

PROJECT MANUAL

for

LTBB ODAWA INDIANS

WAH-WAHS-NOO-DA-KE MAINTENANCE BUILDING

PROJECT NO. 300-24

July 31, 2026



ANTHONY P. ESSON
ARCHITECT

PO BOX 479

GAYLORD, MICHIGAN 49734

TELEPHONE:

(989) 732-0585

DOCUMENT 00 01 01

PROJECT TITLE PAGE

PROJECT NAME: LTBB ODAWA INDIANS
Wah-Wahs-Noo-Da-Ke Maintenance Building

OWNER: LTBB Odawa Indians
7500 Odawa Circle
Harbor Springs, MI 49740
Contact: Amanda Swiss, Planning Director
PH: (231) 242-1591

ARCHITECT: Anthony Esson, Architect

Mailing Address:
P.O. Box 479
Gaylord, MI 49734

Shipping Address:
2111 Forester Drive
Frederic, MI 49733

Contact: Anthony P. Esson, Architect, LEED AP
PH: (989) 732-0585
Email: tony@anthonyessonarchitect.com

MEP ENGINEER: JLK Engineering
5766 Catawaba Court
Gaylord, MI 49735
Contact: Justin Kowatch, PE
PH: (989) 448-4631
Email: jkowatch@jlkengineering.com

DOCUMENT 00 01 10

TABLE OF CONTENTS

Section Title

**PROCUREMENT AND CONTRACTION REQUIREMENTS GROUP
DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS**

INTRODUCTORY INFORMATION

00 01 01	Project Title Page.....	1
00 01 10	Table of Contents.....	3

PROCUREMENT REQUIREMENTS

00 11 16	Invitation to Bid.....	2
00 21 13	Instructions to Bidders	8
	Davis-Bacon Act Wage Determination MI20260118 05/18/2026	4
00 41 13	Bid Form - Stipulated Sum.....	3
00 45 03	Debarment, Suspension, and Ineligibility Affidavit.....	1
00 45 04	Non-collusion Affidavit of Bidder	1

CONTRACTING REQUIREMENTS

00 52 14	Agreement Form	1
	AIA A101-2017 as Modified	9
	ATTACHMENT A – Tribal Resolution 091318-01	
	Limited Waiver of Sovereign Immunity	3
00 72 14	General Conditions	1
	AIA A201-2017 as Modified	39
	Sales Tax Exemption Form.....	4

**SPECIFICATIONS GROUP
GENERAL REQUIREMENTS SUBGROUP**

DIVISION 01 - GENERAL REQUIREMENTS

01 10 00	Summary	2
01 20 00	Price and Payment Procedures	4
01 30 00	Administrative Requirements	5
01 33 00	Submittal Procedures.....	5
01 40 00	Quality Requirements.....	4
01 50 00	Temporary Facilities and Controls	7
01 60 00	Product Requirement	3
01 70 00	Execution and Closeout Requirements.....	6

FACILITY CONSTRUCTION SUBGROUP

DIVISION 03 - CONCRETE

03 30 00	Cast-In-Place Concrete.....	9
----------	-----------------------------	---

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 10 00	Rough Carpentry.....	4
06 17 53	Shop-Fabricated Wood Trusses	5

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 21 13	Board Insulation	2
07 21 16	Blanket Insulation.....	2
07 21 26	Blown Insulation	2
07 26 00	Vapor Retarders.....	2
07 31 13	Asphalt Shingles	4
07 42 13	Metal Wall Panels	4
07 90 00	Joint Protection	4

DIVISION 08 - OPENINGS

08 12 13	Hollow Metal Frames	3
08 13 13	Hollow Metal Doors.....	3
08 36 13	Sectional Doors.....	5
08 71 00	Door Hardware.....	7

DIVISION 09 - FINISHES

09 90 00	Painting and Coating.....	4
----------	---------------------------	---

DIVISION 10 - SPECIALTIES

10 44 00	Fire Protection Specialties	2
----------	-----------------------------------	---

FACILITY SERVICES SUBGROUP

DIVISION 22 - PLUMBING

22 00 01	General Plumbing Requirements.....	6
22 10 05	Plumbing Piping	7

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

23 00 01	General Mechanical Requirements.....	9
23 34 13	Axial HVAC Fans	2
23 37 00	Air Outlets and Inlets.....	2
23 55 33	Fuel-Fired Unit Heaters.....	3

DIVISION 26 - ELECTRICAL

26 00 01	General Electrical Requirements	10
----------	---------------------------------------	----

26 05 19	Low-Voltage Electrical Power Cables (600V and Less)	5
26 05 26	Grounding and Bonding for Electrical Systems	3
26 05 29	Hangers and Supports for Electrical Systems	2
26 05 34	Conduit.....	6
26 05 37	Boxes	3
26 05 53	Identification for Electrical Systems	2
26 09 23	Lighting Control Devices – Wired.....	6
26 24 16	Panelboards	5
26 27 01	Electrical Service Entrance	2
26 27 17	Equipment Wiring.....	2
26 27 26	Wiring Devices	5
26 29 13	Enclosed Controllers	2
26 51 00	Interior Lighting	4
26 56 00	Exterior Lighting	3

SITE AND INFRASTRUCTURE SUBGROUP

DIVISION 31 - EARTHWORK

31 10 00	Site Clearing.....	2
31 22 13	Rough Grading.....	3
31 23 16	Excavation.....	2
31 23 23	Fill.....	3

END OF SECTION

DOCUMENT 00 11 16

INVITATION TO BID

Project:

WWNDK Maintenance Building

Owner:

Little Traverse Bay Bands (LTBB) of Odawa Indians
7500 Odawa Circle
Harbor Springs, MI 49740

Architect/Engineer:

Anthony P. Esson, Architect
PO Box 479
Gaylord, MI 49734

Date: July 31, 2026

LTBB Odawa Indians will receive Bids from General Contract Bidders for construction of a Maintenance Building at the Wah-Wahs-Noo-Da-Ke Housing Development located on Ap-Gish-Mok Blvd., Harbor Springs, Michigan 49740.

Sealed Bids may be mailed or delivered in person to LTBB Odawa Indians, c/o Amanda Swiss, Planning Director; 7500 Odawa Circle, Harbor Springs, MI 49740. Bids must be received prior to 3:00 PM local time on September 10, 2026. Bids will be opened and read aloud immediately following closure of the bidding period in Room 312 of the Governmental Center located at 7500 Odawa Circle, Harbor Springs, MI 49740. The Owner will not consider or accept a bid received after the date and time specified for bid submission.

Bidding Documents will be available on or about August 12, 2026. Bidding Documents will be available to Bidders in electronic format (.pdf) free of charge. Interested Bidders may view and download bidding documents at www.anthonyyessonarchitect.com. Select LTBB ODAWA INDIANS; WWNDK Maintenance Building under the Bid Docs button. A Bidders List will be published and posted on the Architects website. Bidders should email contact information to the Architect at tony@anthonyyessonarchitect.com to be placed on the Bidder's List.

Bids shall be submitted on the Bid Form provided in the Bidding Documents.

A Bid security in the amount of 5 percent of the Bid Sum in the form of a Bid Bond shall accompany each Bid. A personal or company check does not constitute a Bid security.

The successful Bidder will be required to furnish Performance and Labor/Material Payment Bonds in the amount of 100% of the contract amount.

The Project is subject to the Davis-Bacon Act and weekly payroll reporting.

Refer to other bidding requirements described in Document 00 21 13.

Bids will be required to be submitted under a condition of irrevocability for a period of 60 days after submission.

The Owner reserves the right to accept or reject any or all Bids, either in whole or in part; to award the Contract to other than the lowest Bidder; to waive any irregularities and/or informalities; and in general to make awards in any manner deemed to be in the best interest of the Owner.

Refer to other bidding requirements described in Document 00 21 13.

END OF DOCUMENT

DOCUMENT 00 21 13

INSTRUCTIONS TO BIDDERS

1.1 SUMMARY

A. Document Includes:

1. Bid submission.
2. Intent.
3. Work identified in contract documents.
4. Contract Time.
5. Definitions.
6. Contract Documents identification.
7. Availability of documents.
8. Examination of documents.
9. Inquiries and Addenda.
10. Product substitutions.
11. Site examination.
12. Prebid conference.
13. Bidder qualifications.
14. Subcontractors.
15. Submission procedure.
16. Bid ineligibility.
17. Davis-Bacon Act applicability.
18. Build America Buy America Act applicability.
19. Drug Free Workplace requirements.
20. Preference Policies.
21. Non-procurement Debarment and Suspension.
22. Certification of the Contractor.
23. Security deposit.
24. Performance Assurance.
25. Bid Form requirements.
26. Fees for changes in the Work.
27. Bid Form signature.
28. Additional bid information.
29. Selection and Award of Alternates
30. Bid opening.
31. Duration of offer.
32. Evaluation of Bids.
33. Acceptance of offer.

B. Related Documents:

1. Invitation to Bid.
2. Bid Form - Stipulated Price (Single-Prime Contract).
3. Document 00 45 03 – Debarment, Suspension, and ineligibility Affidavit.
4. Document 00 45 04 – Non-Collusion Affidavit of Bidder.
5. AIA Document A101-2017, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum.
 - a. Definitions.
 - b. Contract Time identification.
 - c. Tax exempt procedures.
 - d. Contractor's fees for changes.

- e. Contractor's liability insurance.
- f. Bond types and values.
- g. Liquidated Damages

1.2 BID SUBMISSION

- A. Bids will be received by LTBB Odawa Indians, c/o Amanda Swiss, Planning Director; 7500 Odawa Circle, Harbor Springs, MI 49740 until 3:00 PM local time on September 10, 2026.
- B. Bids submitted after the above time will not be considered.
- C. Amendments to submitted Bids will be permitted when received in writing prior to bid closing and when endorsed by the same party or parties who signed and sealed the Bid.
- D. Bidders may withdraw their Bid by written request at any time before bid closing.

1.3 INTENT

- A. The intent of this Bid request is to obtain an offer to perform Work for a Stipulated Price contract, in accordance with Contract Documents.

1.4 WORK IDENTIFIED IN CONTRACT DOCUMENTS

- A. Work of this proposed Contract comprises construction of a Maintenance Building, and associated site work.
- B. Location: Ap-Gish-Mok Blvd., Harbor Springs, MI 4970

1.5 CONTRACT TIME

- A. Indicate the number of days required following notice of award until commencement of the work under Contract Time in the Bid Form.
- B. Indicate the number of calendar weeks required to achieve Substantial Completion of the work under Contract Time in the Bid Form. The Date of Substantial Completion in the Agreement shall be the Contract Time added to the commencement date.
- C. Contractor shall achieve Final Completion not later than sixty days following the Date of Substantial Completion.

1.6 DEFINITIONS

- A. Bidding Documents: Contract Documents supplemented with Invitation to Bid, Instructions to Bidders, Bid Form, and bid securities, identified.
- B. Contract Documents: Defined in AIA Document A201-2017 Article 1, including issued Addenda.
- C. Bid: Executed Bid Form and required attachments submitted in accordance with these Instructions to Bidders.
- D. Bid Price: Monetary Price identified by the Bidder in the Bid Form.

1.7 CONTRACT DOCUMENTS IDENTIFICATION

- A. The Contract Documents are identified as AEA Project No. 300-25; WWNDK Maintenance Building for LTBB Odawa Indians; as prepared by Anthony Esson, Architect and identified in the Project Manual.

1.8 AVAILABILITY OF DOCUMENTS

- A. Bidding Documents may be obtained as stated in Invitation to Bid.
- B. Bidding Documents are made available only for the purpose of obtaining offers for this Project. Their use does not grant a license for other purposes.
- C. A Bidders List will be published on the Architect's website. Bidders should email contact information to tony@anthonyessonarchitect.com to be included on the Bidders List.

1.9 EXAMINATION OF DOCUMENTS

- A. Bidders are responsible for full examination of the specifications and any addenda prior to submission of Bids.
- B. Bidding Documents are on display at the offices of the Owner and construction association plan room facilities as indicated in the Invitation to Bid.
- C. Upon receipt of Bidding Documents verify documents are complete. Notify Architect/Engineer if documents are incomplete.
- D. Immediately notify Architect/Engineer upon finding discrepancies or omissions in Bidding Documents.
- E. It shall be recognized by the Bidder that components of the Work of any one trade may be identified at various locations throughout the Bidding Documents. The successful Bidder shall be responsible for the Work identified in the Contract Documents as a whole, without regard to the specific location of the information within the Contract Documents.

1.10 INQUIRIES AND ADDENDA

- A. In the case of a conflict or inconsistency in the Bidding Documents which should have reasonably been identified by the Bidder prior to Bid submission, and which was not brought to the attention of the Architect and clarified by Addendum prior to Bid submission, the Bidder shall include and/or shall be deemed to have included the higher quantity or quality of Product or material, and/or more labor intensive or costly installation in the Bid.
- B. Direct questions in writing to Anthony P. Esson, at the office of the Architect/Engineer; email at tony@anthonyessonarchitect.com.
- C. Verbal answers are not binding on any party.
- D. Submit questions not later than [month date, year]. Replies will be made by Addenda.
 - 1. Questions submitted after [month date, year] will not be responded to.

- E. Addenda may be issued during bidding period. Addenda will be posted on Owner's website and sent to construction association plan room facilities. Addenda become part of the Contract Documents. Include resultant costs in the Bid Price.

1.11 PRODUCT SUBSTITUTIONS

- A. Where Bidding Documents allow "or equal" Products, substitutions may be made at the Bidder's discretion. Products substituted shall provide equal function, performance, dimension, appearance, and quality as provided by the specified product. The Architect reserves the right to reject substitutions not meeting criteria for equal function, performance, dimension, appearance, and quality. In that event, Contractor will be required to provide products meeting equal function, performance, dimension, appearance, and quality criteria at no additional cost to the Owner. Preapproval for products specified as "or equal" prior to the submission of Bids is not required and will not be acknowledged by the Architect.
- B. Where the Bidding Documents stipulate particular "Products" with no provisions for substitutions, substitutions will not be considered. The Architect will not acknowledge or respond to requests for substitutions for products specified "no substitutions" or "substitutions not permitted".
- C. Where Bidding Documents stipulate particular "Products" with provisions for substitutions, substitution requests will be considered by Architect/Engineer up to March 25, 2016.
 - 1. Substitution requests received after March 25, 2016 will not be responded to.
- D. With each substitution request, provide sufficient information for Architect/Engineer to determine acceptability of proposed products.
- E. When a request to substitute a Product is made, Architect/Engineer may approve the substitution. Approved substitutions will be identified by Addenda.
- F. In submission of substitutions to products specified, Bidders shall include in their Bid, changes required in the Work and changes to Contract Time and Contract Price to accommodate such approved substitutions. Later claims by the Bidder for an addition to the Contract Time or Contract Price because of changes in Work necessitated by use of substitutions will not be considered.

1.12 SITE EXAMINATION

- A. Examine Project site before submitting a Bid.

1.13 PREBID CONFERENCE – Not Used

1.14 BIDDER QUALIFICATIONS

- A. To demonstrate qualification for performing the Work of this Contract, Bidders may be requested to submit written evidence of financial position, previous experience, current commitments, and license(s) to perform work.

1.15 SUBCONTRACTORS

- A. The Owner reserves the right to reject a proposed Subcontractor for reasonable cause.
- B. Refer to AIA Document A201-2017, Article 5.

1.16 SUBMISSION PROCEDURE

- A. Bidders shall be solely responsible for delivery of Bids in manner and time prescribed.
- B. Submit one copy of executed offer on Bid Forms provided, signed and sealed with required security deposit in a closed opaque envelope, clearly identified with Bidder's name, Project name, and Owner's name on the outside.
- C. An abstract summary of submitted Bids will be made available to all Bidders following bid opening.

1.17 BID INELIGIBILITY

- A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may be declared unacceptable at Owner's discretion.
- B. Bid Forms, and enclosures which are improperly prepared may be declared unacceptable at Owner's discretion.
- C. Failure to provide security deposit, bonds or insurance requirements may invalidate the Bid at the discretion of the Owner.
- D. Bidders that are debarred, suspended or otherwise ineligible to receive Federal contracts are not eligible for contract award.

1.18 DAVIS-BACON REQUIREMENTS

- A. This project is subject to compliance with the Davis-Bacon Act and other provisions as provided in the Contract.
- B. Prevailing wage rates are as listed on the Department of Labor website (<http://sam.gov/wage-determination/MI20260118/1>) for corresponding classes of laborers employed on similar projects in the area and are listed in this contract (**MI20260118 05/18/2026** "Davis-Bacon Act Wage Determination").

1.19 BUILD AMERICA BUY AMERICA ACT

- A. To the greatest extent practicable, the Contractor shall purchase, acquire, and/or use goods, products and/or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section shall be included in all subawards including all contracts and purchase orders for work or products under this contract.
 - 1. "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
 - 2. "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

1.20 DRUG FREE WORKPLACE REQUIREMENTS

- A. This project is subject to compliance with the Drug-Free Workplace Act (41 U.S.C. 701 – 707).

1.21 PREFERENCE POLICIES

- A. Award of this contact is subject to the Indian Preference Policy of the Little Traverse Bay Bands of Odawa Indians.
- B. Preference will be given to Indian Owned, Minority Owned, and Women Owned businesses as follows:
 - 1. Businesses owned by citizens of other Federally Recognized Indian Tribes, as certified by the Bureau of Indian Affairs.
 - 2. Special consideration will also be given to firms proven to be minority owned, woman-owned and/or classified as a small business.
- C. Indian Owned businesses are defined as business with at least 51% ownership and control by person(s) of federally recognized Native American heritage. Include SBA and/or Tribal documentation with the Bid.
- D. Minority Owned or Women Owned Businesses are defined as businesses with at least 51% ownership and control by person(s) of a minority or women and so documented by SBA. Include SBA 8a documentation with the Bid.

1.22 NONPROCUREMENT DEBARMENT AND SUSPENSION

- A. Bidders that are debarred, suspended or otherwise ineligible to receive Federal contracts, certain subcontracts, and certain Federal financial and nonfinancial assistance and benefits, pursuant to the provisions of E.O. 12549, E.O. 12689, 2 CFR part 180, 48 CFR 9.404, and each agency's codification of the Common Rule for Nonprocurement Debarment and Suspension are not eligible for contract award.
- B. Bidders are required to submit with their Bid, Document 00 45 03 – Debarment, Suspension and Ineligibility Affidavit.

1.23 NONCOLLUSION CERTIFICATION OF THE CONTRACTOR

- A. Bidders shall execute and submit Document 00 45 04 – Non-Collusion Affidavit of Bidder, with the Bid.

1.24 SECURITY DEPOSIT

- A. Bids shall be accompanied by security deposit as follows:
 - 1. Bid Bond of a sum no less than 5 percent of the total Bid Price (including Site and Infrastructure and Buildings 4, 3, 5 and 6) on standard surety company form.
 - 2. Certified check in the amount of 5 percent of the total Bid Price (including Site and Infrastructure and Buildings 4, 3, 5 and 6).
- B. Endorse Bid Bond in name of the Owner as blige, signed and sealed by the principal (Contractor) and surety.
- C. Endorse certified check in name of the Owner.

- D. Security deposits will be returned after execution of the Owner Contractor agreement.
- E. If no contract is awarded, security deposits will be returned.

1.25 PERFORMANCE ASSURANCE

- A. Accepted Bidder: Provide a Performance and Payment bond as described in the Contract.
- B. Include the cost of performance assurance bonds in each Bid Price.

1.26 BID FORM REQUIREMENTS

- A. Complete requested information in the Bid Form and Bid Form Supplements.
- B. Refer to AIA Document A201-2017, Article 3.6, procedures for sales tax exemption.

1.27 FEES FOR CHANGES IN THE WORK

- A. When the Architect/Engineer establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions, the percentage fee allowed for Overhead and Profit shall be Ten Percent (10%) on the net cost of work by the General Contractor, and Ten Percent (10%) on the gross cost of work by a Subcontractor.

1.28 BID FORM SIGNATURE

- A. Sign Bid Form, as follows:
 - 1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature. Affix seal.
 - 2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature. Affix seal to each signature.
 - 3. Corporation: Signature of a duly authorized signing officers in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the Bid is signed by officials other than the president and secretary of the company, or the president/secretary/treasurer of the company, submit a copy of the by-law resolution of their board of directors authorizing them to do so, with the Bid Form in the bid envelope.
 - 4. Joint Venture: Signature of each party of the joint venture under their respective seals in a manner appropriate to such party as described above, similar to requirements for Partnerships.

1.29 ADDITIONAL POST-BID INFORMATION

- A. Any Bidder shall, upon request of the Owner/Architect, complete and submit the following within 24 hours of Bid opening.
 - 1. List of Subcontractors: Include names of all Subcontractors and portions of the Work each Subcontractor will perform.

1.30 SELECTION AND AWARD OF ALTERNATES – Not Used

1.31 BID OPENING

- A. Bids will be opened and read aloud immediately following the closure of the bidding period.

- B. Location of Bid Opening: Room 312 of the Governmental Center located at 7500 Odawa Circle, Harbor Springs, MI 49740.
- C. The Owner will not consider or accept a bid received after the date and time specified for bid submission.

1.32 DURATION OF OFFER

- A. Bids shall remain open to acceptance and shall be irrevocable for a period of 60 days after bid closing date.

1.33 ACCEPTANCE OF OFFER

- A. After acceptance by the Owner, the Architect/Engineer on behalf of the Owner, will issue to the accepted Bidder, written notice of Contract Award.
- B. Notwithstanding delay in the preparation and execution of the Agreement, accepted Bidder shall be prepared, upon written Notice, to commence work within seven days following receipt of official written order of the Owner to proceed, or on date stipulated in such order.
- C. The accepted bidder shall, within 7 days following its presentation, execute Agreement and return it to the Owner.

END OF DOCUMENT

"General Decision Number: MI20260118 07/28/2026

State: Michigan

Construction Types: Building

Counties: Michigan Counties of
Emmet

Modification Number	Publication Date		
1	05/12/2026		
2	07/28/2026		
ASBE0047-005 07/01/2025			
		Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR.....		\$ 40.00	23.65

BOIL0169-002 07/01/2025			
		Rates	Fringes
BOILERMAKER.....		\$ 43.50	37.64

BRMI0009-024 08/01/2024			
		Rates	Fringes
TILE SETTER.....		\$ 35.83	22.18
BRICKLAYER.....		\$ 35.83	22.18

CARP0202-002 06/01/2025			
		Rates	Fringes
CARPENTER (DRYWALL HANGER AND FORM WORK).....		\$ 30.83	21.09

CARP1102-005 06/01/2025			
		Rates	Fringes
MILLWRIGHT.....		\$ 40.04	26.47

ELEC0498-017 06/01/2024			
		Rates	Fringes
ELECTRICIAN (ALL TOWNSHIPS EXCEPT WAWATAM).....		\$ 36.62	23.05

ELEC0692-004 06/01/2025			
		Rates	Fringes
ELECTRICIAN (TOWNSHIP OF WAWATAM).....		\$ 37.75	25.60

ENGI0324-021 06/01/2024			
		Rates	Fringes
POWER EQUIPMENT OPERATOR: GROUP 6 OILER CRANE OPERATOR WITH MAIN BOOM AND JIB 300' OR LONGER: \$1.50 PER HOUR ABOVE THE GROUP 1 RATE. CRANE OPERATOR WITH MAIN BOOM AND JIB 400' OR LONGER: \$3.00 PER HOUR ABOVE THE GROUP 1 RATE. PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, FOURTH OF JULY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....		\$ 31.23	25.25
POWER EQUIPMENT OPERATOR: GROUP 5 FORK TRUCK (20' LIFT AND UNDER FOR MASONRY WORK) CRANE OPERATOR WITH MAIN BOOM AND JIB 300' OR LONGER: \$1.50 PER HOUR ABOVE THE GROUP 1 RATE. CRANE OPERATOR WITH MAIN BOOM AND JIB 400' OR LONGER: \$3.00 PER HOUR ABOVE THE GROUP 1 RATE. PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, FOURTH OF JULY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....		\$ 33.71	25.25
POWER EQUIPMENT OPERATOR: GROUP 4 FORK TRUCK (OVER 20' LIFT) CRANE OPERATOR WITH MAIN BOOM AND JIB 300' OR LONGER: \$1.50 PER HOUR ABOVE THE GROUP 1 RATE. CRANE OPERATOR WITH MAIN BOOM AND JIB 400' OR LONGER: \$3.00 PER HOUR ABOVE THE GROUP 1 RATE. PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, FOURTH OF JULY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....		\$ 39.57	25.25
POWER EQUIPMENT OPERATOR: GROUP 3 CRANE; PAVER; AND SCRAPER; STIFF LEG DERRICK CRANE OPERATOR WITH MAIN BOOM AND JIB 300' OR LONGER: \$1.50 PER HOUR ABOVE THE GROUP 1 RATE. CRANE OPERATOR WITH MAIN BOOM AND JIB 400' OR LONGER: \$3.00 PER HOUR ABOVE THE GROUP 1 RATE. PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, FOURTH OF JULY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....		\$ 41.28	25.25
POWER EQUIPMENT OPERATOR: GROUP 2 CRANE OPERATOR WITH MAIN BOOM AND JIB 140' OR LONGER; TOWER CRANE, GANTRY CRANE AND WHIRLEY DERRICK CRANE OPERATOR WITH MAIN BOOM AND JIB 300' OR LONGER: \$1.50 PER			

HOUR ABOVE THE GROUP 1 RATE. CRANE OPERATOR WITH
 MAIN BOOM AND JIB 400' OR LONGER: \$3.00 PER HOUR
 ABOVE THE GROUP 1 RATE. PAID HOLIDAYS: NEW
 YEAR'S DAY, MEMORIAL DAY, FOURTH OF JULY, LABOR
 DAY, THANKSGIVING DAY AND CHRISTMAS DAY.....\$ 43.93 25.25
 POWER EQUIPMENT OPERATOR: GROUP 1 CRANE OPERATOR
 WITH MAIN BOOM AND JIB 400', 300', OR 220' OR
 LONGER. CRANE OPERATOR WITH MAIN BOOM AND JIB 300'
 OR LONGER: \$1.50 PER HOUR ABOVE THE GROUP 1 RATE.
 CRANE OPERATOR WITH MAIN BOOM AND JIB 400' OR
 LONGER: \$3.00 PER HOUR ABOVE THE GROUP 1 RATE.
 PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, FOURTH
 OF JULY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS
 DAY.....\$ 47.28 25.25

IRON0025-005 06/01/2025

	Rates	Fringes
IRONWORKER: STRUCTURAL.....	\$ 36.55	29.51
IRONWORKER: REINFORCING.....	\$ 36.55	29.51

LAB01098-028 07/01/2025

	Rates	Fringes
LABORER: SANDBLASTER.....	\$ 26.23	13.45
LABORER (COMON OR GENERAL; MASON TENDER - BRICK; MASON TENDER - CEMENT/CONCRETE; AND PIPELAYER).....	\$ 25.02	13.45

PLAS0016-036 04/01/2014

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER.....	\$ 23.10	12.38

PLUM0085-001 05/01/2023

	Rates	Fringes
PLUMBER (HVAC SYSTEM INSTALLATION ONLY).....	\$ 38.01	21.73

PLUM0085-001 05/04/2023

	Rates	Fringes
PLUMBER (EXCLUDING HVAC PIPE & SYSTEM INSTALLATION).....	\$ 38.01	21.73
PIPEFITTER (HVAC PIPE INSTALLATION ONLY).....	\$ 38.01	21.73
PIPEFITTER (EXCLUDING HVAC PIPE & SYSTEM INSTALLATION).....	\$ 38.01	21.73

SFMI0669-003 01/02/2025

	Rates	Fringes
SPRINKLER FITTER (FIRE SPRINKLERS).....	\$ 41.34	27.39

SHEE0007-003 05/01/2023

	Rates	Fringes
SHEET METAL WORKER (HVAC DUCT INSTALLATION ONLY)....	\$ 31.05	25.07
SHEET METAL WORKER (EXCLUDING HVAC DUCT & SYSTEM INSTALLATION).....	\$ 31.05	25.07

SUMI2011-043 02/14/2011

	Rates	Fringes
TRUCK DRIVER: FLATBED TRUCK.....	\$ 17.44	4.51
TRUCK DRIVER, INCLUDES DUMP AND TANDEM TRUCK.....	\$ 16.56	3.50
ROOFER.....	\$ 13.64	4.58
PAINTER: SPRAY.....	\$ 16.37	2.08
PAINTER: ROLLER.....	\$ 16.61	2.09
PAINTER: BRUSH ONLY.....	\$ 16.20	2.07
OPERATOR: LOADER.....	\$ 24.04	6.03
OPERATOR: TRACTOR.....	\$ 19.60	7.31
OPERATOR: ROLLER.....	\$ 27.47	8.86
OPERATOR: GRADER/BLADE.....	\$ 24.04	6.03
OPERATOR: BULLDOZER.....	\$ 22.46	7.29
OPERATOR: BACKHOE/EXCAVATOR.....	\$ 24.04	6.03
LABORER: LANDSCAPE & IRRIGATION.....	\$ 11.04	4.39
GLAZIER.....	\$ 17.19	3.83
CARPENTER, EXCLUDES DRYWALL HANGING, AND FORM WORK..	\$ 19.48	5.02

TEST

----- WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information

on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than SU, UAVG, SA, or SC denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The SU identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

SU wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The SA identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME

refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the SA identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

=====

END OF GENERAL DECISION

..

DOCUMENT 00 41 13

BID FORM - STIPULATED PRICE

To: LTBB Odawa Indians
c/o Amanda Swiss, Planning Director
7500 Odawa Circle
Harbor Springs, MI 49740

Project: LTBB ODAWA INDIANS
WWNKD Maintenance Building
AEA Project No. 300-25

Date: _____

Submitted by: _____
(Company full name)

(full address) _____

Estimator _____; Telephone _____

1.1 OFFER

Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Anthony Esson, Architect dated July 31, 2026 for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Price of:

\$ _____ (numerical)

\$ _____ dollars
(written), in lawful money of the United States of America.

We have included the cost of Performance and Labor/Material Payment Bonds in the Bid.

We have included the cost of Wages and Benefits required under the Davis-Bacon Act.

We have included, the security deposit as required by the Instruction to Bidders.

We have completed and attached Certificates of the Bidder as required in Section 00 21 13:
Document 00 45 03 - Debarment, Suspension, and Ineligibility Affidavit
Document 00 45 04 - Non-collusion Affidavit of Bidder

We have not included Michigan Sales Tax as the project being Tribally Owned is exempt from Michigan Sales Tax under an agreement with the State of Michigan.

1.2 ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for sixty days from the bid closing date.

If this bid is accepted by the Owner within the time period stated above, we will:

- Execute the Agreement within seven days of receipt of Notice of Award.
- Furnish the required bonds and insurances within seven days of receipt of Notice of Award.
- Commence work within seven days after execution of the agreement.

If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required bonds, the security deposit shall be forfeited as compensation to the Owner for Owners additional expenses, by reason of our failure.

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

1.3 CONTRACT TIME

We acknowledge that construction must be Substantially Complete and approved for occupancy not later than the date established and agreed to in the Contract, and that we must achieve Final Completion not later than thirty (30) days following Substantial Completion. We further acknowledge that Liquidated Damages as defined in the Contract Documents apply to both Substantial Completion and Final Completion.

If this Bid is accepted, we can commence work within _____ (_____) calendar days.

If this Bid is accepted, we will achieve Substantial Completion within _____
(_____) calendar weeks from the date of commencement.

1.4 ADDENDA

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

Addendum # _____ Dated _____

Addendum # _____ Dated _____

1.5 APPENDICES

In accordance with Instruction to Bidders, the following documents will, if requested, be submitted within 24 hours of bid opening and made a condition of the Bid:

- Bidder's qualifications statement and supporting data.
- List of Subcontractors.

1.6 BID FORM SIGNATURES

Bidder - print the full name of your firm

Authorized signing officer

Title

Signature

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

END OF DOCUMENT

DOCUMENT 00 45 03

NON-PROCUREMENT DEBARMENT AND SUSPENSION AFFIDAVIT

By signing and submitting this affidavit, Bidder certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or excluded from receiving Federal contracts, certain subcontracts, and certain Federal financial and nonfinancial assistance and benefits, pursuant to the provisions of [2 CFR part 180](#), E.O. 12549, E.O. 12689, 48 CFR 9.404, and each agency's codification of the Common Rule for Nonprocurement Suspension and Debarment.

BIDDER:

By: _____

Its: _____

State of Michigan)
) SS
County of)

This instrument was acknowledged before me on the _____ day of _____, 20____, by

_____.

, Notary Public

_____, County, Michigan

My Commission Expires: _____

Acting in the County of: _____

END OF NON-PROCUREMENT DEBARMENT AND SUSPENSION AFFIDAVIT

DOCUMENT 00 45 04

NON-COLLUSION AFFIDAVIT OF BIDDER

_____, being the first duly sworn, deposes and says that:

1. He/she is _____ of _____
(Owner, partner, etc.) (Company)
the Bidder that has submitted the accompanying Bid;

2. He/she is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

3. Such Bid is genuine and is not a collusive or sham Bid;

4. Neither the said Bidder nor any of its officers, partners, owners, subcontractors, agents, representatives, employees or parties in interest including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix price or prices in the attached Bid or of any other Bidder, or to fix overhead, profit or cost element of the bid price or the bid price of any other bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement and advantage against the owner of the property interested in the proposed contract;

5. No agents, representatives, or employees of the Little Traverse Bay Bands of Odawa Indians is directly or indirectly interested in the bid, or the work to which it relates, or in any portion of the profits thereof; and,

6. The price of prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees or parties in interest including this affiant;

7. The Bidder is not indebted to the Little Traverse Bay Bands of Odawa Indians in any form or manner.

By: _____

Its: _____

State of Michigan)
) SS
County of)

This instrument was acknowledged before me on the _____ day of _____, 200__, by

_____.

_____, Notary Public

_____, County, Michigan

My Commission Expires: _____

Acting in the County of: _____

DOCUMENT 00 52 14

AGREEMENT FORM - AIA STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 SUMMARY

A. Document Includes:

1. Agreement.

B. Related Documents:

1. Document 00 72 14 - General Conditions - AIA Stipulated Sum (Single-Prime Contract).

1.2 AGREEMENT

- A.** AIA Document A101-2017, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum, as modified and included herein, forms the basis of Agreement between the Owner and Contractor.

END OF DOCUMENT

 AIA® Document A101® – 2017***Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum***

AGREEMENT made as of the day of in the year
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

Little Traverse Bay Bands of Odawa Indians
7500 Odawa Circle
Harbor Springs, MI 49740
Telephone: 231.242.1400

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

Architect's Project No. 300-25

Little Traverse Bay Bands of Odawa Indians
WWNDK Maintenance Building
Ap-Gish-Mok Blvd., Harbor Springs, MI 49740

The Architect:
(Name, legal status, address and other information)

Anthony Esson, Architect
PO Box 479
Gaylord, MI 49734
Telephone: 989.350.1827

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

TABLE OF ARTICLES

1	THE CONTRACT DOCUMENTS
2	THE WORK OF THIS CONTRACT
3	DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
4	CONTRACT SUM
5	PAYMENTS
6	DISPUTE RESOLUTION
7	TERMINATION OR SUSPENSION
8	MISCELLANEOUS PROVISIONS
9	ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

- ☒ [X] The date of this Agreement.
- ☐ [] A date set forth in a notice to proceed issued by the Owner.
- ☐ [] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

[] Not later than () calendar days from the date of commencement of the Work.

[X] By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work

Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item

Price

None

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item

Price

Conditions for Acceptance

None

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item

Price

None

§ 4.4 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item

Units and Limitations

Price per Unit (\$0.00)

None

§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

As determined in accordance with Article 6 of this agreement.

§ 4.6 Other:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

None

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.

§ 5.1.3 Provided that a properly executed Application for Payment and supporting documents, is received by the Architect not later than the last day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the last day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than thirty (30) days after the Architect receives the properly executed Application for Payment and supporting documents.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

Ten percent (10%) on work completed (materials and labor) or stored (materials).

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

Performance and Payment Bonds required under the Contract, and costs incurred by the Contractor for any permits required in connection with the work.

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

There shall be no reduction or limitation of retainage. Owner shall retain 10% on completed work through Substantial Completion.

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

(Insert any other conditions for release of retainage upon Substantial Completion.)

The Owner shall retain an amount equal to two times (2x) the value of items included on the punch list as listed on the Certificate of Substantial Completion through final payment.

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

%

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

Init.

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

- ☐ Arbitration pursuant to Section 15.4 of AIA Document A201–2017
- ☒ Litigation in a court of competent jurisdiction in accordance with Tribal Resolution #091318-01 (ATTACHMENT A)
- ☐ Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

(Paragraphs deleted)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:

(Name, address, email address, and other information)

Amanda Swiss, Planning Director
LTBB Odawa Indians
7500 Odawa Circle
Harbor Springs, MI 49740
Telephone: 231.242.1591
Email: ASwiss@LTBBODAWA-NSN.GOV

§ 8.3 The Contractor's representative:

(Name, address, email address, and other information)

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

(Paragraphs deleted)

§ 8.7 Other provisions:

§ 8.7.1 This project is subject to compliance with the Drug-Free Workplace Act (41 U.S.C. 701 – 707). Contractors shall cooperate with the Owner in compliance with the Act.

§ 8.7.2 This project is subject to compliance with the Davis-Bacon Act, including payment of prevailing wages and benefits, and weekly payroll reporting.

§ 8.7.3 Final Completion: Contractor shall achieve Final Completion not later than sixty (30) days after Substantial Completion.

§ 8.7.4 All contractors, including their employees, and subcontractors and their employees (at any level) that are sex offenders mandated to register that are working on sites under the jurisdiction of LTBB Odawa Indians are required to update their registry with LTBB Law Enforcement .

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 Applicable portions of HUD-5370 (1/2014) General Conditions for Construction Contracts – Public Housing Programs
- .5 Architectural and MEP Drawings – All dated July 31, 2026 unless indicated otherwise.

Number	Title	Date
T	Title Sheet / Project Information	
A1.1	FoundationPlan / Details and Notes	
A2.1	Floor Plan / Door Schedule and Details	
A3.1	Exterior Elevations	
A4.1	Building Section "A-A" / Framing Elevations	
A5.1	Wall Details	
A6.1	Structural Notes and Details	
MT	Mechanical and Plumbing Title Sheet	
M1	Mechanical and Plumbing Plans	
ET	Electrical Title Sheet	

Init.

.6 Civil Drawings – All dated June 23, 2026 unless indicated otherwise.

Number	Title	Date
G-001	Construction Notes and Legends	
C-001	Existing Conditions, Removals, and SESC Plan	
C-002	Proposed Improvements Plan	
C-003	Proposed Grading Plan	

.7 Specifications – All dated July 31, 2026 unless indicated otherwise.

Section	Title	Date	Pages
01 10 00	Summary		2
01 20 00	Price and Payment Procedures		4
01 30 00	Administrative Requirements		5
01 33 00	Submittal Procedures		5
01 40 00	Quality Requirements		4
01 50 00	Temporary Facilities and Controls		7
01 60 00	Product Requirements		3
01 70 00	Execution and Closeout Requirements		6
03 30 00	Cast-in-Place Concrete		9
06 10 00	Rough Carpentry		4
06 17 53	Shop-Fabricated Wood Trusses		5
07 21 13	Board Insulation		2
07 21 16	Blanket Insulation		2
07 21 26	Blown Insulation		2
07 26 00	Vapor Retarders		2
07 31 13	Asphalt Shingles		4
07 42 13	Metal Wall Panels		4
07 90 00	Joint Protection		4
08 12 13	Hollow Metal Frames		3
08 13 13	Hollow Metal Doors		3
08 36 13	Sectional Doors		5
08 71 00	Door Hardware		7
09 90 00	Painting and Coating		4
10 44 00	Fire Protection Specialties		2
22 00 01	General Plumbing Requirements		6
22 10 05	Plumbing Piping		7
23 00 01	General Mechanical Requirements		9
23 34 13	Axial HVAC Fans		2
23 37 00	Air Outlets and Inlets		2
23 55 33	Fuel-Fired Unit Heaters		3
26 00 01	General Electrical Requirements		10
26 05 19	Low-Voltage Electrical Power Cables (600V and less)		5
26 05 26	Grounding and Bonding for Electrical Systems		3
26 05 29	Hangers and Supports for Electrical Systems		2
26 05 34	Conduit		6
26 05 37	Boxes		3
26 05 53	Identification for Electrical Systems		2
26 09 23	Lighting Control Devices – Wired		6
26 24 16	Panelboards		5
26 27 01	Electrical Service Entrance		2
26 27 17	Equipment Wiring		2
26 27 26	Wiring Devices		5
26 29 13	Enclosed Controllers		2

26 51 00	Interior Lighting	4
26 56 00	Exterior Lighting	3
31 10 00	Site Clearing	2
31 22 13	Rough Grading	3
31 23 16	Excavation	2
31 23 23	Fill	3

.8 Addenda, if any:

Number	Date	Pages
--------	------	-------

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.9
(Paragraphs deleted)

.10 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

- .1 Tribal Resolution #091318-01 Limited Waiver of Sovereign Immunity (ATTACHMENT A).
- .2 Accepted portions of Bidders Bid (Bid Form – Stipulated Price) and any documentation submitted with the Bid (ATTACHMENT B).

This Agreement entered into as of the day and year first written above.

LTBB ODAWA INDIANS

OWNER (Signature)

Winnay Wemigwase Tribal Chairperson
(Printed name and title)

CONTRACTOR (Signature)

(Printed name and title)

Init.

LITTLE TRAVERSE BAY BANDS OF ODAWA INDIANS
7500 ODAWA CIRCLE
HARBOR SPRINGS, MI 49740

TRIBAL RESOLUTION 091318-01

Limited Waiver of Sovereign Immunity

WHEREAS the Waganakising Odawak Nation, known as the Little Traverse Bay Bands of Odawa Indians, and its citizens are vested with inherent sovereignty and right to self-governance;

WHEREAS the Little Traverse Bay Bands of Odawa Indians is a federally recognized Indian Tribe under Public Law 103-324, and is a party to numerous Treaties with the United States the most recent of which being the Treaty of Washington of March 28, 1836 (7 Stat. 491) and the Treaty of Detroit of 1855 (11 Stat. 621);

WHEREAS the Little Traverse Bay Bands of Odawa Indians Constitution, Article XVIII, Sovereign Immunity, Tribal Immunity from Suit, provides:

The Little Traverse Bay Bands of Odawa Indians, including all subordinate entities, shall be immune from suit except to the extent that the Tribal Council clearly and expressly waives its sovereign immunity, and officials and employees of the Tribe acting within the scope of their duties or authority shall be immune from suit.

WHEREAS in accordance with the Constitution, Tribal Council has delegated management of any and all economic affairs and enterprises of the Little Traverse Bay Bands of Odawa Indians to Tribally chartered corporations or other subordinate Tribal entities, or where appropriate, to the Executive Branch;

WHEREAS in accordance with the Constitution, Tribal Chair is to oversee all Tribal Executive departments, boards, commissions and committees created by the Tribal Council;

WHEREAS the Tribal Chair, Tribally chartered corporations or other subordinate Tribal entities, must enter into a variety of contracts on an almost daily basis to function effectively.

THEREFORE BE IT RESOLVED that the Little Traverse Bay Bands of Odawa Indians Tribal Council expressly authorizes the Tribal Chair, Executive Departments, Tribally chartered corporations or other subordinate Tribal entities, to waive their Constitutional and common law immunity to suit in the Tribal Court of the Little Traverse Bay Bands of Odawa Indians, including the enforcement of arbitration, when entering into contracts for up to the amount of the contract but not to exceed \$750,000.00.

FURTHER BE IT RESOLVED this authorization only applies to the assets under the direct control of the Tribal Chair, Executive Departments, Tribally chartered corporations or other subordinate Tribal entities.

FURTHER BE IT RESOLVED any contracts that allow for any other jurisdiction other than Tribal Court must have prior approval by Tribal Council. Any contracts over \$750,000.00 must have prior approval by Tribal Council.

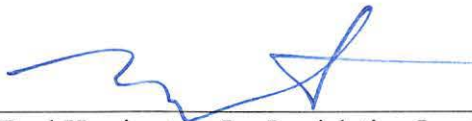
FINALLY, BE IT RESOLVED that any and all previous authorizations for limited waivers of sovereign immunity, including Certified Motion #091114-03, *Limited Sovereign Immunity Waivers in Odawa Casino Resort Contracts*, are repealed and replaced by this Tribal Resolution.

CERTIFICATION

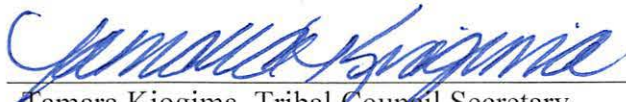
As the Tribal Council Legislative Leader and Tribal Council Secretary, we certify that this Tribal Resolution was duly adopted by the Tribal Council of the Little Traverse Bay Bands of Odawa Indians by phone poll of the Tribal Council held on September 13, 2018 at which a quorum was present, by a vote of 7 in favor, 0 opposed, 0 abstentions, and 2 absent as recorded:

	In Favor	Opposed	Abstained	Absent
Frank Bernard	X			
David Harrington	X			
Dexter McNamara	X			
Emily Proctor	X			
Julie Shananaquet	X			
Shanna Wemigwase				X
Marcella Reyes				X
Tamara Kiogima	X			
Fred Harrington, Jr.	X			

Date: 09.13.18


Fred Harrington, Jr., Legislative Leader

Date: 9-17-18


Tamara Kiogima, Tribal Council Secretary

Received by the Executive Office on 9-18-18 by 

Pursuant to Article VII, Section D, Subsection 1 of the Little Traverse Bay Bands of Odawa Indians Constitution adopted on February 1, 2005 the Executive concurs in this action of the Tribal Council.

Date: 10-17-18


Regina Gasco Bentley, Tribal Chairperson

Tribal Resolution Limited Waiver of Sovereign Immunity
Secretary Kiogima 



DOCUMENT 00 72 14

GENERAL CONDITIONS

1.1 SUMMARY

- A. Document Includes:
 - 1. General Conditions.
- B. Related Documents:
 - 1. Document 00 52 14 - Agreement Form.

1.2 GENERAL CONDITIONS

- A. AIA Document A201-2017 General Conditions of the Contract for Construction, as modified and included herein, form the General Conditions of the Contract.

END OF DOCUMENT



AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Little Traverse Bay Bands of Odawa Indians
WWNDK Maintenance Building
Ap-Gish-Mok Blvd., Harbor Springs, MI 49740

THE OWNER:

(Name, legal status and address)

Little Traverse Bay Bands of Odawa Indians
7500 Odawa Circle, Harbor Springs, MI 49740

THE ARCHITECT:

(Name, legal status and address)

Anthony Esson, Architect
PO Box 479, Gaylord, MI 49734

TABLE OF ARTICLES

1	GENERAL PROVISIONS
2	OWNER
3	CONTRACTOR
4	ARCHITECT
5	SUBCONTRACTORS
6	CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7	CHANGES IN THE WORK
8	TIME
9	PAYMENTS AND COMPLETION
10	PROTECTION OF PERSONS AND PROPERTY
11	INSURANCE AND BONDS
12	UNCOVERING AND CORRECTION OF WORK
13	MISCELLANEOUS PROVISIONS
14	TERMINATION OR SUSPENSION OF THE CONTRACT
15	CLAIMS AND DISPUTES

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

Init.

/

INDEX

(Topics and numbers in bold are Section headings.)

Acceptance of Nonconforming Work

9.6.6, 9.9.3, **12.3**

Acceptance of Work

9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, **12.3**

Access to Work

3.16, 6.2.1, **12.1**

Accident Prevention

10

Acts and Omissions

3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5,

10.2.8, 13.3.2, 14.1, 15.1.2, 15.2

Addenda

1.1.1

Additional Costs, Claims for

3.7.4, 3.7.5, 10.3.2, 15.1.5

Additional Inspections and Testing

9.4.2, 9.8.3, 12.2.1, **13.4**

Additional Time, Claims for

3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, **15.1.6**

Administration of the Contract

3.1.3, **4.2**, 9.4, 9.5

Advertisement or Invitation to Bid

1.1.1

Aesthetic Effect

4.2.13

Allowances

3.8

Applications for Payment

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5.1, 9.5.4, 9.6.3, 9.7, 9.10

Approvals

2.1.1, 2.3.1, 2.5, 3.1.3, 3.10.2, 3.12.8, 3.12.9,

3.12.10.1, 4.2.7, 9.3.2, 13.4.1

Arbitration

8.3.1, 15.3.2, **15.4**

ARCHITECT

4

Architect, Definition of

4.1.1

Architect, Extent of Authority

2.5, 3.12.7, 4.1.2, 4.2, 5.2, 6.3, 7.1.2, 7.3.4, 7.4, 9.2,
9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1,
13.4.1, 13.4.2, 14.2.2, 14.2.4, 15.1.4, 15.2.1

Architect, Limitations of Authority and Responsibility

2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2, 4.2.3,
4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4, 9.4.2,
9.5.4, 9.6.4, 15.1.4, 15.2

Architect's Additional Services and Expenses

2.5, 12.2.1, 13.4.2, 13.4.3, 14.2.4

Architect's Administration of the Contract

3.1.3, 3.7.4, 15.2, 9.4.1, 9.5

Architect's Approvals

2.5, 3.1.3, 3.5, 3.10.2, 4.2.7

Architect's Authority to Reject Work

3.5, 4.2.6, 12.1.2, 12.2.1

Architect's Copyright

1.1.7, 1.5

Architect's Decisions

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3,
7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1,
13.4.2, 15.2

Architect's Inspections

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.4

Architect's Instructions

3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.4.2

Architect's Interpretations

4.2.11, 4.2.12

Architect's Project Representative

4.2.10

Architect's Relationship with Contractor

1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2,
3.5, 3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16,
3.18, 4.1.2, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5,
9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.3.2, 13.4, 15.2

Architect's Relationship with Subcontractors

1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3

Architect's Representations

9.4.2, 9.5.1, 9.10.1

Architect's Site Visits

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4

Asbestos

10.3.1

Attorneys' Fees

3.18.1, 9.6.8, 9.10.2, 10.3.3

Award of Separate Contracts

6.1.1, 6.1.2

Award of Subcontracts and Other Contracts for Portions of the Work

5.2

Basic Definitions

1.1

Bidding Requirements

1.1.1

Binding Dispute Resolution

8.3.1, 9.7, 11.5, 13.1, 15.1.2, 15.1.3, 15.2.1, 15.2.5,
15.2.6.1, 15.3.1, 15.3.2, 15.3.3, 15.4.1

Bonds, Lien

7.3.4.4, 9.6.8, 9.10.2, 9.10.3

Bonds, Performance, and Payment

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**, 11.1.3, **11.5**

Building Information Models Use and Reliance

1.8

Building Permit

3.7.1

Capitalization

1.3

Certificate of Substantial Completion

9.8.3, 9.8.4, 9.8.5

Certificates for Payment

4.2.1, 4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.4

Certificates of Inspection, Testing or Approval
13.4.4

Certificates of Insurance
9.10.2

Change Orders

1.1.1, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8, 5.2.3, 7.1.2, 7.1.3, **7.2**, 7.3.2, 7.3.7, 7.3.9, 7.3.10, 8.3.1, 9.3.1.1, 9.10.3, 10.3.2, 11.2, 11.5, 12.1.2

Change Orders, Definition of

7.2.1

CHANGES IN THE WORK

2.2.2, 3.11, 4.2.8, 7, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1, 11.5

Claims, Definition of

15.1.1

Claims, Notice of
1.6.2, 15.1.3

CLAIMS AND DISPUTES

3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, **15**, 15.4
Claims and Timely Assertion of Claims
15.4.1

Claims for Additional Cost

3.2.4, 3.3.1, 3.7.4, 7.3.9, 9.5.2, 10.2.5, 10.3.2, **15.1.5**

Claims for Additional Time

3.2.4, 3.3.1, 3.7.4, 6.1.1, 8.3.2, 9.5.2, 10.3.2, **15.1.6**

Concealed or Unknown Conditions, Claims for
3.7.4

Claims for Damages

3.2.4, 3.18, 8.3.3, 9.5.1, 9.6.7, 10.2.5, 10.3.3, 11.3, 11.3.2, 14.2.4, 15.1.7

Claims Subject to Arbitration
15.4.1

Cleaning Up

3.15, 6.3

Commencement of the Work, Conditions Relating to
2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3, 6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.2, **15.1.5**

Commencement of the Work, Definition of
8.1.2

Communications

3.9.1, **4.2.4**

Completion, Conditions Relating to

3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1, 9.10, 12.2, 14.1.2, 15.1.2

COMPLETION, PAYMENTS AND 9

Completion, Substantial

3.10.1, 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2, 15.1.2

Compliance with Laws

2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14.1.1, 14.2.1.3, 15.2.8, 15.4.2, 15.4.3

Concealed or Unknown Conditions

3.7.4, 4.2.8, 8.3.1, 10.3

Conditions of the Contract

1.1.1, 6.1.1, 6.1.4

Consent, Written

3.4.2, 3.14.2, 4.1.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 13.2, 15.4.4.2

Consolidation or Joinder

15.4.4

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

1.1.4, **6**

Construction Change Directive, Definition of
7.3.1

Construction Change Directives

1.1.1, 3.4.2, 3.11, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3, **7.3**, 9.3.1.1

Construction Schedules, Contractor's

3.10, 3.11, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2

Contingent Assignment of Subcontracts

5.4, 14.2.2.2

Continuing Contract Performance

15.1.4

Contract, Definition of

1.1.2

CONTRACT, TERMINATION OR SUSPENSION OF THE

5.4.1.1, 5.4.2, 11.5, **14**

Contract Administration

3.1.3, 4, 9.4, 9.5

Contract Award and Execution, Conditions Relating to

3.7.1, 3.10, 5.2, 6.1

Contract Documents, Copies Furnished and Use of
1.5.2, 2.3.6, 5.3

Contract Documents, Definition of

1.1.1

Contract Sum

2.2.2, 2.2.4, 3.7.4, 3.7.5, 3.8, 3.10.2, 5.2.3, 7.3, 7.4, **9.1**, 9.2, 9.4.2, 9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.5, 12.1.2, 12.3, 14.2.4, 14.3.2, 15.1.4.2, **15.1.5**, **15.2.5**

Contract Sum, Definition of

9.1

Contract Time

1.1.4, 2.2.1, 2.2.2, 3.7.4, 3.7.5, 3.10.2, 5.2.3, 6.1.5, 7.2.1.3, 7.3.1, 7.3.5, 7.3.6, 7, 7, 7.3.10, 7.4, 8.1.1, 8.2.1, 8.2.3, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 12.1.2, 14.3.2, 15.1.4.2, 15.1.6.1, 15.2.5

Contract Time, Definition of

8.1.1

CONTRACTOR

3

Contractor, Definition of

3.1, **6.1.2**

Contractor's Construction and Submittal Schedules

3.10, 3.12.1, 3.12.2, 4.2.3, 6.1.3, 15.1.6.2

Contractor's Employees
2.2.4, 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3, 11.3, 14.1, 14.2.1.1

Contractor's Liability Insurance
11.1
Contractor's Relationship with Separate Contractors and Owner's Forces
3.12.5, 3.14.2, 4.2.4, 6, 11.3, 12.2.4
Contractor's Relationship with Subcontractors
1.2.2, 2.2.4, 3.3.2, 3.18.1, 3.18.2, 4.2.4, 5, 9.6.2, 9.6.7, 9.10.2, 11.2, 11.3, 11.4
Contractor's Relationship with the Architect
1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5.1, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.4, 15.1.3, 15.2.1
Contractor's Representations
3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2
Contractor's Responsibility for Those Performing the Work
3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8
Contractor's Review of Contract Documents
3.2
Contractor's Right to Stop the Work
2.2.2, 9.7
Contractor's Right to Terminate the Contract
14.1
Contractor's Submittals
3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3
Contractor's Superintendent
3.9, 10.2.6
Contractor's Supervision and Construction Procedures
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 7.3.6, 8.2, 10, 12, 14, 15.1.4
Coordination and Correlation
1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1
Copies Furnished of Drawings and Specifications
1.5, 2.3.6, 3.11
Copyrights
1.5, **3.17**
Correction of Work
2.5, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, **12.2**, 12.3, 15.1.3.1, 15.1.3.2, 15.2.1
Correlation and Intent of the Contract Documents
1.2
Cost, Definition of
7.3.4
Costs
2.5, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.4, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6, 11.2, 12.1.2, 12.2.1, 12.2.4, 13.4, 14
Cutting and Patching
3.14, 6.2.5

Damage to Construction of Owner or Separate Contractors
3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 12.2.4
Damage to the Work
3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 12.2.4
Damages, Claims for
3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.3.2, 11.3, 14.2.4, 15.1.7
Damages for Delay
6.2.3, 8.3.3, 9.5.1.6, 9.7, 10.3.2, 14.3.2
Date of Commencement of the Work, Definition of
8.1.2
Date of Substantial Completion, Definition of
8.1.3
Day, Definition of
8.1.4
Decisions of the Architect
3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 6.3, 7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.4.2, 14.2.2, 14.2.4, 15.1, 15.2
Decisions to Withhold Certification
9.4.1, **9.5**, 9.7, 14.1.1.3
Defective or Nonconforming Work, Acceptance, Rejection and Correction of
2.5, 3.5, 4.2.6, 6.2.3, 9.5.1, 9.5.3, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1
Definitions
1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 5.1, 6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1, 15.1.1
Delays and Extensions of Time
3.2, **3.7.4**, 5.2.3, 7.2.1, 7.3.1, **7.4**, **8.3**, 9.5.1, **9.7**, 10.3.2, **10.4**, 14.3.2, **15.1.6**, 15.2.5
Digital Data Use and Transmission
1.7
Disputes
6.3, 7.3.9, 15.1, 15.2
Documents and Samples at the Site
3.11
Drawings, Definition of
1.1.5
Drawings and Specifications, Use and Ownership of
3.11
Effective Date of Insurance
8.2.2
Emergencies
10.4, 14.1.1.2, **15.1.5**
Employees, Contractor's
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3.3, 11.3, 14.1, 14.2.1.1
Equipment, Labor, or Materials
1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2
Execution and Progress of the Work
1.1.3, 1.2.1, 1.2.2, 2.3.4, 2.3.6, 3.1, 3.3.1, 3.4.1, 3.7.1, 3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.6, 8.2, 9.5.1, 9.9.1, 10.2, 10.3, 12.1, 12.2, 14.2, 14.3.1, 15.1.4

Extensions of Time
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2, 10.4, 14.3, 15.1.6, **15.2.5**

Failure of Payment
9.5.1.3, **9.7**, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

Faulty Work
(See Defective or Nonconforming Work)

Final Completion and Final Payment
4.2.1, 4.2.9, 9.8.2, **9.10**, 12.3, 14.2.4, 14.4.3

Financial Arrangements, Owner's
2.2.1, 13.2.2, 14.1.1.4

GENERAL PROVISIONS

1

Governing Law

13.1
Guarantees (See Warranty)

Hazardous Materials and Substances
10.2.4, **10.3**

Identification of Subcontractors and Suppliers
5.2.1

Indemnification
3.17, **3.18**, 9.6.8, 9.10.2, 10.3.3, 11.3

Information and Services Required of the Owner
2.1.2, **2.2**, 2.3, 3.2.2, 3.12.10.1, 6.1.3, 6.1.4, 6.2.5, 9.6.1, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2, 14.1.1.4, 14.1.4, 15.1.4

Initial Decision
15.2

Initial Decision Maker, Definition of
1.1.8
Initial Decision Maker, Decisions
14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5
Initial Decision Maker, Extent of Authority
14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5

Injury or Damage to Person or Property
10.2.8, 10.4

Inspections
3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 12.2.1, 13.4

Instructions to Bidders
1.1.1

Instructions to the Contractor
3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.4.2

Instruments of Service, Definition of
1.1.7

Insurance
6.1.1, 7.3.4, 8.2.2, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 10.2.5, **11**

Insurance, Notice of Cancellation or Expiration
11.1.4, 11.2.3

Insurance, Contractor's Liability
11.1
Insurance, Effective Date of
8.2.2, 14.4.2

Insurance, Owner's Liability
11.2

Insurance, Property
10.2.5, 11.2, 11.4, 11.5

Insurance, Stored Materials
9.3.2

INSURANCE AND BONDS
11

Insurance Companies, Consent to Partial Occupancy
9.9.1

Insured loss, Adjustment and Settlement of
11.5

Intent of the Contract Documents
1.2.1, 4.2.7, 4.2.12, 4.2.13

Interest
13.5

Interpretation
1.1.8, 1.2.3, **1.4**, 4.1.1, 5.1, 6.1.2, 15.1.1

Interpretations, Written
4.2.11, 4.2.12

Judgment on Final Award
15.4.2

Labor and Materials, Equipment
1.1.3, 1.1.6, **3.4**, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2

Labor Disputes
8.3.1

Laws and Regulations
1.5, 2.3.2, 3.2.3, 3.2.4, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1, 10.2.2, 13.1, 13.3.1, 13.4.2, 13.5, 14, 15.2.8, 15.4

Liens
2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8

Limitations, Statutes of
12.2.5, 15.1.2, 15.4.1.1

Limitations of Liability
3.2.2, 3.5, 3.12.10, 3.12.10.1, 3.17, 3.18.1, 4.2.6, 4.2.7, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 9.6.8, 10.2.5, 10.3.3, 11.3, 12.2.5, 13.3.1

Limitations of Time
2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7, 5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15, 15.1.2, 15.1.3, 15.1.5

Materials, Hazardous
10.2.4, **10.3**

Materials, Labor, Equipment and
1.1.3, 1.1.6, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2

Means, Methods, Techniques, Sequences and Procedures of Construction
3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2

Mechanic's Lien
2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8

Mediation
8.3.1, 15.1.3.2, 15.2.1, 15.2.5, 15.2.6, **15.3**, 15.4.1, 15.4.1.1

Minor Changes in the Work
1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1, **7.4**

MISCELLANEOUS PROVISIONS

13

Modifications, Definition of

1.1.1

Modifications to the Contract

1.1.1, 1.1.2, 2.5, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2

Mutual Responsibility

6.2

Nonconforming Work, Acceptance of

9.6.6, 9.9.3, **12.3**

Nonconforming Work, Rejection and Correction of
2.4, 2.5, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2

Notice

1.6, 1.6.1, 1.6.2, 2.1.2, 2.2.2., 2.2.3, 2.2.4, 2.5, 3.2.4, 3.3.1, 3.7.4, 3.7.5, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 7.4, 8.2.2, 9.6.8, 9.7, 9.10.1, 10.2.8, 10.3.2, 11.5, 12.2.2.1, 13.4.1, 13.4.2, 14.1, 14.2.2, 14.4.2, 15.1.3, 15.1.5, 15.1.6, 15.4.1

Notice of Cancellation or Expiration of Insurance

11.1.4, 11.2.3

Notice of Claims

1.6.2, 2.1.2, 3.7.4, 9.6.8, 10.2.8, **15.1.3**, 15.1.5, 15.1.6, 15.2.8, 15.3.2, 15.4.1

Notice of Testing and Inspections

13.4.1, 13.4.2

Observations, Contractor's

3.2, 3.7.4

Occupancy

2.3.1, 9.6.6, 9.8

Orders, Written

1.1.1, 2.4, 3.9.2, 7, 8.2.2, 11.5, 12.1, 12.2.2.1, 13.4.2, 14.3.1

OWNER

2

Owner, Definition of

2.1.1

Owner, Evidence of Financial Arrangements

2.2, 13.2.2, 14.1.1.4

Owner, Information and Services Required of the

2.1.2, **2.2**, 2.3, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2, 14.1.1.4, 14.1.4, 15.1.4

Owner's Authority

1.5, 2.1.1, 2.3.32.4, 2.5, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2, 11.4, 11.5, 12.2.2, 12.3, 13.2.2, 14.3, 14.4, 15.2.7

Owner's Insurance

11.2

Owner's Relationship with Subcontractors

1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2

Owner's Right to Carry Out the Work

2.5, 14.2.2

Owner's Right to Clean Up

6.3

Owner's Right to Perform Construction and to Award Separate Contracts

6.1

Owner's Right to Stop the Work

2.4

Owner's Right to Suspend the Work

14.3

Owner's Right to Terminate the Contract

14.2, 14.4

Ownership and Use of Drawings, Specifications and Other Instruments of Service

1.1.1, 1.1.6, 1.1.7, **1.5**, 2.3.6, 3.2.2, 3.11, 3.17, 4.2.12, 5.3

Partial Occupancy or Use

9.6.6, **9.9**

Patching, Cutting and

3.14, 6.2.5

Patents

3.17

Payment, Applications for

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1, 14.2.3, 14.2.4, 14.4.3

Payment, Certificates for

4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4

Payment, Failure of

9.5.1.3, **9.7**, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

Payment, Final

4.2.1, 4.2.9, **9.10**, 12.3, 14.2.4, 14.4.3

Payment Bond, Performance Bond and

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**

Payments, Progress

9.3, **9.6**, 9.8.5, 9.10.3, 14.2.3, 15.1.4

PAYMENTS AND COMPLETION

9

Payments to Subcontractors

5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2

PCB

10.3.1

Performance Bond and Payment Bond

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**

Permits, Fees, Notices and Compliance with Laws

2.3.1, **3.7**, 3.13, 7.3.4.4, 10.2.2

PERSONS AND PROPERTY, PROTECTION OF

10

Polychlorinated Biphenyl

10.3.1

Product Data, Definition of

3.12.2

Product Data and Samples, Shop Drawings

3.11, **3.12**, 4.2.7

Progress and Completion

4.2.2, **8.2**, 9.8, 9.9.1, 14.1.4, 15.1.4

Progress Payments

9.3, **9.6**, 9.8.5, 9.10.3, 14.2.3, 15.1.4

Project, Definition of
1.1.4
 Project Representatives
 4.2.10
Property Insurance
 10.2.5, **11.2**
Proposal Requirements
 1.1.1
PROTECTION OF PERSONS AND PROPERTY
10
 Regulations and Laws
 1.5, 2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1,
 10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14, 15.2.8, 15.4
 Rejection of Work
 4.2.6, 12.2.1
 Releases and Waivers of Liens
 9.3.1, 9.10.2
 Representations
 3.2.1, 3.5, 3.12.6, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.10.1
 Representatives
 2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.10, 13.2.1
 Responsibility for Those Performing the Work
 3.3.2, 3.18, 4.2.2, 4.2.3, 5.3, 6.1.3, 6.2, 6.3, 9.5.1, 10
 Retainage
 9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3
Review of Contract Documents and Field
Conditions by Contractor
3.2, 3.12.7, 6.1.3
 Review of Contractor's Submittals by Owner and
 Architect
 3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2
 Review of Shop Drawings, Product Data and Samples
 by Contractor
 3.12
Rights and Remedies
 1.1.2, 2.4, 2.5, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1,
 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.1, 12.2.2,
 12.2.4, **13.3**, 14, 15.4
Royalties, Patents and Copyrights
3.17
 Rules and Notices for Arbitration
 15.4.1
Safety of Persons and Property
10.2, 10.4
Safety Precautions and Programs
 3.3.1, 4.2.2, 4.2.7, 5.3, **10.1**, 10.2, 10.4
Samples, Definition of
3.12.3
Samples, Shop Drawings, Product Data and
 3.11, **3.12**, 4.2.7
Samples at the Site, Documents and
3.11
Schedule of Values
9.2, 9.3.1
 Schedules, Construction
 3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2

Separate Contracts and Contractors
 1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2
Separate Contractors, Definition of
6.1.1
Shop Drawings, Definition of
3.12.1
Shop Drawings, Product Data and Samples
 3.11, **3.12**, 4.2.7
Site, Use of
3.13, 6.1.1, 6.2.1
 Site Inspections
 3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.9.2, 9.4.2, 9.10.1, 13.4
 Site Visits, Architect's
 3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4
 Special Inspections and Testing
 4.2.6, 12.2.1, 13.4
Specifications, Definition of
1.1.6
Specifications
 1.1.1, **1.1.6**, 1.2.2, 1.5, 3.12.10, 3.17, 4.2.14
 Statute of Limitations
 15.1.2, 15.4.1.1
 Stopping the Work
 2.2.2, 2.4, 9.7, 10.3, 14.1
 Stored Materials
 6.2.1, 9.3.2, 10.2.1.2, 10.2.4
Subcontractor, Definition of
5.1.1
SUBCONTRACTORS
5
 Subcontractors, Work by
 1.2.2, 3.3.2, 3.12.1, 3.18, 4.2.3, 5.2.3, 5.3, 5.4, 9.3.1.2,
 9.6.7
Subcontractual Relations
5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1
 Submittals
 3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.4, 9.2, 9.3, 9.8,
 9.9.1, 9.10.2, 9.10.3
 Submittal Schedule
 3.10.2, 3.12.5, 4.2.7
Subrogation, Waivers of
 6.1.1, **11.3**
Substances, Hazardous
10.3
Substantial Completion
 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, **9.8**, 9.9.1, 9.10.3, 12.2,
 15.1.2
Substantial Completion, Definition of
9.8.1
 Substitution of Subcontractors
 5.2.3, 5.2.4
 Substitution of Architect
 2.3.3
 Substitutions of Materials
 3.4.2, 3.5, 7.3.8
Sub-subcontractor, Definition of
5.1.2

Subsurface Conditions

3.7.4

Successors and Assigns

13.2

Superintendent

3.9, 10.2.6

Supervision and Construction Procedures

1.2.2, **3.3**, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.4

Suppliers

1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.5.4, 9.6, 9.10.5, 14.2.1

Surety

5.4.1.2, 9.6.8, 9.8.5, 9.10.2, 9.10.3, 11.1.2, 14.2.2, 15.2.7

Surety, Consent of

9.8.5, 9.10.2, 9.10.3

Surveys

1.1.7, 2.3.4

Suspension by the Owner for Convenience

14.3

Suspension of the Work

3.7.5, 5.4.2, 14.3

Suspension or Termination of the Contract

5.4.1.1, 14

Taxes

3.6, 3.8.2.1, 7.3.4.4

Termination by the Contractor

14.1, 15.1.7

Termination by the Owner for Cause

5.4.1.1, **14.2**, 15.1.7

Termination by the Owner for Convenience

14.4

Termination of the Architect

2.3.3

Termination of the Contractor Employment

14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT

14

Tests and Inspections

3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 10.3.2, 12.2.1, **13.4**

TIME

8

Time, Delays and Extensions of

3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5

Time Limits

2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2, 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15.1.2, 15.1.3, 15.4

Time Limits on Claims

3.7.4, 10.2.8, 15.1.2, 15.1.3

Title to Work

9.3.2, 9.3.3

UNCOVERING AND CORRECTION OF WORK

12

Uncovering of Work

12.1

Unforeseen Conditions, Concealed or Unknown

3.7.4, 8.3.1, 10.3

Unit Prices

7.3.3.2, 9.1.2

Use of Documents

1.1.1, 1.5, 2.3.6, 3.12.6, 5.3

Use of Site

3.13, 6.1.1, 6.2.1

Values, Schedule of

9.2, 9.3.1

Waiver of Claims by the Architect

13.3.2

Waiver of Claims by the Contractor

9.10.5, 13.3.2, **15.1.7**

Waiver of Claims by the Owner

9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.3.2, 14.2.4, **15.1.7**

Waiver of Consequential Damages

14.2.4, 15.1.7

Waiver of Liens

9.3, 9.10.2, 9.10.4

Waivers of Subrogation

6.1.1, **11.3**

Warranty

3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.2, 9.10.4, 12.2.2, 15.1.2

Weather Delays

8.3, 15.1.6.2

Work, Definition of

1.1.3

Written Consent

1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.10.3, 13.2, 13.3.2, 15.4.4.2

Written Interpretations

4.2.11, 4.2.12

Written Orders

1.1.1, 2.4, 3.9, 7, 8.2.2, 12.1, 12.2, 13.4.2, 14.3.1

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.2.5 Prior to submitting its bid, the Contractor shall have studied and compared the Contract Documents and shall have reported to the Architect any error, inconsistency, or omission in the Contract Documents related to its work. It will be presumed that the Contractor's bid and the Contract Sum include the cost of correcting any error, inconsistency, or omission, which could have been discovered by exercise of reasonable diligence. Unless the Contractor establishes that such error, inconsistency, or omission could not have been discovered by the exercise of reasonable diligence, the Contractor will make such corrections without additional compensation so that the Work is fully functional. Where such errors, inconsistencies, or omissions affect quantity of material or labor, it is presumed that Contractor's Bid and Contract Sum included the higher quantity or quality of material, or more labor intensive or costly installation.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.4.4 Build America Buy America

§ 3.4.4.1 To the greatest extent practicable, the Contractor shall purchase, acquire, and/or use goods, products and/or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section shall be included in all subawards including all contracts and purchase orders for work or products under this contract.

- .1 "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
- .2 "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Owner represents that this project is exempt for Michigan sales and use taxes under the provisions of the Tax Agreement between Little Traverse Bay Bands of Odawa Indians and the State of Michigan. The Contractor shall not pay Michigan sales and use taxes on materials that are purchased, used or acquired in the performance of this contract that will be consumed or otherwise not removed from the site. The Owner will provide the Contractor with exemption certificates and any other documentation needed to make tax exempt purchases. Contractor shall execute certificates provided and shall provide executed certificates to subcontractors and suppliers. The Contractor shall pay any and all other sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 The Owner shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. The Contractor shall assist the Owner in securing required permits from the Authority Having Jurisdiction (LTBB Odawa Indians Planning Department).

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

- § 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that
- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
 - .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be

reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

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

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the

Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time

within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the

Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 **Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 **Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 **Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor,

Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3** Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1** repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2** fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3** repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4** otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2** Accept assignment of subcontracts pursuant to Section 5.4; and
- .3** Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after

occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data

from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to

file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

| (Paragraphs deleted)





GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF TREASURY
LANSING

RACHAEL EUBANKS
STATE TREASURER

December 4, 2025

Ms. Winnay Wemigwase, Chairwoman
Little Traverse Bay Bands of Odawa Indians
7500 Odawa Circle
Harbor Springs, MI 49740

Dear Chairwoman Wemigwase:

Letter of Authorization to Use Tribal Certificate of Exemption

The Michigan Department of Treasury acknowledges receipt of the Little Traverse Bay Bands of Odawa Indians' election to use *Tribal Certificates of Exemption* for **Tribal, Resident Tribal Member, and Tribal Entity** purchases as provided in the Tax Agreement between the State and the Tribe dated December 20, 2002.

The Michigan Department of Treasury issues this *Letter of Authorization* indicating that as of January 1, 2008, the **Tribe, its Resident Tribal Members, and Tribal Entities** are hereby authorized to use the *Tribal Certificate of Exemption* in accordance with the terms and conditions set forth in the Tax Agreement. This letter has been updated to reflect its continued use through the **calendar year 2026**.

A copy of this *Letter of Authorization* should be attached to all *Tribal Certificates of Exemption* that are authorized by the Tribe.

Very truly yours,

Julie Jensen
Tribal Specialist

c: James Bransky, General Counsel
Sean Cahill, Executive Services Attorney

2026 Tribal Certificate of Exemption for Sales and Use TaxTO BE RETAINED IN THE SELLER'S RECORDS - DO NOT SEND TO TREASURY
READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.**NOTICE TO SELLER:** Part 2 of this form lists the tribes that are authorized to use this certificate and indicates which tribes have authorized its Resident Tribal Members/Tribal Members/Tribal Entities to use this form. This certificate is not valid unless it has a Letter of Authorization issued by the State of Michigan attached and is signed by an authorized tribal representative. This certificate is updated annually and may only be used for purchases made in the 2026 calendar year. Outdated certificates are not valid.☐ Where this box is checked the Resident Tribal Member may only receive a 50% exemption on their purchase.**PART 1: PURCHASER**Check the purchaser status: ☒ Tribe☐ Resident Tribal Member/Tribal Entity (RTM/TE)☐ Tribal Member (TM)

Purchaser Name*

Little Traverse Bay Bands of Odawa Indians

Federal Employer Identification No. (FEIN) or TR No. or ME No.

38-323295

Purchaser's Street Address (Number, Street)

7500 Odawa Circle

Social Security Number (Last 4 digits only)

City or Town

Harbor Springs

State

MI

ZIP Code

49740

Tribal Member Number

* (1) TRIBAL PURCHASER: Enter Tribe, Tribal Business, Police Dept., School, etc.; (2) RTM/TM/TE PURCHASER: Enter First Name, MI and Last Name, or Tribal Business

PART 2: TRIBAL AFFILIATION

Check the tribal affiliation of the purchaser:

Are RTMs/TMs/TEs authorized to
use this Certificate of Exemption?

- | | | |
|--|---|-----|
| ☐ 01 | Bay Mills Indian Community | YES |
| ☐ 02 | Grand Traverse Band of Ottawa and Chippewa Indians | YES |
| ☐ 03 | Match-E-Be-Nash-She-Wish Band of Pottawatomi Indians (Gun Lake Tribe) | YES |
| ☐ 04 | Hannahville Indian Community | YES |
| ☐ 07 | Little River Band of Ottawa Indians | YES |
| ☒ 08 | Little Traverse Bay Bands of Odawa | YES |
| ☐ 09 | Nottawaseppi Huron Band of Potawatomi Indians | YES |
| ☐ 10 | Pokagon Band of Potawatomi Indians | YES |
| ☐ 11 | Saginaw Chippewa Indian Tribe of Michigan | YES |
| ☐ 12 | Sault Ste. Marie Tribe of Chippewa Indians | YES |

PART 3: SELLER

Enter name and address of the seller:

PART 4: TRIBAL AND RTM/TM/TE PURCHASESCheck items covered by this *Tribal Certificate of Exemption* and provide the following information for each:**A: Tribal Purchases**

- ☒
- Tangible personal property acquired within the Tribe's Tribal and Trust Lands for use exclusively within the Tribe's Tribal and Trust Lands.

Item(s) To Be Acquired

Tangible personal property such as supplies and
equipment

Location Where Item(s) Will Be Used

All Tribal Government locations within the Tribes
Tribal and Trust Lands

- ☒
- Tangible personal property acquired for Tribal Governmental Function.

Item(s) To Be Acquired

Tangible personal property such as supplies and
equipment

Governmental Function for the Item(s)

From the list as stated in Section III.A.1.b from the
LTBB/SOM Tax Agreement.

PART 4: TRIBAL AND RTM/TM/TE PURCHASES (Cont.)

Check items covered by this *Tribal Certificate of Exemption* and provide the following information for each:

A: Tribal Purchases (Cont.)☐

Buses used for transporting passengers to and from a gaming facility.

Year, Make, and Model of Vehicle(s)

Vehicle Identification Number

☒

Treaty fishing. Enter a description of the item(s) to be acquired.

Tangible personal property such as supplies and equipment

☒

Affixation to real estate (see instructions).

Item(s) To Be Acquired

Physical Address of Real Estate

Materials for construction, renovation or
improvement of the real property, such as building
materials or supplies

Real property owned by the Tribe or the federal
government in trust for the Tribe that is also located
within the Tribal and Trust Lands

B: Resident Tribal Member/Tribal Entity Purchases☐

Personal use vehicles, recreational watercraft, snowmobiles, and off-road vehicles.

Year, Make, and Model of Vehicle(s)

Vehicle Identification Number

C: Resident Tribal Member, Tribal Member, and Tribal Entity Purchases (see instructions)☐

Affixation to real estate (see instructions).

Item(s) To Be Acquired

Physical Address of Real Estate

☐

Modular or mobile home to be used as a principal residence of an RTM or of a TM who plans to become an RTM.

Year, Make, and Model, Size

Serial Number

Physical Address at Which Home Will Be Placed

☐

Tangible personal property acquired for use in treaty fishing. Enter a description of the item(s) below.

PART 4: CERTIFICATION

The undersigned represents that he or she is authorized by the Tribe to execute this Tribal Certificate of Exemption and represents that he or she has reviewed the tax agreement between the Tribe and the State of Michigan and determined the Tribe, Tribal Member, Resident Tribal Member or Tribal Entity is entitled to the exemption(s) claimed.

Signature of Authorized Tribal Representative

Telephone Number

(231) 242-1584

Name and Title (Printed or Typed)

Date Signed

Billi Jo Head, Department of Commerce Director

12/18/2025

Instructions for Completing Form 3998, Tribal Certificate of Exemption for Sales and Use Tax

This certificate is issued by the Tribe to be used by the Tribe as well as by a Resident Tribal Member (RTM), Tribal Member (TM), or Tribal Entity (TE) of that Tribe. **As defined in the tax agreement, a TM is an enrolled member of the issuing Tribe. An RTM is a TM whose principal place of residence is located within the Tribe's Agreement Area.**

Do not use this certificate if the exemption is a standard exemption (e.g., resale, industrial processing, etc.) which can be claimed on the Michigan Sales and Use Tax Certificate of Exemption (Form 3372).

Notice to Seller of 50% Exemption. This box must be marked when a purchase will be jointly titled or owned by two individuals where only one qualifies for the exemption. A qualified individual is one who is a current RTM, or a qualifying TM (as described under Part 4.C.). If the joint purchaser is not a qualified individual, such a purchase is only eligible for a 50% exemption from the calculated tax. The remaining 50% tax should be collected and remitted to the State.

Part 2 of this certificate lists the tribes that have elected to use these certificates and indicates which of those tribes have authorized their RTMs/TMs/TEs to use it.

An authorized tribal representative must sign this certificate and attach a Letter of Authorization which is addressed to the Tribe and issued by the State of Michigan. **This certificate is updated annually and may only be used for purchases made in the calendar year specified on the certificate.**

Document retention. The Tribe must retain a copy of this certificate, including all documentation submitted by an RTM, TM, or TE to the Tribe in support of a request for authorization to use this certificate. Each contractor or subcontractor must retain a copy of this certificate, a copy of the Letter of Authorization, and copies of all Forms 3372 (if any). A supplier must retain a copy of this certificate, a copy of the Letter of Authorization, and a copy of the Form 3372 completed by the purchasing contractor or subcontractor. Projects spanning multiple years will require a new Tribal Certificate of Exemption (Form 3998) and a current copy of the Letter of Authorization at the start of each calendar year. **Do not send this certificate to the Department of Treasury.**

Line-By-Line Instructions

Items not listed here are explained on the form.

PART 1: Purchaser

Tribal purchases are those made by the Tribe itself, a governmental subdivision of the Tribe (e.g. police department, health facility), or a business fully owned by the Tribe. TE purchases are those made by entities owned by more than one tribal member or the Tribe and one or more of its tribal members. "RTM purchases" are those made by an RTM or by a qualifying TM as described in Part 4.C.

If the purchaser is the Tribe, enter the name and address of the governmental agency of the Tribe or the name of the tribal business and the Federal Employer Identification Number (FEIN), TR number, or ME number. If the purchaser is an RTM/TM, enter the first name, middle initial, last name, address, last 4 digits of the social security number, and Tribal Member Number of the individual. If the purchaser is a TE, enter the name of the entity and the FEIN, TR number, or ME number.

PART 4: Tribal and RTM/TM/TE Purchases

C: RTM, TM, and TE Purchases

"TM purchases" are those purchases of a modular or mobile home by a TM who plans to use the home as a principal residence in the Tribe's Agreement Area within 12 months of the purchase. It also includes purchases of materials to be used to build or renovate a home within the Tribe's Agreement Area where the home is occupied by the TM as their principal residence within 18 months.

Affixation to real estate by a contractor or subcontractor. Follow these instructions to claim an exemption on tangible personal property to be affixed to real estate by a contractor:

- Part 1: Provide the requested information of the Tribe, RTM, TM, or TE who owns the real estate where the affixation will occur.
- Part 2: Select the appropriate tribal affiliation.
- Part 3: Provide the name and address of the contractor or subcontractor.
- Part 4.A or 4.C: Check the appropriate "affixation to real estate" box and provide the requested information.

Contractor or subcontractor exempt purchase from supplier. If a contractor or subcontractor purchases from a supplier tangible personal property to be affixed to the real estate, the contractor or subcontractor must complete and provide Form 3372 to the supplier, stating in section 3, line 12 of that form "affixation to real estate under a tribal-state tax agreement." The contractor or subcontractor must also provide to the supplier a copy of this certificate and a copy of the Letter of Authorization.

If you have questions, visit www.michigan.gov/taxes or call Tribal Affairs at 517- 241-2185.

SECTION 01 10 00

SUMMARY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Contract description.
- B. Work by Owner.
- C. Owner supplied products.
- D. Contractor's use of site and premises.
- E. Future work.
- F. Work sequence.
- G. Owner occupancy.
- H. Specification Conventions.

1.2 CONTRACT DESCRIPTION

- A. Perform Work of Contract under stipulated sum contract with Owner in accordance with Conditions of Contract.
- B. Contract includes Civil Work described in documents prepared by Owner's independent Civil Engineer and Architectural work described in Drawings and Specifications prepared by the Architect.

1.3 WORK BY OWNER – Not Used

1.4 OWNER SUPPLIED PRODUCTS – Not Used

1.5 CONTRACTOR'S USE OF SITE AND PREMISES – Not Used

1.6 FUTURE WORK – Not Used

1.7 WORK SEQUENCE – Not Used

1.8 OWNER OCCUPANCY – Not Used

1.9 SPECIFICATION CONVENTIONS

- A. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cash allowances.
- B. Contingency allowances.
- C. Testing and inspection allowances.
- D. Schedule of values.
- E. Applications for payment.
- F. Change procedures.
- G. Defect assessment.
- H. Unit prices.
- I. Alternates.

1.2 CASH ALLOWANCES – Not Used

1.3 CONTINGENCY ALLOWANCES

- A. A Contingency Allowance has been established by the Owner.

1.4 TESTING AND INSPECTION ALLOWANCES

- A. A Testing and Inspection Allowance has been established by the Owner.

1.5 SCHEDULE OF VALUES

- A. Submit printed schedule on AIA Form G703 - Continuation Sheet for G702. Contractor's standard form or electronic media printout following format of specified AIA form will be considered.
- B. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- C. Format: Utilize Table of Contents of this Project Manual. Identify each line item with number and title of major specification Section. Identify site mobilization, bonds and insurance, and General Requirements as separate line items.
- D. Include in each line item, amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by unit cost to achieve total for each item.

- E. Include in each line item, direct proportional amount of Contractor's overhead and profit.
- F. Revise schedule to list approved Change Orders, with each Application for Payment. List each cost change by item separately.

1.6 APPLICATIONS FOR PAYMENT

- A. Submit three copies of each application on AIA Form G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet for G702 or approved Contractor's electronic media driven form.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Submit updated construction schedule with each Application for Payment.
- D. Payment Period: Submit at intervals stipulated in the Agreement.
- E. Submit with transmittal letter as specified for Submittals in Section 01 33 00 - Submittal Procedures.
- F. Submit a fully executed Sworn Statement indicating all monies owed as of the date of application. Sworn statements shall reflect the amount invoiced to the Contractor less any retention being withheld.
- G. Submit unconditional waivers of lien for each subcontractor and supplier included on the sworn statement. Waivers shall reflect the payment amount released to the subcontractor / supplier. Payment will not be released without verification of waivers for the full balance of the previous payment.
- H. Substantiating Data: When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
 - 1. Partial release of liens from major subcontractors and vendors.
 - 2. Affidavits attesting to off-site stored products.
 - 3. Construction progress schedules, revised and current.

1.7 CHANGE PROCEDURES

- A. The Architect/Engineer will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions in writing to the Contractor.
- B. The Architect/Engineer may issue a Proposal Request or Bulletin including a detailed description of proposed change with supplementary or revised Drawings and specifications. Contractor will prepare and submit estimate of cost and any required change in Contract Time within 14 days.
- C. Contractor may, upon request of the Architect, propose changes by submitting a request for change to Architect/Engineer describing proposed change and its full effect on the Work. Include a statement describing reason for the change, and effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on Work by separate or other Contractors.

- D. Stipulated Sum/Price Change Order: Based on Proposal Request (Bulletins) and Contractor's fixed price quotation or Contractor's request for Change Order as approved by Architect/Engineer.
- E. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under Construction Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.
- F. Construction Change Directive: Architect/Engineer may issue directive, on AIA Form G713 Construction Change Directive signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.
- G. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Architect/Engineer will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.
- H. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
- I. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation.
- J. Change Order Forms: AIA G701 Change Order.
- K. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
- L. Correlation Of Contractor Submittals:
 - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
 - 2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
 - 3. Promptly enter changes in Project Record Documents.

1.8 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Architect/Engineer, it is not practical to remove and replace the Work, the Architect/Engineer will direct appropriate remedy or adjust payment.
- C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price at discretion of Owner.
- D. Defective Work will be partially repaired to instructions of Architect/Engineer, and unit sum/price will be adjusted to new sum/price at discretion of Owner.
- E. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.

- F. Authority of Architect/Engineer to assess defects is final.
- G. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from transporting vehicle.
 - 4. Products placed beyond lines and levels of required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected products.

1.9 UNIT PRICES – Not Used

1.10 ALTERNATES – Not Used

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Coordination and project conditions.
- B. Field engineering.
- C. Preconstruction meeting.
- D. Site mobilization meeting.
- E. Progress meetings.
- F. Periodic construction visits.
- G. Pre-installation meetings.
- H. Project Record Documents.
- I. Acceptance of Preceding Work.
- J. Cutting and patching.
- K. Special procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work 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.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.

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

1.3 FIELD ENGINEERING

- A. Employ Land Surveyor registered in State of Michigan and acceptable to Architect/Engineer.
- B. Locate and protect survey control and reference points. Promptly notify Architect/Engineer of discrepancies discovered.
- C. Control datum for survey is that shown on Drawings.
- D. Verify set-backs and easements; confirm drawing dimensions and elevations.
- E. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
- F. Submit copy of site drawing and certificate signed by Land Surveyor certifying elevations and locations of the Work are in conformance with Contract Documents.
- G. Maintain complete and accurate log of control and survey work as Work progresses.
- H. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- I. Promptly report to Architect/Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.
- J. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect/Engineer.

1.4 PRECONSTRUCTION MEETING

- A. Architect/Engineer will schedule meeting after Notice of Award.
- B. Attendance Required: Owner, Architect/Engineer, and Contractor.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
 - 5. Designation of personnel representing parties in Contract, and Architect/Engineer.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.
 - 8. Scheduling activities of Testing agency.
- D. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect/Engineer, Owner, and those affected by decisions made.

1.5 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum bi-monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to agenda topics for each meeting.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems impeding planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of progress schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to Work.
 - 14. Coordination of work by Owner's Contractor with work of the General Contract.
 - 15. Project Record Documents.
- E. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect/Engineer, Owner, and those affected by decisions made.

1.6 PERIODIC CONSTRUCTION VISITS

- A. The Architect and Owner will visit the project site at weekly intervals. The purpose of the visits will be to monitor the progress and quality of the work.
- B. The Contractor's Site Superintendent shall be available for meetings with the Architect and Owner.
- C. Agenda:
 - 1. Review of Work in progress.
 - 2. Field observations, problems, and decisions.
 - 3. Identification of problems which impede planned progress.
 - 4. Maintenance of progress schedule.
 - 5. Corrective measures to regain projected schedules.
 - 6. Planned progress during succeeding work period.
 - 7. Maintenance of quality and work standards.
 - 8. Other business relating to Work.

1.7 PRE-INSTALLATION MEETINGS – Not Used

1.8 PROJECT RECORD DOCUMENTS

- A. Contractor shall maintain and update Project Record Drawings (As-Built Drawings) on site during construction. Contractor and each Subcontractor shall be responsible to update the as built drawings on a weekly basis.
- B. Project Record Documents shall be available for review by the Architect.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 ACCEPTANCE OF PRECEDING WORK

- A. Before starting any operation, each Contractor(s) shall examine work performed by others to which their work adjoins or is applied and shall report to the Architect any conditions that will prevent satisfactory accomplishment of their work.
- B. Failure to notify the Architect of deficiencies or faults in preceding work will constitute acceptance thereof and waive of any claims to its usability.

3.2 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.
- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Restore Work with new products in accordance with requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

- I. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.

3.3 SPECIAL PROCEDURES – Not Used

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Proposed products list.
- D. Product data.
- E. Shop drawings.
- F. Samples.
- G. Design data.
- H. Test reports.
- I. Certificates.
- J. Manufacturer's instructions.
- K. Manufacturer's field reports.
- L. Erection drawings.

1.2 SUBMITTAL PROCEDURES

- A. Electronic Submittals: Prepare and transmit submittals of Product Data, Shop Drawings, Design Data, Test Reports, Certificates, Manufacturers Instructions, and Erection Drawings to Architect in electronic (.pdf) format.
- B. Samples: Where specifications require the submittal of samples for verification or selection, submit physical samples and/or physical color charts to the Architect. Electronic reproductions of color charts will not be accepted. Include Contractor's transmittal form identifying Project, Contractor, subcontractor and supplier; product designated by name indicated in specifications.
- C. Transmit electronic submittals with Contractor's transmittal form:
 - 1. Sequentially number submittals. Include the specification section in the submittal numbering system. Mark revised submittals with original number and sequential alphabetic suffix.
 - 2. Identify Project, Contractor, subcontractor and supplier; product designated by name indicated in specifications.

- D. Include Contractor's certification (stamp), signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite Project. Coordinate submission of related items.
- F. For each submittal for review, allow 15 days excluding delivery time to and from Contractor. Submittals for long lead time items shall be expedited by the Contractor in order to allow for the Owner's completion schedule. Notify Architect/Engineer of long lead time items requiring expedited review.
- G. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.
- H. Architect will return files electronically following review. Contractor shall distribute copies of reviewed submittals to appropriate parties.
- I. Contractor shall produce and provide a paper copy of approved submittals to governing authorities upon request.
- J. Where specified in specific Submittals Articles, Contractor shall provide a paper copy of approved submittals to the Owner at closeout.
- K. When revised for resubmission, identify changes made since previous submission.
- L. Submittals not requested will not be recognized or processed.

1.3 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedules within 7 days after Notice to Proceed. After review, resubmit required revised data within ten days.
- B. Submit revised Progress Schedules with each Application for Payment.
- C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.
- D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
- E. Utilize Contractor's standard computer generated schedule format.
- F. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.
- G. Indicate estimated percentage of completion for each item of Work at each submission.
- H. Revisions To Schedules:
 - 1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
 - 2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.

3. Prepare narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect [including effect of changes on schedules of separate contractors].

1.4 PROPOSED PRODUCTS LIST

- A. Within 7 days after Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.5 PRODUCT DATA

- A. Product Data: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Mark submittal to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.6 SHOP DRAWINGS

- A. Shop Drawings: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.
 1. Include signed and sealed calculations to support design.
 2. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- D. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.7 SAMPLES

- A. Samples: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Samples For Selection as Specified in Product Sections:

1. Submit to Architect/Engineer for aesthetic, color, or finish selection.
 2. Submit samples of finishes from full range of manufacturers' standard colors, including premium and/or custom colors where specified, textures, and patterns for Architect/Engineer selection.
- C. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- D. Include identification on each sample, with full Project information.
- E. Submit number of samples specified in individual specification sections; Architect/Engineer will retain samples.
- F. Samples will not be used for testing purposes unless specifically stated in specification section.
- G. Architect will issue a schedule indicating colors selected.

1.8 DESIGN DATA

- A. Submit for Architect/Engineer's knowledge as contract administrator or for Owner.
- B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.9 TEST REPORTS

- A. Submit for Architect/Engineer's knowledge as contract administrator or for Owner.
- B. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.10 CERTIFICATES

- A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Architect/Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.

1.11 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, [start-up,] adjusting, and finishing, to Architect/Engineer for delivery to Owner in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.12 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for Architect/Engineer's benefit as contract administrator or for Owner.
- B. Submit report [in duplicate] within 5 days of observation to Architect/Engineer for information.
- C. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.13 ERECTION DRAWINGS

- A. Submit drawings for Architect/Engineer's benefit as contract administrator or for Owner.
- B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by Architect/Engineer or Owner.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality control and control of installation.
- B. Tolerances.
- C. References.
- D. Labeling.
- E. Mock-up requirements.
- F. Testing and inspection services.
- G. Manufacturers' field services.
- H. Examination.
- I. Preparation.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control 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. When manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer 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. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 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. When manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- E. Neither contractual relationships, duties, nor responsibilities of parties in Contract nor those of Architect/Engineer shall be altered from Contract Documents by mention or inference otherwise in reference documents.

1.5 LABELING

- A. Attach label from agency approved by authority having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label.
 - 1. Model number.
 - 2. Serial number.
 - 3. Performance characteristics.

1.6 MOCK-UP REQUIREMENTS – Not Used

1.7 TESTING AND INSPECTION SERVICES

- A. Owner will employ and pay for specified services of an independent firm to perform testing and inspection.
- B. The independent firm will perform tests, inspections and other services specified in individual specification sections and as required by Authority having jurisdiction.
 - 1. Laboratory: Authorized to operate in State of Michigan.
 - 2. Laboratory Staff: Maintain full time registered Engineer on staff to review services.
 - 3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- C. Testing, inspections and source quality control may occur on or off project site. Perform off-site testing as required by Architect/Engineer or Owner.

- D. Reports will be submitted by independent firm to Architect/Engineer, Contractor, and authority having jurisdiction, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
 - 1. Submit final report indicating correction of Work previously reported as non-compliant.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify independent firm 24 hours prior to expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- F. Testing and/or employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- G. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Architect/Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
- H. Agency Responsibilities:
 - 1. Test samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with Architect/Engineer and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-conformance of Work or products.
 - 6. Perform additional tests required by Architect/Engineer.
 - 7. Attend preconstruction meetings and progress meetings.
- I. Agency Reports: After each test, promptly submit two copies of report to Architect/Engineer, Contractor, and authority having jurisdiction. When requested by Architect/Engineer, provide interpretation of test results. Include the following:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Name of inspector.
 - 4. Date and time of sampling or inspection.
 - 5. Identification of product and specifications section.
 - 6. Location in Project.
 - 7. Type of inspection or test.
 - 8. Date of test.
 - 9. Results of tests.
 - 10. Conformance with Contract Documents.
- J. Limits On Testing Authority:
 - 1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency or laboratory may not approve or accept any portion of the Work.
 - 3. Agency or laboratory may not assume duties of Contractor.
 - 4. Agency or laboratory has no authority to stop the Work.

1.8 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect/Engineer 30 days in advance of required observations.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Refer to Section 01 33 00 - Submittal Procedures, MANUFACTURERS' FIELD REPORTS article.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify 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. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 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 new material or substance in contact or bond.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities:
 - 1. Temporary electricity.
 - 2. Temporary lighting for construction purposes.
 - 3. Temporary heating.
 - 4. Temporary cooling.
 - 5. Temporary ventilation.
 - 6. Telephone service.
 - 7. Email service
 - 8. Temporary water service.
 - 9. Temporary sanitary facilities.
- B. Construction Facilities:
 - 1. Field offices and sheds.
 - 2. Vehicular access.
 - 3. Parking.
 - 4. Progress cleaning and waste removal.
 - 5. Fire prevention facilities.
- C. Temporary Controls:
 - 1. Barriers.
 - 2. Enclosures and fencing.
 - 3. Water control.
 - 4. Dust control.
 - 5. Erosion and sediment control.
- D. Removal of utilities, facilities, and controls.

1.2 TEMPORARY ELECTRICITY

- A. Provide and pay for power service required from utility source as needed for construction operation.
- B. Owner will pay cost of energy used. Exercise measures to conserve energy.
- C. Provide power outlets, with branch wiring and distribution boxes located as required for construction operations. Provide flexible power cords as required for portable construction tools and equipment.
- D. Provide main service disconnect and over-current protection at convenient location.
- E. Permanent convenience receptacles may be utilized during construction.

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations to achieve minimum lighting level of 2 watt/sq ft.
- B. Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.
- C. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps for specified lighting levels.
- D. Maintain lighting and provide routine repairs.
- E. Permanent building lighting may be utilized during construction.

1.4 TEMPORARY HEATING

- A. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations.
- B. Enclose building prior to activating temporary heat in accordance with Enclosures article in this section.
- C. Prior to operation of permanent equipment for temporary heating purposes, verify installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.
- D. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in product sections.

1.5 TEMPORARY COOLING

- A. Provide and pay for cooling devices and cooling as needed to maintain specified conditions for construction operations.
- B. Enclose building prior to activating temporary cooling in accordance with Enclosures article in this section.
- C. Prior to operation of permanent equipment for temporary cooling purposes, verify installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.
- D. Maintain maximum ambient temperature of 80 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

1.6 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.7 TELEPHONE SERVICE

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

1.8 EMAIL SERVICE

- A. Provide, maintain and pay for email service to site Superintendent and Project Manager at time of project mobilization

1.9 TEMPORARY WATER SERVICE

- A. Provide and pay for suitable quality water service as needed to maintain specified conditions for construction operations. Connect to existing water source.
- B. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

1.10 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of project mobilization.

1.11 FIELD OFFICES AND SHEDS

- A. Locate offices and sheds minimum distance of 30 feet from existing and new structures.
- B. Construction: Portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations with steps and landings at entrance doors.
 - 1. Construction: Structurally sound, secure, weather tight enclosures for office and storage spaces. Maintain during progress of Work; remove when no longer needed.
 - 2. Temperature Transmission Resistance of Floors, Walls, and Ceilings: Compatible with occupancy and storage requirements.
- C. Environmental Control:
 - 1. Heating, Cooling, and Ventilating for Offices: Automatic equipment to maintain comfort conditions 68 degrees F heating and 76 degrees F cooling.
 - 2. Storage Spaces: Heating and ventilation as needed to maintain products in accordance with Contract Documents; lighting for maintenance and inspection of products.
- D. Storage Areas And Sheds: Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and for inspection of products to requirements of Section 01 60 00 - Product Requirements.
- E. Preparation: Fill and grade sites for temporary structures sloped for drainage away from buildings.
- F. Employee Residential Occupancy: Not allowed on Owner's property.
- G. Removal: At completion of Work remove buildings, foundations, utility services, and debris. Restore areas.

1.12 VEHICULAR ACCESS

- A. Construct temporary all-weather access roads from public thoroughfares to serve construction area, of width and load bearing capacity to accommodate unimpeded traffic for construction purposes.

- B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
- C. Extend and relocate vehicular access as Work progress requires, provide detours as necessary for unimpeded traffic flow.
- D. Location as approved by Owner.
- E. Provide unimpeded access for emergency vehicles. Maintain 20 feet wide driveways with turning space between and around combustible materials.
- F. Provide means of removing mud from vehicle wheels before entering streets.
- G. Where available, use existing on-site roads for construction traffic.

1.13 PARKING

- A. Provide temporary gravel surface parking areas to accommodate construction personnel.
- B. Locate as approved by Owner.
- C. When site space is not adequate, provide additional off-site parking.
- D. Use of designated existing on-site streets and driveways used for construction traffic is permitted. Tracked vehicles not allowed on paved areas.
- E. Use of existing parking facilities used by construction personnel is not permitted.
- F. Do not allow heavy vehicles or construction equipment in parking areas.
- G. Permanent Pavements And Parking Facilities:
 - 1. Prior to Substantial Completion, bases for permanent roads and parking areas may be used for construction traffic.
 - 2. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.
 - 3. Use of new permanent parking areas is permitted.
- H. Maintenance:
 - 1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, and ice.
 - 2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.
- I. Removal, Repair:
 - 1. Remove temporary materials and construction when permanent paving is usable.
 - 2. Remove underground work and compacted materials to depth of 2 feet; fill and grade site as specified.
 - 3. Repair existing permanent facilities damaged by use, to original or better condition.
- J. Mud From Site Vehicles: Provide means of removing mud from vehicle wheels before entering streets.

1.14 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in 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 spaces.
- 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 rubbish from site weekly and dispose off-site.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.15 FIRE PREVENTION FACILITIES

- A. Prohibit smoking with buildings under construction and demolition. Designate area on site where smoking is permitted. Provide approved ashtrays in designated smoking areas.
- B. Establish fire watch for cutting and welding and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- C. Portable Fire Extinguishers: NFPA 10; 10 pound capacity, 4A-60B: C UL rating.
 - 1. Provide one fire extinguisher at each stair on each floor of buildings under construction and demolition.
 - 2. Provide minimum one fire extinguisher in every construction trailer and storage shed.
 - 3. Provide minimum one fire extinguisher on roof during roofing operations using heat producing equipment.

1.16 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide barriers to separate construction areas from adjacent occupied areas.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.17 ENCLOSURES AND FENCING

- A. Construction: Contractor's option.
- B. Provide 6 feet high fence around construction site; equip with vehicular and pedestrian gates with locks.
- C. Exterior Enclosures:

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

1.18 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.19 DUST CONTROL

- A. Execute Work by methods to minimize raising dust from construction operations.
- B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

1.20 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize surface area of bare soil exposed at one time.
- C. Provide temporary measures including berms, dikes, and drains, and other devices to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.21 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
- B. Remove underground installations to minimum depth of 2 feet. Grade site as indicated on Drawings.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.
- E. Product substitution procedures.
- F. Equipment electrical characteristics and components.

1.2 PRODUCTS

- A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.
- C. Furnish interchangeable components from same manufacturer for components being replaced.

1.3 PRODUCT DELIVERY REQUIREMENTS

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

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.

- E. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with an "Or Equal" provision: Any Product meeting the quality standards or description. Pre-bid requests for approval of Products specified with an "or equal" provision will not be acknowledged. Acceptability of "or equal" Products will be determined by the Architect during the submittal process based upon the quality or suitability of the Product proposed.
- D. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for any manufacturer not named in accordance with the following article.

1.6 PRODUCT SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for Substitutions during bidding period to requirements specified in this section.
- B. Post-Bid Substitutions will only be considered when a product becomes unavailable through no fault of Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that Bidder:
 - 1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
 - 2. Will provide same warranty for Substitution as for specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.

5. Will reimburse Owner and/or Architect/Engineer for review or redesign services associated with re-approval by authorities having jurisdiction.
- E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to Contract Documents.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 70 00

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Starting of systems.
- D. Demonstration and instructions.
- E. Testing, adjusting and balancing.
- F. Protecting installed construction.
- G. Project record documents.
- H. Operation and maintenance data.
- I. Manual for materials and finishes.
- J. Manual for equipment and systems.
- K. Spare parts and maintenance products.
- L. Product warranties and product bonds.
- M. Maintenance service.

1.2 CLOSEOUT PROCEDURES

- A. Submit certification that the work is Substantially Complete and approved for occupancy by the Authority Having Jurisdiction, and Contractor's list of items to be completed to the Architect.
- B. Architect will inspect the work and will prepare a Punch List of items to be corrected or completed for final acceptance of the work.
- C. Upon completion of all work and correction of items included on the Punch List prepared by the Architect, submit written certification that Contract Documents have been reviewed, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer's final review. Architect will visit the site and will verify that all items have been properly completed and/or corrected.
- D. Contractor shall reimburse the Owner for all re-inspection costs incurred as a result of Contractor's failure to complete and/or correct all items identified by the Architect. Charges to the Contractor shall be made at such times and in such amounts as the Architect invoices the Owner

under the rate schedule in effect at the time of service. Such charges to the Contractor will be deducted from the Contractor's progress payment or final payment as applicable.

- E. Provide submittals to Architect/Engineer required by authorities having jurisdiction.
- F. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.3 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs, and drainage systems.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.4 STARTING OF SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect/Engineer seven days prior to start-up of each item.
- C. Verify 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 equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable personnel in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Section 01 33 00 - Submittal Procedures that equipment or system has been properly installed and is functioning correctly.

1.5 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of final inspection.
- B. Demonstrate Project equipment instructed by qualified manufacturer's representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- G. Required instruction time for each item of equipment and system is specified in individual sections.

1.6 TESTING, ADJUSTING AND BALANCING – Not Used

1.7 PROTECTING INSTALLED CONSTRUCTION

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

1.8 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.

- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract drawings.
- G. Submit documents to Architect/Engineer with claim for final Application for Payment.

1.9 OPERATION AND MAINTENANCE DATA

- A. Submit data bound in 8-1/2 x 11 inch (A4) text pages, three D side ring binders with durable plastic covers.
- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
- C. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- E. Contents: Prepare Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for [special] finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - 3. Part 3: Project documents and certificates, including the following:

- a. Shop drawings and product data.
- b. Air and water balance reports.
- c. Certificates.
- d. Photocopies of warranties and bonds.

1.10 MANUAL FOR MATERIALS AND FINISHES – Not Used

1.11 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy will be reviewed and returned, with Architect/Engineer comments. Revise content of document sets as required prior to final submission.
- B. Submit two sets of revised final volumes in final form with claim for Final Application for Payment.
- C. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- D. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- E. Include color coded wiring diagrams as installed.
- F. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and special operating instructions.
- G. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- H. Include servicing and lubrication schedule, and list of lubricants required.
- I. Include manufacturer's printed operation and maintenance instructions.
- J. Include sequence of operation by controls manufacturer.
- K. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- L. Include control diagrams by controls manufacturer as installed.
- M. Include Contractor's coordination drawings, with color coded piping diagrams as installed.
- N. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- O. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- P. Include test and balancing reports as specified in Section 01 40 00 - Quality Requirements.

- Q. Additional Requirements: As specified in individual product specification sections.
- R. Include listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

1.12 SPARE PARTS AND MAINTENANCE PRODUCTS – Not Used

1.13 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
- B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include Table of Contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time Of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, provide extended warranty for the full length of the warranty period beyond the Date of Substantial Completion.
 - 2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

1.14 MAINTENANCE SERVICE – Not Used

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete for the following:
 - 1. Building footings and slabs on grade.

1.2 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 301 - Specifications for Structural Concrete.
 - 2. ACI 305 - Hot Weather Concreting.
 - 3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
 - 4. ACI 318 - Building Code Requirements for Structural Concrete.
- B. ASTM International:
 - 1. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
 - 2. ASTM C33 - Standard Specification for Concrete Aggregates.
 - 3. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - 4. ASTM C42/C42M - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 - 5. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
 - 6. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
 - 7. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
 - 8. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
 - 9. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
 - 10. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
 - 11. ASTM C595 - Standard Specifications for Blended Hydraulic Cements.
 - 12. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
 - 13. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
 - 14. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
 - 15. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
 - 16. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
 - 17. ASTM E1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
 - 18. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Design Data:
 - 1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
 - a. Hot and cold weather concrete work.
 - b. Air entrained concrete work.
 - 2. Identify mix ingredients and proportions, including admixtures.
- C. Product Data: Submit data on concrete admixtures, accessories.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301 and ACI 318.
- B. Conform to ACI 305 when concreting during hot weather.
- C. Conform to ACI 306.1 when concreting during cold weather.
- D. Acquire cement and aggregate from one source for Work.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Maintain concrete temperature after installation at minimum 50 degrees F for minimum 7 days.

PART 2 PRODUCTS

2.1 FORM MATERIALS

- A. Form Materials: At discretion of Contractor.

2.2 FORMWORK ACCESSORIES

- A. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Size, strength and character to maintain formwork in place while placing concrete.

2.3 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, 60 ksi yield grade, deformed billet bars, uncoated finish.
- B. Welded Plain Wire Fabric: ASTM A185/A185M; in flat sheets; unfinished.

2.4 ACCESSORY REINFORCEMENT MATERIALS

- A. Tie Wire: Minimum 16 gage annealed type.

- B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom.

2.5 CONCRETE MATERIALS

- A. Cement: ASTM C595, Type IL.
- B. Normal Weight Aggregates: ASTM C33.
 - 1. Fine aggregate: size 2NS; clean, sharp, natural sand free from loam, clay lumps, or other deleterious substances.
 - 2. Coarse Aggregate Maximum Size: In accordance with ACI 318.
 - 3. Aggregate shall be clean, uncoated, crushed stone, processed from natural rock or stone containing no clay, mud, loam, of foreign matter.
- C. Water: ACI 318; potable.

2.6 ADMIXTURES

- A. Air Entrainment: ASTM C260.
- B. Chemical: ASTM C494/C494M.
- C. Fly Ash and Calcined Pozzolan: ASTM C618 Class F.
- D. Plasticizing: ASTM C1017/C1017M.

2.7 ACCESSORIES

- A. Vapor Retarder: ASTM E1745 Class B; 15 mil thick clear polyethylene film; type recommended for below grade application. Furnish joint tape recommended by manufacturer.
 - 1. Manufacturers:
 - a. Global Plastics Model VaporBlock 15.
 - 2. Substitutions: Or Equal.

2.8 CONCRETE MIX

- A. Select proportions for concrete in accordance with ACI 318 trial mixtures, field experience, or both.
- B. Concrete TYPE A:

Material and Property	Measurement
Compressive Strength (28 day)	3,500 psi
Cement Content (minimum)	517 pounds/cu yd
Aggregate Type	Normal weight
Water-Cement Ratio (maximum)	.45 by weight
Air Content	Not air entrained

Fly Ash Content:	20 percent of cementitious materials by weight, maximum
Slump	4 inches plus or minus 1 inch.

C. Concrete TYPE B:

Material and Property	Measurement
Compressive Strength (28 day)	4,500 psi
Cement Content (minimum)	517 - 658 pounds/cu yd
Aggregate Type	Normal weight
Water-Cement Ratio (maximum)	.45 by weight
Air Content	Not air entrained
Fly Ash Content:	20 percent of cementitious materials by weight, maximum
Slump	4 inches plus or minus 1 inch

D. Admixtures: Include admixture types and quantities indicated in concrete mix designs only when approved by Architect.

1. Use accelerating admixtures in cold weather. Use of admixtures will not relax cold weather placement requirements.
2. Do not use calcium chloride nor admixtures containing calcium chloride.
3. Use set retarding admixtures during hot weather.

E. Average Compressive Strength Reduction: Not permitted.

F. Ready Mixed Concrete: Mix and deliver concrete in accordance with ASTM C94/C94M.

2.9 COMPOUNDS - HARDENERS AND SEALERS

A. Chemical Hardener: liquid type.

1. Manufacturers:
 - a. Curecrete Chemical Company Model Ashford Formula.
 - b. Substitutions: Not permitted.

PART 3 EXECUTION

3.1 EXAMINATION – FORMWORK

- A. Verify lines, levels, and centers before proceeding with formwork. Verify dimensions agree with Drawings.

- B. When formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Architect/Engineer.

3.2 INSTALLATION – FORMWORK

- A. Earth Forms:
 - 1. Earth forms are not permitted.
- B. Formwork - General:
 - 1. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
 - 2. Carefully verify horizontal and vertical positions of forms. Correct misaligned or misplaced forms before placing concrete.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

3.3 INSTALLATION - INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Locate and set in place items required to be cast directly into concrete.
- B. Coordinate with Work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.
- C. Install accessories straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- D. Arrangement: Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.
- E. Embedded Items:
 - 1. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, water stops, and other features.
 - 2. Do not embed wood or uncoated aluminum in concrete.
 - 3. Obtain installation and setting information for embedded items furnished under other Specification sections.
 - 4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
 - 5. Verify conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318 for size and location limitations.
- F. Screeds:
 - 1. Set screeds and establish levels for tops of concrete slabs and levels for finish on slabs.
 - 2. Slope slabs to drain where required or as shown on Drawings.
 - 3. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms. Remove freestanding water.

3.4 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads and removal has been approved by Architect/Engineer.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

3.5 REINFORCEMENT PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position beyond specified tolerance.
 - 1. Do not weld crossing reinforcement bars for assembly except as permitted by Architect/Engineer.
- B. Accommodate placement of formed openings.
- C. Space reinforcement bars with minimum clear spacing in accordance with ACI 318.
 - 1. Where bars are indicated in multiple layers, place upper bars directly above lower bars.
- D. Maintain concrete cover around reinforcement in accordance with ACI 318 as follows:
 - 1. Concrete cast against earth: 3 inches.
 - 2. Formed concrete surfaces exposed to earth, weather or water: 2 inches.
 - 3. Formed concrete surfaces of walls, beams and columns not exposed to earth, weather or water: 1-1/2 inches.
 - 4. Slabs exposed to earth, weather or water: 1-1/2 inches.
 - 5. Slabs not exposed to earth, weather or water: 1 inch.
- E. Splice reinforcing at points of minimum stress. Splicing of bars shall be in accordance with ACI 318.
- F. Bond and ground reinforcement where required by Code.

3.6 EXAMINATION – CONCRETE PLACEMENT

- A. Verify requirements for concrete cover over reinforcement.
- B. Verify reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.7 PREPARATION – CONCRETE PLACEMENT

- A. Remove debris from reinforcement, and concrete substrates.
- B. Remove water from areas receiving concrete before concrete is placed.

3.8 PLACING CONCRETE

- A. Place concrete in accordance with ACI 318.
- B. Notify testing laboratory minimum three (3) business days prior to commencement of operations.
- C. Install vapor retarder under interior slabs on grade in accordance with ASTM E1643. Lap joints minimum 6 inches and seal watertight by adhesive applied between overlapping edges and ends or by taping edges and ends with vapor retarder manufacturer recommended tape.
- D. Separate slabs on grade from vertical surfaces with joint filler as scheduled. Do not separate slabs from cold joints in existing concrete to be doweled together.
- E. Deposit concrete at final position. Prevent segregation of mix.

- F. Place concrete in continuous operation for each panel or section determined by predetermined joints.
- G. Consolidate concrete.
- H. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.
- I. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- J. Place concrete continuously between predetermined joints.
- K. Do not interrupt successive placement; do not permit cold joints to occur.
- L. Saw cut pattern indicated. Where patching existing slabs, extend existing control joints through new concrete.
- M. Saw cut joints within 12 hours after placing. Use 3/16 inch thick blade, cut into 1/4 depth of slab thickness.
- N. Screed floors and slabs on grade level, maintaining surface flatness of Ff of 20.

3.9 CONCRETE FINISHING

- A. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1.
- B. Steel trowel interior floor slab.
- C. Lightly hand or machine tool edges. Assure that edges are not depressed or chattered along bulkheads, formed edges, columns, and penetrations.

3.10 FLOOR TOLERANCES

- A. Measure for FF and FL tolerances for floors in accordance with ASTM E1155, within 48 hours after slab installation.
- B. Finish concrete to achieve the following tolerances:
 - 1. Exposed to view and foot traffic in public areas: F(F) 35 and F(L) 25.

3.11 FLOOR SURFACE TREATMENT

- A. Apply liquid hardener on concrete floor surface.

3.12 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
 - 1. Protect concrete footings from freezing for minimum 7 days.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.13 FIELD QUALITY CONTROL - CONCRETE

- A. Field inspection and testing will be performed by Owner's testing laboratory in accordance with ACI 318.
- B. Provide free access to Work and cooperate with appointed firm.
- C. Reinforcement Inspection:
 - 1. Placement Acceptance: Specified and ACI 318 material requirements and specified placement tolerances.
- D. Periodic Placement Inspection: Inspect for correct materials, fabrication, sizes, locations, spacing, concrete cover, and splicing.
- E. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of Work.
- F. Strength Test Samples:
 - 1. Sampling Procedures: ASTM C172.
 - 2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, standard cured.
 - 3. Sample concrete and make one set of three cylinders for every 50 cu yds or less of each class of concrete placed. At a minimum, provide one set of cylinders for concrete footings, one set of cylinders for concrete pier foundations, and one set of cylinders for concrete sidewalks and paving.
 - 4. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than 5 batches are used.
 - 5. Make one additional cylinder during cold weather concreting, and field cure.
- G. Field Testing:
 - 1. Slump Test Method: ASTM C143/C143M.
 - 2. Air Content Test Method: ASTM C231.
 - 3. Temperature Test Method: ASTM C1064/C1064M.
 - 4. Measure slump, and temperature for each concrete load at point of delivery.
 - 5. Measure air content in air entrained concrete for each concrete load at point of delivery.
- H. Cylinder Compressive Strength Testing:
 - 1. Test Method: ASTM C39/C39M.
 - 2. Test Acceptance: In accordance with ACI 318.
 - 3. Test one cylinder at 7 days.
 - 4. Test two cylinders at 28 days.
- I. Core Compressive Strength Testing:
 - 1. Sampling and Testing Procedures: ASTM C42/C42M.
 - 2. Test Acceptance: In accordance with ACI 318.
 - 3. Drill three cores for each failed strength test from concrete represented by failed strength test.
- J. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

3.14 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by Architect.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.15 SCHEDULE - CONCRETE TYPES AND FINISHES

- A. Concrete for Building Foundations: Type B, non-air entrained.
- B. Concrete for floor slabs-on-grade: TYPE A, non-air entrained; chemical hardener after finishing.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes structural, wall, and roof framing; roof sheathing; preservative treatment of wood; miscellaneous framing and sheathing.
- B. Related Sections:
 - 1. Section 06 17 53 - Shop Fabricated Wood Trusses.

1.2 REFERENCES

- A. American Wood-Preservers' Association:
 - 1. AWPA U1 - Use Category System: User Specification for Treated Wood.
- B. ASTM International:
 - 1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- C. National Lumber Grades Authority:
 - 1. NLGA - Standard Grading Rules for Canadian Lumber.
- D. U.S. Department of Commerce National Institute of Standards and Technology:
 - 1. DOC PS 1 - Construction and Industrial Plywood.
 - 2. DOC PS 2 - Performance Standard for Wood-Based Structural-Use Panels.
 - 3. DOC PS 20 - American Softwood Lumber Standard.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit technical data on wood preservative materials, and application instructions.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
 - 1. Lumber Grading Agency: Certified by DOC PS 20.
 - 2. Wood Structural Panel Grading Agency: Certified by EWA - The Engineered Wood Association.
 - 3. Lumber: DOC PS 20.
 - 4. Wood Structural Panels: DOC PS 1 or DOC PS 2.
- B. Fire Rated Wall and Roof Construction: Rating as indicated on Drawings.
 - 1. Tested Rating: Determined in accordance with ASTM E119.
- C. Apply label from agency approved by authority having jurisdiction to identify each preservative treated material.

PART 2 PRODUCTS

2.1 LUMBER MATERIALS

- A. Lumber Grading Rules: NLGA.
- B. Non-structural Light Framing: SPF species, #2 grade or better, 19 percent maximum moisture content.
- C. Studding and purlins: SPF species, #2 grade or better, 19 percent maximum moisture content.
- D. Plates or ribbon beams bearing loads from trusses or rafters: SYP species, #2 grade or better, 19 percent maximum moisture content.
- E. Lumber in contact with concrete: SYP species, #2 grade or better, 19 percent maximum moisture content, pressure preservative treated.
- F. Structural Columns: SYP species, #2 grade or better, 19 percent maximum moisture content, pressure preservative treated.
- G. Below Grade Wood Foundation Framing: SYP species, #2 grade or better, 19 percent maximum moisture content, pressure preservative treated.
- H. Miscellaneous Framing: SPF species, #2 grade or better, 19 percent maximum moisture content.

2.2 ENGINEERED WOOD PRODUCTS

- A. Beam Framing: 2.0E parallel strand lumber made up of structurally bonded wood strands, equal to Parallam PSL as manufactured by Trus Joist McMillan.

2.3 SHEATHING MATERIALS

2.4 SHEATHING MATERIALS

- A. Wood Structural Panel Roof Sheathing: EWA Rated Sheathing; Oriented Strand Board; Exposure Durability 1; unsanded.
 - 1. Thickness: 19/32 inches.
 - 2. Span Rating: 40/20.
 - 3. Edges: Square.
- B. Wood Structural Panel Ceiling Sheathing: EWA Rated Sheathing, Oriented Strand Board; Exposure Durability 1; unsanded; preservative treated when installed within 8 inches of exposed exterior grade.
 - 1. Thickness: 15/32 inches.
 - 2. Span Rating: 32/16.
 - 3. Edges: Square.
- C. Wood Structural Panel Wall Sheathing: EWA Rated Sheathing, Oriented Strand Board; Exposure Durability 1; unsanded; preservative treated when installed within 8 inches of exposed exterior grade.
 - 1. Thickness: 15/32 inches.
 - 2. Span Rating: 32/16.
 - 3. Edges: Square.

2.5 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Fasteners: ASTM A153/A153M, hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
- B. Structural Framing Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
- C. Sill Gasket on top of foundation wall/slab: ¼ inch thick, plate width, closed cell polyethylene foam from continuous rolls.
- D. Anchor Bolts: ASTM A307; Grade A threaded rod, epoxy anchored into predrilled holes.
- E. Anchoring Adhesive: Hilti HIT-RE 100 epoxy Anchor, or equal.

2.6 FACTORY WOOD TREATMENT

- A. Wood Preservative (Pressure Treatment): AWPA U1, Commodity Specification A-Sawn Products or F-Wood Composites using water-borne preservative.
- B. Moisture Content After Treatment: Redried.
 - 1. Lumber: Maximum 19 percent.
 - 2. Structural Panels: Maximum 15 percent.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that vapor retarder installation is completed prior to installing ceiling sheathing.

3.2 SEQUENCING

- A. Install ceiling sheathing before wall interior wall sheathing.

3.3 FRAMING

- A. Set structural members level and plumb, in correct position.
- B. Fasten framing in accordance with applicable code.
- C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in alignment until completion of erection and installation of permanent bracing.
- D. Place horizontal members, crown side up.
- E. Construct load bearing framing and curb members full length without splices.
- F. Double members at openings over 16 inches wide. Space short studs over and under opening to stud spacing.
- G. Place sill gasket directly on cementitious foundation at perimeter exterior walls. Puncture gasket clean and fit tight to protruding foundation anchor bolts.

- H. Coordinate installation of prefabricated wood trusses.
- I. Curb roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members.
- J. Coordinate curb installation with installation of decking and support of deck openings.

3.4 SHEATHING

- A. Fasten sheathing in accordance with applicable code.
- B. Secure roof sheathing with longer edge (strength axis) perpendicular to framing members and with ends staggered and sheet ends over bearing.
- C. Fully engage tongue and groove edges.
- D. Secure roof sheathing with longer edge (strength axis) perpendicular to framing members and with ends staggered and sheet ends over bearing. Maintain 1/8" gap between panels joints.
- E. Secure ceiling sheathing with long dimension perpendicular to trusses, with ends over firm bearing and staggered. Maintain 1/8" gap between panels joints.
- F. Secure wall sheathing with long dimension perpendicular to wall studs, with ends over firm bearing and staggered. Maintain 1/8" gap between panels joints.

3.5 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Framing Members: 1/4 inch from indicated position, maximum.

END OF SECTION

SECTION 06 17 53

SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes shop fabricated wood trusses for roof framing; bridging, bracing, and anchorage.
- B. Related Sections:
 - 1. Section 06 10 00 - Rough Carpentry.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - 3. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
 - 4. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
 - 5. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 6. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 - 7. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- B. National Lumber Grades Authority:
 - 1. NLGA - Standard Grading Rules for Canadian Lumber.
- C. The Redwood Inspection Service:
 - 1. RIS - Standard Specifications for Grades of California Redwood Lumber.
- D. Southern Pine Inspection Bureau:
 - 1. SPIB - Standard Grading Rules for Southern Pine Lumber.
- E. Truss Plate Institute:
 - 1. TPI 1 - National Design Standard for Metal Plate Connected Wood Truss Construction.
- F. U. S Department of Commerce National Institute of Standards and Technology:
 - 1. DOC PS 1 - Construction and Industrial Plywood.
 - 2. DOC PS 2 - Performance Standard for Wood-Based Structural-Use Panels.
 - 3. DOC PS 20 - American Softwood Lumber Standard.
- G. West Coast Lumber Inspection Bureau:
 - 1. WCLIB - Standard Grading Rules for West Coast Lumber.
- H. Western Wood Products Association:
 - 1. WWPA G-5 - Western Lumber Grading Rules.

1.3 DESIGN REQUIREMENTS

- A. Design for roof Live and Dead Loads indicated on Drawings with a deflection limit of $L/240$.
- B. Design for individual mechanical unit point loads and other loads indicated.
- C. Design trusses for maximum bearing pressure of 425 psi.
- D. Selection and specification of all truss to truss connectors appropriate to the connection condition and loading requirements is the responsibility of the Truss Designer.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate sizes and spacing of trusses and associated components, web and chord sizes, plate sizes, structural connectors, bearing surface area requirements, loads and truss cambers, framed openings, locations for temporary and permanent bridging and bracing.
- C. Submit design calculations.
- D. Individual truss design cut sheets and accompanying calculations shall bear the seal of the Supervising Professional Structural Engineer.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
 - 1. Lumber Grading Agency: Certified by DOC PS 20.
 - 2. Lumber: DOC PS 20.
- B. Truss Design, Fabrication, and Installation: In accordance with TPI 1.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Design trusses under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Michigan.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Store truss depth in vertical position resting on intermittent bearing pads.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide trusses fabricated with metal connector plates of one of the following:
 - 1. Letherer Truss and Wall Systems.
 - 2. Michigan Timber and Truss.
 - 3. Mid Michigan Truss & Components.
 - 4. Bear Truss.
 - 5. Truss Technologies.
 - 6. Midwest Manufacturing.
 - 7. Wendricks Truss
 - 8. Substitutions, or Equal.

2.2 MATERIALS

- A. Lumber Grading Rules: NLGA, SPIB, WCLIB, or WWPA G-5 as applicable.
- B. Wood Members: Any species graded under NLGA, SPIB, WWPA or WWPA; grade specified by Truss Designer; 19 percent maximum and 7 percent minimum moisture content.
- C. Steel Plate Connectors: TPI 1, Section 6; hot dip galvanized; die stamped with integral teeth; minimum coated metal thickness indicated, but not less than 0.036 inch thick.
- D. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.3 ACCESSORIES

- A. Wood Blocking and Framing for Openings: In accordance with Section 06 10 00.
- B. Fasteners and Anchors:
 - 1. Fasteners: ASTM A153/A153M, hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
 - 2. Nails: ASTM F1667.
- C. Structural Connectors: Meeting requirements specified in Section 61 00 00, as selected by Truss Designer.

2.4 FABRICATION

- A. Wood truss fabrication shall comply with TPI-1 "National Design Standard for Metal Plate Connected Wood Truss Construction".
- B. Fabricate trusses to achieve structural requirements specified.
- C. Cut wood members to accurate length, angles, and sizes to produce close fitting joints with wood to wood bearing in assembled units.
- D. Fabricate metal connector plates to size, configuration, thickness and anchorage details required for types of joint truss designs indicate.

- E. Assemble truss members in design configuration indicated using jigs or other means to ensure uniformity and accuracy of assembly with close fitting joints. Position members to produce design camber indicated.
- F. Connect members by metal connector plates accurately located and securely fastened to each side of wood members.
- G. Fabricate bottom and top chord extensions as indicated on Drawings.
- H. Frame special sized openings in web framing as indicated on Drawings.

2.5 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Inspect Work performed at fabricator's facility to verify conformance to Contract Documents.
- C. When fabricator is approved by authority having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
 - 1. Specified shop inspections are not required for Work performed by approved fabricator.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify supports and openings are ready to receive trusses.

3.2 PREPARATION

- A. Coordinate placement of bearing and support items.

3.3 ERECTION

- A. Do not install damaged trusses, or trusses with damaged web or chord members, or with loose metal connecting plates.
- B. Erect trusses in accordance with manufacturer's instructions and TPI recommendations.
- C. Set members level and plumb, in correct position.
- D. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in alignment until completion of erection and installation of permanent bracing.
- E. During entire construction period, Contractors shall provide means of adequate distribution of concentrated loads so that the safe loading capacity of any single truss is not exceeded.
- F. Do not field cut or alter truss members without approval of the Truss Designer and Architect/Engineer of Record. Trusses that are cut, notched or otherwise altered shall be repaired as directed by the Truss Designer at the Contractor's expense.

- G. Exercise care during erection to minimize out-of-plane bending.
 - H. Anchor trusses at each bearing location using connectors indicated in Drawings or as specified by Truss Designer.
 - I. Do not anchor trusses directly to top plate of non-bearing partitions. Install designated slip connector between non-bearing partitions and trusses.
 - J. Frame openings between trusses with lumber in accordance with Section 06 10 00.
 - K. Install permanent bracing to enable trusses to maintain design spacing and position, withstand specified live and dead loads including lateral loads, and to comply with other indicated requirements.
 - 1. Roof Trusses: At a minimum, install pairs of 2x4 chevron bracing at maximum 20 foot intervals at all truss compression webs requiring permanent lateral bracing. Chevron bracing shall be installed in the plane of the webs and nailed to each web member with two sixteen penny nails minimum. Chevron bracing angle shall be approximately 45 degrees in the plane of the web and shall be in addition to continuous lateral bracing. Alternatively, Contractor may install T or L bracing in lieu of continuous lateral and chevron bracing on any member requiring bracing. T or L bracing shall be installed in accordance with BCSI recommendation.
 - L. Coordinate installation of sheathing with work of this Section.
- 3.4 ERECTION TOLERANCES
- A. Section 01 40 00 - Quality Requirements: Tolerances.
 - B. Framing Members: 1/2 inch maximum, from indicated position.
 - C. Trusses: 1/4 inch maximum from true position, 1/4 inch maximum from plumb.

END OF SECTION

SECTION 07 21 13
BOARD INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Rigid insulation in post framed wood construction.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
 - 2. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics.
 - 3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.3 SYSTEM DESCRIPTION

- A. Materials of This Section: Provide continuity of thermal barrier at building enclosure elements [in conjunction with thermal insulating materials in Section 07 21 16 and 07 21 26.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on product characteristics, performance criteria, limitations, and adhesives.

1.5 QUALITY ASSURANCE

- A. Insulation Installed in Concealed Locations Surface Burning Characteristics:
 - 1. Foam Plastic Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- B. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation board.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Extruded Polystyrene Insulation:
 - 1. Dow Chemical
 - 2. UC Industries/Owens Corning
 - 3. Or equal.

2.2 COMPONENTS

- A. Extruded Polystyrene Insulation: ASTM C578 Type IV; conforming to the following:
 - 1. Board Size: 48 x 96 inch.
 - 2. Board Thickness: As indicated on Drawings.
 - 3. Thermal Resistance: R of 5.0 per inch of thickness.
 - 4. Water Absorption: In accordance with ASTM D2842; 0.3 percent by volume maximum.
 - 5. Compressive Strength: Minimum 25 psi.
 - 6. Board Edges: Square edges.
- B. Expanding Foam Insulation: Expanding urethane foam meeting flame spread rating of 75 and smoke developed rating of 450 when tested in accordance with ASTM E84.

2.3 ACCESSORIES

- A. Insulation Plates: 2 inches diameter, metal insulation plate with screw fastener.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify substrate, adjacent materials, and insulation boards are dry and ready to receive insulation.

3.2 INSTALLATION – POST FRAMED WOOD CONSTRUCTION

- A. Install board between columns over wall girts. Extend insulation above ceiling as detailed.
- B. Butt edges and ends tight to adjacent board and to adjacent construction.
- C. Cut and fit insulation tight to protrusions or interruptions to insulation plane.
- D. Fill gaps between boards and protrusions with expanding foam insulation. Trim and remove excess expanding foam insulation back to board surface once cured.

END OF SECTION

SECTION 07 21 16
BLANKET INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes batt insulation and vapor retarder in exterior wall construction.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 2. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 3. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
 - 4. ASTM E970 - Standard Test Method for Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source.

1.3 SYSTEM DESCRIPTION

- A. Materials of This Section: Provide continuity of thermal barrier at building enclosure elements in conjunction with thermal insulating materials in Section 07 21 13 and 07 21 26.

1.4 PERFORMANCE REQUIREMENTS

- A. Vapor Retarder Permeance: Maximum 1 perm when tested in accordance with ASTM E96/E96M.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on product characteristics, performance criteria, and limitations.

1.6 QUALITY ASSURANCE

- A. Insulation Installed in Concealed Locations Surface Burning Characteristics:
 - 1. Batt Insulation: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

PART 2 PRODUCTS

2.1 BATT INSULATION

- A. Manufacturers:
 - 1. Owens Corning Fiberglas
 - 2. Or equal.

2.2 COMPONENTS

- A. Batt Insulation: ASTM C665; preformed glass fiber roll; conforming to the following:
 - 1. Thermal Resistance: R of 3.75 per inch of thickness.
 - 2. Facing: Faced on one side with asphalt treated mesh reinforced Kraft paper.
- B. Staples: Steel wire; type and size to suit application.
- C. Tape: Polyethylene self-adhering type, 2 inch wide.

2.3 ACCESSORIES

- A. Spray Foam Insulation: Low expansion spray foam insulation formulated for use around doors and windows without distortion. Great Stuff Window and Door, or equal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify substrate, adjacent materials, and insulation are dry and ready to receive insulation.

3.2 INSTALLATION

- A. Install in exterior walls without gaps or voids. Do not compress insulation.
- B. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- C. Insulate miscellaneous gaps and voids around door and window frames and other framed openings with expanding spray foam insulation.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within plane of insulation.
- E. Install with factory applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.
- F. Staple facing flanges in place at maximum 6 inches oc.
- G. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

3.3 SCHEDULES

- A. Wall Insulation: R13, faced.

END OF SECTION

SECTION 07 21 26
BLOWN INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes: attic loose insulation pneumatically placed through access holes.
- B. Related Sections:
 - 1. Section 07 26 00 - Vapor Retarders: Vapor retarder materials adjacent to blown insulation.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM C739 - Standard Specification for Cellulosic Fiber (Wood-Base) Loose-Fill Thermal Insulation.
 - 3. ASTM E970 - Standard Test Method for Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source.
- B. Consumer Product Safety Commission:
 - 1. CPSC 16 CFR 1209 - Interim Safety Standard for Cellulose Insulation.
 - 2. CPSC 16 CFR 1404 - Cellulose Insulation.

1.3 SYSTEM DESCRIPTION

- A. Materials of This Section: Provide continuity of thermal barrier at building enclosure elements, in conjunction with Sections 07 21 13 and 07 21 16.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on product characteristics, performance criteria, and limitations.

1.5 QUALITY ASSURANCE

- A. Furnish and label cellulose loose fill insulation in accordance with CPSC 16 CFR 1209 and CPSC 16 CFR 1404.
- B. Apply label from agency approved by authority having jurisdiction to identify each package of cellulose loose fill insulation.

1.6 SEQUENCING

- A. Do not install blown insulation until other trades are completed.
- B. Prior to substantial completion, repair any disturbed areas with additional insulation.

PART 2 PRODUCTS

2.1 COMPONENTS

- A. Fiber Fill Insulation: ASTM C764, Cellulose fiber type, bulk for pneumatic placement, total in-place R-value as indicated in Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify substrate, adjacent materials, and insulation are dry and ready to receive insulation.
- C. Verify spaces are unobstructed to allow placement of insulation.

3.2 INSTALLATION

- A. Place insulation pneumatically, tight in trusses spaces achieve a minimum in-place R-value as indicated in Drawings.
- B. Place insulation against eave edge blocking. Do not impede natural attic ventilation from soffit.
- C. Place against and behind mechanical and electrical services within plane of insulation.
- D. Completely fill intended spaces. Leave no gaps or voids.

3.3 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Remove loose insulation residue.

END OF SECTION

SECTION 07 26 00
VAPOR RETARDERS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes sheet materials for controlling vapor diffusion.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
 - 2. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
- B. Sealant, Waterproofing and Restoration Institute:
 - 1. SWRI - Sealant Specification.

1.3 PERFORMANCE REQUIREMENTS

- A. Vapor Retarder Permeance: Maximum 1 perm when tested in accordance with ASTM E96/E96M, desiccant method.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data indicating material characteristics, performance criteria, and limitations.

1.5 SEQUENCING

- A. Section 01 10 00 - Summary: Work sequence.
- B. Do not install vapor retarder until items penetrating vapor retarder are in place.

PART 2 PRODUCTS

2.1 VAPOR RETARDER

- A. Sheet Retarder: Polyethylene film for above grade application, 6 mil thick.

2.2 ACCESSORIES

- A. Tape: Polyethylene self-adhering type, 2 inch wide, compatible with sheet material.
- B. Attachments: Staples and/or adhesives compatible with sheet material substrate.

PART 3 EXECUTION

3.1 PREPARATION

- A. Remove loose or foreign matter capable of impairing adhesion.
- B. Clean and prime substrate surfaces to receive adhesive.

3.2 INSTALLATION

- A. Vapor Retarder For Truss Framed Roofs: Secure sheet retarder to truss faces with adhesive and/or staples. Extend vapor retarder down perimeter walls and fasten to top plate. Lap edges and ends and seal with tape.
- B. Seal all laps and repair all tears or penetrations in vapor retarder with tape.

END OF SECTION

SECTION 07 31 13

ASPHALT SHINGLES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Asphalt shingles.
 - 2. Underlayment
- B. Related Sections:
 - 1. Section 07 42 13 – Metal Wall Panels: Roof drip edge.

1.2 REFERENCE STANDARDS

- A. ASTM International:
 - 1. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 2. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
 - 3. ASTM D2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
 - 4. ASTM D3018 - Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
 - 5. ASTM D3462 - Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
 - 6. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
 - 7. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings.
 - 8. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- B. National Roofing Contractors Association:
 - 1. NRCA - The NRCA Steep Roofing Manual.
- C. Sheet Metal and Air Conditioning Contractors:
 - 1. SMACNA - Architectural Sheet Metal Manual.
- D. Underwriters Laboratories Inc.:
 - 1. UL 790 - Tests for Fire Resistance of Roof Covering Materials.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Samples: Submit samples of each shingle color indicating color range and finish texture/pattern; for color and texture selection.

1.4 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish fifty year manufacturer warranty period for asphalt shingles.

- C. Warranty Supplement: Provide manufacturer's supplemental warranty to cover labor and materials in the event of a material defect in the first ten years after completion of installation of shingles.

PART 2 PRODUCTS

2.1 ASPHALT SHINGLES

- A. Manufacturer:
 - 1. Certain Teed Corporation; Model Landmark Premium
 - 2. Substitutions: Permitted under provision of Section 00 21 13. Substitutions will only be considered where substituting manufacturer provides written warranty substantively equal to specified manufacturers warranty for shingles installed over a non-ventilated insulated deck.
- B. Description: ASTM D3018 Type 1 – Self-Sealing; ASTM D3462; ASTM D3161 Class F Wind Resistance; ASTM D7158 Class H Wind Resistance; ASTM E108 / UL 790 Class A Fire Resistance; glass fiber mat base, ceramically colored / UV resistant mineral surface granules across entire face of shingle; algae-resistant 300 lb/100 sq ft weight; self-sealing; laminated overlay type; color as selected.

2.2 SHEET MATERIALS

- A. Ice Barrier Membrane: ASTM D1970; self adhering polymer modified bituminous sheet material, slip resistant surface, 40 mils thick, 36 inches wide, with strippable release paper to expose adhesive surface; Winterguard HT as manufactured by Certainteed, or shingle manufacturer approved equivalent.
- B. Underlayment: Synthetic polymer-based scrim-reinforced underlayment complying with physical property requirements of ASTM D226 and ASTM D486, including resistance to liquid water transmission; Diamond Deck as manufactured by Certainteed, or shingle manufacturer approved equivalent

2.3 RIDGE VENTS

- A. Ridge Vents: Plastic, nominal 11 inches wide with vent openings that do not permit direct water or weather entry; to receive cap shingles; minimum 12 sq inches/foot net free area:
 - 1. Ridge Vent: 11" Ridge Master Plus manufactured by Mid-America Building Products, Tapco International.

2.4 ACCESSORIES

- A. Flashing and Drip Edge Materials:
 - 1. As specified in Section 07 42 13.
- B. Nails: ASTM F1667; standard round wire roofing nails hot dipped galvanized steel type, minimum 0.105 inch diameter shank, minimum 0.375 inch diameter head; of sufficient length to penetrate through roof sheathing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify roof penetrations and plumbing stacks are flashed to deck surface.
- C. Verify deck surfaces are dry, free of ridges, warps, or voids.

3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Fill knot holes and surface cracks with latex filler at areas of bonded underlayment and/or membrane flashing.
- C. Broom clean deck surfaces under underlayment.

3.3 INSTALLATION

- A. Installation shall be in strict accordance with the manufacturer's installation instructions for the materials specified.
- B. Ice Barrier Membrane:
 - 1. Install membrane along building eaves directly on the roof deck in strict accordance with manufacturer's recommendations. Install a minimum of two rows of membrane, extending up slope a minimum of 24 inches inside the exterior wall line of the building. Weather lap subsequent rows of membrane as recommended by manufacturer.
- C. Underlayment Installation:
 - 1. Weather lap over ice barrier membrane as recommended by manufacturer. Lap ends minimum 2 inches. Nail underlayment in place.
 - 2. Cut underlayment to allow ventilation at hips and ridges.
- D. Ridge Vent:
 - 1. Install hip and ridge vent in accordance with manufacturer's instructions.
 - 2. Install hip and ridge vent continuous, centered over ridge/hip line. Hold ridge and hip vent back 2 feet from hip and ridge ends.
 - 3. Secure in place with nails spaced as recommended by manufacturer.
- E. Metal Flashing and Accessories Installation:
 - 1. Install metal flashings over membrane flashing and underlayment.
 - 2. Apply plastic cement between metal flashing and roof underlayment.
 - 3. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.
 - 4. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
 - 5. Secure in place with nails. Conceal fastenings.
 - 6. Seal metal joints watertight with plastic cement.
- F. Asphalt Shingles Installation:

1. Install shingles following manufacturer's recommendation for steep slopes using 6 nails per shingle.
2. Install color matching starter strip at eaves.
3. Place shingles in straight coursing pattern with weather exposure recommended by manufacturer to produce double thickness over full roof area.
4. Extend shingles on one slope across valley and fasten. Trim shingles from other slope 2 inches from valley center line to achieve closed cut valley, concealing valley protection.
5. Cap hips and ridges with individual shingles, maintaining manufacturer's recommended weather exposure. Place to avoid exposed nails.
6. Coordinate installation of roof mounted components or items projecting through roof with weather tight placement of flashings.
7. Complete installation to provide weather tight service.

3.4 DEFECT ASSESSMENT AND REPAIR

- A. Inspect completed roof for the presence of nail-pops. Where encountered, remove penetrated shingle and replace with new. Carefully remove fasteners to allow removal of overlying shingle and fill holes where fasteners are removed from shingles to remain with sealant. Remove under-driven or otherwise improperly driven fasteners and fill fastener hole with sealant. Install new fasteners as recommended by manufacturer adjacent to previous holes.
- B. Inspect completed roof for the presence of exposed fasteners. Where fasteners (nail heads) are not concealed by the overlying shingles, underlying shingle is to be removed and replaced with new. Carefully remove fasteners to allow removal of underlying shingle and fill holes where fasteners are removed from shingles to remain with sealant. Install new fasteners as recommended by manufacturer adjacent to previous holes.
- C. Repair of nail pops and/or exposed fasteners by coating with sealant will not be accepted.

3.5 PROTECTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Do not permit traffic over finished roof surface.

END OF SECTION

SECTION 07 42 13
METAL WALL PANELS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes preformed metal siding system for walls, and soffits, with related flashings and accessory components.

1.2 REFERENCES

- A. American Society of Civil Engineers:
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- B. ASTM International:
 - 1. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

1.3 SYSTEM DESCRIPTION

- A. System: Preformed and prefinished metal siding system of vertical profile; site assembled.

1.4 PERFORMANCE REQUIREMENTS

- A. Components: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as calculated in accordance with applicable code and with ASCE 7.
 - 1. Design Pressure: Minimum 20 lb/sq ft.
- B. Maximum Allowable Deflection of Panel: 1/180 of span.
- C. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; deflection of structural support framing.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on panels.
- C. Samples: Submit samples of siding finish illustrating finish color, sheen, and texture.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Manufacturer's Warranty: Submit manufacturer's standard warranty.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- C. Store prefinished material off ground protected from weather, to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- D. Prevent contact with materials capable of causing discoloration or staining.

1.9 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate Work with installation of adjacent components or materials.

1.10 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish 20 year paint finish warranty for cracking, chipping, peeling, fading and chalking.

PART 2 PRODUCTS

2.1 METAL WALL PANELS

- A. Manufacturers:
 - 1. Fabral.
 - 2. Substitutions: Permitted.

2.2 COMPONENTS

- A. Exterior Panel Materials: Minimum 26 gage thick pre-coated steel stock; 36 inches wide panel; lapped edges; Equal to Mighty-Rib.
- B. Soffit Panels: 24 gage thick pre-coated steel, fully vented, 14" inch wide panels; interlocking edges; Equal to Posi-Lock.
- C. Drip Edge: Minimum 29 gage thick pre-coated steel; Equal to D Style Eave.
- D. Fascia: Minimum 29 gage thick pre-coated steel; Equal to AL9 Angle Flashing.

- E. Miscellaneous Sheet Materials: Minimum 24 gage thick steel stock
- F. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; brake formed to required angles.
- G. Trim, Closure Pieces, Caps, Flashings: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

2.3 FINISH

- A. Panel and trim Finish Aluminum-Zinc Alloy Coated Steel; ASTM A792/A792M Commercial - CQ Quality, Coating Designation AZ 50 aluminum-zinc alloy coating. Precoated Surfaces: Color as selected.

2.4 ACCESSORIES

- A. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; color to match siding.
- B. Sealant Tape: Manufacturers standard type 3/16 inch x 1/4 inch for sidelaps.
- C. Sealants: Manufacturer's standard type suitable for use with installation of system, color to match panels.
- D. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, steel, hot dip galvanized; fastener cap same color as exterior panel.
- E. Field Touch-up Paint: As recommended by panel manufacturer.
- F. Bituminous Paint: Asphalt base.

2.5 FABRICATION

- A. Form sections to shape indicated on Drawings, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest practicable lengths.
- C. Panel Profile: Manufacturer's standard profile for specified system.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify building framing members are ready to receive panel system.

3.2 INSTALLATION

- A. Install panels in accordance with manufacturer's instructions.

- B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.
- C. Fasten siding to structural supports; aligned, level, and plumb. Space fasteners as recommended by manufacturer to suit application.
- D. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.3 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Offset From Indicated Alignment Between Adjacent Members Butting or In Line: 1/16 inch.
- C. Maximum Variation from Plane: 1/8 inch.

3.4 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Remove site cuttings from finish surfaces.
- C. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

END OF SECTION

SECTION 07 90 00
JOINT PROTECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes sealants and joint backing and accessories.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C834 - Standard Specification for Latex Sealants.
 - 2. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
 - 3. ASTM C1193 - Standard Guide for Use of Joint Sealants.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Products Data: Submit data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.
- C. Samples: Submit two samples illustrating sealant colors for selection.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Applicator: Company specializing in performing Work of this section with minimum three years documented experience.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements.
- B. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.

1.6 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate Work with sections referencing this section.

PART 2 PRODUCTS

2.1 JOINT SEALERS

- A. Manufacturers:

1. Dow Corning Corp.
2. Pecora Corp..
3. Sika Corp..
4. Tremco Sealants & Waterproofing.
5. Substitutions: Or equal.

B. Products Description:

1. Sealant S1 - High Performance General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25, Uses M, G, and A; multi-component.
 - a. Acceptable Products:
 - 1) Dymeric 240FC manufactured by Tremco.
 - 2) Sikaflex-2c NS manufactured by Sika Corp.
 - 3) Dynatrol II by Pecora Corporation.
 - 4) Or equal.
 - b. Color: Standard colors matching finished surfaces.
2. Sealant S2 - High Performance Exterior Sealant: Polyurethane; ASTM C920 Type S, Grade NS, Class 35, Use T, NT, O, M, G, I; single-component; paintable.
 - a. Acceptable Products:
 - 1) SikaFlex - 1a by Sika Corp.
 - 2) Or equal.
 - b. Color: Standard colors matching finished surfaces.
3. Sealant S3 - Exterior Metal Lap Joint Sealant: Butyl, non-drying, non-skinning, non-curing.
 - a. Acceptable Products
 - 1) Butyl Sealant manufactured by Tremco.
 - 2) Pecora BA-98 manufactured by Pecora Corp.
 - 3) Or equal.
4. Sealant S4 - General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, single component, paintable.
 - a. Acceptable Products:
 - 1) TremFlex 834 manufactured by Tremco.
 - 2) Pecora AC-20 + Silicone manufactured by Pecora Corp.
 - 3) Or equal.
 - b. Color: Standard colors matching finished surfaces.

2.2 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: Round foam rod compatible with sealant; ASTM D1056, sponge or expanded rubber; oversized 30 to 50 percent larger than joint width.
 1. Type: Everlastic manufactured by Williams Products, Inc. or equal.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify substrate surfaces and joint openings are ready to receive work.
- C. Verify joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

- A. Remove loose materials and foreign matter impairing adhesion of sealant.
- B. Clean and prime joints.
- C. Perform preparation in accordance with ASTM C1193.
- D. Protect elements surrounding Work of this section from damage or disfiguration.

3.3 INSTALLATION

- A. Perform installation in accordance with ASTM C1193.
- B. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
 - 1. Width/depth ratio of 2: 1.
 - 2. Neck dimension no greater than 1/3 of joint width.
 - 3. Surface bond area on each side not less than 75 percent of joint width.
- C. Install bond breaker where joint backing is not used.
- D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Tool joints concave.

3.4 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Clean adjacent soiled surfaces.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Protect sealants until cured.

3.6 SCHEDULE

- A. Exterior Joints Between Metal Frames and Adjacent Work: Type S1 or S2.

- B. Exterior Joints for Which No Other Sealant Type is Indicated: Type S1 or S2.
- C. Lap Joints in Exterior Sheet Metal Work: Type S3.
- D. Interior Joints Between Metal Frames and Adjacent Work: Type S4.
- E. Interior Joints for Which No Other Sealant is Indicated: Type S4.

END OF SECTION

SECTION 08 12 13
HOLLOW METAL FRAMES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes fire rated and non-rated steel frames.
- B. Related Sections:
 - 1. Section 07 90 00 – Joint Protection: Joint sealers.
 - 2. Section 08 13 13 – Hollow Metal Doors.
 - 3. Section 08 71 00 - Door Hardware: Hardware.
 - 4. Section 09 90 00 – Painting: Field painting of frames.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
- B. ASTM International:
 - 1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- C. National Fire Protection Association:
 - 1. NFPA 80 - Standard for Fire Doors, Fire Windows.
 - 2. NFPA 105 - Standard for the Installation of Smoke Door Assemblies and other Opening Protectives.
 - 3. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.
- D. Underwriters Laboratories Inc.:
 - 1. UL 10B - Fire Tests of Door Assemblies.
 - 2. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
 - 3. UL 1784 - Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

- A. Shop Drawings: Indicate frame elevations, reinforcement, anchor types and spacing, location of cut-outs for hardware, and finish.
- B. Product Data: Submit frame configuration and finishes.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Conform to requirements of ANSI A250.8.

1.5 QUALIFICATIONS

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

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept frames on site in manufacturer's packaging. Inspect for damage.
- B. Break seal on-site to permit ventilation.

1.7 COORDINATION

- A. Coordinate Work with frame opening construction, door, and hardware installation.

PART 2 PRODUCTS

2.1 STANDARD STEEL FRAMES

- A. Manufacturers:
 - 1. Amweld Building Products, Inc.
 - 2. Ceco Door Products
 - 3. Junbarton Corp.
 - 4. Kewanee Corp.
 - 5. Republic Builders Products
 - 6. Steelcraft
 - 7. Or equal
- B. Product Description: Standard shop fabricated steel frames, fire rated and non-rated types.
 - 1. Hollow Metal Frames:
 - a. 16 gage/0.053 inch thick material, base metal thickness, galvanized.

2.2 ACCESSORIES

- A. Primer: ANSI A250.10 rust inhibitive type.
- B. Silencers: Resilient rubber fitted into drilled hole.
- C. Weatherstripping: Specified in Section 08 71 00.

2.3 FABRICATION

- A. Fabricate frames as welded unit.
- B. Fabricate frames with hardware reinforcement plates welded in place.
- C. Prepare frames for silencers. Provide three single silencers for single doors on strike side.
- D. Fabricate frames to match frame elevations depicted in plans.

2.4 SHOP FINISHING

- A. Steel Sheet: Galvanized to ASTM A653/A653M G60.
- B. Primer: Baked.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify opening sizes and tolerances are acceptable.

3.2 INSTALLATION

- A. Install frames in accordance with ANSI A250.8.
- B. Anchor frames to surrounding construction using three anchors each jamb.
- C. Coordinate installation of frames with installation of hardware specified in Section 08 71 00 and doors in Section 08 13 13.

3.3 ERECTION TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edges, crossed corner to corner.

END OF SECTION

SECTION 08 13 13
HOLLOW METAL DOORS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes non-rated, thermally insulated, steel doors.
- B. Related Sections:
 - 1. Section 08 12 13 - Hollow Metal Frames.
 - 2. Section 08 71 00 - Door Hardware.
 - 3. Section 09 90 00 - Painting and Coating: Field painting of doors.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
- B. ASTM International:
 - 1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. ASTM C518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- C. Hollow Metal Manufacturers Association:
 - 1. HMMA 810 - Hollow Metal Doors.
- D. Steel Door Institute:
 - 1. SDI 108 - Recommended Selection and Usage Guide for Standard Steel Doors.

1.3 SUBMITTALS

- A. Shop Drawings: Indicate door elevations, internal reinforcement, closure method, and cut-outs for glazing, and finishes.
- B. Product Data: Submit door configurations, location of cut-outs for hardware reinforcement.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ANSI A250.8.
- B. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation board.

1.5 QUALIFICATIONS

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

- B. Installer: Company specializing in performing work of this section with minimum three years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept doors on site in manufacturer's packaging. Inspect for damage.
- B. Break seal on site to permit ventilation.

1.7 COORDINATION

- A. Coordinate Work with door opening construction, door frame, and door hardware installation.
- B. Coordinate installation to accommodate door hardware electric wire connections.

PART 2 PRODUCTS

2.1 HOLLOW METAL DOORS

- A. Manufacturers:
 - 1. Amweld Building Products, Inc.
 - 2. Ceco Door Products.
 - 3. Kewanee Corp.
 - 4. Pioneer Industries.
 - 5. Republic Builders Products.
 - 6. Steelcraft.
 - 7. Or equal.
- B. Product Description:
 - 1. Doors (Non-Rated): ANSI A250.8, SDI 108, 1-3/4 inch thick.
 - a. Level 2 – Heavy Duty, Model 1, full flush design.

2.2 COMPONENTS

- A. Face: Steel sheet in accordance with ANSI A250.
- B. End Closure: Channel, 0.04 inches thick, flush.
- C. Core: Polyurethane foam.
 - 1. Thermal Insulated Door: Total insulation R-Value of 11 minimum calculated in accordance with ASTM C518.

2.3 ACCESSORIES

- A. Primer: ANSI A250.10 rust inhibitive type.

2.4 FABRICATION

- A. Fabricate doors with hardware reinforcement welded in place.

2.5 SHOP FINISHING

- A. Steel Sheet: Galvanized to ASTM A653/A653M A60.
- B. Primer: Baked.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify opening sizes and tolerances are acceptable.

3.2 INSTALLATION

- A. Install doors in accordance with ANSI A250.8.
- B. Coordinate installation of glass and glazing specified in Section 08 80 00.
- C. Coordinate installation of doors with installation of frames specified in Section 08 12 13 and hardware specified in Section 08 71 00.
- D. Touch-up damaged shop finishes.

3.3 ERECTION TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.4 ADJUSTING

- A. Adjust door for smooth and balanced door movement.

END OF SECTION

SECTION 08 36 13

SECTIONAL DOORS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes electric overhead sectional door and operating hardware,

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. Door and Access Systems Manufacturers Association International:
 - 1. DASMA 102 - Specifications for Sectional Overhead Type Doors.
- C. National Electrical Manufacturers Association:
 - 1. NEMA MG 1 - Motors and Generators.

1.3 SYSTEM DESCRIPTION

- A. Operation: Electric.
- B. Wind Loads: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as calculated in accordance with applicable code and with ASCE 7.
 - 1. Design Pressure: Minimum 20 lb/sq ft.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
- C. Product Data: Submit component construction, anchorage method, and hardware.
- D. Samples: Submit exterior and interior panel finish samples, illustrating color and finish.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data:
 - 1. Include electrical control adjustment recommendations.
 - 2. Include data for [motor and] transmission, shaft and gearing, lubrication frequency, periodic adjustments required, and spare part sources.

1.6 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.
- B. Perform Work in accordance with DASMA 102, Application Type Commercial Industrial.
- C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Section 01 60 00 – Product Requirements: Product storage and handling requirements.
- B. Store products in manufacturer's unopened labeled packaging until ready for installation.
- C. Protect materials from exposure to moisture until ready for installation.
- D. Store materials in a dry, ventilated weathertight location.

1.9 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for electric operating equipment.

PART 2 PRODUCTS

2.1 SECTIONAL OVERHEAD DOORS

- A. Manufacturers:
 - 1. Overhead Door Corporation Model 593.
 - 2. Or equal.
- A. Product Description: Steel overhead sectional doors, electric operation, stock configuration and hardware.
 - 1. Door Nominal Thickness: 2 inches thick.

2.2 INSULATED SECTIONAL OVERHEAD DOORS

- A. Insulated Steel Sectional Overhead Doors: Units shall have the following characteristics:

1. Door Assembly: Metal/foam/metal sandwich panel construction, with hot melt thermal break and weather-tight ship-lap design meeting joints.
 - a. Panel Thickness: 1-3/8 inches (35 mm).
 - b. Exterior Surface: Ribbed, textured.
 - c. Exterior Steel: .015 inch (.38 mm), hot-dip galvanized.
 - d. End Stiles: 20 gauge.
 - e. Spring Counterbalance: Sized to weight of the door, with a helically wound, oil tempered torsion spring mounted on a steel shaft; cable drum of diecast aluminum with high strength galvanized aircraft cable. Sized with a minimum 7 to 1 safety factor.
 - 1) Standard cycle spring: 10,000 cycles.
 - f. Insulation: CFC-free and HCFC-free polyurethane, fully encapsulated.
 - g. Thermal Values: Tested installed assembly U-factor of 0.15 Btu/hr/SF degrees F; calculated section R-value of 12.76.
 - h. Air Infiltration: 0.08 cfm at 15 mph; 0.15 cfm at 25 mph.
 - i. Partial Glazing of Steel Panels:
 - 1) 1/2 inch Low E Insulated glazing.

2.3 ACCESSORIES

- A. Track: Rolled galvanized steel, size and thickness recommended by manufacturer to suit loading requirements and clearances, continuous one piece for each side; galvanized steel mounting brackets minimum.
- B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers.
- C. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.
- D. Sill Weatherstripping: Resilient bulb type seal, one piece; fitted to bottom of door panel, full length contact.
- E. Jamb Weatherstripping: Resilient flexible seal.
- F. Head Weatherstripping: Resilient flexible seal, one piece full length.

2.4 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Electrical Characteristics:
 1. 1/2 hp; manually operable in case of power failure; transit speed of nominal 12 inches per second.
 2. 115 volts, single phase, 60 Hz.
- B. Motor Type: NEMA MG1.
- C. Disconnect Switch: Factory mount disconnect switch on equipment.
- D. Electric Operator: UL listed standard duty electric operator, center mounted on cross head shaft, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second. Operator shall meet UL325/2010 requirements for continuous monitoring of safety devices.
- E. Control Station: Standard three button (open-close-stop) continuous pressure type, control for each electric operator; 24 volt circuit, surface mounted.

- F. Hand Held Transmitter: Digital control, resettable.
- G. Photoelectric Sensor: Furnish system which detects obstruction and reverses door without requiring door to contact obstruction.

2.5 FACTORY FINISHING

- A. Exterior Surfaces: Precoat of color as selected.
- B. Interior Surfaces: Precoat of white.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.
- C. Verify electric power is available and of correct characteristics.

3.2 PREPARATION

- A. Prepare opening to permit correct installation of door unit to perimeter air and vapor retarder seal.
- B. Apply primer to wood frame.

3.3 INSTALLATION

- A. Anchor assembly to wall construction and building framing without distortion or stress.
- B. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- C. Fit and align door assembly including hardware.
- D. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.
- E. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07 90 00.
- F. Install perimeter weatherstripping.

3.4 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation from Plumb: 1/16 inch.
- C. Maximum Variation from Level: 1/16 inch.

- D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.
- E. Maintain dimensional tolerances and alignment with adjacent work.

3.5 MANUFACTURER'S FIELD SERVICES

- A. Section 01 40 00 - Quality Requirements: Manufacturers' field services.
- B. Ensure operation and adjustments to door assembly for specified operation.

3.6 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust door assembly to smooth operation and in full contact with weatherstripping.

3.7 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Clean doors, frames and glass.
- C. Remove temporary labels and visible markings.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Furnish hardware required to complete the work as shown on the drawings and as specified herein;
 - 2. Furnish trim attachments and fastenings, specified or otherwise required, for proper and complete installation.
 - 3. Furnish all items of Finish Hardware specified, scheduled, shown or required herein except those items specifically excluded from this section of the specification.
- B. Related Sections:
 - 1. Section 08 12 13 – Hollow Metal Frames.
 - 2. Section 08 13 13 – Hollow Metal Doors.

1.2 DEFINITIONS

- A. "Finish Hardware": Items required for swinging doors, except special types of unique and non-matching hardware specified under door and frame Sections of these Specifications.

1.3 DESIGN REQUIREMENTS

- A. Thoroughly review finish hardware schedule, comparing it with the floor plan, door schedule, and door details to verify hardware requirements, quantities, door swings, finishes, and sizes.
- B. If an inconsistency or error in the proposed construction documents is suspected, the hardware supplier is to bring it immediately to the attention of the Architect. If the quantity of items is questioned, for bidding purposes, assume the higher quantity is required and price accordingly.
- C. Architect's review of Submittals is for design concept only, and does not relieve the Contractor of the responsibility to furnish sufficient material and functions required for a complete, and code-worthy installation. Determination of all quantities is the responsibility of the Contractor.

1.4 PERFORMANCE REQUIREMENTS

- A. Furnish finish hardware complying with the requirements of laws, codes, ordinances and guidelines of governmental authorities having jurisdiction:
- B. NFPA 101, "Life Safety Code", 2000 edition.
- C. International Building Code - 2009 Edition
- D. ANSI A117.1-2003 Accessible and Usable Buildings and Facilities

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Hardware Schedule:

1. Submit "Finish Hardware Schedule" in the following format:
 - a. Vertically-typed, double-spaced;
 - b. Organized into "hardware sets", indicating complete designations of every item required for each door or opening. Include the following information for each item of finish hardware:
 - 1) Manufacturer
 - 2) Type
 - 3) Style
 - 4) Function
 - 5) Size
 - 6) Degree and direction of opening swing ("hand")
 - 7) Finish
 - 8) Fasteners
 - 9) Location of hardware set cross-referenced to indications on floor plans, door, schedule, and frame schedule.
 - 10) Explanation of all abbreviations, symbols, codes, etc. contained in schedule.
 - 11) Mounting heights and locations for hardware.
 - 12) Door and frame sizes and materials.
 - 13) Keying information.
 - c. Electrified Hardware system operation description.

C. Product Data:

1. Submit, in booklet form Manufacturers Catalog cut sheets of scheduled hardware.
2. Submit product data with hardware schedule.

D. Electrified Hardware Drawings:

1. Submit Riser & Wire Diagram RPIJB0217 drawings showing relationship of all electrical hardware components to door and frame. Indicate number and gage of wires required. RPIJB0217 shall be included with the submittals.
 - a. Include wiring drawing showing point to point wire hook up for all components.
 - b. Include system operations descriptions for each type of opening; describe each possible condition

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with the following requirements:

1. ANSI A156 series.
2. NFPA 80.
3. UL 305.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Source limitations: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

- B. Package hardware items individually with necessary fasteners, instructions, and installation templates, when necessary; label and identify each package with door opening code to match hardware schedule.
 - 1. Include instructions, templates, and fasteners needed for installation.

1.9 COORDINATION

- A. Section 01 31 00 - Project Management and Coordination: Coordination and project conditions.
- B. Coordinate Owner's keying requirements during course of Work.

PART 2 PRODUCTS

2.1 GENERAL

- A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each finish hardware item is indicated in the Drawings.
- B. Product designations:
 - 1. Provide the product designated or the comparable product by the Manufacturers listed under this Section.
- C. ANSI/BHMA designations:
 - 1. Used to describe hardware items, or to define quality or function. Provide products complying with these standards in addition to additional requirements of this Section.
- D. Hand of door: Drawings show direction of slide, swing ("hand") of door leaves.
- E. Hardware: Use hardware manufactured to conform to published templates and, generally, prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.

2.2 MATERIALS

- A. Base metals:
 - 1. Manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially-recognized) quality than that specified for applicable hardware units by applicable ANSI A156 series standard for each type hardware item and with ANSI A156.18 for finish designations indicated.
 - 2. Do not furnish "optional" materials for those indicated, except as otherwise specified.
- B. Fasteners:
 - 1. Furnish Phillips flat-head screws with each hardware item, unless otherwise indicated.
 - 2. Exposed screws: Match finish of hardware (even where noted to be "prepared for paint").
 - 3. Use concealed fasteners for hardware units which are exposed when door is closed, except where no standard units of type specified are available with concealed fasteners.
 - 4. Do not use thru-bolts where bolt head or nut on opposite face would be exposed.
 - 5. Where adequate reinforcement is not feasible, thru-bolting would only be acceptable if through sleeves, or if sex-screw fasteners are used.
- C. Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of finish hardware.

2.3 MANUFACTURED UNITS

- A. Reference standards:
 - 1. Comply with BHMA/ANSI A156 current series for each product type.
- B. Hardware finishes:
 - 1. Materials and Finishes Standard: Comply with ANSI A156.18 (BHMA 1301). Finish designations used in schedules are listed, therein.
 - 2. Provide matching finishes for hardware units at each door, unless otherwise indicated.
 - 3. Match the color and texture of hardware items to manufacturer's standard finish for the latchset, lockset, or push-pull unit.
 - 4. Provide quality of finish, including thickness of plating or coating, composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than that specified or described by referenced standards.
- C. Hardware for fire-rated openings:
 - 1. Comply with NFPA 80.
 - 2. Tested and listed by Underwriters Laboratory (UL), or Factory Mutual (FM) for type, size and use of door, and complying with requirements of door and door frame label.
 - 3. Provide UL or FM label on door indicating "Fire door to be equipped with fire-exit hardware".
 - 4. Provide UL or FM label on exit device indicating "Fire Exit Hardware".

2.4 PRODUCTS

- A. Hinges:
 - 1. Butt Hinges:
 - a. ANSI A156.1 - for commercial quality.
 - b. Provide only template-produced units.
 - c. All butt hinges to be ball bearing-5 knuckle type Standard or Heavy Weight as specified.
 - d. Hinges at exterior doors shall be of non-ferrous material.
 - e. All hinges shall be provided Non-removable (NRP)
 - f. Size and number of hinges as specified; otherwise according to hinge manufacturer's recommendation for door size and weight.
 - 2. Acceptable products: PDQ, PBB, SDC
- B. Lock Cylinders and Keying:
 - 1. General:
 - a. Supplier shall meet with Owner and Architect to finalize keying direction and furnish a complete key schedule. The key schedule shall include keysets, marks and key schedule corresponding to each opening.
 - 2. Cylinders:
 - a. Type: Mortise or rim-type as required by function of locking device.
 - b. Provide screw on cams or tail piece as required.
 - c. Construct lock cylinder parts from brass/bronze, stainless steel or nickel silver.
 - d. Provide solid machined cylinder rings with tension spring to resist wrenching of cylinder. Length, finish and size as required.
 - e. Provide cylinder(s) and core(s) as required by function for each locking device.
 - 3. System:
 - a. Provide cylinders and keys keyed to the owners' existing Sargent key system
 - 4. Keying:
 - a. Deliver keys and final cores to the hardware installation Contractor for final installation, when directed by the Owner.

- b. Comply with Owner's instructions for master keying and, except as otherwise indicated, provide individual change key for each lock which is not designated to be keyed alike with a group of related locks.
 - c. Key material: Nickel silver
 - d. Key quantity:
 - 1) Two (2) change keys for each lock.
- C. Locksets:
 - 1. Cylindrical Locks
 - a. Comply with ANSI A156.2 –Series 4000, Grade 1 criteria for cylindrical locks
 - b. Function: Indicated in the hardware sets.
 - c. Provide appropriate fasteners for lock and strike.
 - d. Locks shall be built in the USA.
 - e. Trim: BSN, equal to PDQ.
 - 2. Acceptable products: PDQ GT, Sargent 11 Line
- D. Door closers:
 - 1. General:
 - a. ANSI A156.4 - 1986 Grade 1 criteria.
 - b. All closers shall be the products of one manufacturer.
 - 2. Description:
 - a. Full rack-and-pinion type
 - b. Cast Iron Body.
 - c. Hydraulic fluid: non-gumming and non-freezing.
 - d. Closer body: non-handed, multi-size spring power.
 - e. With three non-critical V valves and hex key adjustment to independently regulate sweep latch speed and backcheck.
 - f. Provide mounting brackets necessary to clear sound seals and weatherstrip.
 - g. Enclose in a full, molded cover.
 - h. Provide drop plates or special brackets for proper mounting.
 - i. Pressure Relief Valves will not be accepted on Door Closers.
 - j. Provide Barrier Free power setting as required by ANSI A117.1
 - k. Where SCS is specified, furnish a Stainless-Steel swivel snubber. Stationary snubbers, rubber grommets and studs will not be accepted.
 - 3. Acceptable products: PDQ 7000, LCN 4041XP
- E. Stops:
 - 1. General:
 - a. ANSI A156.16 - 1989 Grade 1 criteria.
 - b. Provide stops where scheduled, wall or floor, as opening conditions dictate, utilizing wall stops wherever possible.
 - 2. Description:
 - a. Wall stops: Cast brass, bronze or stainless steel. Concave wall stop to have stainless steel washer imbedded in rubber stop.
 - b. Floor stops: Cast Stainless, brass or bronze, and plated as required.
 - c. Make selection of floor stop height based upon floor conditions and door undercut.
 - d. Overhead Stops: Stainless steel body sized for width of door.
 - 3. Acceptable products: Don Jo, PDQ, Hiawatha
- F. Kick plates, mop plates and armor plates:
 - 1. General: ANSI A156.16 - 1989 criteria.
 - 2. Description:
 - a. Minimum .050" thick
 - b. Dimensions:
 - 1) Width: 2" less than door width to which they are to be applied.
 - 2) Kick plate height: 10"

3. Mounting:
 - a. Install kick plates and armor plates flush to bottom edge of door.
 - b. Notch armor plates for lock or exit device trim or active case.
4. Acceptable manufacturers: Don Jo, Hiawatha, PDQ

G. Miscellaneous Hardware Equipment and Material:

1. General:
 - a. Provide items and types as specified.

2.5 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

2.6 HARDWARE FINISHES

A. General:

1. Provide matching finishes for hardware units at each door or opening, to the greatest extent possible and except as otherwise indicated.
2. Reduce differences in color and textures as much as commercially possible where the base metal or metal forming process is different for individual units of hardware exposed at the same door or opening.
3. In general, match items to the manufacturer's standard finish for the latch and lock set (or push/pull units if no latch/lock sets) for color and texture.
4. Provide finishes matching those established by BHMA or, if none established, match the Architect's sample.
5. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness and other qualities complying with manufacturer's standards, but in no case less than that specified for the applicable units of hardware by referenced standards.
6. Finish designations used in schedules and elsewhere listed in ANSI A156.18 "Materials and Finishes Standard", including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.

- B. Provide the following hardware finishes, unless otherwise scheduled: Dull Chrome, Stainless Steel, and Aluminum color pallet.

- C. Base material: Manufacturer's standard high-carbon steel, brass, or bronze.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify doors and frames are ready to receive door hardware and dimensions are as indicated on shop drawings.
- B. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

- B. General:
 - 1. Install each item in its proper location firmly anchored into position, level and plumb, and in accordance with the manufacturer's recommendations.
 - 2. Hanging, hardware heights, locations, and degree of opening swing are indicated in the Drawings and Finish Hardware Schedule.
 - 3. Mount finish hardware units:
 - a. At recommended heights and locations as shown in approved finish hardware schedule, complying with requirements of the A.D.A., and pertinent provisions of the Building Code.
 - b. To function at proper degree of opening of doors as indicated on approved finish hardware schedule.
 - c. By manufacturer's template.
 - d. Prior to final finishing of the door. Remove hardware to allow finishing of door, and permanently reinstall hardware upon completion of finishing operation.
 - 4. Reinforce, where necessary, the substrate to assure proper attachment.
 - 5. Drill and countersink units which are not factory-prepared for anchorage fasteners.
 - 6. Space fasteners and anchors in accordance with industry standards.
- C. Installing closers:
 - 1. Mount closers per manufacturer's template and secure the Architect's approval of the closer installation.
 - 2. The Contractor will be required to replace doors onto which closers are improperly mounted at no additional cost to the Owner. Repair or patching of such doors will not be acceptable.
- D. Installing Stops: Install all wall stops into reinforced wall or stud. Projection type wall stops (115) should be mounted 80" from finish floor, with sloped portion of the stop facing up / flat side down. Install floor stops out of the way foot traffic at a height high enough to accommodate any ramp or uneven floor condition.

3.3 ADJUSTING AND CLEANING

- A. Check and adjust each item of hardware and each door upon completion of final installation. Verify proper function, and replace units which cannot be made to operate freely and smoothly, as intended for the application.
- B. Clean adjacent surfaces soiled by hardware installation.

3.4 PROTECTION OF INSTALLED CONSTRUCTION

- A. Do not permit adjacent work to damage hardware or hardware finish.

END OF SECTION

SECTION 09 90 00
PAINTING AND COATING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and field application of paints, stains, and other coatings.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.
 - 2. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials.
 - 3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. Painting and Decorating Contractors of America:
 - 1. PDCA - Architectural Painting Specification Manual.
- C. SSPC: The Society for Protective Coatings:
 - 1. SSPC - Steel Structures Painting Manual.

1.3 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this section.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on finishing products.
- C. Samples:
 - 1. Submit paper chip samples illustrating range of colors available for each surface finishing product scheduled.
- D. Manufacturer's Installation Instructions: Submit special surface preparation procedures, and substrate conditions requiring special attention.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

1.6 QUALITY ASSURANCE

- A. Surface Burning Characteristics:

1. Fire Retardant Finishes: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.
- B. Applicator: Company specializing in performing work of this section with minimum three years documented experience and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- C. 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.
- D. Paint Materials: Store at minimum ambient temperature of 45 degrees F and maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements.
- B. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.
- C. Do not apply exterior coatings during rain or snow when relative humidity is outside humidity ranges, or moisture content of surfaces exceed those required by paint product manufacturer.
- D. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.
- F. Provide lighting level of 80 ft candle measured mid-height at substrate surface.

1.10 SEQUENCING

- A. Section 01 10 00 - Summary: Work sequence.
- B. Sequence application to the following:
 1. Do not apply finish coats until paintable sealant is applied.
 2. Back prime wood trim before installation of trim.

1.11 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five-year manufacturer warranty for paints and coatings.

PART 2 PRODUCTS

2.1 PAINTS AND COATINGS

- A. Manufacturers: Paint
 - 1. Glidden Coatings and Resins
 - 2. Benjamin Moore and Company
 - 3. Sherwin Williams Company
 - 4. Valspar Corporation
 - 5. Devoe Paint Co.
 - 6. Fuller-O'Brien.
 - 7. PPG Architectural Finishes.

2.2 COMPONENTS

- A. Coatings: Ready mixed, except field catalyzed coatings. Prepare coatings:
 - 1. To soft paste consistency, capable of being readily and uniformly dispersed to homogeneous coating.
 - 2. For good flow and brushing properties.
 - 3. Capable of drying or curing free of streaks or sags.
- B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve finishes specified; commercial quality.
- C. Patching Materials: Latex filler.
- D. Fastener Head Cover Materials: Latex filler.

2.3 FINISHES

- A. Exterior Paint Systems (EPS-1):
 - 1. System EPS-1: Gloss Alkyd Enamel:
 - a. 1st Coat; (Primer):
 - 1) Ferrous Metal: Red oxide primer (TT-P-645).
 - 2) Galvanized Metal: Galvanized primer (TT-P-641).
 - b. 2nd Coat and 3rd Coat:
 - 1) Gloss Alkyd Enamel (TT-E-489, Class A).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

- B. Verify surfaces and substrate conditions are ready to receive Work as instructed by product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report conditions capable of affecting proper application.
- D. Test shop applied primer for compatibility with subsequent cover materials.
- E. Measure moisture content of surfaces using electronic moisture meter. Do not apply finishes unless moisture content are within manufacturers limitations.

3.2 PREPARATION

- A. Surface Appurtenances: Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- B. Surfaces: Correct defects and clean surfaces capable of affecting work of this section. Remove or repair existing coatings exhibiting surface defects.
- C. Metal Doors and Frames Scheduled for Painting: Prime metal door top and bottom edge surfaces.

3.3 APPLICATION

- A. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- B. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless specified otherwise.
- C. Sand surfaces lightly between coats to achieve required finish.
- D. Use tack cloth to remove dust and particles just prior to applying next coat.

3.4 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Collect waste material which may constitute fire hazard, place in closed metal containers, and remove daily from site.

3.5 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING

- A. Hollow metal doors and frames: EPS-1.

END OF SECTION

SECTION 10 44 00
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes fire extinguishers and brackets for wall mounting.

1.2 REFERENCES

- A. National Fire Protection Association:
 - 1. NFPA 10 - Standard for Portable Fire Extinguishers.
- B. Underwriters Laboratories Inc.:
 - 1. UL - Fire Protection Equipment Directory.

1.3 PERFORMANCE REQUIREMENTS

- A. Conform to NFPA 10 and applicable code.
- B. Provide extinguishers classified and labeled by Underwriters Laboratories Inc. for purpose specified and indicated.
- C. Provide fire extinguisher cabinets classified and labeled by Underwriters Laboratories Inc. for purpose specified and indicated.

1.4 SUBMITTALS

- A. Shop Drawings: Indicate cabinet physical dimensions, rough-in measurements for recessed cabinets, wall bracket mounted measurements, location, and.
- B. Product Data: Submit extinguisher operational features, color and finish, and anchorage details.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit test, refill or recharge schedules and re-certification requirements.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not install extinguishers when ambient temperature are capable of freezing extinguisher ingredients.

PART 2 PRODUCTS

2.1 FIRE EXTINGUISHERS

- A. Manufacturers:

1. JL Industries Cosmic Extinguisher as basis for design.
 2. The Ansul Company.
 3. Larsen's Manufacturing Co.
 4. Nystrom Products Co.
 5. Potter Roemer.
 6. Or equal.
- B. Multi-Purpose Chemical Type: Cast steel tank, with pressure gage; 3A-40BC, located as shown in Drawings.
1. Extinguisher Finish: Steel, enamel to red color.
- C. Fire Extinguisher Bracket: Provide manufacturer's steel bracket with powder coat paint.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify rough openings for cabinet are correctly sized and located.

3.2 INSTALLATION

- A. Install bracket plumb and level, maximum 48 inches from finished floor to top of extinguisher handle.
- B. Secure rigidly in place.
- C. Install extinguisher on bracket.

END OF SECTION

SECTION 22 0001

GENERAL PLUMBING REQUIREMENTS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. This Division includes all labor, materials, equipment, tools, supervision, start-up services, Owner training, etc., including all incidental and related items, necessary to complete installation and successfully test and start up and operate the Plumbing systems indicated on the drawings, AND as described in each Section of Division 220000 Specifications.
- B. All drawings and General Provisions of the Contract, including the General Conditions, Supplementary General Conditions, and Division 1 specification sections, apply to work of all Division 22 sections. The items in this section are not intended to supersede, but are supplementary to, the requirements set forth in other Divisions of the specifications.
- C. The Contractor, and their Subcontractors and Suppliers, shall include in their bid all materials, labor, and equipment involved, in accordance with all local customs, codes, rules, regulations; and secure compliance of all parts of the Specifications and Drawings regardless of Sectional inclusion in these Specifications.
- D. The Contractor shall be responsible for the complete and satisfactory accomplishment of all Work inclusive of whatever miscellaneous material and/or appurtenances are required to perfect the installation, and demonstrate that all plumbing/mechanical systems will operate satisfactorily under normal operating conditions.

1.02 DRAWINGS & SPECIFICATIONS

- A. The drawings are diagrammatic and show the general location and arrangement of equipment, piping and related items. They shall be followed as closely as elements of the construction will permit. The Contractor shall provide/install all plumbing systems, and associated equipment, complete and include all necessary offsets, fittings, and other components required due to interferences, space constraints, code requirements, etc. as required to provide a complete/functional system.
- B. The general plumbing requirements are intended to augment the drawings and specifications. Should conflicts occur between the drawings and the specifications, the strictest provision shall govern. Where there are conflicts or differences between the drawings for the various trades, report such conflicts or differences to the ARCHITECT and/or ENGINEER for resolution prior to rough-in.
- C. The Contractor shall examine the drawings of all other trades in order to verify the conditions governing the work on the job site and arrange their work accordingly, providing all piping, fittings, traps, valves and accessories as may be required to meet such conditions.
- D. Deviations from the drawings, with the exception of minor changes in routing and other such incidental changes that do not affect the functioning or serviceability of the systems, shall not be made without the written approval of the ARCHITECT and/or ENGINEER.
- E. The architectural and structural drawings take precedence in all matters pertaining to the building structure; plumbing drawings in all matters pertaining to plumbing trades; Mechanical drawings in all matters pertaining to mechanical trades; and electrical drawings in all matters pertaining to electrical trades. Where there are conflicts or differences between the drawings for the various trades, report such conflicts or differences to the ARCHITECT and/or ENGINEER for resolution prior to rough-in.

1.03 COORDINATION OF WORK

- A. The Contractor and his Subcontractors shall be responsible for all tasks applicable to their work in accordance with the Specifications, Drawings, and code requirements, and shall be responsible for coordinating locations and arrangements of their work to give best results with all other relevant trades.
 - 1. Coordinate their work to obtain symmetry in ceiling layouts, so that lights, diffusers, piping, etc. are coordinated and are installed per the Architectural reflected ceiling plan.
 - 2. Coordinate all wall, roof, floor penetrations, etc. with architectural and structural trades prior to rough-in.
 - 3. Verify requirements of all equipment with shop drawing submittals prior to installation - notify Architect/Engineer of any conflicts between shop drawings and plans prior to rough-in.
 - 4. Do not route/locate below grade piping below, or with 45 degrees of the bottom corner of, foundation walls/footings. Coordinate with structural trades prior to installing piping. Any piping that crosses through/under foundation walls/footings shall be sleeved within a steel pipe sleeve at least 2" larger than the service pipe.
 - 5. Verify clearance requirements of all mechanical, electrical, plumbing equipment/systems prior to the installation of any new work. Plumbing equipment, piping, systems, etc. shall not interfere with electrical equipment spaces. Electrical conduit and equipment clearances shall not interfere with mechanical/plumbing equipment spaces.

1.04 INSPECTION OF SITE AND PROJECT DOCUMENTATION

- A. The CONTRACTOR shall visit the site and examine/verify the conditions under which the work must be conducted before submitting proposal. Examine the drawings and specifications of all other trades including Mechanical, Architectural, Structural and Electrical.
- B. The CONTRACTOR shall notify the ARCHITECT and/or ENGINEER, prior to submitting their bid via Request For Information (RFI), of any potential problems that he has identified during his inspection of the site or from the review of plans/specifications. RFIs must be submitted at least 5 working days prior to bid opening.

1.05 GENERAL SUPPORT REQUIREMENTS

- A. Provide all necessary angle/brackets, hangers, or supplementary supporting steel as required for adequate support for all piping, and equipment. Secure approval from Architect and/or Structural Engineer, in writing, before welding or bolting to steel framing or anchoring to concrete structure, or cutting/coring thru structural systems
- B. Install plumbing and mechanical piping systems with adequate anchors, guides, expansion loops, etc. as required to provide for piping expansion/contraction.

1.06 GUARANTEE

- A. CONTRACTOR shall guarantee that all labor, materials, and equipment are free from defects and agrees to replace or repair any part of this installation which becomes defective within a period of one year from the date of substantial completion following final acceptance. Acceptance date of substantial completion shall be as determined by the ARCHITECT and/or ENGINEER.
- B. The CONTRACTOR shall file with the OWNER any and all guarantees from the equipment manufacturers including the operating conditions and performance capacities they are based on.

1.07 CODES, PERMITS AND FEES

- A. Refer to Division 1, General Conditions and Supplementary Conditions.
- B. Unless otherwise indicated, all required permits, plan reviews, licenses, inspections, approvals and fees for plumbing work shall be submitted for plan review, and secured & paid for by the

CONTRACTOR, and/or their Sub-Contractors.

- C. All work shall be executed in accordance with the latest enforceable rules and regulations set forth in local and state codes.
 - 1. Mechanical and Plumbing systems shall be installed per current jurisdictional codes (Michigan Mechanical Code, Michigan Plumbing Code, International Fuel Gas Code, etc.), current NFPA codes (NFPA 101, NPFA 90, etc.), and applicable sections of the Michigan Building Code.
- D. In the event that the plans and specifications conflict with any rules, regulations, or codes applying, said rules, regulations and codes shall govern.
- E. Where the drawings and/or specifications indicate materials or construction in excess of code requirements, the drawings and/or specifications shall govern.
- F. The CONTRACTOR, and/or their Sub-Contractors, shall submit the plans/specs which are required by the governing authorities (i.e. Mechanical / Plumbing plan review & permit, AHJs, Etc.) for plan review & permit approval.

1.08 UTILITIES

- A. The CONTRACTOR shall be responsible for coordinating, obtaining new utility services and/or revising existing utility services, and advising the ENGINEER/OWNER, and utility company(s) for any of the following utilities that may be pertinent to the project including: Storm sewer, and Natural/Propane Gas service installations.
- B. Rules of local utility companies shall be complied with. The CONTRACTOR shall check with each utility company supplying service to the installation (i.e. Storm, Gas, etc.) and coordinate service requirements including, but not limited to, all valves, meters, regulators, etc. which will be required. The OWNER shall pay for any "direct" utility charges required for new/revised service.
- C. In the event that the plans and specifications conflict with any utility rules, regulations, or codes applying, said utility rules, regulations and codes shall govern.

1.09 RECORD DRAWINGS

- A. The CONTRACTOR shall keep accurate notes of all deviations from the construction documents and discrepancies of construction on field drawings as they occur. The marked up field documents shall be available for review by the ARCHITECT and/or ENGINEER, and OWNER at their request.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 INSTALLATION OF EQUIPMENT

- A. Install equipment in strict accordance with all directions and recommendations furnished by the manufacturer. Where such directions are in conflict with the drawings and specifications, report such conflicts to the ARCHITECT and/or ENGINEER for resolution.

3.02 WORK INVOLVING OTHER TRADES

- A. Certain items of equipment or materials specified in the Plumbing Division may have to be installed by other trades due to code requirements or union jurisdictional requirements. In such instances, the Contractor shall complete the work through an approved, qualified subcontractor and shall include the full cost for same in his bid.

3.03 COORDINATION

- A. Install work to avoid interference with work of other trades including, but not limited to, architectural and electrical trades. Remove and relocate any work that causes an interference at CONTRACTOR's expense. Disputes regarding the cause of an interference shall be resolved by

the ARCHITECT and/or ENGINEER.

3.04 CHASE, SHAFTS AND RECESSES

- A. Coordinate with structural, architectural and other trades to ensure accurate location and size of chases, shafts and recesses required for plumbing systems/piping.

3.05 SLEEVES

- A. Provide and install Schedule 40 black steel pipe sleeves, cut to length, wherever pipes pass through above grade walls and floors. Provide and install galvanized steel pipe sleeves, cut to length, wherever pipes pass through below grade foundation walls and slab on grade floors. Sleeves shall terminate flush with walls in finished areas. All sleeves through the floor are to extend two (2) inches above finish floor.
- B. Provide escutcheons at each penetration through walls, floors, and ceilings in exposed areas.
- C. Patch sleeves to match building material.

3.06 SEALING OF PLUMBING OPENINGS

- A. Seal the space around pipes and sleeves through roofs, walls, floors and ceilings.
- B. Refer to specification 078400-Firestopping.
- C. Provide adequate clearance to allow for proper pipe movement and sealing.
- D. Provide/install fireproof wall and floor sleeves as required by applicable building codes at all applicable wall, ceiling, and floor penetrations. Refer to Architectural plans for fire rated assembly ratings & locations.
- E. Sleeves placed in floors shall be flush with the underside of the floor construction and shall have planned, square ends, extending 2 inches above the finished floor, unless otherwise noted or detailed.
- F. Where sleeves pass through reinforced concrete floors, they shall be properly set in position prior to concrete pouring in such a way that they will be maintained in position until the concrete is set.
- G. Pipes passing through below grade perimeter walls or slabs on grade shall have the space between the pipe and sleeve sealed watertight with a mechanically expandable elastomer seal device.
- H. Penetrations through fire rated floors and walls shall be fire-stopped in accordance with applicable building code requirements with UL and FMRC approved materials and shall have a fire rating equal to or greater than the fire partition rating. Refer to architectural plans for locations and assembly ratings.
 - 1. Packing: Refractory fiber or ceramic fiber.
 - a. Manufacturers:
 - 1) Carborundum Fiberfrax.
 - 2) Johns-Manville - Cerafelt.
 - 3) Eagle Picher Epitherm 1200.
 - 4) Babcock and Wilcox Kaowool.
 - 2. Fire stop sealant.
 - a. Manufacturers:
 - 1) Hilti
 - 2) Tremco

- 3) Mameco
- 4) Pecora

3.07 CUTTING, CORING AND PATCHING

- A. Refer to General Conditions.
- B. Unless noted otherwise, the CONTRACTOR shall perform all cutting, coring, and patching that may be necessary for the installation of their Work. All cutting, coring, patching and repair work shall be performed by the CONTRACTOR through qualified Subcontractors. CONTRACTOR shall include full cost of same in his bid.
- C. Secure approval from Architect and/or Structural Engineer, in writing, before cutting, welding/bolting to, or anchoring from any structural building components (i.e. structural steel, load bearing walls, footings/foundations, concrete floors/ceilings, etc.).

3.08 EXCAVATION AND BACKFILLING

- A. Provide all excavation, trenching, tunneling and backfilling required for the plumbing work.
- B. Refer to Architectural/Structural specification sections for excavation and backfilling details.

3.09 EQUIPMENT FOUNDATIONS AND SUPPORTS

- A. Shall be as required or as shown on plans or specified.
- B. For equipment suspended from ceiling or walls, furnish and install all inserts, rods, structural steel frames, brackets and platforms required. Obtain approval of ARCHITECT and/or ENGINEER for same including loads, locations, and methods of attachment.

3.10 EQUIPMENT/FIXTURE CONNECTIONS

- A. Make connections to equipment, fixtures and other items included in the work in accordance with the approved shop drawings and rough-in measurements furnished by the manufactures of the particular equipment furnished.
- B. All piping connections to equipment shall be flanged or shall be made with unions to facilitate equipment removal.
- C. All piping connections to pumps, water heater, and other similar equipment shall be installed without strain at the pipe connection of this equipment.
- D. Brass unions for connections of 2 inch and less and flanged union with dielectric gasket and bolt sleeves for 2-1/2 inch and greater shall be used for equipment connections of dissimilar metals.

3.11 ACCESSIBILITY

- A. All equipment shall be installed so as to be readily accessible for operation, maintenance, and repair, as required by the equipment manufacturer and as subject to the approval of the ENGINEER.

3.12 CLEANING

- A. Each trade shall be responsible for removing all debris daily as required to maintain the work area in a neat, orderly condition.
- B. After equipment and systems have been completed and tested, each entire system shall be cleaned and flushed.
- C. Prior to connection of new piping to existing piping systems, all new piping shall be subject to initial flushing, cleaning and final flushing. Provide temporary bypass piping and fittings, temporary valves and strainers, temporary water make-up piping with approved means of backflow prevention, and temporary pumps as needed to perform specified flushing and cleaning requirements.

3.13 PROTECTION AND HANDLING OF EQUIPMENT AND MATERIALS

- A. Equipment and materials shall be protected from theft, injury or damage.
- B. Protect equipment outlets, pipe openings with temporary plugs or caps.
- C. Provide adequate storage for all equipment and materials delivered to the job site. Equipment set in place in unprotected areas must be provided with temporary protection.

3.14 GENERAL SUPPORT REQUIREMENTS

- A. Each trade shall provide all required supporting components to properly support their work. Supporting components/systems shall be in accordance with Code and as specified.
- B. Provide all necessary angle/brackets or supplementary steel as required for adequate support for all piping, ductwork, specialties, and equipment. Secure approval from ARCHITECT and/or Structural ENGINEER, in writing, before welding or bolting to steel framing or anchoring to concrete structure.

3.15 DRAWINGS AND MEASUREMENTS

- A. These specifications and accompanying drawings are intended to describe and provide for finished work. They are intended to be cooperative, and what is called for by either the drawings or specifications shall be as binding as if call for by both. The work herein described shall be complete in every detail.
- B. The Drawings are not intended to be scaled for rough-in measurements, nor to serve as Shop Drawings. Field measurements necessary for ordering materials and fitting the installation to the building construction and arrangement shall be taken by the Contractor. The Contractor shall check latest architectural drawings to locate equipment/fixtures/etc., check latest structural drawings for interferences, etc.

3.16 PIPING SYSTEMS TESTING

- A. Pressure test natural gas and propane gas piping in accordance with governing and applicable codes. At minimum, test with air at 100 PSIG - permissible pressure drop shall be 0 PSIG over 2-hour period.

3.17 EXTRA WORK

- A. For any extra work which may be proposed, the Contractor shall furnish to the General Contractor/Construction Manager, an itemized breakdown of the estimated cost of all materials and labor required to complete this work. The estimate cost breakdown shall include unit prices (same prices for increase/decrease of work) for all materials (i.e. duct, piping, valves, equipment, equipment rental, etc.) and all labor (i.e. manhours, overtime, etc.) which may be required for any proposed extra work. The Contractor shall not proceed until receiving a written order from the General Contractor establishing the agreed price and describing the work to be done.

END OF SECTION

SECTION 22 1005

PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe, pipe fittings, valves, and connections for piping systems.
 - 1. Storm water.
 - 2. Gas.

1.02 REFERENCE STANDARDS

- A. ANSI Z21.22 - American National Standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems.
- B. ASME B16.3 - Malleable Iron Threaded Fittings; The American Society of Mechanical Engineers.
- C. ASME B31.1 - Power Piping; The American Society of Mechanical Engineers (ANSI/ASME B31.1).
- D. ASME B31.9 - Building Services Piping; The American Society of Mechanical Engineers (ANSI/ASME B31.9).
- E. ASME (BPV IV) - Boiler and Pressure Vessel Code, Section IV - Rules for Construction of Heating Boilers; The American Society of Mechanical Engineers.
- F. ASTM A 53/A 53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- G. ASTM A 234/A 234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
- H. ASTM D 2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
- I. ASTM D 2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.
- J. ASTM D 2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings.
- K. ASTM D 3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- L. ASTM F 679 - Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.
- M. MSS SP-58 - Pipe Hangers and Supports - Materials, Design and Manufacture; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc..
- N. MSS SP-89 - Pipe Hangers and Supports - Fabrication and Installation Practices; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc..
- O. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc..
- P. NFPA 54 - National Fuel Gas Code; National Fire Protection Association.

1.03 QUALITY ASSURANCE

- A. Perform Work in accordance with State of Michigan, standards.

- B. Valves: Bear UL and FMRC label or marking. Manufacturer's name and pressure rating marked on valve body.
- C. Test drainage piping systems in accordance with their respective and applicable governing codes. Test drainage and waste piping hydraulically by filling the system to its highest point or at a static head of 10 feet, whichever is higher.
- D. Pressure test plumbing piping (domestic cold water, domestic hot water, hot water recirculation, etc.) in accordance with governing and applicable codes. At minimum, test with water at 225 PSIG - permissible pressure drop shall be 0 PSIG over 2 hour period.
- E. Pressure test natural gas/propane gas piping, compressed air piping, vacuum air piping, in accordance with governing and applicable codes. At minimum, test with air at 100 PSIG - permissible pressure drop shall be 0 PSIG over 2 hour period.

1.04 REGULATORY REQUIREMENTS

- A. Perform Work in accordance with State and local plumbing and mechanical codes.
- B. Conform to applicable code for installation of backflow prevention devices.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary protective coating on cast iron and steel valves.
- B. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- C. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.06 FIELD CONDITIONS

- A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 PLUMBING SYSTEM REQUIREMENTS

- A. Comply with ASME B31.9 and applicable federal, state, and local regulations.
- B. Piping: Provide piping, fittings, hangers and supports as required, as indicated, and as follows:
 - 1. Where more than one piping system material is specified, provide joining fittings that are compatible with piping materials and ensure that the integrity of the system is not jeopardized.
 - 2. Use non-conducting dielectric connections whenever jointing dissimilar metals.
 - 3. Provide pipe hangers and supports in accordance with ASME B31.9 unless indicated otherwise.
- C. Pipe-to-Valve and Pipe-to-Equipment Connections: Use flanges, or unions to allow disconnection of components for servicing; do not use direct welded, soldered, or threaded connections.
- D. Valves: Provide valves where indicated, and as follows:
 - 1. Isolate equipment using ball valves.

2.02 STORM WATER PIPING (ST, RC), BURIED WITHIN 5 FEET OF BUILDING

- A. PVC Pipe: ASTM D 2665, ASTM D 3034, or ASTM F 679.
 - 1. Fittings: PVC.
 - 2. Joints: Push-on, using ASTM F 477 elastomeric gaskets.

3. Note: All pipes passing under footings, or through foundation walls, shall be sleeved thru a steel pipe sleeve.

2.03 NATURAL GAS PIPING (G), BURIED WITHIN 5 FEET OF BUILDING

- A. Steel Pipe: ASTM A 53/A 53M Schedule 40 black.
 1. Fittings: ASTM A 234/A 234M, wrought steel welding type.
 2. Joints: ASME B31.1, welded.
 3. Jacket: AWWA C105/A21.5 polyethylene jacket or double layer, half-lapped 10 mil polyethylene tape.
- B. Soft Copper Tubing: ASTM B88, seamless and jointless soft copper tubing may be used for sizes 2 inch and smaller. No solder joints shall be permitted on below grade copper tubing.
- C. For sizes 2" and less: Seamless run of Pre-sleeved stainless steel flexible gas pipe with fully ventable polyethylene sleeve may be used where allowed by code.
 1. Manufacturer: OmegaFlex "TracPipe PS-2".
- D. Minimum System Pressure Rating: 100 psig

2.04 NATURAL GAS PIPING (G), ABOVE GRADE

- A. Steel Pipe: ASTM A 53/A 53M Schedule 40 black.
 1. Fittings: ASME B16.3, malleable iron, or ASTM A 234/A 234M, wrought steel welding type.
 2. Joints: NFPA 54, threaded (for pipe sizes 1" or less) or welded to ASME B31.1 (for pipe sizes 1-1/4" and larger).
- B. Corrugated Stainless Steel Tubing (CSST) may be used for short runs to equipment connections: ASTM A240, type 304 stainless steel with a minimum nominal wall thickness of 0.010 inches. System shall comply with ANSI LC-1 "Standard for Fuel Gas Piping Using Corrugated Stainless Steel Tubing (CSST), and carrying listings by CSA International (Certification Number 1009875), ICC Evaluation Services (Report Number ESR-1031) and IAPMO Research & Testing (Certificate of Listing Number 3250).
 1. Fittings: Corrugated stainless steel tube fittings: Mechanical tube fittings manufactured from ASTM B16 type 360 brass whose design incorporates a double wall flare for gas-tight seal with mechanical capture of the jacket for enhanced tubing protection. Include ends with threads according to ASME B1.20.1 for connection to threaded pipe or fittings.
 2. Protective Coating: Furnish corrugated stainless steel tubing with factory-applied corrosion-resistant polyethylene jacket for use in corrosive atmosphere. Coating properties include the following:
 - a. Corrugated stainless steel tube jacket shall be UV-Resistant polyethylene meeting the requirements of ASTM E84 for flame spread and smoke density.
 3. Low pressure, 0.5 psig (14 inch Water Column) or less, Natural Gas Systems: Use the following :
 - a. 1/2 to 2-inch NPS: CSST and brass fittings.
 4. Medium pressure, over 0.5 psig (14 inch Water Column = W.C.) up to 5 psig, Natural Gas Systems: Use the following:
 - a. 1/2 to 2-inch NPS: CSST and brass fittings.
- C. Isolation Valves: AGA approved and UL listed ball valves for sizes 3 inch and smaller and UL listed lubricated plug valves for sizes 4 inches and larger.
- D. Minimum System Pressure Rating: 100 psig.

2.05 FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 2-1/2 inches and Under:
 - 1. Ferrous pipe: Class 150 malleable iron threaded unions.
 - 2. Copper tube and pipe: Class 150 bronze unions with soldered joints.
- B. Flanges for Pipe Size Over 2-1/2 inches:
 - 1. Ferrous pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
 - 2. Copper tube and pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.
- C. Dielectric Connections: Union or waterway fitting with galvanized or plated steel threaded end, grooved end, copper solder end, water impervious isolation barrier. Victaulic Style 47 (or approved equal).

2.06 PIPE HANGERS AND SUPPORTS

- A. Plumbing Piping - Drain, Waste, and Vent:
 - 1. Conform to MSS SP-58.
 - 2. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Carbon steel, adjustable swivel, split ring.
 - 3. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
 - 4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 - 5. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
 - 6. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.
 - 7. Vertical Support: Steel riser clamp.
 - 8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 - 9. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- B. Plumbing Piping - Gas:
 - 1. Conform to MSS SP-58.
 - 2. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Carbon steel, adjustable swivel, split ring.
 - 3. Hangers for Cold Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
 - 4. Hangers for Hot Pipe Sizes 2 Inches to 4 Inches: Carbon steel, adjustable, clevis.
 - 5. Vertical Support: Steel riser clamp.
- C. Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
 - 1. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.
 - 2. Masonry Wedge Expansion Anchors: Complying with ICC-ES AC01.
 - 3. Concrete Screw Type Anchors: Complying with ICC-ES AC193.
 - 4. Masonry Screw Type Anchors: Complying with ICC-ES AC106.
 - 5. Concrete Adhesive Type Anchors: Complying with ICC-ES AC308.
 - 6. Other Types: As required.

2.07 BALL VALVES

- A. Manufacturers:
 - 1. Conbraco Industries: www.conbraco.com.
 - 2. Nibco, Inc.: www.nibco.com.
 - 3. Milwaukee Valve Company: www.milwaukeevalve.com.
- B. Construction, 2 Inches and Smaller: 300 psi CWP, forged brass two piece body, chrome plated brass ball and stem, regular port, TFE seats and seals, blow-out proof stem, lever handle.
- C. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze, two piece body, chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder or threaded ends with union.
- D. Ball valves for natural gas service shall be UL labeled for such service.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. Provide access where valves and fittings are not exposed.
- H. Establish elevations of buried piping outside the building to ensure not less than 4' of cover.
- I. Provide support for utility meters in accordance with requirements of utility companies.
- J. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting in "finished" areas. Refer to Section 09 9000.
- K. Pipe vents from gas pressure reducing valves to outdoors and terminate in weather proof hood.
- L. Gas piping shall be painted per specification section 09900 and building/mechanical code requirements.
- M. Sleeve and vent gas piping that is concealed or buried below building slab per fuel gas code requirements.
- N. PVC Pipe: Make solvent-welded joints in accordance with ASTM D 2855.
- O. Sleeve pipes passing through partitions, walls and floors.
- P. Each fixture shall have isolation valves provided. All run-outs from piping mains to fixtures shall

have isolation valves installed near the main take-off, whether shown on the plans or not. All isolation valves shall be located in accessible locations.

- Q. Do not route/locate below grade piping below, or with 45 degrees of the bottom corner of, foundation walls/footings. Coordinate with structural trades prior to installing piping.
- R. Pipe Hangers and Supports:
 - 1. Install in accordance with MSS SP-89.
 - 2. Support horizontal piping as scheduled.
 - 3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
 - 4. Place hangers within 12 inches of each horizontal elbow.
 - 5. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 - 6. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
 - 7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 - 8. Provide copper plated hangers and supports for copper piping.
- S. Provide vents, with manual vent valves, at all high points in piping systems. Purge all air from the system during start-up.

3.04 APPLICATION

- A. Install unions downstream of valves and at equipment or apparatus connections.
- B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- C. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- D. Provide plug valves in natural gas systems for shut-off service.

3.05 TOLERANCES

- A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/8 inch per foot slope, for pipes 3 inches - 6 inches in diameter. Pipes smaller than 3 inches in diameter shall drain at minimum 1/4 inch per foot slope.

3.07 SERVICE CONNECTIONS

- A. Provide new Storm piping as needed to connect to Storm service (on-site). Before commencing work check invert elevations required for storm sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing. Coordinate with Sewer Utility and Site/Civil trades.
- B. Provide new gas service complete, with gas meter and regulators, as required to accommodate the gas system improvements. Gas service distribution piping to have initial minimum pressure of 11 inch wg. Coordinate flow and pressure requirements with gas utility. P.C. shall coordinate new gas service with gas utility. Owner shall pay for all direct gas utility charges.

3.08 SCHEDULES

- A. Pipe Hanger Spacing:
 - 1. Metal Piping:
 - a. Pipe size: 1/2 inches to 1-1/4 inches:

- 1) Maximum hanger spacing: 6.5 ft.
 - 2) Hanger rod diameter: 3/8 inches.
- b. Pipe size: 1-1/2 inches to 2 inches:
- 1) Maximum hanger spacing: 10 ft.
 - 2) Hanger rod diameter: 3/8 inch.

END OF SECTION

SECTION 23 0001

GENERAL MECHANICAL REQUIREMENTS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. This Division includes all labor, materials, equipment, tools, supervision, start-up services, Owner training, etc., including all incidental and related items, necessary to complete installation and successfully test and start up and operate the mechanical systems indicated on the drawings, AND as described in each Section of Division 230000 Specifications.
- B. All drawings and General Provisions of the Contract, including the General Conditions, Supplementary General Conditions, and Division 1 specification sections, apply to work of all Division 230000 sections. The items in this section are not intended to supersede, but are supplementary to, the requirements set forth in other Divisions of the specifications.
- C. The Contractor, and his Subcontractors and Suppliers, shall include in their bid all materials, labor, and equipment involved, in accordance with all local customs, codes, rules, regulations; and secure compliance of all parts of the Specifications and Drawings regardless of Sectional inclusion in these Specifications.
- D. The Contractor shall be held responsible for the complete and satisfactory accomplishment of all Work inclusive of whatever miscellaneous material and/or appurtenances are required to perfect the installation, and demonstrate that all mechanical systems will operate satisfactorily under normal operating conditions.

1.02 DRAWINGS & SPECIFICATIONS

- A. The drawings are diagrammatic and show the general location and arrangement of equipment, piping, ductwork and related items. They shall be followed as closely as elements of the construction will permit. The Contractor shall provide/install all mechanical systems, and associated equipment, complete and include all necessary offsets, fittings, and other components required due to interferences, space constraints, code requirements, etc. as required to provide a complete/functional system.
- B. The general mechanical requirements are intended to augment the drawings and specifications. Should conflicts occur between the drawings and the specifications, the strictest provision shall govern. Where there are conflicts or differences between the drawings for the various trades, report such conflicts or differences to the Architect and/or Engineer for resolution prior to rough-in.
- C. The Contractor shall examine the drawings of all other trades in order to verify the conditions governing the work on the job site. Arrange work accordingly, providing all ductwork, piping, fittings, traps, valves and accessories as may be required to meet such conditions.
- D. Deviations from the drawings, with the exception of minor changes in routing and other such incidental changes that do not affect the functioning or serviceability of the systems, shall not be made without the written approval of the Architect and/or Engineer prior to rough-in.
- E. The architectural and structural drawings take precedence in all matters pertaining to the building structure; plumbing drawings in all matters pertaining to plumbing trades; Mechanical drawings in all matters pertaining to mechanical trades; and electrical drawings in all matters pertaining to electrical trades. Where there are conflicts or differences between the drawings for the various trades, report such conflicts or differences to the ARCHITECT and/or ENGINEER for resolution prior to rough-in.

1.03 COORDINATION OF WORK

- A. The Contractor shall verify clearance requirements of all electrical and mechanical equipment/systems prior to the installation of any new work. Mechanical equipment, piping, ductwork, systems, etc. shall not interfere with mechanical equipment spaces or electrical clearances. The Contractor shall coordinate his work to obtain symmetry in ceiling layouts, so that sprinkler heads, lights, diffusers, etc. are coordinated and are installed per the Architectural reflected ceiling plan.
- B. The Contractor and their Subcontractors shall be responsible for all tasks applicable to their work in accordance with the Specifications, Drawings, and code requirements, and shall be responsible for coordinating locations and arrangements of their work to give best results with all other relevant trades.
 - 1. Coordinate his work to obtain symmetry in ceiling layouts, so that lights, ductwork, garage doors, etc. are coordinated and are installed per the Architectural reflected ceiling plan.
 - 2. Coordinate all wall, roof, floor penetrations, equipment locations, system routings, etc. with architectural and structural trades prior to rough-in.
 - 3. Verify requirements of all equipment with shop drawing submittals prior to installation - notify Architect/Engineer of any conflicts between shop drawings and plans prior to rough-in.
 - 4. Coordinate rough-in locations of mechanical control devices (i.e. thermostats, sensors, etc.) with electrical trades. T-stats shall be located @ 48" AFF unless noted otherwise.
 - 5. Coordinate locations of mechanical items that require access (i.e. balance dampers, actuators, exhaust fans, filters, etc.) with reflected ceiling plan. Items located above hard non-accessible ceilings shall be provided with access doors as required.
 - 6. Verify clearance requirements of all mechanical, electrical, plumbing equipment/systems prior to the installation of any new work. Mechanical equipment, piping, ductwork, systems, etc. shall not interfere with electrical equipment spaces. Electrical conduit and equipment clearances shall not interfere with mechanical/plumbing equipment spaces.

1.04 INSPECTION OF SITE AND PROJECT DOCUMENTATION

- A. The Contractor shall visit the site and examine/verify the conditions under which the work must be conducted before submitting proposal. The Contractor shall examine the drawings and specifications of all other trades including Mechanical, Architectural, Structural and Electrical.
- B. The Contractor shall notify the Architect and/or Engineer, prior to submitting his bid via Request For Information (RFI), of any potential problems that he has identified during his inspection of the site or from the review of plans/specifications. RFIs must be submitted at least 5 working days prior to bid opening.

1.05 GENERAL SUPPORT REQUIREMENTS

- A. Provide all necessary angle/brackets, hangers, or supplementary supporting steel as required for adequate support for all piping, ductwork, and equipment. Secure approval from Architect and/or Structural Engineer, in writing, before welding or bolting to steel framing or anchoring to concrete structure, or cutting/coring thru structural systems.

1.06 GUARANTEE

- A. Contractor shall guarantee that all labor, materials, and equipment are free from defects and agrees to replace or repair any part of this installation which becomes defective within a period of one year from the date of substantial completion following final acceptance. Acceptance date of substantial completion shall be as determined by the Architect and/or Engineer.
- B. The Contractor shall file with the Owner any and all guarantees from the equipment manufacturers including the operating conditions and performance capacities they are based on.

1.07 CODES, PERMITS AND FEES

- A. Refer to Division 1, General Conditions and Supplementary Conditions.
- B. Unless otherwise indicated, all required permits, plan reviews, licenses, inspections, approvals and fees for plumbing work shall be submitted for plan review, and secured & paid for by the CONTRACTOR, and/or their Sub-Contractors.
- C. All work shall be executed in accordance with the most current rules and regulations set forth in local and state codes.
 - 1. Mechanical and Plumbing systems shall be installed per current jurisdictional codes (Michigan Mechanical Code, Michigan Plumbing Code, International Fuel Gas Code, Michigan Building Code, etc.), current NFPA codes (NFPA 101, NFPA 90, etc.), and applicable sections of the Michigan Building Code.
- D. In the event that the plans and specifications conflict with any rules, regulations, or codes applying, said rules, regulations and codes shall govern.
- E. Where the drawings and/or specifications indicate materials or construction in excess of code requirements, the drawings and/or specifications shall govern.
- F. The CONTRACTOR, and/or their Sub-Contractors, shall submit the plans/specs which are required by the governing authorities (i.e. Mechanical / Plumbing plan review & permit, Etc.) for plan review & permit approval.

1.08 SUBSTITUTION ITEMS REQUIRING PRIOR APPROVAL

- A. All items that the Contractor proposed to use in the work that are not specifically named in the contract documents must be submitted for review. Such items must be submitted in .pdf format to the Architect and/or Engineer for approval a minimum of seven (7) days prior to bid opening. Requests for prior approval must be accompanied by complete catalog information, including but not limited to, model, size, accessories, complete electrical information and performance data in the form given in the equipment schedule on the drawings at stated design conditions. Where items are referred to by symbolic designations on the drawings, all requests for prior approval shall bear the same designations. The Contractor shall call out/illustrate to the Engineer any/all differences between the basis of design and the Contractor's proposed substitution items.

1.09 MATERIAL AND EQUIPMENT MANUFACTURERS

- A. All items of equipment shall be furnished complete with all accessories normally supplied with the catalog items listed and all other accessories necessary for a complete and satisfactory operating system. All equipment and materials shall be new and shall be standard products of manufacturers regularly engaged in the production of plumbing, heating, ventilating and air conditioning equipment and shall be the manufacturer's latest design.
- B. If an approved manufacturer is other than the manufacturer used as the basis for design, the equipment of product provided shall be equal in quality, durability, appearance, capacity and efficiency through all ranges of operation, shall conform with arrangements and space limitations of the equipment shown on the plans and/or specified, shall be compatible with the other components of the system and shall comply with the requirements for Substitution Items Requiring Prior Approval specified in this Section of the Specifications. All costs to make these items of equipment comply with these requirements including, but not limited to, piping, sheet metal, electrical work, and building alterations shall be included in the original bid.

1.10 SHOP DRAWINGS/SUBMITTALS

- A. Refer to General Conditions and Supplementary General Conditions.
- B. All shop drawings shall be submitted in groupings of similar and/or related items. Incomplete submittal groupings will be returned unchecked.

- C. Unless noted otherwise, submit digital (.pdf format) copies of complete manufacturer's shop drawings for all equipment, valves, plumbing and heating specialties, refrigeration specialties, pipe hangers, wiring diagrams and control diagrams including, but not limited to the items listed below. Where items are referred to by symbolic designation on the drawings and specifications, all submittals shall bear the same designation. Refer to other Sections of the mechanical specifications for additional requirements.
- 1) 23 3413 Axial HVAC Fans
 - 2) 23 3700 Air Outlets and Inlets
 - 3) 23 5533 Fuel-Fired Unit Heaters

1.11 OPERATION AND MAINTENANCE INSTRUCTIONAL MANUALS

- A. Refer to Division 1, General Requirements.
- B. Provide complete maintenance and operating instructional manuals covering all mechanical equipment as specified herein, Division 1 requirements, and individual equipment specification sections.
- C. The O&M data shall be bound in a suitable number of 3" or 4", 3-ring, hard cover binders. Permanently imprinted on the cover shall be the words, "Manufacturer's Operation and Maintenance Data", project title, location of project, and the date. A table of contents shall be provided in the front of each binder.
- D. Maintenance and operating instructional manuals shall be job specific to this project. Generic manuals are not acceptable. Each piece of equipment in the O&M manual shall be identified as identified on the project drawings (i.e. Exhaust Fan EF-1, Pump P-1, etc.).
- E. Internally subdivide the binder contents with permanent page dividers, organized by specification section and/or major equipment/systems (i.e. 233413 Axial HVAC Fans, 235533 Fuel Fired Unit Heaters, etc.)
- F. Contents: Each volume of O&M manual shall have three parts:
1. Part 1: A directory listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
 2. Part 2: O&M data, arranged and subdivided by major equipment/systems. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers:
 - a. List of equipment.
 - b. Copies of Shop drawings and product data, approved by Architect/Engineer.
 - c. Installation and operational procedures.
 - d. Routine maintenance procedures.
 - e. Trouble shooting procedures.
 - f. Complete parts lists by nomenclature, manufacturer's part number and use.
 - g. Recommended spare parts lists.
 - h. Lubrication chart listing all types of lubricants to be used for each piece of equipment and the recommended frequency of lubrication.
 - i. Complete wiring and schematic diagrams.
 - j. Elevations and/or sections cut through all of the major equipment and sub-assemblies.

- k. At the end of each section, a maintenance schedule shall be provided for each piece of equipment. The schedule shall display the daily, weekly, monthly, semi-annual, and annual lubrication and preventative maintenance required in order to meet warranty conditions and the manufacturer's recommendations for optimal performance and life of the equipment. Photos or reproduction of the manufacturer's literature will not be accepted.
- 3. Part 3: Project documents and certificates, including the following:
 - a. Testing, Adjusting, and Balance Reports (approved by Engineer).
 - b. Warranty Certificates.
 - c. Copies of approved construction permits.
- G. Maintenance and Operating manuals shall be provided, in digital .pdf format, to the Architect and/or Engineer for review when construction is 75% complete.
- H. A minimum of two (2) hard copies, as well as digital .pdf format, of all approved Operation and Maintenance literature shall be furnished to the Owner within 10 days after final inspection. O&M manuals must be completed prior to start of Owner training as the manuals shall be used as the basis of the training.

1.12 INSTRUCTION OF OWNER PERSONNEL

- A. Before final inspection the Contractor shall instruct Owner's designated personnel in operation, adjustment and maintenance of mechanical equipment and systems at agreed upon times.
- B. For equipment requiring seasonal operation, perform instructions for other seasons within six months.
- C. Use Operation and Maintenance Manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.
- E. Training shall be provided by factory authorized/trained representatives familiar with the startup and training on the equipment.

1.13 RECORD DRAWINGS

- A. Contractor shall submit to the Architect and/or Engineer, record drawings which have been neatly marked to represent as-built conditions for all new mechanical work.
- B. The Contractor shall keep accurate note of all deviations from the construction documents and discrepancies in the concealed conditions and other items of construction on field drawings as they occur. The marked up field documents shall be available for review by the Architect and/or Engineer, and Owner at their request.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All material and equipment furnished and installed by the Contractor for the permanent Work shall be new, unused, of the best quality of make specified, shall be free from defects of any character, and shall be listed as approved by the UL and/or FM.

PART 3 EXECUTION

3.01 INSTALLATION OF EQUIPMENT

- A. Install equipment in strict accordance with all directions and recommendations furnished by the manufacturer. Where such directions are in conflict with the drawings and specifications, report

such conflicts to the Architect and/or Engineer for resolution.

3.02 WORK INVOLVING OTHER TRADES

- A. Certain items of equipment or materials specified in the Mechanical Division may have to be installed by other trades due to code requirements or union jurisdictional requirements. In such instances, the Contractor shall complete the work through an approved, qualified subcontractor and shall include the full cost for same in his bid.

3.03 LUBRICATION

- A. Provide all lubrication for the operation of the mechanical equipment until acceptance by the Owner. Contractor shall be responsible for all damage to bearings up to the date of acceptance of the equipment. Protect all bearings and shafts during installation. Thoroughly grease steel shafts to prevent corrosion. Provide covers as required for proper protection of all motors and other equipment during construction.

3.04 COORDINATION

- A. Install work to avoid interference with work of other trades including, but not limited to, architectural and electrical trades. Remove and relocate any work that causes an interference at Contractor's expense. Disputes regarding the cause of an interference shall be resolved by the Architect and/or Engineer.

3.05 CHASE, SHAFTS AND RECESSES

- A. Coordinate with structural, architectural and other trades to ensure accurate location and size of chases, shafts and recesses required for mechanical systems.

3.06 SLEEVES

- A. Provide and install Schedule 40 black steel pipe sleeves, cut to length, wherever pipes pass through above grade walls and floors. Provide and install galvanized steel pipe sleeves, cut to length, wherever pipes pass through below grade foundation walls and slab on grade floors. Sleeves shall terminate flush with walls in finished areas. All sleeves through the floor are to extend two (2) inches above finish floor.
- B. Provide escutcheons at each penetration through walls, floors, and ceilings in exposed areas.
- C. Patch sleeves to match building material.

3.07 SEALING OF MECHANICAL OPENINGS

- A. Seal the space around pipes in sleeves and around duct openings through walls, floors and ceilings.
- B. Refer to specification 078400-Firestopping.
- C. Provide adequate clearance to allow for proper duct/pipe movement and sealing.
- D. Provide/install fireproof wall and floor sleeves as required by applicable building codes at all applicable wall, ceiling, and floor penetrations. Refer to Architectural plans for wall assembly ratings.
- E. Sleeves placed in floors shall be flush with the underside of the floor construction and shall have planed, square ends, extending 2 inches above the finished floor, unless otherwise noted or detailed.
- F. Where sleeves pass through reinforced concrete floors, they shall be properly set in position prior to concrete pouring in such a way that they will be maintained in position until the concrete is set.
- G. Ducts and pipes passing through below grade perimeter walls or slabs on grade shall have the space between the duct/pipe and sleeve sealed watertight with a mechanically expandable

elastomer seal device.

- H. Penetrations through fire rated floors and walls shall be fire-stopped in accordance with applicable building code requirements with UL and FMRC approved materials and shall have a fire rating equal to or greater than the fire partition rating. Refer to architectural plans for locations and assembly ratings.
 - 1. Packing: Refractory fiber or ceramic fiber.
 - a. Manufacturers:
 - 1) Carborundum Fiberfrax.
 - 2) Johns-Manville - Cerafelt.
 - 3) Eagle Picher Epitherm 1200.
 - 4) Babcock and Wilcox Kaowool.
 - 2. Fire stop sealant.
 - a. Manufacturers:
 - 1) Hilti
 - 2) Tremco
 - 3) Mameco
 - 4) Pecora
 - 3. Where combustible pipes, tubes, vents, etc. penetrate a fire rated assembly, such penetrations shall be protected by an approved through-penetration fire stop collar/sealant system per the building code.
 - a. Through -penetration firestop systems shall be tested in accordance with ASTM E814 with a minimum positive pressure differential of 0.01 inch WG. Through penetration firestop systems shall have a "F" rating and a "T" rating of not less than 1 hour but not less than the required rating of the assembly penetrated.
 - b. Hilti CP 642 Firestop Collar.
 - c. Hilti FS-ONE High Performance Intumescent Firestop Sealant.
 - d. 3M Fire Barrier PPD Plastic Pipe Device.
 - e. 3M Fire Barrier Intumescent Firestop Sealant.

3.08 CUTTING, CORING AND PATCHING

- A. Refer to General Conditions.
- B. Unless specifically noted otherwise, the Contractor shall perform all cutting, coring, and patching that may be necessary for the installation of their Work. All cutting, coring, patching and repair work shall be performed by the Contractor through qualified Subcontractors. Contractor shall include full cost of same in his bid.
- C. Secure approval from Architect and/or Structural Engineer, in writing, before cutting, welding/bolting to, or anchoring from any structural building components (i.e. structural steel, load bearing walls, footings/foundations, concrete floors/ceilings, etc.).

3.09 EQUIPMENT FOUNDATIONS AND SUPPORTS

- A. For equipment suspended from ceiling or walls, furnish and install all inserts, rods, structural steel frames, brackets and platforms required. Obtain approval of Architect and/or Structural Engineer for same including loads, locations, and methods of attachment.

3.10 EQUIPMENT CONNECTIONS

- A. Make connections to equipment, fixtures and other items included in the work in accordance with the approved shop drawings and rough-in measurements furnished by the manufactures of the particular equipment furnished.

3.11 ACCESSIBILITY

- A. All equipment shall be installed so as to be readily accessible for operation, maintenance, and repair, as required by the equipment manufacturer and as subject to the approval of the Engineer.

3.12 CLEANING

- A. Each trade shall be responsible for removing all debris daily as required to maintain the work area in a neat, orderly condition.
- B. After equipment, ductwork, piping systems have been completed and tested, each entire system shall be cleaned and flushed.
- C. Prior to connection of new piping to existing piping systems, all new piping shall be subject to initial flushing, cleaning and final flushing. Provide temporary bypass piping and fittings, temporary valves and strainers, temporary water make-up piping with approved means of backflow prevention, and temporary pumps as needed to perform specified flushing and cleaning requirements.

3.13 PROTECTION AND HANDLING OF EQUIPMENT AND MATERIALS

- A. Equipment and materials shall be protected from theft, injury or damage.
- B. Protect equipment outlets, pipe and duct openings with temporary plugs or caps.
- C. Provide adequate storage for all equipment and materials delivered to the job site. Equipment set in place in unprotected areas must be provided with temporary protection.

3.14 GENERAL SUPPORT REQUIREMENTS

- A. Each mechanical trade shall provide all required supporting components to properly support their work. Supporting components/systems shall be in accordance with Code and as specified.
- B. Provide all necessary angle/brackets or supplementary steel as required for adequate support for all piping, ductwork, specialties, and equipment. Secure approval from Architect and/or Engineer, in writing, before welding or bolting to steel framing or anchoring to structure.

3.15 DRAWINGS AND MEASUREMENTS

- A. These specifications and accompanying drawings are intended to describe and provide for finished work. They are intended to be cooperative, and what is called for by either the drawings or specifications shall be as binding as if call for by both. The work herein described shall be complete in every detail.
- B. The Drawings are not intended to be scaled for rough-in measurements, nor to serve as Shop Drawings. Field measurements necessary for ordering materials and fitting the installation to the building construction and arrangement shall be taken by the Contractor. The Contractor shall check latest architectural drawings to locate equipment/fixtures/etc., check latest structural drawings for interferences, etc..

3.16 EXTRA WORK

- A. For any extra work which may be proposed, the Contractor shall furnish to the General Contractor/Construction Manager, an itemized breakdown of the estimated cost of all materials and labor required to complete this work. The estimate cost breakdown shall include unit prices (same prices for increase/decrease of work) for all materials (i.e. duct, piping, valves, equipment, equipment rental, etc.) and all labor (i.e. manhours, overtime, etc.) which may be required for any

proposed extra work. The Contractor shall not proceed until receiving a written order from the General Contractor establishing the agreed price and describing the work to be done.

3.17 ACCEPTANCE PROCEDURE

- A. Upon successful completion of start-up and recalibration, but prior to building acceptance, substantial completion and commencement of warranties, the Architect and/or Engineer shall be requested in writing to inspect the satisfactory operation of all mechanical control systems.
- B. The Contractor shall demonstrate operation of equipment and control systems, including each individual component, to the Architect and/or Engineer and Owner.
- C. After correcting all items appearing on the punch list, make a second written request to the Architect and/or Engineer for inspection and approval.
- D. After all items on the punch list are corrected and formal approval of the plumbing/mechanical systems is provided by the Architect and/or Engineer, the Contractor shall indicate to the Owner in writing the commencement of the warranty period.
- E. If testing, adjusting, and balancing of a mechanical system cannot take place due to seasonal weather, all parties involved (i.e. mechanical contractor and test/balance agency, and manufacturer's representative) shall return to the site during season required to properly test, adjust and balance the equipment. An example of this would be a heating system installed and tested in the cooling season (summer). Due to the fact that there may not be enough heating load required to properly test the boiler, all parties shall return to the site the following heating season (winter) to test, adjust, and balance the heating system.
- F. Operation of the following systems shall be demonstrated:
 - 1. Space Heating & Temperature Controls
 - 2. Exhaust Systems

END OF SECTION

SECTION 23 3413

AXIAL HVAC FANS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Propeller fans.
- B. Motors and drives.
- C. Accessories.

1.02 REFERENCE STANDARDS

- A. ABMA STD 11 - Load Ratings and Fatigue Life for Roller Bearings; American Bearing Manufacturers Association, Inc..
- B. AMCA 99 - Standards Handbook; Air Movement and Control Association International, Inc..
- C. AMCA 210 - Laboratory Methods of Testing Fans for Aerodynamic Performance Ratings; Air Movement and Control Association International, Inc. (ANSI/AMCA 210, same as ANSI/ASHRAE 51).
- D. AMCA (DIR) - [Directory of] Products Licensed Under AMCA International Certified Ratings Program; Air Movement and Control Association International, Inc..
- E. AMCA 300 - Reverberant Room Method for Sound Testing of Fans; Air Movement and Control Association International, Inc..
- F. AMCA 301 - Methods for Calculating Fan Sound Ratings From Laboratory Test Data; Air Movement and Control Association International, Inc..
- G. SMACNA (DCS) - HVAC Duct Construction Standards - Metal and Flexible; Sheet Metal and Air Conditioning Contractors' National Association.

1.03 SUBMITTALS

- A. Product Data: Provide data on axial fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels for both fan inlet and outlet at rated capacity, and electrical characteristics and connection requirements.
- B. Shop Drawings: Indicate assembly of axial fans and accessories including fan curves with specified operating point clearly plotted, sound power levels for both fan inlet and outlet at rated capacity, and electrical characteristics and connection requirements.
- C. Manufacturer's Instructions: Indicate installation instructions.
- D. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum 10 years of documented experience.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect motors, shafts, and bearings from weather and construction dust.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. ACME Engineering and Manufacturing Corporation: www.acmefan.com.
- B. Loren Cook Company: www.lorencook.com.
- C. S&P.
- D. Greenheck.
- E. Carnes.

2.02 PROPELLER FANS

- A. Impeller: Shaped steel or steel reinforced aluminum blade with heavy hubs, statically and dynamically balanced, keyed and locked to shaft, directly connected to motor or provided with variable speed direct drive motor.
- B. Frame: One piece, square steel/aluminum with die formed venturi orifice, mounting flanges and supports, with baked enamel finish.
- C. Accessories:
 - 1. Backdraft Damper: Multiple blade with offset hinge pin, blades linked.
 - 2. Safety Screens: Expanded galvanized metal over inlet, motor, drive and outlet; to comply with OSHA regulations.
 - 3. Hood: Weathershield, to exclude rain and snow, with birdscreen.
 - 4. Controller: Solid-state speed controller.
 - 5. Disconnect Switch, unit mounted with thermal overloads.
 - 6. Wall Housing Bracket.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide safety screen where inlet or outlet is exposed.
- C. Provide backdraft dampers on discharge of exhaust fans and as indicated.

END OF SECTION

SECTION 23 3700

AIR OUTLETS AND INLETS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Louvers.

1.02 REFERENCE STANDARDS

- A. ADC 1062: GRD - Test Code for Grilles, Registers & Diffusers; Air Diffusion Council.
- B. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating; Air Movement and Control Association International, Inc..
- C. ASHRAE Std 70 - Method of Testing for Rating the Performance of Air Outlets and Inlets; American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc..
- D. SMACNA (DCS) - HVAC Duct Construction Standards - Metal and Flexible; Sheet Metal and Air Conditioning Contractors' National Association.

1.03 SUBMITTALS

- A. Product Data: Provide data for equipment required for this project. Review louvers/outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of louvers/outlets and inlets showing type, size, make, model, finish, location, air quantity, pressure drop, neck or jet velocity, throw, diffusion range, and noise level.
- B. Project Record Documents: Record actual locations of louvers/air outlets and inlets.

1.04 QUALITY ASSURANCE

- A. Test and rate louver performance in accordance with AMCA 500-L.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum 10 years of documented experience.

PART 2 PRODUCTS

2.01 LOUVER MANUFACTURERS

- A. Greenheck.
- B. Ruskin.
- C. American Warming.

2.02 LOUVERS

- A. Louvers shall be fabricated in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
- B. Fabricated of aluminum with at least 50% kynar/hynar.
- C. Provide color chart for selection by Architect/Owner.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

- B. Check location of louvers/outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, lighting arrangement, etc...

END OF SECTION

SECTION 23 5533

FUEL-FIRED UNIT HEATERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Gas fired unit heaters.

1.02 REFERENCE STANDARDS

- A. ASHRAE Std 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI/ASHRAE/IESNA Std 90.1) – Current Edition or Owner's Adopted Energy Code.
- B. ASHRAE Std 103 - Methods of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc..
- C. NFPA 54 - National Fuel Gas Code; National Fire Protection Association.
- D. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; National Fire Protection Association.
- E. NFPA 211 - Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances; National Fire Protection Association.

1.03 SUBMITTALS

- A. Product Data: Provide manufacturer's literature and data indicating rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
- B. Shop Drawings: Indicate assembly, required clearances, and locations and sizes of field connections.
- C. Manufacturer's Instructions: Indicate rigging, assembly, and installation instructions.
- D. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts listing.
- E. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in OWNER's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum 10 years of documented experience.

1.05 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 UNIT HEATER MANUFACTURERS

- A. Modine Manufacturing Company.
- B. Sterling Gas Division of Mestek, Inc.
- C. Reznor/Thomas & Betts Corporation: www.reznoronline.com.

2.02 GAS FIRED UNIT HEATERS

- A. Unit Heaters: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heat exchanger, burner, controls, and accessories:
 - 1. Discharge Louvers: Individually adjustable horizontal and vertical louvers to match cabinet finish.
- B. Cabinet: Galvanized steel with baked enamel finish, easily removed and secured access doors, glass fiber insulation and reflective liner.
- C. Supply Fan: Propeller type with direct drive.
- D. Heat Exchanger: Aluminized steel welded construction.
 - 1. Provide optional Stainless Steel heat exchanger where indicated on Equipment Schedule.
- E. Gas Burner:
 - 1. Power-vented / separated combustion supply & venting.
 - 2. Gas valve, two stage provides 100 percent safety gas shut-off; 24 volt combining pressure regulation, safety pilot, manual set (On-Off), pilot filtration, automatic electric valve.
 - 3. Electronic pilot ignition, with electric spark igniter.
 - 4. Non-corrosive combustion air blower with permanently lubricated motor.
- F. Gas Burner Safety Controls:
 - 1. Thermocouple sensor: Prevents opening of gas valve until pilot flame is proven and stops gas flow on ignition failure.
 - 2. Flame rollout switch: Installed on burner box and prevents operation.
 - 3. Vent safety shutoff sensor: Temperature sensor installed on draft hood and prevents operation, manual reset.
 - 4. Limit Control: Fixed stop at maximum permissible setting, de-energizes burner on excessive bonnet temperature, automatic resets.
- G. Operating Controls
 - 1. Room Thermostat: Cycles burner & fan to maintain room temperature setting.
 - 2. Supply Fan Control: Energize from bonnet temperature independent of burner controls, with adjustable timed off delay and fixed timed on delay, with manual switch for continuous fan operation. Provide continuous low speed fan operation.
- H. Performance:
 - 1. Ratings: Energy Efficiency Rating (EER)/Coefficient of Performance (COP) not less than requirements of ASHRAE Std 90.1; seasonal efficiency to ASHRAE Std 103.
 - 2. Refer to Equipment Schedule on the drawings. Gas heating capacities are sea level ratings.

2.02 ROOM THERMOSTATS

- A. Manufacturers:
 - 1. Honeywell: www.honeywell.com.
 - 2. Johnson Controls, Inc.: www.johnsoncontrols.com.
 - 3. Siemens Building Technologies, Inc.: www.sbt.siemens.com.
- B. Room Thermostat: Adjustable, low voltage, to control burner operation, and supply fan to

maintain temperature setting.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that space is ready for installation of units and openings are as indicated on shop drawings.
- B. Verify that proper power supply is available.
- C. Verify that proper fuel supply is available for connection.

3.02 INSTALLATION

- A. Install in accordance with NFPA 90A.
- B. Install gas fired units in accordance with NFPA 54 and applicable codes.
- C. Provide and install venting for fuel-fired heaters in accordance with Manufacturer's recommendations (e.g. venting materials, min./max. venting lengths, etc.) and also per applicable construction codes (Mechanical Code, NFPA 211, etc.).
- D. Provide connection to electrical power systems; refer to Section 26 2717.

END OF SECTION

SECTION 26 0001

GENERAL ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. This Division includes all labor, materials, equipment, tools, supervision, start-up services, Owner's Instructions, including all incidental and related items necessary to complete installation and successfully test and start up and operate the Electrical Systems indicated on Drawings and described in each Section of Division 26 Specifications, and conforming with ALL other Contract Documents.
- B. The Drawings and General Provisions of the Contract, including the General Conditions, Supplementary General Conditions, and Division 1 specification sections, apply to work of Division 26 sections. The items in this section are not intended to supersede, but are supplementary to, the requirements set forth in other Divisions of the specifications.
- C. The Contractor, and his Subcontractors and Suppliers, shall include in their bid all materials, labor, and equipment involved, in accordance with all local customs, codes, rules, regulations; and secure compliance of all parts of the Specifications and Drawings regardless of Sectional inclusion in these Specifications.
- D. The Contractor shall be held responsible for the complete and satisfactory accomplishment of all Work inclusive of whatever miscellaneous material and/or appurtenances are required to perfect the installation, and demonstrate that all electrical systems will operate satisfactorily under normal operating conditions.

1.02 DRAWINGS & SPECIFICATIONS

- A. The drawings are diagrammatic and show the general location and arrangement of equipment, outlets, lights and related electrical items. They shall be followed as closely as elements of the construction will permit. The Contractor shall provide/install all electrical systems, and associated equipment, complete and include all necessary wire/conduit, pull boxes, and other components required due to interferences, space constraints, code requirements, etc. as required to provide a complete/functional system.
- B. These General Electrical Requirements are intended to augment the drawings and specifications. Should conflicts occur between the drawings and the specifications, the strictest provision shall govern. Where there are conflicts or differences between the drawings for the various trades, report such conflicts or differences to the Architect and/or Engineer for resolution prior to rough-in.
- C. The Contractor shall examine the drawings of all other trades in order to verify the conditions governing the work on the job site. Arrange work accordingly, providing all wiring, conduit, fittings, boxes, etc. as may be required to meet such conditions.
- D. Deviations from the drawings, with the exception of minor changes in routing and other such incidental changes that do not affect the functioning or serviceability of the systems, shall not be made without the written approval of the Architect and/or Engineer.
- E. The architectural and structural drawings take precedence in all matters pertaining to the building structure, mechanical drawings in all matters pertaining to mechanical trades and electrical drawings in all matters pertaining to electrical trades. Where there are conflicts or differences between the drawings for the various trades, report such conflicts or differences to the Architect and/or Engineer for resolution.

1.03 COORDINATION OF WORK

- A. The Contractor shall verify clearance requirements of all electrical and mechanical equipment/systems prior to the installation of any new work. Electrical equipment, wiring, systems, etc. shall not interfere with mechanical equipment spaces. The Contractor shall coordinate his work to obtain symmetry in ceiling layouts, so that lights, diffusers, etc. are coordinated and are installed per the Architectural reflected ceiling plan.
- B. The Contractor, and his Subcontractors, shall be responsible for all tasks applicable to their work in accordance with the Specifications, Drawings, and code requirements, and shall be responsible for coordinating locations and arrangements of their work to give best results with all other relevant trades.
 - 1. Coordinate his work to obtain symmetry in ceiling layouts, so that lights, diffusers, etc. are coordinated and are installed per the Architectural reflected ceiling plan.
 - 2. Coordinate all wall, roof, floor penetrations, equipment locations, system routings, etc. with architectural and structural trades.
 - 3. Verify requirements of all equipment with shop drawing submittals prior to installation - notify Architect/Engineer of any conflicts between shop drawings and plans prior to rough-in.
 - 4. Coordinate rough-in locations and mounting heights of all devices with locations/heights of countertops/sinks/furniture/cabinets/etc. with Architectural Elevations and other trades prior to rough-in.
 - 5. Coordinate rough-in locations of mechanical control devices (i.e. thermostats, sensors, etc.) with mechanical trades. E.C shall provide rough-in of box for T-stat/Sensor and conduit pathway from box to mechanical unit's control box, for wiring by M.C and/or T.C.. T-stats/sensors shall be located @ 48" AFF unless noted otherwise.
 - 6. Coordinate locations of electrical items that require access (i.e. panelboards, starters, pull boxes, etc.) with reflected ceiling plan. Items located above hard non-accessible ceilings shall be provided with access doors as required.
 - 7. Do not route/locate below grade piping below, or with 45 degrees of the bottom corner of, foundation walls/footings. Coordinate with structural trades prior to installing piping. Any piping that crosses through/under foundation walls/footings shall be sleeved within a steel pipe sleeve at least 2" larger than the service pipe.
 - 8. Verify clearance requirements of all mechanical, electrical, plumbing equipment/systems prior to the installation of any new work. Electrical equipment, lighting, conduit, systems, etc. shall not interfere with mechanical equipment spaces. Mechanical/plumbing equipment, piping, ductwork, systems, etc. shall not interfere with electrical equipment spaces.

1.04 INSPECTION OF SITE AND PROJECT DOCUMENTATION

- A. The Contractor shall visit the site and examine/verify the conditions under which the work must be conducted before submitting proposal. The Contractor shall examine the drawings and specifications of all other trades including Mechanical, Architectural, Structural, Plumbing, and Electrical.
- B. The Contractor shall notify the Architect and/or Engineer, via written RFI prior to submitting his bid, of any potential conflicts/problems with the plans that he has identified during his inspection of the site and/or from the review of plans/specifications. RFIs must be submitted at least 5 working days prior to bid opening.

1.05 GENERAL SUPPORT REQUIREMENTS

- A. Provide all necessary angle/brackets or supplementary steel as required for adequate support for all conduit, lighting, specialties, and equipment. Secure approval from Architect and/or

Structural Engineer, in writing, before welding or bolting to steel framing or anchoring to structure, or cutting/coring thru structural systems.

1.06 GUARANTEE

- A. Contractor shall guarantee that all labor, materials, and equipment are free from defects and agrees to replace or repair any part of this installation which becomes defective within a period of one year from the date of substantial completion following final acceptance, provided that such failure is due to defects in the equipment, material or installation. Acceptance date of substantial completion shall be Owner occupancy as determined by the Architect and/or Engineer.
- B. The Contractor shall file with the Owner one set of guarantees from the equipment manufacturers including the operating conditions and performance capacities they are based on.

1.07 CODES, PERMITS AND FEES

- A. Refer to Division 1, General Requirements and Supplementary Conditions.
- B. Unless otherwise indicated, all required permits, plan reviews, licenses, inspections, approvals and fees for plumbing work shall be submitted for plan review, and secured & paid for by the CONTRACTOR, and/or their Sub-Contractors.
- C. All work shall be executed in accordance with the latest enforceable rules and regulations set forth in local and state codes.
 - 1. Electrical systems shall be installed per current jurisdictional codes (Michigan Electrical Code, Michigan Energy Code, etc.), current NFPA codes (NFPA 101, NFPA 90, NFPA 72, etc.), and applicable sections of the Michigan Building Code & Michigan Energy Code.
- D. In the event that the plans and specifications conflict with any rules, regulations, or codes applying, said rules, regulations and codes shall govern.
- E. Where the drawings and/or specifications indicate materials or construction in excess of code requirements, the drawings and/or specifications shall govern.
- F. The CONTRACTOR, and/or their Sub-Contractors, shall submit the plans/specs which are required by the governing authorities (i.e. Electrical plan review & permit) for plan review & permit approval.

1.08 SUBSTITUTION ITEMS REQUIRING PRIOR APPROVAL

- A. All items that the Contractor proposes to use in the work, that are not specifically named in the contract documents, must be submitted for review/approval. Such items must be submitted in .pdf format to the Architect and/or Engineer for approval a minimum of seven (7) days prior to bid opening. Requests for prior approval must be accompanied by complete catalog information, including but not limited to, model, size, accessories, complete electrical information and performance data in the form given in the equipment schedule on the drawings at stated design conditions. Where items are referred to by symbolic designations on the drawings, all requests for prior approval shall bear the same designations. The Contractor shall call out/illustrate to the Engineer any/all differences between the basis of design and the Contractor's proposed substitution items.
- B. Lighting Substitutions:
 - 1. Furnish lighting fixtures as scheduled on drawings.
 - 2. Lighting fixture substitutions may be considered for approval by the Architect and/or Engineer only if all of the following criteria are met:
 - a. Provide specification cut sheets marked-up to clearly identify the proposed luminaire including features, options, accessories, etc. required to match products indicated in the schedules.

- b. Submit all cut sheets, calculations, etc. to the Architect and/or Engineer no less than 7 days prior to bid date. Substitutions submitted after this date will not be considered.

1.09 MATERIAL AND EQUIPMENT MANUFACTURERS

- A. All items of equipment shall be furnished complete with all accessories normally supplied with the catalog items listed and all other accessories necessary for a complete and satisfactory operating system. All equipment and materials shall be new and shall be standard products of manufacturers regularly engaged in the production of electrical equipment and shall be the manufacturer's latest design.
- B. If equipment by an approved manufacture is other than the equipment specified as the basis of design the substituted equipment shall be equal in quality, durability, appearance, capacity and efficiency through all ranges of operation, shall conform with arrangements and space limitations of the equipment shown on the plans and/or specified, shall be compatible with the other components of the system and shall comply with the requirements for Substitution Items Requiring Prior Approval specified in this Section of the Specifications. All costs to make these items of equipment comply with original requirements including, but not limited to, conduit, wiring, bus work, enclosures, and building alterations shall be included in the original bid.

1.10 SHOP DRAWINGS

- A. Refer to Division 1, General Requirements.
- B. All shop drawings shall be submitted in groupings by specification section (i.e. 262416-Panelboards, 262726-Wiring Devices, etc.) and of similar and/or related items. Incomplete submittal groupings will be returned unchecked.
- C. Unless noted otherwise, submit electronically in digital .pdf form, copies of complete manufacturer's shop drawings for all electrical equipment, or systems, including but not limited to, the items listed below. Where items are referred to by symbolic designation on the drawings and specifications, all submittals shall bear the same designation. Refer to other Sections of the electrical specifications for additional requirements.
 - 1. 26 0923 Lighting Control Devices - Wired
 - 2. 26 2416 Panelboards
 - 3. 26 5100 Interior Lighting
 - 4. 26 5600 Exterior Lighting

1.11 OPERATION AND MAINTENANCE INSTRUCTIONAL MANUALS

- A. Refer to Division 1, General Requirements.
- B. Provide complete maintenance and operating instructional manuals covering all electrical equipment as specified herein, and individual equipment specification sections.
- C. The O&M data shall be bound in a suitable number of 3" or 4", 3-ring, hard cover binders. Permanently imprinted on the cover shall be the words, "Manufacturer's Operation and Maintenance Data", project title, location of project, and the date. A table of contents shall be provided in the front of each binder.
- D. Maintenance and operating instructional manuals shall be job specific to this project. Generic manuals are not acceptable. Each piece of equipment in the O&M manual shall be identified as identified on the project drawings (i.e. Distribution Panel DP-1, Light Fixture Type L-1, etc.).
- E. Internally subdivide the binder contents with permanent page dividers, organized by specification section and/or major equipment/systems (i.e. 262416_PANELBOARDS, 265100_Interior Lighting, etc.).
- F. Contents: Each volume of O&M manual shall have three parts:

1. Part 1: A directory listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
 2. Part 2: O&M data, arranged and subdivided by major equipment/systems. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers:
 - a. List of equipment.
 - b. Copies of Shop drawings and product data, approved by Architect/Engineer.
 - c. Installation and operational procedures.
 - d. Routine maintenance procedures.
 - e. Trouble shooting procedures.
 - f. Complete parts lists by nomenclature, manufacturer's part number and use.
 - g. Recommended spare parts lists.
 - h. Lubrication chart listing all types of lubricants to be used for each piece of equipment and the recommended frequency of lubrication.
 - i. Complete wiring and schematic diagrams.
 - j. Elevations and/or sections cut through all of the major equipment and sub-assemblies.
 3. Part 3: Project documents and certificates, including the following:
 - a. Warranty certificates.
 - b. Copies of approved construction permits.
 - c. Contractor's and equipment manufacturer's telephone numbers for warranty repair services.
- G. Two (2) Maintenance and Operating manuals shall be provided, in digital .pdf format, to the Architect and/or Engineer for review when construction is 75% complete.
- H. A minimum of two (2) hard copies, as well as digital .pdf format, of all approved Operation and Maintenance literature shall be furnished to the Owner within 10 days after final inspection. O&M manuals must be completed prior to start of Owner training as the manuals shall be used as the basis of the training.

1.12 INSTRUCTION OF OWNER PERSONNEL

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

1.13 RECORD DRAWINGS

- A. Contractor shall submit to the Architect and/or Engineer, record drawings which have been neatly marked to represent as-built conditions for all new electrical work.
- B. The Contractor shall keep accurate note of all deviations from the construction documents and discrepancies in the concealed conditions and other items of construction on field drawings as they occur. Proper circuiting, conduit runs, location and number of electrical devices shall be

indicated on the "as-built" drawings. The marked up field documents shall be available for review by the Architect, Engineer and Owner at their request.

1.14 UTILITIES

- A. The Contractor shall be responsible for coordinating, obtaining service, and advising the Owner/Architect/Engineer, and utility company(s) for the electrical and telecommunication service installations.
- B. Rules of local utility companies shall be complied with. The Contractor shall check with each utility company supplying service to the installation (i.e. power, telecom) and coordinate service requirements including, but not limited to, all transformers, meter boxes and meters which will be required.
- C. The Owner shall pay for any direct utility costs directly to the utility to be pulled in the Owner's name. The Contractor shall assist with coordinating the new electrical / telecom service and also provide for all installation costs in his bid including, but not limited to, conduit, transformer pads, mounting the CT/Meter, etc.
- D. In the event that the plans and specifications conflict with any utility rules applying, said utility rules and regulations shall govern.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All material and equipment furnished and installed by the Contractor for the permanent Work shall be new, unused, of the best quality of make specified, shall be free from defects of any character, and shall be listed as approved by the UL and/or FM.
- B. Outdoor electrical equipment shall be weatherproof, NEMA 3R or NEMA 4X (stainless steel), unless otherwise indicated.
- C. Unless otherwise specified in other Division 26 sections, the sheet metal surfaces of equipment enclosures shall be coated with a rust resisting primer. Over the primer, a corrosion resistant baked enamel finish shall be applied. The color shall be ASA No. 49, medium light gray.

PART 3 EXECUTION

3.01 INSTALLATION OF EQUIPMENT

- A. Install equipment in strict accordance with all directions and recommendations furnished by the manufacturer. Where such directions are in conflict with the drawings and specifications, report such conflicts to the Architect and/or Engineer for resolution.

3.02 CHASE, SHAFTS AND RECESSES

- A. Coordinate with architectural and other trades to ensure accurate location and size of chases, shafts and recesses.

3.03 CUTTING, CORING AND PATCHING

- A. Refer to General Conditions.
- B. The Contractor shall perform all cutting, coring, and patching that may be necessary for the installation of their Work. All cutting, coring, patching and repair work shall be performed by the Contractor through qualified Subcontractors. Contractor shall include full cost of same in his bid.
- C. Secure approval from Architect and/or Structural Engineer, in writing, before cutting, welding/bolting to, or anchoring from any structural building components (i.e. structural steel, load bearing walls, footings/foundations, concrete floors/ceilings, etc.).

3.04 EXCAVATION AND BACKFILLING

- A. Provide all excavation, trenching, tunneling and backfilling required for the electrical work.

- B. Where conduit is installed less than 2'6" below the surface of pavement, provide concrete encasement, 4" minimum coverage, all around or as shown on the electrical drawings.
- C. Install warning tape for all buried circuits.
- D. Refer to Architectural, Structural, and Site/Civil Specification sections for excavation and backfilling details.

3.05 EQUIPMENT FOUNDATIONS AND SUPPORTS

- A. For equipment suspended from ceiling or walls, furnish and install all inserts, rods, structural steel frames, brackets and platforms required. Obtain approval of Architect and/or Structural Engineer for same including loads, locations, and methods of attachment.

3.06 SLEEVES

- A. Provide and install Schedule 40 black steel pipe sleeves, cut to length, wherever conduits pass through above grade walls and floors. Provide and install galvanized steel pipe sleeves, cut to length, wherever conduits pass through below grade foundation walls and slab on grade floors. Sleeves shall terminate flush with walls in finished areas. All sleeves through the floor are to extend two (2) inches above finish floor.
- B. Provide escutcheons at each penetration through walls, floors, and ceilings in exposed areas.
- C. Patch sleeves to match building material.

3.07 SEALING OF ELECTRICAL OPENINGS

- A. Seal the space around conduits in sleeves through walls, floors and ceilings.
- B. Refer to specification 078400-Firestopping.
- C. Provide adequate clearance to allow for proper sealing.
- D. Provide/install fireproof wall and floor sleeves as required at all applicable wall, ceiling, and floor penetrations. Refer to Architectural plans for wall assembly ratings.
- E. Sleeves placed in floors shall be flush with the underside of the floor construction and shall have planned, square ends, extending 2 inches above the finished floor, unless otherwise noted or detailed.
- F. Where sleeves pass through reinforced concrete floors, they shall be properly set in position prior to concrete pouring in such a way that they will be maintained in position until the concrete is set.
- G. Conduits passing through below grade perimeter walls or slabs on grade shall have the space between the pipe and sleeve sealed watertight with a mechanically expandable elastomer seal device.

3.08 FIRESTOP MATERIALS

- A. Refer to specification 078400-Firestopping.
- B. Use only firestop products that have been tested according to ASTM E-814 and UL 1479 for the conditions set forth regarding construction assembly type, penetrating item type, annular space requirements and fire rating.
- C. Install conduit & boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in other related specification sections.
 - 1. For non-combustible penetrations including conduit not passing through a sleeve, the following materials are acceptable:
 - a. Hilti FS 601 Elastmeric Firestop Sealant.
 - b. 3 M.

- c. CSD Sealing Systems.
- d. Firestop Systems.
- 2. For non-combustible penetrations including sleeved conduits, the following materials are acceptable:
 - a. Hilti FS 601 Elastmeric Firestop Sealant.
 - b. 3 M.
 - c. CSD Sealing Systems.
 - d. Firestop Systems.
- 3. For combustible penetrations including cables and cable bundles, the following materials are acceptable:
 - a. Hilti FS 611A Intumescent Firestop Sealant.
 - b. 3 M.
 - c. CSD Sealing Systems.
 - d. Firestop Systems.
- D. For fire rated membrane penetrations larger than a 4" square J-box (e.g. panelboards, large pull boxes, elevator call boxes, non-rated access doors, etc.) provide/install Endothermic Mat in order to preserve fire resistance rating of partitions and other elements. Install per manufacturer's recommendations & code requirements.
 - 1. 3M Interam Endothermic Mat E-5A-4, or equal.

3.09 EQUIPMENT CONNECTIONS

- A. Make connections to equipment, fixtures and other items included in the work in accordance with the approved shop drawings and rough-in measurements furnished by the manufactures of the particular equipment furnished. All additional connections not shown on the drawings, but called out by the equipment manufacturer's shop drawings, shall be provided at no additional cost.

3.10 CLEANING

- A. Each Trade shall be responsible for removing all debris daily as required to maintain the work area in a neat, orderly condition.
- B. Final cleanup shall include, but not be limited to, washing of fixture lenses or louvers, switchboards, substations, motor control centers, panels, etc. Fixture reflectors and lenses or louvers shall be left with no water marks or cleaning streaks.

3.11 PROTECTION AND HANDLING OF EQUIPMENT AND MATERIALS

- A. Equipment and materials shall be protected from theft, injury or damage.
- B. Protect equipment outlets, pipe and duct openings with temporary plugs or caps.
- C. Provide adequate storage for all equipment and materials delivered to the job site. Equipment set in place in unprotected areas must be provided with temporary protection.

3.12 ACCESSIBILITY

- A. All equipment shall be installed so as to be readily accessible for operation, maintenance, and repair, as required by the equipment manufacturer and as subject to the approval of the Engineer.

3.13 NAMEPLATES AND DIRECTORIES

- A. Identify switchgear, motor controls, panelboards, safety switches, etc., with manufacturer's nameplate, shop order, where applicable on composite assemblies, and designations used on the Drawings. Nameplates shall be laminated phenolic plastic, beveled edged white with engraved black letters. Except where impractical, letter and numerals shall be a minimum of 1/2 inch high. Nameplates shall be mechanically secured. Pressure sensitive nameplates are not acceptable. Panel directories shall be neatly typed, showing equipment served and location for each breaker or switch with a clear plastic protective cover.

3.14 EXTRA WORK

- A. Refer to Division 1, General Requirements.
- B. For any extra electrical work which may be proposed, the Electrical Contractor shall furnish to the General Contractor/Construction Manager, an itemized breakdown of the estimated cost of all materials and labor required to complete this work. The estimate cost breakdown shall include unit prices (same prices for increase/decrease of work) for all materials (i.e. wire, conduit, devices, equipment, equipment rental, etc.) and all labor (i.e. manhours, overtime, etc.) which may be required for any proposed extra work. The Contractor shall not proceed until receiving a written order from the General Contractor establishing the agreed price and describing the work to be done.

3.15 DRAWINGS AND MEASUREMENTS

- A. These specifications and accompanying drawings are intended to describe and provide for finished work. They are intended to be cooperative, and what is called for by either the drawings or specifications shall be as binding as if call for by both. The work herein described shall be complete in every detail.
- B. The Drawings are not intended to be scaled for rough-in measurements, nor to serve as Shop Drawings. Field measurements necessary for ordering materials and fitting the installation to the building construction and arrangement shall be taken by the Contractor. The Contractor shall check latest architectural drawings to locate light switches, check latest structural drawings for interferences, etc.

3.16 FIELD QUALITY CONTROL

- A. Equipment Start-Up
 - 1. After completion of the installation, all systems and equipment shall be tested by the Contractor in the presence of the Owner's Representative and/or Engineer under actual operating conditions. Tests shall be performed according to manufacturer's recommendations.
 - 2. The Contractor shall include with his bid the services of all required Equipment Manufacturer's field service technicians for a period necessary to complete the work to the satisfaction of the Engineer and Owner.
 - 3. This service shall be for the purposes of check-out, initial start-up, certification, and instruction of plant personnel.
 - 4. A written report covering the technician's findings and installation approval shall be submitted to the Engineer covering all inspections and outlining in detail any deficiencies noted.
 - 5. Specific requirements, if any, for a particular system or piece of equipment are contained in the particular specification sections. The Contractor's responsibility relative to coordinating these services is contained in Section 01 7700, Closeout Procedures.
- B. Manufacturer's Supervision and Field Installation Verification
 - 1. Where specified, electrical equipment manufacturer shall furnish the services of an authorized representative especially trained and experienced in the installation of his

equipment to

- a. Supervise the equipment installation in accordance with the approved submittals and manufacturer's instructions.
- b. Be present when the equipment is first put into operation.
- c. Inspect, check, adjust as necessary, and approve the installation.
- d. Repeat the inspection, checking, and adjusting until all trouble or defects are corrected and the equipment installation and operation are acceptable.
- e. Prepare and submit the specified Manufacturers' Certified report. Include all costs for representative's services in the contract price.

END OF SECTION

SECTION 26 0519

LOW-VOLTAGE ELECTRICAL POWER CABLES (600 V AND LESS)

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wire and cable for 600 volts and less.
- B. Wiring connectors and connections.

1.02 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- B. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.03 SUBMITTALS

- A. Project Record Documents: Record actual locations of components and circuits.

1.04 QUALITY ASSURANCE

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

1.05 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on the Drawings.
- B. Conductor sizes are based upon copper unless indicated as aluminum "AL" on the Drawings.
- C. Wire and cable routing shown on the Drawings are approximate unless dimensioned. Route wire and cable as required to meet project conditions.
- D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.
 - 1. Contractor shall coordinate all proposed routings through occupied areas with the Architect/Owner as required to determine acceptable appearance of new routings prior to rough-in.

PART 2 PRODUCTS

2.01 WIRING REQUIREMENTS

- A. Concealed Dry Interior Locations: Use only building wire in conduit.
 - 1. Or building wire in raceway where approved by Architect/Owner.
- B. Exposed Dry Interior Locations: Use only building wire in conduit building wire with Type THHN, THWN, XHHW insulation in conduit.
- C. Above Accessible Ceilings: Use only building wire in conduit or metal clad cable.
- D. Wet or Damp Interior Locations: Use only building wire with Type THWN, XHHW insulation in conduit.
- E. Exterior Locations: Use only building wire with Type THWN or XHHW insulation in conduit.
- F. Underground Installations: Use only building wire with Type THWN or XHHW insulation in conduit.

- G. Use stranded conductors for control circuits.
- H. Use conductor not smaller than 10 AWG for power and lighting circuits.
- I. Use conductor not smaller than 14 AWG for control circuits.
- J. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
- K. Use 8 AWG conductors for 30 ampere, 120 volt branch circuits longer than 75 feet.
- L. Conductor sizes are based on copper unless indicated as aluminum or "AL".
- M. All feeders not sized on the plans shall be sized by the CONTRACTOR for a maximum of 2% voltage drop. All branch circuits shall be sized for a maximum of 3% voltage drop.

2.02 WIRE MANUFACTURERS

- A. Cerro Wire Inc.: www.cerrowire.com.
- B. Industrial Wire & Cable, Inc.: www.iewc.com.
- C. Southwire Company: www.southwire.com.
- D. Royal.
- E. Rome.
- F. General Cable.
- G. Triangle.

2.03 BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper. Class B strand per ICEA S-61-402.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: NFPA 70.
 - 1. For Feeders and Branch Circuits Equal to and Smaller Than 4/0 AWG (Dry and Damp locations): Type THHN rated 90 degrees C.
 - 2. For Feeders and Branch Circuits Equal to and Smaller Than 4/0 AWG (Wet locations): Type THWN rated 90 degrees C.
 - 3. For Feeders and Branch Circuits Larger Than 4/0 AWG (Dry and Damp locations): Type XHHW rated 90 degrees C.
- E. Color Coding:
 - 1. Branch circuits shall have their insulation color coded the entire length as noted below.
 - 2. Feeder conductors shall have their ends taped, when entering junction boxes or panels, as noted below.
 - 3. Color coding shall be as follows:
 - a. 240/120 volt, 1 phase, 3 wire:
 - 1) grounded neutral - white
 - 2) phase A hot leg - black
 - 3) phase B hot leg - red
 - 4) ground – green

2.04 CONTROL WIRING

- A. Control circuit, single conductor field wire shall be No. 14 AWG, stranded copper with 30 mil thick wall of cross linked polyethylene or polyvinyl chloride insulation rated to withstand a copper temperature of 90 degrees C. at 600 volts without deterioration. It shall meet applicable ICEA Standards.
- B. Multi conductor control cable shall consist of individual conductors, No. 14 AWG, stranded copper with 30 mil thick wall of insulation rated to withstand a copper temperature of 75 degrees C without deterioration. The insulation shall be a 20 mil wall of polyethylene with a 10 mil thick polyvinyl chloride jacket. The individual conductors shall be identified per Paragraph 5.6.3. of ICEA Publication No. S 61402 and shall be cabled together with suitable fillers and binder tape to give the completed cable a substantially circular cross section.

2.05 METAL CLAD CABLE (TYPE MC CABLE)

- A. Description: NFPA 70, Type MC.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation Temperature Rating: 75 degrees C.
- E. Insulation Material: Thermoplastic.
- F. Armor Material: Steel.
- G. Armor Design: Interlocked metal tape.
- H. Fittings: Shall be specifically designed for use with type MC cable.

2.06 WIRING CONNECTORS

- A. Split Bolt Connectors:
 - 1. Manufacturers:
 - a. Black Burn.
 - b. T & B.
 - c. Burndy.
- B. Solderless Pressure Connectors:
 - 1. Manufacturers:
 - a. AMP.
 - b. T & B.
 - c. 3 M.
- C. Spring Wire Connectors:
 - 1. Manufacturers:
 - a. Buchanah Model B-Cap.
 - b. 3 M Model Scotchlok or Hyflex.
 - c. Panduit Model P-Conn.
- D. Compression Connectors:
 - 1. Manufacturers:
 - a. Neer.

- b. T & B.
- c. Appleton.

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.
- D. Verify that field measurements are as indicated.

3.02 PREPARATION

- A. Completely and thoroughly swab conduit/raceway before installing wire.

3.03 INSTALLATION

- A. Install wire and cable securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Route wire and cable as required to meet project conditions.
 - 1. Wire and cable routing indicated is approximate unless dimensioned.
 - 2. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.
- C. Use wiring methods indicated.
- D. All wiring shall be installed in conduit or approved raceway. All raceways shall be provided with a ground conductor unless noted otherwise.
- E. Use stranded conductors for control circuits.
- F. Pull all conductors into raceway at same time.
- G. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- H. Protect exposed cable from damage.
- I. Support cables above accessible ceiling, using spring metal clips or metal cable ties to support cables from structure. Do not rest cable on ceiling panels.
- J. Use suitable cable fittings and connectors.
- K. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- L. Clean conductor surfaces before installing lugs and connectors.
- M. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- N. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
- O. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
- P. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- Q. Identify and color code wire and cable under provisions of Section 26 0553. Identify each conductor with its circuit number or other designation indicated.

- R. Branch circuits may be combined up to 8 conductors (A-phase, B-phase, C-phase, neutral and A-phase, B-phase, C-phase, neutral) and 2 ground conductors in conduit. Contractor shall be responsible for derating conductors as required by N.E.C Article 310, Note 8.
- S. Branch circuit neutral conductors: The use of multi-wire branch circuits with a common neutral is not permitted. Each branch circuit shall be furnished and installed with an accompanying neutral conductor sized the same as the phase conductor.

END OF SECTION

SECTION 26 0526

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grounding and bonding components.
- B. Provide all components necessary to complete the grounding system(s) consisting of:
 - 1. New grounding for new electrical service & circuits connected to new bonding to reinforcing steel in foundation footing.
 - 2. New Rod electrodes.

1.02 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.03 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: 5 ohms.

1.04 SUBMITTALS

- A. Test Reports: Indicate overall resistance to ground and resistance of each electrode.
- B. Project Record Documents: Record actual locations of components and grounding electrodes.

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 10 years documented experience with service facilities within 100 miles of Project.
- C. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- D. The Contractor shall be responsible for providing all grounding required in accordance with NEC and local code requirements. Grounding shown on the plans is minimum required.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Cooper Power Systems: www.cooperpower.com.
- B. Framatome Connectors International: www.fciconnect.com.
- C. Lightning Master Corporation: www.lightningmaster.com.
- D. American Electric.
- E. Chance.
- F. Burndy.
- G. Cadweld.

2.02 GENERAL

- A. The contractor shall provide/install a grounding system in accordance with the drawings, the specifications, and with the National Electrical Code, NEMA, USASI, and IEEE Standards, latest

editions.

1. The ground bar at the main service disconnect shall be bonded to the water mains, structural steel, driven ground rods, reinforcing steel in building foundation, etc. via Grounding Electrode Conductors (G.E.C.) as required for an NEC code compliant grounding system. Maximum grounding resistance shall be achieved per NEC requirements.

2.03 ELECTRODES

- A. Manufacturers:
 1. Cooper Power Systems: www.cooperpower.com.
 2. Framatome Connectors International: www.fciconnect.com.
 3. Lightning Master Corporation: www.lightningmaster.com.
 4. Chance.
 5. American Electric - Blackburn.
- B. Rod Electrodes: Copper-clad steel.
 1. Diameter: 3/4 inch (19 mm).
 2. Length: 10 feet (3000 mm).

2.04 CONNECTORS AND ACCESSORIES

- A. Mechanical Connectors: Bronze.
 1. Manufacturers: Chance, Burndy, American Electric - Blackburn.
- B. Exothermic Connections:
 1. Product: Cadweld.
- C. Wire: Stranded copper.
- D. Grounding Electrode Conductor: Size to meet NFPA 70 N.E.C. code requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions prior to beginning work.
- B. Verify that final backfill and compaction has been completed before driving rod electrodes.

3.02 INSTALLATION

- A. Install ground electrodes at locations indicated. Install additional rod electrodes as required to achieve specified resistance to ground.
- B. Provide grounding well pipe with cover at each rod location. Install well pipe top flush with finished grade.
- C. Provide grounding electrode conductor (G.E.C.) and connect to: Metal Water Service Pipe; Building Steel; Reinforcing steel in foundation footing; Effective Ground Mat; Etc...for a complete code compliant grounding system. Bond steel together.
- D. Provide bonding to meet requirements described in Quality Assurance.
- E. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- F. Ground cables shall be protected by sleeves where the cables extend through a concrete surface. Ground inserts shall be used where ground cables extending through the surface would be exposed to damage during or after construction.

- G. Where ground cables are installed in metallic conduit, the cables shall be bonded to the conduit at both ends of the run.
- H. Welds on ground cables shall be cleaned and painted with an asphalt base paint where buried underground or imbedded in concrete.
- I. Install a minimum #12 AWG green grounding wire for each branch circuit. The grounding wire shall be connected to the grounding terminal bus bars in panelboards, and these bars shall be grounded to the building's grounding system.
- J. Circuits run in PVC conduit shall have a separate ground wire.

END OF SECTION

SECTION 26 0529

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Conduit and equipment supports.
- B. Anchors and fasteners.

1.02 REFERENCE STANDARDS

- A. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- B. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.03 QUALITY ASSURANCE

- 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 MATERIALS

- A. Hangers, Supports, Anchors, and Fasteners - General: Corrosion-resistant materials of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.
- B. Supports: Fabricated of structural steel or formed steel members; galvanized. All structural supports and channels shall be manufactured from a minimum of #16 gauge ASTM A570 grade 33 steel.
- C. Anchors and Fasteners:
 - 1. Do not use spring clips.
 - 2. Obtain permission from ENGINEER before using powder-actuated anchors.
 - 3. Concrete Structural Elements: Use precast inserts, expansion anchors, or preset inserts.
 - 4. Steel Structural Elements: Use beam clamps or welded fasteners.
 - 5. Concrete Surfaces: Use expansion anchors.
 - 6. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use hollow wall fasteners.
 - 7. Solid Masonry Walls: Use expansion anchors or preset inserts.
 - 8. Sheet Metal: Use sheet metal screws.
 - 9. Wood Elements: Use wood screws.
- D. Formed Steel Channel:
 - 1. Product: B-Line Strut.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install hangers and supports as required to adequately and securely support electrical system

components, in a neat and workmanlike manner, as specified in NECA 1.

1. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
 2. Obtain permission from Engineer before drilling or cutting structural members.
- B. Rigidly weld support members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- C. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- D. In wet and damp locations use steel channel supports to stand cabinets and panelboards 1 inch off wall.
- E. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

END OF SECTION

SECTION 26 0534

CONDUIT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Conduit, fittings and conduit bodies.

1.02 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC).
- B. ANSI C80.3 - American National Standard for Steel Electrical Metallic Tubing (EMT).
- C. ANSI C80.5 - American National Standard for Electrical Rigid Aluminum Conduit (ERAC).
- D. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- E. NECA 101 - Standard for Installing Steel Conduit (Rigid, IMC, EMT); National Electrical Contractors Association.
- F. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association.
- G. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit; National Electrical Manufacturers Association.
- H. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing; National Electrical Manufacturers Association.
- I. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.03 SUBMITTALS

- A. Project Record Documents: Accurately record actual routing of conduits larger than 1-1/4 inches in diameter.

1.04 QUALITY ASSURANCE

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

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept conduit on site. Inspect for damage.
- B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- C. Protect PVC conduit from sunlight.

1.06 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 shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system.
- D. Where wire and cable routing is not shown, and destination only is indicated, determine exact

routing and lengths required.

1. Contractor shall coordinate all proposed routings through occupied areas with the Architect/Owner as required to determine acceptable appearance of new routings prior to rough-in

PART 2 PRODUCTS

2.01 CONDUIT REQUIREMENTS

- A. Conduit Size: Comply with NFPA 70.
 1. Minimum Size: 3/4 inch (19 mm) where concealed within inaccessible construction (i.e. within walls, above drywall ceilings, etc.), 1/2" minimum elsewhere.
- B. Underground Installations:
 1. More than 5 Feet (1.5 Meters) from Foundation Wall: Use galvanized rigid steel conduit, thickwall nonmetallic conduit, or thinwall nonmetallic conduit.
 2. Within 5 Feet (1.5 Meters) from Foundation Wall: Use galvanized rigid steel conduit, or thickwall nonmetallic conduit.
 3. In or Under Slab on Grade: Use thickwall nonmetallic conduit.
 4. Minimum Size: 1 inch (25 mm).
- C. Outdoor Locations Above Grade: Use galvanized rigid steel conduit.
- D. In Slab Above Grade:
 1. Use galvanized rigid steel conduit.
 2. Maximum Size Conduit in Slab: 3/4 inch (19 mm); 1/2 inch (13 mm) for conduits crossing each other.
- E. Wet and Damp Locations: Use galvanized rigid steel conduit or rigid aluminum conduit
- F. Dry Locations:
 1. Concealed: Use electrical metallic tubing.
 2. Exposed: Use galvanized rigid steel conduit or electrical metallic tubing.
- G. Transformer and Motor Connections:
 1. Liquidtight flexible metal conduit (maximum length shall be 3'-0").
- H. Lighting fixtures:
 1. Interior: From junction box to lighting fixture shall be flexible metal conduit (maximum length shall be 6'-0").
 2. Exterior: From junction box to lighting fixture shall be liquidtight flexible metal conduit (maximum length shall be 3'-0").
- I. AC/MC Cable:
 1. Use for concealed branch circuit drops to devices or light fixtures. Do not use AC/MC cable for homeruns to panelboards.
- J. Low Voltage Control Wiring (security systems, temperature controls systems, etc.):
 1. Use electrical metallic tubing, except when making final connection to moving equipment where flexible conduit or sealtite should be used.

2.02 METAL CONDUIT

- A. Manufacturers:

1. Allied Tube & Conduit: www.alliedtube.com.
 2. Beck Manufacturing, Inc.: www.beckmfg.com.
 3. Wheatland Tube Company: www.wheatland.com.
 4. Century.
- B. Rigid Steel Conduit: ANSI C80.1. Galvanized Rigid Steel (GRS).
- C. Rigid Aluminum Conduit: ANSI C80.5.
- D. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.
1. Connectors and couplings shall be threaded, set-screw, or compression type, and concrete tight and/or rain tight where required.
 2. Locknuts shall be malleable iron or steel. Bushings shall be malleable iron, steel, or plastic. Malleable iron or steel bushings shall be zinc or cadmium plated and shall have insulating insert of thermostatic plastic molded and locked into bushing ring. Plastic bushings shall be thermostatic phenolic insulating type. Use of non-rigid plastic bushings is prohibited.

2.03 FLEXIBLE METAL CONDUIT

- A. Manufacturers:
1. AFC Cable Systems, Inc.: www.afcweb.com.
 2. Electri-Flex Company: www.electriflex.com.
 3. International Metal Hose: www.metalhose.com.
- B. Description: Interlocked steel construction.
- C. Fittings: NEMA FB 1. cast fittings.
- D. Flexible metal conduit shall have a separate grounding conductor.

2.04 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Manufacturers:
1. AFC Cable Systems, Inc.: www.afcweb.com.
 2. Electri-Flex Company: www.electriflex.com.
 3. International Metal Hose: www.metalhose.com.
 4. Anaconda Type "UA" for less than 1-1/4" and Type "EF" for larger than 1-1/2".
- B. Description: Interlocked steel construction with PVC jacket.
- C. Fittings: NEMA FB 1. cast fittings.
- D. Flexible metal conduit shall have a separate grounding conductor.

2.05 ELECTRICAL METALLIC TUBING (EMT)

- A. Manufacturers:
1. Allied Tube & Conduit: www.alliedtube.com.
 2. Beck Manufacturing, Inc.: www.beckmfg.com.
 3. Wheatland Tube Company: www.wheatland.com.
- B. Description: ANSI C80.3; galvanized tubing.
- C. Fittings and Conduit Bodies: NEMA FB 1; steel or malleable iron set screw type.
1. Connectors and couplings shall be threaded, set-screw, or compression type, and concrete

tight and/or rain tight where required.

2. Locknuts shall be malleable iron or steel. Bushings shall be malleable iron, steel, or plastic. Malleable iron or steel bushings shall be zinc or cadmium plated and shall have insulating insert of thermostatic plastic molded and locked into bushing ring. Plastic bushings shall be thermostatic phenolic insulating type. Use of non-rigid plastic bushings is prohibited.

2.06 NONMETALLIC CONDUIT

- A. Manufacturers:
 1. AFC Cable Systems, Inc.: www.afcweb.com.
 2. Electri-Flex Company: www.electriflex.com.
 3. Carlon.
- B. Description: NEMA TC 2; Schedule 40 = Thinwall; 80 = Thickwall PVC.
- C. Fittings and Conduit Bodies: NEMA TC 3.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify routing and termination locations of conduit prior to rough-in.
- B. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

3.02 INSTALLATION

- A. Install conduit securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Install steel conduit as specified in NECA 101.
- C. Install nonmetallic conduit in accordance with manufacturer's instructions.
- D. Arrange supports to prevent misalignment during wiring installation.
- E. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- F. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits.
- G. Fasten conduit supports to building structure and surfaces under provisions of Section 26 0529.
- H. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- I. Do not attach conduit to ceiling support wires.
- J. Arrange conduit to maintain headroom and present neat appearance.
- K. Route exposed conduit parallel and perpendicular to walls.
- L. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- M. Route conduit in and under slab from point-to-point.
- N. Do not cross conduits in slab.
- O. Maintain adequate clearance between conduit and piping.
- P. Maintain 12 inch (300 mm) clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).
- Q. Cut conduit square using saw or pipecutter; de-burr cut ends.

- R. Bring conduit to shoulder of fittings; fasten securely.
- S. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- T. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations, and to cast boxes.
- U. Install no more than equivalent of three 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2 inch (50 mm) size. Elbows larger than 3" dia. shall be long radius elbows.
- V. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- W. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control, and expansion joints.
- X. Provide suitable pull string in each empty conduit except sleeves and nipples.
- Y. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- Z. Ground and bond conduit under provisions of Section 26 0526.
- AA. Identify conduit under provisions of Section 26 0553.
- BB. Underground exterior conduits shall be sloped away from the building at a minimum of 4" per 100' or 0.33%.
- CC. Install insulating bushings at open ends of telephone, data, video, security, etc. conduits.
- DD. Drawstrings shall be provided for all new empty conduits. Drawstring shall be wax impregnated, nylon, or other synthetic material resistant to moisture and mildew to prevent deterioration.
- EE. All underground conduits and/or duct banks shall be installed 24" minimum below grade (unless noted otherwise) and shall slope minimum of 0.33% to manholes, handholes, cable vaults, or other structures.

3.03 FIRESTOPPING

- A. Use only firestop products that have been tested according to ASTM E-814 and UL 1479 for the conditions set forth regarding construction assembly type, penetrating item type, annular space requirements and fire rating.
- B. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
 - 1. For non-combustible penetrations including conduit not passing through a sleeve, the following materials are acceptable:
 - a. Hilti FS 601 Elastmeric Firestop Sealant.
 - b. 3 M.
 - c. CSD Sealing Systems.
 - d. Firestop Systems.
 - 2. For non-combustible penetrations including sleeved conduits, the following materials are acceptable:
 - a. Hilti FS 601 Elastmeric Firestop Sealant.
 - b. 3 M.
 - c. CSD Sealing Systems.

- d. Firestop Systems.
- 3. For combustible penetrations including cables and cable bundles, the following materials are acceptable:
 - a. Hilti FS 611A Intumescent Firestop Sealant.
 - b. 3 M.
 - c. CSD Sealing Systems.
 - d. Firestop Systems.

3.04 PAINTING

- A. All conduit exposed in finished areas shall be painted to match the surrounding finishes. Refer to specification section 09900 - Coordinate color with Architect.

END OF SECTION

SECTION 26 0537

BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall and ceiling outlet boxes.
- B. Pull and junction boxes.

1.02 REFERENCE STANDARDS

- A. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- B. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association.
- C. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; National Electrical Manufacturers Association.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association.
- E. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.03 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Provide products listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.
- C. Pull boxes, junction boxes, and cable support boxes of proper size and design shall be provided in accordance with the N.E.C. and as required to facilitate installation of wires. All boxes shall be sized in accordance with the N.E.C. Covers shall be gasketed and held in place with corrosion resistant machine screws. Cable supports for vertical runs shall be provided at code required locations, within pull or junction boxes. Boxes shall be NEMA 12 for inside and NEMA 4 for outside use where exposed to the weather or where otherwise called for on the drawings.

PART 2 PRODUCTS

2.01 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch (13 mm) male fixture studs where required.
- B. Cast Boxes: NEMA FB 1, Type FD, cast ferrous alloy. Provide gasketed cover by box manufacturer. Provide threaded hubs.
- C. Wall Plates for Finished Areas: As specified in Section 26 2726.
- D. Outlet and switch boxes shall be minimum of 2-1/8" deep. When installed in a poured wall a 2-1/2" minimum deep box shall be used. When installed in masonry a 3-1/2" minimum deep box shall be used.
- E. Use 2-gang 4" square boxes with single plaster rings for single device outlets.

2.02 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

- B. Surface Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface mounted junction box:
 - 1. Material: Galvanized cast iron.
 - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose.

3.02 INSTALLATION

- A. Install boxes securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70.
- C. Coordinate installation of outlet boxes for equipment connected under Section 26 2717.
- D. Set wall mounted boxes at elevations to accommodate mounting heights indicated.
- E. Electrical boxes are shown on Drawings in approximate locations unless dimensioned.
- F. Orient boxes to accommodate wiring devices oriented as specified in Section 26 2726.
- G. Maintain headroom and present neat mechanical appearance.
- H. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- I. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.
- J. Provide identification labels on all junction boxes indicating what systems/equipment circuits are feeding (i.e. Lights in Room #102) and where they are being fed from (i.e. Panel LP-1)
- K. Install boxes to preserve fire resistance rating of partitions and other elements.
- L. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.
- M. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan.
- N. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.
- O. Use flush mounting outlet box in finished areas.
- P. Do not install flush mounting box back-to-back in walls; provide minimum 6 inches (150 mm) separation. Provide minimum 24 inches (600 mm) separation in acoustic rated walls.
- Q. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- R. Use stamped steel bridges to fasten flush mounting outlet box between studs.
- S. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- T. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches (305 mm) of box.
- U. Use 2-gang 4" square boxes with single plaster rings for single device outlets.
- V. Use cast outlet box in exterior locations and wet locations.
- W. Large Pull Boxes (boxes larger than 100 cubic inches in volume or 12 inches in any dimension): Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

3.03 ADJUSTING

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

3.04 CLEANING

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

END OF SECTION

SECTION 26 0553

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nameplates and labels.
- B. Wire and cable markers.
- C. Conduit markers.
- D. Underground wiring tape.
- E. Panel schedules.

1.02 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.03 QUALITY ASSURANCE

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

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Brady Corporation: www.bradycorp.com.
- B. Seton Identification Products: www.seton.com/aec.
- C. Thomas & Betts.
- D. Panduit.

2.02 NAMEPLATES AND LABELS

- A. Nameplates: Engraved three-layer laminated plastic, black letters on white background.
- B. Locations:
 - 1. Each electrical distribution and control equipment enclosure (including starters, disconnects, panelboards, breakers at distribution panels, etc.).
 - 2. Communication cabinets.
- C. Letter Size:
 - 1. Use 1/2 inch letters for identifying equipment and loads. Identification shall indicate where the load is fed from.

2.03 WIRE MARKERS

- A. Description: Vinyl cloth type self-adhesive wire markers.
- B. Description: tape or split sleeve type wire markers.
- C. Locations: Each conductor at panelboard gutters, pull boxes, and junction boxes each load connection.
 - 1. Identify circuit feeder numbers at all wiring devices (receptacle, light switches, dimmers, etc.) with a self-adhesive wire marker taped to the back of the device cover plate.

D. Legend:

1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
2. Control Circuits: Control wire number indicated on shop drawings.

2.04 CONDUIT MARKERS

- A. Description: Size: 1-1/8"x4-1/2" minimum. Color: Background color as specified below with black lettering.
- B. Location: Furnish markers for each conduit longer than 6 feet (2 m).
- C. Spacing: 20 feet (6 m) on center.
- D. Color:
 1. Fire Alarm System: Red.
 2. All Others: White
- E. Legend:
 1. 480 Volt System: 480 Volt.
 2. 277 Volt System: 277 Volt.
 3. 240 Volt System: 240 Volt.
 4. 208 Volt System: 208 Volt.
 5. Fire Alarm System: Fire Alarm.
 6. Telecom: Telecom.

2.05 UNDERGROUND WARNING TAPE

- A. Description: 4 inch (100 mm) wide plastic tape, detectable type colored red with suitable warning legend describing buried electrical lines.

2.06 PANEL SCHEDULES

- A. Each panel shall have a typewritten panel schedule indicating loads. A clear plastic cover over the schedule shall be provided to protect it.
- B. Existing panel schedules shall be improved to indicate all existing loads and/or updated to indicate all changes that have occurred during renovation. Typing over writing over existing entries on existing schedules is not acceptable. A new schedule shall be provided. Entries must be in type written form.

PART 3 EXECUTION

3.01 PREPARATION

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

3.02 INSTALLATION

- A. Install nameplates and labels parallel to equipment lines.
- B. Secure nameplates to equipment front using screws or rivets.
- C. Secure nameplates to inside surface of door on panelboard that is recessed in finished locations.
- D. Identify underground conduits using underground warning tape. Install one tape per trench at 3 inches (75 mm) below finished grade.

END OF SECTION

SECTION 26 0923

LIGHTING CONTROL DEVICES - WIRED

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Occupancy / Vacancy sensors.

1.02 REFERENCE STANDARDS

- A. ANSI C136.10 - American National Standard for Roadway and Area Lighting Equipment - Locking-Type Photocontrol Devices and Mating Receptacles - Physical and Electrical Interchangeability and Testing; 2006.
- B. ANSI C136.24 - American National Standard for Roadway and Area Lighting Equipment - Nonlocking (Button) Type Photocontrols.
- C. NECA 1 - Standard for Good Workmanship in Electrical Contracting.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- E. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of lighting control devices with millwork, furniture, equipment, etc. installed under other sections or by others.
 - 2. Coordinate the placement of wall switch occupancy sensors with actual installed door swings.
 - 3. Coordinate the placement of occupancy sensors with millwork, furniture, equipment or other potential obstructions to motion detection coverage installed under other sections or by others.
 - 4. Notify ENGINEER of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.
- B. Sequencing:
 - 1. Do not install lighting control devices until final surface finishes and painting are complete.

1.04 SUBMITTALS

- A. Product Data: Include ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.
 - 1. Occupancy / Vacancy Sensors: Include detailed motion detection coverage range diagrams.
- B. Shop Drawings:
 - 1. Occupancy / Vacancy Sensors: Provide lighting plan indicating location, model number, and orientation of each occupancy sensor and associated system component.
- C. Field Quality Control Reports.
- D. Manufacturer's Installation Instructions: Include application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- E. Operation and Maintenance Data: Include detailed information on device programming and

setup.

- F. Project Record Documents: Record actual installed locations and settings for lighting control devices.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Store products in a clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

1.07 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

PART 2 PRODUCTS

2.01 ALL LIGHTING CONTROL DEVICES

- A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- B. Unless specifically indicated to be excluded, provide all required conduit, wiring, connectors, hardware, components, accessories, etc. as required for a complete operating system.

2.02 OCCUPANCY / VACANCY SENSORS

- A. Manufacturers:
 - 1. Hubbell Building Automation, Inc.: www.hubbellautomation.com
 - 2. WattStopper: www.wattstopper.com.
 - 3. Leviton.
 - 4. Cooper.
 - 5. Source Limitations: Furnish products produced by a single manufacturer and obtained from a single supplier.
- B. All Occupancy / Vacancy Sensors:
 - 1. Description: Factory-assembled commercial specification grade devices for indoor use capable of sensing both major motion, such as walking, and minor motion, such as small desktop level movements, according to published coverage areas, for automatic control of load indicated.
 - 2. Sensor Technology:
 - a. Passive Infrared (PIR) Occupancy Sensors: Designed to detect occupancy by sensing movement of thermal energy between zones.
 - b. Ultrasonic Occupancy Sensors: Designed to detect occupancy by sensing frequency shifts in emitted and reflected inaudible sound waves.
 - c. Passive Infrared/Ultrasonic Dual Technology Occupancy Sensors: Designed to detect occupancy using a combination of both passive infrared and ultrasonic technologies.

- d. Passive Infrared/Acoustic Dual Technology Occupancy Sensors: Designed to detect occupancy using a combination of both passive infrared and audible sound sensing technologies.
- 3. Provide LED to visually indicate motion detection with separate color LEDs for each sensor type in dual technology units.
- 4. Operation: Unless otherwise indicated, occupancy sensor to turn load on when occupant presence is detected and to turn load off when no occupant presence is detected during an adjustable turn-off delay time interval.
- 5. Dual Technology Occupancy Sensors: Field configurable turn-on and hold-on activation with settings for activation by either or both sensing technologies.
- 6. Passive Infrared Lens Field of View: Field customizable by addition of factory masking material, adjustment of integral blinders, or similar means to block motion detection in selected areas.
- 7. Turn-Off Delay: Field adjustable, up to a maximum time delay setting of not less than 15 minutes and not more than 30 minutes.
- 8. Sensitivity: Field adjustable.
- 9. Adaptive Technology: Field selectable; capable of self-adjusting sensitivity and time delay according to conditions.
- 10. Compatibility: Suitable for controlling LED lighting, incandescent lighting, low-voltage lighting with electronic and magnetic transformers, fluorescent lighting with electronic and magnetic ballasts, and fractional motor loads, with no minimum load requirements.
- 11. Load Rating for Line Voltage Occupancy Sensors: As required to control the load indicated on the drawings.
- 12. Isolated Relay for Low Voltage Occupancy Sensors: SPDT dry contacts, ratings as required for interface with system indicated.
- C. Ceiling Mounted Occupancy Sensors:
 - 1. All Ceiling Mounted Occupancy Sensors:
 - a. Description: Low profile occupancy sensors designed for ceiling installation.
 - b. Unless otherwise indicated or required to control the load indicated on the drawings, provide low voltage units, for use with separate compatible accessory power packs.
 - c. Provide field selectable setting for disabling LED motion detector visual indicator.
 - d. Occupancy sensor to be field selectable as either manual-on/automatic-off or automatic on/off.
 - e. Finish: White unless otherwise indicated.
 - 2. Passive Infrared (PIR) Ceiling Mounted Occupancy Sensors:
 - a. Standard Range Sensors: Capable of detecting motion within an area of 450 square feet (41.8 square meters) at a mounting height of 9 feet (2.7 m), with a field of view of 360 degrees.
 - b. Extended Range Sensors: Capable of detecting motion within an area of 1,200 square feet (111.5 sq. m) at a mounting height of 9 feet (2.7 m), with a field of view of 360 degrees.
 - 3. Ultrasonic Ceiling Mounted Occupancy Sensors:
 - a. Standard Range Sensors: Capable of detecting motion within an area of 500 square feet (46.5 sq. m) at a mounting height of 9 feet (2.7 m), with a field of view of 360

degrees.

- b. Medium Range Sensors: Capable of detecting motion within an area of 1,000 square feet (92.9 sq. m) at a mounting height of 9 feet (2.7 m), with a field of view of 360 degrees.
- c. Extended Range Sensors: Capable of detecting motion within an area of 2,000 square feet (185.8 sq. m) at a mounting height of 9 feet (2.7 m).
- 4. Passive Infrared/Ultrasonic Dual Technology Ceiling Mounted Occupancy Sensors:
 - a. Standard Range Sensors: Capable of detecting motion within an area of 450 square feet (41.8 sq. m) at a mounting height of 9 feet (2.7 m), with a field of view of 360 degrees.
 - b. Extended Range Sensors: Capable of detecting motion within an area of 1,200 square feet (111.5 sq. m) at a mounting height of 9 feet (2.7 m), with a field of view of 360 degrees.
- D. Directional Occupancy Sensors:
 - 1. All Directional Occupancy Sensors: Designed for wall or ceiling mounting, with integral swivel for field adjustment of motion detection coverage.
 - a. Unless otherwise indicated or required to control the load indicated on the drawings, provide low voltage units, for use with separate compatible accessory power packs.
 - b. Provide field selectable setting for disabling LED motion detector visual indicator.
 - c. Finish: White unless otherwise indicated.
 - 2. Passive Infrared (PIR) Directional Occupancy Sensors:
 - a. Standard Range Sensors: Capable of detecting motion within a distance of 40 feet (12 m) at a mounting height of 10 feet (3.1 m).
 - b. Long Range Sensors: Capable of detecting motion within a distance of 80 feet (24 m) at a mounting height of 10 feet (3.1 m).
 - c. High Bay Sensors: Capable of detecting motion within a distance of 50 feet (15 m) at a mounting height of 30 feet (9.1 m).
 - 3. Passive Infrared/Ultrasonic Dual Technology Directional Occupancy Sensors: Capable of detecting motion within a distance of 40 feet (12 m) at a mounting height of 10 feet (3.1 m).
- E. Power Packs for Low Voltage Occupancy Sensors:
 - 1. Description: Plenum rated, self-contained low voltage class 2 transformer and relay compatible with specified low voltage occupancy sensors for switching of line voltage loads.
 - 2. Provide HVAC relay contact in all Occupancy Sensors and/or Power Packs for use by HVAC Temperature Controls (T.C.).
 - 3. Provide quantity and configuration of power and slave packs with all associated wiring and accessories as required to control the load indicated on the drawings.
 - 4. Input Supply Voltage: Dual rated for 120/277 V ac.
 - 5. Load Rating: As required to control the load indicated on the drawings.
- F. Accessories:
 - 1. Provide heavy duty coated steel wire protective guards compatible with specified occupancy sensors where indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that openings for outlet boxes are neatly cut and will be completely covered by devices or wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to lighting control devices.
- F. Verify that the service voltage and ratings of lighting control devices are appropriate for the service voltage and load requirements at the location to be installed.
- G. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated
- B. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of lighting control devices provided under this section.
 - 1. Mounting Heights: Unless otherwise indicated, as follows:
 - 2. Orient outlet boxes for vertical installation of lighting control devices unless otherwise indicated.
- C. Install lighting control devices in accordance with manufacturer's instructions.
- D. Unless otherwise indicated, connect lighting control device grounding terminal or conductor to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- E. Install lighting control devices plumb and level, and held securely in place.
- F. Where applicable, install lighting control devices and associated wall plates to fit completely flush to mounting surface with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- G. Occupancy Sensor Locations:
 - 1. Location Adjustments: Locations indicated are diagrammatic and only intended to indicate which rooms or areas require devices. Provide quantity and locations as required for complete coverage of respective room or area based on manufacturer's recommendations for installed devices.
 - 2. Locate ultrasonic and dual technology passive infrared/ultrasonic occupancy sensors a minimum of 4 feet (1.2 m) from air supply ducts or other sources of heavy air flow and as per manufacturer's recommendations, in order to minimize false triggers.
- H. Unless otherwise indicated, install power packs for lighting control devices above accessible

ceiling or above access panel in inaccessible ceiling near the sensor location.

- I. Where indicated, install separate compatible wall switches for manual control interface with lighting control devices or associated power packs.
- J. Unless otherwise indicated, install switches on load side of power packs so that switch does not turn off power pack.

3.04 FIELD QUALITY CONTROL

- A. Inspect each lighting control device for damage and defects.
- B. Test occupancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area. Record test results in written report to be included with submittals.
- C. Correct wiring deficiencies and replace damaged or defective lighting control devices.

3.05 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.
- B. Adjust occupancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by ENGINEER.
- C. Adjust position of directional occupancy sensors and outdoor motion sensors to achieve optimal coverage as required.
- D. Where indicated or as directed by Architect, install factory masking material or adjust integral blinders on passive infrared (PIR) and dual technology occupancy sensor lenses to block undesired motion detection.

3.06 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate proper operation of lighting control devices to Owner, and correct deficiencies or make adjustments as directed.
- B. Training: Train OWNER's personnel on operation, adjustment, programming, and maintenance of lighting control devices.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Provide minimum of two hours of training.
 - 3. Instructor: Qualified contractor familiar with the project and with sufficient knowledge of the installed lighting control devices.
 - 4. Location: At project site.

END OF SECTION

SECTION 26 2416

PANELBOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Lighting and appliance panelboards.
- B. Overcurrent protective devices for panelboards.

1.02 REFERENCE STANDARDS

- A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; Federal Specification; Revision D.
- B. NECA 1 - Standard for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- C. NECA 407 - Standard for Installing and Maintaining Panelboards; National Electrical Contractors Association.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- E. NEMA PB 1 - Panelboards; National Electrical Manufacturers Association.
- F. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less; National Electrical Manufacturers Association.
- G. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association.
- H. NFPA 70 - National Electrical Code; National Fire Protection Association.
- I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- J. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- K. UL 67 - Panelboards; Current Edition, Including All Revisions.
- L. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
- B. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.
- C. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

1.04 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.
4. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
5. Notify ENGINEER of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.
- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

1.07 MAINTENANCE MATERIALS

- A. Furnish two of each panelboard key.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. General Electric Company: www.geindustrial.com.
- B. Schneider Electric; Square D Products: www.schneider-electric.us. BASE BID Square D, other approved manufacturers may only be bid as a voluntary alternate to the base bid and must be clarified in the bid as such.
- C. Siemens.

2.02 ALL PANELBOARDS

- A. Provide products listed and labeled by Underwriters Laboratories Inc. as suitable for the purpose indicated.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 1. Altitude: Less than 6,600 feet (2,000 m).
 2. Ambient Temperature:
 - a. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
- C. Short Circuit Current Rating: Refer to plans – Contractor shall verify AIC with local utility prior to ordering panelboards.
- D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.

- E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 - 1. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
 - 2. Bussing may be Aluminum, or Copper where indicated.
- G. Conductor Terminations: Suitable for use with the conductors to be installed.
- H. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - a. NEMA 1 for interior locations.
 - b. NEMA 3R or 4X for exterior or wet/damp locations.
 - 2. Boxes: Galvanized steel unless otherwise indicated.
 - a. Provide wiring gutters sized to accommodate the conductors to be installed.
 - 3. Fronts:
 - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
 - b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
 - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- I. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

2.03 LIGHTING AND APPLIANCE PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Conductor Terminations:
 - 1. Main and Neutral Lug Material: Aluminum or Copper, suitable for terminating aluminum or copper conductors.
 - 2. Main and Neutral Lug Type: Mechanical.
- C. Bussing:
 - 1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
 - 2. Phase and Neutral Bus Material: Aluminum or Copper.
 - a. Provide double neutral bus where scheduled.
 - 3. Ground Bus Material: Aluminum or Copper.
 - a. Provide insulated ground bus where scheduled.
- D. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.
- E. Enclosures:
 - 1. Provide surface-mounted or flush-mounted enclosures as indicated.
 - 2. Provide clear plastic circuit directory holder mounted on inside of door.

- F. Manufacturers:
 - 1. Square D NQ or NF type. BASE BID SQUARE D.
 - 2. Equal by approved manufacturer may be bid as alternate.
- G. Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.
- H. Minimum Integrated Short Circuit Rating: As indicated on drawings or minimum as listed below.
 - 1. 208/240 Volt Panelboards: 14,000 amperes rms symmetrical.
 - 2. 480/277 Volt Panelboards: 22,000 amperes rms symmetrical.
- I. Molded Case Circuit Breakers: Thermal magnetic trip circuit breakers, bolt-on type, with common trip handle for all poles; UL listed.
 - 1. Type SWD for lighting circuits.
 - 2. Type HACR for air conditioning equipment circuits.
 - 3. Class A ground fault interrupter circuit breakers where scheduled.
 - 4. Do not use tandem circuit breakers.
 - 5. Lock-on devices shall be provided for all branch circuits supplying exit lighting, un-switched night lighting, emergency lighting, security systems, clock and program systems, and/or fire alarm.
- J. Enclosure: NEMA PB 1, Type 1. (Type 3R for exterior locations).
- K. Cabinet Front: Flush or Surface (as noted on plans) cabinet front with concealed trim clamps, concealed hinge, metal directory frame, and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.

2.04 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers:
 - 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
 - 2. Interrupting Capacity:
 - a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
 - 3. Conductor Terminations:
 - a. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
 - 4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
 - 5. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install panelboards securely, in a neat and workmanlike manner in accordance with NECA 1

(general workmanship), NECA 407 (panelboards), and NEMA PB 1.1.

- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required supports in accordance with Section 26 0529.
- E. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.
- F. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches (2000 mm) above the floor or working platform.
- G. Provide grounding and bonding in accordance with Section 26 0526.
- H. Install all field-installed branch devices, components, and accessories.
- I. Install panelboards in accordance with NEMA PB 1.1 and NECA 1.
- J. Install panelboards plumb. Install recessed panelboards flush with wall finishes.
- K. Height: 6 feet (1800 mm) to top of panelboard; install panelboards taller than 6 feet (1800 mm) with bottom no more than 4 inches (100 mm) above floor.
- L. Provide filler plates to cover unused spaces in panelboards.
- M. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.
- N. Provide identification nameplate for each panelboard in accordance with Section 26 0553.
- O. Provide arc flash warning labels in accordance with NFPA 70.

3.02 FIELD QUALITY CONTROL

- A. Perform inspection, testing, and adjusting in accordance with General Requirements.
- B. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA STD ATS, Section 7.6.1.1 for all main circuit breakers and circuit breakers larger than 400 amperes. Tests listed as optional are not required.
- C. Correct deficiencies and replace damaged or defective panelboards or associated components.
- D. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

3.03 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.
- B. Adjust alignment of panelboard fronts.

END OF SECTION

SECTION 26 2701

ELECTRICAL SERVICE ENTRANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metering transformer cabinets.
- B. Meter bases.
- C. Contractor shall arrange with Utility Company for permanent electrical service, either new service or renovations to existing service. Contractor shall be responsible for providing drawings to the Utility Company for Coordination of services and charges. Contractor shall provide conduit for primary cable from service to transformer, transformer pad (if pad mounted), and installation of meter base per utility requirements. Owner shall pay for any direct utility costs for new or modified service charges.

1.02 REFERENCE STANDARDS

- A. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- B. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.03 SYSTEM DESCRIPTION

- A. Service Entrance: Either Overhead or Underground service entrance, per the plans, but also as coordinated with and determined by the Electrical Utility.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with utility company written requirements and NFPA 70.
 - 1. Maintain one copy of each document on site.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.05 PRE-INSTALLATION MEETING

- A. Convene eight (8) weeks prior to commencing work of this section. Review service entrance requirements and details with Utility Company representative at least eight (8) weeks prior to start of new electrical service.

PART 2 PRODUCTS

2.01 COMPONENTS

- A. Metering Transformer Cabinets (If Applicable): Sheet metal cabinet with hinged door, conforming to utility company requirements, with provisions for locking and sealing.
 - 1. Size: As required by utility.
- B. Meter Base: Furnished by utility company.
- C. Utility Transformer Pad (If Applicable): Prefabricated precast concrete transformer pad with cable pit.
- D. Other Components: As required by utility company.

PART 3 EXECUTION

3.01 PREPARATION

- A. Arrange with utility company to obtain permanent electric service to the Project. The Contractor shall be responsible for providing drawings to the Utility Company and for Coordination of the new service or modifications to existing service.
- B. Verify that field measurements are as indicated on utility company drawings.
- C. Coordinate location of Utility Company's facilities to ensure proper access is available.

3.02 INSTALLATION

- A. Install securely, in a neat and workmanlike manner, as specified in NECA 1.

END OF SECTION

SECTION 26 2717

EQUIPMENT WIRING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical connections to equipment.

1.02 REFERENCE STANDARDS

- A. NEMA WD 1 - General Color Requirements for Wiring Devices; National Electrical Manufacturers Association.
- B. NEMA WD 6 - Wiring Devices - Dimensional Requirements; National Electrical Manufacturers Association.
- C. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.03 QUALITY ASSURANCE

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

1.04 COORDINATION

- A. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
- B. Determine connection locations and requirements.
- C. Sequence rough-in of electrical connections to coordinate with installation of equipment.
- D. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
 - 1. Colors: Conform to NEMA WD 1.
 - 2. Cord Construction: NFPA 70, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
 - 3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.
- B. Disconnect Switches: As specified in Section 26 2818 and in individual equipment sections.
- C. Wiring Devices: As specified in Section 26 2726.
- D. Flexible Conduit: As specified in Section 26 0534.
- E. Wire and Cable: As specified in Section 26 0519.
- F. Boxes: As specified in Section 26 0537.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations. Maximum length shall be 6 feet. Minimum size shall be 3/4" diameter.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION

SECTION 26 2726

WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall switches.
- B. Receptacles.
- C. Wall plates.

1.02 REFERENCE STANDARDS

- A. FS W-C-596 - Connector, Electrical, Power, General Specification for; Federal Specification; Revision G.
- B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush-mounted (General Specification); Federal Specification; Revision F.
- C. NECA 1 - Standard for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- D. NEMA WD 1 - General Color Requirements for Wiring Devices; National Electrical Manufacturers Association.
- E. NEMA WD 6 - Wiring Device -- Dimensional Requirements; National Electrical Manufacturers Association.
- F. NFPA 70 - National Electrical Code; National Fire Protection Association.
- G. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.
- H. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.
- I. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.

1.03 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Cooper Wiring Devices: www.cooperwiringdevices.com.
- B. Leviton Manufacturing, Inc.: www.leviton.com.
- C. Hubbell.
- D. Bryant.

2.02 ALL WIRING DEVICES

- A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.03 WALL SWITCHES

- A. All Wall Switches: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.
- B. Wall Switches: NEMA WD 1, General Duty, Spec. Grade, AC only general-use snap switch. Switches shall be binding screw type, side and back wired type.
 - 1. Body and Handle: Ivory plastic with toggle handle. Coordinate color selection with Architect prior to ordering.
 - 2. Ratings: Match branch circuit and load characteristics.
- C. Single Pole Single Throw Wall Switches
 - 1. Products:
 - a. Hubbell 1221.
 - b. Arrow Hart 1991.
 - c. Leviton 1221.
- D. Three Way Wall Switches
 - 1. Products:
 - a. Hubbell 1223.
 - b. Arrow Hart 1993.
 - c. Leviton 1223.

2.04 RECEPTACLES

- A. All Receptacles: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
 - 2. NEMA configurations specified are according to NEMA WD 6.
 - 3. Coordinate all receptacle device body color with Architect/Owner prior to order.
 - a. All Emergency (EM) receptacles shall be red in color.
- B. Receptacles: NEMA WD 1, General duty, Spec. Grade, grounded type
 - 1. Configuration: NEMA WD 6, type as specified and indicated.
- C. 20 Amp Duplex Convenience Receptacles.
 - 1. Hubbell 5362.
 - 2. Arrow Hart 5362.
 - 3. Leviton 5362.
 - 4. Device Body: Ivory; Coordinate color selection with Architect prior to ordering.
- D. 20 Amp GFCI Receptacles: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.

1. Hubbell.
2. Arrow Hart.
3. Leviton.
4. Device Body: Ivory. Coordinate color selection with Architect prior to ordering.
5. GFCI receptacles shall meet UL 2003 standards.
6. NOTE: All receptacles in Wet Locations (e.g. Outdoors, Below Grade, Carwashes, etc.) and/or Damp Locations (e.g. Basements, Crawlspace, Cold storage areas, Under outdoor canopies, etc.) shall be "Weather Resistant" (WR) rated.

2.05 WALL PLATES

- A. All Wall Plates: Comply with UL 514D.
 1. Configuration: One-piece cover as required for quantity and types of corresponding wiring devices.
 2. Screws: Metal with slotted heads finished to match wall plate finish.
- B. Interior wall plates:
 1. Stainless Steel Cover Plates:
 - a. Hubbell "S" series.
 - b. Leviton 8400 series.
 - c. Arrow Hart "S" series.
- C. Exterior wall plates:
 1. WeatherProof (WP) Cover Plates (where located outdoors and where indicated on plans as "WP"): Raintight/gasketed, clear impact resistant thermoplastic, spring retained cover with offset device opening for cord exit.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- B. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- C. Verify that final surface finishes are complete, including painting.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
- E. Verify that conditions are satisfactory for installation prior to starting work.
- F. Verify door openings/swings with Architectural trades prior to installation.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.

- B. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of wiring devices provided under this section.
- C. Install wiring devices in accordance with manufacturer's instructions.
- D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- E. Where required, connect wiring devices using pigtails not less than 6 inches (150 mm) long. Do not connect more than one conductor to wiring device terminals.
- F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.
- G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- H. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- I. Install wall switches with OFF position down.
- J. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
- K. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- L. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.
- M. Connect wiring device grounding terminal to branch circuit equipment grounding conductor.
- N. Use jumbo size plates for outlets installed in masonry walls.
- O. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.04 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations of outlet boxes provided under Section 26 0537 to obtain mounting heights indicated on drawings.
- B. Install wall switches, motor control switches, at 50 inches to center of box above finished floor. For CMU walls - 48" to top of box above finished floor.
- C. Install convenience receptacles 18 inches (450 mm) above finished floor to center of box (not otherwise specified).
- D. Install convenience receptacles in CMU walls at 16 inches above floor to bottom of box.
- E. Unless noted otherwise, install GFI receptacles in toilet rooms, janitor closets, and storage rooms 48 inches to top of the box above floor.
- F. Install convenience receptacles 6 inches (150 mm) above counter. Or as required to accommodate the counter construction - refer to Architectural elevations.
- G. Coordinate all finishes and colors of wiring devices with Architect prior to ordering.
- H. Coordinate mounting height/locations with Architect prior to rough-in.

3.05 FIELD QUALITY CONTROL

- A. Inspect each wiring device for damage and defects.
- B. Operate each wall switch, wall dimmer, and fan speed controller with circuit energized to verify proper operation.
- C. Test each receptacle to verify operation and proper polarity.
- D. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.
- E. Correct wiring deficiencies and replace damaged or defective wiring devices.
- F. NOTE: All receptacles in Wet Locations (e.g. Outdoors, Below Grade, Carwashes, etc.) and/or Damp Locations (e.g. Basements, Crawlspace, Cold storage areas, Under outdoor canopies, etc.) shall be "Weather Resistant" (WR) rated.

3.06 ADJUSTING

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

3.07 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION

SECTION 26 2913

ENCLOSED CONTROLLERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Manual motor controllers.
- B. Magnetic motor controllers.
- C. Combination magnetic motor controllers and disconnects.

1.02 REFERENCE STANDARDS

- A. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- B. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC; National Electrical Manufacturers Association.
- C. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices; National Electrical Manufacturers Association.
- D. NEMA ICS 6 - Industrial Control and Systems: Enclosures; National Electrical Manufacturers Association.
- E. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum); National Electrical Manufacturers Association.
- F. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.03 QUALITY ASSURANCE

- 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 MANUFACTURERS

- A. General Electric Company: www.geindustrial.com.
- B. Square D: www.squared.com. BASE BID Square D, other approved manufacturers may only be bid as a voluntary alternate to the base bid and must be clarified in the bid as such.
- C. Allen Bradley.
- D. Siemens.

2.02 MANUAL CONTROLLERS

- A. Manual Motor Controllers: NEMA ICS 2, AC general-purpose, Class A, manually operated, full-voltage controller with overload element, red pilot light, NO auxiliary contact, and toggle operator with handle guard/lock off feature.
- B. Fractional Horsepower Manual Controllers: NEMA ICS 2, AC general-purpose, Class A, manually operated, full-voltage controller for fractional horsepower induction motors, with thermal overload unit, red pilot light, and toggle operator with handle guard/lock off feature.
- C. Enclosures: NEMA ICS 6, Type 1 for interior, dry locations; Type 3R or 4X for exterior and

damp locations.

2.03 AUTOMATIC CONTROLLERS

- A. Magnetic Motor Controllers: NEMA ICS 2, AC general-purpose Class A magnetic controller for induction motors rated in horsepower.
- B. Coil Operating Voltage: 120 volts, 60 Hertz.
- C. Overload Relays: NEMA ICS 2; bimetal.
- D. Ground fault protection: Each starter shall be provided with ground fault protection system.
- E. Enclosures: NEMA ICS 6, Type 1 for interior, dry locations; Type 4X for exterior and damp locations.

2.04 ACCESSORIES

- A. Auxiliary Contacts: NEMA ICS 2, 2 field convertible contacts in addition to seal-in contact.
- B. Indicating Lights: NEMA ICS 2; RUN; Red in front cover; Transformer, LED type.
- C. Selector Switches: NEMA ICS 2; HAND/OFF/AUTO, in front cover.
- D. Relays: NEMA ICS 2.
- E. Control Power Transformers: 120 volt secondary, 100 VA minimum, in each motor starter. Provide fused primary, secondary, and bond unfused leg of secondary to enclosure.
- F. Overload Relays: NEMA ICS 2; bimetal.

2.05 DISCONNECTS

- A. Combination Controllers: Combine motor controllers with disconnects in common enclosure. Obtain IEC Class 2 coordinated component protection.
- B. Nonfusible Switch Assemblies: NEMA KS 1, enclosed knife switch with externally operable handle.
- C. Fusible Switch Assemblies: NEMA KS 1, enclosed knife switch with externally operable handle. Fuse clips: Designed to accommodate Class R fuses.
- D. Provide handle guard/lock-off feature for all motor starter disconnects.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install enclosed controllers where indicated, in accordance with manufacturer's instructions.
- B. Install securely, in a neat and workmanlike manner, as specified in NECA 1.
- C. Provide fuses for fusible switches.
- D. Select and install overload heater elements in motor controllers to match installed motor characteristics.
- E. Neatly type label inside each motor controller door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating. Place label in clear plastic holder.

END OF SECTION

SECTION 26 5100

INTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Interior luminaires.

1.02 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- B. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems; National Electrical Contractors Association.
- C. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; National Electrical Contractors Association.
- D. NFPA 70 - National Electrical Code; National Fire Protection Association.
- E. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures; National Fire Protection Association.
- F. UL 1598 - Luminaires; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. Shop Drawings: Indicate dimensions and components for each fixture that is not a standard product of the manufacturer.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- D. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

1.04 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70 and NFPA 101.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.
- C. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- D. All lighting systems shall provided/installed to meet applicable building codes (i.e. N.E.C, Life Safety Code NFPA 101, Energy Code, etc.).

1.06 SUBSTITUTION ITEMS REQUIRING PRIOR APPROVAL

- A. All items that the CONTRACTOR proposes to use in the work, that are not specifically named in the contract documents, must be submitted for review/approval. Such items must be submitted in duplicate to the ARCHITECT and/or ENGINEER for approval a minimum of ten (10) days prior to

bid opening. Requests for prior approval must be accompanied by complete catalog information, including but not limited to, model, size, accessories, complete electrical information and performance data in the form given in the equipment schedule on the drawings at stated design conditions. Where items are referred to by symbolic designations on the drawings, all requests for prior approval shall bear the same designations.

B. Lighting Substitutions:

1. Furnish lighting fixtures as scheduled on drawings.
2. Lighting fixture substitutions may be considered for approval by the ARCHITECT/ENGINEER only if all of the following criteria are met:
 - a. Provide specification cut sheets marked-up to clearly identify the proposed luminaire including features, options, accessories, etc. required to match products indicated in the schedules.
 - b. Provide detailed point-by-point lighting calculations for all areas proposed luminaire will be installed.
 - c. Submit all cut sheets, calculations, etc. to the ARCHITECT/ENGINEER no less than 10 days prior to bid date. Substitutions submitted after this date will not be considered.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acuity/Lithonia Lighting.
- B. Eaton/Cooper Lighting.
- C. Hubbell Lighting.
- D. Or as noted in lighting schedule on the drawings.

2.02 LUMINAIRES

- A. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- B. Provide products that comply with requirements of NFPA 70 and NFPA 101.
- C. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- D. Unless otherwise indicated, provide complete luminaires including LED light source, lamp(s) and all sockets, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

2.03 LUMINAIRES

- A. Furnish products as indicated in Schedule included on the Drawings.

2.05 LAMPS

- A. All LED light sources or Lamps:
 1. Unless explicitly excluded, provide new, compatible, operable lamps in each luminaire.
 2. Verify compatibility of specified lamps with luminaires to be installed. Where lamps are not specified, provide lamps per luminaire manufacturer's recommendations.

3. Minimum Efficiency: Comply with all current applicable federal and state lamp efficiency standards.
4. Color Temperature Consistency: Unless otherwise indicated, for each type of lamp furnish products which are consistent in perceived color temperature. Replace lamps that are determined by the ENGINEER to be inconsistent in perceived color temperature.

B. Lamp Types: As specified for each fixture.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of luminaires provided under this section.
- B. Install products according to manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship), NECA 500 (commercial lighting), and NECA 502 (industrial lighting).
- D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- E. Install suspended luminaires using pendants supported from swivel hangers (except where noted to use chain hangers). Provide pendant length required to suspend luminaire at indicated height.
- F. Support luminaires independent of ceiling framing.
- G. Locate ceiling luminaires as indicated on reflected ceiling plan.
- H. Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.
- I. Install recessed luminaires to permit removal from below.
- J. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
- K. Install wall mounted luminaires at height as indicated on Drawings or in Architectural plans.
- L. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within fixture; use flexible conduit.
- M. Connect luminaires to branch circuit outlets provided under Section 26 0537 using flex. conduit.
- N. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
- O. Bond products and metal accessories to branch circuit equipment grounding conductor.
- P. All night lights, emergency lights, and exit signs shall be circuited from the unswitched hot leg of the general lighting circuit for the area served by the night/emergency/exit lights.

3.02 FIELD QUALITY CONTROL

- A. Inspect each product for damage and defects.
- B. Operate each luminaire after installation and connection to verify proper operation.

3.03 CLEANING

- A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.
- B. Remove dirt and debris from enclosures.

- C. Clean photometric control surfaces as recommended by manufacturer.
- D. Clean finishes and touch up damage.

3.04 SCHEDULE - See Drawings

END OF SECTION

SECTION 26 5600

EXTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Exterior luminaires.

1.02 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.
- B. NECA/IESNA 501 - Recommended Practice for Installing Exterior Lighting Systems.
- C. NFPA 70 - National Electrical Code; National Fire Protection Association.
- D. UL 1598 - Luminaires; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.
- C. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

1.04 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.
- C. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- D. All lighting systems shall provided/installed to meet applicable building codes (i.e. N.E.C, Life Safety Code NFPA 101, Energy Code, etc.).

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.07 SUBSTITUTION ITEMS REQUIRING PRIOR APPROVAL

- A. All items that the CONTRACTOR proposes to use in the work, that are not specifically named in the contract documents, must be submitted for review/approval. Such items must be submitted in duplicate to the ARCHITECT and/or ENGINEER for approval a minimum of ten (10) days prior to bid opening. Requests for prior approval must be accompanied by complete catalog information, including but not limited to, model, size, accessories, complete electrical information and performance data in the form given in the equipment schedule on the drawings at stated design

conditions. Where items are referred to by symbolic designations on the drawings, all requests for prior approval shall bear the same designations.

B. Lighting Substitutions:

1. Furnish lighting fixtures as scheduled on drawings.
2. Lighting fixture substitutions may be considered for approval by the ARCHITECT/ENGINEER only if all of the following criteria are met:
 - a. Provide specification cut sheets marked-up to clearly identify the proposed luminaire including features, options, accessories, etc. required to match products indicated in the schedules.
 - b. Provide detailed point-by-point lighting calculations for all areas proposed luminaire will be installed.
 - c. Submit all cut sheets, calculations, etc. to the ARCHITECT/ENGINEER no less than 10 days prior to bid date. Substitutions submitted after this date will not be considered.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Eaton/Cooper Lighting Group.
- B. Acuity/Lithonia.
- C. Hubbell Lighting Group Products.
- D. Or as noted in lighting schedule on the drawings.

2.02 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the Drawings.

2.03 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- C. Unless otherwise indicated, provide complete luminaires including LED light sources, lamp(s) and all sockets, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
- E. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of luminaires provided under this section.
- B. Install products according to manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship) and NECA/IESNA 501 (exterior lighting).
- D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.

- E. Install accessories furnished with each luminaire.
- F. Bond products and metal accessories to branch circuit equipment grounding conductor.
- G. All night lights, emergency lights, and exit signs shall be circuited from the unswitched hot leg of the general lighting circuit for the area served by the night/emergency/exit lights.

3.02 FIELD QUALITY CONTROL

- A. Inspect each product for damage and defects.
- B. Operate each luminaire after installation and connection to verify proper operation.
- C. Correct wiring deficiencies and repair or replace damaged or defective products.

3.03 CLEANING

- A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.
- B. Clean electrical parts to remove conductive and deleterious materials.
- C. Remove dirt and debris from enclosure.
- D. Clean photometric control surfaces as recommended by manufacturer.
- E. Clean finishes and touch up damage.

3.04 SCHEDULE - See Drawings

END OF SECTION

SECTION 31 10 00

SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removing surface debris.
 - 2. Removing designated trees, shrubs, and other plant life.
 - 3. Removing abandoned utilities.
 - 4. Excavating topsoil.
- B. Related Sections:
 - 1. Section 31 22 13 - Rough Grading.

1.2 REFERENCES

- A. MDOT Specifications:
 - 1. Michigan Department of Transportation Standard Specifications for Construction.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with 2020 MDOT Standard Specifications for Construction.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify existing plant life designated to remain is tagged or identified.

3.2 PREPARATION

- A. Call Local Utility Line Information service not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.

3.3 PROTECTION

- A. Locate, identify, and protect utilities indicated to remain, from damage.

- B. Protect trees, plant growth, and features designated to remain, as final landscaping as specified in Section 01 50 00.
- C. Protect bench marks, survey control points, and existing structures to remain from damage or displacement.

3.4 CLEARING

- A. Clear areas required for access to site and execution of Work to minimum depth of 6 inches.
- B. Remove trees and shrubs within marked areas. Remove stumps, main root ball, and root system to depth of 12 inches.
- C. Clear undergrowth and deadwood, without disturbing subsoil.

3.5 REMOVAL

- A. Remove debris and extracted plant life from site.
- B. Remove designated paving, curbs, and improvements.
- C. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.
- D. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.
- E. Do not burn or bury materials on site. Leave site in clean condition.

3.6 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be further excavated, relandscaped, or regraded, without mixing with foreign materials for use in finish grading.
- B. Do not excavate wet topsoil.
- C. Stockpile on site to depth not exceeding 8 feet and protect from erosion. Stockpile material on 36 mil Hypalon material and cover over with same material, until reuse.
- D. Stockpile excess topsoil not intended for reuse in location designated by Owner.

END OF SECTION

SECTION 31 22 13

ROUGH GRADING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating subsoil.
 - 2. Cutting, grading, filling, rough contouring, and compacting, site for site structures, and building pads.
- B. Related Sections:
 - 1. Section 31 10 00 - Site Clearing: Excavating topsoil.
 - 2. Section 31 23 16 - Excavating: Building excavation.
 - 3. Section 31 23 23 - Fill: General building area backfilling.

1.2 REFERENCES

- A. Michigan Department of Transportation:
 - 1. MDOT Standard Specifications for Construction.
- B. ASTM International:
 - 1. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 2. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.3 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with 2020 MDOT Standard Specifications for Construction.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Subsoil Fill: ASTM D2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetable, contaminates and other deleterious matter.
 - 1. Material shall be acceptable to the Soils Engineer or Architect in the absence thereof.
 - 2. Source of borrow material shall be approved by Soils Engineer or Architect in the absence thereof prior to delivery of any borrow material to the job site.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify survey bench mark and intended elevations for the Work are as indicated on Drawings.

3.2 PREPARATION

- A. Call Local Utility Line Information service not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Notify utility company to remove and relocate utilities.
- D. Protect utilities indicated to remain from damage.
- E. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- F. Protect bench marks, survey control point, existing structures, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.3 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be further excavated, relandscaped, or regraded.
- B. Excavate and process wet material to obtain optimum moisture content.
- C. When excavating through roots, perform Work by hand and cut roots with sharp axe.
- D. Stockpile excavated material in area designated on site in location approved by Owner.
- E. Stability: Replace damaged or displaced subsoil as specified for fill.

3.4 FILLING

- A. Fill areas to contours and elevations with unfrozen materials.
- B. Place fill material in continuous layers and compact in accordance with schedule at end of this section.
- C. Maintain optimum moisture content of fill materials to attain required compaction density.
- D. Slope grade away from building minimum 2 percent slope for minimum distance of 10 ft, unless noted otherwise.
- E. Make grade changes gradual. Blend slope into level areas.

- F. Repair or replace items indicated to remain damaged by excavation or filling.

3.5 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

3.6 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting and testing.
- B. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D2922.
 - 2. Moisture Tests: ASTM D3017.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

3.7 SCHEDULES

- A. Subsoil Fill:
 - 1. Fill to subgrade elevation.
 - 2. Compact uniformly to minimum 95 percent of maximum density.

END OF SECTION

SECTION 31 23 16

EXCAVATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Soil densification.
 - 2. Excavating for building foundations.
 - 3. Excavating for slabs-on-grade.
- B. Related Sections:
 - 1. Section 31 10 00 – Site Clearing: Topsoil removal from site surface.
 - 2. Section 31 22 13 - Rough Grading: Subsoil removal from site surface.
 - 3. Section 31 23 23 - Fill.

1.2 REFERENCES

- A. Local utility standards when working within 24 inches of utility lines.
- B. Michigan Department of Transportation:
 - 1. MDOT Standard Specifications for Construction.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with 2020 MDOT Standard Specifications for Construction.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 PREPARATION

- A. Call Local Utility Line Information service not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Protect utilities indicated to remain from damage.
- D. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- E. Protect bench marks, survey control points, existing structures, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.2 EXCAVATION

- A. Excavate subsoil to accommodate building foundations, slabs-on-grade and site structures.
- B. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 31 23 23.
- C. Slope banks with machine to angle of repose or less until shored.
- D. Do not interfere with 45 degree bearing splay of foundations.
- E. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- F. Trim excavation. Remove loose matter.
- G. Remove lumped subsoil, boulders, and rock
- H. Notify Architect/Engineer of unexpected subsurface conditions.
- I. Correct areas over excavated with structural fill as specified in Section 31 23 23.
- J. Stockpile excavated material on site in location approved by Owner.
- K. Repair or replace items indicated to remain damaged by excavation.

3.3 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting and testing.
- B. Request inspection of excavation and controlled fill operations in accordance with applicable code.
- C. Request visual inspection of bearing surfaces by inspection agency before installing subsequent work.

3.4 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION

SECTION 31 23 23

FILL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Backfilling building perimeter to subgrade elevations.
 - 2. Fill under slabs-on-grade.
 - 3. Fill for over-excavation.
 - 4. Compaction of subgrade and fill materials in place.
- B. Related Sections:
 - 1. Section 31 22 13 - Rough Grading: Site filling.
 - 2. Section 31 23 16 - Excavation.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 2. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- B. Michigan Department of Transportation:
 - 1. MDOT Standard Specifications for Construction.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with 2020 MDOT Standard Specifications for Construction.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. Subsoil Fill: Type specified in Section 31 22 13.
- B. Structural Fill: MDOT Class II sand.
- C. Granular Fill: MDOT Class II sand.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

- B. Verify structural ability of unsupported walls to support loads imposed by fill.

3.2 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with structural fill and compact to density equal to or greater than requirements for subsequent fill material.
- C. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

3.3 BACKFILLING

- A. Backfill areas to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Place fill material in continuous layers and compact in accordance with schedule at end of this section.
- D. Employ placement method that does not disturb or damage other work.
- E. Maintain optimum moisture content of backfill materials to attain required compaction density.
- F. Backfill against supported foundation walls. Do not backfill against unsupported foundation walls.
- G. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
- H. Slope grade away from building minimum 2 percent slope for minimum distance of 10 ft, unless noted otherwise.
- I. Make gradual grade changes. Blend slope into level areas.

3.4 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Top Surface of Backfilling Within Building Areas: Plus or minus 1 inch from required elevations.
- C. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting and testing.
- B. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D2922.
 - 2. Moisture Tests: ASTM D3017.

- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

3.6 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic.

3.7 SCHEDULE

- A. Under Building Footings:
 - 1. Subgrade compacted uniformly to 98 percent of maximum density.
- B. Interior Slab-On-Grade:
 - 1. Subgrade compacted to 95 percent.
 - 2. Cover with Granular Fill, 12 inches thick, compact uniformly to 95 percent of maximum density.
- C. Exterior Side of Foundation Walls:
 - 1. Granular Fill, (S1 may be used upon approval of the Architect/Engineer), to subgrade elevation, each lift, compact uniformly to 95 percent of maximum density.
- D. Fill to Correct Over-excavation:
 - 1. Structural Fill, flush to required elevation, compact uniformly to same requirements as area of over excavation.

END OF SECTION