PROJECT MANUAL

for

ELLSWORTH COMMUNITY SCHOOL

Elementary School Remodeling
and Partial Reroofing

PROJECT NO. 298-25

May 9, 2025

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ARCHITECT

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DOCUMENT 00 01 01

PROJECT TITLE PAGE

PROJECT NAME: ELLSWORTH COMMUNITY SCHOOLS
Elementary School Remodeling and Partial Reroofing

OWNER: Ellsworth Community Schools
9467 Park Street
Ellsworth, MI 49729
Contact: Aaron Gaffney, Superintendent
Telephone: 231/588-2544

ARCHITECT: Anthony Esson, Architect

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

Shipping Address:
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Frederic, MI 49733

Contact: Anthony P. Esson, Architect, LEED AP
PH: 989-350-1827
tony@anthonyessonarchitect.com

MEP ENGINEER Nealis Engineering
1419 Industry Drive
Traverse City, MI 49696
Contact: Jason VanBrocklin, PE
PH: 231-933-0510
jvanbrocklin@nealisengineering.com

CONSTRUCTION MANAGER: Sugar Construction, Inc.
2968 Venture Drive
Midland, MI 48640
Contact: Jerry Brown, Project Manager
PH: 989-631-4154
jerrybrown@sugarconstruction.com

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INVITATION TO BID

Project:

ELLSWORTH COMMUNITY SCHOOLS
Elementary Schools Remodeling and Partial Reroofing

Owner:

Ellsworth Community Schools
9467 Park Street
Ellsworth, MI 49729

Architect/Engineer:

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

Date: May 9, 2025

Ellsworth Community Schools will receive Bids for remodeling and reroofing at the Elementary School building located at 9467 Park St., Ellsworth, MI 49729.

Sealed Bids may be delivered in person to Ellsworth Community Schools, c/o Aaron Gaffney, 9467 Park St., Ellsworth, MI 49729. Bids must be received prior to 10:30 AM local time on July 2, 2025. Bids will be opened publically and read aloud at 10:30 AM local time on July 2, 2025, in the Superintendent's Office located in the Middle/High School; 9467 Park St., Ellsworth, MI 49729. The Owner will not consider or accept a bid received after the date and time specified for bid submission. Post Bid Interviews with the apparent low Bidder(s) will be scheduled following receipt of Bids. All Bids will be evaluated at a later date.

There will be a Pre-Bid Conference conducted by the Construction Manager, Owner, and Architect/Engineer at 1:00 PM local time, Wednesday, June 18, 2025. The meeting will convene in the Ellsworth Elementary School Media Center located at, 9467 Park Street, Ellsworth, MI 49729. The Pre-Bid Conference will consist of a brief informational meeting followed by an opportunity for Bidders to examine the Project site. Attendance is not mandatory but is strongly encouraged.

Bidding Documents will be available on or about June 5, 2025. Interested Bidders may view and download bidding documents at www.sugarconstruction.com/current-bids. Select Ellsworth Community Schools, Elementary School Remodeling and Partial Reroofing.

Each Bidder shall include with its Bid, a sworn and notarized statement disclosing any familial relationships that exist between the owner or any employee of the Bidder and any member of the Board of Education of the Superintendent of the School District.

Compliance with the Iran Economic Sanctions Act (PA 517 of 2012) is required. Each Bidder shall include a sworn and notarized certification that they are not an "Iran Linked Business" as the term is defined in the Act.

A Bid security in the amount of no less than 5 percent of the Bid Sum in the form of a Bid Bond, or certified check payable to the Owner shall accompany each Bid. A personal or company check does not constitute a Bid security.

As the remodeling portion of the project will be funded in part by State grant funds, all wages and fringe benefits paid to construction mechanics performing work on the remodeling portion of the project by the Contractors and their Subcontractors must not be less than the prevailing rates in the locality where the work is performed. The partial reroofing portion of the project will not be funded by State grant funds and is exempt from prevailing wage requirements.

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

Bids shall be submitted on the Bid Form provided in the Bidding Documents. Bidders may supplement this form as appropriate.

Bidders will not be required to furnish Performance and Labor/Material Payment Bonds for this project.

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.

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. Prevailing Wage Requirements
14. Subcontractors.
15. Submission procedure.
16. Bid ineligibility.
17. Security deposit.
18. Performance Assurance.
19. Bid Form requirements.
20. Fees for changes in the Work.
21. Bid Form signature.
22. Familial Disclosure Statement
23. Iran Economic Sanctions Act Compliance Affidavit
24. Selection and award of alternates.
25. Bid opening.
26. Duration of offer.
27. Acceptance of offer.

B. Related Documents:
1. Document 00 11 16 - Invitation to Bid.
2. Document 00 41 13 - Bid Form - Stipulated Sum (Trade Contract).
3. Document 00 73 43 – Prevailing Wage Directive.

1.2 BID SUBMISSION

A. Bids signed and under seal, executed, and dated will be received by Ellsworth Community Schools c/o Aaron Gaffney, Superintendent, 9467 Park Street, Ellsworth, MI 49729 until 10:30 AM local time on July 2, 2025.

B. Bids submitted after the above time will be returned to Bidder unopened.

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 Trade Contract work to complete the Work described in the Contract Documents.

B. This is a “Construction Management as Constructor” project and there will be no “general contractor”. The Construction Manager will award trade contracts for each Bid Category as described below:

1. Project “A” Remodeling (Prevailing Wage)
   a. Bid Category 6.0 - General Trades
   b. Bid Category 9.3 –Flooring
   c. Bid Category 9.5 – Drywall Acoustical
   d. Bid Category 9.9 – Painting
   e. Bid Category 15.0 – Mechanical and Plumbing
   f. Bid Category 16.0 – Electrical
2. Project “B” Partial Reroofing (Prevailing Wage not required)
   a. Bid Category 7.0 - Roofing

1.4 WORK IDENTIFIED IN CONTRACT DOCUMENTS

A. Work of this proposed Contract comprises renovations and improvements to Ellsworth Elementary School as described in the drawings, specifications and specific Bid Categories for each trade discipline.

B. Locations:
   1. Ellsworth Elementary School; 9467 Park St., Ellsworth, MI 49729.

1.5 CONTRACT TIME

A. Perform the Work within time stated in Document 00 52 14, Sample Subcontract Agreement, and Sample Subcontract Agreement - Exhibit "A". The Bidder, in submitting an offer, accepts the Contract Time period stated for performing the Work.

1.6 DEFINITIONS

A. Bidding Documents: Contract Documents supplemented with Invitation to Bid, Instructions to Bidders, Information Available to Bidders, Bid Form, and bid securities, identified

B. Contract Documents: As defined in AIA Document A201-2007 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 sum identified by the Bidder in the Bid Form.

1.7 CONTRACT DOCUMENTS IDENTIFICATION

A. The Contract Documents are identified as Project No. 298-25 Ellsworth Community Schools; Elementary School Remodeling and Partial Reroofing as prepared by Anthony P. Esson, Architect.

1.8 AVAILABILITY OF DOCUMENTS

A. Bidding Documents may be obtained as stated in Invitation to Bid.

B. Partial sets of Bidding Documents will not be issued to Bidders.

C. 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.

1.9 EXAMINATION OF DOCUMENTS

A. Bidders are responsible for full examination of the drawings, specifications, exhibits and any Addenda prior to submission of bids.

B. Bidding Documents may be viewed at the office of the Owner

C. Upon receipt of Bidding Documents verify documents are complete. Notify Architect/Engineer if documents are incomplete.

D. Contractor shall study and compare contract documents and Immediately notify Architect/Engineer or error, inconsistency, or omission in the documents. Refer to AIA A201-2007 Article 3.2.5.
   1. Where errors, inconsistencies, or omissions could have been discovered by exercise of reasonable diligence, it is presumed that the Contractor's Bid and Contract Sum include the cost of correcting such errors, inconsistencies, or omissions.
   2. Where such errors' inconsistencies, or omissions affect quantity of material or labor, it is presumed that Contractors Bid and Contract Sum included the higher quantity or quality of material, or more labor intensive or costly installation.

1.10 INQUIRIES AND ADDENDA

A. Direct questions in writing to Anthony P. Esson, at the office of the Architect/Engineer; e-mail at tony@anthonyessonarchitect.com.

B. Verbal answers are not binding on any party.

C. Submit questions not less than 7 days before date set for receipt of Bids. Replies will be made by Addenda.

D. Addenda may be issued during bidding period. Addenda will be posted on the Construction Manager's website. Addenda become part of the Contract Documents. Include resultant costs in the Bid Price.

1.11 PRODUCT SUBSTITUTIONS

A. Where Bidding Documents stipulate particular Products, substitution requests will be considered by Architect/Engineer up to 5 days before receipt of Bids.

B. With each substitution request, provide sufficient information for Architect/Engineer to determine acceptability of proposed products.

C. When a request to substitute a Product is made, Architect/Engineer may approve the substitution. Approved substitutions will be identified by Addenda.

D. In submission of substitutions to Products specified, Bidders shall include in their Bid, changes required in the Work, 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

A. A Bidders conference is scheduled for 1:00 PM on June 18, 2025. The meeting will convene in the Ellsworth Elementary School Media Center at 9467Park Street, Ellsworth, MI 49729. The Pre-Bid Meeting will consist of a brief informational meeting followed by an opportunity for Bidders to examine the project sites. No other opportunity to examine the project sites will be offered.

B. Attendance is not mandatory but, is strongly recommended.

C. Representatives of the Owner, Architect/Engineer and Construction Manager will be in attendance.

D. Information relevant to Bidding Documents will be issued by Addendum

1.14 PREVAILING WAGE REQUIREMENTS

A. Portions of the project funded in part by State grant funds are subject to Michigan Prevailing Wage requirements. All wages and fringe benefits paid to construction mechanics performing work on the portions of state funded projects by the Contractors and their Subcontractors must not be less than the prevailing rates in the locality where the work is performed.
   1. Contractors and Subcontractors preforming work of Bid Categories 6.0, 9.3, 9.5, 9.9, 15.0, and 16.0 must comply with Michigan Prevailing Wage requirements, and must pay construction mechanics wages and fringe benefits at least the prevailing rates in the locality where the work is performed.
   2. Contractors and Subcontractors performing work of Bid Category 7.0 is exempt from Michigan Prevailing Wage requirements as this project is not funded by any State funding.

1.15 SUBCONTRACTORS

A. The owner reserves the right to reject a proposed subcontractor for reasonable cause.

B. Refer to AIA Document A201-2007 Article 5 of General Conditions.

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, with required security deposit in a closed opaque envelope, clearly identified with Bidder’s name, Project name, Specific Bid Category and Owner's name on the outside.

C. Each Bid Category must be bid in its’ entirety. Bid qualifiers that omit portions of the work will be grounds for rejection.

D. Bidders may bid more than one Bid Category however each category must be bid separately, using separate Bid Forms, in separate envelopes.

E. 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, will be declared unacceptable at Owner's discretion.

B. Bid Forms, Appendices, and enclosures which are improperly prepared will be declared unacceptable at Owner's discretion.

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

D. Bidders that are "Iran Linked Businesses" as the term is defined in PA 517 of 2012, Iran Economic Sanctions Act are ineligible to Bid. Eligible Bidders must submit certification in accordance with the Act. Refer to Section 00 45 02.

1.18 SECURITY DEPOSIT

A. Bids shall be accompanied by security deposit as follows:
   1. Bid Bond in the amount of not less than five percent (5%) of the Bid Price on standard surety company form or;
   2. Certified check payable to Owner in the amount of five percent (5%) of the Bid Price.

B. Endorse Bid Bond in name of Ellsworth Community School as obligee, signed and sealed by the principal (Contractor) and surety.

C. Endorse certified check in name of Ellsworth Community School.

1.19 PERFORMANCE ASSURANCE

A. The Construction Manager will administer this project. All correspondence, submittals, changes to the contract, etc. shall be directed to the attention of the Project Manager: Jerry A. Brown

1.20 BID FORM REQUIREMENTS

A. Complete requested information in the Bid Form and Bid Form Supplements.

1.21 FEES FOR CHANGES IN THE WORK

A. Include in the Bid Form, the overhead and profit fees on Bidder's own Work and Work by Subcontractors, applicable for Changes in the Work, whether additions to or deductions from the Work on which the Bid Price is based.
   1. Overhead and profit fees may not exceed 10%.
   2. Overhead and profit fees will be applied to the net cost of additions to, or the net cost of deductions from the Work.

1.22 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.

1.23 FAMILIAL DISCLOSURE STATEMENT

A. Include Familial Disclosure Statement – 00 45 01.

B. Complete all requested information in the affidavit.

C. Signature of the affidavit shall be notarized.

D. Failure of the Bidder to submit a fully executed affidavit will result in disqualification of the bidder.

1.24 IRAN ECONOMIC SANCTIONS ACT COMPLIANE AFFIDAVIT

A. Include Iran Economic Sanctions Act Compliance Affidavit – 00 45 02.

B. Complete all requested information in the affidavit.

C. Signature of the affidavit shall be notarized.

D. Failure of the Bidder to submit a fully executed affidavit will result in disqualification of the bidder.

1.25 SELECTION AND AWARD OF ALTERNATES – Not used

1.26 BID OPENING

A. Bids will be opened publicly immediately after time for receipt of Bids. Bidders may be present.

1.27 DURATION OF OFFER

A. Bids shall remain open to acceptance and shall be irrevocable for a period of 30 days after bid closing date.

1.28 ACCEPTANCE OF OFFER

A. The Owner reserves the right to accept or reject any or all offers.

B. After acceptance by the Owner, the Construction Manager, on behalf of the Owner, will issue to the accepted Bidder, a written Notice to Proceed.

C. Notwithstanding delay in the preparation and execution of the Agreement, accepted Bidder shall be prepared, upon written Notice to Proceed, to commence work within (3) days following receipt of official written order of the Owner to proceed, or on date stipulated in such order.

D. The accepted bidder shall enter into a Contract Agreement with the Construction Manager, and within (5) days following its presentation shall execute Agreement and return it to the Construction Manager.

END OF DOCUMENT

BID CATEGORY 6.0 – GENERAL TRADES

General Inclusions for This Category's Work

1. The term "general contractor" will not apply to any body of work for this project. Each trade discipline will be responsible for such work as described by Bid Category content.
2. Provide all required layout for this Bid Category's work.
3. Provide daily housekeeping and clean up and dispose of any wastes generated by this bid category in dumpster provided by the Construction Manager unless noted otherwise in Specific Inclusions below. "Daily" means daily. Should it be necessary for the Construction Manager to get involved in clean up the costs will be passed along to this contractor.
4. Contractor shall have a competent supervisor on site while performing any work for this bid category.
5. Contractor shall be responsible for coordination and interface with other contractors for the duration of the project.
6. Contractor shall be responsible for the receiving, unloading, storage and storage facilities for materials brought to the site.
7. The owner shall have the right to reclaim demolished materials.
8. All front end paperwork such as insurance certificates, schedule of values, submittals and/or shop drawings must be submitted to the Construction Manager within ten work days of award.
9. Contractor shall be responsible for safe work practices as required by Michigan Laws and as per the safety policy of the Construction Manager.
10. Contractor is responsible for the complete bid documents including drawings, specifications, Addenda, schedules, etc. and shall perform all that is required for a complete product that complies with same.
11. Contractor's representative shall attend scheduled progress meetings each week as directed by the Construction Manager.
12. Any Contractor that knowingly installs their work on another's mistake or faulty work will be responsible for correcting same.
13. All contractors shall complete their work to a fully operational condition in full compliance with governing codes and authorities.
14. Contractors shall obtain and pay all costs for permits that are associated with this categories work. Scheduling inspections by governing officials will be by this bid category and shall be coordinated with the Construction Manager. The Building Permit will be purchased by the Construction Manager.
15. Copies of permits (if applicable) shall be forwarded to the Construction Manager as soon as received. Occupancy approvals shall also be forwarded on or before the date of substantial completion.
16. Contractor shall supply sufficient manpower or any overtime that might be required to meet the project schedule.
17. Contractor is responsible for the protection of existing structures, plants, lawns, trees, etc.
18. Mud and/or debris tracked onto the parking lots, streets or any roadways by this contractor shall be swept and properly cleaned by this contractor.
19. Bid Category descriptions are intended to define the job scope in as much detail as possible however not necessarily "all" inclusive. Each bidder shall review all Bid Categories for a clear understanding of responsibility of scope and should advise the Architect of any conflicts or irregularities that could affect the bidding or the execution of this contract.
20. Should there be a conflict regarding <u>assignment of work</u> between the Bid Category descriptions and notes and/or Architect's specifications, the Bid Category descriptions shall take precedence.
21. All Contractors shall be subject to <u>liquidated damages</u> for failure to meet the specified date of substantial completion as set forth in these documents and/or obtaining a Certificate of Occupancy (temporary or final), by the Michigan Bureau of Construction Codes prior to said date.

22. The Construction Manager will have a safety policy governing the work activities of this project. Each Contractor shall comply with said policy as well as the minimum requirements under Michigan Law.
23. The Construction Manager will designate an area outside the school for contractor lunch room trailers.
24. Smoking is not permitted anywhere on School Property.
25. Questions that arise during the construction period shall be directed to the Construction Manager who will provide the appropriate response. Contractors shall not approach the owner or any persons employed by the owner with job questions or concerns.
26. Certain areas may be occupied by the owner during construction. Profane or abusive language, pornography, etc. will not be tolerated.
27. Provide and maintain dust control for this Bid Category's work.
28. Contractors will be given access to the site from 7:00am to 5:30pm weekdays only. Weekend work may be granted by special permission or if so stated in your bid proposal.

The contractor shall provide all labor, materials and equipment to perform the work specified in the construction documents and as set forth in this Bid Category description.

Specifications Included for This Bid Category:
(Total responsibility for these sections in their entirety unless otherwise noted)

03 30 00 – Cast In Place Concrete
04 20 00 – Unit Masonry
05 12 00 – Structural Steel Framing
08 12 13 – Hollow Metal Frames
08 14 16 – Flush Wood Doors
08 71 00 - Door Hardware
08 80 00 – Glazing
12 32 16 – Manufactured Plastic Laminate Clad Casework

Reference Specifications for This Bid Category:
(Include portions of these specifications as they apply to this bid category)

All sections under Division 1 General Requirements
02 41 19 – Selective Demolition
07 90 00 – Joint Protection

Inclusions for This Project: (but not limited to):
Any work that may be reasonably construed as part of this bid category's responsibility shall be included.

1. Coordination with other trade contractors.
2. Quote alternates as applicable.
3. Perform selective demolition of existing concrete, masonry, doors, frames, flooring and base, ceiling and existing surfaces as required for new work installed by this Bid Category. This will include the aluminum entrance doors, salvaged for reinstall
4. Provide temporary weather proof security protection at the opening mentioned in item 3 above. Remove same for new construction when required.
5. Furnish and install all new concrete work as shown.
6. Furnish and install masonry work as shown.
7. Furnish and install hollow metal frames, wood doors and hardware.
8. Furnish and install borrowed lite and associated glazing.

9. Relocate and reinstall aluminum entrance door assembly.
10. Furnish and install plastic laminate casework.
11. Furnish and install joint sealants for this Bid Category's work.
12. Provide a dumpster for waste materials generated under this Bid Category and pay all costs for disposal.
13. This Bid Category will be responsible for protection of existing finishes that it may affect. Damages by this category will be repaired at the expense of this Bid Category.
14. Update the Construction Manager's as built drawings weekly.
15. Provide temporary lunch room facilities as required for this Bid Category's work.

Exclusions:

1. Temporary toilet facilities will be provided by the Construction Manager.
2. Testing will be by others.

END OF BID CATEGORY 6.0

BID CATEGORY 7.0 – MEMBRANE ROOFING

General Inclusions for This Category's Work

1. The term "general contractor" will not apply to any body of work for this project. Each trade discipline will be responsible for such work as described by Bid Category content.
2. Provide all required layout.
3. Provide daily housekeeping and clean up and dispose of any wastes generated by this bid category in dumpster provided by the Construction Manager unless noted otherwise in Specific Inclusions below. "Daily" means daily. Should it be necessary for the Construction Manager to get involved in clean up the costs will be passed along to this contractor.
4. Contractor shall have a competent supervisor on site while performing any work for this bid category.
5. Contractor shall be responsible for coordination and interface with other contractors for the duration of the project.
6. Contractor shall be responsible for the receiving, unloading, storage and storage facilities for materials brought to the site.
7. The owner shall have the right to reclaim demolished materials.
8. All front end paperwork such as insurance certificates, schedule of values, submittals and/or shop drawings must be submitted to the Construction Manager within ten work days of award.
9. Contractor shall be responsible for safe work practices as required by Michigan Laws and as per the safety policy of the Construction Manager.
10. Contractor is responsible for the complete bid documents including drawings, specifications, Addenda, schedules, etc. and shall perform all that is required for a complete product that complies with same.
11. Contractor's representative shall attend scheduled progress meetings each week as directed by the Construction Manager.
12. Any Contractor that knowingly installs their work on another's mistake or faulty work will be responsible for correcting same.
13. All contractors shall complete their work to a fully operational condition in full compliance with governing codes and authorities.
14. Contractors shall obtain and pay all costs for permits that are associated with this categories work. Scheduling inspections by governing officials will be by this bid category and shall be coordinated with the Construction Manager. The Building Permit will be purchased by the Construction Manager.
15. Copies of permits (if applicable) shall be forwarded to the Construction Manager as soon as received. Occupancy approvals shall also be forwarded on or before the date of substantial completion.
16. Contractor shall supply sufficient manpower or any overtime that might be required to meet the project schedule.
17. Contractor is responsible for the protection of existing structures, plants, lawns, trees, etc.
18. Mud and/or debris tracked onto the parking lots, streets or any roadways by this contractor shall be swept and properly cleaned by this contractor.
19. Bid Category descriptions are intended to define the job scope in as much detail as possible however not necessarily "all" inclusive. Each bidder shall review all Bid Categories for a clear understanding of responsibility of scope and should advise the Architect of any conflicts or irregularities that could affect the bidding or the execution of this contract.
20. Should there be a conflict regarding <u>assignment of work</u> between the Bid Category descriptions and notes and / or Architect's specifications, the Bid Category descriptions shall take precedence.
21. All Contractors shall be subject to <u>liquidated damages</u> for failure to meet the specified date of substantial completion as set forth in these documents and/or obtaining a Certificate of Occupancy (temporary or final), by the Michigan Bureau of Construction Codes prior to said date.
22. The Construction Manager will have a safety policy governing the work activities of this project. Each Contractor shall comply with said policy as well as the minimum requirements under Michigan Law.
23. The Construction Manager will designate an area outside the school for contractor provided lunch room facilities. Food or drink will not be permitted outside of the designated area.
24. Smoking is not permitted anywhere on School Property.

25. Questions that arise during the construction period shall be directed to the Construction Manager who will provide the appropriate response. Contractors shall not approach the owner or any persons employed by the owner with job questions or concerns.
26. Certain areas may be occupied by the owner during construction. Profane or abusive language, pornography, etc. will not be tolerated.
27. Provide and maintain dust control for this Bid Category's work.
28. Contractors will have access to the site from 7:00am to 5:30pm weekdays only. Weekend work may be granted by special permission or if so stated in your bid proposal.

The contractor shall provide all labor, materials and equipment to perform the work specified in the construction documents and as set forth in this Bid Category description.

Specifications Included for This Bid Category:
(Total responsibility for these sections in their entirety unless otherwise noted)

07 54 19 – Polyvinyl-Chloride Roofing

Reference Specifications for This Bid Category:
(Include portions of these specifications as they apply to this bid category)

All sections under General Requirements
02 41 19 – Selective Structure Demolition
07 90 00 – Joint Protection

Inclusions for This Project: (but not limited to)
Any work that may be reasonably construed as part of this bid category's responsibility shall be included.

1. Provide adequate barricading and /or protection as required for the safety of individuals that may be entering the building.
2. Quote Alternates as applicable.
3. Demolish and dispose of existing roofing materials as noted on the plans. Report any existing substrates that are in need of repair to the construction manager.
4. Provide a dumpster for the demolition under this bid category and pay all costs for disposal.
5. Furnish and install new roofing and flashing.
6. Furnish and install joint sealants at adjoining dissimilar materials.
7. This Bid Category will be responsible for protection of existing finishes that it may affect. Damages by this category will be repaired at the expense of this category.
8. Update Construction Manager's as built drawings weekly.
9. Provide temporary weather protection as required for unfinished openings.
10. Carefully examine all reference drawings for locations of existing lines, etc.
11. All work required for the completion of the roof installation is the responsibility of this Bid Category.
12. Flash in all mechanical and electrical roof penetrations as required.

Exclusions:

1. THIS BID CATEGORY SHALL NOT BE REQUIRED TO INCLUDE PREVAILING WAGES INCLUDING ANY SUBCONTRACTOR PERFORMING ANY OF THIS CATEGORY'S SCOPE OF WORK.
2. Construction Manager will provide temporary restroom facilities.

END OF BID CATEGORY 7.0

BID CATEGORY 9.3 – FLOORING

General Inclusions for This Category's Work

1. The term "general contractor" will not apply to any body of work for this project. Each trade discipline will be responsible for such work as described by Bid Category content.
2. Provide all required layout for this Bid Category's work.
3. Provide daily housekeeping and clean up and dispose of any wastes generated by this bid category in dumpster provided by the Construction Manager unless noted otherwise in Specific Inclusions below. "Daily" means daily. Should it be necessary for the Construction Manager to get involved in clean up the costs will be passed along to this contractor.
4. Contractor shall have a competent supervisor on site while performing any work for this bid category.
5. Contractor shall be responsible for coordination and interface with other contractors for the duration of the project.
6. Contractor shall be responsible for the receiving, unloading, storage and storage facilities for materials brought to the site.
7. The owner shall have the right to reclaim demolished materials.
8. All front end paperwork such as insurance certificates, schedule of values, submittals and/or shop drawings must be submitted to the Construction Manager within ten work days of award.
9. Contractor shall be responsible for safe work practices as required by Michigan Laws and as per the safety policy of the Construction Manager.
10. Contractor is responsible for the complete bid documents including drawings, specifications, Addenda, schedules, etc. and shall perform all that is required for a complete product that complies with same.
11. Contractor's representative shall attend scheduled progress meetings each week as directed by the Construction Manager.
12. Any Contractor that knowingly installs their work on another's mistake or faulty work will be responsible for correcting same.
13. All contractors shall complete their work to a fully operational condition in full compliance with governing codes and authorities.
14. Contractors shall obtain and pay all costs for permits that are associated with this categories work. Scheduling inspections by governing officials will be by this bid category and shall be coordinated with the Construction Manager. The Building Permit will be purchased by the Construction Manager.
15. Copies of permits (if applicable) shall be forwarded to the Construction Manager as soon as received. Occupancy approvals shall also be forwarded on or before the date of substantial completion.
16. Contractor shall supply sufficient manpower or any overtime that might be required to meet the project schedule.
17. Contractor is responsible for the protection of existing structures, plants, lawns, trees, etc.
18. Mud and/or debris tracked onto the parking lots, streets or any roadways by this contractor shall be swept and properly cleaned by this contractor.
19. Bid Category descriptions are intended to define the job scope in as much detail as possible however not necessarily "all" inclusive. Each bidder shall review all Bid Categories for a clear understanding of responsibility of scope and should advise the Architect of any conflicts or irregularities that could affect the bidding or the execution of this contract.
20. Should there be a conflict regarding <u>assignment of work</u> between the Bid Category descriptions and notes and/or Architect's specifications, the Bid Category descriptions shall take precedence.
21. All Contractors shall be subject to <u>liquidated damages</u> for failure to meet the specified date of substantial completion as set forth in these documents and/or obtaining a Certificate of Occupancy (temporary or final), by the Michigan Bureau of Construction Codes prior to said date.

22. The Construction Manager will have a safety policy governing the work activities of this project. Each Contractor shall comply with said policy as well as the minimum requirements under Michigan Law.
23. The Construction Manager will designate an area outside the school for contractor lunch room trailers.
24. Smoking is not permitted anywhere on School Property.
25. Questions that arise during the construction period shall be directed to the Construction Manager who will provide the appropriate response. Contractors shall not approach the owner or any persons employed by the owner with job questions or concerns.
26. Certain areas may be occupied by the owner during construction. Profane or abusive language, pornography, etc. will not be tolerated.
27. Provide and maintain dust control for this Bid Category's work.
28. Contractors will have access to the site from 7:00am to 5:30pm weekdays only. Weekend work may be granted by special permission or if so stated in your bid proposal.

The contractor shall provide all labor, materials and equipment to perform the work specified in the construction documents and as set forth in this Bid Category description.

Specifications Included for This Bid Category:
(Total responsibility for these sections in their entirety unless otherwise noted)

09 65 13 – Resilient Base and Accessories
09 65 19 – Resilient Flooring
09 67 24 – Resinous Flooring
09 68 13 – Tile Carpeting

Reference Specifications for This Bid Category:
(Include portions of these specifications as they apply to this bid category)

All sections under Division 1 General Requirements
02 41 19 – Selective Structure Demolition
07 90 00 - Joint Protection

Inclusions for This Project: (but not limited to):
Any work that may be reasonably construed as part of this bid category's responsibility shall be included.

1. Coordination with other trade contractors.
2. Furnish and install new resilient flooring as shown including base.
3. Furnish and install new carpet tile including base.
4. Install salvaged carpet tile per key note A11 on drawing A1.1.
5. Furnish and install resinous flooring as shown.
6. This Bid Category will be responsible for protection of existing finishes that it may affect. Damages by this category will be repaired at the expense of this Bid Category.
7. Provide temporary lunch facilities for this bid category's work.

Exclusions:

1. Temporary restrooms will be provided by the Construction Manager.

END OF BID CATEGORY 9.9

BID CATEGORY 9.5 – DRYWALL ACOUSTICAL

General Inclusions for This Category's Work

1. The term "general contractor" will not apply to any body of work for this project. Each trade discipline will be responsible for such work as described by Bid Category content.
2. Provide all required layout for this Bid Category's work.
3. Provide daily housekeeping and clean up and dispose of any wastes generated by this bid category in dumpster provided by the Construction Manager unless noted otherwise in Specific Inclusions below. "Daily" means daily. Should it be necessary for the Construction Manager to get involved in clean up the costs will be passed along to this contractor.
4. Contractor shall have a competent supervisor on site while performing any work for this bid category.
5. Contractor shall be responsible for coordination and interface with other contractors for the duration of the project.
6. Contractor shall be responsible for the receiving, unloading, storage and storage facilities for materials brought to the site.
7. The owner shall have the right to reclaim demolished materials.
8. All front end paperwork such as insurance certificates, schedule of values, submittals and/or shop drawings must be submitted to the Construction Manager within ten work days of award.
9. Contractor shall be responsible for safe work practices as required by Michigan Laws and as per the safety policy of the Construction Manager.
10. Contractor is responsible for the complete bid documents including drawings, specifications, Addenda, schedules, etc. and shall perform all that is required for a complete product that complies with same.
11. Contractor's representative shall attend scheduled progress meetings each week as directed by the Construction Manager.
12. Any Contractor that knowingly installs their work on another's mistake or faulty work will be responsible for correcting same.
13. All contractors shall complete their work to a fully operational condition in full compliance with governing codes and authorities.
14. Contractors shall obtain and pay all costs for permits that are associated with this categories work. Scheduling inspections by governing officials will be by this bid category and shall be coordinated with the Construction Manager. The Building Permit will be purchased by the Construction Manager.
15. Copies of permits (if applicable) shall be forwarded to the Construction Manager as soon as received. Occupancy approvals shall also be forwarded on or before the date of substantial completion.
16. Contractor shall supply sufficient manpower or any overtime that might be required to meet the project schedule.
17. Contractor is responsible for the protection of existing structures, plants, lawns, trees, etc.
18. Mud and/or debris tracked onto the parking lots, streets or any roadways by this contractor shall be swept and properly cleaned by this contractor.
19. Bid Category descriptions are intended to define the job scope in as much detail as possible however not necessarily "all" inclusive. Each bidder shall review all Bid Categories for a clear understanding of responsibility of scope and should advise the Architect of any conflicts or irregularities that could affect the bidding or the execution of this contract.
20. Should there be a conflict regarding <u>assignment of work</u> between the Bid Category descriptions and notes and/or Architect's specifications, the Bid Category descriptions shall take precedence.
21. All Contractors shall be subject to <u>liquidated damages</u> for failure to meet the specified date of substantial completion as set forth in these documents and/or obtaining a Certificate of Occupancy (temporary or final), by the Michigan Bureau of Construction Codes prior to said date.

22. The Construction Manager will have a safety policy governing the work activities of this project. Each Contractor shall comply with said policy as well as the minimum requirements under Michigan Law.
23. The Construction Manager will designate an area outside the school for contractor lunch room trailers.
24. Smoking is not permitted anywhere on School Property.
25. Questions that arise during the construction period shall be directed to the Construction Manager who will provide the appropriate response. Contractors shall not approach the owner or any persons employed by the owner with job questions or concerns.
26. Certain areas may be occupied by the owner during construction. Profane or abusive language, pornography, etc. will not be tolerated.
27. Provide and maintain dust control for this Bid Category's work.
28. Contractors will be given access to the site from 7:00am to 5:30pm weekdays only. Weekend work may be granted by special permission or if so stated in your bid proposal.

The contractor shall provide all labor, materials and equipment to perform the work specified in the construction documents and as set forth in this Bid Category description.

Specifications Included for This Bid Category:
(Total responsibility for these sections in their entirety unless otherwise noted)

09 21 16 – Gypsum Board Assemblies
09 51 13 – Acoustical Panel Ceilings

Reference Specifications for This Bid Category:
(Include portions of these specifications as they apply to this bid category)

All sections under Division 1 General Requirements
07 90 00 – Joint Protection

Inclusions for This Project: (but not limited to):
Any work that may be reasonably construed as part of this bid category's responsibility shall be included.

1. Coordination with other trade contractors.
2. Furnish and install temporary fire rated wall assembly as shown. Include removal at job completion.
3. Furnish and install metal stud framing and furring.
4. Furnish, install and finish new drywall per plans.
5. Furnish and install blanket insulation as shown.
6. Furnish and install new acoustical ceiling per plans.
7. This Bid Category will be responsible for protection of existing finishes that it may affect. Damages by this category will be repaired at the expense of this Bid Category.
8. Furnish contractor lunch facilities as required for this Bid Category.

Exclusions:

1. Temporary restrooms will provided by the Construction Manager.

END OF BID CATEGORY 9.5

BID CATEGORY 9.9 – PAINTING

General Inclusions for This Category's Work

1. The term "general contractor" will not apply to any body of work for this project. Each trade discipline will be responsible for such work as described by Bid Category content.
2. Provide all required layout for this Bid Category's work.
3. Provide daily housekeeping and clean up and dispose of any wastes generated by this bid category in dumpster provided by the Construction Manager unless noted otherwise in Specific Inclusions below. "Daily" means daily. Should it be necessary for the Construction Manager to get involved in clean up the costs will be passed along to this contractor.
4. Contractor shall have a competent supervisor on site while performing any work for this bid category.
5. Contractor shall be responsible for coordination and interface with other contractors for the duration of the project.
6. Contractor shall be responsible for the receiving, unloading, storage and storage facilities for materials brought to the site.
7. The owner shall have the right to reclaim demolished materials.
8. All front end paperwork such as insurance certificates, schedule of values, submittals and/or shop drawings must be submitted to the Construction Manager within ten work days of award.
9. Contractor shall be responsible for safe work practices as required by Michigan Laws and as per the safety policy of the Construction Manager.
10. Contractor is responsible for the complete bid documents including drawings, specifications, Addenda, schedules, etc. and shall perform all that is required for a complete product that complies with same.
11. Contractor's representative shall attend scheduled progress meetings each week as directed by the Construction Manager.
12. Any Contractor that knowingly installs their work on another's mistake or faulty work will be responsible for correcting same.
13. All contractors shall complete their work to a fully operational condition in full compliance with governing codes and authorities.
14. Contractors shall obtain and pay all costs for permits that are associated with this categories work. Scheduling inspections by governing officials will be by this bid category and shall be coordinated with the Construction Manager. The Building Permit will be purchased by the Construction Manager.
15. Copies of permits (if applicable) shall be forwarded to the Construction Manager as soon as received. Occupancy approvals shall also be forwarded on or before the date of substantial completion.
16. Contractor shall supply sufficient manpower or any overtime that might be required to meet the project schedule.
17. Contractor is responsible for the protection of existing structures, plants, lawns, trees, etc.
18. Mud and/or debris tracked onto the parking lots, streets or any roadways by this contractor shall be swept and properly cleaned by this contractor.
19. Bid Category descriptions are intended to define the job scope in as much detail as possible however not necessarily "all" inclusive. Each bidder shall review all Bid Categories for a clear understanding of responsibility of scope and should advise the Architect of any conflicts or irregularities that could affect the bidding or the execution of this contract.
20. Should there be a conflict regarding <u>assignment of work</u> between the Bid Category descriptions and notes and/or Architect's specifications, the Bid Category descriptions shall take precedence.
21. All Contractors shall be subject to <u>liquidated damages</u> for failure to meet the specified date of substantial completion as set forth in these documents and/or obtaining a Certificate of Occupancy (temporary or final), by the Michigan Bureau of Construction Codes prior to said date.

22. The Construction Manager will have a safety policy governing the work activities of this project. Each Contractor shall comply with said policy as well as the minimum requirements under Michigan Law.
23. The Construction Manager will designate an area outside the school for contractor lunch room trailers.
24. Smoking is not permitted anywhere on School Property.
25. Questions that arise during the construction period shall be directed to the Construction Manager who will provide the appropriate response. Contractors shall not approach the owner or any persons employed by the owner with job questions or concerns.
26. Certain areas may be occupied by the owner during construction. Profane or abusive language, pornography, etc. will not be tolerated.
27. Provide and maintain dust control for this Bid Category's work.
28. Contractors will have access to the site from 7:00am to 5:30pm weekdays only. Weekend work may be granted by special permission or if so stated in your bid proposal.

The contractor shall provide all labor, materials and equipment to perform the work specified in the construction documents and as set forth in this Bid Category description.

Specifications Included for This Bid Category:
(Total responsibility for these sections in their entirety unless otherwise noted)

09 90 00 – Painting and Coating

Reference Specifications for This Bid Category:
(Include portions of these specifications as they apply to this bid category)

All sections under Division 1 General Requirements
02 41 19 – Selective Structure Demolition
07 90 00 - Joint Protection

Inclusions for This Project: (but not limited to):
Any work that may be reasonably construed as part of this bid category's responsibility shall be included.

1. Coordination with other trade contractors.
2. Perform finish painting as detailed on the drawings.
3. Finish paint patch work in masonry in door openings that are scheduled to have frames removed and replaced.
4. This Bid Category will be responsible for protection of existing finishes that it may affect. Damages by this category will be repaired at the expense of this Bid Category.
5. Provide temporary lunch facilities for this bid category's work.

Exclusions:

1. Temporary restrooms will be provided by the Construction Manager.

END OF BID CATEGORY 9.9

BID CATEGORY 15.0 – MECHANICAL AND PLUMBING

General Inclusions for This Category's Work

1. The term "general contractor" will not apply to any body of work for this project. Each trade discipline will be responsible for such work as described by Bid Category content.
2. Provide all required layout for this Bid Category's work.
3. Provide daily housekeeping and clean up and dispose of any wastes generated by this bid category in dumpster provided by the Construction Manager unless noted otherwise in Specific Inclusions below. "Daily" means daily. Should it be necessary for the Construction Manager to get involved in clean up the costs will be passed along to this contractor.
4. Contractor shall have a competent supervisor on site while performing any work for this bid category.
5. Contractor shall be responsible for coordination and interface with other contractors for the duration of the project.
6. Contractor shall be responsible for the receiving, unloading, storage and storage facilities for materials brought to the site.
7. The owner shall have the right to reclaim demolished materials.
8. All front end paperwork such as insurance certificates, schedule of values, submittals and/or shop drawings must be submitted to the Construction Manager within ten work days of award.
9. Contractor shall be responsible for safe work practices as required by Michigan Laws and as per the safety policy of the Construction Manager.
10. Contractor is responsible for the complete bid documents including drawings, specifications, Addenda, schedules, etc. and shall perform all that is required for a complete product that complies with same.
11. Contractor's representative shall attend scheduled progress meetings each week as directed by the Construction Manager.
12. Any Contractor that knowingly installs their work on another's mistake or faulty work will be responsible for correcting same.
13. All contractors shall complete their work to a fully operational condition in full compliance with governing codes and authorities.
14. Contractors shall obtain and pay all costs for permits that are associated with this categories work. Scheduling inspections by governing officials will be by this bid category and shall be coordinated with the Construction Manager. The Building Permit will be purchased by the Construction Manager.
15. Copies of permits (if applicable) shall be forwarded to the Construction Manager as soon as received. Occupancy approvals shall also be forwarded on or before the date of substantial completion.
16. Contractor shall supply sufficient manpower or any overtime that might be required to meet the project schedule.
17. Contractor is responsible for the protection of existing structures, plants, lawns, trees, etc.
18. Mud and/or debris tracked onto the parking lots, streets or any roadways by this contractor shall be swept and properly cleaned by this contractor.
19. Bid Category descriptions are intended to define the job scope in as much detail as possible however not necessarily "all" inclusive. Each bidder shall review all Bid Categories for a clear understanding of responsibility of scope and should advise the Architect of any conflicts or irregularities that could affect the bidding or the execution of this contract.
20. Should there be a conflict regarding <u>assignment of work</u> between the Bid Category descriptions and notes and/or Architect's specifications, the Bid Category descriptions shall take precedence.
21. All Contractors shall be subject to <u>liquidated damages</u> for failure to meet the specified date of substantial completion as set forth in these documents and/or obtaining a Certificate of Occupancy (temporary or final), by the Michigan Bureau of Construction Codes prior to said date.

22. The Construction Manager will have a safety policy governing the work activities of this project. Each Contractor shall comply with said policy as well as the minimum requirements under Michigan Law.
23. The Construction Manager will designate an area outside the school for contractor lunch room trailers.
24. Smoking is not permitted anywhere on School Property.
25. Questions that arise during the construction period shall be directed to the Construction Manager who will provide the appropriate response. Contractors shall not approach the owner or any persons employed by the owner with job questions or concerns.
26. Certain areas may be occupied by the owner during construction. Profane or abusive language, pornography, etc. will not be tolerated.
27. Provide and maintain dust control for this Bid Category's work.
28. Contractors will have access to the site from 7:00am to 5:30pm weekdays only. Weekend work may be granted by special permission or if so stated in your bid proposal.

The contractor shall provide all labor, materials and equipment to perform the work specified in the construction documents and as set forth in this Bid Category description.

Specifications Included for This Bid Category:
(Total responsibility for these sections in their entirety unless otherwise noted)

22 000 – Plumbing
23 000 – Mechanical (All sections)

Reference Specifications for This Bid Category:
(Include portions of these specifications as they apply to this bid category)

All sections under Division 1 General Requirements
02 41 19 – Selective Structure Demolition

Inclusions for This Project: (but not limited to):
Any work that may be reasonably construed as part of this bid category's responsibility shall be included.

1. Coordination with other trade contractors.
2. Provide required permits for work installed by this Bid Category.
3. Demolish and dispose of all mechanical/plumbing items scheduled for demolition on the plans.
4. Provide a dumpster and pay for disposal of materials demolished under this Bid Category.
5. Furnish and install new HVAC equipment, ducts and accessories as shown on plans.
6. Install all controls and associated wiring.
7. Furnish and install all new plumbing.
8. This Bid Category will be responsible for protection of existing finishes that it may affect. Damages by this category will be repaired at the expense of this Bid Category.
9. Provide temporary lunch facilities for this bid category's work.

Exclusions:

1. Temporary restrooms will be provided by the Construction Manager.

END OF BID CATEGORY 15.0

BID CATEGORY 16.0 – ELECTRICAL

General Inclusions for This Category's Work

1. The term "general contractor" will not apply to any body of work for this project. Each trade discipline will be responsible for such work as described by Bid Category content.
2. Provide all required layout for this Bid Category's work.
3. Provide daily housekeeping and clean up and dispose of any wastes generated by this bid category in dumpster provided by the Construction Manager unless noted otherwise in Specific Inclusions below. "Daily" means daily. Should it be necessary for the Construction Manager to get involved in clean up the costs will be passed along to this contractor.
4. Contractor shall have a competent supervisor on site while performing any work for this bid category.
5. Contractor shall be responsible for coordination and interface with other contractors for the duration of the project.
6. Contractor shall be responsible for the receiving, unloading, storage and storage facilities for materials brought to the site.
7. The owner shall have the right to reclaim demolished materials.
8. All front end paperwork such as insurance certificates, schedule of values, submittals and/or shop drawings must be submitted to the Construction Manager within ten work days of award.
9. Contractor shall be responsible for safe work practices as required by Michigan Laws and as per the safety policy of the Construction Manager.
10. Contractor is responsible for the complete bid documents including drawings, specifications, Addenda, schedules, etc. and shall perform all that is required for a complete product that complies with same.
11. Contractor's representative shall attend scheduled progress meetings each week as directed by the Construction Manager.
12. Any Contractor that knowingly installs their work on another's mistake or faulty work will be responsible for correcting same.
13. All contractors shall complete their work to a fully operational condition in full compliance with governing codes and authorities.
14. Contractors shall obtain and pay all costs for permits that are associated with this categories work. Scheduling inspections by governing officials will be by this bid category and shall be coordinated with the Construction Manager. The Building Permit will be purchased by the Construction Manager.
15. Copies of permits (if applicable) shall be forwarded to the Construction Manager as soon as received. Occupancy approvals shall also be forwarded on or before the date of substantial completion.
16. Contractor shall supply sufficient manpower or any overtime that might be required to meet the project schedule.
17. Contractor is responsible for the protection of existing structures, plants, lawns, trees, etc.
18. Mud and/or debris tracked onto the parking lots, streets or any roadways by this contractor shall be swept and properly cleaned by this contractor.
19. Bid Category descriptions are intended to define the job scope in as much detail as possible however not necessarily "all" inclusive. Each bidder shall review all Bid Categories for a clear understanding of responsibility of scope and should advise the Architect of any conflicts or irregularities that could affect the bidding or the execution of this contract.
20. Should there be a conflict regarding <u>assignment of work</u> between the Bid Category descriptions and notes and/or Architect's specifications, the Bid Category descriptions shall take precedence.
21. All Contractors shall be subject to <u>liquidated damages</u> for failure to meet the specified date of substantial completion as set forth in these documents and/or obtaining a Certificate of Occupancy (temporary or final), by the Michigan Bureau of Construction Codes prior to said date.

22. The Construction Manager will have a safety policy governing the work activities of this project. Each Contractor shall comply with said policy as well as the minimum requirements under Michigan Law.
23. The Construction Manager will designate an area outside the school for contractor lunch room trailers.
24. Smoking is not permitted anywhere on School Property.
25. Questions that arise during the construction period shall be directed to the Construction Manager who will provide the appropriate response. Contractors shall not approach the owner or any persons employed by the owner with job questions or concerns.
26. Certain areas may be occupied by the owner during construction. Profane or abusive language, pornography, etc. will not be tolerated.
27. Provide and maintain dust control for this Bid Category's work.
28. Contractors will be given access to the site form 7:00am to 5:30pm weekdays only. Weekend work may be granted by special permission or if so stated in your bid proposal.
29. All punch list work and all closeout documents must be completed to the satisfaction of the architect before acceptance of any invoice for retainage or any portion of retainage.

The contractor shall provide all labor, materials and equipment to perform the work specified in the construction documents and as set forth in this Bid Category description.

Specifications Included for This Bid Category:
(Total responsibility for these sections in their entirety unless otherwise noted)

26 000 – Electrical (All Sections)
27 000 – Communications
28 000 – Electronic Safety and Security
See Electrical Drawings for Electrical Requirements.

Reference Specifications for This Bid Category:
(Include portions of these specifications as they apply to this bid category)

All sections under Division 1 General Requirements
02 41 19 – Selective Structure Demolition

Inclusions for This Project: (but not limited to):
Any work that may be reasonably construed as part of this bid category's responsibility shall be included.

1. Coordination with other trade contractors.
2. Provide required electrical permit.
3. Electrical demolition.
4. Provide a dumpster for the demolition under this bid category and pay all costs for disposal.
5. Provide temporary support for fixtures in ceilings that are to be removed and replaced.
6. Furnish and install new light fixtures per plans.
7. Furnish and install new electrical outlets and switching as shown.
8. Provide firestopping for any electrical penetrations through fire rated assembies.
9. Furnish and install fire alarm work as shown.
10. Install television and data system raceways.
11. Access through existing ceilings and restoration of same will be the responsibility of this Bid Category.
12. Relocate and reinstall existing Aiphone and security equipment.

13. Update Construction Manager's as built drawings weekly.
14. Provide temporary lunch facilities for this bid category's work.

Exclusions:

1. Temporary restrooms will be provided by the Construction Manager.

END OF BID CATEGORY 16.0

DOCUMENT 00 41 13
BID FORM – STIPULATED PRICE

To: Ellsworth Community Schools
c/o Aaron Gaffney, Superintendent
9467 Park St.
Ellsworth, MI 49729

Project: Ellsworth Community Schools
Elementary School Remodeling and Partial Reroofing
Project No. 298-25

Date: _____

Submitted by: _____
(full name)

_____
(full address)

Estimator _____
(name and telephone)

Bid Category: _____

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 for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the

Stipulated Sum of: $_____(numerical)

$_____dollars in lawful (written) money of the United States of America.

- We have included Prevailing Wages and Fringe Benefits for all construction mechanics performing work on State funded projects (Bid Categories 6.0, 9.3, 9.5, 9.9, 15.0 and 16.0)
- We have included the required security deposit as required by the Instruction to Bidders.
- All applicable federal and/or State of Michigan taxes are included in the Bid Sum.
- We have included allowances as provided in each respective Bid Category.
- We acknowledge that Liquidated Damages will be assessed for our failure to achieve Substantial Completion and/or obtain approval for occupancy from the Michigan Bureau of Construction Codes (where applicable) prior to the dates indicated in the Contract Documents.

2. ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for sixty (60) days from the bid closing date. If this bid is accepted by the Owner within the time period stated above, we will:

a. Execute the Agreement within five (5) days of receipt of Notice of Award by the Construction Manager.

b. Commence work within three (3) days after written Notice to Proceed by the Construction Manager.

If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.

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

3. CHANGES TO THE WORK

When the Architect establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions, our percentage fee will be:

_____ percent (may not to exceed 10%) overhead and profit on the net cost of our own Work;

_____ percent (may not to exceed 10%) on the cost of work done by any Subcontractor.

6. 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 Sum.

Addendum # _____ Dated _____

Addendum # _____ Dated _____

7. BID FORM SIGNATURE(S)
   The Corporate Seal of

   _____
   (Bidder - print the full name of firm)
   was hereunto affixed in the presence of:

   _____
   (Authorized signing officer Title)

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

END OF BID FORM - STIPULATED PRICE

DOCUMENT 00 45 01

FAMILIAL DISCLOSURE STATEMENT

The undersigned, the owner or authorized officer of _____ (the "Bidder") pursuant to the familial disclosure requirement provided in the advertisement for construction bids, hereby represent and warrant, except as provided below, that no familial relationships exist between the owner(s) or any employee of the Bidder and any member of the Board of Education or the Superintendent of Ellsworth Community Schools (the School), except as indicated below:

List any Familial Relationships:

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 FAMILIAL DISCLOSURE STATEMENT

DOCUMENT 00 45 02

IRAN ECONOMIC SANCTIONS ACT COMPLIANCE AFFIDAVIT

Effective April 1, 2013, all Bids and/or Proposals received by public entities in the State of Michigan must comply with the Iran Economic Sanctions Act, Act 517 of 2012. As a condition to compliance with the Act, the following certification must be submitted with the Bid.

The undersigned, the owner or authorized officer of _____ (the “Bidder”), pursuant to the requirements of the Iran Economic Sanctions Act, Act 517 of 2012, hereby certifies under civil penalty for false certification, that the Bidder is not an "Iran Linked Business", as defined in the Act, and is eligible to submit a Bid.

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 IRAN ECONOMIC SANCTIONS ACT COMPLIANCE AFFIDAVIT

DOCUMENT 00 52 14

AGREEMENT FORM

1.1 SUMMARY

A. Document Includes:
   1. Agreement.

B. Related Documents:
   1. Document 00 72 14 - General Conditions.

1.2 AGREEMENT

A. The Subcontractor Agreement included in this section (see following Sample agreement) forms the basis of Agreement between the Construction Manager and Trade Contractor.

END OF DOCUMENT

SUBCONTRACT AGREEMENT

Construction Manager:	**Sugar Construction, Inc.** **2968 Venture Drive** **Midland MI 48640**	**SUBCONTRACTOR:**	**Sample Subcontractor**
Phone:	**989 631-4154**	Address:	
Fax:	**989 631-7012**	Phone:	
PROJECT:	**Elem School Remodeling and Partial Reroofing** **Ellsworth Community Schools** **9467 Park Street** **Ellsworth MI 49729**	Fax: Email: Attn:	
		Federal ID #:	
SCI JOB #:	**1054**	**CONTRACT DATE:**	**05/23/2025**
CONTRACT #:	**8238**	**Taxable:**	**Yes**

SUBCONTRACT SUM: **$40,000.00 EXACTLY FORTY THOUSAND DOLLARS**

CONTRACT DOCUMENTS:

1. This Subcontract Agreement.
2. As described in Exhibit A.

TIME OF COMPLETION: 10/31/2025

1. THE WORK:

1.1 The Subcontractor represents that it is fully qualified and licensed to perform this Agreement, and acknowledges that, prior to the execution of this Agreement it has (a) by its own independent investigation ascertained (i) the Work required by this Agreement (ii) the conditions involved in performing the Work, and (iii) the obligations of this Agreement and the Contract Documents; and (b) independently verified all information furnished by the Owner, Construction Manager, or others satisfying itself as to the correctness and accuracy of that information. Any failure by Subcontractor to investigate independently and become informed will not relieve the Subcontractor from its responsibilities hereunder nor serve as a basis for an adjustment to the contract value.

1.2 The Subcontractor shall provide all necessary labor, material, equipment, tools, shop drawings, layout, samples, professional services, taxes, permits, fees, licenses, insurances, etc. to perform the Work.

1.3 The Work shall be performed in accordance with all applicable local, state and federal codes, laws and regulations (including OSHA and MIOSHA) and in accordance with the Contract Documents.

1.4 Subcontractor shall keep the Project free and clean of trash and debris attributable to the Work. On twenty-four (24) hours written notice by the Construction Manager, Subcontractor shall remove all trash and debris or be responsible for the cost, plus twenty percent, incurred by Construction Manager to do same.

1.5 The Subcontractor shall furnish a workforce that will work in harmony with all other subcontractors on the Project. The Subcontractor shall not suffer, support or take any action to picket, strike, handbill, engage in sympathy or unfair labor practice strikes, or any work stoppages or otherwise interfere with the Work or the business of the Construction Manager or any of its subcontractors. The Subcontractor shall not suffer its employees to honor or recognize any picket line by any union against the Construction Manager.

1.6 Subcontractor agrees promptly to make good, without cost to the Owner or Construction Manager, any and all defects due to faulty workmanship and/or materials which may appear within the guaranty or warranty period established in the Contract Documents or for one year from Owner's acceptance of the Construction Manager's work, whichever is later.

1.7 Time is of the essence of this Agreement. Subcontractor shall provide sufficient manpower to complete the Work on or before the Completion Date stipulated herein, including working his forces overtime at no cost to the Construction Manager, if deemed necessary by the Construction Manager to meet the Completion Date.

1.8 The Subcontractor shall be bound by the terms of the Specifications, General Conditions and Supplemental Conditions and Addenda in the Contract between the Construction Manager and the Owner, shall conform to and comply with the Drawings and Specifications and Addenda, and shall assume toward the Construction Manager all the obligations and responsibilities that the Construction Manager assumes toward the Owner.

1.9 If the Work is delayed, substantially without fault or responsibility of Subcontractor, the Subcontractor may receive an extension of the Contract Time and an adjustment to the Schedule of Work. Subcontractor expressly understands that its sole and exclusive remedy for delay will be an extension of time for performance of the Work. Written documentation of delays in work must be acepted by Sugar Construction. Without written documentation, short comings in manpower, schedule, etc. will be the responsibilty of the Subcontracor. A subcontractor's ability to not fullfill the contract oblications will result in Sugar Construction fulfilling these obligations at the expense of the subcontractor.

2. PAYMENTS

2.1 Subcontractor shall submit a Subcontractor Application for Progress Payment ("Application for Payment"), completed in full, signed and notarized, to the Construction Manager on or before the 20th day of each month for that portion of the Work completed through the end of the month, less ten percent (10%) retainage, per the attached format. Applications for Payment must be mailed or delivered to Construction Manager; facsimile copies shall not be accepted.

2.2 Construction Manager agrees to pay Subcontractor within thirty (30) days from the end of the month in which the Work was performed and the Application for Payment submitted, or within ten (10) business days following Construction Manager's receipt of payment from the Owner for the Work, whichever is later. It shall be an express condition precedent to Construction Manager's obligations to pay Subcontractor any amount under this Contract that Construction Manager shall have first actually received payment for the Work from the Owner.

2.3 If notification of any claim against Subcontractor is made to Construction Manager, Construction Manager, at its discretion has the right to withhold sufficient funds from any payment due Subcontractor to cover the cost of the claim, pending final settlement. If Subcontractor fails to settle any claim, Construction Manager shall have the right to pay the Subcontractor's sub-subcontractors or suppliers and deduct those payments from the Subcontract Sum. Any expenses incurred by the Construction Manager including but not limited to costs associated with bonding of liens, attorneys' fees, court costs and Construction Manager's personnel expenses incurred in order to resolve claims shall be deducted from the Subcontract Sum. In the event that the cost to resolve said claims is greater than the unpaid amounts and retainage, Subcontractor shall pay those amounts to Construction Manager upon receipt of a written statement from the Construction Manager. If such amounts are not paid within fifteen (15) days of receipt of statement, Subcontractor agrees to pay Construction Manager interest on all such amounts at a rate of twelve percent (12%) per annum and Subcontractor agrees to pay all costs of collection, including but not limited to court costs and attorney's fees.

2.4 Final payment shall be paid Subcontractor upon Construction Manager's receipt of:

a. Final payment by Owner.
b. Subcontractor Application for Final Payment, as per the attached format, completed in full, signed & notarized.
c. Final lien waiver from Subcontractor; and
d. Written statement of guaranty of work, warranties, manuals, as-builts and any other required documents from Subcontractor.

3. CHANGES IN WORK

3.1 Subcontractor expressly agrees that no changes will be made, nor extra work performed, nor changes made in the quality or quantity of materials furnished, nor additional compensation paid, unless such matter is previously authorized by the Project Manager, in the form of a written change order.

3.2 If the written change order entitles the Subcontractor to additional compensation, the change order must include written documentation from any sub-subcontractors or suppliers that are entitled to compensation pursuant to or as a result of the written change order.

3.3 Any work that is deemed a change in value for the Subcontract Agreement, and which would delay Subcontractor or Construction Manager's scheduled completion, and for which the parties do not agree as to the value, shall upon twenty four (24) hours written notice, be diligently prosecuted by the Subcontractor according to the following guidelines. The Construction Manager shall determine an undisputed amount for the change order work, which shall be billed in accordance with the Payment terms herein. The disputed amount shall be submitted to the owner or architect for their ruling as to the value of the work. The decision as to the value of the work shall be based on the Owner or architect's ruling, and this amount shall thereby be the agreed upon value of the work.

3.4 Subcontractor will give Cosntruction Manager written notice of any claims relating to Subcontractor's performance under this Agreement, including claims for which Construction Manager or Owner might be liable, within three (3) calendar days of the occurrence of the condition or event which forms the basis of such claim. Failure to provide such written notice within the three-day period constitutes a waiver of any such claim.

4. INSURANCE

4.1 The Subcontractor shall procure and maintain at the Subcontractor's own expense, during the entire contract time, Liability Insurance as hereinafter specified:

a. Business Automobile Liability shall be provided for a Combined Single Limit of at least $1,000,000 for Bodily Injury and Property Damage. Coverage shall include owned, leased, hired and non-owned vehicles. Construction Manager shall be named as Additional Insured.
b. Workers Compensation Insurance for the protection of all Subcontractor's employees including partners and individual owners working on or in connection with the Project.
c. Commercial General Liability shall be provided for a Combined Single Limit of at least $1,000,000 for each occurrence, $1,000,000 Personal Injury and Advertising Liability, $2,000,000 Products and Completed Operations aggregate and $2,000,000 general aggregate. The policy shall contain no restrictions for contractual liability and xcu (explosion, collapse and underground). Construction Manager shall be named as additional insured, per form CG2010 1185 or equivalent. Subcontractor shall maintain Products and Completed Operations insurance and shall name Construction Manager as additional insured for at least two (2) years from the date of final payment. Subcontractor's insurance shall be primary and non-contributing so that the Construction Manager's policy will not respond until the limits under the Subcontractor's policy are exhausted.
d. Commercial Umbrella Liability shall be provided for at least $1,000,000 and shall be as broad as the primary General Liability and Automobile.

4.2 Certificates of Insurance, including a copy of the additional insured endorsement, acceptable to Construction Manager must be provided prior to Subcontractor commencing any work or ordering any materials. Renewal certificates must be provided no less then 14 days prior to expiration. All insurance carriers named in the Subcontractor's certificate of insurance shall have an A.M. rating of A- or better. The Certificates must also contain a provision that coverage afforded under the policies will not be canceled unless at least thirty (30) days prior written notice has been given to Construction Manager. Construction Manager shall not make any payment to Subcontractor until proper evidence of insurance is received. If Subcontractor performs any portion or all of the Work without the required insurances, Construction Manager shall deduct the greater of twenty five percent (25%) broken down as follows: 10% for General Liability, 10% for Workers Compensation, 3% for Automobile Liability and 2% for Umbrella coverage of the Subcontract Sum, or the value of the insurance premium as solely determined by Construction Manager's insurance carrier.

4.3 Waiver of Subrogation: Subcontractor waives all rights against Construction Manager, Owner and architect and their agents, officers, Directors and employees for recovery of damages caused by fire or other causes of loss to the extent such damages are covered by any insurance provided under this Subcontract Agreement.

5. INDEMNIFICATION

5.1 The Subcontractor shall indemnify and hold harmless Construction Manager and its agents and employees from and against any and all liability, suits, actions, claims, damages, losses, judgments, settlements, costs and expenses, including attorney's fees and litigation costs (including fees and expenses of consultants and/or expert witnesses), arising out of, related to or resulting from the Subcontractor's performance of the Work, provided that such suit, action, claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use therefrom, and is caused in whole or in part by any negligent or willful act or omission of the Subcontractor, its sub-subcontractors, suppliers, anyone directly or indirectly employed by Subcontractor or anyone for whose acts Subcontractor may be liable.

5.2 In any or all claims against the Construction Manager, or any of its agents or employees, by any employee of the Subcontractor, anyone directly or indirectly employed by Subcontractor, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, of benefits payable by or for the Subcontractor under workers compensation acts, disability benefits acts, or any other employee benefit acts.

5.3 If Construction Manager is assessed liquidated damages or other damages for delay on the Project, the Construction Manager may assess delay damages against Subcontractor according to Subcontractor's responsibility for the delay. In addition, Subcontractor shall be liable to Construction Manager for actual damages including, without limitation, reasonable attorney's fees caused by Subcontractor's delay.

5.4 Subcontractor shall at all times comply with all safety regulations as set forth by any state regulatory agency or any federal regulatory agency and shall indemnify Construction Manager against all claims and/or penalties arising from inspections by these agencies.

6. TERMINATION AND SUPPLEMENTING FORCES

6.1 The failure by Subcontractor to supply a sufficient number of skilled workmen, or to supply the specified or required materials, or sufficient and proper equipment, to prosecute the Work in a manner tocomply with the Completion Date, to pay in a timely manner for third party materials, equipment and labor, or to perform any covenant contained in the Contract Documents, shall constitute a default of the Subcontractor, and Construction Manager may, at its option, and after forty-eight (48) hours of written notice of said default to Subcontractor, terminate this Agreement.

6.2 The Construction Manager also has the right, with forty- eight (48) hours written notice to the Subcontractor, to hire third party forces to help to complete the work if the Subcontractor is proving unable to meet the scheduled Completion Date. All such supplemental charges incurred shall be deducted from the Subcontract Sum. In the event that the cost to supplement forces is greater than the unpaid amounts and retainage, Subcontractor shall pay those amounts to Construction Manager upon receipt of a written statement from the Construction Manager. If such amounts are not paid within fifteen (15) days of receipt of statement, Subcontractor agrees to pay Construction Manager interest on all such amounts at a rate of twelve percent (12%) per annum and Subcontractor agrees to pay all costs of collection, including but not limited to court costs and attorney's fees.

6.3 In the event of default by Subcontractor and subsequent termination of Subcontractor by Construction Manager, Construction Manager shall complete the Work through its own or third party forces, and shall deduct the costs thereof from the unpaid amounts and retainage of this Subcontract. In the event the cost to complete the Work is greater than the unpaid amounts and retainage, Subcontractor shall pay those amounts to Construction Manager upon receipt of a written statement from the Coonstruction Manager. If such amounts are not paid by Subcontractor within fifteen (15) days of receipt of statement, Subcontractor agrees to pay Construction Manager interest on all such amounts at a rate of twelve percent (12%) per annum, and Subcontractor further agrees to pay any and all costs of collection, including but not limited to court costs and attorney's fees.

7. DISPUTES

7.1 The interpretation, performance and enforcement of this Agreement will be governed by the laws of the State of Michigan and or governing body that has jurisdiction over the project work site.

7.2 Any and all claims, disputes and other matters in questions arising out of or relating to this Agreement, or breach thereof, will be resolved, at Construction Manager's option (1) by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association in the County of Oakland, Michigan; or (2) in the Circuit Court of Oakland County, Michigan or such other venue as may be agreed upon by Construction Manager. Construction Manager and Subcontractor hereby waive their right to demand a jury trial. In the event that Construction Manager prevails in such arbitration or litigation, Subcontractor shall pay the Construction Manager the costs and expenses, including such reasonable attorney's fees and costs, including expert witness fees and expenses, incurred by Construction Manager in such arbitration or litigation.

7.3 Subcontractor shall turn the Work over to Construction Manager in good condition, free and clear of all claims, encumbrances and liens growing out of the performance of this Agreement. In the event a mechanic's or materialman's lien is filed by reason of work done or materials furnished to or by the Subcontractor or any of its sub-subcontractors, Subcontractor will, upon demand by Owner or Construction Manager and at Subcontractor's expense, cause such lien to be released of record, by bonding or otherwise. If Subcontractor fails to do so within a reasonable time after demand, Owner or Construction Manager may take such action as shall be necessary to remove such lien of record and if either of them do so, Subcontractor will, upon demand, reimburse them for all costs incurred, including, without limitation, attorney's fees.

8. MISCELLANEOUS PROVISIONS

8.1 Any amounts owed to Subcontractor under this Subcontract Agreement may be withheld by Construction Manager and applied to any actual or potential amounts or sums that are, or may in the future be owed by Subcontractor to Construction Manager on this or any other project, job, matter or contract between Construction Manager and Subcontractor including, without limitation, legal expenses and costs associated therewith.

8.2 Within ten (10) days following any request by Construction Manager, Subcontractor will furnish Construction Manager with a list of all subcontractors and material suppliers who have performed labor or supplied materials to Construction Manager as part of the Work, together with a statement of current balance owed to or claimed by each sub-subcontractor or supplier.

8.3 The partial or complete invalidity of any one or more provisions of this Agreement shall not affect the validity or continuing force and effect of any other provision. The failure of either party to insist, in any or more instances, upon the performance of any of the terms, covenants, or conditions of this Agreement, or to exercise any right herein, shall not be construed as a waiver or relinquishment of such term, covenant, condition or right as respect to further performance.

8.4 This Agreement and the Contract Documents constitute the entire agreement between parties and may not be amended, superseded or otherwise affected, except by an agreement in writing signed by both parties. This subcontract or the amounts due hereunder cannot be sublet or assigned in whole or in part without prior written approval from the Construction Manager.

8.5 The individual signing below has read and understands all of the terms described herein, and has the capacity to bind the Subcontractor.

8.6 No Asbestos containing building materials (ACBM) shall be used in the construction of this project.

Initials

8.6 LIQUIDATED DAMAGES: Recognizing that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not Substantially Complete and approved for occupancy by the Michigan Bureau of Construction Codes (if applicable) within the time limits established herein, plus any extensions of time as allowed under the General Conditions, and also recognizing the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by the Owner if the Work is not Substantially Complete on time, instead of requiring any such proof, The Construction Manager and Contractor agree that as liquidated damages for delay (but not as penalty) Contractor will pay The Construction Manager (to be forwarded to the Owner)One Thousand Dollars ($ 1,000.00) for each day that expires after the date of Substantial Completion established herein until the Work is Substantially Complete and approved for occupancy by the Michigan Bureau of Construction Codes (if applicable). Liquidated damages charges shall be deducted from the Contractor's progress payments or final payment as applicable. The Owner reserves the right to demand legal proceedings in the event that the actual loss exceeds the damages provided for herein.

8-7 In addition, Contractor shall be responsible for all Architectural costs incurred by the Construction Manager after the established Final Completion date (thirty days after actual Substantial Completion date) resulting from Contractor's failure to properly complete the work. Any such costs shall be deducted from the Contractors progress payment or final payment as applicable.

This Agreement is entered into as of the day and year first written above, labeled as the contract date.

CONSTRUCTION MANAGER

Sugar Construction, Inc.

BY: _____

NAME: Jerry A Brown

TITLE: Project Manager

DATE: _____

SUBCONTRACTOR

Sample Subcontractor

BY: _____

NAME: _____

TITLE: _____

DATE: _____

EXHIBIT "A"

Pursuant to the terms and conditions stated below, which are part of this agreement, the Subcontractor shall furnish all labor, materials, tools equipment, hoisting, scaffolding, clean-up and services necessary for the satisfactory completion of all work as described in the contract specifications as follows:

Scope of Work: Furnish labor and materials to install masonry per plans and specifications. Addendums noted received.

Bidding Addenda / Bulletins **See Exhibit B for Addendums**

And as shown on the drawings, including applicable addenda, accepted alternates, and all related work, and Subcontractor shall pay the government taxes, sales taxes, and use taxes as applicable. Without limiting the above scope, the following items of work are part of this Sub-Contract Agreement.

Specifications Dated: _____ Drawings Dated: _____

Initials _____

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 A201-2007 General Conditions of the Contract for Construction as modified, included herein, is the General Conditions of the Contract.

END OF DOCUMENT

AIA® Document A201® – 2007

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)
Ellsworth Community Schools
9467 Park Street
Ellsworth, MI 49729

THE OWNER:
(Name, legal status and address)
Ellsworth Community School
9467 Park Street
Ellsworth, MI 49729

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

THE ARCHITECT:
(Name, legal status and address)
Anthony Esson, Architect
PO Box 479
Gaylord, MI 49734

THE CONSTRUCTION MANAGER:

Sugar Construction, Inc.
2968 Venture Drive
Midland, MI 48640

(The Term "Contractor" is understood to include the Construction Manager in this AIA Document A201-2007 Edition, as modified, for all purposes related to Construction Phase and subsequent work.)

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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) which shall be awarded by the Owner and then assigned over by the Owner to the Construction Manager after award 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,~~ Agreement in writing, the Contract Documents ~~do not~~ also 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 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 the Contractor's performance of ~~the Architect's~~ its 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 and certify termination of the Agreement under Section 14.2.2.

§ 1.1.9 The term "Product(s)" as used in the Contract Documents refers to the materials, systems and equipment provided by the Contractor for use in the work of the Project.

§ 1.1.10 The terms "Warranty" and "Guarantee" as used in the Contract Documents shall have the same meaning and shall be defined as "legally enforceable assurance of satisfactory performance or qualify of a product or Work."

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§ 1.1.11 Where materials, systems and equipment items are referred to in the singular, such reference shall not serve to limit the quantity required. The Contractor shall furnish quantities as required by the Contract Documents to complete the Work.

§ 1.1.12 Unless specifically limited in the Contract the words "furnish," "install," and "provide," or an combination thereof, mean to furnish and incorporate into the Work, including all necessary labor, materials, and equipment and other items required to perform the Work indicated.

§ 1.1.13 The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

§ 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. Should the Drawings and Specifications appear to be in disagreement with each other relative to the quality or quantity of Work required, the better quality and/or the greater quantity shall govern, and shall be provided, unless instructions are otherwise furnished to the Contractor by the Architect in writing.

§ 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. Where responsibility for particular Work is required of the Contractor, the Contractor shall not be released from that responsibility by reason of the location of the specification or drawing information which establishes the responsibility. Thus, the Contractor shall be responsible for all Work required of him, even though that responsibility may be shown only in that portion of the documents typically pertaining to another contractor or 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.

§ 1.2.4 If there should be a conflict between two or more of the Contract Documents, the following order of interpretation shall apply:

- **.1** Where requirements specifically set forth in the Owner-Contractor Agreement are in conflict with other Contract Documents, the Owner-Contractor Agreement shalt govern.
- **.2** Where there is conflict between the requirements of the General Conditions and the Owner-Contractor Agreement, the requirements of the Owner-Contract Agreement shall govern, except where the requirements set forth in the Owner-Contractor Agreement are contrary to law, in which case the legal requirements shall govern.
- **.3** In all other instances, the conflict shall be resolved by complying with the provision that requires the better quality or greater quantity of work/services to the Owner.
- **.4** When a duplicate of material or equipment occurs in the Drawings, the Specifications or other Contract Documents, each Contractor shall be deemed to have bid on the basis of each furnishing such material or equipment. The Construction Manager will decide which Contractor(s) shall furnish the same and which Contract amount shall be adjusted for not incorporating such material or equipment into the Project.

§ 1.2.5 The Contractor acknowledges that there may be items of the Work which the Contractor is responsible to provide under the Agreement that are not drawn or specified in the Design but are necessary for the proper execution and completion of the Work and are consistent with and reasonably inferable from the Drawings and Specifications. All such items shall be provided as part of the Work without delay in its progress and without any increase in the Contract Sum.

§ 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.

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§ 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~~ Unless otherwise indicated in the Owner/Architect Agreement or the Contract Documents, 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 will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment 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 this 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 material or equipment suppliers are authorized to use and reproduce the Instruments of Service ~~provided to them~~ 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 material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.5.3 The Drawings, Specifications, and other documents and all data used in compiling, and the results of any tests, surveys or inspections at the Project Site, as well as all photographs, drawings, specifications, schedules, data processing output, computer-aided design/drafting (CADD) system disks/tapes, computations, studies, audits, reports, models and other items of like kind, and all intellectual property, prepared or created for or in connection with the Project and required by the Owner, the Contractor, or a third party, belong to the Owner. The Contractor may retain one Contract record set. All copies of them, except Contractor's record set, shall be returned or suitably accounted for upon completion of the Work. They are for use solely with respect to the Project. The Contractor shall not, without the prior written consent of the Owner, use or permit anyone to use any Drawings, Specifications, or other documents prepared for or in connection with the Project, or any concepts or ideas developed in connection with the Project, for any purpose other than the Project. The Owner shall at all times have access to and control over the disposition of any Drawings, Specifications, and other documents pertaining to the Project.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM
If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

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 INFORMATION AND SERVICES REQUIRED OF THE OWNER
§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor

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as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall ~~furnish~~ furnish, as applicable, such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, ~~including~~ including, but not limited to, 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.

§ 2.2.3 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~~ Taking into account the Contractor's experience and expertise, 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. The Contractor shall not be entitled to additional compensation resulting from its failure to confirm the location of the site utilities or existing structures prior to the opening of the Contractor's bid.

§ 2.2.4 ~~The~~ Upon specific written request of the Owner, 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. Contracts with other Contractors alone shall not constitute sufficient Owner control for purposes of this section.

§ 2.2.5 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.

§ 2.3 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. This right shall be in addition to and not in limitation of the Owner's rights under any provision of the Contract Documents.

§ 2.4 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~~ three-day period after receipt of written notice from the Owner or the Owner's designee 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, including any claim against the Contractor's performance bond, correct such deficiencies. In the event the Contractor's default or neglect results in a threat to the safety of persons or property, the Contractor shall immediately commence and continue correction; otherwise, the Owner may undertake the same actions as permitted in the prior sentence, In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's ~~expenses and compensation for the Architect's~~ expenses, including any and all legal expenses incurred to effectuate and enforce this provision, and compensation for the Architect's, Construction Manager's, and/or other Contractor's additional services made necessary by such default, neglect or failure. ~~Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect.~~ Exercise of such rights shall in no way limit or jeopardize the Owner's right to any claim against the Performance Bond or Contractor. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

In the event the Owner directs another entity to perform Work pursuant to this section that otherwise is the obligation of the Contractor, including correction of safety violations, either at the Contractor's request or as a result of the Contractor's failure to perform such Work, that other entity shall charge the Contractor all costs for labor, material and equipment plus that other entity's administrative, profit and overhead costs. The Contractor shall pay that other entity within ten (10) days of the date of invoice. If not paid within ten (10) days, the Contractor authorizes the Owner to

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withhold that amount from the Contractor and to pay the same to that other entity from the next payment due the Contractor. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

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 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.

§ 3.1.4 These General Conditions refer to the relationship between the Owner and the Contractor. As to the contract between the Contractor and its Subcontractors, the General Conditions shall be read as the Contractor having the position of the Owner and the Subcontractors having the position of the Contractor. The Subcontractors are bound to the Contractor just as the Contractor is bound to the Owner. The Subcontractors shall have all the rights, duties and obligations to the Contractor as the Contractor has rights duties and obligations to the Owner. The Subcontractors shall agree to and accept the same responsibility to the Owner as the Contractor. In the event any failure of a Subcontractor causes any type of injury or loss to the Owner, direct or indirect, the Contractor shall be jointly and severally liable to the Owner for such injury in addition to any responsibility or liability of the Subcontractor.

§ 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 2.2.3, 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.~~ require, with a copy of the same to the Owner. 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 make 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 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

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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 an error, inconsistency or omission in the Contract Documents. It will be presumed that the Contractor's bid and the Contract Sum include the cost of correcting any such error, inconsistency or omission, which could have been discovered by the exercise of reasonable diligence. Unless the Contractor establishes that such error, inconsistency or omission could not have been discovered by the exercise of reasonable dilegence, the Contractor will make such corrections without additional compensation so that the Work is fully functional.

§ 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, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and 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 written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures. The Contractor shall immediately notify the Architect of delays of any other Contractors that could impact timely coordination and completion of the Work.

§ 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. Such provision of labor and materials shall occur in sufficient time to satisfy the existing Project schedule. The Contractor bears the risk of any failure to timely provide such labor and materials for any reason. The Contractor agrees to execute the appropriate UCC forms to effectuate the Owner's ownership of the material and equipment furnished pursuant to this Agreement.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 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 The Contractor agrees that neither he nor his subcontractors will discriminate against any employee or applicant for employment, to be employed in the performance of this Contact with respect to hire, tenure, conditions or privilege of employment, or any matter directly or indirectly related to employment, because of race, age, sex, color, religion, national origin, ancestry or physical disability. Breach of this covenant may be regarded as a material breach of this Contract.

§ 3.4.5 Immediately after "award of the contract," the Contractor shall provide the Architect a list showing the name of the manufacturer proposed to be used for each of the product(s) identified in the Specifications and, where applicable, the name of the installing Subcontractor.

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§ 3.4.6 The Architect will reply in writing to the Contractor stating whether the Owner or the Architect, after due investigation, has reasonable objection to any such proposal. If adequate data on any proposed manufacturer or installer is not available, the Architect may state that action will be deferred until the Contractor provides further data.

§ 3.4.7 In all cases involving utilities, unless the Contract Documents specifically provide otherwise, it shall be the Contractor's responsibility to coordinate the Work with the owners of such utilities, for the protection of such utilities and for the safety associated with working with or in the vicinity of such utilities. The Contractor shall coordinate any work required by private and/or public utility companies to provide utilities to the Work and/or shall coordinate relocation of utilities as required by the Work. Any reference to the Owner being responsible for the coordination of, the paying for, or the relocation of any utility or associated equipment, which it does not own or control, requires only reasonable efforts by the Owner to coordinate such activity.

§ 3.4.8 ASBESTOS-FREE PRODUCT INSTALLATION

§ 3.4.8.1 It is hereby understood and agreed that no product and/or material containing asbestos including chrysolite, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos and any combination of these materials that have been chemically treated and/or altered shall be installed or introduced into the Work by the contractor or his employees, agents, subcontractors, or other individuals or entities over whom the Contractor has control. The Contractor shall be required to provide a signed certification statement ensuring that all products or materials installed or introduced into the work all be asbestos-free.

§ 3.4.8.2 The Contractor shall also be required to furnish certified statements from the manufacturers of supplied materials used during construction verifying their products to be asbestos-free in accordance with the requirements of Section 3.4.8.1.

§ 3.4.8.3 The Contractor shall complete and submit to the Owner a certification evidencing asbestos-free product installation prior to issuance of the final Certificate for Payment, in a form acceptable to the Owner.

§ 3.5 WARRANTY

~~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.~~In addition to any other warranties, guarantees or obligations set forth in the Contract Documents or applicable as a matter of a law, and not in limitation of the terms of the Contract Documents, the Contractor warrants and guarantees that:

.1 The Owner will have good title to the Work and all materials and equipment incorporated into the Work and unless otherwise expressly provided in the Contract Documents, will be new;

.2 The Work and all materials and equipment incorporated into the Work will be free from all defects, including any defects in workmanship or materials;

.3 The Work and all equipment incorporated into the Work will be fit for the purpose for which they are intended;

.4 The Work and all materials and equipment incorporated into the Work will be merchantable; and

.5 The Work and all materials and equipment incorporated into the Work will conform in all respects to the Contract Documents.

Upon notice of the breach of any of the foregoing warranties or guarantees or any other warranties or guarantees under the Contract Documents, the Contractor, in addition to any other requirements in the Contract Documents, will commence to correct such breach within seventy-two (72) hours after written notice thereof and thereafter will use its best efforts to correct such breach to the satisfaction of the Owner; provided that if such notice is given after final payment hereunder, such seventy-two (72) hour period shall be extended to seven (7) days. The foregoing warranties and obligations of the Contractor shall survive the final payment and/or termination of the Contract.

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§ 3.6 TAXES

The Contractor shall pay 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. The Contractor shall pay all state and federal taxes levied on its business, income or property and shall make all contributions for social security and other wage or payroll taxes. The Contractor shall be solely responsible for such payments and shall indemnify the Owner and hold it harmless from same. The Contractor shall include and shall deem to have been included in its bid all Michigan Sales and Use Taxes currently imposed by legislative enactment and as administered by the Michigan Department of Treasury on the Bid Date.

§ 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 ~~Unless otherwise provided in the Contract Documents, the~~ The Contractor 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.

§ 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 written and dated notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the ~~Architect determines~~ Owner and Architect determine 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, they will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the ~~Architect determines~~ Owner and Architect determine 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 in writing, stating the reasons. If ~~either party~~ Contractor disputes the ~~Architect's~~ determination or recommendation, ~~that party may~~ The Contractor shall proceed as provided in Article 15. The requirements of Section 2 of 1998 PA 57, as amended, are hereby incorporated into this Agreement. The Contractor shall be alert to any indication or evidence of existing underground or concealed utilities or structures not shown on the Contract Documents and shall immediately notify the Owner of discovery of such evidence. If the Contractor encounters such utilities or structures, it shall cease operations immediately to minimize damage and shall notify the Owner and Architect. The Contractor shall bear the cost of damage resulting from its failure to exercise reasonable care in its construction activity or from continuing operations without notifying the Owner.

§ 3.7.4.1 The Contractor bidding on the Work is responsible for visiting the site and determining all local conditions that may in any way affect its Work.

§ 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~~ provide written and dated notification to 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~~ shall be made, as needed, as provided in Article 15.

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§ 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. The superintendent shall be satisfactory to the Owner in all respects, and the Owner shall have the right to require the Contractor to remove any superintendent from the Project whose performance is not satisfactory to the Owner and to replace such superintendent with a superintendent who is satisfactory to the Owner.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Owner and/or Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Owner and/or Architect requires additional time to review. ~~Failure of the Architect to reply 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.~~ except with a replacement superintendent who is satisfactory to the Owner.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Owner's and Architect's approval. The Owner's and Architect's approval shall not unreasonably be 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.~~ for a reasonable time to review submittals, and (3) shall provide for expeditious and practical execution on the Work. If the Contractor fails to submit a 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.

§ 3.10.4 In no event shall the Contractor's Construction Schedule be extended due to action or inaction of the Contractor, except with prior written approval of the Owner within the Owner's sole discretion.

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§ 3.10.5 Progress Meetings: Meetings of representatives of the various Contractors and Trades will be held for the purpose of coordination and furthering the progress of the Work. Contractor and subcontractor attendance is mandatory. Meetings shall be held at regular intervals as provided in the General Requirements; special meetings may be held if deemed necessary by the Owner, Contractor and Architect/Engineer.

§ 3.10.6 The Contractor shall proceed strictly (not substantially) in accordance with the critical path set forth in the Construction Schedule. The Contractor shall monitor the progress of the Work for conformance with the requirements of the Construction Schedule and shall promptly advise the Owner of any delays or potential delays. If any progress report indicates any delays, the Construction Manager shall propose an affirmative plan to correct the delay, including overtime and/or additional labor, if necessary. In no event shall any progress report constitute an adjustment of the Contract Time or any Milestone Date or the Contract duration unless any such adjustment is agreed to by the Owner and authorized pursuant to a Change Order.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be 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 for submittal to and review by the Architect 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 for submittal to and review by the Architect to illustrate materials or equipment for some portion of the Work. All Work shall be furnished and installed in accordance with the Drawings, Specifications and as additionally required by the manufacturer's printed instructions. The Contractor shall review the manufacturer's instructions, and where conflict occurs between the Drawings or Specifications and the manufacturer's instructions, the Contractor shall request clarification from the Architect prior to commencing the Work.

§ 3.12.3 Samples are physical examples for submittal to and review by the Architect 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 the way by which 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.

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§ 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 requirements of the Contract Documents by the Architect's review and approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in detailed writing 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 written 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. 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 cause such services or certifications to be provided by a properly 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, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, 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. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 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, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.~~**§ 3.13.1** The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 Anything contained in the Contract Documents to the contrary notwithstanding, no one except the Owner shall be permitted to disrupt the operation of any building system or any other services without the Owner's prior written consent. Any request to perform such work shall be in writing, received by the Owner no less than five (5) days prior to the commencement of the requested disruption, and shall detail (1) the exact nature and duration of such interruption, (2) the area affected, and (3) any impact upon the Construction Schedule caused by such proposed temporary disruption. Except in the case of Extraordinary Measures, all work shall be performed during the hours and on the days set forth in the Specifications. The Contractor's failure to comply with the notice provisions of this section shall constitute a waiver b the Contractor of an right it may have to an adjustment of its compensation, or the Construction time, on account of any postponement, rescheduling, or other delays ordered by the Owner in connection with any Work affecting Critical Service for which appropriate notice was not furnished.
§ 3.13.3 The Contractor will consult with the Owner and the Owner's Representative concerning any necessary operations at the Project site, including staging area limits, office or storage trailer locations, dumpster operations, equipment and material deliveries, hoisting areas and any other construction impacts on the Owner's grounds.

§ 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 and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

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§ 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 such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor and its subcontractors under Contractor's direction shall keep the premises and surrounding area free from accumulation of waste materials or 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 Owner shall be entitled to reimbursement from the Contractor.

§ 3.15.3 Any areas and/or concurrently occupied space both occupied by the Owner and used in the progress of the Work, both within the limits of the construction site and the adjacent areas leading to it, shall be maintained, opened to travel and kept in a clean condition. Failure by the Contractor to maintain said areas will result in the Owner's cleaning of same, at the expense of the Contractor.

§ 3.15.4 In addition to removal of rubbish, the Contractor and its subcontractors, under the Contractor's direction, shall replace any broken glass, remove stains, spots, marks, and dirt from decorated work, clean hardware, and/or remove spots and smears from all surfaces which were affected by the Work.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect 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 indemnify and hold harmless the Owner and Architect ~~harmless from~~ from any and all cost, damage, or loss on account thereof, including, but not limited to, actual attorneys fees, but shall not be responsible for such 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 the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect. The review by the Owner or Architect of any method of construction, invention, appliance, process, article, device or materials of any kind shall be for its adequacy in the Work and shall not be an approval for the use thereof by the Contractor in violation of any patent or other rights of any third person.

§ 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~~ Work or the duties or obligations of this Agreement or the failure of the Contractor or the Work to conform with the Contract Documents, caused in whole or in part by any acts or omissions of the Contractor, a Subcontractor, or anyone directly or indirectly employed by them or anyone for whose acts ~~they~~ of any of them may be liable, regardless of whether or not such claim, damage, loss or expense is, or is claimed to be caused in part by a party indemnified hereunder, except where such loss, damage, injury, liability, expense or claim is the result of the sole negligence of the Owner, Architect or the consultants, agents or employees of any of them and is not contributed to by the Contractor or anyone whose acts the Contractod may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. The Contractor shall further indemnify the Owner, Architect,

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Architect's consultants, Construction Manager and agents and employees of any of them from and against all amounts such parties may be required to pay in attorney fees in order to pursue enforcement of this provision against the Contractor or otherwise obtain indemnification from the Contractor provided under the terms of this Article. Such obligation shall not be construed to negate, abridge, or reduce any other rights or obligations of indemnity ~~that would otherwise exist as to a party or person described in this Section 3.18.~~which would otherwise exist as to any party or person set forth in this section. To the fullest extent permitted by law, the Contractor shall indemnify the Owner and save the Owner harmless against all loss by fines, penalties or corrective measures resulting from acts of the Contractor or omissions by the Contractor, its Subcontractors, agents, employees or assigns, with respect to the violation of safety requirements of this Contract, including reasonable attorney fees.

§ 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.~~addition to and not in limitation of the Contractor's other indemnity obligations, the Contractor hereby accepts and assumes exclusive liability for and shall indemnify, protect and save harmless the Owner, Architect and Construction Manager from and against the payment of the following:

All contributions, taxes or premiums (including interest and penalties thereon) which may be payable under the unemployment insurance law of any state, the federal Social Security Act, federal, state, county and/or municipal tax withholding laws, or any other law, measured upon the payroll of or required to be withheld from employees by whomsoever employed, engaged in the Work to be performed and furnished under this Contract;

All sales, use, personal property and other taxes (including interest and penalties thereon) required by an federal, state, county, municipal or other law to be paid or collected by the Contractor or any of its Subcontractors or vendors or any other person or persons acting for, through or under it or any of them, by reason of the performance of the Work or the acquisition, ownership, furnishing, or use of any materials, equipment, supplies, labor, services or other items for or in connection with the Work: and

All pension, welfare, vacation, annuity and other benefit contributions payable under or in connection with respect to all persons by whomsoever employed, engaged in the Work to be performed and furnished under this Contract.

The Contractor shall indemnify, defend and hold the Owner harmless from any claim, damage, loss or expense, including but not limited to actual attorney fees, incurred by the Owner related to any hazardous material or waste, toxic substance, pollution or contamination brought into the Project site or caused by the Contractor or used, handled, transported, stored, removed, remediated, disturbed or disposed of by Contractor.

§ 3.18.3 In the event that any claim is made or asserted, or lawsuit filed for damages or injury arising out of or resulting from the performance of the Work, whether or not the Owner or Construction Manager is named as a party, the Contractor shall immediately advise the Owner and Construction Manager, in writing, of such claim or lawsuit and shall provide a full and complete copy of any documents or pleadings thereto, as well as a full and accurate report of the facts involved.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The ~~Owner shall retain an architect~~ Architect is 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. The term "Architect," "Architect/Engineer," "Engineer," or "Design Professional" as used herein means the Architect or the Architect's authorized representative.

§ 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.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect ~~as to whom the Contractor has no reasonable objection and~~ whose status under the Contract Documents shall be that of the Architect.

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§ 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.~~ Payment and with the Owner's written concurrence during the correction period.. 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 more frequently as ~~otherwise~~ agreed with the ~~Owner,~~ Owner or required by law, 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~~ Except as otherwise set forth herein, 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, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect ~~will~~ shall keep the Owner ~~reasonably~~ informed about the progress and quality of the portion of the Work completed, shall guard the Owner against defects and deficiencies in the Work, and shall report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) 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 FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 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 13.5.2 and 13.5.3, whether or not such 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, material and equipment 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 Owner and Architect or, in the absence of an approved submittal schedule, with reasonable promptness as to cause no delay in the Work 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, unless otherwise specifically stated by the Architect, 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. However, should the Architect discover during the course of such review any inaccuracies, incompleteness, or other irregularities, the Architect shall immediately

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notify the Owner of the same to determine an appropriate corrective course of action or notify the Contractor of the same to correct the irregularities.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize 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~~ determine, with the Owner's concurrence, 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 duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 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.~~ promptness given the particular circumstances.

§ 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,~~ interpretations, the Architect will endeavor to secure faithful performance by ~~both Owner and Contractor, will not show partiality to either and~~ the Contractor, will not be liable for results of interpretations ~~or decisions~~ rendered in good ~~faith.~~faith and without negligence.

§ 4.2.13 The Architect's ~~decisions~~ interpretations 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.~~ promptness given the particular circumstances. 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 subcontractors of a separate contractor. The term "Subcontractor" shall also include material and equipment suppliers. Each and every subcontract shall be understood to have the Owner as a third-party beneficiary, and the Owner shall enjoy all third-party beneficiary rights permitted by law.

§ 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 or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish supplies, materials or ~~equipment~~ equipment, including those fabricated to a special design) proposed for each principal portion of the Work. The Architect ~~may~~ will reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. ~~Failure of the Owner or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.~~All contractual

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agreements with additional persons or entities serving as a subcontractor shall expressly identify the Owner as a third-party beneficiary, and the Owner shall enjoy all third-party beneficiary rights not prohibited by law.

§ 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, despite the Architect's or Owner's reasonable objection, 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 previously selected if the Owner or Architect makes reasonable objection to such substitution. The Contractor shall notify the Owner and Architect of any proposed substitution a minimum of ten (10) days prior to such proposed change.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, 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, which the Contractor, by these 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 in writing; 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.~~may be equitably adjusted as negotiated by the parties.

§ 5.4.3 Upon such 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.~~

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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 Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to ~~insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.~~ insurance. The Contractor shall be responsible for coordinating the Work with the work of other Contractors, including the Owner's own forces or separate contractors, so as to complete the Work in accordance with the Project time schedule.

§ 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 other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the 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, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor 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 report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report 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, except as to defects not then reasonably discoverable.

§ 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 the Contractor ~~wrongfully~~ causes to completed or partially completed construction or to property of the Owner or separate contractors 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.

§ 6.2.6 Claims and other disputes and matters in question between the Contractor and other Contractors shall be subject to the provisions of Section 4.7 provided the other Contractors have reciprocal obligations. If such other Contractor initiates legal or any other proceedings against the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings at its own expense, and if any judgment or award against the Owner arises therefrom, the Contractor shall pay or satisfy it and

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shall reimburse the Owner for all actual attorneys' fees and court or other costs which the Owner has incurred over and above those paid for directly by the Contractor.

§ 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. The Owner's right to clean up shall in no event be deemed a duty, and should the Owner choose not to pursue this remedy, the Contractor necessitating such action shall remain fully responsible for the same.

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, only by Change Order, Construction Change ~~Directive~~ Directive, written contract amendment, 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~~ may be issued 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.~~alone, if so authorized.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, 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 or more 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 7.3.7.

However, the Contract time shall be adjusted only if the Contractor demonstrates to the Owner that the changes in the Work required by the Construction Change Directive adversely affect the critical path of the Work.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or

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Contractor, the applicable unit prices shall be equitably ~~adjusted.~~adjusted, unless the Contractor provided unit prices as part of a competitive bid.

§ 7.3.5 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. Contractor agreements to a Construction Change Directive shall require a follow-up writing or signature as contemplated in Section 7.3.6.

§ 7.3.6 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.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall ~~determine~~ determine, with the Owner's approval, the method and 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 7.3.7 shall be limited to ~~the following:~~a reasonable amount of the following that are actually incurred by the Contractor:

- **.1** Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- **.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 related to the Work; and
- **.5** Additional costs of supervision and field office personnel directly attributable to the change.

§ 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 undisputed Work completed under the Construction Change Directive in Applications for Payment. ~~The~~ For those undisputed portions, 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~~ cost, if agreed to by the Owner in writing, shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of ~~either party~~ the Contractor to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree in writing with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, in writing, 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.

§ 7.3.11 In no event shall the Contractor be entitled to receive, and the Contractor hereby waives the right to receive any payment or an extension of time for additional or changed work, whether partially or fully completed or simply proposed, unless such additional work is authorized by a written Change Order or Construction Change Directive signed by the Owner, nor shall the Contractor be obligated to proceed with an such work. Only the Owner shall have then right to issue a written Change Order or Constructive Change Directive to the Contractor authorizing any addition, deletion or other revision in the scope of the Work and/or an adjustment in the Contract Sum or the Construction Schedule.

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§ 7.4 MINOR CHANGES IN THE WORK
The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

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 obtaining all supplies, materials, tools and equipment necessary to perform the Work and for properly performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. All work shall be completed in sufficient time to allow for cleanup and preparation for Owner move-in prior to the Date of Substantial Completion.

§ 8.2.4 Without altering the applicability and obligations of Section 8.2.3, the Contractor shall prosecute the Work undertaken in a prompt and diligent manner wherever such Work, or any part of it, becomes available, or at such other times as the Owner and/or Architect may direct so as to promote the general progress of the entire construction. The Contractor shall not, by delay or otherwise, interfere with or hinder the Work of any other contractor, the Owner, or the Architect. Any supplies, materials, tools and/or equipment that are to be furnished by the Contractor hereunder shall be furnished in sufficient time to enable the Contractor to perform and complete its Work within the time or times provided for herein. If the Contractor, through its negligence or failure, including the negligence or failure of its Subcontractors or suppliers, fails to furnish the necessary labor and/or supplies, materials, tools and/or equipment to meet construction needs in accordance with the established Schedule, then it shall increase its forces or work such overtime as may be required, at its own expense, to bring its part of the Work up to the proper schedule. In the event the Contractor fails to take such action necessary to bring its part of the Work up to schedule within twenty-four hours of receiving notice from the Owner or Architect then the Owner, at its sole option, ma supplement the Contractor's forces, materials and/or equipment or remove the Contractor from the Project, and the Owner may complete part or all of the remainder of the Contractor's Work, either utilizing in the Owner's sole discretion its own forces, new contractors chosen by the Owner or any Subcontractor or supplier of the Contractor, which may include fixed price supplemental work, time and materials supplemental work, or any combination thereof, which in Owner's sole discretion will most quickly and completely cure the failure of the Contractor. The Contractor shall be responsible for any and all costs of performing or completing the Work that are incurred by the Owner or any Contractor, Subcontractor, supplier, or other entity on the Owner's behalf. The Contractor shall pay the Owner for such costs within ten (10) days of the date of invoice. If not paid within ten (10) days, the amount will be withheld from the Contractor and paid to the Owner from the next payment due the Contractor under the Agreement. Exercise of such rights shall in no way limit or jeopardize the Owner's right to any other remedy, including but not limited to a claim against the Performance Bond of the Contractor.

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§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 ~~If~~ Provided the Contractor submits a written request for an extension not more than fourteen days after the occurrence that gives rise to the delay, if the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by ~~labor disputes,~~ fire, ~~unusual delay in deliveries,~~ unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending ~~mediation and arbitration;~~ litigation or mediation, as applicable; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may ~~determine.~~ determine and the Owner agrees. Failure of the Contractor to submit a timely request for an extension shall irrevocably waive the Contractor's right to such an extension of time. If the Contract time is subject to extension pursuant to this subparagraph, such extension shall be the exclusive remedy of the Contractor for delay and the Contractor shall not be entitled to recover damages from the Owner.

§ 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~~ precludes recovery of damages for delay by ~~either party~~ the Contractor under other provisions of the Contract Documents.

§ 8.3 DELAY DAMAGE CLAIMS

§ 8.4.1 If the Contractor fails to complete its Work on time resulting in loss or damage to the Owner, whether or not liquidated damages are called for in the Contract Documents, the Owner shall be entitled to recover an damages caused by the Contractor's breach, including overhead, profit, extended general conditions, actual attorney fees, etc.

§ 8.4.2 In the event the Contractor is hindered in the commencement or progress of the Work by the Work or the lack thereof or another contractor on the Project and in the event the Contractor claims damages as a direct and proximate consequence thereof (including, but not limited to, extended general conditions, overhead, profit, overtime, interest, supervision or other costs or profits whatsoever), then the Contractor shall not assert such claims against the Owner, and as to the Owner, the Contractor's claims of delay damages are hereby waived. The Contractor's sole and exclusive remedy regarding such claims for such delay damages shall be to pursue such claims directly against any contractor(s) on the job site which caused the delay, and with regard to such claims asserted against the Contractor by any other contractor(s), the Contractor hereby waives the defense of absence of contractual privity and hereby assumes liability to other contractor(s) arising out of the Contractor's actions resulting in such delay and claim.

§ 8.4.3 In the event of any delay in the completion of the Contractor's Work or scheduling of the Contractor's Work, including the sequence of that Work which is attributable to the Owner, and if it is determined by a court of competent jurisdiction that the Owner is liable for such delay despite the other terms of this Contract barring any Owner liability for damages for delay, then the Owner shall be liable to the Contractor for liquidated damages in the amount of not to exceed One Hundred Dollars ($100) per day, maximum, which shall include all of the Contractor's claims, including by way of example, delays, compressions of schedule, lost productivity, lost profits, lost opportunities, out of sequence work, overhead, crowding, tools, equipment, rentals, etc.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

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.

§ 9.2 SCHEDULE OF VALUES

~~Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.~~**§ 9.2.1** Before the first Application for Payment, the Contractor shall submit a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

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§ 9.2.2 The schedule of values shall be prepared in such manner that the value associated for each major item of work and each subcontracted item of work is shown with materials and labor indicated separately on AIA Document G702A Application and Certificate of Payment Continuation Sheet, or otherwise.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ~~ten~~ fifteen 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~~ valuesfor completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents. The form of Application and Certificate for Payment shall be AIA Document G702 pplication and Certification for Payment, supported by AIA Document G702A Continuation Sheet, unless otherwise agreed by the Owner. Applications for Payment are due to the office of the Construction Manager by the designated day of the month. Applications for Payment that are received after the specified date will not be processed until the following month.

§ 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. A request for payment of sums related to work regarding Construction Change Directives shall, unless qualified in writing at the time of request, constitute full and complete consent to the Construction Change Directive(s) and to the issuance of a Change Order.

§ 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 material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 The Contractor shall submit with each monthly Application for Payment (1) an Affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the previous application was submitted and the Owner might in any way be responsible have been paid or otherwise satisfied, and (2) a release or waiver of liens arising out of the Contract from each Contractor and/or Subcontractor, materialman, supplier and laborer or the Contractor addressing all previous Applications for Payment submitted for the Project.

§ 9.3.1.4 The Contractor must provide copies of the insurance certificates, bonds, and the same for all of the Subcontractors prior to submitting the first Application for Payment.

§ 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. Payment to Contractor for materials stored off site is discouraged. When circumstances indicate that the Owner's best interest is served by off-site storage, the Contractor shall make written request to the Owner for approval to include such material costs in his next progress payment. The Contractor's request shall include the following information:

.1 A list of the fabricated materials consigned to the Project (which shall be clearly identified, giving the place of storage, together with copies of invoices and reasons why materials cannot be delivered to the site,

.2 Certification that items have been tagged for delivery to the Project and that they will not be used for another purpose.

.3 A letter from the Contractor's Surety indicating agreement to the arrangements and that payment to the Contractor shall not relieve either party of their responsibility to complete the Work.

.4 Evidence of adequate insurance covering the material in storage, which shall name the Owner as additionally insured.

.5 Costs incurred by the Construction Manager and Architect to inspect material in off-site storage shall be paid by the Contractor.

.6 Subsequent pay requests shall itemize the materials and their cost which were approved on previous pay requests and remain in off-site storage.

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.7 When a partial payment is allowed on account of material delivered on the site of the Work or in the vicinity thereof or under possession and control of the Contractor, but not yet incorporated therein, such material shall become the property of the Owner, but if such material is stolen, destroyed or damaged by casualty before being used, the Contractor will be required to replace it at its own expense.

§ 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, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part 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 comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. 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.~~ Architect, in writing, together with the certification to which it pertains. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. 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~~ reviewed, unless otherwise required by the contract or law, construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material 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;~~remedied, or the Contractor in default on the Agreement;
- **.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 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.~~ Documents;
- **.8** the Work not having progressed to the extent set forth in the Application for payment;
- **.9** representations of the Contractor are untrue;
- **.10 failing to conform to project schedule;**
- **.11 default in the performance of any obligation to Owner under another contract; or**
- **.12 failure to provide sufficiently skilled workers.**

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

§ 9.5.3 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 material or equipment suppliers 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 Architect will reflect such payment on the next Certificate for Payment.

§ 9.5.4 If the Contractor disputes any determination by the Owner with regard to any Certificate for Payment, the Contractor shall nevertheless continue to expeditiously perform the Work and such dispute shall provide no basis for any manner of suspension of the Contractor's performance of the Work.

§ 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 material and equipment 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 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, except as may otherwise be required by law.

§ 9.6.5 ~~Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.~~The Owner may, in its sole discretion, after providing Contractor with ten (10) days prior written notice, make direct payments to the Contractor's Subcontractors, material men, laborers or claimants relating to labor or material provided to the Contractor for which the Contractor has not provided a waiver of lien, in the event the Subcontractors, material men, laborers or claimants threaten to or actually cease providing labor and/or materials for the Project such that, in the Owner's determination, progress of the Project and the Project's schedule are jeopardized. All payments made pursuant to this section shall be considered the same as if paid directly to the Contractor and shall constitute partial payment of the Contract Sum. In the event the Contractor disagrees with the amount proposed to be paid to one or more Subcontractors, material men, laborers or claimants, the Contractor shall provide a bond in the amount the Contractor believes the Owner will overpay, within ten (10) days of receipt of notice, or be barred from making any claim that the amount of the direct payment was incorrect. Payment under this provision shall not jeopardize any other remedy available to the Owner.

§ 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 and 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, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

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§ 9.6.8 Subject to applicable law, if a petition in bankruptcy or any other arrangement or proceeding regarding insolvency, assignment for the benefit of creditors, trust, chattel mortgage, or similar state or federal proceeding, whether voluntary or involuntary, shall be filed with respect to the Contractor, the Owner may withhold the final balance, or any other payments, whether or not an application for progress payment has been properly filed, until expiration of the period of any guarantees or warranties required for the Contractor, and the Owner may pay out such funds the amount necessary to satisfy any claims or costs that otherwise would have been covered by such guarantees or warranties.

§ 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~~ without justifiable basis under the Contract or these General Conditions (including, without limitation, receipt of the Architect's Certificate for Payment), 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~~ undisputed amount asserted by the Contractor in its Application for Payment or awarded by a court, then the Contractor may. upon 21additional days' written notice to the Owner and Architect, stop the Work until payment of the undisputed 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 shut-down, 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 and when all required occupancy permits, if any, have been issued, 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.~~ immediately. 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, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall 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 such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such 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.

§ 9.8.6 Notwithstanding Sections 9.8.1 and 9.8.2, as a condition precedent to establishing the date of Substantial Completion, the Contractor shall prepare and submit to the Construction Manager and Architect a comprehensive list of items to be completed or corrected (a "punch list"). The Contractor shall respond immediately to correct Work deficiencies and/or punch list items. Should the Contractor fail to make corrections in a timely fashion, but not later than thirty (30) calendar days from the date of Substantial Completion or notification of the required corrections, whichever is earlier, such Work may be corrected by the Owner at the Contractor's sole expense, and the Contract Sum may be adjusted accordingly.

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§ 9.8.7 The Contractor shall promptly notify the Construction Manager and Architect, in writing, when the Work deficiencies and/or punch list items are completed. Upon the review of the Work by the Construction Manager and/or Architect after such notification by the Contractor, if Work deficiencies and/or punch list items shall continue to exist the Contractor shall reimburse the Owner its cost plus ten percent (10%) overhead and profit on any cost incurred by the Owner, including the Construction Manager's and Architect's fees for reinspections of the Work. Failure to pay such costs within ten (10) days of receipt of a demand regarding the same shall permit the Owner to pay such costs out of retainage held by the Owner on the Contractor's contract.

§ 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 as required under Section 11.3.1.5 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.~~complete. The Contractor shall proceed with the work in such a manner as reasonably directed and shall cooperate with the Owner to limit interruptions.

§ 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,~~ upon in writing, 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.

§ 9.9.4 Any agreement as to the acceptance of non-conforming Work not complying with the requirements of the Contract Documents, shall be in writing in the form of a Change Order, acceptable to the Owner's authorized representative and signed by all parties.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written 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 and, 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 terms and conditions of 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 and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial 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 and (5),~~ (5) an affidavit that states the Work is fully completed and performed in accordance with the Contract Documents, (6) in the event of Contractor bankruptcy, at the Owner's option, an order entered by the court having jurisdiction of the Contractor's insolvency proceeding authorizing such payment; (7) a general release executed by the Contractor on a form provided by the Architect, and (8) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such

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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. If such lien 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 such lien, including all costs and ~~reasonable~~ actual 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 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 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; ~~or~~

.3 terms of special warranties required by the Contract ~~Documents.~~Documents;

.4 claims for indemnification;

.5 claims about which the Owner has previously given notice to the Contractor; or

.6 claims unknown to the Owner at the time of final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of ~~claims by that payee~~ all claims of the Contractor, except those previously made by the Contractor in writing and identified by ~~that payee~~ the Contractor as unsettled at the time of final Application for ~~Payment.~~Payment and specifically referenced as being an exception to the waiver contained in this section.

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.~~ **§ 10.1.1** The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.1.2 The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The contractor shall continuously maintain adequate protection of all Work from damage and shall protect the Owner's property from injury or loss. The Contractor shall make good any such damage, injury or loss at no cost to the Owner, except to the extent directly caused by agents or employees of the Owner. The Contractor shall adequately protect the Work and adjacent property as required by law, the Contract Documents, or as otherwise required, to cause no damage to the Work and adjacent property during the execution of the Work. This requirement shall also apply to structures above and below ground as conditions of the site require. The Contractor shall also provide recommendations and information to the Owner regarding: (1) the assignment of responsibilities for safety precautions and programs by the Subcontractors and responsibilities for safety precautions and programs by the subcontractors and the Owner for the safety of members of the Construction Team, the Owner, and the general public; (2) temporary facilities; and (3) equipment, materials and services for common use of Subcontractors. The Contractor shall verify that the requirements and assignment of responsibilities are included in the proposed Contract Documents.

§ 10.1.3 The Contractor is solely responsible to the Owner for health and safety at the Project site and, accordingly, shall be sole responsible for initiating, monitoring, maintaining, and supervising all safety precautions and programs in connection with the performance of the Work. The foregoing does not relieve the Subcontractors of their responsibility to the Contractor for the safe performance of their Work in accordance with all Applicable Laws.

§ 10.1.4 The Contractor shall develop and implement a health and safety plan that complies with all applicable Laws covering all activities on the Project Site except those activities performed solely by the Owner. The Contractor shall provide the Owner a copy of such health and safety plan prior to commencement of Work. The Owner shall have no duty to review the plan and shall assume no duty by doing so. The plan shall be included in all bidding documents, and the requirements of the plan shall be applicable to all members of the Construction Team.

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§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take ~~reasonable precautions~~ every reasonable precaution 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 or the Contractor's Subcontractors or Sub-subcontractors; 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.~~take all reasonable safety precautions with respect to its Work and the work of others, shall comply with all standard industry safety measures and shall comply with all applicable laws, ordinances, rules, regulations and orders of any public authority and all other requirements of the Contract Documents, including those applicable to the safety of persons or property. The Contractor shall be responsible for the safety of all of the Contractor's employees and the safety of all of the Contractor's Subcontractors, suppliers and their employees. The Contractor shall report in writing to the Architect any injury to any of to any of Contractor's or its' Subcontractors' employees at the site within one (1) day after the occurrence of such injury.

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

§ 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. The Contractor shall be solely and fully responsible for any and all damage claims and for defense of all actions against the Owner relating to such explosives, hazardous materials and/or unusual methods.

§ 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, except damage or loss 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~~ Contractor suffers injury or damage to person or property because of an act or omission of the ~~other party,~~ Owner, or of others for whose acts ~~such party~~ the Owner is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the ~~other party~~ Owner 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.~~ Owner to investigate the matter. This provision shall be for investigative purposes only and shall not eliminate or reduce a party's obligation to pursue claims. The Contractor's failure to fully satisfy the requirements of this section shall be an irrevocable waiver of any claim arising out of such injury or damage. Injury or damage to persons or

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property suffered by the Owner because of an act or omission of the Contractor or others for whose acts the Contractor is legally responsible shall be subject to the limitations provisions established by Michigan law.
§ 10.2.8.1 The Contractor causing damage to the Work of another Contractor shall be responsible for the repair and replacement of such damaged Work. Back charges shall be made against the Contract sum of the damaging Contractor when corrections are not made promptly.

§ 10.2.8.2 The Owner reserves the right to pay the Contractor originating the back charge from monies due the Contractor who is responsible for the Work required by same and shall deduct it from the Contract amount due the said responsible Contractor.

§ 10.2.8.3 The Contractor originating back charges will determine the amount of the back charges in accordance with Article 7, Changes in the Work, in order to obtain the Architect's approval.

§ 10.2.9 If the Contractor or any Subcontractor chooses to use any systems, equipment, facilities, or services which have been incorporated in the Project as a permanent part thereof by any other, the Contractor shall assume full responsibility for damages caused to said systems, equipment, facilities or services, and have damages repaired as required, so that in no case will the performance of the used systems, equipment, facilities or services be diminished from the specified criteria as a result of such use.

§ 10.2.10 The Contractor acknowledges that the safety of the Owner's students, employees and guests is of the utmost importance. The Contractor will take no action which would jeopardize the safety of the Owner's students, employees and guests and, without the Owner's written approval, shall take no action which would interfere with the Owner's activities. Without limiting the foregoing provisions, the Contractor shall comply with all laws applicable to students and/or school safety.

§ 10.3 HAZARDOUS MATERIALS
§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. 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 report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the ~~Owner~~ Owner, in its discretion, 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~~ shall, as a courtesy, 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 such material or substance or who are to perform the task of removal or safe containment of such 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 in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.~~to address shut-down, 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.~~

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§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for 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 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.~~site. To the extent the Contract requires the removal, transport and disposal of hazardous materials, the Contractor agrees that it assumes responsibility for said tasks as part of the Agreement.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance 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 indemnify 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. Nothing in this section will be construed as relieving Contractor from the cost and responsibilities for emergencies covered hereby.

§ 10.5 NOTIFICATION OF UTILITY COMPANIES

§ 10.5.1 At least five (5) working days prior to the start of work in areas which may involve existing utility lines, the Contractor shall notify by certified mail with return receipt requested, the Registered Utility Protection Service of the utility company possibly affected by the planned work.

§ 10.5.2 The utility company should upon receipt of notice, stake, mark or otherwise desigate the location (and depth) of its lines, or temporarily move the line(s).

§ 10.5.3 The Contractor shall immediately report to the respective utility company any break or leak in its lines or any dent, gouge, groove or other damage to the utility line or to its coating or cathodic protection made or discovered in the course of the Work.

§ 10.5.4 The Contractor shall immediately alert the Owner, Construction Manager, Architect and occupants of nearby premises of any and all emergencies caused or discovered in the utility line(s) in the course of the Work.

§ 10.6 SECURITY

§ 10.6.1 All members of the Construction Team shall cooperate with the Owner's security personnel and shall comply with all of the Owner's security requirements. Such requirements shall include, without limitation, if requested by the Owner, delivering to the Owner's security personnel, prior to the commencement of the Work on each day, a list of all personnel who will be permitted access to the Work. The foregoing, however, shall not relieve the Contractor of any obligation to provide a safe and secure workplace for all parties entering the Project Site.

§ 10.7 FIRE PROTECTION

§ 10.7.1 The Contractor shall maintain free access to the building areas for fire fighting equipment and shall at no time block off main roadways or fire aisle without providing adequate auxiliary roadways and means of entrance for fire fighting equipment, including heavy fire department trucks, where applicable.

§ 10.7.2 The Contractor shall at all times cooperate with the Owner and keep the municipal fire department informed of the means of entrance and changes to the roadways or fire aisles as needed to provide fire department access to or around to Project site.

§ 10.7.3 The Contractor shall, during the entire construction period and until the completion of the Work, provide and maintain all material, equipment and services necessary for an adequate fire protection system, which shall meet the

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approval of the Owner and/or the Architect. The system shall, at a minimum, meet the requirements set forth in the Contract Documents and of Applicable Laws. These requirements shall be augmented and/or the installations relocated, as may be necessary to meet, at all times, the demands of adequate protection in all areas and shall not be reduced prior to the completion of the Work with the written approval of the Owner and/or the Architect.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;

.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 Claims for damages insured by usual personal injury liability coverage;

.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;

.7 Claims for bodily injury or property damage arising out of completed operations; and

.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section ~~3.18.~~3.18;

.9 liability insurance shall include all major divisions of coverage and e on a comprehensive basis including:

- **.1** Premises' Operations (deleting X, C, or U exclusions);
- **.2** Owner's and Contractor's Protective;
- **.3** Products and Completion Operations;
- **.4** Contractual including specific for the Contractor's obligations under Section 3.18;
- **.5** Any auto; and
- **.6** Broad Form Property Damage, including Completed Operations; and

.10 All bonds required by law, including bid bond, performance bond and payment bond.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be ~~canceled~~ canceled, reduced or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor ~~with reasonable promptness.~~to the Owner and Architect no less than thirty (30) days prior to any reduction in coverage.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's ~~consultants~~ Consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner

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as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.1.5 On all insurance contracts under which the Contractor is obligated to have its insurance company name the Owner as additional insured, the Contractor shall require such insurance company to add to the policy the following clause: "The insurance afforded to the Additional Insured is primary insurance. If the Additional Insureds have other insurance which is applicable to the loss on an excess or contingent basis, the amount of the insurance company's liability under this policy shall not be reduced by the existence of such other insurance."

§ 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project. The term "temporary building", as used in this section, shall not include job trailers or any party.

This policy will exclude any tools, equipment, scaffolding, glass breakage, etc. owned or rented by the Contractor or Subcontractors and material stored on the site but not incorporated into the Project. The Contractor shall be responsible for protecting all product until the Date of Substantial Completion is established by the Architect/Engineer. The Contractor shall replace any Work if damaged before Substantial Completion. The contractor may assume the risk itself or obtain insurance in amounts it deems sufficient.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such ~~deductibles.~~deductibles, and the Owner may recover such costs from the party causing the loss.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

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§ 11.3.2 BOILER AND MACHINERY INSURANCE
The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE
The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. ~~The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.~~

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

~~**§ 11.3.5** 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, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.~~

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION
~~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, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, 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 covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.~~
Superior to any other term in this Agreement, any reference in the General Conditions to "waiver of subrogation" or such similar term are hereby deleted and shall be declared to no effect.
§ 11.3.8 A loss insured under the Owner's property insurance 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 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such

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loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. ~~If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.~~

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner ~~shall have the right to require~~ hereby requires the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder ~~as stipulated in bidding requirements or specifically required in the Contract Documents~~ each in the penal sum of 1005 of the Contract Sum and in accordance with applicable law on the date of execution of the Contract.

§ 11.4.2 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.

§ 11.4.3 The Contractor shall deliver copies of the Performance Bond and Payment Bond required by the Agreement to the Owner for to Contractor be pursuant to the Agreement. The Contractor's obligation to provide such bonds shall not be waived in any fashion, including any failure to secure such bonds prior to Contractor beginning performance pursuant to the Agreement.

§ 11.4.4 If applicable and as permitted by the Owner/Construction Manager Agreement, bonds shall be executed by a responsible surety licensed in the state where the work is located with a Best's rating of no less than A, XII or better and shall remain in effect for a period of time established by Michigan law.

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.~~Time or Contract Sum.

§ 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 with the Owner's consent to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. At the time Owner's consent is sought as described herein, the Architect shall notify the Owner that additional costs may apply if the Work is in accordance with the Contract Documents. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.1.3 If a portion of the Work has been covered which 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, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor, under the Owner's control, in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

It is understood that the correction of work, either before or after Substantial Completion, shall occur without extension of the Construction Time, without increase in the Contract Sum, and without use of any contingency.

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§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

~~The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs~~ If any portion of the Work is determined by the Owner or Architect, either during performance of the Work or during any applicable warranty period, to be defective or not in compliance with the requirements therefor, the Owner shall notify the Contractor in writing that such Work is rejected. Thereupon, the Contractor shall immediately replace and/or correct such Work by making the same comply strictly with all the requirements therefor. The Contractor shall bear all 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.~~
work of other Subcontractors and including compensation for the Architect's and Construction Manager's additional services and any delay or related damages to the owner made necessary thereby. The Owner shall have the right to charge the Contractor for any compensation payable for the Architect's or Construction Manager's additional services required by the Contractor's rejected Work and deduct the payment from the next payment due the Contractor.

§ 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 an 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 written 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 2.4.

§ 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, whether completed or partially completed, of the Owner or separate contractors 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.

§ 12.2.6 The Contractor shall respond immediately to correct Work deficiencies and/or punch list items. Failure to correct Work deficiencies and/or punch list items in a timely fashion shall be a material breach, and the Owner may terminate the Contract. Whether or not the Contract is terminated, if the Contractor fails to make corrections in a timely fashion, such Work may be corrected by the Owner, in its sole discretion, at the Contractor's expense, and the Contract Sum may be adjusted by backcharge accordingly. The Contractor shall promptly notify the Architect in writing when Work deficiencies and/or punch list items are completed. If upon review of the Work by the Architect, after such notification by the Contractor, Work deficiencies and/or punch list items shall continue to exist, the Contractor shall reimburse the Owner for any costs incurred by the Owner, plus ten percent (10%) overhead and profit.as well as the Architect's fees for reinspections of the Work.

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§ 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. The acceptance of nonconforming Work by the Owner shall be by written Change Order signed by the Owner's authorized representative. Acceptance of nonconforming Work may only occur pursuant to such written Change Order.

ARTICLE 13 MISCELLANEOUS PROVISIONS
§ 13.1 GOVERNING LAW
The Contract shall be governed by the ~~law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.~~ State of Michigan.

§ 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 such 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 such assignment.

§ 13.3 WRITTEN NOTICE
Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by national overnight courier service providing a tracking system and proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES
§ 13.4.1 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.

§ 13.4.2 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 there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS
§ 13.5.1 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 (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor. Wherever the Contract Documents require the Contractor to give "Notice" or "Timely Notice" to the Architect, Public Authority, and/or others, it shall be the Contractor's responsibility to furnish all such notices sufficiently in advance to allow the party receiving the notice reasonable time to react to such notice, including travel time on the job site as necessary, when such notices require the on-site presence of the Architect, Public Authority, their authorized representatives, or others for field observation of inspections, testing or approvals. Reasonable time shall be defined as no less than 24 hours plus normal travel time from the home office of the party being notified to the job site and must also accommodate known, standard, or reasonable processing periods.

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§ 13.5.2 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 13.5.1, 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 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract ~~Documents,~~ Documents or applicable law, 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.

§ 13.5.4 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.

§ 13.5.5 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.

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

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may 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.

§ 13.7 TIME LIMITS ON CLAIMS

~~The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time 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 13.7.~~

§ 13.7.1 The Owner shall commence all claims and causes of action in accordance with the applicable statutes of limitation applicable under Michigan law. The Contractor shall commence all claims and causes of action in accordance with the time frame stated in Sections 10.2.8 and 15.1.2 of these General Conditions.

§ 13.7.2 Regardless of any provision to the contrary, the statute of limitations with respect to any defective or nonconforming Work which is not discovered by the Owner shall not commence until the discovery of such defective or nonconforming Work by the Owner. Further, no claim by the Owner shall be deemed untimely if filed within six (6) years of such time frame.

§ 13.8 SURETY NOTICE AND PRIOR APPROVALS

Except where otherwise expressly required by the terms of the Agreement, the Contract Documents or the General Conditions, exercise by the Owner of any contractual or legal right or remedy without prior notice to or approval by the Contractor's surety shall in no way bar or prohibit the Owner's ability to pursue such right or remedy. Further, pursuit of such a right or remedy without prior notice to or approval of surety shall in no way compromise, limit or bar any claim by the Owner against a surety bond of the Contractor.

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 or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, 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;

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.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;~~ Documents, subject to justifiable withholding of payment as described herein or in the contract documents; or

.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, 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' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor 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' written 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;~~materials to the point of negatively impacting the Project and/or the related schedule;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.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.~~Documents; or

.5 the Contractor fails to prosecute the Work or any part thereof with promptness and diligence or fails to perform any provisions of this Contract, or goes into bankruptcy, liquidation, makes an assignment for the benefit of creditors, enters into a composition with its creditors, or becomes insolvent.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, 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' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:~~:three (3) days' written notice, terminate the Contractor's right to proceed with the Work, or such part of the Work as to which such defaults have occurred, and may take any one or more of the following actions:

.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.

In the event the Contractor's surety bond requires notice of intent to declare a default of the Contractor and if such bond notice is provided by the Owner, such notice shall be adequate to satisfy the three (3) day written notice described above in this section.

§ 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.

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§ 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 in pursuing termination and completion of the Work, including actual attorney and legal fees and costs, 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 as described in 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 written 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 Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

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, or other relief with respect to the terms of the ~~Contract.~~ Contract, including but not limited to, additional sums, additional time for performance, or damages for delay. 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. The Contractor shall not knowingly (as "knowingly" is defined in the Federal False Claims Act, 31 USC 3729. *et seq.*) present or cause to be presented a false or fraudulent Claim. As a condition precedent to making a Claim by the Contractor, the Claim shall be accompanied by an affidavit sworn to before a notary public or other person authorized to administer oaths in the State of Michigan and executed by an authorized representative of the Contractor which states that: "The Claim which is submitted herewith complies with subparagraph 15.1.1 of the General Conditions as amended, which provides that the Contractor shall not knowingly present or cause to be presented a false or fraudulent claim." Claims of the Owner shall be governed by the relevant Michigan statutory limitations period.

§ 15.1.2 NOTICE OF CLAIMS

Claims by ~~either the Owner or~~ Contractor must be initiated by written 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~~ the Contractor must 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. Failure to

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timely and properly initiate a claim shall be an irrevocable waiver of such claim. Claims by the Owner shall be governed by the applicable statute of limitations period.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, including mediation and/or litigation, as applicable, 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 undisputed payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Failure to provide such notice shall serve as an absolute bar against a claim for such an increase in the Contract Sum. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4. A Project delay shall not be a basis for a Claim for additional cost. Delays may be remedied only through an extension of time per Section 15.1.5.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, ~~written notice as provided herein shall be given.~~ additional written notice as provided herein shall be given in addition to the general requirements for filing a claim. Failure to give such notice shall not be an irrevocable waiver of a claim for additional time. The Contractor's Claim shall include an estimate ~~of cost and~~ of probable effect of delay on progress of the ~~Work.~~ Work due to the increase in Contract Time sought. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 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.

§ 15.1.5.3 In the event the Contractor is delayed or hindered in the commencement or progress of the Work by the Work or lack of Work of another contractor or subcontractor on the Project and the Contractor claims monetary damages as a direct and proximate consequence thereof (including, but not limited to extended general conditions, overhead, profit, overtime, interest, supervision or other costs or profits whatsoever), then the Contractor shall not assert such claims against the Owner and, as to the Owner, the Contractor's claims of delay damages are hereby waived. The Contractor's sole and exclusive remedy regarding such claims for such delay damages shall be to pursue such claims directly against any contractor(s) and/or subcontractors on the job which caused the delay, and with regard to such claims asserted against the Contractor by any other contractor(s) and/or subcontractors the Contractor hereby waives the defense absence of contractual privity and hereby assumes liability to other contractor(s) and/or subcontractors arising out of the Contractor's actions or inactions resulting in such delay and claim. To the extent a claim for monetary damages is asserted against the Owner for delay of the Contractor, the Contractor shall indemnify, defend and hold harmless the Owner from all damages, costs and fees, including actual attorney fees, arising out of such a claim.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor ~~and Owner waive Claims against each other~~ waives Claims against the Owner 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~~but is not limited to:

.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 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

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§ 15.1.7 Regardless of any other provision in this document, the Contract, or the Contract Documents to the contrary, the Contractor shall not be entitled to damages or additional compensation from the Owner or Architect on account of delays caused by any persons or entities.

§ 15.1.8 Information pertaining to existing locations and configurations of existing structures, utilities and drains within existing buildings and structures and existing site utilities and drains both above and below grade have been obtained by the Owner and/or the Architect through survey and investigations, and are shown on the Drawings. This information has been gathered with reasonable care but is of a schematic nature and is not guaranteed for accuracy. The Contractor shall independently verify all information given prior to beginning the Work. The Contractor shall make careful investigation to establish the exact location of items indicated on the Drawings. The Contractor shall be responsible for all costs arising out of damage to such items or additional construction costs incurred because Contractor failed to verify said information.

§ 15.1.9 The Contractor bidding on the Work is responsible for visiting the site and determining all local conditions that may in any way affect its Work.

§ 15.2 INITIAL DECISION

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial ~~decision.~~ interpretation. The Architect will serve as the Initial Decision ~~Maker, unless otherwise indicated in the Agreement.~~ MakerMaker. Except for those Claims excluded by this Section 15.2.1, an ~~initial decision~~ initialinterpretation shall be required as a condition precedent to mediation and/or litigation, of any Claim brought by the Contractor against the Owner, arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no ~~decision~~ interpretation 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.~~ interpret the Claim. Within ten (10) days a written request, the Contractor shall make available to the Owner or its representative all of its books, records, or other documents in its possession or to which it has access relating to a Claim and shall require its subcontractors, regardless of tier, and materialmen to do the same.

§ 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 such 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~~ will, based in its interpretation, either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial ~~decision~~ interpretations approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial ~~decision~~ interpretation 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 recommended 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.~~interpretation shall be subject to the parties' agreed-upon dispute resolution process.

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~~§ 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 an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, 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~~ Owner, Architect or Initial Decision Maker may, but are 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~~ Owner, Architect or Initial Decision Maker may, but are 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. Proceeding in such manner does not eliminate or reduce the Contractor's obligation to timely and properly file a claim as a condition precedent to mediation and/or litigation.

§ 15.2.9 Notwithstanding anything herein to the contrary, claims of the Owner shall be governed in accordance with the statute of limitations periods under Michigan law.

§ 15.3 MEDIATION

§ 15.3.1 ~~Claims, disputes, or other matters in controversy~~ Except as stated in this Agreement or otherwise agreed in writing by the parties, claims arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to ~~binding dispute resolution.~~ the parties' agreed-upon dispute resolution process.

§ 15.3.2 The parties shall initially endeavor to resolve their Claims by non-binding 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~~ commencment of the parties' agreed-upon dispute resolution proceedings but, in such event, mediation shall proceed in advance of ~~binding dispute resolution~~ such 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.~~

Either party may, in good faith, declare a mediation impasse and proceed with litigation after one full day of mediation.

§ 15.3.3 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.

~~**§ 15.4 ARBITRATION**~~

~~**§ 15.4.1** If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.~~

~~**§ 15.4.1.1** A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a~~

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~~written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

~~**§ 15.4.2** The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

~~**§ 15.4.3** The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 ~~Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~ Contractor further agrees to include similar dispute resolution provisions in all agreements with the independent contractors and consultants retained for the Project and to require all independent contractors and consultants also to include a similar dispute resolution provisions in all agreements with all subconsultants, suppliers, or fabricators so retained, thereby providing for a consistent method of dispute resolution between the parties to those agreements. Subject to the other limitations periods identified in these General Conditions which are understood to govern over this sentence, no demand for mediation or litigation shall be made after the date when the applicable statutes of limitation would bar legal or equitable proceedings. During the pendency of any mediation, all applicable limitations period shall be tolled until the conclusion of that process.

With the exception of matters solely dealing with this Agreement, the Owner reserves the right in its discretion to require consolidation or joinder of any mediation arising out of or relating to this Agreement with another mediation involving a person or entity not a party to this Agreement in any event the Owner believes such consolidation or joinder is necessary in order to resolve a dispute or avoid duplication of time, expense or effort. With the exception of matters solely dealing with this Agreement, in the event the Owner is involved in a dispute which is not subject to mediation involving a person or entity not a party to this Agreement, the mediation provisions of this article shall be deemed to be void and nonexistent in the event Owner, in its discretion determines the Contractor should become a party to that dispute by joinder or otherwise. Any mediation hearing shall be held in the general location where the Project is located, unless another location is mutually agreed upon.

~~**§ 15.4.4.2** Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~**§ 15.4.4.3** The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.~~

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DOCUMENT 00 73 43

WAGE RATE REQUIREMENTS

1.1 SUMMARY

A. Document Includes:
1. Wage Rate Requirements.
2. Wage Determination Schedule.

B. Related Documents:
1. WHD-9917 Informational Sheet: Prevailing Wages on State Projects
2. WHD-9918 Informational Sheet: Prevailing Wages on State Projects
3. Official 2025 Prevailing Wage Rates for State Funded Projects.

1.2 WAGE RATE REQUIREMENTS

A. Portions of this project, being financially support by the State of Michigan, are subject to compliance with the Prevailing Wages on State Projects Act, Public Act 10 of 2023.
1. Contractors and Subcontractors preforming work of Bid Categories 6.0, 9.3, 9.5, 9.9, 15.0 and 16.0 must comply.
2. Contractors and Subcontractors performing work of Bid Category 7.0 are exempt and that portion of the project is not State funded.

END OF DOCUMENT

General Information Regarding Fringe Benefits

Certain fringe benefits **may** be credited toward the payment of the Prevailing Wage Rate:

- If a fringe benefit is paid directly to a construction mechanic
- If a fringe benefit contribution or payment is made on behalf of a construction mechanic
- If a fringe benefit, which may be provided to a construction mechanic**,** is pursuant to a written contract or policy
- If a fringe benefit is paid into a fund, for a construction mechanic

When a fringe benefit is not paid by an hourly rate, the hourly credit will be calculated based on the annual value of the fringe benefit divided by 2080 hours per year (52 weeks @ 40 hours per week). The following is an example of the types of fringe benefits allowed and how an hourly credit is calculated:

Vacation	40 hours X $14.00 per hour = $560/2080 =	$.27
Dental insurance	$31.07 monthly premium X 12 mos. = $372.84 /2080 =	$.18
Vision insurance	$5.38 monthly premium X 12 mos. = $64.56/2080 =	$.03
Health insurance	$230.00 monthly premium X 12 mos. = $2,760.00/2080 =	$1.33
Life insurance	$27.04 monthly premium X 12 mos. = $324.48/2080 =	$.16
Tuition	$500.00 annual cost/2080 =	$.24
Bonus	4 quarterly bonus/year x $250 = $1000.00/2080 =	$.48
401k Employer Contribution	$2000.00 total annual contribution/2080 =	$.96
	Total Hourly Credit	$3.65

Other examples of the types of fringe benefits allowed:

- Sick pay
- Holiday pay
- Accidental Death & Dismemberment insurance premiums

The following are examples of items that **will not** be credited toward the payment of the Prevailing Wage Rate

- Legally required payments, such as:
  - Unemployment Insurance payments
  - Workers' Compensation Insurance payments
  - FICA (Social Security contributions, Medicare contributions)
- Reimbursable expenses, such as:
  - Clothing allowance or reimbursement
  - Uniform allowance or reimbursement
  - Gas allowance or reimbursement
  - Travel time or payment
  - Meals or lodging allowance or reimbursement
  - Per diem allowance or payment
- Other payments to or on behalf of a construction mechanic that are not wages or fringe benefits, such as:
  - Industry advancement funds
  - Financial or material loans

OVERTIME PROVISIONS for MICHIGAN PREVAILING WAGE RATE COMMERCIAL SCHEDULE

1. Overtime is represented as a nine-character code. Each character represents a certain period of time after the first 8 hours Monday thru Friday.

	Monday thru Friday	Saturday	Sunday & Holidays	Four 10s
First 8 Hours		**4**	**8**	**9**
9th Hour	**1**	**5**		
10th Hour	**2**	**6**		
Over 10 hours	**3**	**7**		

Overtime for Monday thru Friday after 8 hours:
the 1st character is for time worked in the 9th hour *(8.1 - 9 hours)*
the 2nd character is for time worked in the 10th hour *(9.1 - 10 hours)*
the 3rd character is for time worked beyond the 10th hour *(10.1 and beyond)*

Overtime on Saturday:
the 4th character is for time worked in the first 8 hours on Saturday *(0 - 8 hours)*
the 5th character is for time worked in the 9th hour on Saturday *(8.1 - 9 hours)*
the 6th character is for time worked in the 10th hour *(9.1 - 10 hours)*
the 7th character is for time worked beyond the 10th hour *(10.01 and beyond)*

Overtime on Sundays & Holidays
The 8th character is for time worked on Sunday or on a holiday

Four Ten Hour Days
The 9th character indicates if an optional 4-day 10-hour per day workweek can be worked ***between Monday and Friday* without paying overtime after 8 hours worked, unless otherwise noted in the rate schedule. To *utilize a 4 ten workweek, notice is required from the employer to employee prior to the start of work on the project.***

2. Overtime Indicators Used in the Overtime Provision:
H - means TIME AND ONE-HALF due
X - means TIME AND ONE-HALF due after 40 HOURS worked
D - means DOUBLE PAY due
Y - means YES an optional 4-day 10-hour per day workweek can be worked without paying overtime after 8 hours worked
N - means NO an optional 4-day 10-hour per day workweek *cannot* be worked without paying overtime after 8 hours worked

3. EXAMPLES:
HHHHHHHDN - This example shows that the 1½ rate must be used for time worked after 8 hours Monday thru Friday *(characters 1 - 3);* for all hours worked on Saturday, 1½ rate is due *(characters 4 - 7).* Work done on Sundays or holidays must be paid double time *(character 8).* The N *(character 9)* indicates that 4 ten-hour days is not an acceptable workweek at regular pay.

XXXHHHHDY - This example shows that the 1½ rate must be used for time worked after 40 hours are worked Monday thru Friday *(characters 1-3);* for hours worked on Saturday, 1½ rate is due *(characters 4 – 7)*. Work done on Sundays or holidays must be paid double time *(character 8).* The Y *(character 9)* indicates that 4 ten-hour days is an acceptable alternative workweek.

ENGINEERS - CLASSES OF EQUIPMENT LIST

UNDERGROUND ENGINEERS

CLASS I

Backfiller Tamper, Backhoe, Batch Plant Operator, Clam-Shell, Concrete Paver (2 drums or larger), Conveyor Loader (Euclid type), Crane (crawler, truck type or pile driving), Dozer, Dragline, Elevating Grader, End Loader, Gradall (and similar type machine), Grader, Power Shovel, Roller (asphalt), Scraper (self-propelled or tractor drawn), Side Broom Tractor (type D-4 or larger), Slope Paver, Trencher (over 8' digging capacity), Well Drilling Rig, Mechanic, Slip Form Paver, Hydro Excavator.

CLASS II

Boom Truck (power swing type boom), Crusher, Hoist, Pump (1 or more 6" discharge or larger gas or diesel powered by generator of 300 amps or more, inclusive of generator), Side Boom Tractor (smaller than type D-4 or equivalent), Tractor (pneu-tired, other than backhoe or front end loader), Trencher (8' digging capacity and smaller), Vac Truck.

CLASS III

Air Compressors (600 cfm or larger), Air Compressors (2 or more less than 600 cfm), Boom Truck (non-swinging, non-powered type boom), Concrete Breaker (self-propelled or truck mounted, includes compressor), Concrete Paver (1 drum, ½ yard or larger), Elevator (other than passenger), Maintenance Man, Mechanic Helper, Pump (2 or more 4" up to 6" discharge, gas or diesel powered, excluding submersible pump), Pumpcrete Machine (and similar equipment), Wagon Drill Machine, Welding Machine or Generator (2 or more 300 amp or larger, gas or diesel powered).

CLASS IV

Boiler, Concrete Saw (40HP or over), Curing Machine (self-propelled), Farm Tractor (w/attachment), Finishing Machine (concrete), Firemen, Hydraulic Pipe Pushing Machine, Mulching Equipment, Oiler (2 or more up to 4", exclude submersible), Pumps (2 or more up to 4" discharge if used 3 hrs or more a day-gas or diesel powered, excluding submersible pumps), Roller (other than asphalt), Stump Remover, Vibrating Compaction Equipment (6' wide or over), Trencher (service) Sweeper (Wayne type and similar equipment), Water Wagon, Extend-a-Boom Forklift.

HAZARDOUS WASTE ABATEMENT ENGINEERS

CLASS I

Backhoe, Batch Plant Operator, Clamshell, Concrete Breaker when attached to hoe, Concrete Cleaning Decontamination Machine Operator, Concrete Pump, Concrete Paver, Crusher, Dozer, Elevating Grader, Endloader, Farm Tractor (90 h.p. and higher), Gradall, Grader, Heavy Equipment Robotics Operator, Hydro Excavator, Loader, Pug Mill, Pumpcrete Machines, Pump Trucks, Roller, Scraper (self-propelled or tractor drawn), Side Boom Tractor, Slip Form Paver, Slope Paver, Trencher, Ultra High Pressure Waterjet Cutting Tool System Operator, Vactors, Vacuum Blasting Machine Operator, Vertical Lifting Hoist, Vibrating Compaction Equipment (self-propelled), and Well Drilling Rig.

CLASS II

Air Compressor, Concrete Breaker when not attached to hoe, Elevator, End Dumps, Equipment Decontamination Operator, Farm Tractor (less than 90 h.p.), Forklift, Generator, Heater, Mulcher, Pigs (Portable Reagent Storage Tanks), Power Screens, Pumps (water), Stationary Compressed Air Plant, Sweeper, Water Wagon and Welding Machine.

CARPENTER CRAFT JURISDICTION

Michigan recognizes the Carpenters for any and all work related to weatherization that has historically been the work of the Carpenter. This work shall include, but not be limited to: all work defined under the Federal Weatherization Assistance Program.

The jurisdiction of Carpenters, as to all work that has historically and traditionally been performed consisting of the milling, fashioning, joining, assembling, erecting, fastening or dismantling of all materials of wood, plastic, metal, fiber, cork, or composition and all other substitute materials, as well as the handling, cleaning, erecting, installing and dismantling of all machinery, equipment and all materials used by Carpenters.

The jurisdiction, therefore, extends over the following divisions and subdivisions of the trade: Carpenters and Joiners, Millwrights, Pile Drivers, Bridge, Dock and Wharf Carpenters, Underpinners, Timbermen, and Core-drillers, Shipwrights, Boat Builders, Ship- hand, Stair-Builders, Millmen, Wood and Resilient Floor Decorators, Floor Finishers, Carpet-layers, Shinglers, Siders, Insulators, Acoustic and Drywall Applicators, Sharers and House Movers, Loggers, Lumber and Sawmill Workers, Reed and Rattan Workers, Shingle Weavers, Casket and Coffin Makers, Railroad Carpenters and Car Builders, regardless of material used and all those engaged in the operation of woodworking or other machinery required in fashioning, milling or manufacturing of products used in the trade, and the handling, erecting and installing materials on any of the above divisions or sub-divisions, burning, welding and rigging incidental to the trade. When the term "Carpenter and Joiner" is used, it shall mean all the subdivisions of the trade. The trade autonomy of Carpenters therefore extends over the divisions and subdivisions of the trade, which are set forth as follows:

(a) The framing, erecting and prefabrication of roofs, partitions, floors and other parts of buildings of wood, metal, plastic or other substitutes; application of all metal flashing used for hips, valleys and chimneys; the erection of Stran Steel section or its equal. The building and setting of all forms and centers for brick and masonry. The fabrication and erection of all forms for concrete and decking, the dismantling of same (as per International Agreement) when they are to be re-used on the job or stored for re-use. The cutting and handling of all falsework for fireproofing and slabs. Where power is used in the setting or dismantling of forms, all signaling and handling shall be done by carpenters. The setting of templates for anchor bolts for structural members and for machinery, and the placing, leveling and bracing of these bolts. All framing in connection with the setting or metal columns. The setting of all bulkheads, footing forms and the setting of and fabrication of, screeds and stakes for concrete and mastic floors where the screed is notched or fitted, or made up of more than one member. The making of forms for concrete block, bulkheads, figures, posts, rails, balusters and ornaments, etc.

(b) The handling and erecting of rough material and drywall, the handling, assembly, setting and leveling of all fixtures, display cases, all furniture such as tables, chairs, desks, coat racks, etc., all de-mountable or moveable partitions such as Von wall, E Wall, Steel Case, Herman Miller, Haworth, American Seating, Westinghouse, Lazy Boy, rosewood, etc. All rebuilding, remodeling and setting up of all kinds of partitions, finished lumber, metal and plastic trim to be erected by Carpenters shall be handled from the truck or vehicle delivering same to the job by Carpenters.

CARPENTER CRAFT JURISDICTION

(c) The building and moving of all scaffolding runways and staging where carpenters' tools are used, the building from the ground up of all scaffolds over fourteen (14) feet in height including metal and specially designed scaffolding. The building and construction of all hoists and derricks made of wood; the making of mortar boards, boxes, trestles, all shoring, razing and moving of buildings. Lift type trucks are to be considered a tool of the trade. Metal siding and metal roofing fall within the scope of jurisdiction for the carpenters.

(d) The cutting or framing and fireproofing of the openings for pipes, conduits, ducts, etc., where they pass through floors, partitions, walls, roofs or fixtures composed in whole or in part of wood. The laying out of making and installation of all inserts and sleeves for pipes, ducts, etc., where carpenters' tools and knowledge are required. The making and installing of all wooden meter boards, crippling and backing for fixtures. The welding of studs and other fastenings to receive material being applied by carpenters.

(e) The installation of all grounds, furring or stripping, ceilings and sidewalks, application of all types of shingling and siding, etc.

(f) The installation of all interior and exterior trim or finish of wood, aluminum, kalamein, hollow or extruded metal, plastic, doors, transoms, thresholds, mullions and windows. The setting of jambs, bucks, window frames of wood or metal where braces or wedges are used. The installation of all wood, metal or other substitutes of casing, molding, chair rail, wainscoting, china closets, base of mop boards, wardrobes, metal partitions as per National Decisions or specific agreements, etc. The complete laying out, fabrication and erection of stairs. The making and erecting of all fixtures, cabinets, shelving, racks, louvers, etc. The mortising and application of all hardware in connection with our work. The sanding and refinishing of all wood, cork or composition floors to be sanded or scraped, filled, sized and buffed, either by hand or power machines. The assembling and setting of all seats in theaters, halls, churches, schools, auditorium, grandstands and other buildings. All bowling alley work.

(g) The manufacture, fabrication and installation of all screens, storm sash, storm doors and garage doors; the installation of wood, canvas, plastic or metal awnings or eye shades, door shelters, jalousies, etc. The laying of wood, wood block and wood composition in floors.

(h) The installation of all materials used in drywall construction, such as plasterboard, all types of asbestos boards, transite and other composition board. The application of all material which serves as base for acoustic tile, except plaster. All acoustical applications as per National Agreement or specific agreement.

(i) The building and dismantling of all barricades, handrails, guard rails, partitions and temporary partitions. The erection and dismantling of all temporary housing on construction projects.

(j) The installation of rock wool, cork and other insulation material used for sound or weatherproofing. The removal of caulking and placing of staff bead and brick mold and all Oakum caulking, substitutes, etc., and all caulking in connection with carpentry work.

(k) The installation of all chalk boards/marker boards.

CARPENTER CRAFT JURISDICTION

(l) The operation of all hand operated winches used to raise wooden structures.

(m) The erection of porcelain enameled panels and siding.

(n) The unloading and distribution of all furnished, prefabricated and built-up sections such as door bucks, window frames, cupboards, cabinets, store fixtures, counters and show cases or comparably finished or prefabricated materials, to the job sites or points of installation as used in the construction, alteration and remodeling industry.

(o) The handling of doors, metal, wood or composite, partitions and other finished bulk materials used for trim from the point of delivery.

(p) All processing of these materials and handling after processing.

(q) The making up of panels and fitting them into walls, all bracing and securing, all removal of panels from the casting including all braces, whalers, hairpins, etc.

(r) The handling and setting of all metal pans and sections from the stock piles of reasonable distance as required by job needs shall be performed by carpenters. The stripping of such metal pans, panels or sections is to be performed by carpenters.

(s) The sharpening of all carpenter hand or power tools, or those used by carpenters.

(t). The layout, fabrication, assembling of and erection and dismantling of all displays made of wood, metal, plastic, composition board or any substitute material; the covering of same with any type of material, the crating and un-crating, the handling from the point of unloading and back to the point of loading of all displays and other materials or components.

(u) The same shall apply to all other necessary component parts used for display purposes such as turntables, platforms, identification towers and fixtures, regardless of how constructed, assembled or erected or dismantled.

(v) The make-up, handling, cutting and sewing of all materials used in buntings, flags, banners, decorative paper, fabrics and similar materials used in the display decorative industry for draperies and back drops. The decorative framing of trucks, trailers and autos used as floats or moving displays. The slatting of walls to hand fabrics and other decorative materials, drilling of all holes to accommodate such installations. Setting up and removal of booths constructed of steel or aluminum tubing as stanchions, railings, etc., handling and placing of furniture, appliances, etc., which are being used to complete the booth at the request of the exhibitor. Fabricating and application of leather, plastic and other like materials used for covering of booths. The handling of all materials, fabricating of same. The loading and unloading, erecting and assembling at the exhibit of show area, also in or out of storage when used in booth decorations.

CARPENTER CRAFT JURISDICTION

(w) A display shall be construed as any exhibit or medium of advertising, open to private or public showing, which is constructed of wood, metal, plastic or any other substitute to accomplish the objectives of advertising or displaying.

(x) Handling, fitting, draping, measuring and installation of fixtures and other hardwares for draperies, all manner of making, measuring, repairing, sizing, hanging and installation of necessary fixtures and hardware for shades and Venetian blinds.

(y) Work consisting of cutting and/or forming of all materials in preparation for installing of floors, walls and ceilings; the installation of all resilient floor and base; wall and ceiling materials to include cork, linoleum, prefabricated, laminated, rubber, asphalt, vinyl, metal, plastic, seamless floors and all other similar materials in sheet, interlocking liquid or tile form; the installation of all artificial turf, the installation, cutting and/or fitting of carpets; installation of padding, matting, linen crash and all preformed resilient floor coverings; the fitting of all devices for the attachment of carpet and other floor, wall and ceiling coverings; track sewing of carpets, drilling of holes for sockets and pins, putting in dowels and slats; and all metal trimmings used; the installation of all underlayments, sealants in preparation of floors, walls and ceilings, the unloading and handling of all materials to be installed and the removal of all materials in preparing floors when contracted for by the employer, shall be done only by employees covered under this Agreement.

(z) The installation of all sink-tops and cabinets, to include all metal trim and covering for same. All cork, linoleum, congo-wall, linewall, veos tile, plexiglass, vinawall tile, composition tile, plastic tile, aluminum tile and rubber in sheets or tile form and the application thereof. All bolta-wall and bolta-wall tile and similar products.

(aa) The handling and placing of all pictures and frames and the assembly of bed frames and accessories. The hanging and placing of all signage.

(bb) The installation of all framework partitions and trim materials for toilets and bathrooms made of wood, metal, plastics or composition materials; fastening of all wooden, plastic or composition cleats to iron or any other material for accessories.

(cc) The erection of cooling towers and tanks.

(dd) The setting, lining, leveling and bracing of all embedded plates, rails and angles. The setting of all stay in place forms.

(ee) Environmental: Clean room, any type of environmental chamber, walk in refrigerated coolers and all refrigerated rooms or buildings.

CARPENTER CRAFT JURISDICTION

PILE DRIVING AND CAISSON DRILLING

(ff) All unloading, handling, signaling and driving of piles, whether wood, steel, pipe, beam pile, composite, concrete or molded in place, wood and steel sheeting, cofferdam work, trestle work, dock work, floating derricks, caisson work, foundation work, bridge work, whether old or new, crib work, pipe line work and submarine work. Cutting of all wood, steel or concrete pile, whether by machine or hand; welding and cutting, peeling, and heading of all wood pile, steel sheeting and wood sheeting. The erecting and dismantling of all pile driving rigs, also derricks whether on land or water; also the moving, shoring and underpinning of all buildings. The loading and unloading of all derricks, cranes and pile driving materials. The tending, maintenance and operation of all valves pertaining to the operation of driving of pile. All diving and tending essential to the completion of jurisdictional claims.

All work done in the established yards of the Company and all work not enumerated above, shall be handled and manned as the Employer decides.

The pile driver will unload all material shipped in by rail from the point that the rail car is spotted.

All cleaning and preparation of all piling prior to driving.

The welding and attachment of all boot plates, pile points, splice plates, connectors, rock crosses, driving crosses, driving rigs, point reinforcements and overboots.

The construction, reconstruction, repair, alteration, demolition and partial or complete removal of all marine work including, but not limited to, docks, piers, wharves, quays, jetties, cribs, causeways, breakwaters, lighthouses and permanent buoys, etc. (mixing and placing of concrete excepted).

The driving and pulling of all wood, steel and concrete foundation piles and sheet piling.

The heading, pointing, splicing, cutting and welding of all piles.

The placing of all wales, bolts, studs, lagging, rods and washers including the cutting, drilling, boring or breaking of all holes or openings thereof.

The removal of all materials and/or obstructions of any nature (rip-rap included) that retard or interfere with the driving of piles or with the placing of wales, bolts and rods.

CARPENTER CRAFT JURISDICTION

This is to be subject to the discretion of the contractor who may choose to use blasting specialists or other demolition specialists.

The handling on the job of all materials used in the work.

The manning of all floating equipment (towing equipment excepted) engaged in the work enumerated, including deck engines, except machinery manned by Operating Engineers.

The placing of all rip-rap, fill stone, bedding stone, cover stone and concrete blocks in connection with marine construction. Work normally performed by Employers, such as soil tests, shoring, underpinning of buildings, cribbing, driving of sheet piling, marine divers, tenders, underwater construction workers and similar operations shall continue to be included in the jurisdiction of this Agreement.

All burning, cutting, welding and fabrication of pipe, H-beams, sheet pile (metal or wood), done on the job site or in the yard of the Employer shall be done by pile drivers. The driving of bearing piles, sheet piling with heavy equipment, caissons, pile caps, auger drilling and boring, the setting up for load testing for any type of piling, all layout and spotting for piling, caisson and boring work, all earth retention, ditch boarding, installing tiebacks.

ASBESTOS ABATEMENT CARPENTERS

(gg) All erection and maintenance of barriers and partitions used in the removing of asbestos or any abatement work. The abatement of any materials previously installed by the carpenter such as transite, ceiling and floor tiles. All operating and maintaining of current equipment used in any abatement work.

ELECTRICIAN – SOUND AND COMMUNICATION / DATA/ VOICE JURISDICTION

The installation, testing, service and maintenance, of systems which utilize the transmission and/or transference of voice, sound, vision or digital for commercial, education, security and entertainment purposes for the following: TV monitoring and surveillance, CATV and CCTV, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, radio page, school intercom and sound, burglar alarms, low voltage fire alarm systems, low voltage master clock systems, distributed antenna systems (DAS), IP data networks, and all surface-mounted (non-power) telecommunications wiremold. Shall additionally include the installation of all raceway systems of unlimited length in telecommunications rooms, entrance facilities, equipment rooms, and similar areas. Energy management systems. Security systems; perimeter, vibration, card access, access control and sonar/infrared monitoring equipment. Communications systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems; SCADA (Supervisory Control and Data Acquisition), PCM (Pulse Code Modulation), Digital Data Systems, Broadband and Baseband and Carriers, POS (Point of Sale systems), VSAT Data Systems, RF and Remote-Control Systems, Fiber Optic Data Systems and Voice and Data Infrastructure and Backbone.

STATE OF MICHIGAN

Wage and Hour Division
PO Box 30476
Lansing, MI 48909
517-284-7800

Informational Sheet: Prevailing Wages on State Funded Projects

REQUIREMENTS

Effective February 13, 2024

The purpose of establishing prevailing rates is to provide minimum rates of pay that must be paid to workers on construction projects that are financed or financially supported by the state Prevailing rates compiled from the rates contained in collectively bargained agreements which cover the locations of the state projects. While the prevailing wage rates are compiled through surveys of collectively bargained agreements, a collective bargaining agreement is not required for contractors to be on or be awarded state projects. The prevailing rate schedule provides an hourly rate which includes wage and fringe benefit totals for designated construction mechanic classifications. The overtime rates also include wage and fringe benefit totals. Please pay special attention to the overtime and premium pay requirements. The prevailing wage is satisfied when wages plus fringe benefits are equal to or greater than the required rate.

State of Michigan responsibilities:

- The department establishes the prevailing rate for each classification of construction mechanic requested by the contracting agents prior to contracts being let out for bid on a state project.

DTMB responsibilities

- If a contract is not awarded or construction does not start within 90 days of the date of the issuance of rates, a re- determination of rates must be requested by the contracting agents.
- Rates for classifications needed but not provided on the Prevailing Rate Schedule, ***must*** be obtained ***prior*** to contracts being let out for bid on a state project.

Contractor responsibilities:

- Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing rates prescribed in a contract.
- Every contractor and subcontractor shall keep an accurate record showing the name and occupation of and the actual wages and benefits paid to each construction mechanic. This record shall be available for reasonable inspection by DTMB or the department.
- Each contractor or subcontractor is liable for the payment of the prevailing rate to its employees.
- The prime contractor is responsible for advising all subcontractors of the requirement to pay the prevailing rate prior to commencement of work.
- A construction mechanic *shall only* be paid the apprentice rate if registered with the United States Department of Labor, Bureau of Apprenticeship and Training and the rate is included in the contract.

Enforcement:

A person who has information of an alleged prevailing wage violation on a prevailing wage project may file a complaint with the State of Michigan. The department will investigate and attempt to resolve the complaint informally. During the course of an investigation, if the requested records and posting certification are not made available in compliance with contractual requirements, the Contracting Agent may consider the Contractor to be in material breach of the contract and may terminate the contract for cause at the sole discretion. There are also civil penalties for failure to be in compliance with Act 10. View the entire text of Act 10 of 2023 at michigan.gov/wagehour.

GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF LABOR AND ECONOMIC OPPORTUNITY
WAGE AND HOUR DIVISION

SUSAN CORBIN
DIRECTOR

Prevailing Wage Rates for State Funded Projects
Official Rate Schedule

ORS#:	ORS-002797
Date Issued:	05/28/2025
Contract Award By Date:	08/26/2025
Contracting Agency:	Ellsworth Community School (CA-0308)
Contracting Agency Representative:	Lisa Krosnicki (businesssecs@charemisd.org)
Project Number:	Summer 2025
Project Name:	Elementary Building Remodeling & Partial Reroofing

Project Description: Remodeling the entrance/library area for secure entry, privacy meeting room; partial re-roof of elementary building

FOR ALL AWARDED CONTRACTS ONLY

- Every Contractor and Subcontractors shall keep Posted on the Construction Site, in a conspicuous place, a copy of all applicable prevailing wage rate schedules contained in a contract.
- The Prevailing rate schedule provides an hourly rate which includes wage and fringe benefit totals for designated classifications.
- Please refer to WHD-9917 & WHD 9918 for any additional information.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Tile Setter, Marble & Terrazzo Finisher	**(Do Not Use) Tile, Terrazzo and Mosaic Setters**	**04/04/2025**

Classification Description: Work: Installing and finishing mosaic and terrazzo materials, including precision tasks like grinding and polishing. Adding aggregate to the top of the finished base and troweled or rolled into the finish.

Materials: Marble, mosaic, Venetian enamel, terrazzo, granules of marble, granite, bluestone, enamel, mother of pearl, quartz, ceramic-colored quartz, rubber, neoprene, vinyl, magnesium chloride, and resinous or chemical substances.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$46.63	$59.08	$71.53
Apprentice: Apprentice level 1	$38.62	$48.07	$57.51
Apprentice: Apprentice level 2	$40.03	$50.18	$60.33
Apprentice: Apprentice level 3	$41.44	$52.30	$63.15
Apprentice: Apprentice level 4	$42.85	$54.41	$65.97
Apprentice: Apprentice level 5 & 6	$44.26	$56.53	$68.79

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$59.08
10th hour	$59.08
Beyond 10 hours	$59.08
Saturday	
First 8 hours	$59.08
9th hour	$59.08
10th hour	$59.08
Beyond 10 hours	$59.08
Sunday/Holiday	$71.53

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Asbestos & Lead Abatement Laborer	**Asbestos Abatement Worker or Environmental Remediation Worker**	**04/04/2025**

Classification Description: Asbestos & Lead Abatement Laborer
4 ten hour days @ straight time allowed Monday-Saturday, must be consecutive calendar days

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$50.60	$65.37	$80.13
Apprentice: Trainee 600 hours +1 year	$34.07	$18.89	$20.54

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$65.37
10th hour	$65.37
Beyond 10 hours	$65.37
Saturday	
First 8 hours	$65.37
9th hour	$65.37
10th hour	$65.37
Beyond 10 hours	$65.37
Sunday/Holiday	$80.13

Four 10-hour days allowed? - Yes
Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Boilermaker	**Boilermaker**	**04/04/2025**

Classification Description: Boilermaker

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$72.47	$107.55	$142.63
Apprentice: 1st Period	$53.53	$79.15	$104.75
Apprentice: 2nd Period	$55.14	$81.56	$107.97
Apprentice: 3rd Period	$56.73	$83.94	$111.15
Apprentice: 4th Period	$58.31	$86.31	$114.31
Apprentice: 5th Period	$59.85	$88.62	$117.39
Apprentice: 6th Period	$63.03	$93.39	$123.75
Apprentice: 7th Period	$66.17	$98.10	$130.03
Apprentice: 8th Period	$69.32	$102.83	$136.33

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$90.82
10th hour	$90.82
Beyond 10 hours	$90.82
Saturday	
First 8 hours	$90.82
9th hour	$90.82
10th hour	$90.82
Beyond 10 hours	$90.82
Sunday/Holiday	$109.17

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Bricklayers, Stone Mason, Pointer, Cleaner & Caulker - BAC 2 - Flint	**Bricklayer**	**04/04/2025**

Classification Description: Bricklayers, Stone Mason, Pointer, Cleaner & Caulker

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$61.45	$78.93	$96.41
Apprentice: Bricklayer Apprentice Level 5	$54.43	$69.40	$84.37
Apprentice: Bricklayer Apprentice Level 6	$56.33	$72.25	$88.17
Apprentice: Bricklayers Apprentice Level 7&8	$58.23	$75.10	$91.97
Apprentice: Bricklayers Apprentice 1st Level	$46.83	$58.00	$69.17
Apprentice: Bricklayers Apprentice 2nd Level	$48.73	$60.85	$72.97
Apprentice: Bricklayers Apprentice 3rd Level	$50.63	$63.70	$76.77
Apprentice: Bricklayers Apprentice 4th Level	$52.53	$66.55	$80.57

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$61.45
10th hour	$61.45
Beyond 10 hours	$61.45
Saturday	
First 8 hours	$61.45
9th hour	$61.45
10th hour	$61.45
Beyond 10 hours	$61.45
Sunday/Holiday	$96.41

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Between Nov. 1 and Apr 30, if inclement weather, or other conditions beyond the Employer’s control, Saturdays may be worked as make-up days. Make-up time shall be paid at the straight time rate until forty hrs are worked unless the standard workweek included a holiday, then 32 hrs straight time

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Bricklayers, Stone Mason, Pointer, Cleaner & Caulker - BAC 2 - GR & Northern	**Bricklayer**	**04/04/2025**

Classification Description: Bricklayers, Stone Mason, Pointer, Cleaner & Caulker

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$55.28	$71.33	$87.38
Apprentice: Bricklayer Apprentice Level 5	$48.63	$62.36	$76.08
Apprentice: Bricklayer Apprentice Level 6	$51.66	$66.35	$81.04
Apprentice: Bricklayers Apprentice 2nd Level	$44.36	$55.40	$66.44
Apprentice: Bricklayers Apprentice 4th Level	$48.18	$61.13	$74.08
Apprentice: Bricklayers Apprentice Level 1	$41.47	$51.62	$61.76
Apprentice: Bricklayers Apprentice Level 3	$45.05	$56.99	$68.92
Apprentice: Bricklayers Apprentice Level 7& 8	$52.22	$67.74	$83.26

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$71.33
10th hour	$71.33
Beyond 10 hours	$71.33
Saturday	
First 8 hours	$71.33
9th hour	$71.33
10th hour	$71.33
Beyond 10 hours	$71.33
Sunday/Holiday	$87.38

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Between Nov. 1 and Apr 30, if inclement weather, or other conditions beyond the Employer's control, Saturdays may be worked as make-up days. Make-up time shall be paid at the straight time rate until forty hrs are worked unless the standard workweek included a holiday, then 32 hrs straight time

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Carpenter	**Carpenter**	**04/04/2025**

Classification Description: Carpenter
4 10s allowed M-Th

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$43.62	$55.35	$67.08
Apprentice: 1st year	$36.58	$44.79	$53.00
Apprentice: 2nd year	$37.76	$46.56	$55.36
Apprentice: 3rd year	$40.10	$50.07	$60.04
Apprentice: 4th year	$42.45	$53.60	$64.74

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$55.35
10th hour	$55.35
Beyond 10 hours	$55.35
Saturday	
First 8 hours	$55.35
9th hour	$55.35
10th hour	$55.35
Beyond 10 hours	$55.35
Sunday/Holiday	$67.08

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday make up day for 4-10s
Saturday make up day for 5-8s for inclement weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Carpenter - FL	**Carpenter**	**04/04/2025**

Classification Description: Floor Layer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$47.10	$60.69	$74.27
Apprentice: 1st Year	$38.95	$48.46	$57.97
Apprentice: 2nd year	$40.31	$50.50	$60.69
Apprentice: 3rd year	$43.02	$54.57	$66.11
Apprentice: 4th year	$45.74	$58.65	$71.55

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$60.69
10th hour	$60.69
Beyond 10 hours	$60.69
Saturday	
First 8 hours	$60.69
9th hour	$60.69
10th hour	$60.69
Beyond 10 hours	$60.69
Sunday/Holiday	$74.27

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Carpenter - PD	**Carpenter**	**04/04/2025**

Classification Description: Pile Driver
Four 10s allowed Monday-Thursday

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$44.27	$56.33	$68.38
Apprentice: 1st Year	$37.04	$45.48	$53.92
Apprentice: 2nd Year	$38.24	$47.28	$56.32
Apprentice: 3rd Year	$40.65	$50.90	$61.14
Apprentice: 4th Year	$43.06	$54.51	$65.96

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$56.33
10th hour	$56.33
Beyond 10 hours	$56.33
Saturday	
First 8 hours	$56.33
9th hour	$56.33
10th hour	$56.33
Beyond 10 hours	$56.33
Sunday/Holiday	$68.38

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday make up day for 4-10s
Saturday make up day for 5-8s for inclement weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Carpenter - UP	**Carpenter**	**04/04/2025**

Classification Description: Carpenter and Floor layer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$48.34	$61.91	$75.47
Apprentice: 0-6 months	$40.20	$49.69	$59.19
Apprentice: 12-18 months	$41.56	$51.73	$61.91
Apprentice: 18-24 months	$42.91	$53.76	$64.61
Apprentice: 24-30 months	$44.27	$55.80	$67.33
Apprentice: 30-36 months	$45.63	$57.84	$70.05
Apprentice: 36-42 months	$46.98	$59.87	$72.75
Apprentice: 42-48 months	$47.66	$60.89	$74.11
Apprentice: 6-12 months	$40.88	$50.71	$60.55

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$61.91
10th hour	$61.91
Beyond 10 hours	$61.91
Saturday	
First 8 hours	$61.91
9th hour	$61.91
10th hour	$61.91
Beyond 10 hours	$61.91
Sunday/Holiday	$75.47

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday for inclemen weather at straight time

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Journeyman Carpenter	**Carpenter**	**04/04/2025**

Classification Description: Journeyman

Wage Rates

	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$45.17	$57.60	$70.02
Apprentice: 1st year	$37.72	$46.42	$55.12
Apprentice: 2nd year	$38.96	$48.28	$57.60
Apprentice: 3rd year	$41.44	$52.00	$62.56
Apprentice: 4th year	$43.93	$55.74	$67.54

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$57.60
10th hour	$57.60
Beyond 10 hours	$57.60
Saturday	
First 8 hours	$57.60
9th hour	$57.60
10th hour	$57.60
Beyond 10 hours	$57.60
Sunday/Holiday	$70.02

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Journeyman Carpenter	**Carpenter**	**04/04/2025**

Classification Description: Journeyman

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$45.82	$58.57	$71.32
Apprentice: 1st year	$37.72	$46.42	$55.12
Apprentice: 2nd year	$38.96	$48.28	$57.60
Apprentice: 3rd year	$41.44	$52.00	$62.56
Apprentice: 4th year	$43.93	$55.74	$67.54

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$58.57
10th hour	$58.57
Beyond 10 hours	$58.57
Saturday	
First 8 hours	$58.57
9th hour	$58.57
10th hour	$58.57
Beyond 10 hours	$58.57
Sunday/Holiday	$71.32

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Cement Mason	**Cement Mason**	**04/04/2025**

Classification Description: • Work: Laying cement, casting concrete, polishing, sealing, and operating cement-related tools and machines

• Materials: cement concrete, brownstone composition, mastic and gypsum material, black top or composition flooring, waterproofing, and epoxy

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$51.20	$65.33	$79.46
Apprentice: Apprentice Level 1	$40.55	$50.36	$60.16
Apprentice: Apprentice Level 2	$42.14	$52.74	$63.34
Apprentice: Apprentice Level 3	$43.73	$55.13	$66.52
Apprentice: Apprentice Level 4	$45.32	$57.51	$69.70
Apprentice: Apprentice Level 5	$46.91	$59.90	$72.88
Apprentice: Apprentice Level 6	$48.50	$62.28	$76.06

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$65.33
10th hour	$65.33
Beyond 10 hours	$65.33
Saturday	
First 8 hours	$65.33
9th hour	$65.33
10th hour	$65.33
Beyond 10 hours	$65.33
Sunday/Holiday	$79.46

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Cement Mason & Plasterer	**Cement Mason**	**04/04/2025**

Classification Description: • Work: Laying cement, casting concrete, polishing, sealing, and operating cement-related tools and machines

• Materials: cement concrete, brownstone composition, mastic and gypsum material, black top or composition flooring, waterproofing, and epoxy

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$56.10	$71.58	$87.41
Apprentice: Apprentice Level 1	$44.58	$55.65	$66.72
Apprentice: Apprentice Level 2	$46.30	$58.23	$70.16
Apprentice: Apprentice Level 3	$48.02	$60.81	$73.60
Apprentice: Apprentice Level 4	$49.74	$63.04	$76.69
Apprentice: Apprentice Level 5	$51.47	$65.99	$80.50
Apprentice: Apprentice Level 6	$53.19	$68.57	$83.94

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$56.10
10th hour	$56.10
Beyond 10 hours	$71.93
Saturday	
First 8 hours	$71.93
9th hour	$71.93
10th hour	$71.93
Beyond 10 hours	$71.93
Sunday/Holiday	$87.76

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Class I	**Diver**	**04/04/2025**

Classification Description: Class I - diver/wet tender, engineer, blaster, leverman

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$82.82	$107.82	$132.82

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$32.82
10th hour	$107.82
Beyond 10 hours	$107.82
Saturday	
First 8 hours	$107.82
9th hour	$107.82
10th hour	$107.82
Beyond 10 hours	$107.82
Sunday/Holiday	$132.82

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Drywall Finisher	**Drywaller**	**04/04/2025**

Classification Description: Drywall Finisher

4 10 hour days allowed on consecutive days, Monday-Friday. Make up day allowed M-F for work missed due to holidays or inclement weather.

Wage Rates

	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$44.69	$57.32	$69.95
Apprentice: Level 1	$32.06	$38.37	$44.69
Apprentice: Level 2	$37.11	$45.95	$54.79
Apprentice: Level 3	$42.16	$53.53	$64.89

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$57.32
10th hour	$57.32
Beyond 10 hours	$57.32
Saturday	
First 8 hours	$57.32
9th hour	$57.32
10th hour	$57.32
Beyond 10 hours	$57.32
Sunday/Holiday	$69.95

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Monday or Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Communication Technician	**Electrician**	**04/04/2025**

Classification Description: Communication Technician

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$67.89	$98.24	$128.58

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$98.24
10th hour	$98.24
Beyond 10 hours	$98.24
Saturday	
First 8 hours	$98.24
9th hour	$98.24
10th hour	$98.24
Beyond 10 hours	$98.24
Sunday/Holiday	$128.58

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

ONLY due to inclement weather or customer requirements may Friday be used as a make up day if the normal scheduled work week was interrupted and time lost of five (5) hours or more was incurred by workmen covered under the terms of the 6-17-C/6-876-T agreement.

Base Rate Comment: Foreman (112.5% above JL Rate)

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Fiber Optic Splicer	**Electrician**	**04/04/2025**

Classification Description: Fiber Optic Splicer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$67.89	$98.24	$128.58

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$98.24
10th hour	$98.24
Beyond 10 hours	$98.24
Saturday	
First 8 hours	$98.24
9th hour	$98.24
10th hour	$98.24
Beyond 10 hours	$98.24
Sunday/Holiday	$128.58

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

ONLY due to inclement weather or customer requirements may Friday be used as a make up day if the normal scheduled work week was interrupted and time lost of five (5) hours or more was incurred by workmen covered under the terms of the 6-17-C/6-876-T agreement.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Foreman Inside Wireman	**Electrician**	**04/04/2025**

Classification Description: Electrical Foreman

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$63.75	$83.89	$104.03

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$83.89
10th hour	$83.89
Beyond 10 hours	$83.89
Saturday	
First 8 hours	$83.89
9th hour	$63.75
10th hour	$63.75
Beyond 10 hours	$63.75
Sunday/Holiday	$104.03

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
General Foreman Inside Wireman	**Electrician**	**04/04/2025**

Classification Description: General Foreman Inside Wireman

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$71.13	$94.02	$116.91

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$94.02
10th hour	$94.02
Beyond 10 hours	$94.02
Saturday	
First 8 hours	$94.02
9th hour	$71.13
10th hour	$71.13
Beyond 10 hours	$71.13
Sunday/Holiday	$116.91

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Inside wireman	**Electrician**	**04/04/2025**

Classification Description: Inside Wireman
Double time pay required after 12 hours worked Monday - Friday

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$56.37	$73.20	$90.02
Apprentice: 1st Period	$26.10	$34.78	$43.45
Apprentice: Period 2	$26.10	$34.78	$43.45
Apprentice: Period 3	$30.30	$41.08	$51.85
Apprentice: Period 4	$32.27	$44.04	$55.79
Apprentice: Period 5	$37.04	$51.20	$65.33
Apprentice: Period 6	$41.09	$57.27	$73.43

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$73.19
10th hour	$73.19
Beyond 10 hours	$73.19
Saturday	
First 8 hours	$73.19
9th hour	$73.19
10th hour	$73.19
Beyond 10 hours	$90.02
Sunday/Holiday	$90.02

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Journeyman Inside Wireman	**Electrician**	**04/04/2025**

Classification Description: Journeyman Inside Wireman

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$58.84	$77.15	$95.46

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$77.15
10th hour	$77.15
Beyond 10 hours	$77.15
Saturday	
First 8 hours	$77.15
9th hour	$58.84
10th hour	$58.84
Beyond 10 hours	$58.84
Sunday/Holiday	$95.46

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Journeyman Signal Technician	**Electrician**	**04/04/2025**

Classification Description: Journeyman Signal Technician

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$67.89	$98.24	$128.58
Apprentice: Apprentice 1st 6 months	$43.61	$61.82	$80.02
Apprentice: Apprentice 2nd 6 months	$46.65	$66.38	$86.10
Apprentice: Apprentice 3rd 6 months	$49.68	$70.92	$92.16
Apprentice: Apprentice 4th 6 months	$52.71	$75.47	$98.22
Apprentice: Apprentice 5th 6 months	$55.75	$80.03	$104.30
Apprentice: Apprentice 6th 6months	$61.82	$89.13	$116.44

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$98.24
10th hour	$98.24
Beyond 10 hours	$98.24
Saturday	
First 8 hours	$98.24
9th hour	$98.24
10th hour	$98.24
Beyond 10 hours	$98.24
Sunday/Holiday	$128.58

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

ONLY due to inclement weather or customer requirements may Friday be used as a make up day if the normal scheduled work week was interrupted and time lost of five (5) hours or more was incurred by workmen covered under the terms of the 6-17-C/6-876-T agreement.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Journeyman Specialist	**Electrician**	**04/04/2025**

Classification Description: Journeyman Specialist

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$76.98	$111.88	$146.76

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$111.87
10th hour	$111.87
Beyond 10 hours	$111.87
Saturday	
First 8 hours	$111.87
9th hour	$111.87
10th hour	$111.87
Beyond 10 hours	$111.87
Sunday/Holiday	$146.76

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

ONLY due to inclement weather or customer requirements may Friday be used as a make up day if the normal scheduled work week was interrupted and time lost of five (5) hours or more was incurred by workmen covered under the terms of the 6-17-C/6-876-T agreement.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Tower Technician	**Electrician**	**04/04/2025**

Classification Description: Tower Technician

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$67.89	$98.24	$128.58

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$98.24
10th hour	$98.24
Beyond 10 hours	$98.24
Saturday	
First 8 hours	$98.24
9th hour	$98.24
10th hour	$98.24
Beyond 10 hours	$98.24
Sunday/Holiday	$128.58

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

ONLY due to inclement weather or customer requirements may Friday be used as a make up day if the normal scheduled work week was interrupted and time lost of five (5) hours or more was incurred by workmen covered under the terms of the 6-17-C/6-876-T agreement.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Elevator Constructor Mechanic	**Elevator Constructor**	**04/04/2025**

Classification Description: Elevator Constructor Mechanic

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$96.72	$83.78	$152.57
Apprentice: 1st year	$68.96	$46.08	$99.68
Apprentice: 2nd year	$74.88	$54.45	$111.18
Apprentice: 3rd year	$77.85	$58.65	$116.95
Apprentice: 4th year	$84.65	$67.02	$129.33

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$152.57
10th hour	$152.57
Beyond 10 hours	$152.57
Saturday	
First 8 hours	$152.57
9th hour	$152.57
10th hour	$152.57
Beyond 10 hours	$152.57
Sunday/Holiday	$152.57

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Glazier	**Glazier**	**04/04/2025**

Classification Description: Glazier
4 tens allowed on consecutive days

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$49.84	$67.73	$85.62
Apprentice: 1st level	$31.62	$40.40	$49.18
Apprentice: 2nd level	$35.12	$45.66	$56.18
Apprentice: 3rd Level	$40.38	$53.54	$66.70
Apprentice: 4th level	$45.66	$61.46	$77.26

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$66.72
10th hour	$66.72
Beyond 10 hours	$66.72
Saturday	
First 8 hours	$66.72
9th hour	$66.72
10th hour	$66.72
Beyond 10 hours	$66.72
Sunday/Holiday	$83.59

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Heat & Frost Insulator	**Heat and Frost Insulator**	**04/04/2025**

Classification Description: Heat and Frost Insulators and Asbestos Workers

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$52.00	$68.89	$85.77
Apprentice: 1st year	$26.38	$33.69	$40.99
Apprentice: 2nd year	$30.15	$38.92	$47.68
Apprentice: 3rd year	$33.92	$44.15	$54.37
Apprentice: 4th year	$37.70	$49.39	$61.08
Apprentice: 5th year	$41.48	$54.63	$67.78

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$68.89
10th hour	$68.89
Beyond 10 hours	$68.89
Saturday	
First 8 hours	$68.89
9th hour	$68.89
10th hour	$68.89
Beyond 10 hours	$68.89
Sunday/Holiday	$85.77

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday for cancelled work in a 4 10 schedule

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Ironworker - Rigger Machinery Mover	**Ironworker**	**04/04/2025**

Classification Description: Rigging Work

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$78.78	$96.21	$113.63
Apprentice: Level 1	$54.18	$65.03	$75.87
Apprentice: Level 2	$54.18	$65.03	$75.87
Apprentice: Level 3	$57.29	$69.02	$80.75
Apprentice: Level 4	$60.00	$72.45	$84.89
Apprentice: Level 5	$63.12	$76.45	$89.78
Apprentice: Level 6	$65.82	$79.86	$93.90
Apprentice: Level 7	$68.94	$83.87	$98.80
Apprentice: Level 8	$72.05	$87.87	$103.69

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$96.21
10th hour	$96.21
Beyond 10 hours	$113.63
Saturday	
First 8 hours	$96.21
9th hour	$96.21
10th hour	$96.21
Beyond 10 hours	$113.63
Sunday/Holiday	$113.63

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Reinforced Ironworker	**Ironworker**	**04/04/2025**

Classification Description: Reinforced Iron Work

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$65.70	$82.42	$99.13
Apprentice: Level 1	$54.67	$66.54	$78.41
Apprentice: Level 2	$57.24	$69.61	$81.98
Apprentice: Level 3	$59.13	$71.84	$84.54
Apprentice: Level 4	$62.02	$75.56	$89.10
Apprentice: Level 5	$64.92	$79.30	$93.67
Apprentice: Level 6	$72.26	$88.98	$105.69
Apprentice: Level 7	$72.26	$88.98	$105.69
Apprentice: Level 8	$72.26	$88.98	$105.69

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$82.41
10th hour	$82.41
Beyond 10 hours	$99.13
Saturday	
First 8 hours	$82.41
9th hour	$82.41
10th hour	$82.41
Beyond 10 hours	$99.13
Sunday/Holiday	$99.13

Four 10-hour days allowed? - No

Make Up Day Allowed? - Yes

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Structural Ironworker	**Ironworker**	**04/04/2025**

Classification Description: Structural, ornamental, welder and pre-cast

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$78.91	$105.80	$132.69
Apprentice: Level 1	$54.18	$65.03	$75.87
Apprentice: Level 2	$55.00	$66.20	$77.40
Apprentice: Level 3	$57.29	$69.02	$80.75
Apprentice: Level 4	$60.00	$72.45	$84.89
Apprentice: Level 5	$63.12	$76.45	$89.78
Apprentice: Level 6	$65.82	$79.86	$93.90
Apprentice: Level 7	$68.94	$83.87	$98.80
Apprentice: Level 8	$72.05	$87.87	$103.69

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$96.69
10th hour	$96.69
Beyond 10 hours	$114.46
Saturday	
First 8 hours	$96.69
9th hour	$96.69
10th hour	$96.69
Beyond 10 hours	$114.46
Sunday/Holiday	$114.46

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Class 1 - RZ3	**Laborer, Common**	**04/04/2025**

Classification Description: Laborer Road Class 1: asphalt shoveler or loader, yard man, fence erector tender, dumper, joint filling, form setting, form stripper, pavement reinforcing, waterproofing, seal coating, bridge painting, sandblasting, pressure grouting, RC equipment

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$46.14	$59.20	$72.26
Apprentice: 0-1,000 hours	$38.61	$48.41	$58.20
Apprentice: 1,001-2,000 hours	$39.92	$50.37	$60.82
Apprentice: 2,001-3,000 hours	$41.22	$52.32	$63.42
Apprentice: 3,001-4,000 hours	$43.83	$56.24	$68.64

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$59.20
10th hour	$59.20
Beyond 10 hours	$59.20
Saturday	
First 8 hours	$59.20
9th hour	$59.20
10th hour	$59.20
Beyond 10 hours	$59.20
Sunday/Holiday	$72.26

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Class 3 - RZ3	**Laborer, Common**	**04/04/2025**

Classification Description: Laborer Road Class 3: tunnel miner, finish tenders, guard rail builder, median barrier installer, earth retention barrier and wall installer, fence erector, bottom man, powder man, wagon drill and air track operator, curb and side rail setter

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$45.64	$58.95	$72.26
Apprentice: 0-1,000 hours	$39.53	$49.51	$59.49
Apprentice: 1,001-2,000 hours	$40.87	$51.52	$62.17
Apprentice: 2,001-3,000 hours	$42.20	$53.52	$64.83
Apprentice: 3,001-4,000 hours	$44.86	$57.51	$70.15

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$58.95
10th hour	$58.95
Beyond 10 hours	$58.95
Saturday	
First 8 hours	$58.95
9th hour	$58.95
10th hour	$58.95
Beyond 10 hours	$58.95
Sunday/Holiday	$72.26

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Class 4 - RZ3	**Laborer, Common**	**04/04/2025**

Classification Description: Laborer Road Class 4: asphalt raker

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$46.08	$59.61	$73.14
Apprentice: 0-1,000 hours	$33.39	$43.54	$53.69
Apprentice: 1,001-2,000 hours	$41.67	$52.50	$63.32
Apprentice: 2,001-3,000 hours	$43.02	$54.52	$66.02
Apprentice: 3,001-4,000 hours	$45.73	$58.59	$71.44

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$59.61
10th hour	$59.61
Beyond 10 hours	$59.61
Saturday	
First 8 hours	$59.61
9th hour	$59.61
10th hour	$59.61
Beyond 10 hours	$59.61
Sunday/Holiday	$73.14

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Class 5 - RZ3	**Laborer, Common**	**04/04/2025**

Classification Description: Laborer Road Class 5: pipe layers, oxy-gun

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$45.58	$58.92	$72.26
Apprentice: 0-1,000 hours	$38.91	$48.92	$58.92
Apprentice: 1,001-2,000 hours	$40.24	$50.91	$61.58
Apprentice: 2,001-3,000 hours	$41.58	$52.92	$64.26
Apprentice: 3,001-4,000 hours	$44.25	$56.93	$69.60

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$58.92
10th hour	$58.92
Beyond 10 hours	$58.92
Saturday	
First 8 hours	$58.92
9th hour	$58.92
10th hour	$58.92
Beyond 10 hours	$58.92
Sunday/Holiday	$72.26

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Class 6 - RZ3	**Laborer, Common**	**04/04/2025**

Classification Description: Laborer Road Class 6: line form setter for curb or pavement, asphalt screed checker/screw man on asphalt paving machines

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$46.01	$59.57	$73.12
Apprentice: 0-1,000 hours	$39.23	$49.39	$59.56
Apprentice: 1,001-2,000 hours	$40.59	$51.44	$62.28
Apprentice: 2,001-3,000 hours	$41.94	$53.46	$64.98
Apprentice: 3,001-4,000 hours	$44.65	$57.53	$70.40

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$59.56
10th hour	$59.56
Beyond 10 hours	$59.56
Saturday	
First 8 hours	$59.56
9th hour	$59.56
10th hour	$59.56
Beyond 10 hours	$59.56
Sunday/Holiday	$73.12

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - N-A	**Laborer, Common**	**04/04/2025**

Classification Description: Class A Laborer: building and heavy construction work, demolition, mortar mixers, mason tender, carpenter tender, fire watch, heater tender, all 3" pumps and below, furniture mover, material mixers, vibrator operators, operators of concrete mixers, chipp

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$34.88	$45.44	$56.00
Apprentice: 0-1,000 work hours	$28.29	$35.56	$42.82
Apprentice: 1,001-2,000 work hours	$28.76	$36.51	$44.26
Apprentice: 2,001-3,000 work hours	$29.72	$37.95	$46.18
Apprentice: 3,001-4,000 work hours	$31.66	$40.86	$50.06

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$45.44
10th hour	$45.44
Beyond 10 hours	$45.44
Saturday	
First 8 hours	$45.44
9th hour	$45.44
10th hour	$45.44
Beyond 10 hours	$45.44
Sunday/Holiday	$56.00

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - S-A	**Laborer, Common**	**04/04/2025**

Classification Description: Class A Laborer on building and heavy construction work, mortar mixers, mason tender, carpenter tender, fire watch, all 3" pumps and below, plaster mixers, plaster tenders, pipe or crock layers, signal men and top men on caisson work, mechanized buggy ope

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$37.71	$49.72	$61.72
Apprentice: 0-1,000 work hours	$30.97	$39.52	$48.12
Apprentice: 1,001-2,000 work hours	$32.12	$41.24	$50.42
Apprentice: 2,001-3,000 work hours	$33.27	$42.97	$52.72
Apprentice: 3,001-4,000 work hours	$35.56	$46.40	$57.30

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$49.71
10th hour	$49.71
Beyond 10 hours	$49.71
Saturday	
First 8 hours	$49.71
9th hour	$49.71
10th hour	$49.71
Beyond 10 hours	$49.71
Sunday/Holiday	$61.71

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class I - Z4	**Laborer, Common**	**04/04/2025**

Classification Description: Construction Laborer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$35.82	$45.48	$55.13
Apprentice: 0-1,000 work hours	$30.52	$39.16	$47.79
Apprentice: 1,001-2,000 work hours	$31.47	$40.59	$49.69
Apprentice: 2,001-3,000 work hours	$32.42	$42.01	$51.59
Apprentice: 3,001-4,000 work hours	$34.32	$44.86	$55.39

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$45.48
10th hour	$45.48
Beyond 10 hours	$45.48
Saturday	
First 8 hours	$45.48
9th hour	$45.48
10th hour	$45.48
Beyond 10 hours	$45.48
Sunday/Holiday	$55.13

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class II - Z4	**Laborer, Common**	**04/04/2025**

Classification Description: Mortar and material mixer, concrete form man, signal man, well point man, manhole, headwall and catch basin builder, guard rail builders, headwall, seawall, breakwall, dock builder and fence erector.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$35.95	$45.67	$55.39
Apprentice: 0-1,000 work hours	$30.62	$39.31	$47.99
Apprentice: 1,001-2,000 work hours	$31.57	$40.73	$49.89
Apprentice: 2,001-3,000 work hours	$32.53	$42.17	$51.81
Apprentice: 3,001-4,000 work hours	$34.44	$45.04	$55.63

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$45.67
10th hour	$45.67
Beyond 10 hours	$45.67
Saturday	
First 8 hours	$45.67
9th hour	$45.67
10th hour	$45.67
Beyond 10 hours	$45.67
Sunday/Holiday	$55.39

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class IV - Z4	**Laborer, Common**	**04/04/2025**

Classification Description: Trench or excavating grade man.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$36.13	$45.94	$55.75
Apprentice: 0-1,000 work hours	$30.75	$39.51	$48.25
Apprentice: 1,001-2,000 work hours	$31.72	$40.96	$50.19
Apprentice: 2,001-3,000 work hours	$32.68	$42.40	$52.11
Apprentice: 3,001-4,000 work hours	$34.61	$45.29	$55.97

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$45.94
10th hour	$45.94
Beyond 10 hours	$45.94
Saturday	
First 8 hours	$45.94
9th hour	$45.94
10th hour	$45.94
Beyond 10 hours	$45.94
Sunday/Holiday	$55.75

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class VI - Z4	**Laborer, Common**	**04/04/2025**

Classification Description: Grouting man, top man assistant, audio visual television operations and all other operations in connection with closed circuit television inspection, pipe cleaning and pipe relining work & the installation and repair of water service pipe and appurtenance

Wage Rates

	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$33.47	$41.95	$50.43
Apprentice: 0-1,000 work hours	$28.76	$36.52	$44.27
Apprentice: 1,001-2,000 work hours	$29.59	$37.77	$45.93
Apprentice: 2,001-3,000 work hours	$30.42	$39.01	$47.59
Apprentice: 3,001-4,000 work hours	$32.09	$41.51	$50.93

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$41.95
10th hour	$41.95
Beyond 10 hours	$41.95
Saturday	
First 8 hours	$41.95
9th hour	$41.95
10th hour	$41.95
Beyond 10 hours	$41.95
Sunday/Holiday	$50.43

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 1	**Laborer, Common**	**04/04/2025**

Classification Description: General Laborer for rehab work or normal cleaning and cctv work-top man, scaffold man, CCTV assistant, jetter-vac assistant

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$28.20	$38.20	$48.19

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$38.20
10th hour	$38.20
Beyond 10 hours	$38.20
Saturday	
First 8 hours	$38.20
9th hour	$38.20
10th hour	$38.20
Beyond 10 hours	$38.20
Sunday/Holiday	$38.20

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Hazardous - Class A - Z10	**Laborer, Hazardous**	**04/04/2025**

Classification Description: Class A Laborer performing work in conjunction with site preparation and other preliminary work prior to actual removal, handling, or containment of hazardous waste substances not requiring use of personal protective equipment required by state or federa

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$31.38	$40.44	$49.50
Apprentice: 0-1,000 work hours	$26.85	$33.64	$40.44
Apprentice: 1,001-2,000 work hours	$27.76	$35.01	$42.26
Apprentice: 2,001-3,000 work hours	$28.66	$36.36	$44.06
Apprentice: 3,001-4,000 work hours	$30.47	$39.08	$47.68

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$40.44
10th hour	$40.44
Beyond 10 hours	$40.44
Saturday	
First 8 hours	$40.44
9th hour	$40.44
10th hour	$40.44
Beyond 10 hours	$40.44
Sunday/Holiday	$49.50

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th or T-F; inclement weather makeup day Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Hazardous - Class B - Z10	**Laborer, Hazardous**	**04/04/2025**

Classification Description: Class B Laborer - performing work in conjunction with the removal, handling, or containment of hazardous waste substances when the use of personal protective equipment levels "A", "B" or "C" is required.

Wage Rates

	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$32.38	$45.44	$58.50
Apprentice: 0-1,000 work hours	$27.60	$38.27	$48.94
Apprentice: 1,001-2,000 work hours	$28.56	$39.71	$50.86
Apprentice: 2,001-3,000 work hours	$29.51	$41.14	$52.76
Apprentice: 3,001-4,000 work hours	$31.42	$44.00	$56.58

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$41.94
10th hour	$41.94
Beyond 10 hours	$41.94
Saturday	
First 8 hours	$41.94
9th hour	$41.94
10th hour	$41.94
Beyond 10 hours	$41.94
Sunday/Holiday	$51.50

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th or T-F; inclement weather makeup day Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Landscape - Class A - Z2	**Laborer, Landscaping**	**04/04/2025**

Classification Description: Class A: Irrigation Foremen and Construction Foremen.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$32.40	$42.96	$53.48

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$42.93
10th hour	$42.93
Beyond 10 hours	$42.93
Saturday	
First 8 hours	$42.93
9th hour	$42.93
10th hour	$42.93
Beyond 10 hours	$42.93
Sunday/Holiday	$53.45

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Landscape - Class A - Z2	**Laborer, Landscaping**	**04/04/2025**

Classification Description: Class A: Irrigation Foremen and Construction Foremen.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$34.62	$46.26	$57.89

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$46.26
10th hour	$46.26
Beyond 10 hours	$46.26
Saturday	
First 8 hours	$46.26
9th hour	$46.26
10th hour	$46.26
Beyond 10 hours	$46.26
Sunday/Holiday	$57.89

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Landscape - Class B2 - Z2	**Laborer, Landscaping**	**04/04/2025**

Classification Description: Class B2: Skilled Landscape Laborer: small power tool operator, lawn sprinkler installers' tender, irrigation installers' tender material mover

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$30.40	$39.93	$49.45

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$39.93
10th hour	$39.93
Beyond 10 hours	$39.93
Saturday	
First 8 hours	$39.93
9th hour	$39.93
10th hour	$39.93
Beyond 10 hours	$39.93
Sunday/Holiday	$49.45

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Landscape - Class C - Z2	**Laborer, Landscaping**	**05/10/2024**

Classification Description: Class C: landscape laborer with 90 or more calendar days worked

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$24.66	$33.27	$41.87

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$31.98
10th hour	$31.98
Beyond 10 hours	$31.98
Saturday	
First 8 hours	$31.98
9th hour	$31.98
10th hour	$31.98
Beyond 10 hours	$31.98
Sunday/Holiday	$39.30

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Landscape - Class D - Z2	**Laborer, Landscaping**	**05/10/2024**

Classification Description: Class D: Inexperienced landscape laborer - individual who has worked less than 90 calendar days

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$15.54	$23.31	$31.08

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$22.03
10th hour	$22.03
Beyond 10 hours	$22.03
Saturday	
First 8 hours	$22.03
9th hour	$22.03
10th hour	$22.03
Beyond 10 hours	$22.03
Sunday/Holiday	$28.51

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class VII - Z4	**Laborer, Landscaping**	**04/04/2025**

Classification Description: Restoration laborer, seeding, sodding, planting, cutting, mulching and topsoil grading and the restoration of property such as replacing mail boxes, wood chips, planter boxes, flagstones etc.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$31.81	$39.46	$47.11
Apprentice: 0-1,000 work hours	$27.51	$34.65	$41.77
Apprentice: 1,001-2,000 work hours	$28.26	$35.77	$43.27
Apprentice: 2,001-3,000 work hours	$29.01	$36.89	$44.77
Apprentice: 3,001-4,000 work hours	$30.51	$39.15	$47.77

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$39.46
10th hour	$39.46
Beyond 10 hours	$39.46
Saturday	
First 8 hours	$39.46
9th hour	$39.46
10th hour	$39.46
Beyond 10 hours	$39.46
Sunday/Holiday	$47.11

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Class 2 - RZ3	**Laborer, Skilled**	**04/04/2025**

Classification Description: Laborer Road Class 2: mixer operator, air or electric tool operator, spreader, boxman, concreter paddler, power chain saw operator, paving patch truck dumper, tunnel mucker, concrete saw operator, dry pack macine and roto-mill grounds person

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$45.35	$58.51	$71.68
Apprentice: 0-1,000 hours	$39.77	$49.15	$59.02
Apprentice: 1,001-2,000 hours	$42.08	$52.61	$63.14
Apprentice: 2,001-3,000 hours	$42.40	$53.59	$64.78
Apprentice: 3,001-4,000 hours	$45.03	$57.54	$70.04

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$58.52
10th hour	$58.52
Beyond 10 hours	$58.52
Saturday	
First 8 hours	$58.52
9th hour	$58.52
10th hour	$58.52
Beyond 10 hours	$58.52
Sunday/Holiday	$71.68

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - Class 7 - RZ3	**Laborer, Skilled**	**04/04/2025**

Classification Description: Laborer Road Class 7: concrete specialist - including finishing and trowling, cast in place or precast by any method

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$49.34	$64.56	$79.78
Apprentice: 0-1,000 hours	$41.73	$53.14	$64.56
Apprentice: 1,001-2,000 hours	$43.25	$55.43	$67.60
Apprentice: 2,001-3,000 hours	$44.77	$57.71	$70.64
Apprentice: 3,001-4,000 hours	$47.82	$62.28	$76.74

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$64.56
10th hour	$64.56
Beyond 10 hours	$64.56
Saturday	
First 8 hours	$64.56
9th hour	$64.56
10th hour	$64.56
Beyond 10 hours	$64.56
Sunday/Holiday	$79.78

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - S-B	**Laborer, Skilled**	**04/04/2025**

Classification Description: Class B Laborer air or electric-driven pavement breakers and jackhammers over 50 lbs., tunnel miners and tunnel muckers, tunnel and shaft underpinning contributing to the structural support of buildings

Wage Rates

	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$38.27	$50.60	$62.86
Apprentice: 0-1,000 work hours	$31.40	$40.20	$49.00
Apprentice: 1,001-2,000 work hours	$32.58	$41.97	$51.36
Apprentice: 2,001-3,000 work hours	$33.75	$43.72	$53.70
Apprentice: 3,001-4,000 work hours	$36.10	$47.25	$58.40

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$50.54
10th hour	$50.54
Beyond 10 hours	$50.54
Saturday	
First 8 hours	$50.54
9th hour	$50.54
10th hour	$50.54
Beyond 10 hours	$50.54
Sunday/Holiday	$62.80

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer - S-C	**Laborer, Skilled**	**04/04/2025**

Classification Description: Class C Laborer-drillers, blasters, burners, welders, & refractory work

Wage Rates

	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$38.84	$51.46	$64.02
Apprentice: 0-1,000 work hours	$31.81	$40.84	$49.86
Apprentice: 1,001-2,000 work hours	$33.02	$42.65	$52.28
Apprentice: 2,001-3,000 work hours	$34.22	$44.45	$54.68
Apprentice: 3,001-4,000 work hours	$36.63	$48.06	$59.50

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$51.41
10th hour	$51.41
Beyond 10 hours	$51.41
Saturday	
First 8 hours	$51.41
9th hour	$51.41
10th hour	$51.41
Beyond 10 hours	$51.41
Sunday/Holiday	$63.97

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer N-B	**Laborer, Skilled**	**04/04/2025**

Classification Description: Class B Refractory Work: inside or outside digester, tanks, lime kilns, chests, boilers, and boiler tubes, including the handling of acid, chlorine, chemicals, epoxies, liquids and cleaning of existing precipitators, hydro blasting, hydro washing, and sa

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$36.23	$47.40	$58.56
Apprentice: 0-1,000 work hours	$29.34	$37.06	$44.78
Apprentice: 1,001-2,000 work hours	$29.86	$38.09	$46.32
Apprentice: 2,001-3,000 work hours	$30.89	$39.64	$48.38
Apprentice: 3,001-4,000 work hours	$32.95	$42.72	$52.50

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$47.40
10th hour	$47.40
Beyond 10 hours	$47.40
Saturday	
First 8 hours	$47.40
9th hour	$47.40
10th hour	$47.40
Beyond 10 hours	$47.40
Sunday/Holiday	$58.56

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class III - Z4	**Laborer, Skilled**	**04/04/2025**

Classification Description: Air, gasoline and electric tool operator, vibrator operator, drillers, pump man, tar kettle operator, bracers, rodder, reinforced steel or mesh man (e.g. wire mesh, steel mats, dowel bars, etc.), cement finisher, welder, pipe jacking and boring man, wagon

Wage Rates

	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$36.06	$45.84	$55.61
Apprentice: 0-1,000 work hours	$30.70	$39.43	$48.15
Apprentice: 1,001-2,000 work hours	$31.66	$40.87	$50.07
Apprentice: 2,001-3,000 work hours	$32.62	$42.31	$51.99
Apprentice: 3,001-4,000 work hours	$34.55	$45.21	$55.85

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$45.84
10th hour	$45.84
Beyond 10 hours	$45.84
Saturday	
First 8 hours	$45.84
9th hour	$45.84
10th hour	$45.84
Beyond 10 hours	$45.84
Sunday/Holiday	$55.61

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class V - Z4	**Laborer, Skilled**	**04/04/2025**

Classification Description: Pipe Layer (including crock, metal pipe, multiplate or other conduits)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$36.25	$46.12	$55.99
Apprentice: 0-1,000 work hours	$30.84	$39.64	$48.43
Apprentice: 1,001-2,000 work hours	$31.81	$41.09	$50.37
Apprentice: 2,001-3,000 work hours	$32.78	$42.55	$52.31
Apprentice: 3,001-4,000 work hours	$34.73	$45.47	$56.21

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$46.12
10th hour	$46.12
Beyond 10 hours	$46.12
Saturday	
First 8 hours	$46.12
9th hour	$46.12
10th hour	$46.12
Beyond 10 hours	$46.12
Sunday/Holiday	$55.99

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 4	**Laborer, Skilled**	**04/04/2025**

Classification Description: Boiler Operator: unit driver and operator of steam/water heater units and all ancillary equipment associated

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$33.20	$45.70	$58.19

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$45.70
10th hour	$45.70
Beyond 10 hours	$45.70
Saturday	
First 8 hours	$45.70
9th hour	$45.70
10th hour	$45.70
Beyond 10 hours	$45.70
Sunday/Holiday	$45.70

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 5	**Laborer, Skilled**	**04/04/2025**

Classification Description: Combo Unit driver & Jetter-Vac Operator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$33.20	$45.70	$58.19

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$45.70
10th hour	$45.70
Beyond 10 hours	$45.70
Saturday	
First 8 hours	$45.70
9th hour	$45.70
10th hour	$45.70
Beyond 10 hours	$45.70
Sunday/Holiday	$45.70

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 6	**Laborer, Skilled**	**04/04/2025**

Classification Description: Pipe Bursting & Slip-lining Equipment Operator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$34.20	$47.20	$60.19

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$47.20
10th hour	$47.20
Beyond 10 hours	$47.20
Saturday	
First 8 hours	$47.20
9th hour	$47.20
10th hour	$47.20
Beyond 10 hours	$47.20
Sunday/Holiday	$47.20

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Class II (A)	**Operating Engineer**	**04/04/2025**

Classification Description: Class II (A) - Crane/backhoe operator, material handler, all self-propelled drill rigs, mechanic/welder, hydraulic dredge, diver tender

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$81.32	$105.57	$129.82

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$32.82
10th hour	$105.57
Beyond 10 hours	$105.57
Saturday	
First 8 hours	$105.57
9th hour	$105.57
10th hour	$105.57
Beyond 10 hours	$105.57
Sunday/Holiday	$129.82

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Class II (B)	**Operating Engineer**	**04/04/2025**

Classification Description: Class II (B) - friction, lattice boom, tug or tug boat operator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$84.32	$110.07	$135.82

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$110.07
10th hour	$110.07
Beyond 10 hours	$110.07
Saturday	
First 8 hours	$110.07
9th hour	$110.07
10th hour	$110.07
Beyond 10 hours	$110.07
Sunday/Holiday	$135.82

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Class III	**Operating Engineer**	**04/04/2025**

Classification Description: Class III - Deck equip. operator, maintenance of crane or excavator, tug/launch operator, loader/dozer on barge/deck machinery, truck-able tug, lead surveyor, ROV operator, AB deckhand, welder

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$76.82	$98.82	$120.82

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$98.82
10th hour	$98.82
Beyond 10 hours	$98.82
Saturday	
First 8 hours	$98.82
9th hour	$98.82
10th hour	$98.82
Beyond 10 hours	$98.82
Sunday/Holiday	$120.82

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Class IV	**Operating Engineer**	**04/04/2025**

Classification Description: Class IV - Deck equipment operator, machineryman/fireman, off road trucks, deck hand, tug engineer, assistant tug operator, blaster helper, deck hand, jet machine, subsea plow, trencher, tug engineer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$72.32	$92.07	$111.82

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$32.82
10th hour	$92.07
Beyond 10 hours	$92.07
Saturday	
First 8 hours	$92.07
9th hour	$92.07
10th hour	$92.07
Beyond 10 hours	$92.07
Sunday/Holiday	$111.82

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Extended Boom Forklift Operator - Over 5,000	**Operating Engineer**	**04/04/2025**

Classification Description: Extended boom forklift/forktruck over 5,000lb capacity, 1 drum hoist

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$41.43	$54.43	$67.42

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$54.43
10th hour	$54.43
Beyond 10 hours	$67.42
Saturday	
First 8 hours	$54.43
9th hour	$54.43
10th hour	$54.43
Beyond 10 hours	$67.42
Sunday/Holiday	$67.42

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Extended Boom Forklift Operator - Over 5,000	**Operating Engineer**	**04/04/2025**

Classification Description: Extended boom forklift/forktruck over 5,000lb capacity, 1 drum hoist

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$58.82	$73.32	$87.81

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$73.32
10th hour	$73.32
Beyond 10 hours	$87.81
Saturday	
First 8 hours	$73.32
9th hour	$73.32
10th hour	$73.32
Beyond 10 hours	$87.81
Sunday/Holiday	$87.81

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Extended Boom Forklift Operator - Over 5,000	**Operating Engineer**	**04/04/2025**

Classification Description: Extended boom forklift/forktruck over 5,000lb capacity, 1 drum hoist

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$64.70	$81.75	$98.80

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$81.75
10th hour	$81.75
Beyond 10 hours	$98.80
Saturday	
First 8 hours	$81.75
9th hour	$81.75
10th hour	$81.75
Beyond 10 hours	$98.80
Sunday/Holiday	$98.80

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Extended Boom Forklift Operator - Over 5,000	**Operating Engineer**	**04/04/2025**

Classification Description: Extended boom forklift/forktruck over 5,000lb capacity, 1 drum hoist

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$69.61	$88.88	$108.15

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$88.88
10th hour	$88.88
Beyond 10 hours	$108.15
Saturday	
First 8 hours	$88.88
9th hour	$88.88
10th hour	$88.88
Beyond 10 hours	$108.15
Sunday/Holiday	$108.15

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Extended Boom Forklift Operator - Over 5,000	**Operating Engineer**	**04/04/2025**

Classification Description: Extended boom forklift/forktruck over 5,000lb capacity, 1 drum hoist

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$63.29	$79.73	$96.16

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$79.73
10th hour	$79.73
Beyond 10 hours	$96.16
Saturday	
First 8 hours	$79.73
9th hour	$79.73
10th hour	$79.73
Beyond 10 hours	$96.16
Sunday/Holiday	$96.16

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Journeyman - Class I	**Operating Engineer**	**04/04/2025**

Classification Description: Journeyman - Class I
Asphalt Transfer Machine (Shuttle Buggy)
Concrete/Asphalt Pavers
Excavators Installing Utilities over 20 feet in depth
GPS or Electronic Grade Equipment (employee must be able to set up and use it on machine themselves, and employee can install it and calibrate it on their own)
Hydraulic/Lattice Lifting Cranes over 25 tons
Mechanic
**On bridge construction projects when a Class I Crane Operator is erecting structural components as part of a composite crew with Structural Ironworkers, the Base Rate and Vacation and Holiday pay shall be at the Crane Operator rate as set forth in the current agreement between the Union and the Great Lakes Fabricators and Erectors Association.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$69.17	$88.16	$107.14
Apprentice: Apprentice Engineer 0-6 months	$56.03	$71.32	$86.60
Apprentice: Apprentice Engineer 13-18	$60.40	$77.87	$95.34
Apprentice: Apprentice Engineer 19-24 months	$62.21	$80.59	$98.96
Apprentice: Apprentice Engineer 25-30 months	$64.76	$84.42	$104.06
Apprentice: Apprentice Engineer 31-36 months	$67.08	$87.90	$108.70
Apprentice: Apprentice Engineer 7-12 months	$58.21	$74.58	$90.96

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$88.16
10th hour	$88.16
Beyond 10 hours	$88.16
Saturday	
First 8 hours	$88.16
9th hour	$88.16
10th hour	$88.16
Beyond 10 hours	$88.16
Sunday/Holiday	$107.14

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather, Monday through Thursday, the Friday work may be scheduled for ten (10) hours, at straight time, as a make-up day.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Journeyman - Class II	**Operating Engineer**	**04/04/2025**

Classification Description: Journeyman - Class II
Air Compressors in Manifold with throttle valve +750 cfm
Asphalt Bituminous Compactor / Roller
Asphalt Planner self-propelled
Asphalt Plant on project including operating from on site or operating remotely
Asphalt Screed or Screw (per Employer Past Practice)
Auto Grade or similar type machine
Backhoe on Farm Type Tractor45 H.P. & over
Ballast Jack Tamper
Ballast Regulator (R.R.)
Batch Plant (concrete-central mix)
Bituminous Paver (self-propelled)
Blade Grader
Bull Dozer
Caisson Drilling Machine
Cherry Picker – 15 ton or over
Chip Spreader
Concrete Batch or Drum Mix Plant on project including operating from on site or operating remotely
Concrete Belt Placer (Formless)
Concrete Cure / Finish Machine (burlap, tinning or grooving)
Concrete Mixer 21 cu. Ft. Or over
Concrete Pump (Truck Mount)
Concrete Pump (3 inch and over)
Concrete / Asphalt Saw Power Driven (3 yrs experience or more)
Conveyor Loader (Euclid type)
Core Drilling Machine
Curb-Barrier Wall Machine CMI type
Directional Drill / Boring Machine
Dredge Engineer
Dredge
Drilling Machine on which the drill is an integral part
Earth Mover – rubber tired – (paddle wheel, Cat 619, 631, TS-24 or similar type)
Earth Mover rubber tired-tandem

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$68.02	$86.51	$104.99

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$86.50
10th hour	$86.50
Beyond 10 hours	$86.50
Saturday	
First 8 hours	$86.50
9th hour	$86.50
10th hour	$86.50
Beyond 10 hours	$86.50
Sunday/Holiday	$104.99

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Journeyman - Class III	**Operating Engineer**	**04/04/2025**

Classification Description: Journeyman - Class III
Air Compressor with Throttle Valve or Clever Brooks type comb.
Backhoe less than 1 cyd. Including Farm Type
Bituminous Plant Engineer
Chemical / Grout Machine 21 cft. Or larger
Cherry Picker under 15 ton
Chip Spreader (self-propelled)
Crusher
Concrete Barrier Moving Machine (per Employer Past Practice)
Concrete Pump
Concrete Spreader--Power Driven
End Loader under 1-1/2 cu yd.
Grease Truck
Gunite Machine
Lowboy (per Employer Past Practice)
Mesh or Steel Placer (motorized)
Multiple Tamping Machine (R.R.)
Refrigerating Machine--Freezing operation
Roller-Waterbound Macadam, Bituminous Macadam, Brick
Ross Carrier
Self-propelled convey transfer devise.
Side Boom Tractor (smaller than D-4 type or equivalent)
Sweeper (Wayne type and similar equipment)
Macadam, Brick Surface
Trench Machine 24" and under
Tube Float (motorized)

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$61.29	$76.85	$92.41

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$30.17
10th hour	$76.85
Beyond 10 hours	$76.85
Saturday	
First 8 hours	$76.85
9th hour	$76.85
10th hour	$76.85
Beyond 10 hours	$76.85
Sunday/Holiday	$92.41

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Journeyman - Class IV	**Operating Engineer**	**04/04/2025**

Classification Description: Journeyman - Class IV
Air Compressor
All mulching equipment
All Walk Behind or Remote Control Powered Equipment (autonomous equipment)
Assistant to Engineer Automatic Dry Batch Plant Belt Spreader (motorized including transfer device by remote, wireless or cable)
Bituminous Distributor
Bituminous Patching Machine
Broom & Belt Machine
Chair Cart (self-propelled)
Concrete Pumps (under 3")
Concrete Breaker
Curb Machine
Curing Equipment (self-propelled)
Deck Hand
Digger Post Hole (power-driven)
Dump Truck
End Dumps (per Employer Past Practice)
End Loader (under ¾ yard capacity)
Farm Tractor-incl. farm tractor with all attachments except backhoe and incl. highlift end loaders of 1 cu. Yard capacity or less
Fireman (on boiler)
Fork Lift – under 10 ton
Form Grader (if motorized)
Georgia Buggy – Power wheel barrel ¾ yard with a seat
Generator (15 kw or greater)
Greaser Helper
Guard Post Driver (power driven)

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$60.73	$76.05	$91.36

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$76.05
10th hour	$76.05
Beyond 10 hours	$76.05
Saturday	
First 8 hours	$76.05
9th hour	$76.05
10th hour	$76.05
Beyond 10 hours	$76.05
Sunday/Holiday	$91.36

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Journeyman - Class V	**Operating Engineer**	**04/04/2025**

Classification Description: Journeyman - Class V
Concrete/Asphalt Saw - Power Driven (Less than 3 yrs. experience)
Density/Soil Engineer
Directional Boring Utility Man
Discharge Pumps 4" or less (1-4 units)
Dumper (Wagon, Truck, Etc.)-½ yard or less
Fence Erector/Power Driven
Light Plants (1 to 5 units)
Paving Batch Truck Dumper
Roto Mill Utility Grade Control
Sign Installer/Sign Installer with Remote Control Operated Equipment
Top Man, And Railroad Track and Trestle Engineer
Utility Engineer
Water Blasting Utility Engineer
1 to 4 pcs. of minor equip.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$42.35	$55.33	$68.31

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$55.33
10th hour	$55.33
Beyond 10 hours	$55.33
Saturday	
First 8 hours	$55.33
9th hour	$55.33
10th hour	$55.33
Beyond 10 hours	$55.33
Sunday/Holiday	$68.31

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 A140	**Operating Engineer**	**04/04/2025**

Classification Description: Crane with boom & jib or leads 140' or longer

Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$77.59	$100.24	$122.89

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$100.24
10th hour	$100.24
Beyond 10 hours	$100.24
Saturday	
First 8 hours	$100.24
9th hour	$100.24
10th hour	$100.24
Beyond 10 hours	$100.24
Sunday/Holiday	$122.89

Four 10-hour days allowed? - Yes
Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 hours Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 A220	**Operating Engineer**	**04/04/2025**

Classification Description: Crane with boom & jib or leads 220' or longer
Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$77.86	$100.63	$123.40

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$100.63
10th hour	$100.63
Beyond 10 hours	$100.63
Saturday	
First 8 hours	$100.63
9th hour	$100.63
10th hour	$100.63
Beyond 10 hours	$100.63
Sunday/Holiday	$123.40

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 hours Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 B120	**Operating Engineer**	**04/04/2025**

Classification Description: Crane Operator w/120' of Boom or Longer w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$77.41	$99.99	$122.56

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$99.98
10th hour	$99.98
Beyond 10 hours	$99.98
Saturday	
First 8 hours	$99.98
9th hour	$99.98
10th hour	$99.98
Beyond 10 hours	$99.98
Sunday/Holiday	$122.56

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 GM	**Operating Engineer**	**04/04/2025**

Classification Description: Ground Man/Light Plants/Welder/Pumps Under 6"

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$43.83	$57.87	$71.91

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$57.87
10th hour	$57.87
Beyond 10 hours	$57.87
Saturday	
First 8 hours	$57.87
9th hour	$57.87
10th hour	$57.87
Beyond 10 hours	$57.87
Sunday/Holiday	$71.91

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - Below 5,000lb Capacity	**Operating Engineer**	**04/04/2025**

Classification Description: Ind. forklift/forktruck under 5,000lb capacity power jacks/power packs, composite crew only

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$67.10	$85.19	$103.28

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$85.19
10th hour	$85.19
Beyond 10 hours	$85.19
Saturday	
First 8 hours	$85.19
9th hour	$85.19
10th hour	$85.19
Beyond 10 hours	$85.19
Sunday/Holiday	$103.28

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - Crane Operator w/Oiler	**Operating Engineer**	**04/04/2025**

Classification Description: Crane Operator w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$77.05	$99.47	$121.89

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$99.47
10th hour	$99.47
Beyond 10 hours	$99.47
Saturday	
First 8 hours	$99.47
9th hour	$99.47
10th hour	$99.47
Beyond 10 hours	$99.47
Sunday/Holiday	$121.89

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - Crane, TDH, Excavator	**Operating Engineer**	**04/04/2025**

Classification Description: Crane Operator, Job Mechanic, Three Drum Hoist and Excavator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$76.05	$98.04	$120.02
Apprentice: Apprentice Engineer 0-6 months	$60.84	$78.54	$96.24
Apprentice: Apprentice Engineer 13-18 months	$65.90	$86.13	$106.36
Apprentice: Apprentice Engineer 19-24 months	$68.42	$89.92	$111.40
Apprentice: Apprentice Engineer 25-30 months	$70.95	$93.71	$116.46
Apprentice: Apprentice Engineer 31-36 months	$73.48	$97.50	$121.52
Apprentice: Apprentice Engineer 7-12 months	$63.40	$82.38	$101.36

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$98.03
10th hour	$98.03
Beyond 10 hours	$98.03
Saturday	
First 8 hours	$98.03
9th hour	$98.03
10th hour	$98.03
Beyond 10 hours	$98.03
Sunday/Holiday	$120.02

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - CW	**Operating Engineer**	**04/04/2025**

Classification Description: Compressor or welding machine
Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$54.86	$69.72	$84.58

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$67.78
10th hour	$67.78
Beyond 10 hours	$67.78
Saturday	
First 8 hours	$67.78
9th hour	$80.70
10th hour	$80.70
Beyond 10 hours	$80.70
Sunday/Holiday	$80.70

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - F	**Operating Engineer**	**04/04/2025**

Classification Description: Forklift, lull, extend-a-boom forklift
Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$63.36	$79.81	$96.25

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$79.81
10th hour	$79.81
Beyond 10 hours	$79.81
Saturday	
First 8 hours	$79.81
9th hour	$96.25
10th hour	$96.25
Beyond 10 hours	$96.25
Sunday/Holiday	$96.25

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - FO	**Operating Engineer**	**04/04/2025**

Classification Description: Fireman or Oiler

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work not performed due to weather, Monday-Thursday may be scheduled on Friday.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$55.02	$67.84	$80.65

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$67.84
10th hour	$67.84
Beyond 10 hours	$67.84
Saturday	
First 8 hours	$67.84
9th hour	$80.65
10th hour	$80.65
Beyond 10 hours	$80.65
Sunday/Holiday	$80.65

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - FO	**Operating Engineer**	**04/04/2025**

Classification Description: Fireman or oiler
Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$53.83	$68.18	$82.52

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$66.31
10th hour	$66.31
Beyond 10 hours	$66.31
Saturday	
First 8 hours	$66.31
9th hour	$78.78
10th hour	$78.78
Beyond 10 hours	$78.78
Sunday/Holiday	$78.78

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - FSM	**Operating Engineer**	**04/04/2025**

Classification Description: Forklift or Straight Mast

Four 10 hour days may be scheduled M-Th or T-F. Work not performed due to weather on M-Th may be scheduled on Friday

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$57.50	$71.40	$85.29

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$71.40
10th hour	$71.40
Beyond 10 hours	$71.40
Saturday	
First 8 hours	$71.40
9th hour	$85.29
10th hour	$85.29
Beyond 10 hours	$85.29
Sunday/Holiday	$85.29

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - I	**Operating Engineer**	**04/04/2025**

Classification Description: Lull or Extend-a-Boom Forklift

Four 10 hour days may be scheduled M-Th or T-F. Work not performed due to weather on M-Th may be scheduled on Friday

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$59.73	$77.09	$94.45

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$74.83
10th hour	$74.83
Beyond 10 hours	$74.83
Saturday	
First 8 hours	$74.83
9th hour	$89.92
10th hour	$89.92
Beyond 10 hours	$89.92
Sunday/Holiday	$89.92

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - OE 324 A120	**Operating Engineer**	**04/04/2025**

Classification Description: Crane with boom & jib or leads 120' or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$68.55	$87.30	$106.04

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$87.30
10th hour	$87.30
Beyond 10 hours	$87.30
Saturday	
First 8 hours	$87.30
9th hour	$87.30
10th hour	$87.30
Beyond 10 hours	$87.30
Sunday/Holiday	$106.04

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time over 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - OSA	**Operating Engineer**	**04/04/2025**

Classification Description: Crane w/ main Boom & Jib 220' or longer

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work not performed due to weather, Monday-Thursday may be scheduled on Friday.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$64.38	$84.07	$103.75

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$81.50
10th hour	$81.50
Beyond 10 hours	$81.50
Saturday	
First 8 hours	$81.50
9th hour	$98.61
10th hour	$98.61
Beyond 10 hours	$98.61
Sunday/Holiday	$98.61

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - OSA3	**Operating Engineer**	**04/04/2025**

Classification Description: Crane w/ main Boom & Jib 300' or longer

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work unabled to be performed due to weather, Monday-Thursday may be scheduled on Friday.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$65.89	$86.33	$106.77

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$83.67
10th hour	$83.67
Beyond 10 hours	$83.67
Saturday	
First 8 hours	$83.67
9th hour	$101.44
10th hour	$101.44
Beyond 10 hours	$101.44
Sunday/Holiday	$101.44

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - OSA4	**Operating Engineer**	**04/04/2025**

Classification Description: Crane w/ main Boom & Jib 400' or longer

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work not performed due to weather, Monday-Thursday may be scheduled on Friday.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$78.46	$101.49	$124.52

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$101.49
10th hour	$101.49
Beyond 10 hours	$101.49
Saturday	
First 8 hours	$101.49
9th hour	$101.49
10th hour	$101.49
Beyond 10 hours	$101.49
Sunday/Holiday	$124.52

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - OSB	**Operating Engineer**	**04/04/2025**

Classification Description: Crane with main boom and jib 140' or longer

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work unabled to be performed due to weather, Monday-Thursday may be scheduled on Friday.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$64.09	$83.63	$103.17

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$81.08
10th hour	$81.08
Beyond 10 hours	$81.08
Saturday	
First 8 hours	$81.08
9th hour	$98.07
10th hour	$98.07
Beyond 10 hours	$98.07
Sunday/Holiday	$98.07

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - RC	**Operating Engineer**	**04/04/2025**

Classification Description: Regular Crane Operator, Job Mechanic, Concrete Pump with Boom

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work not performed due to weather, Monday-Thursday may be scheduled on Friday.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$66.04	$83.65	$101.26
Apprentice: 0-999 hours	$51.13	$64.18	$77.22
Apprentice: 1,000-1,999 hours	$52.99	$66.96	$80.94
Apprentice: 2,000-2,999 hours	$54.86	$69.77	$84.68
Apprentice: 3,000-3,999 hours	$56.72	$72.56	$88.40
Apprentice: 4,000-4,999 hours	$58.59	$75.36	$92.14
Apprentice: 5,000-5,999 hours	$60.44	$78.15	$95.84

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$83.65
10th hour	$83.65
Beyond 10 hours	$83.65
Saturday	
First 8 hours	$83.65
9th hour	$101.26
10th hour	$101.26
Beyond 10 hours	$101.26
Sunday/Holiday	$101.26

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - RE	**Operating Engineer**	**04/04/2025**

Classification Description: Regular Engineer, Hydro Excavator & Remote Controlled Concrete Breaker

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work not performed due to weather, Monday-Thursday may be scheduled on Friday.

Wage Rates

	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$65.07	$82.26	$99.44
Apprentice: 1,000-1,999 hours	$55.19	$70.02	$84.84
Apprentice: 1-999 hours	$53.21	$67.02	$80.85
Apprentice: 2,000-2,999 hours	$57.16	$72.97	$88.78
Apprentice: 3,000-3,999 hours	$59.13	$75.93	$92.72
Apprentice: 4,000-4,999 hours	$61.11	$78.90	$96.68
Apprentice: 5,000-5,999 hours	$63.09	$81.87	$100.64

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$82.26
10th hour	$82.26
Beyond 10 hours	$82.26
Saturday	
First 8 hours	$82.26
9th hour	$99.44
10th hour	$99.44
Beyond 10 hours	$99.44
Sunday/Holiday	$99.44

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - Skidsteer Operator	**Operating Engineer**	**04/04/2025**

Classification Description: Skidsteer forklift when working with fence and Door companies

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$65.69	$83.17	$100.65

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$83.17
10th hour	$83.17
Beyond 10 hours	$83.17
Saturday	
First 8 hours	$83.17
9th hour	$83.17
10th hour	$83.17
Beyond 10 hours	$83.17
Sunday/Holiday	$100.65

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - TDH, Backhoe	**Operating Engineer**	**04/04/2025**

Classification Description: Hoisting Operator, Two Drum Hoist, Rubber Tire Backhoe

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$75.41	$97.11	$118.82

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$97.11
10th hour	$97.11
Beyond 10 hours	$97.11
Saturday	
First 8 hours	$97.11
9th hour	$97.11
10th hour	$97.11
Beyond 10 hours	$97.11
Sunday/Holiday	$118.82

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Sewer Relining Operator - Class II	**Operating Engineer**	**04/04/2025**

Classification Description: Class II-Operator of hot water heaters and circulation system; water jetters; and vacuum and mechanical debris removal systems and those assisting.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$50.80	$68.49	$86.18

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$66.30
10th hour	$66.30
Beyond 10 hours	$66.30
Saturday	
First 8 hours	$66.30
9th hour	$66.30
10th hour	$66.30
Beyond 10 hours	$66.30
Sunday/Holiday	$81.79

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Marine Construction and Dredging Class I - OE324	**Operating Engineer, Dredge or Marine Engineer**	**04/04/2025**

Classification Description: Craft Foreman, Diver/Wet Tender, Engineer, Engineer (hydraulic dredge), Blaster

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$84.30	$110.05	$135.80

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$110.05
10th hour	$110.05
Beyond 10 hours	$110.05
Saturday	
First 8 hours	$110.05
9th hour	$110.05
10th hour	$110.05
Beyond 10 hours	$110.05
Sunday/Holiday	$135.80

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Marine Construction and Dredging Class II A - OE324	**Operating Engineer, Dredge or Marine Engineer**	**04/04/2025**

Classification Description: Crane, Backhoe, Material Handler, All Self-Propelled Drill Rigs, Mechanic/Welder, Asst. Engineer (hydraulic dredge), Leverman (hydraulic dredge), Diver Tender.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$82.80	$107.80	$132.80

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$107.80
10th hour	$107.80
Beyond 10 hours	$107.80
Saturday	
First 8 hours	$107.80
9th hour	$107.80
10th hour	$107.80
Beyond 10 hours	$107.80
Sunday/Holiday	$132.80

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Marine Construction and Dredging Class II B - OE324	**Operating Engineer, Dredge or Marine Engineer**	**04/04/2025**

Classification Description: Friction, Lattice Boom, or Crane License Cert., Endorse Tug or Tow Boat Operator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$85.80	$112.30	$138.80

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$112.30
10th hour	$112.30
Beyond 10 hours	$112.30
Saturday	
First 8 hours	$112.30
9th hour	$112.30
10th hour	$112.30
Beyond 10 hours	$112.30
Sunday/Holiday	$138.80

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Marine Construction and Dredging Class III - OE324	**Operating Engineer, Dredge or Marine Engineer**	**04/04/2025**

Classification Description: Deck Equipment Operator, (Machineryman), Maintenance of Crane, Tug/Launch Operator, Loader/Dozer on Barge, Deck Machinery, etc.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$78.30	$101.05	$123.80

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$101.05
10th hour	$101.05
Beyond 10 hours	$101.05
Saturday	
First 8 hours	$101.05
9th hour	$101.05
10th hour	$101.05
Beyond 10 hours	$101.05
Sunday/Holiday	$123.80

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Marine Construction and Dredging Class IV - OE324	**Operating Engineer, Dredge or Marine Engineer**	**04/04/2025**

Classification Description: Deck Equipment Operator, Machineryman/Fireman, (4 equipment units or more), Off Road Trucks, Deck
Hand, Tug/Engineer, Crane Maint. (50 ton and under/Backhoe 115,000 lbs. or less), Asst. Tug Operator, Blaster Helper.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$73.35	$93.85	$114.35

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$93.85
10th hour	$93.85
Beyond 10 hours	$93.85
Saturday	
First 8 hours	$93.85
9th hour	$93.85
10th hour	$93.85
Beyond 10 hours	$93.85
Sunday/Holiday	$114.35

Four 10-hour days allowed? - No
Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - AC	**Operating Engineer, General Construction & Underground**	**04/04/2025**

Classification Description: Compressor or Welding Machine

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work not performed due to weather, Monday-Thursday may be scheduled on Friday.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$56.05	$69.32	$82.58

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$69.32
10th hour	$69.32
Beyond 10 hours	$69.32
Saturday	
First 8 hours	$69.32
9th hour	$82.58
10th hour	$82.58
Beyond 10 hours	$82.58
Sunday/Holiday	$82.58

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Underground-324-Class I	**Operating Engineer, General Construction & Underground**	**04/04/2025**

Classification Description: Class I Equipment-Air Compressors in Manifold with throttle valve Auto Grade or similar type machine
Backfill Tamper Backhoe
Backhoe on Farm Type Tractor45 H.P. & over. Ballast Regulator (R.R.)
Batch Plant (concrete - central mix) Batch Plant Operator (concrete) Blade Grader Operator
Bulldozer
Caisson Drilling Machine Cherry Picker--15 ton or over Clamshell
Concrete/Asphalt Saw Operator - Power Driven (3yrs experience or more) Concrete Belt Placer (Formless)
Concrete Cure/Finish Machine Operator
Concrete Mixer 21 cu. ft. or over Concrete Paver [two (2) drums or larger] Concrete Pump (Truck Mount)
Concrete Pump (3 inch and over) Concrete Pump with Boom Operator Conveyor Loader Operator (Euclid type) Core Drilling Machine
Crane (Crawler, truck type or pile driving)
Crane or De1Tick with any attachment incl. clamshell, dragline, shovel, backhoe, etc. Directional Drill/Boring Machine Operator
Dozer Dragline
Dredge Engineer Dredge Operator
Drilling Machine on which the drill is an integral part
Earth Mover--rubber tired--(paddle wheel, 619, 631, TS-24 or similar type) Earth Mover rubber tired--tandem ($.50 cents per hr. added for each bowl) Elevating
Grader Operator
End Loader
End Loader Operator (1½ yard capacity and over)
Excavator
Farm type tractor with attached pan
Finishing Machine Operator (Asphalt or Concrete) Foreman/Operating Engineer
Forklift (10 ton or over)
GPS or Electronic Grade on motorized equipment Gradall and similar type machine
Grader
Gravel Processing plant (portable) Operator of Guard Rail Post Driver Haul Units (off-highway) Helicopter crew
Highlift Shovel--1-1 /2 cu. yd. or over Hoisting Engineer
Horizontal Directional Drill Hydraulic Boom Truck
Hydro demolition equipment (water blaster) Hydro Excavator
Loader--Self-propelled (Belt-Chain- Wheel) (Holland or similar type) Locomotive and/or Dinkey Engine
Mechanic Milling Machine
Mucking Machine
Operator of Guard Rail Post Driver Paver Operator - Concrete
Pile Driver--Skid or Crawler Power Shovel
Rock Breaking Plant
Rock Crushing Plant (Portable)
Root Rake, Tractor Mounted Sand Blaster Vacuum Roto Mill
Scraper Self-Propelled or Tractor Drawn

Self-propelled Widener or Gravel distributing shoulder machine Shovel Operator
Side Boom Tractor (type D-4 or equivalent or larger) Slope Paver
Stump Remover Tractor Mounted Surface Heater & Planer
Surface Roller with Dozer Blade
Swinging Boom Truck (over 12-ton capacity) Tilling Machine or (Roto Grader)
Tractor Operator
Tractor--Boom, Winch or Hoe Head Tractor--Push
Tractor with Scoop Tractor Mounted Spreader Tree Mover
Trench Machine (ladder or wheel type) Trencher (over 8ft. digging capacity) Tugboat Operator
Tunnel Boring Machine Tunnel Shield
Vacuum Machine/Truck Operator Well Drilling Machine
Well Drilling Rig
Winch Truck with A Frame

Wage Rates

	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$68.12	$87.01	$105.89
Apprentice: Apprentice Engineer 0-999 hours	$54.36	$69.57	$84.77
Apprentice: Apprentice Engineer 1,000-1,999 hours	$56.53	$72.83	$89.11
Apprentice: Apprentice Engineer 2,000-2,999 hours	$58.69	$76.06	$93.43
Apprentice: Apprentice Engineer 3,000-3,999 hours	$60.87	$79.33	$97.79
Apprentice: Apprentice Engineer 4,000-4,999 hours	$64.22	$84.36	$104.49
Apprentice: Apprentice Engineer 5,000-5,999 hours	$65.06	$85.62	$106.17

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$87.00
10th hour	$87.00
Beyond 10 hours	$87.00
Saturday	
First 8 hours	$87.00
9th hour	$87.00
10th hour	$87.00
Beyond 10 hours	$87.00
Sunday/Holiday	$105.89

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather Monday through Thursday, then Friday work may be scheduled for the ten (10) hours, at straight-time.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Underground-324-Class II	**Operating Engineer, General Construction & Underground**	**04/04/2025**

Classification Description: Class II Equipment
Air Compressor with Throttle Valve or Clever Brooks type comb. Backhoe (with 3/8-yard bucket or less)
Backhoe on Farm Type Tractor under 45 H.P.
Batch Plant (concrete-dry batch)
Boom Truck (power swing type boom)
Cherry Picker under 15 ton
Crusher
Crusher Operator
Concrete Pump
Concrete Mesh Depressor--independently operated Concrete Spreader--Power Driven
End Dumps when operated by an Operating Engineer End Loader under 1-1/2 cu yd.
Gunite Machine
Head Greaser
Hoist
Lowboy Operator
Mesh or Steel Placer (motorized)
Multiple Tamping Machine (R.R.)
Power Curing Spraying Machine (Formless)
P.C.C. Concrete Belt Placer (form type)
Pull Grader--Power Control
Pump Operator (6" discharge or over, gas diesel, powered or generator of 300 amp or larger)
Refrigerating Machine--Freezing operation Ross Carrier
Self-propelled convey transfer devise. Sheepfoot Roller (self-propelled)
Side Boom Tractor (smaller than D-4 type or equivalent)
Sweeper (Wayne type and similar equipment)
Telescoping laser finish machine (laser screed)
Tractor (pneu-tired, other than backhoe or front-end loader)
Trencher (8ft. digging capacity and smaller)
Trench Machine 24" and under
Tube Float (motorized)
Vac Truck
Washing Plant Operator Welder

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$64.00	$83.38	$102.75

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$80.82
10th hour	$80.82
Beyond 10 hours	$80.82
Saturday	
First 8 hours	$80.82
9th hour	$80.82
10th hour	$80.82
Beyond 10 hours	$80.82
Sunday/Holiday	$97.65

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather Monday through Thursday, then Friday work may be scheduled for the ten (10) hours, at straight-time.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Underground-324-Class III	**Operating Engineer, General Construction & Underground**	**04/04/2025**

Classification Description: Class III Equipment
Air Compressor (600 CFM or larger)
Air Compressor [two (2) or more - less than 600 CFM] Base Paver (Jersey or similar type machine)
Boom Truck (Non swinging, Non powered type boom) Concrete Breaker
Concrete Finishing Machine
Concrete Paver (1 drum - ½ yard or larger) Curb Machine
Elevator (other than passenger) Hoist (one drum)
Jacks - Hydraulic Power-driven multiple jack system Maintenance Man
Mechanics Helper Paving Breaker
Power Broom Self-propelled
Pump [two (2) or more 4 inch up to 6-inch discharge gas or diesel powered-excluding submersible pumps)
Pumpcrete Machine and similar equipment Roller (Earth & Sub-base material) Screening Plant Operator
Spike Machine (R.R.)
Tamper-Multiple Vibrating-Earth and Sub-base material Tractor with Drill--50 H.P. or over Well Point System Wagon Drill (multiple)
Welding Machine or Generator [two (2) or more 300 amp. Or larger -gas or diesel powered]
Well Point System
Widener (Apsco or similar type)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$63.27	$82.28	$101.29

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$79.78
10th hour	$79.78
Beyond 10 hours	$79.78
Saturday	
First 8 hours	$79.78
9th hour	$79.78
10th hour	$79.78
Beyond 10 hours	$79.78
Sunday/Holiday	$96.29

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather
Monday through Thursday, then Friday work may be scheduled for the ten (10)
hours, at straight-time.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Underground-324-Class IV	**Operating Engineer, General Construction & Underground**	**04/04/2025**

Classification Description: Class IV Equipment
Air Compressor Operator (over 250 CFM)
All Mulching Equipment
All Walk Behind or Remote-Control Powered Equipment (autonomous equipment)
Assistant to Engineer Automatic Dry Batch Plant
Belt Spreader (motorized including transfer device by remote, wireless or cable) Boiler
Boom or Winch truck operator
Broom & Belt Machine
Chair Cart (Self-propelled) Concrete Pumps (under 3")
Curing Equipment Operator (self-propelled)
Deck Hand
Digger Post Hole (Power-driven)
End loader Operator (under 3/4-yard capacity)
Extend A Boom Forklift--under 10 Ton
Farm Tractor with attachments Finishing Machine (concrete)
Forklift under 10 ton
Form Grader (if motorized)
Georgia Buggy -Power wheel barrel l ¾ yard with a seat Generator (15 kw or greater)
Greaser Helper
Hydraulic pipe pushing machine Mechanical Heater
Mechanics Helper
Outboard or Inboard Motorboat Power Bin Operator
Pug Mill
Pumps - [two (2) or more up to 4 in. discharge if used three (3) hours or more a day - gas or diesel powered- excluding submersible pumps]
Roller (other than asphalt)
Seaman Tiller
Skid Steer
Stump Remover (Grinder)
Sweeper (Wayne type and similar equipment) Tamper
Trencher (service)
Vibratory Compaction Equipment Operator (6 ft. wide or over)
Walk Behind Forklift
Water Wagon

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$62.70	$81.43	$100.15

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$78.96
10th hour	$78.96
Beyond 10 hours	$78.96
Saturday	
First 8 hours	$78.96
9th hour	$78.96
10th hour	$78.96
Beyond 10 hours	$78.96
Sunday/Holiday	$95.22

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather Monday through Thursday, then Friday work may be scheduled for the ten (10) hours, at straight-time.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Underground-324-Class V	**Operating Engineer, General Construction & Underground**	**04/04/2025**

Classification Description: Class V Equipment
Concrete/Asphalt Saw Operator- Power Driven (Less than 3 yrs. experience) Density/Soil Engineer
Directional Boring Utility Man
Discharge Pumps 4" or less (1 - 4 units) Dump Truck Operator
Dumper (Wagon, T1uck, Etc.) - or trade Fence Erector /Power Driven
Guard Post Driver Operator (power driven) Hydra Seeder
Light Plants (1 to 5 units) Oiler Fireman
Operator of minor equip.
Roto Mill Utility Grade Control Operator
Scissor lifts and basket lifts where used for material hoisting
Sign Installer/Sign Installer with Remote Control Operated Equipment
Straw Blower or Brush Mulcher
Top Man, And Railroad Track and Trestle Engineer Utility Engineer
Water Blasting Utility Engineer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$39.95	$53.88	$67.80

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$52.06
10th hour	$52.06
Beyond 10 hours	$52.06
Saturday	
First 8 hours	$52.06
9th hour	$52.06
10th hour	$52.06
Beyond 10 hours	$52.06
Sunday/Holiday	$64.17

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather
Monday through Thursday, then Friday work may be scheduled for the ten (10)
hours, at straight-time.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Crane Operator - 324 B400	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane Operator w/400' Boom or Longer w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$81.86	$106.37	$130.88

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$106.37
10th hour	$106.37
Beyond 10 hours	$106.37
Saturday	
First 8 hours	$106.37
9th hour	$106.37
10th hour	$106.37
Beyond 10 hours	$106.37
Sunday/Holiday	$130.88

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time over 12 hours Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 A300	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane with boom & jib or leads 300' or longer
Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$79.36	$102.78	$126.20

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$102.78
10th hour	$102.78
Beyond 10 hours	$102.78
Saturday	
First 8 hours	$102.78
9th hour	$102.78
10th hour	$102.78
Beyond 10 hours	$102.78
Sunday/Holiday	$126.20

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time over 12 hours Mon-Sat.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 A400	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane with boom & jib or leads 400' or longer
Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$80.86	$104.94	$129.01

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$104.93
10th hour	$104.93
Beyond 10 hours	$104.93
Saturday	
First 8 hours	$104.93
9th hour	$104.93
10th hour	$104.93
Beyond 10 hours	$104.93
Sunday/Holiday	$129.01

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time over 12 hours/day Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 A50	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Tower Crane & Derrick Operator 50' or More

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$77.14	$99.59	$122.05

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$99.59
10th hour	$99.59
Beyond 10 hours	$99.59
Saturday	
First 8 hours	$99.59
9th hour	$99.59
10th hour	$99.59
Beyond 10 hours	$99.59
Sunday/Holiday	$122.05

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 B140	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane Operator w/140' of /Boom or Longer w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$78.59	$101.68	$124.76

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$101.67
10th hour	$101.67
Beyond 10 hours	$101.67
Saturday	
First 8 hours	$101.67
9th hour	$101.67
10th hour	$101.67
Beyond 10 hours	$101.67
Sunday/Holiday	$124.76

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 B220	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane Operator w/220' of Boom or Longer w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$78.86	$100.76	$123.97

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$102.06
10th hour	$102.06
Beyond 10 hours	$102.06
Saturday	
First 8 hours	$102.06
9th hour	$102.06
10th hour	$102.06
Beyond 10 hours	$102.06
Sunday/Holiday	$125.27

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 hours Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 B300	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane Operator w/300' of Boom or Longer w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$80.36	$104.22	$128.07

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$104.22
10th hour	$104.22
Beyond 10 hours	$104.22
Saturday	
First 8 hours	$104.22
9th hour	$104.22
10th hour	$104.22
Beyond 10 hours	$104.22
Sunday/Holiday	$128.07

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time over 12 hours Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 B50	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Tower Crane & Derrick Operator 50' or more w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$78.14	$101.03	$123.92

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$101.03
10th hour	$101.03
Beyond 10 hours	$101.03
Saturday	
First 8 hours	$101.03
9th hour	$101.03
10th hour	$101.03
Beyond 10 hours	$101.03
Sunday/Holiday	$123.92

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - 324 PRE60118	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Oiler/pumps over 6" **Applies to Operators who have previously worked under this classification PRIOR to 6/1/18**

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$61.22	$76.76	$92.29

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$76.75
10th hour	$76.75
Beyond 10 hours	$76.75
Saturday	
First 8 hours	$76.75
9th hour	$76.75
10th hour	$76.75
Beyond 10 hours	$76.75
Sunday/Holiday	$92.29

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer - EF	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Extended boom forklift over 5,000 lb capacity, 1 Drum Hoist

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$72.21	$92.53	$112.84

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$92.53
10th hour	$92.53
Beyond 10 hours	$112.84
Saturday	
First 8 hours	$92.53
9th hour	$92.53
10th hour	$92.53
Beyond 10 hours	$112.84
Sunday/Holiday	$112.84

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW120	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane w/ 120' boom or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$74.14	$95.24	$116.33

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$95.24
10th hour	$95.24
Beyond 10 hours	$116.33
Saturday	
First 8 hours	$95.24
9th hour	$95.24
10th hour	$95.24
Beyond 10 hours	$116.33
Sunday/Holiday	$116.33

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW120O	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane w/ 120' boom or longer w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$75.01	$96.54	$118.07

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$96.54
10th hour	$96.54
Beyond 10 hours	$118.07
Saturday	
First 8 hours	$96.54
9th hour	$96.54
10th hour	$96.54
Beyond 10 hours	$118.07
Sunday/Holiday	$118.07

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW140	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane w/ 140' boom or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$75.19	$96.80	$118.41

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$96.80
10th hour	$96.80
Beyond 10 hours	$118.41
Saturday	
First 8 hours	$96.80
9th hour	$96.80
10th hour	$96.80
Beyond 10 hours	$118.41
Sunday/Holiday	$118.41

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW140O	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane w/ 140' boom or longer W/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$76.19	$98.24	$120.28

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$98.24
10th hour	$98.24
Beyond 10 hours	$120.28
Saturday	
First 8 hours	$98.24
9th hour	$98.24
10th hour	$98.24
Beyond 10 hours	$120.28
Sunday/Holiday	$120.28

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW220	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Boom & Jib 220' or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$76.46	$98.62	$120.78

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$98.62
10th hour	$98.62
Beyond 10 hours	$120.78
Saturday	
First 8 hours	$98.62
9th hour	$98.62
10th hour	$98.62
Beyond 10 hours	$120.78
Sunday/Holiday	$120.78

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW220O	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane w/ 220' boom or longer w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$74.01	$95.11	$116.20

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$95.11
10th hour	$95.11
Beyond 10 hours	$116.20
Saturday	
First 8 hours	$95.11
9th hour	$95.11
10th hour	$95.11
Beyond 10 hours	$116.20
Sunday/Holiday	$116.20

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW300	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Boom & Jib 300' or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$76.96	$99.34	$121.72

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$99.34
10th hour	$99.34
Beyond 10 hours	$121.72
Saturday	
First 8 hours	$99.34
9th hour	$99.34
10th hour	$99.34
Beyond 10 hours	$121.72
Sunday/Holiday	$121.72

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW300O	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane w/ 300' boom or longer w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$77.96	$100.78	$123.59

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$100.78
10th hour	$100.78
Beyond 10 hours	$123.59
Saturday	
First 8 hours	$100.78
9th hour	$100.78
10th hour	$100.78
Beyond 10 hours	$123.59
Sunday/Holiday	$123.59

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW400	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Boom & Jib 400' or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$78.46	$101.49	$124.52

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$101.49
10th hour	$101.49
Beyond 10 hours	$124.52
Saturday	
First 8 hours	$101.49
9th hour	$101.49
10th hour	$101.49
Beyond 10 hours	$124.52
Sunday/Holiday	$124.52

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW400O	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane w/ 400' boom or longer w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$79.46	$102.93	$126.39

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$102.93
10th hour	$102.93
Beyond 10 hours	$126.39
Saturday	
First 8 hours	$102.93
9th hour	$102.93
10th hour	$102.93
Beyond 10 hours	$126.39
Sunday/Holiday	$126.39

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWCO	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane Operator, Job Mechanic, 3 Drum Hoist & Excavator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$73.65	$94.59	$115.53
Apprentice: 0-999 hours	$59.16	$76.02	$92.88
Apprentice: 1,000-1,999 hours	$61.56	$79.63	$97.68
Apprentice: 2,000-2,999 hours	$63.96	$83.22	$102.48
Apprentice: 3,000-3,999 hours	$66.38	$84.18	$101.98
Apprentice: 4,000-4,999 hours	$68.78	$90.46	$112.12
Apprentice: 5,000 hours	$71.20	$91.09	$110.99

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$94.59
10th hour	$94.59
Beyond 10 hours	$115.53
Saturday	
First 8 hours	$94.59
9th hour	$94.59
10th hour	$94.59
Beyond 10 hours	$115.53
Sunday/Holiday	$115.53

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWCO-O	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Crane Operator w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$74.65	$96.03	$117.40

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$96.03
10th hour	$96.03
Beyond 10 hours	$117.40
Saturday	
First 8 hours	$96.03
9th hour	$96.03
10th hour	$96.03
Beyond 10 hours	$117.40
Sunday/Holiday	$117.40

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWCW	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Compressor or Welder Operator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$37.03	$49.48	$61.92

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$47.85
10th hour	$47.85
Beyond 10 hours	$58.67
Saturday	
First 8 hours	$47.85
9th hour	$47.85
10th hour	$47.85
Beyond 10 hours	$58.67
Sunday/Holiday	$58.67

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWHO	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Hoisting Operator, 2 Drum Hoist, & Rubber Tire Backhoe

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$73.01	$93.67	$114.33

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$93.67
10th hour	$93.67
Beyond 10 hours	$114.33
Saturday	
First 8 hours	$93.67
9th hour	$93.67
10th hour	$93.67
Beyond 10 hours	$114.33
Sunday/Holiday	$114.33

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWO	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$53.42	$67.61	$81.80

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$65.74
10th hour	$65.74
Beyond 10 hours	$78.06
Saturday	
First 8 hours	$65.74
9th hour	$65.74
10th hour	$65.74
Beyond 10 hours	$78.06
Sunday/Holiday	$78.06

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWTD50	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Tower Crane & Derrick where work is 50' or more

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$74.74	$96.16	$117.57

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$96.16
10th hour	$96.16
Beyond 10 hours	$117.57
Saturday	
First 8 hours	$96.16
9th hour	$96.16
10th hour	$96.16
Beyond 10 hours	$117.57
Sunday/Holiday	$117.57

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWTD50 O	**Operating Engineer, Steel Work**	**04/04/2025**

Classification Description: Tower Crane & Derrick 50' or more w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$75.84	$97.69	$119.54

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$97.69
10th hour	$97.69
Beyond 10 hours	$119.54
Saturday	
First 8 hours	$97.69
9th hour	$97.69
10th hour	$97.69
Beyond 10 hours	$119.54
Sunday/Holiday	$119.54

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Painter	**Painter**	**04/04/2025**

Classification Description: Painter

4 10 hour days allowed on consecutive days, Monday-Friday. Make up day allowed M-F for work missed due to holidays or inclement weather.

Wage Rates

	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$41.48	$53.64	$65.79
Apprentice: 1st year	$29.33	$35.41	$41.49
Apprentice: 2nd year	$31.76	$39.05	$46.35
Apprentice: 3rd year	$35.40	$44.51	$53.63
Apprentice: 4th year	$39.05	$49.99	$60.93

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$53.64
10th hour	$53.64
Beyond 10 hours	$53.64
Saturday	
First 8 hours	$53.64
9th hour	$53.64
10th hour	$53.64
Beyond 10 hours	$53.64
Sunday/Holiday	$65.79

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Monday or Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Plumber, Pipefitter, Welder - Z2	**Plumber**	**04/04/2025**

Classification Description: Plumber, Pipefitter, Welder

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$49.49	$63.80	$78.10
Apprentice: 1st 6 months	$30.54	$37.69	$44.84
Apprentice: 2nd 6 months	$32.52	$40.39	$48.26
Apprentice: 3rd 6 months	$34.50	$43.09	$51.67
Apprentice: 4th 6 months	$36.48	$45.78	$55.08
Apprentice: 5th 6 months	$38.46	$48.47	$58.49
Apprentice: 6th 6 months	$40.44	$51.17	$61.90
Apprentice: 7th 6 months	$42.42	$53.87	$65.31
Apprentice: 8th 6 months	$44.40	$56.56	$68.72
Apprentice: 9th & 10th 6 months	$46.38	$59.25	$72.13

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$63.80
10th hour	$63.80
Beyond 10 hours	$63.80
Saturday	
First 8 hours	$63.80
9th hour	$63.80
10th hour	$63.80
Beyond 10 hours	$63.80
Sunday/Holiday	$78.10

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 tens allowed M-Th; Friday makeup day

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Roofer - NL	**Roofer/Waterproofer**	**04/04/2025**

Classification Description: Commercial Roofer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$41.35	$53.75	$66.15
Apprentice: Apprentice 1	$31.62	$39.59	$47.56
Apprentice: Apprentice 2	$33.03	$41.66	$50.29
Apprentice: Apprentice 3	$34.39	$43.66	$52.92
Apprentice: Apprentice 4	$35.76	$45.67	$55.58
Apprentice: Apprentice 5	$37.12	$47.67	$58.21
Apprentice: Apprentice 6	$37.92	$48.82	$59.72

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$53.86
10th hour	$53.86
Beyond 10 hours	$53.86
Saturday	
First 8 hours	$53.86
9th hour	$53.86
10th hour	$53.86
Beyond 10 hours	$53.86
Sunday/Holiday	$66.26

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Sheet Metal Worker	**Sheet Metal Worker**	**04/04/2025**

Classification Description: Sheet Metal Worker
4 10s allowed as consecutive days, M-Th or T-F

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$55.78	$70.79	$85.80
Apprentice: 1st year	$23.74	$31.25	$38.75
Apprentice: 2nd year	$28.99	$38.00	$47.00
Apprentice: 3rd year	$34.26	$44.77	$55.27
Apprentice: 4th year	$39.53	$51.54	$63.55

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$70.79
10th hour	$70.79
Beyond 10 hours	$85.80
Saturday	
First 8 hours	$70.79
9th hour	$70.79
10th hour	$70.79
Beyond 10 hours	$85.80
Sunday/Holiday	$85.80

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Sprinkler Fitter	**Sprinkler Fitter**	**04/04/2025**

Classification Description: Sprinkler Fitter

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$60.34	$78.45	$96.56
Apprentice: Class 1	$24.57	$32.72	$40.87
Apprentice: Class 10	$52.07	$68.37	$84.67
Apprentice: Class 2	$26.38	$35.43	$44.49
Apprentice: Class 3	$39.14	$49.10	$59.06
Apprentice: Class 4	$40.95	$51.82	$62.68
Apprentice: Class 5	$43.01	$54.78	$66.55
Apprentice: Class 6	$44.82	$57.49	$70.17
Apprentice: Class 7	$46.63	$60.21	$73.79
Apprentice: Class 8	$48.45	$62.94	$77.43
Apprentice: Class 9	$50.26	$65.65	$81.05

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	$78.45
10th hour	$78.45
Beyond 10 hours	$78.45
Saturday	
First 8 hours	$78.45
9th hour	$78.45
10th hour	$78.45
Beyond 10 hours	$78.45
Sunday/Holiday	$96.56

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Truck Driver - RB1	**Truck Driver**	**04/04/2025**

Classification Description: on all trucks of 8 cubic yard capacity or less (except dump trucks of 8 cubic yard capacity or over, tandem axle trucks, transit mix and semis, euclid type equipment, double bottoms and low boys)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$53.95	$70.30	$86.64

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$69.32
10th hour	$69.32
Beyond 10 hours	$69.32
Saturday	
First 8 hours	$69.32
9th hour	$69.32
10th hour	$69.32
Beyond 10 hours	$69.32
Sunday/Holiday	$84.69

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Truck Driver - RB1A	**Truck Driver**	**04/04/2025**

Classification Description: of all trucks of 8 cubic yard capacity or over semi, tractor trailer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$54.10	$70.52	$86.94

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$69.55
10th hour	$69.55
Beyond 10 hours	$69.55
Saturday	
First 8 hours	$69.55
9th hour	$69.55
10th hour	$69.55
Beyond 10 hours	$69.55
Sunday/Holiday	$84.99

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Truck Driver - RB1B	**Truck Driver**	**04/04/2025**

Classification Description: on euclid type equipment, Pole drier, lowboy, doubles, fuel, bus, water

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$54.20	$69.70	$85.19

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$69.70
10th hour	$69.70
Beyond 10 hours	$69.70
Saturday	
First 8 hours	$69.70
9th hour	$69.70
10th hour	$69.70
Beyond 10 hours	$69.70
Sunday/Holiday	$85.19

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Truck Driver - RB2	**Truck Driver**	**04/04/2025**

Classification Description: of all trucks of 8 cubic yd capacity or over

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$44.10	$48.81	$49.80

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$56.55
10th hour	$56.55
Beyond 10 hours	$56.55
Saturday	
First 8 hours	$56.55
9th hour	$56.55
10th hour	$56.55
Beyond 10 hours	$56.55
Sunday/Holiday	$56.55

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Truck Driver - RB2A	**Truck Driver**	**04/04/2025**

Classification Description: of all trucks of 8 cubic yard capacity or less (except dump trucks of 8 cubic yard capacity or over, tandem axle trucks, transit mix and semis, euclid type equipment, double bottoms and low boys)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$44.00	$48.66	$49.60

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$56.40
10th hour	$56.40
Beyond 10 hours	$56.40
Saturday	
First 8 hours	$56.40
9th hour	$56.40
10th hour	$56.40
Beyond 10 hours	$56.40
Sunday/Holiday	$56.40

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Truck Driver - RB2B	**Truck Driver**	**04/04/2025**

Classification Description: on euclid type equipment

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$44.25	$49.04	$0.00

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$56.78
10th hour	$56.78
Beyond 10 hours	$56.78
Saturday	
First 8 hours	$56.78
9th hour	$56.78
10th hour	$56.78
Beyond 10 hours	$56.78
Sunday/Holiday	$56.78

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 2	**Wiring System Installer; Technology Circuits or Systems Installer**	**04/04/2025**

Classification Description: Tap cutter/CCTV Tech/Grout Equipment Operator: unit driver and operator of CCTV; grouting equipment and tap cutting equipment

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$32.70	$44.95	$57.19

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$44.95
10th hour	$44.95
Beyond 10 hours	$44.95
Saturday	
First 8 hours	$44.95
9th hour	$44.95
10th hour	$44.95
Beyond 10 hours	$44.95
Sunday/Holiday	$44.95

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 3	**Wiring System Installer; Technology Circuits or Systems Installer**	**04/04/2025**

Classification Description: CCTV Technician/Combo Unit Operator: unit driver and operator of cctv unit or combo unit in connection with normal cleaning and televising work

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$31.45	$43.07	$54.69

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$43.07
10th hour	$43.07
Beyond 10 hours	$43.07
Saturday	
First 8 hours	$43.07
9th hour	$43.07
10th hour	$43.07
Beyond 10 hours	$43.07
Sunday/Holiday	$43.07

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Antrim

Classification Name	Category	Last Updated
Sewer Relining Operator - Class I	**Wiring System Installer; Technology Circuits or Systems Installer**	**04/04/2025**

Classification Description: Class I-Operator of audio visual CCTV system including remote in-ground cutter and other equipment used in conjunction with CCTV system.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	$52.84	$69.23	$85.62
Apprentice: 0-6 months	$41.58	$54.66	$67.74
Apprentice: 6-12 months	$45.31	$60.26	$75.20

Overtime Provisions	
Over 8-hour day/40-hour week	
9th hour	$69.23
10th hour	$69.23
Beyond 10 hours	$69.23
Saturday	
First 8 hours	$69.23
9th hour	$69.23
10th hour	$69.23
Beyond 10 hours	$69.23
Sunday/Holiday	$85.62

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

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. Specification Conventions.

1.2 CONTRACT DESCRIPTION

A. Work of the Project includes comprise remodeling of the Ellsworth Elementary School building and includes selective demolition and reconstruction of interior spaces, and reroofing of portions of the building as depicted.

B. Perform Work of each Bid Category under stipulated sum contract with Construction Manager in accordance with Conditions of Contract.
   1. Contract “A” will include the remodeling portion of the project and include Bid Categories 6.0, 9.3, 9.5, 9.9, 15.0 and 16.0.
   2. Contract “B” will include the reroofing portion of the project and will include Bid Category 7.0 only.

C. Work of each subcontract is described in each respective Bid Category.

1.3 WORK BY OWNER

A. Items noted NIC (Not in Contract), movable cabinets, and furnishings will be furnished and installed by Owner after Substantial Completion.

B. Asbestos identification and abatement will be completed by the Owner’s independent Contractor prior to the commencement of Work under this contract.

1.4 OWNER SUPPLIED PRODUCTS – Not Used

1.5 CONTRACTOR'S USE OF SITE AND PREMISES

A. Limit use of site and premises to allow:
   1. Owner occupancy.
   2. Work by Others and Work by Owner.
   3. Use of site and premises by the public.

B. Tobacco use of any kind, including vaping in school buildings or on school sites (including in cars and trailers) is prohibited by law.

C. Vehicular access to the site is limited to existing paved or gravel drives and parking areas. Vehicular access with not be permitted across lawns or concrete sidewalks or other site improvements except where required to access the work area upon approval of the Construction Manager.

D. Coordinate site and building access routes with Owner and limit use of Owner parking areas during school operations.

1.6 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.

B. Contractor is responsible for the entire Work identified in the Contract Documents without regard to the specific location of the information within the Contract Documents.

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.

C. Schedule of values.

D. Applications for payment.

E. Change procedures.

F. Defect assessment.

G. Unit Prices

H. Alternates.

1.2 CASH ALLOWANCES

A. Costs Included in Cash Allowances: Cost of product to Contractor or Subcontractor, less applicable trade discounts; product delivery to site and handling at site, including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing.

B. Architect/Engineer Responsibilities:
   1. Confirm quantities.
   2. Prepare Change Order.

C. Contractor Responsibilities:
   1. Obtain proposals from suppliers and installers and offer recommendations.
   2. Execute purchase agreement with supplier and installer.
   3. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
   4. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

D. Differences in costs will be adjusted by Change Order.

E. Allowances Schedule:
   1. Refer to Bid Category sections for descriptions of Cash Allowances to be included in Bids.

1.3 CONTINGENCY

A. A Contingency fund has been established by the Owner and will be included in the project cost.

B. Funds will be moved from the contingency as needed to cover changes in the work by Change Order.

1.4 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 Construction Manager-Subcontractor 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.

E. Include within 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.

1.5 APPLICATIONS FOR PAYMENT

A. Submit one copy 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. Submit a pencil copy to the attention of the Construction Manager by the 20th of each month for approval. Once approved forward a final copy by mail to the office of the Construction Manager.

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.

G. Submit waivers of lien for each subcontractor and supplier included on the sworn statement. 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.

1.6 CHANGE PROCEDURES

A. The following procedures, as they apply, will flow from the Architect / Engineer, through the Construction Manager to the contractors and from the contractors to the Construction Manager.

B. Submittals: Submit name of individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

C. 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.

D. 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.

E. Contractor may 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.

F. 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.

G. 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.

H. 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.

I. 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.

J. 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.

K. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation.

L. Change Order Forms: AIA G701 Change Order.

M. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.

N. 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.

1.7 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.

1.8 UNIT PRICES – Not Used

1.9 ALTERNATES – Not Used

PART 2 ODUCTS - 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 and for portions of Work designated for Owner's partial occupancy.

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 Not Used

1.4 PRECONSTRUCTION MEETING

A. Construction Manager will schedule meeting after Notice of Award.

B. Attendance Required: Owner, Architect/Engineer, Construction Manager, and Subcontractor's.

C. Agenda:
1. Execution of Contracts.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of 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.

D. The Construction Manager shall 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. The Construction Manager will schedule and administer meetings throughout progress of the Work at maximum bi-weekly intervals.

B. The Construction Manager will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: Construction Manager's Project Manager and On-site Superintendent, Subcontractor's Project Manager and Job Superintendent, major 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. The Construction Manager shall 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 maximum weekly intervals. The purpose of the visits will be to monitor the progress and quality of the work.

B. The Construction Manager'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

A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific section.

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

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

D. Prepare agenda and preside at meeting:
1. Review conditions of installation, preparation and installation procedures.
2. Review coordination with related work.

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.

1.8 PROJECT RECORD DOCUMENTS

A. The Construction Manager shall maintain and update Project Record Drawings (As-Built Drawings) on site during construction. Each Contractor 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 Construction Manager any conditions that will prevent satisfactory accomplishment of their work.

B. Failure to notify the Construction Manager 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. Where patching areas of masonry construction subject to wind loading, remove and replace unit. Where patching penetrations in masonry not subject to wind loading, remove face shell and replace with masonry soap matching existing masonry material. Where concealed from view, penetrations in masonry may be patched with mortar. Patching exposed to view masonry penetrations with mortar will not be accepted.

J. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of penetrated element.

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

L. Identify hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.

3.3 SPECIAL PROCEDURES

A. Materials: As specified in product sections; match existing with new products and salvaged products for patching and extending work.

B. Employ skilled and experienced installer to perform alteration work.

C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

E. Remove debris and abandoned items from area and from concealed spaces.

F. Prepare surface and remove surface finishes to permit installation of new work and finishes.

G. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.

H. Remove, cut, and patch Work in manner to minimize damage and to permit restoring products and finishes to original or specified condition.

I. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified condition for each material, with neat transition to adjacent finishes.

J. Where new Work abuts or aligns with existing, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

K. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Architect/Engineer for review.

L. Finish surfaces as specified in individual product sections.

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. Prepare all submittals as per subsequent instructions below. Scan and transmit electronically to the attention of the Construction Manager. (jerrybrown@sugarconstruction.com).
   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.

B. Apply Contractor's 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.

C. Schedule submittals to expedite Project. Coordinate submission of related items.

D. For each submittal for review, allow 15 days excluding delivery time to and from Construction Manager. Submittals for long lead time items shall be expedited by the Contractor in order to allow for the Owner’s completion schedule. Notify Construction Manager of long lead time items requiring expedited review.

E. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.

F. Allow space on submittals for Construction Manager and Architect/Engineer review stamps.

G. When revised for resubmission, identify changes made since previous submission.

H. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

I. After submittals are electronically returned stamped reviewed by the architect make (4) hard copies with any required corrections and mail to the attention of the Construction Manager.
   1. Provide record copies required by governing authorities which are in addition to copies specified for submittal to Construction Manager.

J. Submittals not requested will not be recognized or processed.

K. Where specified below, retain one copy of each submittal to be turned over to the Owner as record documentation in accordance with Section 01 70 00.

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. Submit separate schedule of submittal dates for shop drawings, product data, and samples, and dates reviewed submittals will be required from Architect/Engineer. Indicate decision dates for selection of finishes.

I. Indicate delivery dates for Owner furnished products.

J. 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 Construction Manager for review by Architect/Engineer for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Mark each copy 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 Construction Manager for review by Architect/Engineer 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 Construction Manager for review by Architect/Engineer 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 Construction Manager for review by 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.
   3. Architect will issue a schedule indicating colors and finishes selected. Construction Manager shall reproduce and distribute.

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 sample.

F. Samples will not be used for testing purposes unless specifically stated in specification section.

1.8 DESIGN DATA

A. Submit to Construction Manager for Architect/Engineer's knowledge as contract administrator and 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 to Construction Manager for Architect/Engineer's knowledge as contract administrator and 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 Construction Manager for transmittal 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 Construction Manager 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 to Construction Manager for Architect/Engineer's benefit as contract administrator and for Owner.

B. Submit report in duplicate within 2 days of observation to Construction Manager for transmittal 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 to Construction Manager for Architect/Engineer's benefit as contract administrator and 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. Tolerances are measured from a common base and are not permitted to stack or 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 – Not Used

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 and Drawings.

D. Verify utility services are available, of correct characteristics, and in correct locations.

E. Report any conditions which would negatively affect the quality, appearance, or performance of the finished Work to the Architect.

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 ventilation.
   4. Telephone service.
   5. Temporary water service.
   6. 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. Security.
   3. Dust control.
   4. Noise control.
   5. Pest control.

D. Removal of utilities, facilities, and controls.

1.2 TEMPORARY ELECTRICITY

A. Permanent convenience receptacles may be utilized during construction.

B. Owner will pay for cost of energy used. Exercise measures to conserve energy.

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Permanent building lighting may be utilized during construction.

B. Owner will pay for cost of energy used. Exercise measures to conserve energy.

1.4 TEMPORARY VENTILATION

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

B. Owner will pay cost of energy used. Exercise measures to conserve energy.

1.5 TELEPHONE SERVICE

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

1.6 TEMPORARY WATER SERVICE

A. Owner will pay cost of temporary water. Exercise measures to conserve energy. Utilize Owner's existing water system, extend and supplement with temporary devices as needed to maintain specified conditions for construction operations.

1.7 TEMPORARY SANITARY FACILITIES

A. Temporary sanitary facilities will be provided by the Construction Manager.

B. Existing facility use is not permitted.

1.8 FIELD OFFICES AND SHEDS

A. A field office will not be provided.

B. Contractors requiring on-site storage of materials and equipment shall provide suitable storage sheds for their own use.

C. Field office and sheds shall be located on paved parking areas in location approved by Owner. Contractors are responsible for restoration of any damage to site resulting from field office or sheds.

1.9 VEHICULAR ACCESS

A. Maintain unimpeded access for emergency vehicles.

B. Maintain access to fire hydrants and control valves free of obstructions.

C. Use existing on-site roads for construction traffic.

D. Vehicle access on sidewalks and stoops is prohibited. Where access to building requires crossing of sidewalks, provide load distribution mats to prevent damage.

1.10 PARKING

A. Use of designated existing on-site streets and driveways used for construction traffic is permitted. Tracked vehicles not allowed on paved areas.

B. Use of designated areas of existing parking facilities used by construction personnel is permitted. Cooperate with the Owner to eliminate conflicts with Owner’s parking requirements.

C. Do not allow heavy vehicles or construction equipment in parking areas.

D. Maintenance:
   1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, and ice.
   2. Maintain existing 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.

E. Removal, Repair:
   1. Repair existing facilities damaged by use, to original condition.

1.11 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.

1.12 FIRE PREVENTION FACILITIES

A. 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.

B. 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.

1.13 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 during construction. Barriers shall be 1 hour fire-rated partitions consisting of wood or metal studs with 5/8 inch Type ‘X’ gypsum board each side. Joints shall be fire-taped. Partitions shall extend from wall to wall, and from floor to underside of roof deck.

C. Provide barricades and covered walkways required by authorities having jurisdiction for public access to existing building.

D. Provide protection for plants designated to remain. Replace damaged plants.

E. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.14 SECURITY

A. Security Program:
   1. Protect Work from theft, vandalism, and unauthorized entry.

2. Initiate program in coordination with Owner's existing security system at project mobilization.
3. Maintain program throughout construction period until Owner occupancy.

1.15 DUST CONTROL

A. Execute Work by methods to minimize raising dust from construction operations.

B. Provide temporary dust partitions as needed to prevent air-borne dust from construction operations from entering adjacent spaces.

C. Provide positive means to prevent air-borne dust from dispersing into or atmosphere.

1.16 NOISE CONTROL

A. Provide methods, means, and facilities to minimize noise produced by construction operations.

B. Limit construction operations that disrupt Owner’s operation to unoccupied time periods.

1.17 PEST CONTROL

A. Provide methods, means, and facilities to prevent pests and insects from entering facility.

1.18 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 installed and 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.

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.

B. Submit to the Construction Manager a list of items remaining to be completed or corrected for final completion. Architect will utilize the Construction Manager’s list as the basis for the final Punch List.

C. Architect will inspect the work and will prepare a list of items to be corrected or completed for final acceptance of the work.

D. 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.

E. 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.

F. Provide submittals to Architect/Engineer required by authorities having jurisdiction.

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

H. Owner will occupy portions of buildings and sites as specified in Section 01 10 00 - Summary.

1.3 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.

C. Clean site; sweep paved areas, rake clean landscaped surfaces.

D. 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 Contractors' 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

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

B. Independent firm will perform services specified in Section 23 05 93.

C. Reports will be submitted by independent firm to Architect/Engineer indicating observations and results of tests and indicating compliance or non-compliance with requirements of Contract Documents.

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. Field changes of dimension and detail.
2. 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. 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.

C. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.

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

E. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

F. 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. Include 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

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. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom manufactured products.

D. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

E. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.

F. Additional Requirements: As specified in individual product specification sections.

G. Include listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

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, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.

G. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; 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, submit documents within ten days after acceptance.
   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 02 41 19

SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Demolishing designated building equipment and fixtures.
2. Demolishing designated construction.
3. Cutting and alterations for completion of the Work.
4. Removing designated items for reuse and Owner's retention.
5. Protecting items designated to remain.
6. Removing demolished materials.

1.2 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Accurately record actual locations of capped utilities, concealed utilities discovered during demolition, and subsurface obstructions.

1.3 QUALITY ASSURANCE

A. Conform to applicable code for demolition work, dust control, and products requiring electrical disconnection and re-connection.

B. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.

C. Obtain required permits from authorities having jurisdiction.

1.4 SCHEDULING

A. Section 01 30 00 - Administrative Requirements: Requirements for scheduling.

B. Schedule Work to coincide with new construction.

C. Cooperate with Owner in scheduling noisy operations and waste removal that may impact Owners operation in adjoining spaces.

D. Coordinate utility and building service interruptions with Owner.
1. Do not disable or disrupt building fire or life safety systems without three days prior written notice to Owner.
2. Schedule tie-ins to existing systems to minimize disruption.
3. Coordinate Work to ensure fire sprinklers, fire alarms, smoke detectors, emergency lighting, exit signs and other life safety systems remain in full operation in occupied areas.

1.5 PROJECT CONDITIONS

A. Conduct demolition to minimize interference with adjacent occupied building areas.

B. Cease operations immediately if structure appears to be in danger and notify Architect/Engineer. Do not resume operations until directed.

PART 2 PRODUCTS - Not Used.

PART 3 EXECUTION

3.1 PREPARATION

A. Notify affected utility companies before starting work and comply with their requirements.

B. Mark location and termination of utilities.

C. Erect and maintain temporary barriers and security devices at locations required for protection of the public, Owner, and existing improvements indicated to remain.

D. Erect and maintain weatherproof closures for exterior openings.

E. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to permit continued Owner occupancy.

F. Prevent movement of structure; provide temporary bracing and shoring required to ensure safety of existing structure.

G. Provide appropriate temporary signage including signage for exit or building egress.

H. Do not close or obstruct building egress path.

I. Do not disable or disrupt building fire or life safety systems without 3 days prior written notice to Owner.

3.2 SALVAGE REQUIREMENTS

A. Owner reserves first right to materials and items of value removed from the work. Conduct review of items to be removed with Owner to identify any materials and/or items of value to be turned over to the Owner in addition to any specified in the Drawings.

B. Tag components and equipment Owner designates for salvage.

C. Protect designated salvage items from demolition operations until items can be removed.

D. Carefully remove building components and equipment indicated to be salvaged.

E. Disassemble as required to permit removal from building.

F. Package small and loose parts to avoid loss.

G. Mark equipment and packaged parts to permit identification and consolidation of components of each salvaged item.

H. Prepare assembly instructions consistent with disassembled parts. Package assembly instructions in protective envelope and securely attach to each disassembled salvaged item.

I. Deliver salvaged items to Owner. Obtain signed receipt from Owner.

3.3 DEMOLITION

A. Conduct demolition to minimize interference with adjacent occupied building areas.

B. Maintain protected egress from, and access to adjacent existing buildings.

C. Cease operations immediately when structure appears to be in danger and notify Architect/Engineer.

D. Disconnect and remove designated utilities within demolition areas.

E. Cap and identify abandoned utilities at termination points when utility is not completely removed. Annotate Record Drawings indicating location and type of service for capped utilities remaining after demolition.

F. Demolish in orderly and careful manner. Protect existing improvements, supporting structural members and items designated to remain.

G. Carefully remove building components indicated to be reused.
   1. Disassemble components as required to permit removal.
   2. Package small and loose parts to avoid loss.
   3. Mark components and packaged parts to permit reinstallation.
   4. Store components, protected from construction operations, until reinstalled.

H. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.

I. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.

J. Remove temporary Work.

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 slabs on grade.

1.2 REFERENCES

A. American Concrete Institute:
   1. ACI 301 - Specifications for Structural Concrete.
   2. ACI 302.1 - Guide for Concrete Floor and Slab Construction.
   3. ACI 305 - Hot Weather Concreting.
   4. ACI 306.1 - Standard Specification for Cold Weather Concreting.
   5. ACI 318 - Building Code Requirements for Structural Concrete.

B. ASTM International:
   1. ASTM C33 - Standard Specification for Concrete Aggregates.
   2. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
   3. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
   4. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
   5. ASTM C595 – Standard Specifications for Blended Hydraulic Cements.
   6. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
   7. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
   8. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
   9. ASTM C1116/C1116M – Standard Specification for Fiber-Reinforced Concrete.
   10. ASTM E1155 - Standard Test Method for Determining Floor Flatness and of Levelness Using the F-number System.
   11. ASTM E1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
   12. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

1.3 SUBMITTALS

A. 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.

B. 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. Maintain concrete temperature after installation at minimum 50 degrees F for minimum 7 days.

1.6 COORDINATION

A. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.1 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.

2.2 REINFORCING

A. Reinforcing Steel: ASTM A615/A615M, 60 ksi yield grade, deformed billet bars, uncoated.

B. Concrete Reinforcing Fibers: ASTM C1116, high strength industrial-grade fibers specifically engineered for secondary reinforcement of concrete.
   1. Manufacturers:
      a. Propex Concrete Systems Model Fibermesh 300.
      b. Substitutions: Or equal.

2.3 ACCESSORIES

A. Bonding Agent: Three component, pre-proportioned, water-based epoxy modified Portland cement bonding agent.
   1. Manufacturers:
      a. Euclid Chemical Company Model Duralprep AC.
      b. Or equal.

B. Vapor Retarder: ASTM E1745 Class B; 15 mil thick clear polyethylene film containing no recycled content; type recommended for below grade application. Furnish joint tape recommended by manufacturer.

C. High Strength Anchoring Adhesive; Hilt HIT-RE 100 Epoxy Anchor or equal.

2.4 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.

2.5 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	Non-air entrained
Fly Ash Content:	20 percent of cementitious materials by weight, maximum
Reinforcing Fiber	As recommended by fiber Manufacturer
Slump	4 inches plus or minus 1 inch

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

1. Do not use calcium chloride nor admixtures containing calcium chloride.

D. Average Compressive Strength Reduction: Not permitted.

E. Ready Mixed Concrete: Mix and deliver concrete in accordance with ASTM C94/C94M.

PART 3 EXECUTION

3.1 PREPARATION

A. Install vapor retarder in accordance with ASTM E1643.

B. Prepare previously placed concrete by cleaning with steel wire brush and applying bonding agent. Remove laitance, coatings, and unsound materials.

C. In locations where new concrete is installed adjacent to existing concrete, dowel new work into existing work with #4 deformed dowels. Drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout. Space dowels at 2’-0” on center maximum. Apply bonding agent to concrete surface in accordance with 3.1.A.

D. Remove debris and ice from formwork, reinforcement, and concrete substrates.

E. Remove water from areas receiving concrete before concrete is placed.

3.2 PLACING CONCRETE

A. Place concrete in accordance with ACI 318.

B. Deposit concrete at final position. Prevent segregation of mix.

C. Consolidate concrete.

D. Screed floors and slabs on grade level.

3.3 CONCRETE FINISHING

A. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1.

B. Steel trowel surfaces receiving carpeting, resilient flooring, seamless flooring, thin set floor tile, and fluid applied flooring.

3.4 CURING AND PROTECTION

A. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.5 TOLERANCES

A. Finish concrete to achieve the following tolerances in measured in accordance with ASTM E1155:
   1. Under thin set tile, resilient tile, carpet or other thin film flooring and exposed to view concrete in non-public areas: F(F) 35 and F(L) 25.

3.6 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.

END OF SECTION

SECTION 04 20 00

UNIT MASONRY

PART 1 GENERAL

1.1 SUMMARY

A. Section includes concrete masonry units, and masonry mortar.

1.2 REFERENCES

A. American Concrete Institute:
   1. ACI 530 - Building Code Requirements for Masonry Structures.
   2. ACI 530.1 - Specifications for Masonry Structures.

B. ASTM International:
   1. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
   2. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
   3. ASTM C216 – Standard Specification for Facing Brick.
   4. ASTM C270 – Standard Specification for Mortar for Unit Masonry.
   5. ASTM C387/C387M - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar
   6. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

1.3 PERFORMANCE REQUIREMENTS

A. Concrete Masonry Compressive Strength (f'm): 1,500 psi; determined by unit strength method.
   1. Concrete Masonry Units: 1,900 psi minimum net area compressive strength.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal requirements.

B. Product Data:
   1. Submit data for masonry units.
   2. Submit data for premix mortar.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 530 Building Code Requirements for Masonry Structures and ACI 530.1 Specification for Masonry Structures.

1.6 QUALIFICATIONS

A. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Cold Weather Requirements: In accordance with ACI 530.1 when ambient temperature or temperature of masonry units is less than 40 degrees F.

C. Hot Weather Requirements: In accordance with ACI 530.1 when ambient temperature is greater than 100 degrees F or ambient temperature is greater than 90 degrees F with wind velocity greater than 8 mph.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Hollow Concrete Masonry Units (CMU) for Above Grade Applications: ASTM C90; light weight.
   1. Medium weight units may be substituted for light weight units only by preapproval of unit texture by Architect.

B. Brick Units: ASTM C216, Type FBS, Grade SW; color, texture and finish to match exiting.

2.2 ACCESSORIES

A. Wall Ties: Corrugated wall ties for brick veneer; hot-dip galvanized.

2.3 MORTAR

A. Pre-packaged Mortar Mixes: ASTM C387/387M, Type S; as manufactured by Spec Mix or equal. Mix and install pre-packaged mortar and grout mixes in accordance with manufactures instructions.

B. Mortar Mixing:
   1. Thoroughly mix mortar in accordance with ASTM C270 in quantities needed for immediate use.
   2. Re-temper only within two hours of mixing.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: coordination and project conditions.

B. Verify field conditions are acceptable and are ready to receive work.

C. Verify items provided by other sections of work are properly sized and located.

D. Verify built-in items are in proper location, and ready for roughing into masonry work.

3.2 PREPARATION

A. Direct and coordinate placement of metal anchors supplied to other sections.

B. Furnish temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent support.

3.3 INSTALLATION

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form bed and head joints of uniform thickness.

C. Coursing of Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches (match existing).
   3. Mortar Joints: Concave.

D. Placing And Bonding:
   1. Lay hollow masonry units with face shell bedding on head and bed joints.
   2. Lay solid masonry units in full bed of mortar, with full head joints.
   3. Anchor new masonry to existing masonry with corrugated wall ties at 16” o.c. vertically.
   4. Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
   5. Remove excess mortar as work progresses.
   6. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment is required, remove mortar and replace.
   7. Perform job site cutting of masonry units with proper tools to assure straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

E. Install veneer wall ties embedded into masonry back-up and veneer at maximum 16 inches oc vertically and 16 inches oc horizontally.

3.4 ERECTION TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

F. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.5 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.

B. Remove excess mortar and mortar smears as work progresses.

C. Replace defective mortar. Match adjacent work.

D. Clean soiled surfaces with cleaning solution.

E. Use non-metallic tools in cleaning operations.

3.6 PROTECTION OF FINISHED WORK

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Protect exposed external corners subject to damage.

C. Protect base of walls and adjacent surfaces from mud and mortar splatter.

D. Protect masonry and other items built into masonry walls from mortar droppings and staining caused by mortar.

END OF SECTION

SECTION 05 12 00

STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Structural framing.

1.2 REFERENCE STANDARDS

A. ASTM International:
   1. ASTM A6 – Standard Specifications for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
   2. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

B. American Welding Society:
   1. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
   2. AWS D1.1 - Structural Welding Code - Steel.

C. SSPC: The Society for Protective Coatings:
   1. SSPC - Steel Structures Painting Manual.
   2. SSPC Paint 15 - Steel Joist Shop Paint.
   3. SSPC SP 3 - Power Tool Cleaning.

1.3 SUBMITTALS

A. Shop Drawings: Submit shop drawings prepared by a professional engineer registered in the state where the Work is located
   1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and bolts.
   2. Connections. Connections not detailed.
   3. Cambers and loads.
   4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

B. Manufacturer's Mill Certificate: Certify products meet or exceed specified requirements.

C. Mill Test Reports: Submit indicating structural strength, destructive and non-destructive test analysis.

D. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.

1.4 QUALIFICATIONS

A. Qualifications for Welding Work: Welders and Welding Procedures: AWS D1.1 qualified within previous 12 months.

PART 2 PRODUCTS

2.1 STRUCTURAL STEEL

A. Angles: ASTM A36/A36M.

2.2 WELDING MATERIALS

A. Welding Materials: AWS D1.1; type required for materials being welded.

2.3 FABRICATION

A. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

B. Fabricate connections for bolt, nut, and washer connectors.

C. Develop required camber for members.

2.4 FINISHES

A. Prepare structural component surfaces in accordance with SSPC SP 3.

B. Shop prime structural steel members. Do not prime surfaces that will be field welded, in contact with concrete, or high strength bolted.

2.5 ACCESSORIES

A. Shop Primer: SSPC Paint 15, Type 1, red oxide.

B. Touch-Up Primer: Match shop primer.

PART 3 EXECUTION

3.1 ERECTION

A. Field weld components indicated on shop drawings.

B. Do not field cut or alter structural members without approval of Architect/Engineer.

C. After erection, touch up welds and abrasions to match shop finishes.

3.2 TOLERANCES

A. Maximum variation for individual pieces from plumb, level, and alignment shall not exceed 1/500 of the axial length of the piece (non-cumulative).

B. Overall Length:
   1. Members with both ends milled for contact bearing: +/- 1/32 inch.
   2. Members without ends milled for contact bearing which are framed to other members:
      a. Members 30 feet or less in length: +/- 1/16 inch.
      b. Members over 30 feet in length: +/- 1/8 inch.

C. Straightness: Structural members may vary from straightness within the tolerances allowed for wide flange shapes by ASTM Specification A6, except that the tolerance on deviation from straightness of compression members is 1/1,000 of the axial length between points which are to be laterally supported.

END OF SECTION

SECTION 07 54 19

POLYVINYL-CHLORIDE ROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Partial removal of roofing system components including designated roof coverings, designated flashings and edge metal trim. Roof recovering system including slip sheet as designated and/or required by manufacturer, insulation as designated, roof covering, accessories, flashings and edge metal.

1.2 REFERENCES

A. ASTM International:
1. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board.
2. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation.
3. Insulation.
4. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
5. ASTM C1371-98 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
6. Construction.
7. ASTM D570 – Standard Test Method for Water Absorption of Plastics.
8. ASTM D751 – Standard Test Methods for Coated Fabrics.
9. ASTM D1204 – Standard Test Method for Linear Dimension Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature.
10. ASTM D2136 – Standard Test Method for Coated Fabrics Low –Temperature Bend Test.
11. ASTM D3045 – Standard Practice for Heat Aging of Plastics Without Load.
12. ASTM D5602 – Standard Test Method for Static Puncture Resistance of Roofing Membrane Specimens.
13. ASTM D5635 – Standard Test Method for Dynamic Puncture Resistance of Roofing Membrane Specimens.
14. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
15. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings.
16. ASTM G21 – Standard Practice of Determining Resistance of Synthetic Ploymeric Materials to Fungi.
17. ASTM G90 – Standard Practice for Performing Accelerated Outdoor Weathering on Nonmetallic Materials Using Concentrated Natural Sunlight.
18. ASTM G154 – Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure on Nonmetallic Materials.

B. FM Global:
1. FM DS 1-28 - Wind Loads to Roof Systems and Roof Deck Securement.
2. FM 4450 - Approval Standard for Class 1 Insulated Steel Deck Roofs.

C. Intertek Testing Services (Warnock Hersey Listed):
1. WH - Certification Listings.

D. Underwriters Laboratories Inc.:
1. UL - Fire Resistance Directory.
2. UL 790 - Tests for Fire Resistance of Roof Covering Materials.

1.3 SYSTEM DESCRIPTION

A. Elastomeric Sheet Membrane Conventional Roofing System: Mechanically fastened single-ply membrane roof system that includes a membrane comprised of a polyvinyl chloride polymer blend, reinforced with a high strength, weft-inserted polyester scrim; insulation; accessories; flashings; and trim. Membrane shall contain a combination of UV stabilizers, UV absorbents, plasticizers, heat stabilizers, flame retardant, lubricants and biocides, and shall exhibit the minimum physical properties specified herein.

B. Roof system shall be warranted by manufacturer as an entire roof system.

1.4 DESIGN REQUIREMENTS

A. Low Slope Membrane Roof Edge Securement: Conform to SPRI ES-1 for wind speeds determined from applicable code.

1.5 PERFORMANCE REQUIREMENTS

A. Uplift Resistance: UL 1897; 60 psf uplift pressure resistance.

1.6 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Submit written confirmation from membrane Manufacturer that installer is an approved applicator.

C. Manufacturer’s pre-approval of project conditions: Submit written documentation demonstrating manufacturer’s pre-approval of project conditions including any recommendations or revisions required particular to project conditions.

D. Product Data: Provide characteristics on membrane materials, pre-manufactured wall flashings, pre-manufactured pipe flashings, pre-fabricated flashing/counter flashings, breathable two-way vents, pre-fabricated edge trim (fascia and fascia extenders), insulation, fasteners, and all other pre-fabricated roofing accessories being installed.

E. Pullout Tests: Submit pullout test results and engineering report from membrane Manufacturer with shop drawings showing locations each test was taken. Engineering report shall include Manufacturer’s basis for selection of anchorage, frequency and seaming patterns.

F. Shop Drawings: Indicate layout for membrane, joint or termination detail conditions, and conditions of interface with other materials.

G. Samples: Submit color samples of roof edge trim (fascia and fascia extenders), and metal flashing/counter flashing for selection, and sample of membrane.

1.7 SUBMITTALS AT CLOSEOUT

A. Section 01 40 00 – Manufacturer’s Field Services and Section 01 70 00 – Execution and Contract Closeout: Manufacturer’s examination of installation.

B. Manufacturers Field Inspection: Upon completion of the installation, an inspection shall be made by the manufacturer’s Quality Assurance Specialist to ascertain that the installation has been completed in accordance with the manufacturer’s instructions and recommendations. Any work

not approved by the manufacturer's Quality Assurance Specialist shall be corrected to the satisfaction of the manufacturer at no additional cost to the Owner.

C. Manufacturer's Field Reports: Submit Manufacturer's Field Report. Indicate procedures followed and any corrective work required for manufacturer's acceptance of installation.

1.8 QUALITY ASSURANCE

A. Prior to submission of Bids, Contractor shall submit all forms and other required data to manufacturer for pre-approval. Contractor shall advise Architect in writing of any recommendations made or revisions required by membrane manufacturer to particular project conditions, and shall include any such recommendations or revisions in the Bid.

B. Perform Work in accordance with manufacturer's most recently published instructions, and any pre-approval recommendations or revisions.

C. Manufacturer's quality assurance specialist shall inspect roofing system for compliance with manufacturer's specifications.

D. All materials used in the installation of the roofing system shall be products of the system manufacturer, or accepted products as defined and described in the manufacturer's specifications. Other materials shall be accepted by the system manufacturer in writing prior to being installed in the system.

E. Contractor Qualifications:
1. The Contractor shall employ and use qualified workmen who are thoroughly trained and experienced in the techniques required to properly install the components necessary to provide a complete and warrantable roof assembly.
2. Contractor shall employ and provide an experienced, qualified, thoroughly trained project superintendent having experience installing the components of the specified roof system.

1.9 REGULATORY REQUIREMENTS

A. Building Code: Michigan Rehabilitation Code for Existing Buildings and Michigan Building Code 2012 by reference.

B. UL 790: Class B (minimum) Fire Hazard Classification.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.

C. Store products in weather protected environment, clear of ground and moisture. Protect foam insulation from direct sunlight exposure.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.

B. Do not remove existing roofing membrane when weather conditions threaten the integrity of the building contents or intended continued occupancy.

C. Maintain continuous temporary protection prior to and during installation of new roofing system.

D. Do not apply roofing membrane during inclement weather or when the ambient air temperature, surface temperature, relative humidity, or wind velocity is outside the range acceptable to the membrane Manufacturer.

E. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

F. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

G. Protect all existing construction and new work. Prior to commencing work, protect existing construction in an approved manner to prevent damage resulting from installation, or from up-loading materials to the roof.

H. Stage materials on the ground until ready for installation. Staging of bulk roofing materials on the roof will not be permitted. Load materials needed for installation as the work progress using fork truck or other ground mounted lifting device. Roof mounted hoists will not be permitted. Protect site surfaces from damage during loading operations.

I. Contractor is responsible for repair/replacement of damage to Owner's property for failure to provide proper weather protection during reroofing work. Damage to property shall be repaired/replaced to Owner's satisfaction at Contractor's expense.

1.12 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Schedule removal of existing roofing to coincide with commencement of installation of new roofing.

C. Remove only existing roofing materials that can be replaced with new materials as the weather will permit.

1.13 WARRANTY

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties. Membrane manufacturer shall warrant the complete installation as a complete roof assembly, for a period of fifteen (15) years commencing on the date of acceptance of the installation by the manufacturer. The warranty shall be a no-dollar limit warranty providing repair and/or replacement of the roofing system at the then current material and labor prices throughout the life of the warranty period. The warranty shall contain no exclusions for ponded water, biological growth, incidental or consequential damages.

B. Repairs to roof system shall be made within seventy-two (72) hours of notification to the contractor or manufacturer and to the satisfaction of the owner and manufacturer at no cost to the owner.

C. Roof shall be warranted as a complete roofing system, edge to edge including all flashings, terminations and trims.

1.14 PRE-INSTALLATION INSPECTION

A. Conduct pre-installation inspection under the provisions of Section 01 30 00.

B. Contractors shall conduct an inspection of the job site roof conditions and confirm the required fastener type and length, moisture content of the existing roofing system, and note damaged area requiring repair prior to the installation of the proposed work. Repair of any core cuts made for the purposes of this verification shall be repaired by the prospective Contractor.

C. Contractors shall conduct fastener pull out tests to verify the integrity of the deck and to establish fastening pattern limits in accordance with system manufacturer's specifications.
   1. Fastener pull-out tests shall be conducted on the roof deck with approved fasteners to verify the integrity of the deck and to establish fastening pattern limits which meet the requirements of manufacturer's specifications.
   2. Pull-out tests shall be taken on-site by the fastener manufacturer, the contractor, or a representative of the roof manufacturer. The sections where integrity is most in question shall be included in the locations for testing. Values shall be documented on the roof drawing locating the test pulls and pull-out test values. The number of pull tests shall be: perform a minimum of ten (10) pull tests for each 50,000 sq. ft. and five (5) additional pull tests for each additional 50,000 sq. ft. or portion thereof for each differing roof deck type on each project. Areas of low pull tests will require additional pull tests.

PART 2 PRODUCTS

2.1 SINGLE PLY ROOFING - MECHANICALLY ATTACHED

A. Manufacturers:
1. Duro-Last Roofing, Inc.
2. Substitutions: Not Permitted.

2.2 MEMBRANE AND ASSOCIATED PRODUCTS

A. Membrane: Durolast Specially Formulated Roofing Membrane, white in color, 50 mil thickness.

B. All membrane components, including pipe, curb, and corner flashings shall be furnished by the roof manufacturer, factory prefabricated from the same fabric reinforced material as the membrane.

C. Drain Boots: Pre-fabricated of same material as roof membrane, sized to suit application and furnished by the roof Manufacturer. Drain boots shall be used in conjunction with composite drain rings and dome strainers for repair of damaged roof sumps.

D. Composite Drain Rings: Fabricated of epoxy-fiberglass composite with tie string for insertion inside drain boots to provide positive seal between drain boot and drain pipe, and furnished by the roof manufacturer. Composite drain rings shall be used in conjunction with drain boots and dome strainers for repair of damaged roof sumps.

E. Dome Strainer: Re-install existing or new as indicated on Drawings.
1. Dome Strainer: Rigid cast aluminum dome strainer with 18” skirt made of same material as roofing membrane, and furnished by the roof Manufacturer. Dome strainers shall be installed in conjunction with drain boots and composite drain rings for repair of damaged roof sumps.

F. Fasteners: Provide Factory Mutual approved fasteners suitable for deck conditions furnished by the roof Manufacturer.
1. Provide Auger type fasteners for cementitious wood fiber decking.

G. Distribution Plates: Provide Factory Mutual approved stress distribution plates suitable for substrate conditions, and furnished by the roof Manufacturer.
1. Provide 2 inch metal plate for use with auger fasteners.

H. Two Piece Metal Fascia: Roof manufacturer’s metal compression edge system fabricated of 0.040 Aluminum with Kynar 500 coating or mill finish; color/finish to match existing.

I. Termination Sealant: Compatible with materials to which sealant is to be applied, conforming to Federal Specifications TT-S-00230C, Type II, Class A and ASTM C920-87, and as furnished by the roof manufacturer.

J. Two-Way Air Vents: Provide roof Manufacturer’s Two-Way Air Vents, color matching roof membrane, fabricated from rigid exterior vinyl with a skirt made of same material as roof membrane. Two-Way Air Vents shall be installed at a maximum density of one per each 1,000 sq. ft. of deck area or any fraction thereof.

2.3 INSULATION MATERIALS

A. Insulation: ASTM C1289, Type II, Class I, faced rigid cellular polyisocyanurate roof insulation, both faces surfaced with integrally laminated heavy coated glass facers with the following characteristics:
   1. Compressive strength: 20 psi.
   2. Board size: 4 x 8 feet.
   3. Board Thickness: Match existing.
   4. Board Edges: square.
   5. LTTR - Insulation R Value: 9.0 minimum.

B. Separation Sheet: Provide roof Manufacturer's chemical resistant 3 mil minimum polyethylene sheet to separate recover membrane from existing non-compatible substrates in recover applications.

2.4 ACCESSORIES

A. Temporary Protection: Provide sheet materials capable of preventing the passage of water to the interior of the building during construction.

PART 3 EXECUTION

3.1 PRECAUTIONS

A. Do not tear-off any more roofing than can be covered with temporary protective covering until ready for re-roofing.

B. In making field heat welds, make sure that all edges are clean and free of materials which could affect the performance of the weld.

C. Do not expose membrane or other accessories to constant temperatures in excess of 100 degrees F.

D. Protection of Roofing Surfaces: Storing, wheeling, or trucking directly on roof insulation or roofing surface will not be permitted. Provide temporary plywood walkways, runways and platforms as necessary to protect insulation and roofing from damage.

3.2 MATERIAL REMOVAL

A. Remove roof system components to the extent described in the Plans.

B. Where moisture is present in substrate scheduled to remain, notify Architect/Owner for confirmation of conditions and instructions prior to removal.

3.3 TEMPORARY PROTECTION

A. Provide temporary protective sheeting over exposed deck and/or substrate surfaces.

B. Turn sheeting up and over parapets and curbing. Retain sheeting in position with weights or temporary fasteners.

C. Provide for surface drainage from protective sheeting to existing drainage facilities. Do not allow water to build-up or stand on protective sheeting.

D. Do not permit traffic over unprotected or repaired deck surface except as required for installation of new roofing.

E. Any repair and/or replacement of damage sustained to the facility or contents resulting from improper scheduling of the work, or improper temporary protection shall be Contractor's responsibility.

3.4 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify surfaces and site conditions are ready to receive work.

C. Verify deck is clean and smooth, free of depressions, waves, or projections, and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set.

3.5 PREPARATION

A. Vacuum or sweep loose debris from surfaces of deck.

3.6 INSTALLATION

A. Insulation (where required for replacement of saturated insulation):
   1. Roof Insulation shall be installed with approved fasteners and distribution plates placed according to roofing Manufacturer's specifications, UL, and FM requirements
   2. Lay boards in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and penetrations through roof.
   3. In multi-layer installations, stagger joints in top and bottom layers.
   4. Apply no more insulation that can be covered with membrane in same day.

B. Separation Sheet:
   1. Install separation sheet (where required to separate recover membrane from non-compatible substrate materials) in accordance with manufacturer's instructions. Separation sheet shall extend edge to edge and shall separate membrane from any non-compatible materials.

C. Membrane Application:
   1. Install membrane in accordance with manufacturers printed installation instructions.

D. Stacks: Install deck membrane around the base of the circular penetration and mechanically attached at the same fastening pattern as the deck membrane, maximum 18 inches on center, and no less than one fastener for each circular penetration. The minimum vertical height of a stack flashing is eight (8) inches. Extend existing stacks as required to obtain this minimum flashing height. Apply sealant to the top portion of the circular penetration where the prefabricated stack flashing will be attached. Fasten stack flashing using stainless steel and clamp furnished by roofing Manufacturer. Trim away excess stack flashing above the clamp and seal with approved sealant. Heat weld skirt on prefabricated stack flashing to deck membrane. Where stacks exceed

a constant temperature 120 degrees F, stack flashing shall be terminated to a metal collar sized 1 inch large that the stack radius providing a 1 inch air space between the stack and the stack collar. Provide a stainless steel canopy terminated to the stack above the stack collar.

E. Custom Curbs: Install the deck membrane and mechanically attach around the perimeter of the rectangular penetration at the same fastening pattern as the deck membrane, maximum 18 inches on center, and no less than one fastener per side. The minimum vertical height of the curb flashing is eight (8) inches. Extend existing curbs as required to obtain this minimum flashing height. Heat weld the curb flashing to the deck membrane. Where the square or rectangular penetration has a removable top, remove the unit and and fold the curb flashing over the curb top, secure in place, and reinstall unit. Where the unit cannot be removed, terminate the curb flashing to the curb using a termination bar and sealant.

F. Roof Drains: Install deck membrane around drain inlet and mechanically attach around perimeter of penetration at the same fastening pattern as the deck membrane, maximum 18 inches on center, and no less than one fastener per penetration. Apply sealant to the interior of the drain at location of composite drain rings and insert prefabricated drain boot. Install composite clamping rings inside drain boot 6 inches minimum from top of existing drain. Heat weld drain boot skirt to deck membrane. Install metal dome strainer with attachment tabs heat weld to drain boot.

G. Two-Way Air Vents: Two-Way Air Vents shall be installed at a density of 1 per 1,000 sq. ft. of deck area of fraction thereof.
   1. For tear-off applications: Cut a 7 inch hole through deck membrane to allow for vent installation. Insert vent so that feet are below deck membrane and heat weld factory attached skirt to deck membrane.
   2. For recover applications: Cut a 7 inch hole through deck membrane to allow for vent installation. Cut a 3 - 4 inch hole through new insulation and existing membrane to expose existing insulation. Infill new insulation with cut plug adhered with sealant applied to bottom of plug. Insert vent so that feet are below deck membrane and heat weld factory attached skirt to deck membrane.

H. Fascia and Trim
   1. Install fascia and trim components to seal membrane at roof perimeter in accordance with Manufacturer’s instructions.
   2. Fasten fascia and trim to solid substrate as required for solid attachment under required wind uplift loads.
   3. Locate fasteners to be concealed by subsequent installation of roofing.
   4. Lap fascia at joints and seal water tight in accordance with manufacturer’s instructions.

3.7 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Manufacturer’s Field Inspection.

B. Require site attendance of roofing manufacturer’s representative as required by manufacturer during installation of the Work.

C. Correct identified defects or irregularities.

3.8 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.

B. In areas where finished surfaces are soiled by Work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.

C. Repair or replace defaced or disfigured finishes caused by Work of this section.

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.

B. Protect building surfaces against damage from roofing work.

C. Where traffic must continue over finished roof membrane, protect surfaces.

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 C919 - Standard Practice for Use of Sealants in Acoustical Applications.
3. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
4. ASTM C1193 - Standard Guide for Use of Joint Sealants.
5. ASTM D1056 - Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.

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.

D. Manufacturer's Installation Instructions: Submit special procedures, surface preparation, and perimeter conditions requiring special attention.

E. Warranty: Include coverage for installed sealants and accessories failing to achieve watertight seal, exhibit loss of adhesion or cohesion, and sealants which do not cure.

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. High Performance General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25, Uses M, G, and A; multi-component.
   1. Acceptable Products:
      a. Dymeric 240FC manufactured by Tremco.
      b. Sikaflex-2c NS manufactured by Sika Corp.
      c. Dynatrol II by Pecora Corporation.
   2. Color: Standard colors matching finished surfaces.
   3. Applications: Use for:
      a. Joints between metal frames and other materials.
      b. Other exterior nontraffic joints for which no other sealant is indicated.

C. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, single component, paintable.
   1. Acceptable Products:
      a. TremFlex 834 manufactured by Tremco.
      b. Pecora AC-20 + Silcone manufactured by Pecora Corp.
   2. Color: Standard colors matching finished surfaces.
   3. Applications: Interior non-moving joints including joints between door frames and wall surfaces, and other interior joints for which no other type of sealant is indicated.

D. Bathtub/Tile Sealant: Silicone; ASTM C920, Uses M and A; single component, mildew resistant.
   1. Acceptable Products:
      a. Tremsil 200 manufactured by Tremco.
      b. Pecora 898 manufactured by Pecora Corp.
      c. Dow Corning 786 manufactured by Dow Corning Corp.
   2. Color: Clear.
   3. Applications: Joints between counter tops and wall.

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. Perform acoustical sealant application work in accordance with ASTM C919.

C. 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.

D. Install bond breaker where joint backing is not used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

G. 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.

END OF SECTION

SECTION 08 12 13

HOLLOW METAL FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes non-rated steel frames.

B. Related Sections:
1. Section 07 90 00 – Joint Protection: Joint sealers.
2. Section 08 71 00 - Door Hardware: Hardware.
3. 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.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate frame elevations, reinforcement, anchor types and spacing, location of cut-outs for hardware, and finish.

C. Product Data: Submit frame configuration and finishes.

D. 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. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Accept frames on site in manufacturer's packaging. Inspect for damage.

C. Break seal on-site to permit ventilation.

1.7 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work with frame opening construction, door, and hardware installation.

C. Sequence installation to accommodate required door hardware electric wire connections.

PART 2 PRODUCTS

2.1 STANDARD STEEL FRAMES

A. Manufacturers:
1. Amweld Building Products, Inc.
2. Ceco Door Products
3. Kewanee Corp.
4. Republic Builders Products
5. Steelcraft
6. Or equal

B. Product Description: Standard shop fabricated steel frames, non-rated type.
1. Interior 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.

2.3 FABRICATION

A. Fabricate frames as welded unit.

B. Fabricate frames with hardware reinforcement plates welded in place.

C. 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. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify opening sizes and tolerances are acceptable.

3.2 INSTALLATION

A. Install frames in accordance with ANSI A250.8.

B. Coordinate with wall construction for anchor placement.

C. Coordinate installation of frames with installation of hardware specified in Section 08 71 00 and doors in Section 08 13 15.

3.3 ERECTION TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edges, crossed corner to corner.

END OF SECTION

SECTION 08 14 16

FLUSH WOOD DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Flush wood doors.

B. Related Requirements:
   1. Section 08 71 00 - Door Hardware.

1.2 REFERENCE STANDARDS

A. Architectural Woodwork Institute:
   1. AWI AWS - Architectural Woodwork Standards.

B. Hardwood Plywood and Veneer Association:
   1. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood.

C. Wood Window and Door Manufacturers Association:
   1. WDMA I.S 1A - Architectural Wood Flush Doors.

1.3 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work with door hardware installation.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data:
   1. Submit data for door core materials and construction.
   2. Submit data for veneer species, type and characteristics.
   3. Submit data for factory finishes.

C. Shop Drawings:
   1. Indicate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, and factory machining criteria.
   2. Indicate cutouts for glazing.

D. Samples:
   1. Submit samples of door veneer, illustrating wood grain, stain color, and sheen.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with AWI AWS Section 9, Premium Grade.

B. Finish doors in accordance with AWI AWS Section 5 Premium Grade.

C. Attach label from agency approved by authority having jurisdiction to identify each fire rated door.

1.6 QUALIFICATIONS

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

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Package, deliver and store doors in accordance with AWI AWS Section 2.

C. Accept doors on site in manufacturer's packaging. Inspect for damage.
1. Break seal on site to permit ventilation.

1.8 WARRANTY

A. Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.

B. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

C. Interior Doors:
1. Factory Finished Doors: Furnish manufacturer’s life of installation warranty.

PART 2 PRODUCTS

2.1 FLUSH WOOD DOORS

A. Manufacturer List:
1. Algoma Hardwoods Inc.
2. Eggers Industries.
3. Graham Manufacturing Corp.
4. Marshfield Door Systems
5. Mohawk Flush Doors, Inc.
6. Oshkosh Architectural Door Company
7. Or equal

B. Flush Interior Doors: Solid core.
1. Thickness: 1-3/4 inches
2. Core: PC
3. Face Construction: Five ply.
4. Performance Duty Level: Heavy duty.

C. Performance / Design Criteria:
1. Performance Duty Level: WDMA I.S. 1A.
2. Fire Resistance: Fire rating not required.

2.2 MATERIALS

A. Door Cores: AWI AWS Section 9.

1. Solid Core, Non-Fire Rated:
   a. Type: PC; particleboard.

B. Interior Door Faces:
   1. Transparent Finished Faces: Wood veneer.
      a. Species: Red oak.
      b. Veneer Cut: Plain sliced.
      c. Veneer Matching: Book matched.
      d. Face Matching: Running. Pair match multiple door leaves in single opening.

C. Facing Adhesive: Type I - waterproof.

2.3 FABRICATION

A. Fabricate doors in accordance with AWI AWS Section 9 requirements.

B. Furnish closer and lock blocks at lock edge and top of door for closer for hardware reinforcement.

C. Vertical Exposed Edge of Stiles: Wood veneer matching door facing.

D. Fit door edge trim to edge of stiles after applying veneer facing.

E. Bond edge banding to cores.

F. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware. Furnish solid blocking for through bolted hardware.

G. Factory fit doors for frame opening dimensions identified on shop drawings.

H. Provide edge clearances in accordance with AWI AWS Section 9.

2.4 FINISHES

A. Transparent Finish System: Stained, color and sheen as selected.
   1. System 9; UV curable epoxy, polyester, urethane.

B. Seal door top edge with color sealer to match door facing.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.2 INSTALLATION

A. Install doors in accordance with AWI AWS Section 9 and manufacturer's instructions.

B. Field Fitting and Trimming:
   1. Trim door height by cutting bottom edges to maximum of 3/4 inch.

C. Coordinate installation of doors with installation of hardware specified in Section 08 71 00.

3.3 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Maximum Diagonal Distortion (Warp): 1/8 inch measured with straight edge or taut string, corner to corner, over imaginary 36 x 84 inches surface area.

C. Maximum Vertical Distortion (Bow): 1/8 inch measured with straight edge or taut string, top to bottom, over imaginary 36 x 84 inches surface area.

D. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taut string, edge to edge, over imaginary 36 x 84 inches surface area.

3.4 ADJUSTING

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for starting and adjusting.

B. Adjust door for smooth and balanced door movement.

C. Adjust door closer for full closure.

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 14 16 – Flush Wood 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 leafs.

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. Handing, 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.

3.5 HARDWARE SETS

<u>Hardware Set 1</u> – Relocate all existing door hardware.

Hardware Set 2 – Storeroom Lock x Electric Strike [Access Control] + Closer

3	ea.	Butt Hinge BB81 4 ½” x 4 ½” NRP	26D	PBB
1	ea.	Storeroom Lock GT 115 BSN	26D	PDQ
1	ea.	Key In Lever Cylinder, Match Existing	26D	Sargent
1	ea.	Closer 7101 BC SCS Stop (push side mount)	689	PDQ
1	ea.	Kickplate 90 10 x 2” LDW B4E	32D	Don Jo
1	ea.	Electric Strike 55-A	32D	SDC
1	ea.	Power Supply 602RF	----	SDC
		Note: Reuse Existing Aiphone System.		

Hardware Set 3 – Classroom Lock x [Lock / Unlock]

3	ea.	Butt Hinge BB81 4 ½” x 4 ½” NRP	26D	PBB
1	ea.	Classroom Lock GT 148 BSN	26D	PDQ
1	ea.	Key In Lever Cylinder, Match Existing	26D	Sargent
1	ea.	Wall Stop 1407	26D	Don Jo

Hardware Set 4 – Office Lock x [Lock / Unlock]

3	ea.	Butt Hinge BB81 4 ½” x 4 ½” NRP	26D	PBB
1	ea.	Office Lock GT 182 BSN	26D	PDQ
1	ea.	Key In Lever Cylinder, Match Existing	26D	Sargent
1	ea.	Wall Stop 1407	26D	Don Jo

Hardware Set 5 – Passage Set x [Always Unlocked]

3	ea.	Butt Hinge BB81 4 ½” x 4 ½” NRP	26D	PBB
1	ea.	Passage Set GT 126 BSN	26D	PDQ
1	ea.	Key In Lever Cylinder, Match Existing	26D	Sargent
1	ea.	Floor Stop 1454	26D	Don Jo

END OF SECTION

SECTION 08 80 00

GLAZING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Glass glazing for doors and frames.

1.2 REFERENCES

A. American National Standards Institute:
   1. ANSI Z97.1 - Safety Glazing Materials Used in Buildings Safety.

B. American Society of Civil Engineers:
   1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International:
   1. ASTM C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.
   2. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings.

D. Consumer Products Safety Commission:
   1. CPSC 16 CFR 1201 - Safety Standard for Architectural Glazing.

E. Glass Association of North America:
   1. GANA - Glazing Manual.

F. Underwriters Laboratories Inc.:
   1. UL - Building Materials Directory.

1.3 PERFORMANCE REQUIREMENTS

A. Interior Glass Deflection: Maximum differential deflection for two adjacent unsupported edges when 50 plf force is applied to one panel at any point up to 42 inches above finished floor less than thickness of glass.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data:
   1. Glass: Provide structural, physical, and thermal and solar optical performance characteristics, size limitations, special handling or installation requirements.
   2. Glazing Sealants, Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors where exposed.

C. Installer's Certificate: Certify glass furnished without identification label is installed in accordance with Construction Documents and applicable code.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual, GANA Sealant Manual, for glazing installation methods.

1.6 QUALIFICATIONS

A. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Do not install glazing when ambient temperature is less than 50 degrees F.

C. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

PART 2 PRODUCTS

2.1 FLOAT GLASS MATERIALS

A. Tempered Glass: ASTM C1048, Type 1 transparent flat, Quality Q3, Kind FT fully tempered, Condition A uncoated, float glass with horizontal tempering.
   1. Furnish tempered glass conforming to CPSC 16 CFR 1201 Category II.

2.2 FLOAT GLASS PRODUCTS

A. Float Glass Manufacturers:
   1. ACH Glass Operations.
   2. AFG Industries, Inc.
   3. Guardian Industries Corp.
   4. PPG Industries.
   5. Pilkington North America, Inc.
   6. Substitutions permitted.

B. Clear Float Glass: Annealed, Heat strengthened, and Tempered float glass as specified; Class 1 clear.
   1. Clear tempered glass (FG-CT).
   2. Minimum Thickness: 1/4 inch.

2.3 GLAZING SEALANTS

A. Pre-Formed Glazing Tape: Size to suit application.
   1. Preformed butyl compound; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.
      a. Butyl Corner Sealant: ASTM C920 single component non-skinning butyl compatible with glazing tape; color to match tape.

2.4 GLAZING ACCESSORIES

A. Setting Blocks: Elastomeric material recommended by glass manufacturer, 80 to 90 Shore A durometer hardness, length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

B. Spacer Shims: Elastomeric material recommended by glass manufacturer, 50 to 60 Shore A durometer hardness, minimum 3 inch long x one half the height of glazing stop x thickness to suit application.

C. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify openings for glazing are correctly sized and within acceptable tolerance.

C. Verify surfaces of glazing channels or recesses are clean, free of obstructions impeding moisture movement, weeps are clear, and ready to receive glazing.

3.2 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION

A. Perform installation in accordance with GANA Glazing Manual.
   1. Glazing Sealants: Comply with ASTM C1193.

B. Interior Dry Method (Tape and Tape) Installation:
   1. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.
   2. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
   3. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
   4. Place glazing tape on free perimeter of glazing in same manner described above.
   5. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

C. Knife trim protruding tape.

3.4 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.

B. Remove glazing materials from finish surfaces.

C. Remove labels after Work is complete.

D. Clean glass and adjacent surfaces.

END OF SECTION

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Light gauge metal framing.
2. Gypsum board and joint treatment.
3. Gypsum sheathing.
4. Acoustic insulation.

1.2 REFERENCE STANDARDS

A. ASTM International:
1. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
2. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
3. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
4. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
5. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.
6. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
7. ASTM C1002 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases.
8. ASTM C1047 – Standard Specifications for Accessories for Gypsum Wallboard.
9. ASTM C1396/C1396M - Standard Specification for Gypsum Board.
10. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
11. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
12. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

B. American Society of Civil Engineers:
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. Gypsum Association:
1. GA 214 - Recommended Levels of Gypsum Board Finish.
2. GA 216 - Application and Finishing of Gypsum Board.
3. GA 600 - Fire Resistance Design Manual Sound Control.

D. Intertek Testing Services (Warnock Hersey Listed):
1. WH - Certification Listings.

E. National Fire Protection Association:
1. NFPA 265 - Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Coverings on Full Height Panels and Walls, Method B.

2. NFPA 286 - Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Wall and Ceiling Interior Finish.

F. Tile Council of North America, Inc. (TCNA):
1. TCA Handbook for Ceramic Tile Installation, Current Edition.

G. Underwriters Laboratories Inc.:
1. UL - Fire Resistance Directory.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on metal framing, sheet materials, joint tape; acoustic products and accessories.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840, GA-214, GA-216 and GA-600 as applicable.

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.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Manufacturer List:
1. Georgia-Pacific Corporation.
2. National Gypsum Co.
3. United States Gypsum Co.
4. Gold Bond Building Products
5. Or equal

B. Performance / Design Criteria:
1. Select stud thickness to resist minimum 5 psf uniform load and maximum 1/240 deflection.
2. Acoustic Attenuation for Identified Interior Partitions: 54 STC in accordance with ASTM E90.

2.2 COMPONENTS

A. Framing Materials:
1. Studs and Tracks: ASTM C645; Standard Duty Drywall Studs, Galvanized, 25 Ga. (unless noted otherwise on Drawings), C shape, with knurled faces.
2. Furring, Framing and Accessories: ASTM C645.

B. Fasteners: ASTM C1002; length to suit application.

C. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

D. Gypsum Board Materials: ASTM C1396/C1396M
   1. Standard Gypsum Board: Thickness indicated on Drawings, Type X fire resistant, maximum available length in place; ends square cut, tapered edges.

2.3 ACCESSORIES

A. Resilient Channels: ASTM C645; RC-1 resilient furring channel.

B. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced, 3 inch thick batts 1 inch wider than stud cavity for creased installation. Equal to ThermaFiber SAFB as manufactured by USG.

C. Gypsum Board Accessories: ASTM C1047; metal; corner beads, edge trim, and expansion joints.
   1. Metal Accessories: Galvanized steel.
   2. Edge Trim: Type LC, L, and U bead as required.

D. Joint Materials:
   1. Gypsum board assemblies: ASTM C475/C475M; reinforcing tape, joint compound, and water.

E. Gypsum Board Screws: ASTM C1002; length to suit application.
   1. Screws for Steel Framing: Type S.

F. Wood Blocking: SPF Species, fire retardant treated.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions are ready to receive work and opening dimensions are as indicated on shop drawings.

3.2 DEMOLITION

A. Extend existing gypsum board installations using materials and methods as specified.

B. Repair and remodel existing gypsum board assemblies which remain or are to be altered.

3.3 INSTALLATION

A. Metal Framing Installation:
   1. Install framing studs in accordance with ASTM C754, GA-216 and GA-600.
   2. Metal Stud Framing Spacing: 16 inches maximum on center.
   3. Extend stud framing to underside of roof deck above. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide extended leg ceiling runners.
   4. Door Opening Framing: Install double studs at door frame jambs.
   5. Blocking: Nail wood blocking to studs. Install blocking for support of wall cabinets, toilet accessories, and other wall mounted items.

B. Acoustic Accessories Installation:
   1. Install resilient channels at maximum 24 inches on center. Locate joints over framing members.
   2. Place acoustic insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions. Field score SAFB insulation full height along center, 1 inch deep.

C. Gypsum Board Installation:
   1. Install gypsum board in accordance with ASTM C840, GA-216, and GA-600.
   2. Erect single layer standard gypsum board horizontal, with ends and edges occurring over firm bearing. Stagger end joints.
   3. Use screws when fastening gypsum board to metal furring or framing.
   4. Place control joints consistent with lines of building spaces as recommended to prevent cracking in finished surfaces.
   5. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

D. Joint Treatment:
   1. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes (see 3.5 Schedule).
   2. Feather coats on to adjoining surfaces so that camber is maximum 1/32.
   3. Taping, filling, and sanding is required at all exposed to view surfaces
   4. Taping and filling is required at concealed surfaces.

3.4 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from Flat Surface: 1/8 inch in 10 feet.

3.5 SCHEDULE

A. Finishes in accordance with GA-214 Level:
   1. Level 1: Above finished ceilings concealed from view.
   2. Level 4: Walls exposed to view.

END OF SECTION

SECTION 09 51 13

ACOUSTICAL PANEL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Acoustic panels.
2. Suspended metal grid ceiling system and perimeter trim.

B. Related Requirements:
1. Section 23 37 00 - Air Outlets and Inlets: Air diffusion devices in ceiling system.
2. Section 26 51 00 - Interior Lighting: Light fixtures in ceiling system.
3. Section 28 31 00 - Fire Detection and Alarm: Fire alarm components in ceiling system.

1.2 REFERENCE STANDARDS

A. ASTM International:
1. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
2. ASTM C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. Ceilings and Interior Systems Construction Association:
1. CISCA - Acoustical Ceilings: Use and Practice.

1.3 SEQUENCING

A. Sequence Work to ensure acoustic ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Install acoustic units after interior wet work is dry.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on metal grid system components, acoustic units and panels.

C. Samples:
1. Submit samples illustrating material and finish.
2. Submit samples color samples of grid for selection where colored grid is specified.

D. Manufacturer's Instructions: Submit special procedures, and perimeter conditions requiring special attention.

1.5 QUALITY ASSURANCE

A. Section 01 42 00 – Reference Standards and Definitions: Requirements for compliance with reference standards.

B. Conform to CISCA requirements.

C. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

1.6 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.

1.7 AMBIENT CONDITIONS

A. Section 01 50 00 - Temporary Facilities and Controls: Ambient conditions control facilities for product storage and installation.

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

PART 2 PRODUCTS

2.1 SUSPENDED ACOUSTICAL CEILINGS

A. Manufacturer List:
1. United States Gypsum Company as basis of design.
2. Armstrong World Industries.

B. Performance / Design Criteria:
1. Suspension System: Rigidly secure acoustic ceiling system including integral mechanical and electrical components with maximum deflection of 1/240

2.2 COMPONENTS

A. Acoustic Panels SAT-1: ASTM E1264, Type III, Form 2, Pattern CDE, Equal to Radar as Manufactured by USG Interior Systems, conforming to the following:
1. Size: 24 x 24 inches.
2. Thickness: 5/8 inches.
3. Composition: Mineral.
4. Light Reflectance: 80 percent minimum.
5. Edge: SQ
6. Surface Color: White.
7. Surface Finish: Perforated (small holes), fissured, lightly textured.

B. Grid:
1. Non-fire Rated Grid: ASTM C635, intermediate duty; exposed T; components die cut and interlocking.
2. Grid Materials: Cold rolled aluminum.
3. Exposed Grid Surface Width: 15/16 inch.
4. Perimeter Molding Width: Match grid width.
5. Grid Finish: White where acoustic panels are scheduled, color to be selected where acoustic panels are to be omitted.
6. Accessories: Trim for interior square and bullnose corners.

7. Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.

2.3 ACCESSORIES

A. Touch-up Paint: Type and color to match acoustic and grid units.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify layout of hangers will not interfere with other work.

3.2 INSTALLATION

A. Lay-In Grid Suspension System:
1. Install suspension system in accordance with ASTM C635, ASTM C636 and as supplemented in this section.
2. Locate system on room axis according to reflected plan.
3. Install after major above ceiling work is complete. Coordinate location of hangers with other work.
4. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
5. Where ducts or other equipment prevent regular spacing of hangers, reinforce nearest affected hangers and related carrying channels to span extra distance.
6. Do not support components on main runners or cross runners when weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches of each corner; or support components independently.
7. Do not eccentrically load system, or produce rotation of runners.
8. Perimeter Molding:
   a. Install edge molding at intersection of ceiling and vertical surfaces.
   b. Use longest practical lengths.
   c. Overlap and rivet corners.
   d. Install at junctions with other interruptions.
9. Install straight or bullnose trim cover at interior grid corners.

B. Acoustic Units:
1. Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.
2. Lay directional patterned units one way with pattern parallel to shortest room axis. Fit border trim neatly against abutting surfaces.
3. Install units after above ceiling work is complete.
4. Install acoustic units level, in uniform plane, and free from twist, warp, and dents.
5. Cutting Acoustic Units:
   a. Cut to fit irregular grid and perimeter edge trim.
   b. Cut square reveal edges to field cut units.

3.3 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 09 65 13

RESILIENT BASE AND ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Resilient wall base.
   2. Resilient transition strips.

1.2 RELATED SECTIONS

A. Section 09 65 16 – Resilient Flooring: Requirements for resilient flooring transitions.

B. Section 09 68 13 – Tile Carpeting: Requirements for resilient flooring transitions.

1.3 REFERENCES

A. ASTM International:
   1. ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials.
   2. ASTM E 648, Standard Test Method for Critical Radiant Flux.
   3. ASTM F1861: Standard Standard Specification for Resilient Wall Base.

1.4 PERFORMANCE REQUIREMENTS

A. Meets performance requirements for ASTM F 1861 Standard Specification for Resilient Wall Base.

B. ASTM E 648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm^2 or greater, Class I.

C. ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, Class B, Smoke less than 450.

1.5 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

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

C. Samples: Submit samples illustrating colors and finishes for selection.

1.6 QUALITY ASSURANCE

A. Provide all resilient materials from a single source.

1.7 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

B. Coordinate work with the work of Section 09 68 13.

1.8 EXTRA MATERIALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for extra materials.

B. Furnish two percent of installed quantity of each style and color of wall base to the Owner.

PART 2 PRODUCTS

2.1 PRODUCT MANUFACTURER

A. Manufacturers:
1. Johnsonite, Inc.

B. Other approved Manufacturers:
1. Armstrong World Industries.
2. Substitutions permitted.

2.2 WALL BASE

A. Standard Wall Base (4”):
1. ASTM 1861, Type TV, vinyl wall base with the following physical characteristics:
a. Style: Coved
b. Height: 4 inch
c. Thickness: 1/8 inch
d. Length: 4 foot sections.
e. Color: As selected.

2.3 RESILIENT TRANSITIONS

A. Carpet to VCT and Resinous Flooring:
1. Equal to Johnsonite CTA-XX-A 1/4 inch material to 1/8 inch material adaptor.
2. Color to match wall base.

2.4 ACCESSORIES

A. Adhesive: Johnsonite #946 Premium Contact Bond Adhesive (Non-porous applications).

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the work.

C. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient wall base.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

C. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

D. Vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 INSTALLATION

A. Comply with manufacturers written instructions for installing resilient materials.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Apply resilient transitions along separation of dissimilar flooring materials. At transitions occurring in door openings, locate transitions under centerline of doors.

D. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

E. Tightly adhere resilient materials to substrate throughout length of each piece, with materials in continuous contact with horizontal and vertical substrates.

F. Do not stretch resilient base during installation.

3.4 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.

B. Comply with manufacturer's written instructions for cleaning and protection of resilient products.

C. Perform the following operations immediately after completing resilient product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Damp-mop surfaces to remove marks and soil.

3.5 PROTECTION OF FINISHED WORK

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

END OF SECTION

SECTION 09 65 19

RESILIENT FLOORING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes resilient tile flooring.

1.2 Related Sections:

A. Section 09 65 13 – Resilient Base and Accessories: Wall base and transitions strips.

1.3 REFERENCES

A. ASTM International:
1. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile.
2. ASTM F1861 - Standard Specification for Resilient Wall Base.

B. National Fire Protection Association:
1. NFPA 253 - Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Samples:
1. Submit manufacturer's complete set of color samples for initial selection.
2. Submit samples illustrating color and pattern for each resilient flooring product specified.

1.5 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.

B. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.6 QUALITY ASSURANCE

A. Perform work in accordance with specified reference standards.

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.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Store materials for not less than 48 hours prior to installation in area of installation at temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.1 TILE FLOORING

A. Manufacturers:
1. Armstrong; Style Standard Excelon.
2. Substitutions not permitted.

B. Vinyl Composition Tile: ASTM F1066:
1. Size: 12 x 12 inch.
2. Thickness: 0.125 inch.
3. Pattern: Through pattern.

2.2 ACCESSORIES

A. Subfloor Filler: Premix latex; type recommended by adhesive material manufacturer.

B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

C. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 40 00 – Quality Requirements: Verification of existing conditions before starting work.

B. Verify concrete floors are dry to maximum moisture content as recommended by manufacturer, and exhibit negative alkalinity, carbonization, and dusting.

C. Verify floor and lower wall surfaces are free of substances capable of impairing adhesion of new adhesive and finish materials.

3.2 PREPARATION

A. Section 01 40 00 – Quality Requirements: Preparation requirements for new work.

B. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is cured.

D. Clean substrate.

E. Apply primer as required to prevent "bleed-thru" or interference with adhesion by substances which cannot be removed.

3.3 INSTALLATION

A. Mix tile from container to ensure shade variations are consistent when tile is placed.

B. Lay flooring with joints and seams parallel to building lines to produce symmetrical tile pattern.

C. Install tile to match existing pattern. Allow minimum 1/2 full size tile width at room or area perimeter.

D. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

E. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.

F. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

G. Install flooring in recessed floor access covers. Maintain floor pattern.

3.4 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.

B. Remove excess adhesive from floor, base, and wall surfaces without damage.

C. Clean, seal, and maintain resilient flooring products.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.

B. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09 67 23

RESINOUS FLOORING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes fluid-applied resin based flooring.

1.2 REFERENCES

A. American Concrete Institute
   1. ACI 308R — Guide to Curing Concrete; 2008

B. ASTM International (American Society for Testing and Materials)
   1. ASTM C307 - Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacings; 2012.
   2. ASTM C579 — Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes; 2012.
   3. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2012.
   4. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers Tension; 2006.
   5. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers; 2012.
   6. ASTM D4258 — Standard Practice for Surface Cleaning Concrete for Coating; 2012.
   7. ASTM D4259 - Standard Practice for Abrading Concrete; 2012.
   8. ASTM D4263 — Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method; 2012.
   9. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers; 2009.
   10. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2011.
   11. ASTM F1869 — Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.
   12. ASTM F2170 — Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2011.

1.3 SUBMITTALS

A. Product Data: Manufacturer’s product literature including physical data, chemical resistance, surface preparation, and application instructions.

B. Samples:
   1. Submit samples illustrating color and pattern for each floor material for selection.
   2. A hard sample of the selected colors shall be submitted to represent the finished floor.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

1.5 QUALITY ASSURANCE

A. Section 01 40 00 – Quality Requirements: Requirements for compliance with reference standards.

B. Perform work in accordance with specified reference standards.

1.6 QUALIFICATIONS

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

B. Installer: Installation shall be performed by an applicator approved by the manufacturer of the floor surfacing materials. The Contractor shall furnish a certified installer certificate.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 – Material and Equipment: Storage and handling requirements.

B. All materials are to be delivered to the job site in the manufacturer's original packaging. The product code and other identification marks should be clearly marked and visible.

C. Store resin materials in dry, secure area.

D. Store materials for three days prior to installation in area of installation to achieve temperature stability.

E. Storage Temperature: Store between 60 degrees F and 95 degrees F.

F. Protect separated A and B components of Hybrid XT resinous flooring from contact with moisture, such as dew, high humidity, and liquid water until fully cured.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Follow Manufacture's recommended safety procedures during installation.

B. Application Range:
   1. Ideal: Maintain material, substrate surface, and ambient temperature range of 40 to 90 degrees F and humidity between 25 and 50 percent.
   2. Maximum: Maintain maximum material, substrate surface, and ambient temperature of 100 degrees F, and humidity of 0 percent.
   3. Minimum: Maintain minimum material, substrate surface, and ambient temperature of 0 degrees F and humidity of 85 percent.

C. Ventilate area where flooring is being installed. Post and enforce NO OPEN FLAME signs until flooring has cured.

D. Restrict traffic from area where flooring is being installed or is curing.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Xtreme Engineered Floor Systems; Product V-8 Hybrid XT Decorative Floor Coating.
   1. Address: 3303 Hudson Trails Drive, Hudsonville, MI 49426.
   2. Phone: (800) 234-8208; Fax: (616) 896-8332; Website: www.V8FloorCoatings.com.

B. Substitutions: Permitted.

2.2 MATERIALS

A. Two-Part Hybrid XT Resin: Part A - clear odorless liquid, with chemical name of aliphatic polyisocyanate; Part B - light yellow colored liquid, mild odor, with chemical name of polyaspartic.

B. Flooring System:
   1. Full Chip Vinyl Broadcast System: Provide color for floor system based on the following.
      a. Primer Coat Color: As selected by Owner from manufacturer's full color line.
      b. Base Coat Color: As selected by Owner from manufacturer's full color line.
      c. Vinyl Flakes: As selected by Owner from manufacturer's full color line.
      d. Size: Matching Owners existing.
      e. Grout Coat: Clear, non-pigmented coating over broadcast color chips.
      f. Finish Coat: Clear, non-pigmented top coating.

2.3 ACCESSORIES

A. Non-Skid Floor Treatment: Crushed polypropylene beads broadcast directly onto surface of final coat.
   1. Acceptable Product: V Grip, distributed by Xtreme Engineered Floor Systems.

B. Base Cove: Flexible vinyl base molding with 1 inch radius, approved by flooring manufacturer.
   1. Length: 4 feet.

C. Concrete Patch/Adhesive: 100 percent solids by volume, two part epoxy with resin binder and hardener.
   1. Application: Used for filling holes, voids, or air pockets in concrete, and as an adhesive for bonding wall base to concrete.
   2. Bond Strength: Failure in concrete, ASTM D4541.
   3. Compressive Strength: 9,000 psi; ASTM C579.
   4. Tensile Strength: 2,000 psi; ASTM C307.
   5. Work Time: Approximately 10 minutes at 75 degrees F.
   6. Recoat Time: After 3 to 5 hours, depending on ambient temperatures.
   7. Acceptable Product: Fast Patch, distributed by Xtreme Engineered Floor Systems, Inc.

D. Cleaner: Highly concentrated non-toxic cleaner, non-corrosive with neutral pH, dye free, and biodegradable.
   1. Acceptable Product: Xtreme Clean, distributed by Xtreme Engineered Floor Systems.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify floor surfaces are smooth and flat with maximum variation as specified in Section and are ready to receive work.

B. Verify that new concrete surfaces have cured for at least 30 days at 75 degrees F with 50 percent or less humidity; ACI 308R.

C. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions and submit report of test results.
   1. Perform calcium chloride test in compliance with ASTM F1869.
      a. Proceed with application of resinous flooring only after substrates have maximum moisture-vapor emission rate of 3 lb of water per 1,000 sq ft of slab area in 24 hours.
   2. Perform plastic sheet test in compliance with ASTM D4263.
      a. Proceed with application only after testing indicates absence of moisture in substrates.
   3. Perform relative humidity test using in position probes in compliance with ASTM F2170.
      a. Proceed with application only after substrates have a 75 percent or less relative humidity level measurement.

D. Alkalinity Testing: Verify that concrete substrate has pH within acceptable range of 7 to 9 as recommended by manufacturer.
   1. Proceed with application only after substrates pass testing.

E. Verify floor are free of substances capable of impairing adhesion of adhesive and finish materials.

3.2 PREPARATION

A. Prepare and clean concrete substrates in accordance with resinous flooring manufacturer's written instructions.
   1. Provide clean, dry substrate for resinous flooring application.
      a. Use manufacturer's recommended cleaning solution for cleaning existing concrete, unless noted otherwise.
      b. Mix cleaning solution with water at dilution ratio recommended for this work; standard ratio is 1:128 or 1 ounce per gallon of water.
   2. Vacuum floor surface to leave the flooring substrate free from loose debris.
   3. Use degreaser on oil or grease saturated areas as necessary before grinding.

B. Concrete Substrates: Provide solid and substantial concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants and debris incompatible with resinous flooring.
   1. Acid etching of concrete substrate is not recommended.

C. Clean concrete surface in preparation for resinous coating application in accordance with ASTM D4258.
   1. Procedures include broom cleaning, vacuum cleaning, air blast cleaning, water cleaning, detergent water cleaning, and steam cleaning to remove loose materials on substrate surface.
   2. Clean surface using procedure as recommended by resinous flooring manufacturer in compliance with project requirements.

D. Prepare concrete surface for resinous coating application in accordance with ASTM D4259.

1. Prepare concrete surface using diamond grinder and mechanically grind the concrete surface to remove existing contaminants and debris in compliance with project requirements.

E. Joints: Prepare control and expansion joints by filling with properly prepared Hybrid XT flooring mixture as recommended by manufacturer.

F. Concrete Repair: Repair holes or spalling in concrete and/or other areas that require patching by filling damaged areas with properly prepared Hybrid XT flooring mixture or concrete patching compound as recommended by manufacturer's installation guidelines.
   1. Use of dry clean sand may be added to Hybrid XT flooring mixture to fill larger surface areas.
   2. Concrete Patch:
      a. Ensure that substrate, resin, and hardener are within range of 60 to 90 degrees F prior to application.
      b. Mix resin and hardener together for at least one minute until thoroughly blended.
      c. Apply onto plaster's hawk or trowel board immediately after mixing and use trowel to apply concrete patch to repair area and remove excess material.
      d. Do not apply more concrete repair material than can be top coated within 24 hours.

G. When field quality control report indicates portions of concrete substrate are unsatisfactory, repeat process until field quality control report indicates there are no unsatisfactory portions remaining.

3.3 APPLICATION

A. Apply flooring in accordance with manufacturer's instructions.

B. Apply components of resinous flooring system in accordance with manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness and characteristics indicated.
   1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and to optimize adhesion between coats.
   2. Cure resinous flooring components in accordance with manufacturer's written instructions.
   3. Ensure the prevention of contamination during application and curing processes.
   4. Comply with resinous flooring manufacturer's written instructions for application at substrate expansion and control joints.

C. Mixing: Pour equal parts of PART A and PART B into separate container, mixing with squirrel cage-type drill mixer attachment.
   1. Product sets up rapidly; mix in manageable batches in accordance with project requirements.
   2. Mixing colored pigments; adhere to the following maximum quantities of one gallon PART A, plus one gallon PART B, plus one quart of colored pigment in accordance with project requirements.

D. Full Chip Vinyl Broadcast System: Provide color for floor system based on the following:
   1. Primer Coat: Apply colored primer coat at coverage rate of 350 to 400 sq ft per gallon.
   2. Base Coat: After 20 minutes, or when tacky to touch, apply colored base coat at 350 sq ft per gallon, and broadcast colored vinyl chips onto wet base coat.
      a. After 30 minutes or when vinyl chips are set within curing base coat, remove excess chips from surface with tile scraper saving excess chips for future use.
      b. Vacuum clean coated floor area.
   3. Grout Coat: Apply clear grout coat over floor area at coverage rate of 225 sq ft per gallon.

a. To ensure even coverage, broadcast additional colored vinyl chips within grout coat to fill-in light areas as necessary.

4. Top Coats: After 30 minutes, when dry to touch, apply two clear top coats at coverage rate of 500 to 550 sq ft per gallon.

E. Apply finish glaze and anti-skid.

3.4 CLEANING

A. Wait at least 3 days after completion of installation before initial cleaning.

B. Sweep and/or mop daily to remove dust and debris.

1. Use a damp mop as necessary, using warm water and manufacturer's recommended cleaner, rinse thoroughly.
2. Use a machine to scrub floor as necessary, using warm water and a gentle detergent. Use nonabrasive scrubbing pads and scrub at low machine speed.
3. Use caution when using new cleaners; test a patch of floor in an inconspicuous location to ensure cleaner will not harm the surface.

C. Use caution when using new cleaners; test a patch of floor in an inconspicuous location to ensure cleaner will not harm the surface.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Prohibit traffic on floor finish until flooring is fully cured.

END OF SECTION

SECTION 09 68 13

TILE CARPETING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Carpet tile, fully adhered.

1.2 RELATED SECTIONS

A. Section 09 65 13 – Resilient Base and Accessories: Resilient wall base and transitions.

1.3 PRICE AND PAYMENT PROCEDURES

A. Tile Carpet Allowance: Allowance includes furnishing tile carpet. Installation and accessory materials are included in this section and are part of Contract Sum/Price.

1.4 REFERENCE STANDARDS

A. ASTM International:
   1. ASTM D2859 - Standard Specification for Ignition Characteristics of Finished Textile Floor Covering Materials.
   2. ASTM F1861 - Standard Specification for Resilient Wall Base.

B. Carpet and Rug Institute:
   1. CRI Carpet Installation Standard - Standard for Installation of Commercial Carpet.
   2. CRI Model Specifications for Commercial Carpets.

C. Consumer Products Safety Commission:
   1. CPSC 16 CFR 1630 - Standard for the Surface Flammability of Carpets and Rugs.

D. National Fire Protection Association:
   1. NFPA 253 - Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.

1.5 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Samples: Submit 2 inch samples of each type, color and pattern of carpeting materials specified. Architect will select desired color range. Submit full size samples indicating full range of colors and patterns for final selection.

D. Manufacturer's Instructions: Submit special procedures, perimeter conditions requiring special attention.

1.6 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.7 QUALITY ASSURANCE

A. Surface Burning Characteristics:
   1. Floor Finishes: Comply with one of the following:
      a. Class II, minimum 0.22 watts/sq cm when tested in accordance with NFPA 253.
      b. CPSC 16 CFR 1630 and ASTM D 2859.

1.8 QUALIFICATIONS

A. Installation must be performed by a firm with not less than five (5) years of experience in installation of commercial carpet, by methods similar to those required for this project.

B. The installation of the carpet must be guaranteed by the manufacturer of the carpet. All installation procedures recommended by the manufacturer will be followed and only materials supplied by the manufacturer will be used in order to coordinate with warranties offered by the manufacturer.

C. Installation must be performed by an installer that is pre-approved in writing by the manufacturer. The agreement between the manufacturer and the installation company must specifically address all installation procedures and materials in order to coordinate with warranties offered by the manufacturer.

1.9 AMBIENT CONDITIONS

A. Section 01 50 00 - Temporary Facilities and Controls: Ambient conditions control facilities for product storage and installation.

B. Store materials in area of installation for 48 hours prior to installation.

PART 2 PRODUCTS

2.1 CARPET TILE

A. Manufacturer and Product List:
   1. Interface Flor; Style to be selected.
   2. No substitutions permitted.

B. Carpeting Material Allowance: Include an allowance for the purchase of carpeting. Owner will select carpeting for purchase by the Contractor. Any adjustment (add or deduct) in the bid price will be made following purchase by Change Order.
   1. Include $30.00 / square yard in the Bid for purchase and delivery of tile carpeting.

C. Carpet Tile:
   1. Tile Size: 50cm x 50cm, nominal.
   2. Construction: Tufted textured loop

3. Warranties: Mold (20 years); Wear (20 years), Static Generation (20 years), Delamination (20 years), and Dimensional Stability (20 years)

2.2 ACCESSORIES

A. Sub-floor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Floor Primer: Manufacturer's approved floor primer applied to all areas that are to receive carpeting.

C. Moldings and Edge Strips: As specified in Section 09 65 13.

D. Adhesives: Type recommended by Manufacturer for installation of carpeting.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.

B. Installer must examine substrate and conditions under which carpeting and base is to be installed, and notify contractor in writing of conditions detrimental to proper completion of the work. Do not proceed with installation of carpeting and base until satisfactory conditions have been corrected in manner acceptable to installer and carpet manufacturer.

C. Do not install carpet over concrete with either excessive moisture or dust producing surface which is not adequately sealed.

D. Verify that substrate surfaces are smooth and flat with maximum variation of 1/8" inch in 10' ft. and are ready to receive work. Correct any deviations in substrate to the satisfaction of the Owner/Architect.

3.2 PREPARATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

D. Clean substrate.

3.3 INSTALLATION

A. Beginning of installation procedures signifies acceptance of existing substrate and site conditions.

B. Installation of carpet tile must proceed in strict accordance with manufacturer's printed installation instructions. This includes the use of adhesives supplied by the manufacturer.

C. Integrate and blend carpet from different cartons to insure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile to pattern selected by Owner, set parallel to building lines.

F. Locate change of color or pattern between rooms under door centerline.

G. Fully adhere carpet tile to substrate.

H. Trim carpet tile neatly at walls and around interruptions.

I. Complete installation of edge strips, concealing exposed edges.

3.4 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.

B. Remove excess adhesive from floor, base, and wall surfaces without damage.

C. Upon completion, vacuum with a pile lifter or commercial beater-bar type vacuum cleaner.

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, 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.

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. Interior Paint Systems IPS-1:
1. Latex Base, Semi-Gloss Finish:
a. 1st Coat; (Primer):
1) Gypsum Drywall: Latex Primer.
2) Concrete Masonry Units: Surface Filler.
3) Concrete: Latex Primer.
b. 2nd Coat and 3rd Coat: Latex base emulsion, semi-gloss. Color as selected by Architect.

B. Interior Paint System IPS-2:
1. Semi-Gloss Enamel:
a. 1st Coat; (Primer)
1) Ferrous metal: Red oxide primer.
2) Galvanized metal: Galvanized primer.
b. 2nd Coat: Ferrous Metal and Galvanized Metal: Enamel Undercoater.
c. 3rd Coat: Odorless Alkyd Enamel, Semi-Gloss.

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 of surfaces are below the following maximums:
   1. Plaster and Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.

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. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.

D. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

E. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. [Prime metal items including shop primed items.]

3.3 EXISTING WORK

A. Extend existing paint and coatings installations using materials and methods compatible with existing installations and as specified.

3.4 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 metal surfaces lightly between coats to achieve required finish.

D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

E. Prime concealed surfaces of interior wood surfaces scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with thinner.

3.5 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.

3.6 SCHEDULE - INTERIOR SURFACES

A. General finish requirements:
   1. Gypsum board and concrete masonry unit wall surfaces as scheduled: IPS-1.
   2. Hollow metal door frames (with no exterior exposure): IPS-2.

B. Refer to Drawings and individual specifications sections for additional surface finish requirements.

END OF SECTION

SECTION 12 32 16

MANUFACTURED PLASTIC LAMINATE-CLAD CASEWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Fixed modular laminate clad casework and components.
2. Countertops.

B. Related Requirements:
1. Section 07 90 00 – Joint Protection: Sealants for countertop installation.

1.2 REFERENCE STANDARDS

A. American National Standards Institute:
1. ANSI A156.9 - Cabinet Hardware.
2. ANSI A208.1 - Mat-Formed Wood Particleboard.

B. Architectural Woodwork Institute:
1. AWI AWS - Architectural Woodwork Standards.

C. ASTM International:
1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
2. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
3. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

D. Hardwood Plywood and Veneer Association:
1. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood.

E. National Electrical Manufacturers Association:

F. NEMA LD 3 - High Pressure Decorative Laminates.

1.3 DEFINITIONS

A. Identification of casework components and related products by surface visibility.
1. Open Interiors: Any open storage unit without solid door or drawer fronts, units with full glass insert doors and/or acrylic doors, and units with sliding solid doors.
2. Closed Interiors: Any closed storage unit behind solid door or drawer fronts.
3. Exposed Ends: Any storage unit exterior side surface that is visible after installation.
4. Other Exposed Surfaces: Faces of doors and drawers when closed, and tops of cabinets less than 72 inches above furnished floor.
5. Semi-Exposed Surfaces: Interior surfaces which are visible, bottoms of wall cabinets and tops of cabinets 72 inches or more above finished floor.
6. Concealed Surfaces: Any surface not visible after installation.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Manufacturer's catalog with specifications and construction details.

C. Shop Drawings: Indicate dimensions, description of materials and finishes, general construction, specific modifications, component connections, anchorage methods, hardware, and installation procedures, plus the following specific requirements.
   1. Include section drawings of typical and special casework, work surfaces and accessories.
   2. Indicate locations of plumbing and electrical service field connection by others.
   3. Provide one set of shop drawings which includes all products within this section, engineered and built by a single source manufacturer, with seamless coordination amongst all products.
   4. Samples:
   5. Component samples: One set of samples for each of the following:
      a. Decorative laminate color chips.
      b. PVC and ABS edgings.

1.5 CLOSE-OUT SUBMITTALS

A. Section 01 70 00 – Execution and Closeout Requirements: Warranty Submittals.

B. Submit manufacturer's warranty.

1.6 QUALITY ASSURANCE

A. Manufacturer: Provide products certified as meeting or exceeding ANSI-A 161.1-2000 testing standards.

B. Single Source Manufacturer: Casework, countertops and architectural millwork products must all be engineered and built by a single source manufacturer in order to ensure consistency and quality for these related products. Splitting casework, countertops and/or architectural millwork between multiple manufacturers will not be permitted.

C. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

1.7 QUALIFICATIONS

A. Manufacturer: Minimum of 5 years experience in providing manufactured casework systems for similar types of projects, produce evidence of financial stability, bonding capacity, and adequate facilities and personnel required to perform on this project.

B. Installer: Manufacturer's authorized representative if other than manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver completed laminate clad casework, countertops, and related products only after wet operations in building are completed, store in ventilated place, protected from the weather, with relative humidity range of 25 percent to 55 percent.

C. Protect finished surfaces from soiling and damage during handling and installation with a protective covering.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.

B. Do not install casework until permanent HVAC systems are operating and temperature and humidity have been stabilized for at least 1 week.

C. Manufacturer/Supplier shall advise Contractor of temperature and humidity requirements for architectural casework installation areas.

D. After installation, control temperature and humidity to maintain relative humidity between 25 percent and 55 percent.

E. Conditions: Do not install casework until interior concrete work, masonry, plastering and other wet operations are complete.

1.10 FIELD MEASUREMENTS

A. Manufacturer and/or Manufacturer's representative shall verify all critical building dimensions prior to fabrication. Indicate field measurements on shop drawings.

1.11 WARRANTY

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.

B. All materials and workmanship covered by this section will carry a five (5) year warranty from date of acceptance.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturers:
1. TMI Systems Corporation.
   a. Drawings and specifications are based on manufacturer's literature from TMI SYSTEMS CORPORATION, 50 South Third Avenue West, Dickinson, North Dakota, 58601, Phone: 800-456-6716, fixed modular, flexible rail mounted, and mobile casework and accessories.
2. Other acceptable Manufacturers
   a. Case Systems.
   b. Cedar Valley Cabinets and Trim.
   c. Other manufacturers shall comply with the minimum levels of material and detailing indicated on the drawings or as specified.

3. Substitutions: Section 01 60 00 - Product Requirements.

2.2 MATERIALS

A. Core Materials:
1. Particleboard up to 7/8 inch thick: Industrial Grade average 45-pound density particleboard, ANSI A 208.1-2009, M-2 requirements.
2. Particleboard 1 inch thick and thicker: Industrial Grade average 45-pound density particle-board, ANSI A 208.1-2009, M-2 requirements.

3. Medium Density Fiberboard 1/4 inch thick: Minimum average density 45-50 lbs., ANSI A208.2-2009 requirements.
4. MR Moisture Resistant Particleboard: Average 45-pound density particleboard, ANSI A208.1 1-2009, M-2 requirements.
5. Toe Base Plywood: 3/4 inch thickness, CC/CD/CDC grades, of western softwood veneers, with NAUF exterior fully water resistant phenolic glues.

B. Decorative Laminates: GREENGAURD Indoor Air Quality Certified
1. High-pressure decorative laminate VGS (.028), NEMA Test LD 3-2005.
2. High-pressure decorative laminate HGS (.048), NEMA Test LD 3-2005.
3. High-pressure decorative laminate HGP (.039), NEMA Test LD 3-2005.
4. High-pressure cabinet liner CLS (.020), NEMA Test LD 3-2005.
5. High-pressure backer BKH (.048), (.039), (.028), NEMA Test LD3-2005.
6. Thermally fused melamine TFL laminate, NEMA Test LD 3-2005. (TFL allowed on casework interiors only, as specified below. Utilization of TFL on any exterior casework surfaces, including door and drawer faces and finished ends, will not be permitted.)

C. Laminate Color Selection: Maximum 1 color per unit face and 5 colors per project.

D. Edging Materials:
1. 1mm PVC banding, machine applied.
2. 3mm PVC banding, machine applied and machine profiled to 1/8 inch radius.

2.3 CABINET HARDWARE

A. Hinges:
1. Five knuckle, epoxy powder coated, institutional grade, 2-3/4 inch overlay type with hospital tip. 0.095 inch thick. ANSI-BHMA standard A156.9, Grade 1.
   a. Doors 48 inches and over in height have 3 hinges per door.
   b. Magnetic door catch with maximum 5 pound pull provided, attached with screws and slotted for adjustment.

B. Pulls:
   a. Metal Wire Pull; Epoxy Powder Coated – color as selected.
   b. All pulls with 96mm spacing on screws. Pull designs shall comply with the Americans with Disability Act (ADA).

C. Drawer Slides:
1. Regular, kneespace and pencil: 100-pound load rated epoxy coated steel, bottom corner mounted with smooth and quiet nylon rollers. Positive stop both directions with self-closing feature. Paper storage, 150-pound load rated epoxy coated steel slides.
2. File: Full extension, 150-pound load rated epoxy coated steel, bottom corner mounted with smooth and quiet nylon rollers. Positive stop both directions with self-closing feature.

D. Adjustable Shelf Supports:
1. Injection molded transparent polycarbonate friction fit into cabinet end panels and vertical dividers, adjustable on 32mm centers. Each shelf support has 2 integral support pins, 5mm diameter, to interface pre-drilled holes, and to prevent accidental rotation of support. The support automatically adapts to 3/4 inch or 1 inch thick shelving and provides non-tip feature for shelving. Supports may be field fixed if desired. Structural load to 1200 pounds (300 pounds per support) without failure.

E. Locks:
1. Removable core, disc tumbler, cam style lock with strike. Lock for sliding 3/4 inch thick doors is a disc type plunger lock, sliding door type with strike. Lock for sliding glass/acrylic doors is a ratchet type sliding showcase lock.

2. Elbow catch or chain bolt used to secure inactive door on all locked cabinets.

2.4 FABRICATION

A. Fabricate casework, countertops and related products to dimensions, profiles, and details shown.

B. All casework panel components must go through a supplemental sizing process after cutting, producing a panel precisely finished in size and square to within 0.010 inches, ensuring strict dimensional quality and structural integrity in the final fabricated product.

C. Cabinet Body Construction:
1. Tops and bottoms are glued and doweled to cabinet sides and internal cabinet components such as fixed horizontals, rails and verticals. Minimum 6 dowels each joint for 24 inch deep cabinets and a minimum of 4 dowels each joint for 12 inch deep cabinets. (Mechanical or metal hardware fasteners joining cabinet top and bottom panels to the sides will not be accepted.)
   a. Tops, bottoms and sides of all cabinets are particleboard core.
2. Cabinet backs: 1/4 inch thick medium density fiberboard panel fully captured by the cabinet top, bottom and side panels. Finish to match cabinet interior. 3/4 inch x 4 inch particleboard rails will be placed behind the back panel at the top and bottom, and doweled to the sides utilizing 10mm hardwood fluted dowels. A third intermediate rail will be included on all cabinets taller than 56 inches. Utilize hot melt glue to further secure back and increase overall strength.
   a. Exposed back on fixed or movable cabinets: 3/4 inch thick particleboard with the exterior surface finished in VGS laminate as selected.
3. Fixed base and tall units have an individual factory-applied base, constructed of 3/4 inch thick plywood. Base is 102mm (nominal 4 inch) high unless otherwise indicated on the drawings.
4. Base units, except sink base units: Full sub-top glued and doweled to cabinet sides. (Mechanical or metal hardware fasteners joining cabinet sub-top panel to the sides will not be accepted.)
   a. Sink base units are provided with open top and a stretcher at the front, attached to the sides. Back to be split removable access panel.
5. Side panels and vertical dividers shall receive adjustable shelf hardware at 32mm line boring centers. Mount door hinges, drawer slides and pull-out shelves in the line boring for consistent alignment.
6. Exposed and semi exposed edges.
   a. Edging: 1mm PVC machine applied.
7. Adjustable Shelves in Cabinets
   a. Core: Particleboard.
   b. Core Thickness: 3/4 inch up to 30 inches wide, 1 inch over 30 inches wide.
   c. Edge: 1mm PVC on Front Edge Only.
8. Interior finish, units with open Interiors:
   a. Top, bottom, back, sides, horizontal and vertical members, and adjustable shelving faces with high-pressure decorative VGS laminate. Use of TFL on exposed open interiors will not be permitted.
9. Interior finish, units with closed Interiors:
   a. Top, bottom, back, sides, horizontal and vertical members, and adjustable shelving faces with TFL Thermally Fused Melamine laminate.
10. Exposed ends:
   a. Faced with high-pressure decorative VGS laminate. Use of TFL on exposed ends will not be permitted.
11. Wall unit bottom:
   a. Faced with high-pressure decorative VGS laminate. Use of TFL on wall unit bottoms will not be permitted.

12. Balanced construction of all laminated panels is mandatory. Unfinished core stock surfaces, even on concealed surfaces (excluding edges), are not permitted.

D. Drawers:
1. Sides, back and sub front: Minimum 1/2 inch thick particleboard, laminated with TFL Thermally Fused Melamine, doweled and glued into sides. Top edge banded with 1mm PVC.
   a. Drawer bottom: Minimum 1/2 inch thick particleboard laminated with TFL Thermally Fused Melamine, screwed directly to the bottom edges of drawer box.

E. Door/Drawer Fronts:
1. Core: 3/4 inch thick particleboard.
2. High-pressure decorative VGS laminate exterior, balanced with high-pressure cabinet liner CLS. Use of TFL on exterior or interior surfaces of door/drawer fronts will not be permitted.
3. Edges: 3mm PVC, machine applied, external edges and outside corners machine profiled to 1/8 inch radius.
4. Provide double doors in opening in excess of 24 inches wide.

F. Door Fronts with Glass Insert captured by Retainer Clips (CUSTOM GRADE):
1. Core: 3/4 inch thick particleboard.
2. High-pressure decorative VGS laminate exterior, balanced with high-pressure VGS laminate. Use of TFL on exterior or interior surfaces of door fronts will not be permitted.
3. Edges: 3mm PVC, machine applied, external edges and outside corners machine profiled to 1/8 inch radius.
4. Provide cutout in door panel resulting in 3-3/8 inch frame. Exposed cutout edge to be finished with 1mm PVC edgebanding.
5. Notch cutout 3/8 inch x 1/4 inch for glass panel to set into, mounting flush with the back side (interior side) of the door panel. Interior cutout edge to be painted a compatible color to the interior surface.
6. Glass panel to be captured and held in place utilizing glass retainer clips, screwed in place. Minimum eight clips per glass panel located in the four corners of the cutout.

2.5 DECORATIVE LAMINATE COUNTERTOPS:

A. Core:
1. All countertops except at sink elevations: 1-1/8 inch thick ANSI A208.1-1993 M-2 particleboard.
2. Countertops at sink elevations: 1-1/8 inch thick ANSI A208.1-1993 MR10 moisture-resistant (MR) particleboard.

B. Surface: High-pressure decorative HGS/HGP laminate with balanced backer sheeting.

C. Edges, including applied backsplash: 3mm PVC, exposed edges and corners machine profiled to 1/8 inch radius. Edges are machine applied with water based low Volatile Organic Compound (VOC), non-toxic, PVA adhesive.

D. All countertops joints must be dry fit at the factory to check for consistency in color from one panel to the other and overall finished panel thickness, resulting in a high quality product easy to install.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. The casework contractor must examine the job site and the conditions under which the work under this section is to be performed, and notify the building owner in writing of unsatisfactory conditions. Do not proceed with work under this Section until satisfactory conditions have been corrected in a manner acceptable to the installer..

3.2 PREPARATION

A. Condition casework to average prevailing humidity conditions in installation areas prior to installing.

3.3 INSTALLATION

A. Erect casework, plumb, level, true and straight with no distortions. Shim as required. Where laminate clad casework abuts other finished work, scribe and cut to accurate fit.

B. Use fixture attachments in concealed locations for wall mounted components.

C. Use concealed joint fasteners to align and secure adjoining cabinet units and counter tops.

D. Secure cabinet and counter bases to floor using appropriate angles and anchorages.

E. Install back and side splashes to wall surface and counter top. Apply bead of sealant to joints and run smooth.

F. Repair minor damage per plastic laminate manufacturer’s recommendations.

3.4 TOLERANCES

A. Maximum Variation from Indicated Position: 1/16 inch.

B. Maximum Offset from Alignment with Abutting Materials: 1/32 inch.

3.5 ADJUSTING

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for starting and adjusting.

B. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind.

3.6 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.

B. Remove and dispose of all packing materials and related construction debris.

C. Clean cabinets inside and out. Wipe off fingerprints, pencil marks, and surface soil etc., in preparation for final cleaning by the building owner.

END OF SECTION

SECTION 22 00 00
PLUMBING GENERAL PROVISIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY OF WORK

A. Furnish labor, materials, and equipment necessary for completion of work as described in Contract Documents.

B. It is the intent of these specifications that the systems specified herein are to be complete and operational before being turned over to the owner. During the bidding process, the contractor is to ask questions or call to the engineer's attention any items that are not shown or may be required to make the system complete and operational. Once the project is bid and the contractor has accepted the contract, it is his responsibility to furnish and install all equipment and parts necessary to provide a complete and operational system without additional cost to the owner. The work shall also include any items which, while not specifically included in the Contract Documents, are reasonable and are accepted trade practices or necessary for the proper completion of the systems.

C. Furnish and install fire stopping materials to seal penetrations through fire rated structures and draft stops.

1.03 DRAWINGS AND SPECIFICATIONS

A. Drawings are diagrammatic and are intended to convey a general arrangement and scope of the work included in the contract. Should drawings contradict themselves or the Specifications, the better quality or greater quantity of work shall be included.

B. The Plumbing Contractor shall be familiar with all Architectural, Civil, Structural, Fire Protection, Mechanical and Electrical Drawings and Specification Sections, and shall follow any special requirements or directions included in these areas.

C. Drawings and Specifications are intended to include all work and materials necessary for completion of the work. Any incidental item of material, labor or detail required for the proper execution and completion of the work and omitted from either the drawings and specifications or both, but required by governing codes local regulations, trade practices, operational functions, and good workmanship, shall be provided as part of the Contract Work without extra charge, even though not specifically detailed or specified.

D. Should there be any question as to the scope of work for which the Plumbing Contractor is responsible, they should request an interpretation before submitting their bid. After contracts are awarded, the Owner shall not be responsible for claims for extras for work that was not included because the Plumbing Contractor was unsure if they should include given work in their bid.

1.04 SUBMITTALS

A. Substitutions: By specific designation and description, standards are established for specialties and equipment. Other makes of specialties and equipment of equal quality will be considered provided such proposed substitutions are submitted to the Architect for his approval, complete with specification data showing how it meets the specifications, at least 5 working days prior to bid opening. A list of approved substitutions will be published as an addendum.

B. Product Data & Shop Drawings:
   1. Portable Document Format (PDF) files of shop drawings on all equipment and materials indicated on the Drawings for approval, prior to placing delivery orders (also refer to Architectural Specifications for shop drawing requirements). PDF files shall be e-mailed to the Construction Manager.

2. At the time of submittal for review by the Engineer, shop drawings shall include signatures or stamps indicating that the Contractor and/or the Sub-Contractor has reviewed the submittals and has coordinated the required space, quantities required, services and work of other trades for the equipment or system being submitted.
3. Provide shop drawings of all manufactured equipment and materials except pipe, pipe fittings. Drawings shall include equipment capacities, weights, dimensions, construction details, installation, controls, wiring diagrams, and motor data.
4. Mark literature to indicate specific item with applicable data underlined.
5. Engineer's approval of shop drawings is for general application only and is a service only and not considered as a guarantee of total compliance with or as relieving the Plumbing Contractor of basic responsibilities under all contract documents, and does not approve changes in time or cost.
6. After approval, the Plumbing Contractor and it's subcontractors are responsible to provide information to all other trades involved in, or affected by, the installation of the Plumbing equipment.

1.05 SITE AND PROJECT DOCUMENT EXAMINATION

A. Submission of a bid proposal is considered evidence that the Plumbing Contractor has completed the following:
   1. Informed themselves of the site conditions.
   2. Examined Drawings and Specifications of all trades including Architectural, Structural, Mechanical and Electrical, and is proficient, experienced and knowledgeable of all standards, codes, ordinances, permits and regulations which affect his respective trade, and that all costs are included in his proposal.

B. The Plumbing Contractor and/or Sub-Contractor shall insure all required permits, and assessments have been obtained prior to any work beginning. Contractor shall verify requirement to include privilege fees, plan review fees, and permits as part of his formal bid.

C. Field Changes:
   1. This Plumbing Contractor shall not make any field changes that affect the system design, equipment manufacturer, timing, costs, or performance without written approval from the Engineer. Approval shall be in the form of a written Field Change Request or Change Order, or supplemental memorandum addressed to the Engineer. All Change Orders shall be directed through the General Contractor and Architect.
   2. The Contractor assumes liability for any additional costs for changes requested. Should any unauthorized change be determined by the Engineer and Architect as lessening the value of the project, a credit will be request, and shall be issued as a change to the contract.

1.06 STANDARDS, CODES, AND PERMITS

A. Refer to Division 01, General Requirements and Supplementary Conditions.

B. All work shall comply with the latest edition of applicable standards and codes of following:
   1. ASA - American Standards Association
   2. ASME - American Society of Mechanical Engineers
   3. ASTM - American Society of Testing Materials
   4. ANSI - American National Standards Institute
   5. AGA - American Gas Association
   6. ASHRAE - American Society of Heating, Refrigerating, and Air Conditioning Engineers
   7. AWWA - American Water Works Association
   8. NFPA - National Fire Protection Association
   9. IBR - Institute of Boiler and Radiator Manufacturers
   10. AWS - American Welding Society
   11. UL - Underwriter's Laboratories
   12. NEMA - National Electric Manufacturers Association

13. NEC - National Electric Code
14. ARA - American Refrigeration Association
15. OSHA - Occupational Safety and Health Act
16. ABMA - American Boiler Manufacturers Association
17. International Plumbing Code 2021 (with Michigan Amendments)
18. Michigan Mechanical Code 2021

C. All work shall be provided and tested in accordance with all applicable local county, state laws, ordinances, codes, rules and regulations.

D. No work shall be covered or enclosed by walls, ceilings, or other, until the work is tested in accordance with applicable codes and regulations, and successful tests witnessed and approved by authorized inspection authority. Written approvals shall be secured by the Plumbing Contractor and submitted to Engineer before final acceptance of work will be granted.

1.07 UTILITY SERVICE REQUIREMENTS

A. Exterior plumbing services including sanitary drain and storm drain systems beyond 5 feet from the building are covered within the scope of the Civil Engineer on this project.

PART II PRODUCTS

2.01 STANDARDS

A. All products shall be furnished by established manufacturers regularly engaged in making the type of materials to be provided and complete with all parts, accessories, connections, etc. as specified or as recommended and/or required by the manufacturer.

B. All material where applicable shall be labeled or listed by Underwriters Laboratories, Inc.

C. All materials and equipment shall be installed in strict compliance with manufacturer's installation instructions. Where special installations or deviations are required, written approval from the manufacturer is required, and shall not void the manufacturer warranty.

2.02 SUBSTITUTIONS AND CHANGES

A. The Contractor and/or Equipment Supplier may propose alternate equipment or materials of EQUAL or better quality, function, performance, durability and appearance. This information is to be submitted to the Engineer's Office TEN (10) working days prior to bid due date to allow for proper review time and to issue an addendum incorporating the acceptable substitution(s). It is the submitter's responsibility to provide sufficient material for review as required by Engineer's Office. Acceptance and approval is the responsibility of the Engineer.

B. The Contractor and/or Equipment Supplier is liable for any added costs to himself or others and is responsible for verifying dimensions, clearance and roughing-in requirements, when product not named as the basis of design are used and is responsible for advising other Contractors of variations and submit revised drawing layout for approval of Engineer.

C. See SECTION 22 00 10 for voluntary alternates.
   1. No substitutions will be accepted after bids are received.
   2. When only one manufacturer is listed within the description of the plumbing fixtures or equipment, the design engineering or project requirements will not allow substitution of other manufacturers.
   3. Contractor will be responsible for ALL costs (engineering time, manufacturer's costs, distributor costs, etc.) incurred to replace equipment not approved if substitutions are made by the distributor, manufacturer's rep., contractor or subcontractor.

D. Equipment not listed in the Schedules or this Division, or not approved in writing by the Engineer, shall be separated from the Base Bid and shall be listed as a Voluntary Alternate only. Before acceptance, all Voluntary Alternates must be approved by the Engineer and Architect, and must be approved for use by any special Specifications related to the job.

E. The Plumbing Contractor is responsible and liable for any added costs to themselves or others that may be a result from use of Approved Alternates or Voluntary Alternates.

F. The Plumbing Contractor is responsible for bidding the Plumbing materials such as pipe and materials as listed on the Drawings and this Division 22 Specification. Alternate materials or value engineering must be pre-approved by the Engineer, prior to bid submittal. Approval of alternate materials must be shared with the Architect, Owner, and other bidders.

2.03 ELECTRICAL REQUIREMENTS AND CONNECTIONS

A. General:
   1. When the equipment not named as the basis of design is approved for use, the Contractor is responsible for any costs incurred by other trades, including revisions to the Electrical requirements such as conduit, wire, starters, heaters, fused switches, disconnects, or circuit breakers.
   2. Electrical items furnished shall bear the Underwriter's Laboratories label and the installation shall comply with requirements of the National Electric Code, ANSI, IPCEA, IRI, and local codes, ordinances and regulations.

B. Motor Starters and Controls:
   1. The Electrical Contractor shall provide all manual or magnetic motor starters as required for all motors as indicated on all Electrical Drawings.
   2. The Plumbing Contractor shall provide factory installed motor starters integral with packaged equipment containing thermal overcurrent protection in all underground conductors with heater coils selected for specific motor usage for all motors.

C. Electrical Wiring and Controls:
   1. The Plumbing Contractor shall furnish and install all motors, drives, controllers integral to equipment and factory mounted controls for all plumbing equipment.
   2. The Electrical Contractor shall install all Class 1 (120 volt and greater) power wiring, conduit to motors and/or factory mounted control panels as indicated on Electrical Drawings or as indicated in Specifications.
   3. All electrical wiring work by the Plumbing Contractor shall be in accordance with Division 26 requirements.

PART III EXECUTION

3.01 COORDINATION OF MECHANCIAL WORK

A. Responsibility:
   1. The Plumbing Contractor shall be responsible for all Sub-Contractors and Suppliers, and include in his bid all materials, labor and equipment involved in accordance with all local regulations, jurisdictional awards, decisions, and secure compliance of all parts of the Specifications and Drawings regardless of sectional inclusion in these Specifications.
   2. The Plumbing Contractor and Sub-Contractors shall be responsible for all parts applicable to the job in accordance with the Specifications and Drawings, and shall be responsible for coordinating locations and arrangements of all Plumbing work with all other relevant Architectural, Structural, Electrical, and fire protection Mechanical Drawings, shop drawings, and Specifications.

B. Submission of a bid proposal is considered evidence that the Contractor and it's Sub-Contractors are fully capable of providing the following and have included the following in their bid proposal:
   1. Fully proficient and experienced to do the work described in the contract documents.
   2. Knowledgeable of all federal, state, and local standards, codes, ordinances, permits, and regulations that pertain to the work described in the contract documents.
   3. Have properly estimated the time and workforce, including subcontractors, needed to complete the job by the due date.
   4. Have included all material, equipment, and labor costs for completion of the job, including all subcontractors costs.
   5. Have all the equipment, tools, supplies, vehicles, and trailers to complete the job.
   6. Have included all travel, food and lodging expenses.

C. Installation of Plumbing Systems:
   1. Install all Plumbing equipment as shown on the Drawings. Deviations of the Plumbing systems and/or installation locations shall be approved by the Engineer.
   2. Changes or deviations of the Plumbing systems design and/or installation locations may require redrawing and resubmittal of the Drawings to the state or local Plumbing or building inspector.
   3. Any costs associated with re-drawing and resubmittal of the Plumbing Drawings, that did not have pre-approval from the Mechanical Engineer, may be charged to the Plumbing Contractor or subcontractors. All costs shall be based on a time and materials basis.
   4. Minor deviations from the original design will be accepted, but a written request or courtesy call to the Engineer is required. The Engineer may request a written report of the situation and a written request for record.

3.02 EQUIPMENT CLEARANCE

A. The Plumbing Contractor shall coordinate with the Electrical Contractor's equipment location to insure adequate clearance is maintained as required by the National Electrical Code and applicable state and local codes, as well as accessibility for future maintenance and operation.

B. Work shall be arranged with building construction to provide minimum 6'-8" overhead clearance where possible.

C. Install equipment in a neat and workmanlike manner. Install, align, and level all equipment so that it may be easily accessed, adjusted, serviced, and balanced.

D. Install equipment so that valves, and controls may be easily accessed.

E. Install equipment so that it does not block or limit access to other equipment, access panels, etc.

F. Install equipment so that it may be easily inspected.

3.03 GENERAL SUPPORTS

A. Plumbing Contractor shall provide all necessary channel, angle, brackets, vibration isolators, or supplementary steel as required for adequate support for all piping, specialties, ductwork, and equipment which is hung from the ceiling or roof, or mounted to the floor or roof. For equipment requiring welding or bolting to steel framing, or anchoring to concrete structures, the Plumbing Contractor shall require written approval from the Architect and General Contractor.

B. Where piping or equipment is suspended from concrete construction, coordinate with the General Contractor to set approved concrete inserts, that shall receive hanger rods such as UniStrut in the concrete form-work. In metal decks, coordinate with General Contractor to use Ramset or welds as required.

3.04 WALL, FLOOR, CEILING, AND ROOF OPENINGS

A. Locate all openings and advise the General Contractor of details and templates of all openings necessary for inspection of Plumbing work.

B. All openings including sawcuts, cores, and required lintels shall be provided by the General Contractor, and shall be approved by the Architect and Structural Engineer. Size and location are the responsibility of the Plumbing Contractor. Cracks and rough edges left following installation of equipment shall be caulked, fire-caulked if required, or filled by the Mechanical Contractor.

C. Perform or pay for all cutting, fitting, repairing, patching and finishing of work of other sections where it is necessary to disturb such work to permit installation of mechanical work.

D. All roof openings including sawcuts and cores through the roof deck shall be provided by the General Contractor, and shall be approved by the Architect and Structural Engineer. Size and location of the openings are the responsibility of the Plumbing Contractor.

E. All roof curbs, Pate Curbs, or other specialty curbs shall be the responsibility of the Plumbing Contractor. Specialty roof curb flashings or curb-membranes shall be included.

F. All roofing materials including standard flashing, and the installation of roofing systems around the Plumbing equipment shall be the responsibility of the General Contractor.

G. All roof deck supporting materials including angles, joists, etc., shall be the responsibility of the General Contractor, and shall be approved by the Architect and Structural Engineer.

3.05 FIELD CHANGES

A. The Plumbing Contractor shall not make any field changes that affect the system design, equipment manufacturer, timing, costs, or performance without written approval from the Engineer. Approval shall be in the form of a written Field Change Request or Change Order, or Supplemental Instruction. All Change Orders shall be directed through the General Contractor and Architect.

B. The Contractor assumes liability for any additional costs for changes requested. Should any unauthorized change be determined by the Engineer and Architect as lessening the value of the project, a credit will be request, and shall be issued as a change to the contract.

3.06 PROJECT CLOSE-OUT

A. Final Acceptance and payment will only be made after final Punch-List completion and receipt at the Engineer's Office of:
   1. Approved Operating and Maintenance Instruction Manuals
   2. Approved Record Drawings (As-Builts)
   3. All Guarantees/Warranties
   4. Certificates of Inspection
   5. Written and signed verification that Owner's Training has taken place
   6. All extra materials specified to be provided within the Contract Documents

3.07 CERTIFICATES OF INSPECTION

A. Submit to the Engineer's Office evidence that installation has been inspected and approved by local or state mechanical inspector and/or the authority having jurisdiction.

3.08 GUARANTEES AND WARRANTIES

A. All labor, materials and equipment shall be guaranteed by Contractor and/or warranted by Manufacturer for ONE (1) year after acceptance date except where specified longer for special equipment. Contractor shall secure such warranty from all Suppliers (not one year from shipment date) or Contractor to assume warranty.

B. Acceptance date of substantial completion shall be Owner occupancy as determined by Architect/Engineer.

C. Contractor shall make all necessary alterations, repairs, adjustments, replacements during guarantee periods as directed by Architect/Engineer to comply with Drawings and Specifications at no cost to Owner.

D. Repair or replacements made under guarantee bear further ONE (1) year guarantee from date of acceptance of repair or replacement.

E. At the end of a one year period of continuous operation, make a complete inspection of all systems, fixtures, equipment, safety devices and controls to insure equipment is operating properly, and report to Engineer in writing.

3.09 PLACING EQUIPMENT INTO OPERATION

A. Contractor shall be responsible for all startup procedures, system checks and balancing associated with his equipment.

B. All equipment shall be installed, tested and operated in accordance with manufacturer's recommendations at normal operating conditions.

C. All permanent plumbing equipment operated during construction periods shall be cleaned and damaged equipment replaced.

3.10 OWNER'S TRAINING

A. The Plumbing Contractor shall conduct ONE (1) - 2-hour training session(s) on the operation and maintenance of all plumbing equipment. Schedule training with Owner at least 72 hours prior to session(s).

END OF SECTION

SECTION 22 00 10
PLUMBING EQUIPMENT AND MATERIALS

PART 1 GENERAL

1.01 INSTRUCTION:

A. The Plumbing Contractor is to either copy or remove this specification section from the spec book and complete as follows:
   1. Indicate the specific manufacturer on which the bidder's base bid price is based in the blank space provided.
   2. All equipment is to be bid as specified. Material or equipment from another manufacturer may be bid as a Voluntary Alternate, but the dollar amount must be shown as an "Add" or "Deduct" to the base bid. Provide the name of the alternate manufacturer in the space provided.
   3. Insert the name(s) of each subcontractor used in your bid in the space provided in Part 3.
   4. This form shall be submitted with the bid.

1.02 RELATED DOCUMENTS:

A. The other Contract Documents complement the requirements of this Section. The General Requirements apply to the work of this section.

1.03 DEVIATIONS FROM SPECIFIED MATERIAL:

A. See SECTION 22 00 00, Part 2, Paragraph 2.02 - Substitutions and Changes. Base bid shall be based on manufacturers listed in this specification or on the drawings.

PART 2 PRODUCTS

2.01 THE FOLLOWING IS A LIST OF APPROVED MANUFACTURERS, GROUPED ACCORDING TO TYPES OF MATERIALS OR EQUIPMENT.

A. Sinks:
   1. American Standard, Elkay, and Kohler
      a. Voluntary Alternate_____
      b. Add $ Deduct $ _____

B. Faucets:
   1. American Standard, Chicago Faucets, Kohler, and Sloan
      a. Voluntary Alternate_____
      b. Add $ Deduct $ _____

PART 3 SUB-CONTRACTORS

3.01 INSERT THE NAME OF EACH SUB-CONTRACTOR AND WORK TO BE PERFORMED BELOW:

A. Subcontractor Work Performed _____

B. Subcontractor Work Performed _____

C. Subcontractor Work Performed _____

END OF SECTION

SECTION 22 05 53
IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nameplates.

B. Tags.

C. Pipe markers.

D. Ceiling tacks.

1.02 REFERENCE STANDARDS

A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2007.

B. ASTM D709 - Standard Specification for Laminated Thermosetting Materials; 2013.

1.03 SUBMITTALS

A. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.

B. Product Data: Provide manufacturers catalog literature for each product required.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

A. Major Control Components: Nameplates.

B. Piping: Pipe markers.

C. Pumps: Nameplates.

D. Equipment: Nameplates.

E. Tanks: Nameplates.

F. Valves: Tags and ceiling tacks where located above lay-in ceiling.

2.02 NAMEPLATES

A. Manufacturers:
   1. Brimar Industries, Inc: www.pipemarker.com/#sle.
   2. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
   3. Seton Identification Products: www.seton.com/#sle.

B. Description: Laminated three-layer plastic with engraved letters.
   1. Letter Color: White.
   2. Letter Height: 1/2 inch (13 mm).
   3. Background Color: Black.
   4. Plastic: Comply with ASTM D709.

2.03 TAGS

A. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch (40 mm) diameter with smooth edges.

B. Valve Tag Chart: Typewritten letter size list in anodized aluminum frame.

C. Chart: Typewritten letter size list in anodized aluminum frame.

2.04 PIPE MARKERS

A. Manufacturers:
   1. Brady Corporation: www.bradycorp.com/#sle.
   2. Brimar Industries, Inc: www.pipemarker.com/#sle.
   3. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
   4. Seton Identification Products: www.seton.com/#sle.

B. Comply with ASME A13.1.

C. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

E. Color code as follows:
   1. Potable, Cooling, Boiler, Feed, Other Water: Green with white letters.
   2. Fire Quenching Fluids: Red with white letters.
   3. Flammable Fluids: Yellow with black letters.
   4. Compressed Air: Blue with white letters.

2.05 CEILING TACKS

A. Description: Steel with 3/4 inch (20 mm) diameter color coded head.

B. Color code as follows:
   1. Plumbing Valves: Green.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

A. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

B. Install tags with corrosion resistant chain.

C. Install plastic pipe markers in accordance with manufacturer's instructions.

D. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

E. Use tags on piping 3/4 inch (20 mm) diameter and smaller.
   1. Identify service, flow direction, and pressure.
   2. Install in clear view and align with axis of piping.
   3. Locate identification not to exceed 20 feet (6 m) on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

F. Identify piping, concealed or exposed, with plastic pipe markers. Use tags on piping 3/4 inch (20 mm) diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet (6 m) on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION

SECTION 22 07 19
PLUMBING PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Piping insulation.

B. Jackets and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 84 00 - Firestopping.

B. Section 22 10 05 - Plumbing Piping: Placement of hangers and hanger inserts.

1.03 REFERENCE STANDARDS

A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.

C. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2013.

D. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2014.

E. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2015.

F. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2013).

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.

H. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.

I. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

1.05 FIELD CONDITIONS

A. Maintain ambient conditions required by manufacturers of each product.

B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, UL 723, ASTM E84, or UL 723.

2.02 GLASS FIBER

A. Manufacturers:
   1. Johns Manville Corporation: www.jm.com/#sle.
   2. Knauf Insulation: www.knaufinsulation.com/#sle.
   3. Owens Corning Corporation: www.ocbuildingspec.com/#sle.

B. Insulation: ASTM C547and ASTM C795; rigid molded, noncombustible.
   1. K (Ksi) Value: ASTM C177, 0.24 at 75 degrees F (0.035 at 24 degrees C).
   2. Maximum Service Temperature: 850 degrees F (454 degrees C).
   3. Maximum Moisture Absorption: 0.2 percent by volume.

C. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches (0.029 ng/Pa s m).

D. Tie Wire: 0.048 inch (1.22 mm) stainless steel with twisted ends on maximum 12 inch (300 mm) centers.

2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

A. Manufacturers:
   1. Armacell LLC; AP Armaflex: www.armacell.us/#sle.

B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.
   1. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C).
   2. Maximum Service Temperature: 220 degrees F (104 degrees C).
   3. Connection: Waterproof vapor barrier adhesive.

C. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.

2.04 JACKETS

A. PVC Plastic.
   1. Jacket: One piece molded type fitting covers and sheet material, off-white color.
      a. Minimum Service Temperature: 0 degrees F (Minus 18 degrees C).
      b. Maximum Service Temperature: 150 degrees F (66 degrees C).
      c. Moisture Vapor Permeability: 0.002 perm inch (0.0029 ng/Pa s m), maximum, when tested in accordance with ASTM E96/E96M.
      d. Thickness: 10 mil (0.25 mm).
      e. Connections: Brush on welding adhesive.
   2. Covering Adhesive Mastic: Compatible with insulation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that piping has been tested before applying insulation materials.

B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.

C. Exposed Piping: Locate insulation and cover seams in least visible locations.

D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.

E. Glass fiber insulated pipes conveying fluids below ambient temperature:
   1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
   2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.

F. For hot piping conveying fluids 140 degrees F (60 degrees C) or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.

G. Glass fiber insulated pipes conveying fluids above ambient temperature:
   1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.

2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.

H. Inserts and Shields:
1. Application: Piping 1-1/2 inches (40 mm) diameter or larger.
2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
3. Insert Location: Between support shield and piping and under the finish jacket.
4. Insert Configuration: Minimum 6 inches (150 mm) long, of same thickness and contour as adjoining insulation; may be factory fabricated.

I. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 07 84 00.

J. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet (3 meters) above finished floor): Finish with canvas jacket sized for finish painting.

3.03 SCHEDULES

A. Plumbing Systems:
1. Domestic Hot Water Supply:
   a. Glass Fiber Insulation:
      1) Pipe Size Range: 1/2" - 1-1/4", thickness: 1-inch.
      2) Pipe Size Range: 1-1/2"+, thickness: 1-1/2 inch.
2. Domestic Cold Water:
   a. Glass Fiber Insulation:
      1) Pipe Size Range: 1/2" - 1-1/4", thickness: 1-inch.
      2) Pipe Size Range: 1-1/2"+, thickness: 1-1/2 inch.
3. Condensate Piping:
   a. Glass Fiber Insulation:
      1) Pipe Size Range: All sizes.
      2) Thickness: 1/2 inch.
4. Horizontal Storm Piping above grade:
   a. Glass Fiber Insulation:
      1) Pipe Size Range: All sizes.
      2) Thickness: 1 inch.
5. Exposed Pan of Roof Drain inside of building:
   a. Glass Fiber Insulation:
      1) Drain Size: All sizes.
      2) Thickness: 1 inch.
6. Supplies & Traps at Barrier Free Lavatories:
   a. Glass Fiber Insulation:
      1) Pipe Size Range: All sizes.
      2) Thickness: 1/2 inch.

END OF SECTION

SECTION 22 10 05
PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe, pipe fittings, specialties, and connections for piping systems.
   1. Sanitary sewer.
   2. Domestic water.
   3. Flanges, unions, and couplings.
   4. Pipe hangers and supports.
   5. Ball valves.
   6. Check.

1.02 REFERENCE STANDARDS

A. ANSI Z21.22 - American National Standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems; 1999, and addenda A&B (R2004).

B. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2011.

C. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2012.

D. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2013.

E. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes; 2013.

F. ASME B31.1 - Power Piping; 2014.

G. ASME B31.9 - Building Services Piping; 2014.

H. ASME BPVC-IV - Boiler and Pressure Vessel Code, Section IV - Rules for Construction of Heating Boilers; 2015.

I. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Welding, Brazing, and Fusing Qualifications; 2015.

J. ASSE 1003 - Performance Requirements for Water Pressure Reducing Valves for Domestic Water Distribution Systems; 2009.

K. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999 (Reapproved 2014).

L. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.

M. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2015.

N. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2015.

O. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).

P. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2014.

Q. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2013.

R. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2010.

S. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2002 (Reapproved 2010).

T. ASTM D2239 - Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter; 2012.

U. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40; 2013.

V. ASTM D2513 - Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings; 2014.

W. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2012.

X. ASTM D2609 - Standard Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe; 2002 (Reapproved 2009).

Y. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2014.

Z. ASTM D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing; 2014.

AA. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2011.

BB. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings; 1996 (Reapproved 2010).

CC. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2015.

DD. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; 2010.

EE. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; 2012.

FF. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast; 2009.

GG. AWWA C606 - Grooved and Shouldered Joints; 2011.

HH. AWWA C651 - Disinfecting Water Mains; 2005.

II. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications; 2009.

JJ. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2011.

KK. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2009.

LL. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves; 2013.

MM. MSS SP-85 - Cast Iron Globe & Angle Valves, Flanged and Threaded Ends; 2011.

NN. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.

OO. NSF 61 - Drinking Water System Components - Health Effects; 2014 (Errata 2015).

PP. NSF 372 - Drinking Water System Components - Lead Content; 2011.

1.03 SUBMITTALS

A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

B. Project Record Documents: Record actual locations of valves.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with applicable codes.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

C. Welding Materials and Procedures: Comply with ASME BPVC-IX and applicable state labor regulations.

D. Welder Qualifications: Certified in accordance with ASME BPVC-IX.

E. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING

A. PVC Pipe: ASTM D2665 or ASTM D3034.
   1. Fittings: PVC.
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.03 SANITARY SEWER PIPING, ABOVE GRADE

A. Cast Iron Pipe: CISPI 301, hubless, service weight.
   1. Fittings: Cast iron.
   2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

2.04 DOMESTIC WATER PIPING, ABOVE GRADE

A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
   2. Joints: ASTM B32, alloy Sn95 solder.

2.05 NATURAL GAS PIPING, ABOVE GRADE

A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
   1. Fittings: ASME B16.3, malleable iron, or ASTM A234/A234M, wrought steel welding type.
   2. Joints: Threaded or welded to ASME B31.1.

2.06 FLANGES, UNIONS, AND COUPLINGS

A. Unions for Pipe Sizes 3 Inches (80 mm) 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 1 Inch (25 mm):
   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. Mechanical Couplings for Grooved and Shouldered Joints: Two or more curved housing segments with continuous key to engage pipe groove, circular C-profile gasket, and bolts to secure and compress gasket.
   1. Dimensions and Testing: In accordance with AWWA C606.
   2. Housing Material: Provide ASTM A47/A47M malleable iron or ductile iron, galvanized.
   3. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel.
   4. When pipe is field grooved, provide coupling manufacturer's grooving tools.

2.07 PIPE HANGERS AND SUPPORTS

A. Provide hangers and supports that comply with MSS SP-58.
   1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.

2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
3. Trapeze Hangers: Welded steel channel frames attached to structure.
4. Vertical Pipe Support: Steel riser clamp.

B. Plumbing Piping - Drain, Waste, and Vent:
1. Hangers for Pipe Sizes 1/2 Inch (15 mm) to 1-1/2 Inches (40 mm): Malleable iron, adjustable swivel, split ring.
2. Hangers for Pipe Sizes 2 Inches (50 mm) and Over: Carbon steel, adjustable, clevis.
3. Wall Support for Pipe Sizes to 3 Inches (80 mm): Cast iron hook.
4. Wall Support for Pipe Sizes 4 Inches (100 mm) and Over: Welded steel bracket and wrought steel clamp.

C. Plumbing Piping - Water:
1. Hangers for Pipe Sizes 1/2 Inch (15 mm) to 1-1/2 Inches (40 mm): Malleable iron, adjustable swivel, split ring.
2. Hangers for Cold Pipe Sizes 2 Inches (50 mm) and Over: Carbon steel, adjustable, clevis.
3. Hangers for Hot Pipe Sizes 2 Inches (50 mm) to 4 Inches (100 mm): Carbon steel, adjustable, clevis.
4. Hangers for Hot Pipe Sizes 6 Inches (150 mm) and Over: Adjustable steel yoke, cast iron pipe roll, double hanger.

2.08 BALL VALVES

A. Manufacturers:
1. Apollo Valves: www.apollovalves.com/#sle.
2. Grinnell Products; _____: www.grinnell.com/#sle.
3. Nibco, Inc: www.nibco.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Construction, 4 Inches (100 mm) and Smaller: MSS SP-110, Class 150, 400 psi (2760 kPa) CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle, threaded or grooved ends with union.

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. See Section 22 05 16.

G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

H. Provide access where valves and fittings are not exposed.

I. Provide support for utility meters in accordance with requirements of utility companies.

J. Prepare exposed, unfinished pipe, fittings, supports, and accessories for finish painting.

K. Install valves with stems upright or horizontal, not inverted. See Section 22 05 23.

L. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.

M. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.

N. Sleeve pipes passing through partitions, walls, and floors.

O. Inserts:
   1. Provide inserts for placement in concrete formwork.
   2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
   3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches (100 mm).
   4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
   5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.

P. Pipe Hangers and Supports:
   1. Install in accordance with ASME B31.9.
   2. Install hangers to provide minimum 1/2 inch (15 mm) space between finished covering and adjacent work.
   3. Place hangers within 12 inches (300 mm) of each horizontal elbow.
   4. Use hangers with 1-1/2 inch (40 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
   5. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

Q. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

3.04 APPLICATION

A. Install unions downstream of valves and at equipment or apparatus connections.

B. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

3.05 TOLERANCES

A. Drainage Piping: Establish invert elevations within 1/2 inch (10 mm) vertically of location indicated and slope to drain at minimum of 1/8 inch per foot (1:100) slope.

3.06 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Disinfect water distribution system in accordance with Section 33 01 10.58.

B. Prior to starting work, verify system is complete, flushed, and clean.

C. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

D. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form throughout system to obtain 50 to 80 mg/L residual.

E. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.

F. Maintain disinfectant in system for 24 hours.

G. If final disinfectant residual tests less than 25 mg/L, repeat treatment.

H. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

I. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

3.07 SERVICE CONNECTIONS

A. Provide new sanitary and storm sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

B. Provide new water service complete with approved water meter with by-pass valves.
   1. Provide sleeve in wall for service main and support at wall with reinforced concrete bridge. Calk enlarged sleeve and make watertight with pliable material. Anchor service main inside to concrete wall.
   2. Provide 18 gauge, 0.0478-inch (1.21 mm) galvanized sheet metal sleeve around service main to 6 inch (150 mm) above floor and 6 feet (1800 mm) minimum below grade. Size for minimum of 2 inches (50 mm) of loose batt insulation stuffing.

END OF SECTION

SECTION 22 40 00
PLUMBING FIXTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sinks.

1.02 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ASHRAE Std 18 - Methods of Testing for Rating Drinking-Water Coolers with Self-Contained Mechanical Refrigeration.; 2008.

C. ASME A112.18.1 - Plumbing Supply Fittings; 2012.

D. ASME A112.19.2 - Ceramic Plumbing Fixtures; 2013.

E. ASME A112.19.3 - Stainless Steel Plumbing Fixtures (Designed for Residential Use); 2008 (R2013).

F. NSF 61 - Drinking Water System Components - Health Effects; 2014 (Errata 2015).

G. NSF 372 - Drinking Water System Components - Lead Content; 2011.

H. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.04 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide five year manufacturer warranty for electric water cooler.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 REGULATORY REQUIREMENTS

A. Comply with applicable codes for installation of plumbing systems.

B. Comply with UL (DIR) requirements.

C. Perform work in accordance with local health department regulations.

D. Provide certificate of compliance from Authority Having Jurisdiction indicating approval of installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.

B. Verify that electric power is available and of the correct characteristics.

C. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

3.02 PREPARATION

A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 INSTALLATION

A. Install each fixture with trap, easily removable for servicing and cleaning.

B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.

C. Install components level and plumb.

3.04 INTERFACE WITH WORK OF OTHER SECTIONS

A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

3.05 ADJUSTING

A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.06 CLEANING

A. Clean plumbing fixtures and equipment.

3.07 PROTECTION

A. Protect installed products from damage due to subsequent construction operations.

B. Do not permit use of fixtures by construction personnel.

C. Repair or replace damaged products before Date of Substantial Completion.

D. Do not permit use of fixtures.

END OF SECTION

SECTION 23 00 00
MECHANICAL GENERAL PROVISIONS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. This Division includes all materials, labor, equipment, tools, supervision, permits, and incidentals necessary to complete installation and successfully test, start-up, and operate, in a practical and efficient manner, all mechanical systems indicated on the Mechanical Drawings and described in this Division. The work shall also include any items which, while not specifically included in the Contract Documents, are reasonable and are accepted trade practices or necessary for the proper completion of the systems.

B. The General Provisions of this Contract, including General and Supplementary Conditions and other General Requirements specified in the Architectural, Electrical, Structural, and Fire Protection Specifications apply to the work specified in this Section.

C. This section is not intended to supersede, but to clarify the definitions in Division 01, General Requirements.

D. **Additional Work Scope: The Mechanical Contractor shall coordinate and assist the Owner to complete the necessary documentation for obtaining all applicable energy efficiency Utility rebates for the work and equipment specified in this project.**

1.02 DRAWINGS AND SPECIFICATIONS

A. Drawings are diagrammatic and are intended to convey a general arrangement and scope of the work included in the contract. Should drawings contradict themselves or the Specifications, the better quality or greater quantity of work shall be included.

B. The Mechanical Contractor shall be familiar with all Architectural, Structural, Fire Protection, and Electrical Drawings and Specification Sections, and shall follow any special requirements or directions included in these areas.

C. Drawings and Specifications are intended to include all work and materials necessary for completion of the work. Any incidental item of material, labor or detail required for the proper execution and completion of the work and omitted from either the drawings and specifications or both, but required by governing codes local regulations, trade practices, operational functions, and good workmanship, shall be provided as part of the Contract Work without extra charge, even though not specifically detailed or specified.

D. Should there be any question as to the scope of work for which the Mechanical Contractor is responsible, they should request an interpretation before submitting their bid. After contracts are awarded, the Owner shall not be responsible for claims for extras for work that was not included because the Mechanical Contractor was unsure if they should include given work in their bid.

1.03 SITE AND PROJECT DOCUMENT EXAMINATION

A. Submission of a bid proposal is considered evidence that the Mechanical Contractor has completed the following:
   1. Visited the site.
   2. Informed themselves of the site conditions.
   3. Examined Drawings and Specifications of all trades including Architectural, Structural and Electrical, and is proficient, experienced and knowledgeable of all standards, codes, ordinances, permits and regulations which affect his respective trade, and that all costs are included in his proposal.

B. The Mechanical Contractor and/or Sub-Contractor shall insure all required permits, and assessments have been obtained prior to any work beginning. Contractor shall verify requirement to include privilege fees, plan review fees, and permits as part of his formal bid.

C. Field Changes:
   1. This Mechanical Contractor shall not make any field changes that affect the system design, equipment manufacturer, timing, costs, or performance without written approval from the Mechanical and Plumbing Engineer. Approval shall be in the form of a written Field Change Request or Change Order, or supplemental memorandum addressed to the Engineer. All Change Orders shall be directed through the Construction Manager and Architect.
   2. The Contractor assumes liability for any additional costs for changes requested. Should any unauthorized change be determined by the Engineer and Architect as lessening the value of the project, a credit will be request, and shall be issued as a change to the contract.

1.04 STANDARDS, CODES, AND PERMITS

A. Refer to Division 01, General Requirements and Supplementary Conditions.

B. All work shall comply with the latest edition of applicable standards and codes of following:
   1. ASA - American Standards Association
   2. ASME - American Society of Mechanical Engineers
   3. ASTM - American Society of Testing Materials
   4. ANSI - American National Standards Institute
   5. AGA - American Gas Association
   6. ASHRAE - American Society of Heating, Refrigerating, and Air Conditioning Engineers
   7. AWWA - American Water Works Association
   8. NFPA - National Fire Protection Association
   9. IBR - Institute of Boiler and Radiator Manufacturers
   10. AWS - American Welding Society
   11. UL - Underwriter's Laboratories
   12. NEMA - National Electric Manufacturers Association
   13. NEC - National Electric Code
   14. ARA - American Refrigeration Association
   15. OSHA - Occupational Safety and Health Act
   16. ABMA - American Boiler Manufacturers Association
   17. International Plumbing Code 2021 (with Michigan Ammendments)
   18. Michigan Mechanical Code 2021

C. All work shall be provided and tested in accordance with all applicable local county, state laws, ordinances, codes, rules and regulations.

D. No work shall be covered or enclosed by walls, ceilings, or other, until the work is tested in accordance with applicable codes and regulations, and successful tests witnessed and approved by authorized inspection authority. Written approvals shall be secured by the Mechanical Contractor and submitted to Engineer before final acceptance of work will be granted.

1.05 SUBMITTALS

A. Proposal Supplement:
   1. Contractor to submit ONE (1) copy of Proposal Supplement - SECTION 23 00 10 - MECHANICAL EQUIPMENT AND MATERIALS, at the time of Bid opening, listing the manufacturers upon which his bid was based, including all items being provided by Sub-Contractors.
   2. After Proposal Supplement and Sub-Contractors are approved, no deviation shall be permitted without written approval of Engineer.

B. Shop Drawings:
   1. Contractor shall electronically submit shop drawings on all equipment and materials indicated on the Drawings for approval, prior to placing delivery orders (also refer to Architectural Specifications for shop drawing requirements.

2. At the time of submittal for review by the Engineer, shop drawings shall include signatures or stamps indicating that the Contractor and/or the Sub-Contractor has reviewed the submittals and has coordinated the required space, quantities required, services and work of other trades for the equipment or system being submitted.
3. Provide shop drawings of all manufactured equipment and materials except pipe, pipe fittings and galvanized ductwork. Drawings shall include equipment capacities, weights, dimensions, construction details, installation, controls, wiring diagrams, and motor data.
4. Engineer's approval of shop drawings is for general application only and is a service only and not considered as a guarantee of total compliance with or as relieving the Mechanical Contractor of basic responsibilities under all contract documents, and does not approve changes in time or cost.
5. After approval, the Mechanical Contractor and it's subcontractors are responsible to provide information to all other trades involved in, or affected by, the installation of the Mechanical and Plumbing equipment.

C. Record (As-Built) Drawings:
1. At substantial completion of construction, furnish record (as-built) plans to the Engineer for approval. As part of the Final Punch List/Close-out, approved as-built plans shall be provided to the Owner.
2. Record drawings shall include, at the minimum:
   a. The location and performance data on each piece of equipment.
   b. The general configuration of duct and pipe distribution systems, including sizes.
   c. The terminal air or water design flow rates.

D. Operating and Maintenance Manuals:
1. The Mechanical Contractor and subcontractors shall provide TWO (2) bound and indexed (with tabs for each section) sets of operating and maintenance instructions to the Engineer for review as part of the Final Punch List/Close-out. The Engineer will provide approved manuals to the Owner.
2. These manuals shall be in accordance with industry-accepted standards and shall include, at the minimum:
   a. Submittal data stating equipment size and selected options for each piece of equipment requiring maintnance.
   b. Operation and Maintenance manuals for each piece of equipment requiring maintenance. Required routine maintenance actions shall be clearly identified.
   c. Names and addresses of at least one (1) service agency.
   d. HVAC controls system maintenance and calibration information, including:
      1) Wiring diagrams
      2) Control schematics
      3) Control sequence of operation descriptions
   e. HVAC control drawings with desired or field-determined set points permenantly recorded and indicated.
   f. A complete narrative of how each system is intended to operate, including suggested set points.

1.06 MECHANICAL UTILITY SERVICE REQUIREMENTS

A. Exterior plumbing services including sanitary drain and storm drain systems beyond 5 feet from the building are covered within the scope of the Civil Engineer on this project.

B. Natural Gas Service
1. The Mechanical Contractor shall arrange with the Utility Company to provide gas service and a gas meter to the location shown on the Mechanical Drawings, complete with a shut-off valve at the meter.
2. The Mechanical Contractor shall consult with the Utility Company as to the extent of its work.

PART II PRODUCTS

2.01 STANDARDS

A. All products shall be furnished by established manufacturers regularly engaged in making the type of materials to be provided and complete with all parts, accessories, connections, etc. as specified or as recommended and/or required by the manufacturer.

B. All material where applicable shall be labeled or listed by Underwriters Laboratories, Inc.

C. All materials and equipment shall be installed in strict compliance with manufacturer's installation instructions. Where special installations or deviations are required, written approval from the manufacturer is required, and shall not void the manufacturer warranty.

2.02 SUBSTITUTIONS AND CHANGES

A. The Contractor and/or Equipment Supplier may propose alternate equipment or materials of EQUAL or better quality, function, performance, durability and appearance. This information is to be submitted to the Engineer's Office TEN (10) working days prior to bid due date to allow for proper review time and to issue an addendum incorporating the acceptable substitution(s). It is the submitter's responsibility to provide sufficient material for review as required by Engineer's Office. Acceptance and approval is the responsibility of the Engineer.

B. The Contractor and/or Equipment Supplier is liable for any added costs to himself or others and is responsible for verifying dimensions, clearance and roughing-in requirements, when product not named as the basis of design are used and is responsible for advising other Contractors of variations and submit revised drawing layout for approval of Engineer.

C. See SECTION 23 00 10 and individual equipment Specifications for approved equipment manufacturers.
   1. No substitutions will be accepted after bids are received.
   2. When only one manufacturer is listed within the description of the mechanical equipment, the design engineering or project requirements will not allow substitution of other manufacturers.
   3. Contractor will be responsible for ALL costs (engineering time, manufacturer's costs, distributor costs, etc.) incurred to replace equipment not approved if substitutions are made by the distributor, manufacturer's rep., contractor or subcontractor.

D. The Mechanical Contractor is responsible and liable for any added costs to themselves or others that may be a result from use of Approved Manufacturer's products.

E. The Mechanical Contractor is responsible for bidding the Mechanical and Plumbing materials such as pipe and ductwork materials as listed on the Mechanical Drawings and Divisions 22 & 23 Specifications. Alternate materials or value engineering must be pre-approved by the Engineer, prior to bid submittal. Approval of alternate materials must be shared with the Architect, Owner, and other bidders.

2.03 ELECTRICAL REQUIREMENTS AND CONNECTIONS

A. General:
   1. When the Mechanical equipment not named as the basis of design is approved for use, the Mechanical Contractor is responsible for any costs incurred by other trades, including revisions to the Electrical requirements such as conduit, wire, starters, heaters, fused switches, disconnects, or circuit breakers.
   2. Electrical items furnished shall bear the Underwriter's Laboratories label and the installation shall comply with requirements of the National Electric Code, ANSI, IPCEA, IRI, and local codes, ordinances and regulations.

B. Motor Starters and Controls:
   1. The Electrical Contractor shall provide all manual or magnetic motor starters as required for all motors as indicated on all Electrical Drawings.

2. The Mechanical Contractor shall provide factory installed motor starters integral with packaged equipment containing thermal overcurrent protection in all underground conductors with heater coils selected for specific motor usage for all motors.

C. Electrical Wiring and Controls:
1. The Mechanical Contractor shall furnish and install all motors, drives, controllers integral to equipment and factory mounted controls for all mechanical equipment.
2. The Mechanical Contractor or Temperature Ccontrol Contractor shall furnish and install all electrical devices requiring mechanical connections, and/or electrical connections, such as thermostats, UL rated temperature control cabinets, etc., as listed in the Division 23 Contract Documents.
3. The Temperature Control Contractor or Mechanical Contractor shall furnish and install all power and Class 2 and 3 wiring (low voltage), conduit, and electrical boxes associated with the Temperature Control System. Verify with Mechanical and Electrical Engineer whether plenum-rated, low voltage wiring is required. **The TCC shall be responsible for ANY Class 1 power wiring required to meet the specified sequence of operations. No additional costs will be provided to the contractor for wiring and components required by other trades to allow the temperature controls system to function as specified.**
4. The Electrical Contractor shall install all Class 1 (120 volt and greater) power wiring, conduit to motors and/or factory mounted control panels as indicated on Electrical Drawings or as indicated in Specifications.
5. All electrical wiring work by the Mechanical Contractor and Temperature Control Contractor shall be in accordance with Division 26 requirements.

PART III EXECUTION

3.01 COORDINATION OF MECHANCIAL WORK

A. Responsibility:
1. The Mechanical Contractor shall be responsible for all Sub-Contractors and Suppliers, and include in his bid all materials, labor and equipment involved in accordance with all local regulations, jurisdictional awards, decisions, and secure compliance of all parts of the Specifications and Drawings regardless of sectional inclusion in these Specifications.
2. The Mechanical Contractor and Sub-Contractors shall be responsible for all parts applicable to the job in accordance with the Specifications and Drawings, and shall be responsible for coordinating locations and arrangements of all Mechanical and Plumbing work with all other relevant Architectural, Structural, Electrical, and fire protection Mechanical Drawings, shop drawings, and Specifications.

B. Submission of a bid proposal is considered evidence that the Mechanical Contractor and it's Sub-Contractors are fully capable of providing the following and have included the following in their bid proposal:
1. Fully proficient and experienced to do the work described in the contract documents.
2. Knowledgeable of all federal, state, and local standards, codes, ordinances, permits, and regulations that pertain to the work described in the contract documents.
3. Have properly estimated the time and workforce, including subcontractors, needed to complete the job by the due date.
4. Have included all material, equipment, and labor costs for completion of the job, including all subcontractors costs.
5. Have all the equipment, tools, supplies, vehicles, and trailers to complete the job.
6. Have included all travel, food and lodging expenses.

C. Installation of Mechanical Systems:
1. Install all Mechanical equipment as shown on the Mechanical Drawings. Deviations of the Mechanical systems and/or installation locations shall be approved by the Engineer.

2. Changes or deviations of the Mechanical systems design and/or installation locations may require redrawing and resubmittal of the Mechanical Drawings to the state or local Mechanical or building inspector.
3. Any costs associated with re-drawing and resubmittal of the Mechanical and Plumbing Drawings, that did not have pre-approval from the Mechanical Engineer, may be charged to the Mechanical Contractor or Mechanical subcontractors. All costs shall be based on a time and materials basis.
4. Minor deviations from the original design will be accepted, but a written request or courtesy call to the Engineer is required. The Engineer may request a written report of the situation and a written request for record.

3.02 EQUIPMENT CLEARANCE

A. The Mechancical Contractor shall coordinate with the Electrical Contractor's equipment location to insure adequate clearance is maintained as required by the National Electrical Code and applicable state and local codes, as well as accessibility for future maintenance and operation.

B. Mechanical work shall be arranged with building construction to provide minimum 6'-8" overhead clearance where possible.

C. Install equipment in a neat and workmanlike manner. Install, align, and level all Mechanical equipment so that it may be easily accessed, adjusted, serviced, and balanced.

D. Install equipment so that filters, valves, and controls may be easily accessed.

E. Install equipment so that it does not block or limit access to other equipment, access panels, etc.

F. Install equipment so that it may be easily inspected.

3.03 GENERAL SUPPORTS

A. Mechanical Contractor shall provide all necessary channel, angle, brackets, vibration isolators, or supplementary steel as required for adequate support for all piping, specialties, ductwork, and equipment which is hung from the ceiling or roof, or mounted to the floor or roof. For equipment requiring welding or bolting to steel framing, or anchoring to concrete structures, the Mechanical Contractor shall require written approval from the Architect and General Contractor.

B. Where piping or equipment is suspended from concrete construction, coordinate with the General Contractor to set approved concrete inserts, that shall receive hanger rods such as UniStrut in the concrete form-work. In metal decks, coordinate with General Contractor to use Ramset or welds as required.

3.04 WALL, FLOOR, CEILING, AND ROOF OPENINGS

A. Locate all openings and advise the General Contractor of details and templates of all openings necessary for inspection of Mechanical work.

B. All openings including sawcuts, cores, and required lintels shall be provided by the General Contractor, and shall be approved by the Architect and Structural Engineer. Size and location are the responsibility of the Mechanical Contractor. Cracks and rough edges left following installation of equipment shall be caulked, fire-caulked if required, or filled by the Mechanical Contractor.

C. Perform or pay for all cutting, fitting, repairing, patching and finishing of work of other sections where it is necessary to disturb such work to permit installation of mechanical work.

D. All roof openings including sawcuts and cores through the roof deck shall be provided by the General Contractor, and shall be approved by the Architect and Structural Engineer. Size and location of the openings are the responsibility of the Mechanical Contractor.

E. All roof curbs, Pate Curbs, or other specialty curbs shall be the responsibility of the Mechanical Contractor. Specialty roof curb flashings or curb-membranes shall be included.

F. All roofing materials including standard flashing, and the installation of roofing systems around the Mechanical equipment shall be the responsibility of the General Contractor.

G. All roof deck supporting materials including angles, joists, etc., shall be the responsibility of the General Contractor, and shall be approved by the Architect and Structural Engineer.

3.05 FIELD CHANGES

A. The Mechanical Contractor shall not make any field changes that affect the system design, equipment manufacturer, timing, costs, or performance without written approval from the Mechanical and Plumbing Engineer. Approval shall be in the form of a written Field Change Request or Change Order, or Supplemental Instruction. All Change Orders shall be directed through the General Contractor and Architect.

B. The Contractor assumes liability for any additional costs for changes requested. Should any unauthorized change be determined by the Engineer and Architect as lessening the value of the project, a credit will be request, and shall be issued as a change to the contract.

3.06 PROJECT CLOSE-OUT

A. Final Acceptance and payment will only be made after final Punch-List completion and receipt at the Engineer's Office of:
   1. Approved Operating and Maintenance Instruction Manuals
   2. Approved Record Drawings (As Builts)
   3. All Guarantees/Warranties
   4. Certificates of Inspection
   5. Written and signed verification that Owner's Training has taken place
   6. Final Test and Balance Report (reference SECTION 23 05 93 for Report requirements)
   7. All extra materials specified to be provided within the Contract Documents

3.07 CERTIFICATES OF INSPECTION

A. Submit to the Engineer's Office evidence that installation has been inspected and approved by local or state mechanical inspector and/or the authority having jurisdiction.

3.08 GUARANTEES AND WARRANTIES

A. All labor, materials and equipment shall be guaranteed by Contractor and/or warranted by Manufacturer for ONE (1) year after acceptance date except where specified longer for special equipment. Contractor shall secure such warranty from all Suppliers (not one year from shipment date) or Contractor to assume warranty.

B. Acceptance date of substantial completion shall be Owner occupancy as determined by Architect/Engineer.

C. Contractor shall make all necessary alterations, repairs, adjustments, replacements during guarantee periods as directed by Architect/Engineer to comply with Drawings and Specifications at no cost to Owner.

D. Repair or replacements made under guarantee bear further ONE (1) year guarantee from date of acceptance of repair or replacement.

E. At the end of a one year period of continuous operation, make a complete inspection of all systems, fixtures, equipment, safety devices and controls to insure equipment is operating properly, and report to Engineer in writing.

3.09 PLACING EQUIPMENT INTO OPERATION

A. Mechanical Contractor shall be responsible for all startup procedures, system checks and balancing associated with his equipment.

B. All equipment shall be installed, tested and operated in accordance with manufacturer's recommendations at normal operating conditions.

C. All permanent mechanical equipment operated during construction periods shall be cleaned and damaged equipment replaced.

3.10 OWNER'S TRAINING

A. The option of video taping any and all training sessions shall be given to the Owner at no additional cost, with the Contractor conducting the video taping and with TWO (2) copies of all tapes being turned over to the Owner for future use.

B. The Mechanical Contractor shall conduct ONE (1) - 4-hour training session(s) on the operation and maintenance of all mechanical equipment. Schedule training with Owner at least 72 hours prior to session(s).

C. Reference the Specification 230923 for required Temperature Controls Owner's training requirements.

END OF SECTION

SECTION 23 00 10
MECHANICAL EQUIPMENT AND MATERIALS

PART 1 GENERAL

1.01 INSTRUCTION:

A. The Mechanical Contractor is to either copy or remove this specification section from the spec book and complete as follows:
   1. Indicate the specific manufacturer on which the bidder's base bid price is based in the blank space provided.
   2. All equipment is to be bid as specified. Material or equipment from another manufacturer may be bid as a Voluntary Alternate, but the dollar amount must be shown as an "Add" or "Deduct" to the base bid. Provide the name of the alternate manufacturer in the space provided.
   3. Insert the name(s) of each subcontractor used in your bid in the space provided in Part 3.
   4. This form shall be submitted with the bid.

1.02 RELATED DOCUMENTS:

A. The other Contract Documents complement the requirements of this Section. The General Requirements apply to the work of this section.

1.03 DEVIATIONS FROM SPECIFIED MATERIAL:

A. See SECTION 23 00 00, Part 2, Paragraph 2.02 - Substitutions and Changes. Base bid shall be based on manufacturers listed in this specification or on the drawings.

PART 2 PRODUCTS

2.01 THE FOLLOWING IS A LIST OF APPROVED MANUFACTURERS, GROUPED ACCORDING TO TYPES OF MATERIALS OR EQUIPMENT.

A. Air Terminal(s):
   1. Krueger, Price, Titus, Tuttle & Bailey, and Shoemaker
      a. Voluntary alternate_____
      b. Add $ Deduct $ _____

B. Damper(s):
   1. Greenheck and Ruskin
      a. Voluntary alternate_____
      b. Add $ Deduct $ _____

C. Exhaust/Supply Fan(s):
   1. Acme, Carnes, Cook, and Greenheck
      a. Voluntary alternate_____
      b. Add $ Deduct $ _____

D. Roof Top Unit(s):
   1. Aaon, American Standard, Carrier, Daikin, Trane, and York
      a. Voluntary alternate_____
      b. Add $ Deduct $ _____

PART 3 SUB-CONTRACTORS

3.01 INSERT THE NAME OF EACH SUB-CONTRACTOR AND WORK TO BE PERFORMED BELOW:

A. Subcontractor _____ Work Performed: Temperature Controls

B. Subcontractor _____ Work Performed: Test & Balance

C. Subcontractor _____ Work Performed: Insulation

D. Subcontractor _____ Work Performed: Sheet Metal Ductwork

E. Subcontractor _____ Work Performed: _____

F. Subcontractor _____ Work Performed: _____

END OF SECTION

SECTION 23 05 53
MECHANICAL IDENTIFICATION FOR PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nameplates.

B. Tags.

C. Adhesive-backed duct markers.

D. Ceiling tacks.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

A. Air Handling Units: Nameplates.

B. Control Panels: Nameplates.

C. Dampers: Ceiling tacks, where located above lay-in ceiling.

D. Major Control Components: Nameplates.

E. Small-sized Equipment: Tags.

F. Thermostats: Nameplates.

2.02 NAMEPLATES

A. Manufacturers:
1. Advanced Graphic Engraving, LLC: www.advancedgraphicengraving.com/#sle.
2. Brimar Industries, Inc: www.pipemarker.com/#sle.
3. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
4. Seton Identification Products, a Tricor Direct Company: www.seton.com/#sle.
5. Letter Color: White.
6. Letter Height: 1/4 inch (6 mm).
7. Background Color: Black.
8. Plastic: Comply with ASTM D709.

2.03 TAGS

A. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch (40 mm) diameter.

B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch (40 mm) diameter with smooth edges.

2.04 CEILING TACKS

A. Description: Steel with 3/4 inch (20 mm) diameter color coded head.

B. Color code as follows:
1. HVAC Equipment: Yellow.
2. Fire Dampers and Smoke Dampers: Red.
3. Heating/Cooling Valves: Blue.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

B. Install tags with corrosion resistant chain.

C. Apply stencil painting in accordance with Section 09 91 23.

D. Install plastic pipe markers in accordance with manufacturer's instructions.

E. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

F. Install underground plastic pipe markers 6 to 8 inches (150 to 200 mm) below finished grade, directly above buried pipe.

G. Use tags on piping 3/4 inch (20 mm) diameter and smaller.
   1. Identify service, flow direction, and pressure.
   2. Install in clear view and align with axis of piping.
   3. Locate identification not to exceed 20 feet (6 m) on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

H. Install ductwork with plastic nameplates. Identify with air handling unit identification number and area served. Locate identification at air handling unit, at each side of penetration of structure or enclosure, and at each obstruction.

I. Locate ceiling tacks to locate valves or dampers above lay-in panel ceilings. Locate in corner of panel closest to equipment.

END OF SECTION

SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Testing, adjustment, and balancing of air systems.

B. Measurement of final operating condition of HVAC systems.

1.02 REFERENCE STANDARDS

A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition; 2016.

B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2008.

C. NEBB (TAB) - Procedural Standards for Testing Adjusting and Balancing of Environmental Systems; 2015, Eighth Edition.

D. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2002.

1.03 SUBMITTALS

A. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
   1. Submit to Engineer.
   2. Include certification that the plan developer has reviewed Contract Documents, the equipment and systems, and the control system with the Engineer and other installers to sufficiently understand the design intent for each system.
   3. Include at least the following in the plan:
      a. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
      b. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
      c. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
      d. Final test report forms to be used.
      e. Expected problems and solutions, etc.
      f. Details of how TOTAL flow will be determined; for example:
         1) Air: Sum of terminal flows via control system calibrated readings or via hood readings of all terminals, supply (SA) and return air (RA) pitot traverse, SA or RA flow stations.
         2) Water: Pump curves, circuit setter, flow station, ultrasonic, etc.
      g. Confirmation of understanding of the outside air ventilation criteria under all conditions.
      h. Procedures for formal deficiency reports, including scope, frequency and distribution.

B. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
   1. Submit to the the Construction Manager within two weeks after completion of testing, adjusting, and balancing.
   2. Revise TAB plan to reflect actual procedures and submit as part of final report.
   3. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Engineer and for inclusion in operating and maintenance manuals.
   4. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
   5. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.

6. Units of Measure: Report data in I-P (inch-pound) units only.
7. Include the following on the title page of each report:
   a. Name of Testing, Adjusting, and Balancing Agency.
   b. Address of Testing, Adjusting, and Balancing Agency.
   c. Telephone number of Testing, Adjusting, and Balancing Agency.
   d. Project name.
   e. Project location.
   f. Project Engineer.
   g. Project Contractor.
   h. Report date.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Perform total system balance in accordance with one of the following:
   1. AABC (NSTSB), AABC National Standards for Total System Balance.
   2. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
   3. SMACNA (TAB).
   4. National Balancing Council (NBC).

B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.

3.02 EXAMINATION

A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
   1. Systems are started and operating in a safe and normal condition.
   2. Temperature control systems are installed complete and operable.
   3. Proper thermal overload protection is in place for electrical equipment.
   4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
   5. Duct systems are clean of debris.
   6. Fans are rotating correctly.
   7. Fire and volume dampers are in place and open.
   8. Air coil fins are cleaned and combed.
   9. Access doors are closed and duct end caps are in place.
   10. Air outlets are installed and connected.
   11. Duct system leakage is minimized.
   12. Hydronic systems are flushed, filled, and vented.
   13. Pumps are rotating correctly.
   14. Proper strainer baskets are clean and in place.
   15. Service and balance valves are open.

B. Beginning of work means acceptance of existing conditions.

3.03 PREPARATION

A. Hold a pre-balancing meeting at least one week prior to starting TAB work.
   1. Require attendance by all installers whose work will be tested, adjusted, or balanced.

B. Provide additional balancing devices as required.

3.04 ADJUSTMENT TOLERANCES

A. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.

B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 10 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

C. Hydronic Systems: Adjust to within plus or minus 10 percent of design.

3.05 RECORDING AND ADJUSTING

A. Ensure recorded data represents actual measured or observed conditions.

B. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.

C. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.

D. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

3.06 AIR SYSTEM PROCEDURE

A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.

B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.

E. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.

F. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches (12.5 Pa) positive static pressure near the building entries.

G. For variable air volume system powered units set volume controller to air flow setting indicated. Confirm connections properly made and confirm proper operation for automatic variable air volume temperature control.

3.07 SCOPE

A. Test, adjust, and balance the following:
   1. Plumbing Pumps.
   2. Forced Air Furnaces.
   3. Terminal Heat Transfer Units.
   4. Air Handling Units.
   5. Fans.
   6. Air Filters.
   7. Air Inlets and Outlets.

3.08 MINIMUM DATA TO BE REPORTED

A. Electric Motors:
   1. Manufacturer.
   2. Model/Frame.
   3. HP/BHP.
   4. Phase, voltage, amperage; nameplate, actual, no load.
   5. RPM.

6. Service factor.
7. Starter size, rating, heater elements.
8. Sheave Make/Size/Bore.

B. Combustion Equipment:
1. Model number.
2. Serial number.
3. Firing rate.
4. Overfire draft.
5. Heat input.

C. Heat Exchangers:
1. Identification/number.
2. Location.
3. Service.
4. Manufacturer.
5. Model number.
6. Serial number.
7. Primary water entering temperature, design and actual.
8. Primary water leaving temperature, design and actual.
9. Primary water flow, design and actual.
10. Primary water pressure drop, design and actual.
11. Secondary water leaving temperature, design and actual.
12. Secondary water flow, design and actual.
13. Secondary water pressure drop, design and actual.

D. Air Moving Equipment:
1. Location.
2. Manufacturer.
3. Model number.
4. Serial number.
5. Air flow, specified and actual.
6. Return air flow, specified and actual.
7. Outside air flow, specified and actual.
8. Total static pressure (total external), specified and actual.
9. Inlet pressure.
10. Fan RPM.

E. Exhaust Fans:
1. Location.
2. Manufacturer.
3. Serial number.
4. Air flow, specified and actual.
5. Total static pressure (total external), specified and actual.
6. Inlet pressure.
7. Discharge pressure.
8. Sheave Make/Size/Bore.
9. Number of Belts/Make/Size.
10. Fan RPM.

F. Air Distribution Tests:
   1. Air terminal number.
   2. Room number/location.
   3. Terminal type.
   4. Terminal size.
   5. Area factor.
   6. Design velocity.
   7. Design air flow.
   8. Test (final) velocity.
   9. Test (final) air flow.

END OF SECTION

SECTION 23 07 13
DUCT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Duct insulation.

B. Duct liner.

1.02 REFERENCE STANDARDS

A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2010.

B. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013.

C. ASTM C1071 - Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material); 2012.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.

E. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.

F. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.

G. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005.

H. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the type of work specified in this section, with minimum 5 years of experience and approved by manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.

B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.06 FIELD CONDITIONS

A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, UL 723, ASTM E84, or UL 723.

2.02 GLASS FIBER, FLEXIBLE

A. Manufacturer:
   1. Johns Manville: www.jm.com/#sle.
   2. Knauf Insulation: www.knaufinsulation.com/#sle.
   3. Owens Corning Corporation: www.ocbuildingspec.com/#sle.

B. Insulation: ASTM C553; flexible, noncombustible blanket.
   1. K (Ksi) value: 0.36 at 75 degrees F (0.052 at 24 degrees C), when tested in accordance with ASTM C518.
   2. Maximum Service Temperature: 1200 degrees F (649 degrees C).
   3. Maximum Water Vapor Absorption: 5.0 percent by weight.

C. Vapor Barrier Jacket:
   1. Kraft paper with glass fiber yarn and bonded to aluminized film.
   2. Moisture Vapor Permeability: 0.029 ng/Pa s m (0.02 perm inch) (0.04 perm inch), when tested in accordance with ASTM E96/E96M.
   3. Secure with pressure sensitive tape.

2.03 DUCT LINER

A. Glass Fiber Insulation: Non-corrosive, incombustible glass fiber complying with ASTM C1071; flexible blanket, rigid board, and preformed round liner board; impregnated surface and edges coated with poly vinyl acetate polymer, acrylic polymer, or black composite.
   1. Fungal Resistance: No growth when tested according to ASTM G21.

B. Liner Fasteners: Galvanized steel, welded with integral head.

PART 3 EXECUTION

3.01 EXAMINATION

A. Test ductwork for design pressure prior to applying insulation materials.

B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NAIMA National Insulation Standards.

C. Slope exterior ductwork to shed water.

D. Duct and Plenum Liner Application:
   1. Adhere insulation with adhesive for 90 percent coverage.
   2. Secure insulation with mechanical liner fasteners. Refer to SMACNA (DCS) for spacing.
   3. Seal and smooth joints. Seal and coat transverse joints.
   4. Seal liner surface penetrations with adhesive.
   5. Duct dimensions indicated are net inside dimensions required for air-flow. Increase duct size to allow for insulation thickness.

3.03 SCHEDULES (INSULATION SHALL PROVIDE THE FOLLOWING R-VALUES

A. Exhaust Ducts Within 10 ft (3 m) of Exterior Openings: R-3.5.

B. Outside Air Intake Ducts: R-6 (Installed value).

C. Return Air Duct: Not required.

D. Supply and Return Duct within 10 ft of any Fan:
   1. Flexible Glass Fiber Duct Liner Insulation: 1 inch thick

END OF SECTION

SECTION 23 11 23
FACILITY NATURAL-GAS PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe, pipe fittings, valves, and connections for natural gas piping systems.

1.02 REFERENCE STANDARDS

A. ANSI Z21.18/CSA 6.3 - Gas Appliance Pressure Regulators; 2019.

B. ANSI Z21.80/CSA 6.22 - Line Pressure Regulators; 2011 (Addendum A, 2012).

C. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Welding, Brazing, and Fusing Qualifications; 2015.

D. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2011.

E. ASME B31.1 - Power Piping; 2014.

F. ASME B31.9 - Building Services Piping; 2014.

G. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.

H. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2015.

I. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.

1.03 SUBMITTALS

A. Project Record Documents: Record actual locations of valves.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with applicable codes.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

C. Welding Materials and Procedures: Comply with ASME BPVC-IX and applicable state labor regulations.

D. Welder Qualifications: Certified in accordance with ASME BPVC-IX.

E. Identify pipe with marking including size, ASTM material classification, and ASTM specification.

PART 2 PRODUCTS

2.01 NATURAL GAS PIPING, ABOVE GRADE

A. Steel Pipe: ASTM A53/A53M, Schedule 40 black.
   1. Fittings: ASME B16.3, malleable iron, or ASTM A234/A234M, wrought steel welding type.
   2. Joints: Threaded or welded to ASME B31.1.

2.02 FLANGES, UNIONS, AND COUPLINGS

A. Unions for Pipe Sizes 3 Inches (80 mm) and Under:
   1. Ferrous Pipe: Class 150 malleable iron threaded unions.

B. Flanges for Pipe Size Over 1 Inch (25 mm):
   1. Ferrous Pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.

2.03 PIPE HANGERS AND SUPPORTS

A. Provide hangers and supports that comply with MSS SP-58.
   1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.

2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
3. Trapeze Hangers: Welded steel channel frames attached to structure.
4. Vertical Pipe Support: Steel riser clamp.
5. Floor Supports: Concrete pier or steel pedestal with floor flange; fixture attachment.

2.04 BALL VALVES

A. Manufacturers:
1. Conbraco Industries, Inc: www.apollovalves.com/#sle.
2. Milwaukee Valve Company: www.milwaukeevalve.com/#sle.
3. Nibco, Inc: www.nibco.com/#sle.

B. Construction, 4 Inches (100 mm) and Smaller: MSS SP-110, Class 150, 400 psi (2760 kPa) CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, Teflon seats and stuffing box ring, blow-out proof stem, lever handle, threaded ends with union.

2.05 LINE PRESSURE REGULATORS AND APPLIANCE REGULATORS INDICATORS

A. Manufacturers:
1. Actaris Metering Systems (A brand of ITT Controls): www.actaris-metering-systems.com/#sle.
2. Maxitrol Company: www.maxitrol.com/#sle.
3. Pietro Fiorentini: www.fiorentini.com/us/en.

B. Compliance Requirements:
1. Appliance Regulator: ANSI Z21.18/CSA 6.3.
2. Line Pressure Regulator: ANSI Z21.80/CSA 6.22.

C. Materials in Contact With Gas:
1. Housing: Aluminum, steel (free of non-ferrous metals).
2. Seals and Diaphragms: NBR-based rubber.

D. Maximum Inlet Operating Pressure: 5 psi (34.5 kPa).
1. Appliance Regulator: 5 psi (34.5 kPa).
2. Line Pressure Regulator: 5 psi (34.5 kPa).

E. Output Pressure Range: 1 inch wc (2.5 mbar) to 80 inch wc (200 mbar).

PART 3 EXECUTION

3.01 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.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install tracer wire with all buried gas piping, per IFGC requirements. Burial depth shall comply with all Code requirements.

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. Provide access where valves and fittings are not exposed.

G. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

H. Provide support for utility meters in accordance with requirements of utility companies.

I. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting.
   1. Painting of exterior piping systems and components is specified in Section 09 91 13.

J. Install valves with stems upright or horizontal, not inverted.

K. Pipe vents from gas pressure reducing valves to outdoors and terminate in weather proof hood.

L. Sleeve pipes passing through partitions, walls and floors.

M. Inserts:
   1. Provide inserts for placement in concrete formwork.
   2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

N. Pipe Hangers and Supports:
   1. Install in accordance with ASME B31.9.
   2. Place hangers within 12 inches (300 mm) of each horizontal elbow.
   3. Use hangers with 1-1/2 inch (40 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.

3.03 APPLICATION

A. Install unions downstream of valves and at equipment or apparatus connections.

B. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

C. Provide plug valves in natural gas systems for shut-off service.

3.04 SERVICE CONNECTIONS

A. Provide new gas service complete with gas meter and regulators in accordance with Section 33 52 16. Gas service distribution piping to have initial minimum pressure of 14 inch wg (XX kPa). Provide regulators on each line serving gravity type appliances, sized in accordance with equipment.

3.05 SCHEDULES

A. Pipe Hanger Spacing:
   1. Metal Piping:
      a. Pipe Size: 1/2 inches (15 mm) to 1-1/4 inches (32 mm):
         1) Maximum Hanger Spacing: 6.5 ft (2 m).
         2) Hanger Rod Diameter: 3/8 inches (9 mm).
      b. Pipe Size: 1-1/2 inches (40 mm) to 2 inches (50 mm):
         1) Maximum Hanger Spacing: 10 ft (3 m).
         2) Hanger Rod Diameter: 3/8 inch (9 mm).
      c. Pipe Size: 2-1/2 inches (65 mm) to 3 inches (75 mm):
         1) Maximum Hanger Spacing: 10 ft (3 m).
         2) Hanger Rod Diameter: 1/2 inch (13 mm).
      d. Pipe Size: 4 inches (100 mm) to 6 inches (150 mm):
         1) Maximum Hanger Spacing: 10 ft (3 m).
         2) Hanger Rod Diameter: 5/8 inch (15 mm).

END OF SECTION

SECTION 23 31 00
HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal ductwork.

B. Buried ductwork.

1.02 RELATED REQUIREMENTS

A. Section 23 07 13 - Duct Insulation: External insulation and duct liner.

1.03 REFERENCE STANDARDS

A. ASHRAE (FUND) - ASHRAE Handbook - Fundamentals; 2013.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.

E. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2015.

F. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

1.05 FIELD CONDITIONS

A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.

B. Maintain temperatures within acceptable range during and after installation of duct sealants.

PART 2 PRODUCTS

2.01 DUCT ASSEMBLIES

A. Regulatory Requirements: Construct ductwork to comply with NFPA 90A standards.

2.02 MATERIALS

A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.

B. Aluminum for Ducts: ASTM B209 (ASTM B209M); aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061-T651 or of equivalent strength.

C. Stainless Steel for Ducts: ASTM A666, Type 304.

D. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
   1. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
   2. VOC Content: Not more than 250 g/L, excluding water.
   3. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.
   4. For Use with Flexible Ducts: UL labeled.
   5. Manufacturers:
      a. Carlisle HVAC Products; Hardcast Iron-Grip 601 Water Based Duct Sealant: www.carlislehvac.com/#sle.

E. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

F. Ducts: Galvanized steel, unless otherwise indicated.

2.03 DUCTWORK FABRICATION

A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.

B. Transfer Air and Sound Boots: 1/2 inch wg (125 Pa) pressure class, fibrous glass.

C. No variation of duct configuration or size permitted except by written permission. Size round duct installed in place of rectangular ducts in accordance with ASHRAE (FUND) Handbook - Fundamentals.

D. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

E. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide air foil turning vanes of perforated metal with glass fiber insulation.

F. Provide turning vanes of perforated metal with glass fiber insulation when acoustical lining is indicated.

G. T's, bends, and elbows: Construct according to SMACNA (DCS).

H. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

I. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).

J. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

2.04 MANUFACTURED DUCTWORK AND FITTINGS

A. Flat Oval Ducts: Machine made from round spiral lockseam duct.
   1. Manufacture in accordance with SMACNA (DCS).
   2. Fittings: Manufacture at least two gauges heavier metal than duct.
   3. Provide duct material, gauges, reinforcing, and sealing for operating pressures indicated.

B. Flexible Ducts: Two ply vinyl film supported by helically wound spring steel wire.
   1. Pressure Rating: 10 inches wg (2.50 kPa) positive and 1.0 inches wg (250 Pa) negative.
   2. Maximum Velocity: 4000 fpm (20.3 m/sec).
   3. Temperature Range: Minus 10 degrees F to 160 degrees F (Minus 23 degrees C to 71 degrees C).

2.05 BURIED UNDERGROUND DUCTS: AQC INDUSTRIES - BLUEDUCT

A. Complete duct system (including: inlet plenums, round duct, run-outs, diffuser boots, etc.) must be from one manufacturer and be of the same material, construction and connection method throughout.

B. Ductwork shall be closed cell plastic material that is recyclable, does not emit volatile organic compounds, and conforms to ASTM-D2412. Ductwork shall be resistant to mildew, mold (UL 181B), and radon gas (BSS 7239-88). Ductwork shall have integral R-10 equivalent thermal insulation value, without the use of external insulation, per NSF's P374 Protocol and verified by a NSF Thermal Testing Report.

C. All joints shall be sealed via gasket or bolts and sealant.

D. Non-flanged joints shall use a clamp and gasket system. Clamps shall be polyethylene with stainless steel plates and stainless-steel screws. Gaskets shall comprise of ¼” thick butyl rubber sealant tape that is water and UV resistant and shall not stain. Gaskets shall comply with ASTM-E84 for flame and smoke spread.

E. Flanged joints and duct branches shall use a co-polymer adhesive caulking sealant that is water and UV resistant. Flanges shall be connected with stainless steel bolts.

F. Duct system shall be installed by an AQC Industries' trained installer.

G. Fiberglass style (FRP) ductwork or PVC coated galvanized steel ductwork shall NOT be acceptable.

H. Duct system performance shall exceed SMACNA's Leakage Class 1 requirements at the system design static pressure. Assembled ductwork shall be able to maintain pressure with no leakage.

I. Duct system shall carry a 10 year Limited Warranty.

J. The complete underground duct system shall be tested for leakage after final assembly.

K. Follow SMACNA air duct leakage test standard.

L. Allow 24 hours for The BlueDuct sealant to cure after final assembly before testing the duct system. Additional curing time may be required in high ambient conditions.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install, support, and seal ducts in accordance with SMACNA (DCS).

B. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

C. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.

D. Install and seal metal and flexible ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

E. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

F. Use double nuts and lock washers on threaded rod supports.

G. Connect diffusers or light troffer boots to low pressure ducts directly or with 6 foot maximum length of flexible duct held in place with strap or clamp.

H. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

I. At exterior wall louvers, seal duct to louver frame and install blank-out panels.

END OF SECTION

SECTION 23 34 23
HVAC POWER VENTILATORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Ceiling exhaust fans.

1.02 REFERENCE STANDARDS

A. AMCA (DIR) - (Directory of) Products Licensed Under AMCA International Certified Ratings Program; http://www.amca.org/certified/search/company.aspx.

B. AMCA 99 - Standards Handbook; 2010.

C. AMCA 204 - Balance Quality and Vibration Levels for Fans; 2005.

D. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating; 2007.

E. AMCA 300 - Reverberant Room Method for Sound Testing of Fans; 2014.

F. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data; 2014.

1.03 SUBMITTALS

A. Product Data: Provide data on fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels at rated capacity, and electrical characteristics and connection requirements.

B. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.04 FIELD CONDITIONS

A. Permanent ventilators may not be used for ventilation during construction.

1.05 EXTRA MATERIALS

A. Supply two sets of belts for each fan.

PART 2 PRODUCTS

2.01 POWER VENTILATORS - GENERAL

A. Static and Dynamically Balanced: AMCA 204 - Balance Quality and Vibration Levels for Fans.

B. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.

C. Sound Ratings: AMCA 301, tested to AMCA 300 and bearing AMCA Certified Sound Rating Seal.

D. Fabrication: Comply with AMCA 99.

E. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.02 CEILING EXHAUST FANS

A. Centrifugal Fan Unit: V-belt or direct driven with galvanized steel housing lined with acoustic insulation, resilient mounted motor, gravity backdraft damper in discharge.

B. Grille: Aluminum with baked white enamel finish.

C. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheaves selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Secure roof exhausters with cadmium plated steel lag screws to roof curb.

C. Hung Cabinet Fans:
   1. Install flexible connections specified in Section 23 33 00 between fan and ductwork. Ensure metal bands of connectors are parallel with minimum one inch (25 mm) flex between ductwork and fan while running.

D. Provide sheaves required for final air balance.

E. Install backdraft dampers on inlet to roof and wall exhausters.

F. Provide backdraft dampers on outlet from cabinet and ceiling exhauster fans and as indicated.

END OF SECTION

SECTION 23 37 00
AIR OUTLETS AND INLETS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rectangular ceiling diffusers.

B. Registers/grilles:
   1. Ceiling-mounted, exhaust and return register/grilles.
   2. Ceiling-mounted, supply register/grilles.

1.02 SUBMITTALS

A. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

B. Project Record Documents: Record actual locations of air outlets and inlets.

PART 2 PRODUCTS

2.01 RECTANGULAR CEILING DIFFUSERS

A. Connections: Round.

B. Frame: Provide surface mount and inverted T-bar type. In plaster ceilings, provide plaster frame and ceiling frame.

C. Fabrication: Steel with baked enamel finish.

D. Color: As indicated on drawings.

E. Fabrication: Steel with baked enamel off-white finish.

2.02 CEILING EXHAUST AND RETURN REGISTERS/GRILLES

A. Frame: 1-1/4 inch (32 mm) margin with countersunk screw mounting.

B. Fabrication: Steel with 20 gage (0.90 mm) minimum frames and 22 gage (0.80 mm) minimum blades, steel and aluminum with 20 gage (0.90 mm) minimum frame, or aluminum extrusions, with factory off-white enamel finish .

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Check location of outlets and inlets and make necessary adjustments in position to comply with architectural features, symmetry, and lighting arrangement.

C. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.

D. Paint ductwork visible behind air outlets and inlets matte black. Refer to Section 09 91 23.

END OF SECTION

SECTION 23 74 16
PACKAGED ROOFTOP AIR-CONDITIONING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Packaged, small-capacity, rooftop air-conditioning units.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.

C. Manufacturer's Instructions: Indicate assembly, support details, connection requirements, and include start-up instructions.

D. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation 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.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements for additional provisions.
   2. Extra Filters: One set for each unit.

1.04 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Provide a five year warranty to include coverage for refrigeration compressors.

PART 2 PRODUCTS

2.01 PACKAGED, SMALL-CAPACITY, ROOFTOP AIR-CONDITIONING UNITS

A. General: Roof mounted units having electric refrigeration that are 6 tons and smaller in capacity.

B. Description: Self-contained, packaged, factory assembled and prewired, consisting of cabinet and frame, supply fan, controls, air filters, refrigerant cooling coil and compressor, condenser coil and condenser fan.

C. Refrigerant: Use only refrigerants that have ozone depletion potential (ODP) of zero and global warming potential (GWP) of less than 50.

D. Disconnect Switch: Factory mount disconnect switch in control panel.

2.02 CASING

A. Cabinet: Steel with baked enamel finish, including access doors with piano hinges and locking handle. Structural members to be minimum 18 gauge, 0.0478 inch (1.21 mm), with access doors or panels of minimum 20 gauge, 0.0359 inch (0.91 mm).

2.03 FANS

A. Supply Fan: Forward curved centrifugal type, resiliently mounted with V-belt drive, and rubber isolated hinge mounted. Provide with high efficiency motor or direct drive as indicated. Isolate complete fan assembly. See Section 23 05 48.

2.04 EVAPORATOR COIL

A. Provide copper tube aluminum fin coil assembly with galvanized drain pan and connection.

B. Provide capillary tubes or thermostatic expansion valves for units of 6 tons (21 kw) capacity and less, and thermostatic expansion valves and alternate row circuiting for units 7.5 tons (26 kw) cooling capacity and larger.

2.05 CONDENSER COIL

A. Provide copper tube aluminum fin coil assembly with subcooling rows and coil guard.

B. Provide direct drive propeller fans, resiliently mounted with fan guard, motor overload protection, wired to operate with compressor. Provide high efficiency fan motors.

2.06 COMPRESSORS

A. Provide hermetic compressors, 3600 rpm maximum, resiliently mounted with positive lubrication, crankcase heater, high and low pressure safety controls, motor overload protection, suction and discharge service valves and gauge ports, and filter drier.

B. Five minute timed off circuit to delay compressor start.

2.07 AIR FILTERS:

2.08 ROOF CURBS

A. Roof Mounting Curb: 24 inches (610 mm) high, galvanized steel, channel frame with gaskets, nailer strips.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Mount units on factory built roof mounting curb providing watertight enclosure to protect ductwork and utility services. Install roof mounting curb level.

3.02 SYSTEM STARTUP

A. Prepare and start equipment. Adjust for proper operation.

3.03 MAINTENANCE

A. Provide service and maintenance of packaged rooftop units for one year from Date of Substantial Completion.

B. Provide routine maintenance service with a two-month interval as maximum time period between calls.

C. Include maintenance items as outlined in manufacturer's operating and maintenance data, including minimum of six filter replacements, minimum of one fan belt replacement, and controls check-out, adjustments, and recalibration.

D. After each service call, submit copy of service call work order or report that includes description of work performed.

END OF SECTION

SECTION 26 00 00
ELECTRICAL GENERAL PROVISIONS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK:

A. Work included in this Division consists of providing all demolition, labor, materials, equipment, tools, supervision, start-up services, Owner's instructions, including all incidental and related items necessary to complete installation, and successfully test, start up and operate building in a practical and efficient manner. Electrical Systems indicated on Drawings and described in each Section of Division 26 Specification and conforming with all Contract Documents.

B. Work not included under this Division:
   1. Low voltage temperature control wiring. Refer to Part 2, Paragraph 2.03 of this Section.
   2. Field painting of equipment, except for repair to damaged factory finishes.

C. The General Provisions of this Contract, including General and Supplementary Conditions and other General Requirements Sections, apply to the Work specified in this Section.

D. This Section is not intended to supersede, but to clarify, the definitions in Division 1, General Requirements and Supplementary Conditions.

E. **The Contractor shall coordinate directly with the Owner to complete the necessary documentation for eligible energy rebates from Consumers Energy's Energy Optimization Program as a result of this project. NOTE: Consumers Energy has not been notified of this project.**

1.02 DRAWINGS AND SPECIFICATIONS:

A. Drawings are diagrammatic and indicate general arrangement of systems and work included in Contract, and shall serve only as design drawings, and not as working drawings, for general layout of various equipment and systems.

B. Drawings and Specifications are intended to supplement each other, and all work specified or indicated in either shall be provided. Should drawings disagree in themselves or with Specifications, the better quality or greater quantity of work shall be provided.

C. Drawings and Specifications are intended to include all work and materials necessary for completion of the work. Any incidental item of material, labor or detail required for the proper execution and completion of the work and omitted from either the drawings and specifications or both, but required by governing codes local regulations, trade practices, operational functions, and good workmanship, shall be provided as part of the Contract Work without extra charge, even though not specifically detailed or specified.

1.03 SITE AND PROJECT DOCUMENT EXAMINATION:

A. Submission of a proposal is considered evidence the Contractor has visited site, examined Drawings and Specifications of all trades including Architectural, Structural and Mechanical, and fully informed himself with all project and site conditions, and is proficient, experienced and knowledgeable of all standards, codes, ordinances, permits and regulations which affect his respective trade, and that all costs are included in his proposal.

B. The Electrical Contractor and/or Sub-Contractor shall insure all required permits, and assessments have been obtained prior to any work beginning. Contractor shall verify requirement to include privilege fees, plan review fees, and permits as part of his formal bid.

1.04 STANDARDS, CODES AND PERMITS:

A. Refer to Division 1, General Requirements and Supplementary Conditions.

B. All work under Electrical Sections shall comply with latest edition of applicable standards and codes of the following, including local codes and variances:
   1. NECA - Standards for Installation
   2. NFPA - National Fire Protection Association

3. NEC - Latest edition of NFPA 70
4. UL - Underwriter's Laboratories
5. NEMA - National Electric Manufacturers Association
6. NESC - National Electric Safety Code (H13)
7. OSHA - Occupational Safety and Health Act
8. IEEE - Institute of Electrical and Electronics Engineers

C. All work shall be provided and tested in accordance with all applicable local, county, state laws, ordinances, code rules and regulations, including Michigan Department of Labor, General Rules, Part 8-Electrical Code Rules.

D. No work shall be covered or enclosed until work is tested in accordance with applicable codes and regulations, and successful tests witnessed and approved by authorized inspection authority. Written approvals shall be secured by Contractor and submitted to Engineer before final acceptance of work.

1.05 SUBMITTALS:

A. Proposal Supplement:
1. Contractor to submit one (1) copy of Proposal Supplement - SECTION 26 00 10 - ELECTRICAL EQUIPMENT AND MATERIALS, at the time of Bid opening, listing the manufacturers upon which his bid was based, including all items being provided by Sub-Contractors.
2. After Proposal Supplement and Sub-Contractors are approved, no deviation shall be permitted without written approval of Engineer.

B. Shop Drawings:
1. Submit nine (9) hard copies or one (1) electronic set of shop drawings on all equipment and materials indicated in the specifications or on drawings.
2. At the time of submittal for review by the Engineer, shop drawings shall include signatures or stamps indicating that the Contractor and/or the Sub-Contractor has reviewed the submittals and has coordinated the required space, quantities required, services and work of other trades for the equipment or system being submitted.
3. Submittals shall be in the form of bound folders with the name of the Project, Architect, Engineer and the submitting Contractor indicated on the cover. Submittals requiring drawings too large to be bound into the folder shall be folded and inserted in pockets bound into the folder.
4. Submit complete manufacturer's shop drawings of all equipment, accessories and controls, including dimensions, weights, capacities, construction details, installation, controls, wiring diagrams, and motor data.
5. Engineer's approval of show drawings is for general application only and is a service only and not considered as a guarantee of total compliance with or as relieving Contractor of basic responsibilities under all Contract Documents, and does not approve changes in quantities, time or cost.
6. After approval, each Contractor is responsible to provide information to all other trades involved in, or affected by, installation of his equipment and work.

C. Operating and Maintenance Instructions and Manuals:
1. Electrical Contractor shall provide for all items of equipment three (3) bound and indexed sets of operating/installation and maintenance instructions to Engineer for approval. After approval, manuals will be given to Owner by the Engineer.
2. Manuals shall include a complete set of shop drawings submitted, indexed with tabs for each section.

1.06 ELECTRICAL SERVICE REQUIREMENTS:

A. Permanent Electrical Service:
1. The existing electrical service shall remain intact..

PART 2 PRODUCTS

2.01 STANDARDS:

A. All products shall be of established manufacturers regularly engaged in making type of materials to be provided and complete with all parts, accessories, trimmings, connections, etc. as specified in detail or as described in manufacturer's catalog.

B. All material shall be labeled or listed by Underwriter's Laboratories, Inc. Assembled electrical equipment supplied to the job site shall be listed or labeled and/or approved by the authority having jurisdiction.

2.02 SUBSTITUTION AND CHANGES:

A. Contractor and/or Equipment Supplier may propose alternate equipment or materials of EQUAL or better quality, function, performance, durability and appearance. This information is to be submitted to the Engineer's Office ten (10) working days prior to bid due date to allow for proper review time and to issue an addendum incorporating the acceptable substitution(s). It is the submitter's responsibility to provide sufficient material for review as required by Engineer's Office. Acceptance and approval is the responsibility of the Engineer.

B. Contractor and/or Equipment Supplier is liable for any added costs to himself or others and is responsible for verifying dimensions, clearance and roughing-in requirements, when product not named as the basis of design are used and is responsible for advising other Contractors of variations and submit revised drawing layout for approval of Engineer.

C. See Section 26 00 10 for approved manufacturers.
   1. No substitutions will be accepted after bids are received. The lighting or electrical equipment specified herein has been carefully chosen for it's ability to meet the luminous performance and/or design criteria of this project. Substitutions in all likelihood will be unable to meet all of the same requirements as the specified equipment.
   2. When only one manufacturer is listed within the description of the luminaire or electrical equipment, the design engineering or architectural aesthetics will not allow substitution of other manufacturer.
   3. When two or more manufacturers are listed within the description of the luminaire or electrical equipment, the Contractor may elect to submit to the Engineer a substitute fixture for review. All submittals must follow paragraph 2.02.A of this section.
   4. Substitution submittals shall consist of a physical description, dimensioned drawing and complete photometric and electric data of the proposed lamp, luminaire or electrical equipment. Working samples may be requested and shall be supplied to the Engineer for a visual check of finish and operating characteristics.
   5. Contractor will be responsible for ALL costs (engineering time, manufacturer's costs, distributor costs, etc.) incurred to replace equipment not approved if substitutions are made by the distributor, manufacturer's rep., contractor or subcontractor.

2.03 EQUIPMENT REQUIREMENTS AND CONNECTIONS:

A. Motor Starters and Controls:
   1. Electrical Contractor shall provide all manual or magnetic motor starters and combination motor starter disconnects as required for all motors as indicated on all Electrical Drawings.
   2. Mechanical Contractor shall provide factory installed motor starters integral with packaged equipment containing thermal overcurrent protection in all underground conductors with heater coils selected for specific motor usage for all motors.

B. Electrical Wiring and Controls:
   1. Mechanical Contractor shall furnish and install all motors, drives, and controllers integral to equipment and factory-mounted controls for all mechanical equipment.
   2. Mechanical Contractor or Temperature Control Contractor shall furnish and install all electrical devices requiring mechanical connections, and/or electrical connections, such as pressure switches, limit switches, float switches, solenoid valves, motor operated valves,

motor operated dampers, fire stats, freeze stats, thermostats, override timers, E.P.'s, P.E.'s, temperature control cabinet, air compressor with starter, etc.

3. Temperature Control Contractor or Mechanical Contractor shall furnish and install all power and Class 2 and 3 wiring, conduit, boxes for their association equipment in 2.03, B, 2.
4. Electrical Contractor shall install all power wiring, conduit to motors and/or factory mounted control panels as indicated on Electrical Drawings or as indicated in Specifications.
5. All electrical wiring work by Mechanical Contractor and Temperature Control Contractor shall be in accordance with Division 26 requirements.

PART 3 EXECUTION

3.01 COORDINATION OF ELECTRICAL WORK:

A. The Electrical Contractor shall be responsible for all Sub-Contractors and Suppliers, and include in his bid all materials, labor and equipment involved in accordance with all local customs, rules, regulations, jurisdictional awards, decisions and secure compliance of all parts of the Specifications and Drawings regardless of Sectional inclusion in these Specifications.

B. The Electrical Contractor and Sub-Contractor shall be responsible for all parts applicable to his trade in accordance with the Specifications and Drawings, and shall be responsible for coordinating locations and arrangements of his work with all other relevant Mechanical, Architectural, Structural and Electrical Contractor's Specifications, Drawings and Shop Drawings.

3.02 EQUIPMENT CLEARANCE:

A. Electrical Contractor to coordinate with the Mechanical Contractor's equipment location to insure adequate clearance is maintained as required by the National Electrical Code and applicable state and local codes, as well as accessibility for future maintenance and operation.

B. Electrical work shall be arranged with building construction to provide minimum 6'-8" overhead clearance where possible.

3.03 WALL, FLOOR AND CEILING OPENINGS:

A. Locate all openings and advise the General Contractor of details and templates of all openings necessary for inspection of electrical work.

B. In general, openings and required lintels shall be provided through the General Contractor. Size and location is the responsibility of this Contractor. Cracks and rough edges left following installation of equipment shall be caulked or covered by Electrical Contractor.

C. Perform or pay for all cutting, fitting, repairing, patching and finishing of work of other sections where it is necessary to disturb such work to permit installation of electrical work.
   1. Repair or replace existing or new work disturbed.

3.04 FIELD CHANGES:

A. The Contractor shall not make any field changes that affect timing, costs or performance without written approval from the Architect/Engineer in the form of a Change Order, Field Change Order or a Supplemental Instruction. The Contractor assumes liability for any additional costs for changes made without such instruction or approval. Should any unauthorized change be determined by the Architect/Engineer as lessening the value of the project, a credit will be determined and issued as a change to the Contract.

3.05 PROJECT CLOSEOUT:

A. Final Acceptance and payment will only be made after final punchlist completion and receipt at the Engineer's Office of:
   1. All Guarantees/Warranties
   2. Operating and Maintenance Instruction Manuals
   3. Record Drawings (As Builts)

4. Certificates of Inspection
5. Test Reports
6. Lamps and ballasts.

3.06 CERTIFICATES OF INSPECTION AND TEST REPORTS:

A. Submit to the Engineer's Office evidence that installation has been inspected and approved by local or state electrical inspector and/or the authority having jurisdiction.

3.07 GUARANTEES AND WARRANTIES:

A. At the end of a one year period of continuous operation, make a complete inspection of all systems, fixtures, equipment, safety devices and controls to insure equipment is operating properly, and report to Engineer in writing.

3.08 RECORD DRAWINGS:

A. Maintain a white-print set of Electrical Contract Drawings in clean, undamaged condition for markup of actual installation on Electrical Contract Drawings which vary substantially from the work as shown. These drawings are to be available for inspection by the Engineer on a weekly basis. Drawings shall indicate at a minimum the routing of all conduits over 2" on size, revised circuiting, revised panel schedules, emergency lighting controller (EPCs, BLTCs, etc.) locations, and addendum, bulletin and field changes.

3.09 OPERATING AND MAINTENANCE INSTRUCTIONS:

A. Provide instruction of Owner's personnel in operation and maintenance procedures for all systems equipment.

B. Provide 3 - bound & tabbed sets of operating & maintenance instruction manuals for all electrical equipment

3.10 PLACING SYSTEMS INTO OPERATION:

A. Electrical Contractor shall be responsible for all startup procedures, system checks and balancing associated with his equipment.

B. All equipment shall be installed, tested and operated in accordance with manufacturer's recommendations at normal operating conditions.

C. All permanent electrical equipment operated during construction periods shall be cleaned and damaged equipment replaced.

3.11 ADJUSTMENTS AND BALANCING:

A. Contractor shall make all necessary adjustments to equipment installed or connected by him under this contract so as to insure proper operation of the same.

3.12 GUARANTEES AND WARRANTIES:

A. All labor, materials and equipment shall be guaranteed by Contractor and/or warranted by Manufacturer for one year after acceptance date and/or one normal continuous complete seasons operation applicable to equipment or system except where specified longer for special equipment. Contractor shall secure such warranty from all Suppliers (not one year from shipment date), or Contractor to assume warranty.

B. Acceptance date of substantial completion shall be Owner occupancy as determined by Architect/Engineer.

C. Contractor shall make all necessary alterations, repairs, adjustments, replacements during guarantee periods as directed by Architect/Engineer to comply with Drawings and Specifications at no cost to Owner.

D. Repair or replacements made under guarantee bear further one year guarantee from date of acceptance of repair or replacement.

3.13 IDENTIFICATION:

A. All service switches, motor disconnects, controllers, etc., whether or not furnished under this Division shall be marked to identify the equipment served and the origin of the power source. Distribution panels, branch panels and switchboards shall be identified as to the designation indication on the Contract Drawings and voltage characteristics. Individual switches in Distribution Panels and Switchboards shall be identified as to equipment being fed.

B. All identification shall be done with engraved 3-ply lamacoid plates with ¼" white lettering on a black background. "Dymo" or tape markers ARE NOT acceptable.

C. Concisely and clearly type out all branch panel schedules indicating room or area served along with the item(s) connected to each circuit.

D. See Electrical Drawing Detail for additional identification requirements.

3.14 TRAINING:

A. The option of video taping any and all training sessions shall be given to the Owner at no additional cost, with the Contractor conducting the video taping and with two (2) copies of all tapes being turned over to the Owner for future use.

B. E.C. shall conduct 2 - 1 hour training session on the operation and controls of all electrical equipment. Notify owner 72 hours prior to session.

C. E.C. shall conduct 2 - 1 hr training sessions on the operation & control of the Fire Alarm System. Notify owner 72 hours prior to session.

D. E. C. shall conduct 2 - 1 hr. training session on the operation & control of the lighting control systems, which includes the occupancy sensors, the over-ride switches, and the lighting control panels. Notify owner 72 hours prior to session.

END OF SECTION

SECTION 26 00 10
ELECTRICAL EQUIPMENT AND MATERIALS

PART 1 GENERAL

1.01 INSTRUCTION:

A. The Electrical Contractor is to either copy or remove this specification section from the spec book and complete as follows:
   1. Indicate the specific manufacturer on which the bidder's base bid price is based in the blank space provided.
   2. All equipment is to be bid as specified. Material or equipment from an unlisted manufacturer may be submitted for review by the Engineer by following the substitution instructions in 260000-2.02.
   3. Insert the name(s) of each subcontractor used in your bid in the space provided in Part 3.
   4. This form shall be submitted with the bid.

1.02 RELATED DOCUMENTS:

A. The other Contract Documents complement the requirements of this Section. The General Requirements apply to the work of this section.

1.03 DEVIATIONS FROM SPECIFIED MATERIAL:

A. See Section 26 00 00, Part 2, Paragraph 2.02 - Substitutions and Changes. Base bid shall be based on manufacturers listed in this specification or on the drawings.

PART 2 PRODUCTS

2.01 THE FOLLOWING IS A LIST OF APPROVED MANUFACTURERS, GROUPED ACCORDING TO TYPES OF MATERIALS OR EQUIPMENT.

A. Wiring Devices:
   1. Pass & Seymour, Hubbell, Leviton, and Cooper
      a. Voluntary alternate_____
      b. Add $_____ Deduct $_____

B. Branch Panel Circuit Breakers:
   1. Square D (basis of design), Eaton, Siemens, and ABB
      a. Voluntary alternate_____
      b. Add $_____ Deduct $_____

C. Safety Switches and Circuit Breakers:
   1. Square D (basis of design), Eaton, Siemens, and ABB
      a. Voluntary alternate_____
      b. Add $_____ Deduct $_____

D. Motor Controls:
   1. Square D (basis of design), Eaton, Siemens, and ABB
      a. Voluntary alternate_____
      b. Add $_____ Deduct $_____

E. Fire Alarm System
   1. Edwards (Basis of Design)
      a. Voluntary alternate_____
      b. Add $_____ Deduct $_____

F. Wireless Lighting Controls Systems
   1. Cooper Ltg. Controls (Basis of Design)
      a. Voluntary alternate_____
      b. Add $_____ Deduct $_____

G. Lighting Fixtures:
   1. Tag A, AE, A1, A1E series: Lithonia, Cooper (Basis of Design), and Lithonia
      a. Voluntary alternate_____ Add $_____ Deduct $_____
   2. Tag EX series: Isolite (Basis of Design) and Lithonia
      a. Voluntary alternate_____ Add $_____ Deduct $_____

PART 3 SUBCONTRACTORS

3.01 INSERT THE NAME OF EACH SUBCONTRACTOR AND WORK TO BE PERFORMED BELOW:

A. Subcontractor_____
   Work Performed_____

B. Subcontractor_____
   Work Performed_____

C. Subcontractor_____
   Work Performed_____

END OF SECTION

SECTION 26 00 50
BASIC MATERIALS AND METHODS

PART 1 GENERAL

1.01 MATERIALS:

A. All materials and equipment furnished for installation on this project shall be new and in strict accordance with Contract Documents. All packaged materials shall be delivered in their original containers which shall show the manufacturer's name and the identifying designations as to size, quality, etc. Materials delivered to the project unmarked or mutilated packages will be ordered to be removed from the site at once. Materials or equipment judged as "damaged" by the Architect/Engineer shall be removed from the project and site.

B. Should any dispute arise to the quality of any material, the decision shall rest entirely with the Architect/Engineer and shall be based on the requirement that all materials furnished shall be first class in every respect, and what is usual or customary in erecting other buildings shall in no way enter into the consideration or decision whatever as it pertains to the project under consideration.

C. All materials and equipment furnished under work of all Division 16 sections shall be UL approved and listed, and shall bear the Underwriter's Label.

1.02 SUBMITTALS:

A. Submit shop drawings for the following: (See 26 00 00 1.05 B 1 thru 6)
   1. Wiring devices.
   2. Motor starters/contactors.
   3. Branch circuit panelboard circuit breakers.
   4. Safety switches / breakers.
   5. Indoor light fixtures (See 26 51 00 1.03 A thru D).
   6. Lighting Controls.
   7. Fire Alarm System.

PART 2 PRODUCTS

2.01 RACEWAYS:

A. Aluminum conduit is not acceptable in this Contract.

B. Rigid Metal Conduit:
   1. Rigid metal conduit shall be hot dipped galvanized steel, meeting Federal Standard WW-C-581.
   2. Threaded fittings shall be used on rigid metal conduit.

C. Electric Metallic Tubing:
   1. Electrical metallic tubing shall be standard weight, meeting Federal Standard WW- C-563 and bear the manufacturer's name and Underwriter's Label on each length. Maximum permissible size tubing shall be 4".
   2. Provide compression-type steel fittings or set screw-type steel fittings. Crimp-type connectors are not acceptable.

D. Flexible Metal Conduit:
   1. Flexible metallic conduit shall meet Federal Standard WW-C-566 and is to have separate grounding conductor. Minimum permissible size shall be 1/2".
   2. Fittings shall be malleable iron, threaded type.

E. Liquid-Tight Flexible Metal Conduit:
   1. Liquid-tight flexible metal conduit shall be single strip, flexible, continuous, interlocked, and double-wrapped steel. It shall be galvanized inside and outside, with a liquid-tight jacket of flexible polyvinyl chloride (PVC). Minimum permissible size shall be 1/2".
   2. Connectors shall be insulated throat, malleable iron.

F. Liquid-Tight Flexible Non-Metallic Conduit:
   1. Liquid-tight flexible non-metallic conduit shall be single strip, flexible polyvinyl chloride (PVC). Minimum permissible size shall be 1/2".
   2. Connectors shall be non-metallic (PVC) compression type UL labeled and listed to be used on liquid-tight flexible non-metallic conduit.

G. Rigid Non-Metallic Conduit:
   1. Rigid non-metallic conduit (PVC) shall be Schedule 40, rigid heavy wall polyvinyl chloride, 90 degrees C., UL rated.
   2. Fittings shall be solvent weld type of the same material as the conduit.
   3. All 45 degree bends or greater shall be made with rigid metal conduit fittings.

H. Metal-Clad Cable:
   1. Metal-clad cable shall be U.L. labeled and have a smooth, weld or corrugated metallic sheath. Type MC cable shall provide an adequate path for equipment grounding as required by N.E.C.
   2. All fitting shall be of the same metallic composition as cable and U.L. labeled for use on cable.

2.02 WIRE AND CABLE:

A. All branch circuit wiring shall be copper and shall be installed in conduit or tubing unless specified otherwise.

B. Feeder wiring shall be copper and installed in conduit or tubing unless specified otherwise. Wiring and conduit sizes shown are based on copper conductors.

C. All wire shall be new and in the original cartons or on manufacturer's shipping reels.

D. No wire smaller than #14 may be used unless specified under descriptions of special systems. Wire #14 and larger shall be stranded.

E. All wiring shall be color coded black, red, blue, phases and white neutral for 120/208v, 3 phase, 4 wire system. All grounding / bonding conductors shall be green or bare. Phase color consistent throughout the entire branch circuit system.

F. All neutral runs including feeders shall be white full length of conductor or identified per NEC.

G. Select from the following wire types to comply with the project's installation requirements and NEC standards.
   1. Type THHN/THWN rated installation. 600 volt, 90 degrees C., in conduit, stranded copper, size No. 14 AWG up to and including No. 10 AWG.
   2. Type THWN-2 rated insulation, 600 volt, 90 degrees C., in conduit, stranded copper, size No. 8 AWG up to No. 750 MCM AWG.

H. Select from the following cable types to comply with the project's installation requirements and NEC standards.
   1. Metal-Clad Cable: Type MC. **May be use for FINAL connections of devices, including receptacles, light fixtures, switches, etc., and for connections to devices instin existing block walls.** Maximum length of eight (8) feet.

2.03 WIRE CONNECTORS AND JOINTS:

A. All conductors #8 AWG and smaller shall be joined with electrical spring connectors with vinyl insulating cap. Conductors larger than #8 shall be joined by compression type connectors.

2.04 OUTLET BOXES:

A. Ceiling outlet boxes shall be 4" octagon, 2 1/8" deep, with fixture hickey, and supported to withstand 50 pounds.

B. Convenience outlet and switch boxes shall be a minimum 4"sq. x 2 1/8" deep with 1 or 2 gang, 2" deep plaster ring. When installed in poured walls, 3 1/8" minimum deep masonry box shall be used; when installed in masonry blocks, minimum 4"sq. x 2 1/8" deep with 1 or 2 gang, 2" deep plaster ring shall be used.

2.05 JUNCTION BOXES AND PULL BOXES:

A. When used, pull boxes and junction boxes shall be galvanized and have flat steel covers fastened with screws and set flush with the finished surface and located in an accessible area. When installed in damp locations, gaskets and seals shall be provided. Junction boxes shall be sized to meet N.E.C. Standards based on conduit and conductors. Provide identifying labels on each box.

2.06 WIRING DEVICES:

A. Receptacles:
   1. Receptacles shall be commercial specification grade and tamper resistant.
      a. 20 Amp, 125 Volt, duplex, ground fault, weatherproof (NEMA 5-20R).
      b. 20 Amp, 125 Volt, duplex, ground fault (NEMA 5-20R).
      c. 20 Amp, 125 Volt, duplex (NEMA 5-20R).

B. Device Plates:
   1. Plates shall be brushed smooth stainless steel, except plates used on surface mounted boxes. Surface mounted outlets plates shall be raised, pressed metal type. Mounting screws shall be metal with same finish as plate and with countersunk head. Plates shall be single ganged, or combination, to accommodate arrangement indicated on drawings.

2.07 MOTOR CONTROLLERS:

A. 120 volt, less then 1/2hp:
   1. Provide motor toggle switch with heater, pilot light and lockout guard. Mount adjacent to motor. Size heater per NEC and manufacturer's recommendations. Based on Sq-D #FGJ5P (surface mount) or # FF1P FL1 (flush mount)

B. 120 volt, 1/2hp to 1hp:
   1. Provide NEMA rated combination magnetic motor starter and disconnect in appropriate enclosure with H.O.A. selector switch, red pilot light, 1 - N.O. & 1 - N.C. Aux. coil. Combination motor starter disconnect shall be Sq-D Class 8539 with breaker sized for respective motor load or two speed starters as shown on plans. Mount within sight and within 50' of motor. Size heaters per NEC and manufacturer's recommendations.

C. 208v, 1ph; 208v, 3ph; 480v. 1ph; and 480v, 3ph; 1/2hp or larger:
   1. Provide NEMA rated combination magnetic motor starter and disconnect in appropriate enclosure with H.O.A. selector switch, red pilot light, 120 volt control transformer, 1 - N.O. & 1 - N.C. Aux. coil. Combination motor starter disconnect shall be based on Sq-D Class 8539 with breaker sized for respective motor load or two speed starters as shown on plans. Mount within sight and within 50' of motor. Size heaters per NEC and manufacturer's recommendations.

2.08 FUSES:

A. Fuses 600 Amperes and Less: Dual element, current limiting, time delay, one-time fuse, 250 or 600 volt, UL Class J. Supply Owner with 3 - spare fuses of each size if applicable.

B. Fuses 601 Amperes and Larger: Current limiting, fast-acting, one time fuse, 600 volt, UL Class L. Supply Owner with 1 - spare fuse of each size if applicable.

C. Interrupting Rating: 200,000 rms amperes.

2.09 SAFETY SWITCHES:

A. Furnish and install all required safety switches.

B. Safety switches shall be NEMA heavy duty type "HD", fusible or non-fusible as shown on drawings and be U.L. labeled and listed. Switches shall be furnished in NEMA-1 general purpose dry location enclosures unless otherwise shown on drawings. Weatherproof switches shall be NEMA-3R (raintight).

C. Switches shall be horsepower rated with interlocking provisions to prevent unauthorized opening of the switch covers in the "ON" position. Switches shall be capable of being physically locked in the open (off) position.

D. Switches shall be Sq-D type "HD" 250v or 600v, respectively.

PART 3 EXECUTION

3.01 RACEWAYS:

A. Conduit or tubing shall be installed in a manner which complies with all applicable provisions of the National Electrical Code and at least six inches from parallel runs of steam pipes, flues, or hot water pipes.

B. Ends of all conduit or tubing shall terminate in a bushing or fitting having factory installed insulating liners. Provide plastic bushings on all conduit or tubing with wire larger than #4 AWG. Exposed runs shall be supported by hangers, clamps, or straps secured by toggle bolts in hollow construction or expansion bolts or inserts in poured or brick walls. No lead anchors shall be allowed

C. Every precaution shall be taken to protect the conduit from damage and from water, dirt, concrete, etc., getting into the system during construction. Capped bushings shall be used on all conduit terminations until wire is installed. If, in the opinion of the Engineer, conduit or tubing has become damaged or contains unremovable foreign matter, it shall be replaced at the Contractor's expense.

D. Rigid metal conduit shall be used in all poured construction, fill, outside masonry walls, areas exposed to weather, under drives and walks, and in areas where tubing may become damaged..

E. Rigid non-metallic conduit (PVC) may be used in lieu of rigid metal conduit below grade or where concealed in concrete. Provide a separate bare stranded copper grounding conductor in the raceway sized in accordance with Table 250.122 of the NEC.

F. Electrical metallic conduit (EMT) shall be used for feeders and branch circuits above ground & above suspended accessible ceilings; for switch and receptacle legs which terminate above suspended accessible ceilings; for exposed feeders and branch circuits; for switch legs in moveable partitions.

G. Flexible metal conduit shall be used for connections to the following equipment: lighting fixtures only. Maximum length of flexible metallic conduit shall be 6'-0". Longer length may be permitted at the discretion of the Owner or as indicated on the plans. Minimum size shall be ½". Flexible metal conduit used for lighting fixture connections shall be "Greenfield" type. Fittings shall be insulated throat, flex-steel connectors.

H. Use liquid-tight flexible steel conduit and liquid-tight flexible non-metallic conduit for final connections to all indoor and outdoor motors and mechanical equipment with a length not to exceed 36".

I. At all wall penetrations, space around circuits shall be filled with mortar or other approved filler. Penetrations through walls, floors or ceilings must not alter the fire rating of the assembly.

J. All conduit and boxes shall be flush mounted and concealed. No exposed conduit will be allowed, except in electrical and mechanical spaces, and where specifically noted.

3.02 WIRE AND CABLE:

A. All wiring shall be installed in approved raceways. Conductors shall be continuous between outlets or junction boxes with splice made only within such boxes.

B. Any branch circuits over 50 feet in length shall be installed with one wire size larger than the circuit rating. Example: 1P/20amp breaker with #12 THHN wire run 50'+ shall be increased to a #10 THHN wire.

3.03 OUTLET BOXES:

A. Set boxes squarely with faces flush to finished surfaces. The exact location of all outlets shall be approved by the Architect/Engineer before same are place and Contractor shall consult Architect/Engineer at all times relative to the location of outlets. No outlets shall be placed behind plumbing or heating pipes or where they will interfere with ducts, pipes, equipment, or other work.

B. Each outlet shall be rigidly supported from the building construction (independent of the raceway system).

3.04 WIRING DEVICES:

A. Receptacles shall be mounted approximately 18" above floor or at other heights indicated on drawings.

B. E.C. shall be responsible for protection of receptacles from painting, plastering, etc.

C. Wall switches shall be mounted approximately 4'-0" above floor unless they interfere with wainscoting or trim.

D. E.C. shall be responsible for masking switches for protection from painting, plastering, etc.

E. E.C. shall confirm all door swings with Building Trades Contractor before installing switches.

F. Wall plates shall be installed plumb and level with all edges in contact with attaching surface.

G. E.C. shall confirm all ADA and barrier free requirements are meant and install according to their regulations.

3.05 SUPPORTS AND HANGERS:

A. Provide and install necessary steel brackets, rods, clamps, etc., for support of all work under this contract. All supports shall be plated or painted and shall be secured to structural members after Architect's approval.

3.06 SLEEVES AND INSERTS:

A. This Contractor shall be responsible for the proper location of all sleeves, chases, openings and inserts for the installation of his equipment.

B. Holes through walls, floors or structural members shall be located only where permitted by the Architect.

3.07 UNDERGROUND WORK:

A. Prior to any underground excavating, trenching, pole base augering, etc. call MISS DIG at 1-800-482-7171 no less than 72 hours in advance of any earthwork.

END OF SECTION

SECTION 26 05 05
ELECTRICAL DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical demolition.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that abandoned wiring and equipment serve only abandoned facilities.

B. Demolition drawings are based on casual field observation and existing record documents.

C. Report discrepancies to Architect/Engineer before disturbing existing installation.

D. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings to be removed.

B. Coordinate service outages with the Owner and/or the utility company.

C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

D. Existing Electrical Service: Maintain existing system in service. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Obtain permission from Owner at least 24 hours before partially or completely disabling system.

E. Existing Fire Alarm System: Maintain existing system in service. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Notify Owner before partially or completely disabling system.
   2. Notify local fire service.
   3. Make notifications at least 24 hours in advance.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Perform work for removal and disposal of equipment and materials containing toxic substances regulated under the Federal Toxic Substances Control Act (TSCA) in accordance with applicable federal, state, and local regulations. Applicable equipment and materials include, but are not limited to:
   1. PCB-containing electrical equipment, including transformers, capacitors, and switches.
   2. PCB- and DEHP-containing lighting ballasts.
   3. Mercury-containing lamps and tubes, including fluorescent lamps, high intensity discharge (HID), arc lamps, ultra-violet, high pressure sodium, mercury vapor, ignitron tubes, neon, and incandescent.

B. Remove, relocate, and extend existing installations to accommodate new construction.

C. Remove abandoned wiring to source of supply.

D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes, unless reuseable. Cut conduit flush with walls and floors, and patch surfaces.

E. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.

F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.

H. Repair adjacent construction and finishes damaged during demolition and extension work.

I. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

J. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

3.04 CLEANING AND REPAIR

A. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.

B. Clean and repair existing materials and equipment that remain or that are to be reused.

C. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Grounding and bonding requirements.

B. Conductors for grounding and bonding.

C. Connectors for grounding and bonding.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.

C. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2013.

D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. NFPA 99 - Health Care Facilities Code; 2015.

F. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.04 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

A. Do not use products for applications other than as permitted by NFPA 70 and product listing.

B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

D. Bonding and Equipment Grounding:
   1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
   2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
   3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
   4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
   5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
   6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.

7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
   a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
8. Provide bonding for metal building frame.
9. Provide bonding for metal siding not effectively bonded through attachment to metal building frame.

E. Pole-Mounted Luminaires: Also comply with Section 26 56 00.

2.02 GROUNDING AND BONDING COMPONENTS

A. General Requirements:
   1. Provide products listed, classified, and labeled as suitable for the purpose intended.
   2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 05 26:
   1. Use insulated copper conductors unless otherwise indicated.
      a. Exceptions:
         1) Use bare copper conductors where installed underground in direct contact with earth.
         2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:
   1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
   2. Unless otherwise indicated, use exothermic welded connections or UL Listed irreversible connectors for underground, concealed and other inaccessible connections.
   3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that work likely to damage grounding and bonding system components has been completed.

B. Verify that field measurements are as indicated.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Make grounding and bonding connections using specified connectors.
   1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
   2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
   3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
   4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
   5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

D. Identify grounding and bonding system components in accordance with Section 26 05 53.

E. Provide grounding electrode conductor and connect to reinforcing steel in foundation footing where indicated. Bond steel together.

F. Provide bonding to meet requirements described in Quality Assurance.

G. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect and test in accordance with NETA ATS except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.13.

D. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.

E. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

END OF SECTION

SECTION 26 09 22
DIGITAL - NETWORK LIGHTING CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. The following specification details the minimum compliance and related criteria for a complete and fully operational wireless digital addressable lighting control system for all interior lights.

1.02 REFERENCES

A. American National Standards Institute/ (ANSI) (www.ansi.org)
   1. C62.41-1991 - Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits.

B. Institute of Electrical and Electronic Engineers (IEEE) (www.ieee.org)
   1. 802.3af-2003 - Power over Ethernet standard

C. International Electrotechnical Commission (www.iec.ch)
   1. IEC/EN 61000-4-2:2009 Electrostatic Discharge Testing Standard.

D. International Organization for Standardization (ISO) (www.iso.ch)
   1. 9001:2000 - Quality Management Systems.

E. National Electrical Manufacturers Association (NEMA) (www.nema.org)
   1. WD1 (R2005) - General Color Requirements for Wiring Devices.

F. Underwriters Laboratories, Inc. (UL) (www.ul.com)
   1. 916 - Energy Management Equipment

G. Federal Communications Commission (FCC) (www.fcc.gov)
   1. Title 47 CFR Part 15 Class A

1.03 SYSTEM DESCRIPTION

A. The digital-network wireless lighting control system shall be capable of providing all of the following functions for all lighting:
   1. Continuous dimming and automatic on/off controls.
   2. Occupancy control.
   3. Vacancy control.
   4. Daylight harvesting.
   5. Load management.
   6. Multi-level scene control
   7. Scheduling
   8. Demand Response
   9. Task Tuning.
   10. Power measurement data reporting.
   11. Mobile device configuration and control
   12. Automatic Code Commissioning
   13. The wireless lighting control system shall be capable of continuous dimming and switching allowing each fixture to monitor its local environment and provide distributed control in response to environmental changes.
   14. The wireless lighting control system shall provide network communication of all sensor and device data for all light fixtures including power measurement, occupied/unoccupied status, scene status and daylight information.
   15. The wireless lighting control system shall provide out-of-the-box functionality of all light fixtures with integrated sensors providing occupancy automatic ON to 75% light level and automatic OFF after 20 minutes. Systems that do not include out-of-the-box functionality shall not be acceptable
   16. The wireless lighting control system shall provide a method for the installer to verify wireless communications and address all wireless devices with a single push

button. Systems that require device addressing using a manual data entry method through software shall not be acceptable.

17. The wireless lighting control system shall provide visible indication on all wireless devices when as each wireless device joins the wireless network. Systems that do not provide a visual indicator per device to the installer shall not be acceptable.
18. The wireless lighting control system shall provide the capabilities for the installer to create a construction group of all wireless occupancy sensors and wireless wallstations to control all installed wireless light fixtures.
19. The wireless lighting control system shall be able to be completely programmed and configured using a mobile application. Systems that require web or PC software for configuration shall not be acceptable.
20. The wireless lighting control system shall allow addressed wireless light fixtures with integrated sensors to be identified by shining a laser or bright flashlight into the sensor. Identified light fixtures shall provide visible indication on the mobile application. Systems that do not permit reverse identification method shall not be acceptable.
21. The wireless lighting control system shall allow wireless wallstations, receptacles, relays and remote sensors to be identified by simple pushbutton method on each device. Identified devices shall provide visible indication on the mobile application. Systems that do not permit reverse identification method shall not be acceptable.
22. The wireless lighting control system includes the following components:
23. Integrated sensors shall include passive infrared sensor, digital photocell, microprocessor, a wireless radio (IEEE 802.15.4), and a load controller for ON/OFF/DIM.
24. Relay Switchpack with 0-10V control shall contain a utility grade power meter chip and a latching relay to control 20Amp load and 120mA 0-10V sink. Device shall include LED indication and pushbutton for device override and identification.
25. Tilemount daylight sensor shall include a digital photocell, microprocessor, a wireless radio (IEEE 802.15.4), and a load controller for ON/OFF/DIM.
26. Wallstation shall be mains powered (120/277VAC), including the following features:
    a. Numerous button configurations, supporting small and large engraved buttons
    b. Individual button LED indication
    c. Universal light icon with raise/lower buttons
    d. Each button fully programmable for Area Scene or Zone control
    e. Wireless radio (IEEE 802.15.4)
27. Battery powered, wireless ceiling sensor shall include passive infrared sensor, microprocessor, a wireless radio (IEEE 802.15.4), LED indication and pushbutton for device identification.
28. Wireless Area Controllers shall wirelessly communicate (IEEE 802.15.4) with all sensors, wallstations, relays, and receptacles to coordinate control areas, and zones. The Wireless Area Controller shall support the following features:
    a. Multiple wireless radios
    b. Power over Ethernet connection to building LAN
    c. Up to 16 areas
    d. Up to 16 zones per area
    e. Area scene configurations
    f. Multiple occupancy sets per area
    g. Multiple daylight sets per area
    h. Demand Response reduction values
    i. Scheduling configuration
    j. Configuration backup and restore capabilities
    k. Automatic Code Commissioning

29. Mobile application shall communicate using Wi-Fi to a single Wireless Area Controller or a building IT network with multiple Wireless Area Controllers. The Mobile application shall include the following features:
    a. Ability to connect to multiple Wireless Area Controllers
    b. Administrative and user login credentials
    c. Demonstration and Live mode
    d. Automatic Code Commissioning
    e. Drag and drop or multi select programming of wireless lighting system
30. LIGHTING CONTROL APPLICATIONS
    a. Minimum lighting control performance required, unless local Energy Code is more stringent.
    b. Occupancy/vacancy requirements - Provide an occupancy/vacancy sensors with Manual On/ Automatic Off or Automatic On/ Automatic Off functionality in all spaces. Manual On vacancy sensors should be used for any enclosed space with a Manual On switch that does not require hands free operation. Spaces with multiple occupants or where line of sight might be obscured ceiling or corner mount sensors and Manual wallstations would be required. Automatic On of lighting via occupancy sensor cannot exceed 50% of lighting. Systems that do that allow the user to select Occupancy or Vacancy Mode shall not be acceptable.
    c. Bi-Level switching - Provide multi-level switching and/or variable dimming for maximum energy savings. (Qualifies for EPACT tax deductions of $0.60 per foot)
    d. Task Lighting / Receptacle Control - Provide automatic shut off of non-essential plug loads and task lighting in all spaces. Provide Manual On or Automatic On of receptacles whenever spaces are occupied. Receptacle Control will only be shut off when no occupancy is detected within the space. Systems that do not provide receptacle control for a full 20 Amp circuit shall not be acceptable.
    e. Daylight Zones - Primary sidelit or toplit areas within an enclosed space shall be controlled separately and automatically by individual integrated daylight sensors. Adjustments to the daylight zones must be provided by a simple to use, intuitive mobile application.
    f. Provide smooth and continuous daylight dimming for areas marked on drawings. Daylighting control system may be designed to dim electric light to the lowest light level and OFF.
    g. Provide the ability to adjust the high end and low end trim of the dimmers to ensure the lighting automatically provides energy saving even when daylighting calls for full illumination.
    h. Provide the ability for the dimmers and the relays to function separately. Systems where the 0-10V dimmers and relays are tied together reduce design capabilities and shall not be acceptable.
    i. Shall be capable of automatically responding to a Demand Response Signal and adjusting the lighting level, without the need of programming or software. Systems that require software or commissioning to provide Demand Response integration shall not be acceptable. (Required for California Title 24 2013)
    j. Additional controls:
        1) Provide occupancy or vacancy sensors (Auto On or Manual On) for any enclosed office, conference, meeting or training rooms. Spaces with multiple occupants or where line of sight may be obscured require ceiling or wall/corner mounted sensors with Manual On switches.
        2) Conference, meeting, training, auditoriums and multi-purpose rooms shall have controls that allow for scene based and independent control of each output. Rooms larger than 300 square feet shall support at least four (4) pre-set lighting scenes. Occupancy or vacancy sensors shall ensure all lighting, receptacles.
        3) Egress lighting control shall be integral to the system. The system shall provide an automatic control of adjacent corridor and/or egress lighting based upon

room occupancy. Systems that do not ensure that adjacent corridor and/or egress lighting is controlled with room occupancy shall not be acceptable.

1.04 SUBMITTALS

A. Specification Conformance Document - Indicate whether the submitted equipment:
   1. Meets specification exactly as stated.
   2. Meets specification via an alternate means and indicate the specific methodology used.
   3. Shop Drawings; include:
      a. Schematic (one-line diagram) will be specific to the project. Generic one-line diagrams will not be accepted. Provide drawing details for field installation that are specific to the project.
      b. Wiring diagrams for typical application installation configurations.
      c. Wiring diagrams for typical device installation configurations.
   4. Product Data: Catalog data sheets with performance specifications demonstrating compliance with specified requirements and are specific to the project.
   5. Sequence of Operation to describe how each component operates and how any building wide functionality is achieved to exceed local energy code (Title 24 2016, ASHRAE 90.1 2016, IECC 2015, or any newer versions of these codes.
   6. Provide a description of the system.
   7. System setup and programming to be provided by installer, certified technician or factory field service personnel.
   8. Follow-up by Field Services for “fine tuning” and additional configuration to occur approximately 90 days after system turnover.

1.05 CLOSEOUT SUBMITTALS

A. Sustainable Design Closeout Documentation.

B. Wireless lighting control system manufacturer to provide an Operation and Maintenance Manual that details the start-up procedure being performed including a process to follow, details on tests performed and an area that documents any test results.

1.06 QUALITY ASSURANCE

A. Manufacturer: manufacturer shall have at least 10 years of experience in the manufacture of lighting control systems. Manufacturers that do not have at least 10 years experience shall not be acceptable.

B. System components:
   1. Listed by UL specifically for the electronic ballast/driver loads. Provide evidence of compliance upon request.
   2. Listed by FCC specifically for the required wireless communication protocols. Provide evidence of compliance upon request.

1.07 APPROVALS

A. 10-working days prior approval before bid date is required for alternate proposals.

B. Complete catalog data, specifications and technical information on alternate equipment must be furnished to the Architect and Owner at least 30 business days in advance of the submission of approved Construction Documents.

C. For wired alternatives, manufacturer shall provide wiring diagrams and architectural details of interconnecting wiring for power signal and control. Contractor shall provide a labor cost (adder or deduction) to install the wired alternative to the lighting control system.

1.08 DELIVERY, STORAGE AND HANDLING

A. The contractor is responsible for complete installation of the entire system according to strict factory standards and requirements.

B. Packaging: All components of the lighting control system shall be packaged in a single box as a QuicKit or as individual components. The QuicKit catalog number will be marked on package

label along with bill of materials. Individual component packages will be marked with product catalog number.

C. Handling: Packaging will include clear installation instructions for all components with typical illustrations of installation locations and connections. The installing contractor can easily match each package to the layout on the design floor plans.

1.09 PROJECT CONDITIONS

A. Do not install equipment until following conditions can be maintained in spaces to receive equipment:
   1. Ambient temperature for indoor devices: 0 degrees to 50 degrees C (32 degrees to 122 degrees F).
   2. Ambient temperature for outdoor devices: -35 degrees to 85 degrees C (-31 degrees to 185 degrees F).
   3. Relative humidity: Maximum 90 percent, non-condensing.
   4. Wireless lighting control system must be protected from dust during installation.
   5. Ambient temperature for Lighting Management Appliance: 10 degrees C to 35 degrees C (50 degrees F - 90 degrees F).
   6. Coordinate layout and installation of luminaries and controls with other construction.
   7. Coordinate site commissioning with manufacturer no less than 21 days prior to required date.

1.10 WARRANTY

A. Provide manufacturer's Enhanced 5 Year Limited Warranty:
   1. 5-year limited warranty for the replacement of defective system components from the date of system shipment.
   2. Contractor shall provide limited workmanship warranty for one year from customer acceptance.
   3. Wireless control fixtures with standard 0-10V dimmable ballast or driver module warranty is [5] years. When purchased with the wireless lighting control system this warranty shall also be [5] years by the lighting fixture manufacturer.
   4. Recommended extra materials:
      a. Wireless Ceiling Sensors (WS1): Provide 1 of each product type for every 200 installed, to be used for maintenance.
      b. Tilemount Daylight Sensors: Provide 1 of each product type for every 100 installed, to be used for maintenance.
      c. Wireless Wallstations (SWSx): Provide 1 of each product type for every 200 installed, to be used for maintenance.
      d. Dimming Relay Switchpack (WD): Provide 1 of each product type for every 200 installed, to be used for maintenance.
      e. Wireless Area Controller (WAC): Provide 1 of each product type for every 100 installed, to be used for maintenance

1.11 MAINTENANCE MATERIAL SUBMITTALS

A. The manufacturer shall make available to the End-User a method of ordering new equipment for expansions, replacements and spare parts through established distributor channels.

B. The manufacturer shall make new replacement parts available for minimum of 5 years from date of manufacture.

C. The manufacturer shall make directly available to the owner additional software apps that may be desired for a minimum of 10 years from the system's date of purchase.

D. The manufacturer shall provide extended support that is billable at an hourly rate OR support that can be purchased on an annual maintenance contract basis.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer: Cooper Lighting Systems WaveLinx Wireless Connected Lighting (WCL) system

B. Substitutions:
   1. All proposed substitutions (clearly delineated as such) must be submitted in writing for approval by the design professional a minimum of 10 working days prior to the bid date and must be made available to all bidders. Proposed substitutes must be accompanied by a review of the specification noting compliance on a line-by-line basis.
   2. By using pre-approved substitutions, the contractor accepts responsibility and associated costs for all required modifications to circuitry, devices and wiring. The contractor shall provide complete engineered shop drawings (including power and control wiring) with deviations from the original design, highlighted in an alternate color, to the engineer for review and approval prior to rough-in.

2.02 CONNECTED DEVICES

A. Load control devices.
   1. Product: Wireless Dimming Relay Switchpack (WD) with 0-10v controls
      a. Plenum rated
      b. Integrated, self-contained unit consisting internally of an isolated load switching control relay [and a power supply to provide low voltage power].
         1) 20amp 120/277VAC General Purpose
         2) 16amp 120/277VAC electronic ballast (LED load)
         3) Single class 2 0-10V dimming output (IEC 60929 Annex E) sinks up to 120mA per (40 µA max per circuit leakage to line)
         4) 0-10V output supports up to 60 ballasts/drivers that draw a standard 2mA each
      c. Power measurement accuracy of 5%, reporting data to the Wireless Area Controller for display on the associated Mobile Application
      d. Shall be compatible with electronic ballast, LED, incandescent, magnetic or electronic low voltage, and magnetic or electronic fluorescent, as well as motor loads.
      e. Shall be capable of controlling up to 20Amp receptacle or plug loads.
      f. Controls incorporate non-volatile memory. Should power be interrupted and subsequently restored, settings and parameters saved in protected memory shall not be lost.
      g. Relay Switchpack shall be FCC certified.
      h. Relay Switchpack shall be a Class 1 device

B. Control devices.
   1. Product: Wireless Wallstation (SWSx)
      a. Mains powered wireless wallstation providing multi-level control of an area or zone
         1) 120VAC input
      b. Shall provide individual button LED indication of status and wireless communication as well as selected button.
      c. Controls incorporate non-volatile memory. Should power be interrupted and subsequently restored, settings and parameters saved in protected memory shall not be lost.
      d. Wallstation shall be FCC certified.
      e. Wallstation shall be a Class 1 device
      f. Wireless momentary pushbutton switches in 2, 3, 4, 5 and 6 button configuration; available in white, ivory, grey and black; compatible with wall plates with decorator opening. Wallstations shall include the following features:
         1) Multi-level scene selection
         2) Scene raise/lower

3) Toggle ON/OFF
4) Removable buttons for field replacement with engraved buttons and/or alternate color buttons. Button replacement may be completed without removing the switch from the wall.
5) Intuitive button labeling to match application and load controls.
6) Pre-defined digital button configurations. Each wallstation is shipped with pre-defined digital button configurations which are automatically mapped to specific area/zone controls when added to an area in the associated Mobile Application.

g. Multiple wallstations may be installed in an area by simply connecting them to the wireless network. No additional configuration will be required to achieve multi-way switching.
h. Optional custom labeling is available for application or location specific wallstation button labels.

2.03 CONNECTED SENSORS

A. Ceiling mounted or fixture integrated sensors.
1. Product: Wireless Ceiling Sensor (WS1)
a. Sensing mechanism
1) Infrared: Utilize multiple segmented lens, with internal grooves to eliminate dust and residue build-up.
b. Power failure memory
1) Controls incorporate non-volatile memory. Should power be interrupted and subsequently restored, settings and parameters saved in protected memory shall not be lost.
c. Products tested in identical manner, complaint to NEMA WD 7 -2011 Occupancy Motion Sensors Standards
d. Sensor shall have time delays from 10 to 20 min
e. All sensors shall provide an LED as a visual means of indication at all times to verify that motion is being detected during both testing and normal operation
f. Sensor is battery powered by standard AA batteries
g. Sensor provides indication of battery life through the associated Mobile Application
h. Sensor battery life shall be 10 years based on approximately 30 activations and wireless signals per day.
i. Sensors shall monitor changes in occupancy, changes in ambient light levels and communicate digital control commands to light fixtures according to a control strategy.
j. Sensor shall wirelessly transmit occupancy; light level, power to Wireless Area Controller (WAC) which allows the data to be stored in a central location on premises and displayed via the associated Mobile Application.
k. Sensors shall be fully adaptive with the ability to have the sensitively and timing to be remotely adjusted to ensure optimal lighting control for any use of the space.
l. Sensors have remotely adjustable settings for dimming levels, occupied/unoccupied light levels, occupancy/vacancy sensing, and sensitivity to changes in motion and changes in ambient light levels.
m. Sensors have the ability to remotely adjust light output to reduced levels and remain at that reduced level for an adjustable time period before turning off when a space is vacant.
n. Programming is stored in each sensor in addition to the Wireless Area Controller. Sensors operate independently of from Wireless Area Controller, so there cannot be single point failure. Systems must operate so there is no single point of failure.
o. Responds to digital (load shed command) Demand Response signal.
p. Sets high end trim via priority assigned in profile.

2. Product: Integrated Fixture Sensor
   a. Sensing mechanism
      1) Infrared: Utilize multiple segmented lens, with internal grooves to eliminate dust and residue build-up.
      2) Daylight: Utilize integrated daylight sensor to provide closed loop daylight dimming control. Each Integrated Sensor provides an individual daylight dimming zone to provide highly accurate daylight levels at the work surface throughout the entire space.
   b. Power failure memory
      1) Controls incorporate non-volatile memory. Should power be interrupted and subsequently restored, settings and parameters saved in protected memory shall not be lost.
   c. Products tested in identical manner, complaint to NEMA WD 7 -2011 Occupancy Motion Sensors Standards
   d. Sensor shall have time delays from 10 to 20 min
   e. Sensor shall provide unique daylight calibration taking into account for light level at the sensors, work surface and integrated luminaire light output.
   f. All sensors shall provide an LED as a visual means of indication at all times to verify that motion is being detected during both testing and normal operation
      1) Green LED indication when sensor is in out-of-the-box operation mode
      2) White LED indication when sensor has been connected to the wireless lighting control system
   g. Test mode- fifteen second time delay
   h. Walk-through mode
   i. Sensors are RoHS compliant
   j. Sensor shall provide out-of-the-box functionality of occupancy detection, directly controlling integrated fixture.
      1) Occupied default light level is 75%
      2) Unoccupied default light level is OFF
      3) Occupancy default time out is 20 minutes
   k. Sensors shall monitor changes in occupancy, changes in ambient light levels and communicate digital control commands to light fixtures according to a control strategy.
   l. Sensor shall wirelessly transmit occupancy; light level, power to the Wireless Area Controller (WAC) which allows the data to be stored in a central location on premises and displayed via the associated Mobile Application.
   m. Sensors shall be fully adaptive with the ability to have the sensitively and timing to be remotely adjusted to ensure optimal lighting control for any use of the space.
   n. Sensors have remotely adjustable settings for dimming levels, occupied/unoccupied light levels, occupancy/vacancy sensing, and sensitivity to changes in motion and changes in ambient light levels.
   o. Sensors have the ability to remotely adjust light output to reduced levels and remain at that reduced level for an adjustable time period before turning off when a space is vacant.
   p. Programming is stored in each sensor in addition to the Wireless Area Controller. Sensors operate independently of from Wireless Area Controller (WAC), so there cannot be single point failure. Systems must operate so there is no single point of failure.
   q. Responds to digital (load shed command) Demand Response signal.
   r. Sets high end trim via priority assigned in profile.

3. Product: Tilemount Daylight Sensor
   a. Sensing mechanism
      1) Daylight: Utilize Tilemount daylight sensor to provide closed loop daylight dimming control to a circuit of connected fixtures.
   b. Power failure memory
      1) Controls incorporate non-volatile memory. Should power be interrupted and subsequently restored, settings and parameters saved in protected memory shall not be lost.
   c. Tilemount sensor connects to a control module which supports up to 3Amps of connected fixtures.
   d. Tilemount is designed to be installed in a ½" or ¾" ceiling tile within 54" of the control module and connected fixtures.
   e. Sensor shall provide unique daylight calibration taking into account for light level at the sensors, work surface and integrated luminaire light output.
   f. All sensors shall provide an LED as a visual means of indication and diagnostics.
   g. Sensors are RoHS compliant

B. Control Module:
   1. Sensor shall connect to a 0-10V dimmable ballast or driver via a control module or connect to an enabled driver without the use of an accessory control module.
   2. Sensor shall connect to a controller via a low voltage cable for interior applications.
   3. If power dropouts in the event of a brown-out or black-out, when power is restored, the lighting system should recover quickly and automatically return to the last lighting levels. A momentary interruption (1 or 2 seconds) of power should not cause extended periods (20 seconds or more) without lighting while the system reboots and all other electrical equipment is back on.
   4. Control Module shall be installed by luminaire manufacturer and is shipped as an integral component to the luminaire.
   5. Sensor shall be FCC certified.
   6. Sensor shall be a Class 2 device.
   7. System shall support user initiated manual demand response and utility or BMS initiated automatic demand response.
   8. Control Module Components:
      a. Power Measurement capable of 5% power measurement accuracy.
      b. Controller to include latching relay, to decrease power requirements of the power pack.
      c. Operate Bounce Time: 3 ms. Max.
      d. Max Switching Voltage 277VAC and 125VDC.
      e. Insulation Rating: Class B and Class F.
      f. Operations:
      g. Control Module and Sensor shall communicate energy usage Wireless Area Controller.
      h. Electrical/Connections:
      i. Circuit protection:
         1) Listed to UL 916.
         2) FCC Part 15 Class A certified.
      j. Manufacturer to pre-wire control module in fixture.
      k. Control module shall be plenum rated.
      l. Connection between sensors and control module shall be Class 2, 18-24 AWG, stranded or solid depending on the application U.L Classified, PVC insulated or TEFLON jacketed cable suitable for use in plenums.

2.04 CONNECTED SPACES

A. Wireless Area Controller (WAC)
   1. Spaces shall be equipped with an automatic control device to shut off lighting in those areas. This automatic control device shall function on either:
      a. a scheduled basis, using time of day, with an independent program schedule that controls the interior lighting in areas that do not exceed 5,000 square feet and are not more than one floor, or
      b. an occupant sensor that shall turn lighting off within 20 minutes of an occupant leaving a space, or
      c. a signal from another control or alarm system that indicates the area is occupied.
   2. Provide Wireless Area Controllers in the locations and capacities as indicated on the plans and schedules. Each Wireless Area Controller shall have the following capabilities:
      a. The Wireless Area Controller is a server class appliance that discovers, programs and manages connected devices, connected sensors and connected Apps.
      b. Uses industry standard HTTPS security with AES-128 encryption safeguards the integrity of the entire system. Backups prevent data loss and restore fixtures to operational modes. It constantly monitors areas to ensure that spaces are managed according to the assigned user preferences and tasks being performed.
      c. Powered-over-Ethernet (PoE) at 48V device, utilizes the building PoE network switches(by others) or a PoE injector (accessory) for power and network connection.
      d. Maximum CAT 5e cable distance between the Wireless Area Controller and a network PoE switch is 330 feet. Care shall be taken when routing the cable to not exceed the 330-foot limitation including travel distance up and down structures.
      e. Wi-Fi access point and wireless client capabilities. Wi-Fi capabilities are automatically disabled if the Wireless Area Controller is physically connected to a building LAN and receives an IP address. Systems that allow multiple simulations methods of network connection (Wi-Fi & LAN) shall not be acceptable.
      f. 2.4 GHz Transceiver for IEEE 802.15.4 wireless radio for communication to connected devices and sensors.
      g. Shall support AES 128-bit encryption
      h. LED indicators for status of various wireless radios and communications.
      i. Shall be FCC Part 15 Class A, RoHS certified.
      j. Wireless Area Controller connection cables shall be plenum rated.
      k. Shall be Class 2 devices.
   3. Construction Grouping
      a. PAIR button to allow automatic creation of Construction Group allowing simplified automatic control of all connected devices and sensors.
      b. The patent-pending Construction Grouping mode permits contractors to complete a quick system start-up to confirm that the devices have been installed correctly, instead of waiting for factory-trained technicians to get the lights on a project in working order. Contractors follow a simple process to pair the wireless devices with the appropriate WAC and initiate occupancy-based lighting control functionality. This saves lighting energy during the construction phase of the project by ensuring that the lights are turned off when the area is unoccupied.
      c. Construction grouping provides visual indication to the installer that devices have received wireless communication from the Wireless Area Controller and received a unique individual address. Systems that do not provide visual indication of device connection to the wireless network shall not be acceptable.
      d. Construction grouping provides automatic grouping of connected devices to provide simple occupancy-based and wallstation control of all devices, without the need of a factory trained technician. Systems that require special software or training to group wireless devices shall not be acceptable.

4. Scalability and Data Integrity
   a. The Wireless Area Controller can be deployed as a dedicated installation managing up to 200 wireless device (connected devices, connected sensors). When deployed as a dedicated installation the Wireless Area Controller acts as a local wireless access point for Wi-Fi connection method to the associated Mobile Application.
   b. The Wireless Area Controller can be deployed as a network installation managing up to 200 wireless devices (connected devices, connected sensors) per Wireless Area Controller. When deployed as a network installation the Wireless Area Controller connects to the building LAN or wireless network as a client using DHCP. The maximum number or Wireless Area Controllers on the building network is dependent upon the building network configuration.

2.05 CONNECTED APPLICATIONS

A. Mobile Application
   1. Administrative programming and editing may be conducted via an intuitive iOS or Android mobile application.
   2. Mobile application shall support the following features:
      a. Network discovery of multiple Wireless Area Controllers
      b. Naming and identification of Wireless Area Controllers
      c. Unique administrative login credentials for each Wireless Area Controller
      d. Discovery of wireless devices per Wireless Area Controller (Find Devices)
      e. Creation of up to 16 Areas per Wireless Area Controller
      f. Creation of up to 16 Zones per area
      g. Creation of multiple Occupancy Sets per area
      h. Creation of Daylight Sets for each integrated luminaire
      i. Creation of Demand Response values for each area
      j. Definition of scene values for each area
      k. Definition of schedules for each Wireless Area Controller
      l. Blink identification and reverse identification of each connected devices and sensor
      m. Identified connected devices and sensors will indicate on the Mobile Application their selection by the device icon pulsing on the screen.
      n. Ability to utilize drag and drop, multi select and filter capabilities for easy association of connected devices and sensors to a defined area.
      o. Automatic Code Commissioning features include:
         1) Automatic association of all devices added to an area to provide a California Title 24 2016 code compliant sequence of operations
         2) All occupancy sensors are joined together to provide an Automatic ON to 50% light level
         3) All occupancy sensors are joined together to provide an Automatic OFF of all luminaires and plug loads after 20 minutes of unoccupancy.
         4) Automatic closed loop daylighting to approximately 500lux
         5) Automatic wallstation button mapping providing the dominant button providing a 50% light level all other buttons provide multi-level dimming control from 30%-100%
         6) Automatic display of area power measurement data
         7) Automatic Demand Response of 20%
      p. Additional screens if needed to adjust Automatic Code Commissioning settings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The control system shall be installed and fully wired as shown on the plans by the installing contractor. The contractor shall complete all electrical connections to all control circuits.

B. Install the work of this Section in accordance with manufacturer's printed instructions unless otherwise indicated.

3.02 PRODUCT SUPPORT AND SERVICE

A. Factory telephone support shall be available at no cost to the owner. Factory assistance shall consist of solving programming or application questions concerning the control equipment.

3.03 FACTORY COMMISSIONING

A. Upon completion of the installation, the system shall be commissioned by the manufacturer's factory authorized representative who will verify a complete fully functional system.

B. The electrical contractor shall provide both the manufacturer and the electrical engineer with twenty one working days written notice of the system startup and adjustment date.

C. Upon completion of the system commissioning the factory-authorized technician shall provide the proper training to the owner's personnel on the adjustment and maintenance of the system.

D. Qualifications for factory certified field service engineer:
   1. Certified by the equipment manufacturer on the system installed.

E. Make first visit upon completion of installation of Wireless Connected Lighting system:
   1. Verify locations of Wireless Area Controllers
   2. Verify implementation of Construction Group process
   3. Identify connected devices and program using the Mobile and Automatic Code Commissioning.
   4. Verify that system operation control based on defined sequence of operations (SOO).
   5. Obtain sign-off on system functions.

F. Make second visit (optional) to demonstrate and educate Owner's representative on system capabilities, programming, fine tuning and maintenance.
   1. Due to building operations, start-up of Wireless Connected Lighting system may be required outside of normal business hours (Monday through Friday, 7 a.m. to 5 p.m.).

3.04 CLOSEOUT ACTIVITIES

A. Training Visit
   1. Lighting control system manufacturer to provide [1] day additional on-site system training to site personnel. This shall be a part of the second visit by field service to the site. A separate third visit will require an additional charge.
   2. For LEED projects, manufacturer shall conduct an on-site walkthrough to demonstrate system functionality to a Commissioning Agent.
   3. During this visit, the manufacturer's Field Service Engineer will perform tasks, at the request of the facility representative or Commissioning Agent, such as to demonstrate wall control functions, explain or describe occupancy and/or daylight sensor functionality.

B. On-site Walkthrough
   1. Lighting control system manufacturer to provide a factory certified Field Service Engineer to demonstrate system functionality to the Commissioning Agent.

3.05 MAINTENANCE

A. Capable of providing on-site service support within 48 hours anywhere in continental United States and within 72 hours worldwide except where special visas are required.

B. Offer renewable service contract on yearly basis, to include parts, factory labor, and annual training visits. Make service contracts available up to ten years after date of system startup. Additional service contracts and warranties need to be verified as being available.

C. Prior to bid, confirm if an on-site meeting between the Lighting Control System Manufacturer and a Facility Representative will be required to evaluate system usage after the building has been in operation for a predetermined period of time. If a field service visit is required for Acceptance Testing or building commissioning, it shall be as an additional charge unless

specifically stated in the specification and confirmed on the Wireless Connected Lighting bill of materials.

END OF SECTION

SECTION 26 27 26
WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Receptacles.

B. Wall plates and covers.

1.02 RELATED REQUIREMENTS

A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. FS W-C-596 - Connector, Electrical, Power, General Specification for; Federal Specification; Revision G, 2001.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.

C. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.

D. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (R 2010).

E. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2012.

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.

H. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.

I. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

J. UL 1310 - Class 2 Power Units; Current Edition, Including All Revisions.

K. UL 1472 - Solid-State Dimming Controls; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
   2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
   3. Coordinate the placement of outlet boxes for wall switches with actual installed door swings.
   4. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.

1.05 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Products: Listed, classified, and labeled as suitable for the purpose intended.

PART 2 PRODUCTS

2.01 WIRING DEVICES - GENERAL REQUIREMENTS

A. Provide wiring devices suitable for intended use with ratings adequate for load served.

2.02 WIRING DEVICE APPLICATIONS

A. Provide wiring devices suitable for intended use and with ratings adequate for load served.

B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.

C. Provide weather resistant GFCI receptacles with specified weatherproof covers for receptacles installed outdoors or in damp or wet locations.

D. Provide GFCI protection for receptacles installed within 6 feet (1.8 m) of sinks.

E. Provide GFCI protection for receptacles installed in kitchens.

F. Provide GFCI protection for receptacles serving electric drinking fountains.

G. Unless noted otherwise, do not use combination switch/receptacle devices.

2.03 ALL WIRING DEVICES

A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.04 RECEPTACLES

A. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498and 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.

B. Convenience Receptacles:
   1. Tamper Resistant Automatically Controlled Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R; controlled receptacle marking on device face per NFPA 70; single or duplex as indicated on the drawings.
   2. Tamper Resistant Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R, listed and labeled as tamper resistant type; single or duplex as indicated on the drawings.
   3. Tamper Resistant and Weather Resistant Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R, listed and labeled as tamper resistant type and as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations; single or duplex as indicated on the drawings.

C. GFCI Receptacles:
   1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.
   2. Tamper Resistant GFCI Receptacles: Commercial specification grade, duplex, 20A, 125V, NEMA 5-20R, listed and labeled as tamper resistant type.
   3. Tamper Resistant and Weather Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as tamper resistant type and as weather resistant type complying with UL 498 Supplement SD suitable for installation in damp or wet locations.

2.05 WALL PLATES AND COVERS

A. Wall Plates: Comply with UL 514D.
   1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
   2. Size: Standard; _____.
   3. Screws: Metal with slotted heads finished to match wall plate finish.

B. Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.

C. Weatherproof Receptacle Covers for Damp Locations: Gasketed, cast aluminum, with self-closing hinged cover and corrosion-resistant screws; listed as suitable for use in wet locations with cover closed.

D. Weatherproof Receptacle Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected and identified as extra-duty type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

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 wall openings are neatly cut and will be completely covered by 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 wiring devices.

F. Verify that openings in access floor are in proper locations.

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 accordance with NECA 1 (general workmanship) 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 05 33.16 as required for installation of wiring devices provided under this section.
   1. Mounting Heights: Unless otherwise indicated, as follows:
      a. Receptacles: 18 inches (450 mm) above finished floor or 6 inches (150 mm) above counter.
   2. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
   3. Where multiple receptacles or wall switches are installed at the same location and at the same mounting height, gang devices together under a common wall plate.

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. Unless otherwise indicated, GFCI receptacles may be connected to provide feed-through protection to downstream devices. Label such devices to indicate they are protected by upstream GFCI protection.

I. Install wiring devices plumb and level with mounting yoke held rigidly in place.

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. Coordinate locations of outlet boxes provided under Section 26 0537 to obtain mounting heights specified.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect each wiring device for damage and defects.

C. Operate each wall switch and wall dimmer with circuit energized to verify proper operation.

D. Test each receptacle to verify operation and proper polarity.

E. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.

F. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.05 ADJUSTING

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

3.06 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 51 00
INTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior luminaires.

B. Exit signs.

C. Ballasts and drivers.

D. Accessories.

1.02 REFERENCE STANDARDS

A. IES LM-79 - Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products; 2008.

B. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; Illuminating Engineering Society; 2015.

C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.

D. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems; 2006.

E. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; 2006.

F. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility; 2012.

G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. NFPA 101 - Life Safety Code; 2015.

I. UL 924 - Emergency Lighting and Power Equipment; Current Edition, Including All Revisions.

J. UL 1598 - Luminaires; Current Edition, Including All Revisions.

K. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
   2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
   3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.

1.04 SUBMITTALS

A. Shop Drawings:
   1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
   2. Provide photometric calculations where luminaires are proposed for substitution upon request.

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.
   1. LED Luminaires:
      a. Include estimated useful life, calculated based on IES LM-80 test data.
      b. Include IES LM-79 test report upon request.

1.05 DELIVERY, STORAGE, AND PROTECTION

A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

A. Furnish products as indicated in luminaire schedule included on the drawings. For approved manufacturers, see Section 26 00 10.

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, classified, and labeled as suitable for the purpose intended.

D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, drivers, power supplies, 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.

G. Recessed Luminaires:
   1. Ceiling Compatibility: Comply with NEMA LE 4.
   2. Luminaires Recessed in Insulated Ceilings: Listed and labeled as IC-rated, suitable for direct contact with insulation and combustible materials.
   3. Luminaires Recessed in Sloped Ceilings: Provide suitable sloped ceiling adapters.

H. LED Luminaires:
   1. Components: UL 8750 recognized or listed as applicable.
   2. Tested in accordance with IES LM-79 and IES LM-80.
   3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

I. Luminaires Mounted in Continuous Rows: Provide quantity of units required for length indicated, with all accessories required for joining and aligning.

2.03 EXIT SIGNS

A. Description: Exit signs and similar signs for special purpose applications such as area of refuge/rescue assistance.

B. Description: Exit signs complying with NFPA 101 and applicable state and local codes, and listed and labeled as complying with UL 924.
   1. Number of Faces: Single- or double-face as indicated or as required for installed location.
   2. Directional Arrows: As indicated or as required for installed location.

C. Self-Powered Exit Signs:
   1. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
   2. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
   3. Provide low-voltage disconnect to prevent battery damage from deep discharge.

2.04 BALLASTS AND DRIVERS

A. Ballasts/Drivers - General Requirements:
   1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
   2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.

B. Dimmable LED Drivers:
   1. Dimming Range: Continuous dimming from 100 percent to 10 percent or less relative light output unless dimming capability to lower level is indicated, without flicker.
   2. Control Compatibility: Fully compatible with the dimming controls to be installed.

PART 3 EXECUTION

3.01 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.

3.02 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 26 05 33.16 as required for installation of luminaires provided under this section.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Install products in accordance with manufacturer's instructions.

D. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).

E. Provide required support and attachment in accordance with Section 26 05 29.

F. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.

G. Recessed Luminaires:
   1. Install trims tight to mounting surface with no visible light leakage.
   2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.

H. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to bottom of luminaire.

I. Install accessories furnished with each luminaire.

J. Bond products and metal accessories to branch circuit equipment grounding conductor.

K. Exit Signs:
   1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.

L. Install lamps in each luminaire.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect each product for damage and defects.

C. Operate each luminaire after installation and connection to verify proper operation.

D. Test self-powered exit signs to verify proper operation upon loss of normal power supply.

E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Engineer.

F. New light fixtures SHALL NOT be used as temporary lighting. Once they are installed, test for proper installation, then leave off until ready to turn over to owner. Maintain temporary lighting throughout entire project.

3.04 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Engineer. Secure locking fittings in place.

B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Engineer or authority having jurisdiction.

C. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Engineer or authority having jurisdiction.

3.05 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.

3.06 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

3.07 PROTECTION

A. Relamp luminaires that have failed lamps at Substantial Completion.

3.08 SCHEDULE - SEE DRAWINGS

END OF SECTION

SECTION 26 60 50
TELEPHONE, TELEVISION AND DATA SYSTEMS' RACEWAYS

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. This section of the specification indicates the scope of the work for the Ellsworth Community Schools ELementary School Remodeling Project contract.

B. The Telephone, Television and Data Cabling raceway system shall include, but not be limited to, the following:
   1. Complete raceway system including conduit as indicated on the drawings.
   2. Provide all electrical power outlets as indicated on the drawings.
   3. Installation of the raceway system shall be closely coordinated with the Contractor performing the wiring and termination of the Telephone, Television and Data Cabling systems. The electrical contractor for the Ellsworth Community Schools ELementary School Remodeling Contract shall provide any miscellaneous power and raceway system work required to complete the raceway system to facilitate installation of the Telephone, Television and Data Cabling system.

C. The Telephone, Television and Data Cabling System components will be provided under a separate contract.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 26 60 51
SECURITY SYSTEM RACEWAYS

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. This section of the specification indicates the scope of the work for the Ellsworth Community Schools ELementary School Remodeling Project contract.

B. The Security Cabling raceway system shall include, but not be limited to, the following:
   1. Complete raceway system including conduit as indicated on the drawings.
   2. Provide all electrical power outlets as indicated on the drawings.
   3. Installation of the raceway system shall be closely coordinated with the Contractor performing the wiring and termination of the Security Cabling systems. The electrical contractor for the Ellsworth Community Schools ELementary School Remodeling Contract shall provide any miscellaneous power and raceway system work required to complete the raceway system to facilitate installation of the Security Cabling system.

C. The Security Cabling System components will be provided under a separate contract.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 27 00 00
COMMUNICATIONS GENERAL PROVISIONS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK:

A. Work included in this Division consists of providing all demolition, labor, materials, equipment, tools, supervision, start-up services, Owner's instructions, including all incidental and related items necessary to complete installation, and successfully test, start up and operate building in a practical and efficient manner. Communications Systems indicated on Drawings and described in each Section of Division 27 Specification and conforming with all Contract Documents.

B. Work not included under this Division:
   1. Low voltage temperature control wiring. Refer to Part 2, Paragraph 2.03 of this Section.
   2. Field painting of equipment, except for repair to damaged factory finishes.

C. The General Provisions of this Contract, including General and Supplementary Conditions and other General Requirements Sections, apply to the Work specified in this Section.

D. This Section is not intended to supersede, but to clarify, the definitions in Division 1, General Requirements and Supplementary Conditions.

1.02 DRAWINGS AND SPECIFICATIONS:

A. Drawings are diagrammatic and indicate general arrangement of systems and work included in Contract, and shall serve only as design drawings, and not as working drawings, for general layout of various equipment and systems.

B. Drawings and Specifications are intended to supplement each other, and all work specified or indicated in either shall be provided. Should drawings disagree in themselves or with Specifications, the better quality or greater quantity of work shall be provided.

C. Drawings and Specifications are intended to include all work and materials necessary for completion of the work. Any incidental item of material, labor or detail required for the proper execution and completion of the work and omitted from either the drawings and specifications or both, but required by governing codes local regulations, trade practices, operational functions, and good workmanship, shall be provided as part of the Contract Work without extra charge, even though not specifically detailed or specified.

1.03 SITE AND PROJECT DOCUMENT EXAMINATION:

A. Submission of a proposal is considered evidence the Contractor has visited site, examined Drawings and Specifications of all trades including Architectural, Structural, Mechanical and Electrical, and fully informed himself with all project and site conditions, and is proficient, experienced and knowledgeable of all standards, codes, ordinances, permits and regulations which affect his respective trade, and that all costs are included in his proposal.

B. The Communications Contractor and/or Sub-Contractor shall insure all required permits, and assessments have been obtained prior to any work beginning. Contractor shall verify requirement to include privilege fees, plan review fees, and permits as part of his formal bid.

1.04 STANDARDS, CODES AND PERMITS:

A. Refer to Division 1, General Requirements and Supplementary Conditions.

B. All work under Communications Sections shall comply with latest edition of applicable standards and codes of the following, including local codes and variances:
   1. NECA - Standards for Installation
   2. NFPA - National Fire Protection Association
   3. NEC - Latest edition of NFPA 70
   4. UL - Underwriter's Laboratories
   5. NEMA - National Electric Manufacturers Association

6. NESC - National Electric Safety Code (H13)
7. OSHA - Occupational Safety and Health Act
8. IEEE - Institute of Electrical and Electronics Engineers

C. All work shall be provided and tested in accordance with all applicable local, county, state laws, ordinances, code rules and regulations, including Michigan Department of Labor, General Rules, Part 8-Electrical Code Rules.

D. No work shall be covered or enclosed until work is tested in accordance with applicable codes and regulations, and successful tests witnessed and approved by authorized inspection authority. Written approvals shall be secured by Contractor and submitted to Engineer before final acceptance of work.

1.05 SUBMITTALS:

A. Proposal Supplement:
1. Contractor to submit one (1) copy of Proposal Supplement - SECTION 27 00 10 - COMMUNICATIONS EQUIPMENT AND MATERIALS, at the time of Bid opening, listing the manufacturers upon which his bid was based, including all items being provided by Sub-Contractors.
2. After Proposal Supplement and Sub-Contractors are approved, no deviation shall be permitted without written approval of Engineer.

B. Shop Drawings:
1. Submit nine (9) hard copies or one (1) electronic set of shop drawings on all equipment and materials indicated in the specifications or on drawings.
2. At the time of submittal for review by the Engineer, shop drawings shall include signatures or stamps indicating that the Contractor and/or the Sub-Contractor has reviewed the submittals and has coordinated the required space, quantities required, services and work of other trades for the equipment or system being submitted.
3. Submittals shall be in the form of bound folders with the name of the Project, Architect, Engineer and the submitting Contractor indicated on the cover. Submittals requiring drawings too large to be bound into the folder shall be folded and inserted in pockets bound into the folder.
4. Submit complete manufacturer's shop drawings of all equipment, accessories and controls, including dimensions, weights, capacities, construction details, installation, controls, wiring diagrams, and motor data.
5. Engineer's approval of show drawings is for general application only and is a service only and not considered as a guarantee of total compliance with or as relieving Contractor of basic responsibilities under all Contract Documents, and does not approve changes in quantities, time or cost.
6. After approval, each Contractor is responsible to provide information to all other trades involved in, or affected by, installation of his equipment and work.

C. Operating and Maintenance Instructions and Manuals:
1. Communications Contractor shall provide for all items of equipment three (3) bound and indexed sets of operating/installation and maintenance instructions to Engineer for approval. After approval, manuals will be given to Owner by the Engineer.
2. Manuals shall include a complete set of shop drawings submitted, indexed with tabs for each section.

D. Submit shop drawings for the following: (See 27 00 00 1.05 B 1 thru 6)
1. Category 6 Cabling and Patch Cords
2. Category 6 Faceplates
3. Category 6 Patch Panels
4. J-hooks
5. PA/Paging/Intercom Speakers
6. PA/Paging/Intercom Cabling

PART 2 PRODUCTS

2.01 STANDARDS:

A. All products shall be of established manufacturers regularly engaged in making type of materials to be provided and complete with all parts, accessories, trimmings, connections, etc. as specified in detail or as described in manufacturer's catalog.

B. All material shall be labeled or listed by Underwriter's Laboratories, Inc. Assembled electrical equipment supplied to the job site shall be listed or labeled and/or approved by the authority having jurisdiction.

2.02 SUBSTITUTION AND CHANGES:

A. Contractor and/or Equipment Supplier may propose alternate equipment or materials of EQUAL or better quality, function, performance, durability and appearance. This information is to be submitted to the Engineer's Office ten (10) working days prior to bid due date to allow for proper review time and to issue an addendum incorporating the acceptable substitution(s). It is the submitter's responsibility to provide sufficient material for review as required by Engineer's Office. Acceptance and approval is the responsibility of the Engineer.

B. Contractor and/or Equipment Supplier is liable for any added costs to himself or others and is responsible for verifying dimensions, clearance and roughing-in requirements, when product not named as the basis of design are used and is responsible for advising other Contractors of variations and submit revised drawing layout for approval of Engineer.

C. See Section 27 00 10 for approved manufacturers.
   1. No substitutions will be accepted after bids are received. The communications equipment specified herein has been carefully chosen for it's ability to meet the performance and/or design criteria of this project. Substitutions in all likelihood will be unable to meet all of the same requirements as the specified equipment.
   2. When only one manufacturer is listed within the description of the communications equipment, the design engineering or architectural aesthetics will not allow substitution of other manufacturer.
   3. When two or more manufacturers are listed within the description of the communications equipment, the Contractor may elect to submit to the Engineer a substitute fixture for review. All submittals must follow paragraph 2.02.A of this section.
   4. Substitution submittals shall consist of a physical description, dimensioned drawing and complete data of the proposed communications equipment. Working samples may be requested and shall be supplied to the Engineer for a visual check of finish and operating characteristics.
   5. Contractor will be responsible for ALL costs (engineering time, manufacturer's costs, distributor costs, etc.) incurred to replace equipment not approved if substitutions are made by the distributor, manufacturer's rep., contractor or subcontractor.

PART 3 EXECUTION

3.01 COORDINATION OF ELECTRICAL WORK:

A. The Communications Contractor shall be responsible for all Sub-Contractors and Suppliers, and include in his bid all materials, labor and equipment involved in accordance with all local customs, rules, regulations, jurisdictional awards, decisions and secure compliance of all parts of the Specifications and Drawings regardless of Sectional inclusion in these Specifications.

B. The Communications Contractor and Sub-Contractor shall be responsible for all parts applicable to his trade in accordance with the Specifications and Drawings, and shall be responsible for coordinating locations and arrangements of his work with all other relevant Mechanical, Architectural, Structural, Electrical Contractor's Specifications, Drawings and Shop Drawings.

3.02 EQUIPMENT CLEARANCE:

A. Communications Contractor to coordinate with the Mechanical and Electrical Contractor's equipment location to insure adequate clearance is maintained as required by the National Electrical Code and applicable state and local codes, as well as accessibility for future maintenance and operation.

B. Work shall be arranged with building construction to provide minimum 6'-8" overhead clearance where possible.

3.03 WALL, FLOOR AND CEILING OPENINGS:

A. Locate all openings and advise the General Contractor of details and templates of all openings necessary for inspection of electrical work.

B. In general, openings and required lintels shall be provided through the General Contractor. Size and location is the responsibility of this Contractor. Cracks and rough edges left following installation of equipment shall be caulked or covered by Communications Contractor.

C. Perform or pay for all cutting, fitting, repairing, patching and finishing of work of other sections where it is necessary to disturb such work to permit installation of electrical work.
   1. Repair or replace existing or new work disturbed.

3.04 FIELD CHANGES:

A. The Contractor shall not make any field changes that affect timing, costs or performance without written approval from the Architect/Engineer in the form of a Change Order, Field Change Order or a Supplemental Instruction. The Contractor assumes liability for any additional costs for changes made without such instruction or approval. Should any unauthorized change be determined by the Architect/Engineer as lessening the value of the project, a credit will be determined and issued as a change to the Contract.

3.05 PROJECT CLOSEOUT:

A. Final Acceptance and payment will only be made after final punchlist completion and receipt at the Engineer's Office of:
   1. All Guarantees/Warranties
   2. Operating and Maintenance Instruction Manuals
   3. Record Drawings (As Builts)
   4. Certificates of Inspection
   5. Test Reports

3.06 CERTIFICATES OF INSPECTION AND TEST REPORTS:

A. Submit to the Engineer's Office evidence that installation has been inspected and approved by local or state electrical inspector and/or the authority having jurisdiction.

3.07 GUARANTEES AND WARRANTIES:

A. At the end of a one year period of continuous operation, make a complete inspection of all systems, fixtures, equipment, safety devices and controls to insure equipment is operating properly, and report to Engineer in writing.

3.08 RECORD DRAWINGS:

A. Maintain a white-print set of Communications Contract Drawings in clean, undamaged condition for markup of actual installation on Communications Contract Drawings which vary substantially from the work as shown. These drawings are to be available for inspection by the Engineer on a weekly basis. Drawings shall indicate at a minimum the circuiting, and addendum, bulletin and field changes.

3.09 OPERATING AND MAINTENANCE INSTRUCTIONS:

A. Provide instruction of Owner's personnel in operation and maintenance procedures for all systems equipment.

B. Provide 3 - bound & tabbed sets of operating & maintenance instruction manuals for all electrical equipment

3.10 PLACING SYSTEMS INTO OPERATION:

A. Communications Contractor shall be responsible for all startup procedures, system checks and balancing associated with his equipment.

B. All equipment shall be installed, tested and operated in accordance with manufacturer's recommendations at normal operating conditions.

C. All permanent communications equipment operated during construction periods shall be cleaned and damaged equipment replaced.

3.11 ADJUSTMENTS AND BALANCING:

A. Contractor shall make all necessary adjustments to equipment installed or connected by him under this contract so as to insure proper operation of the same.

3.12 GUARANTEES AND WARRANTIES:

A. All labor, materials and equipment shall be guaranteed by Contractor and/or warranted by Manufacturer for one year after acceptance date and/or one normal continuous complete seasons operation applicable to equipment or system except where specified longer for special equipment. Contractor shall secure such warranty from all Suppliers (not one year from shipment date), or Contractor to assume warranty.

B. Acceptance date of substantial completion shall be Owner occupancy as determined by Architect/Engineer.

C. Contractor shall make all necessary alterations, repairs, adjustments, replacements during guarantee periods as directed by Architect/Engineer to comply with Drawings and Specifications at no cost to Owner.

D. Repair or replacements made under guarantee bear further one year guarantee from date of acceptance of repair or replacement.

3.13 IDENTIFICATION:

A. All cables shall be labeled with typewritten labels at each end detailing the cabling run number. Identification shall be by means of wrap around “brady” type labels. All workstation outlets must be labeled and all circuits clearly identified utilizing designation strips in compliance with TIA/EIA 606 standards. Labels shall include room/area number and identified as an Access Point (i.e., 513-WAP), Data Outlet, Telephone Outlet, etc.. Each end of new and existing re-routed cabling shall be labeled.

3.14 TRAINING:

A. The option of video taping any and all training sessions shall be given to the Owner at no additional cost, with the Contractor conducting the video taping and with two (2) copies of all tapes being turned over to the Owner for future use.

B. Communications Contractor shall conduct 2 - 2 hour training session on the operation and controls of all communications equipment. Notify owner 72 hours prior to session.

END OF SECTION

SECTION 27 00 10
COMMUNICATIONS EQUIPMENT AND MATERIALS

PART 1 GENERAL

1.01 INSTRUCTION:

A. The Communications Contractor(s) is to either copy or remove this specification section from the spec book and complete as follows:
   1. Indicate the specific manufacturer on which the bidder's base bid price is based in the blank space provided.
   2. All equipment is to be bid as specified. Material or equipment from an unlisted manufacturer may be submitted for review by the Engineer by following the substitution instructions in 270000-2.02.
   3. Insert the name(s) of each subcontractor used in your bid in the space provided in Part 3.
   4. This form shall be submitted with the bid.

1.02 RELATED DOCUMENTS:

A. The other Contract Documents complement the requirements of this Section. The General Requirements apply to the work of this section.

PART 2 PRODUCTS

2.01 THE FOLLOWING IS A LIST OF APPROVED MANUFACTURERS, GROUPED ACCORDING TO TYPES OF MATERIALS OR EQUIPMENT.

A. CAT6 Cabling and Patch Cords:
   1. Commscope/Systimax, Nordx, Belden/CDT and General Cable

B. CAT6 Faceplates and Patch Panels:
   1. Commscope/Systimax, Nordx, Belden/CDT and Hubbell

C. J-hooks:
   1. Caddy Cat and Panduit J-Pro

D. PA/Paging/Intercom Speakers:
   1. CareHawk

E. PA/Paging.Intercom Cabling:
   1. CareHawk, and General Cable

PART 3 SUBCONTRACTORS

3.01 INSERT THE NAME OF EACH SUBCONTRACTOR AND WORK TO BE PERFORMED BELOW:

A. Subcontractor_____
   Work Performed_____

B. Subcontractor_____
   Work Performed_____

C. Subcontractor_____
   Work Performed_____

END OF SECTION

SECTION 27 10 07
LOCAL AREA NETWORK (LAN) CABLING SYSTEM

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. The intent is to provide a state-of-the art Local Area Network (LAN) cabling infrastructure as specified in this specified in this specification and on the contract drawings.

B. The installation shall be executed in accordance with this specification, contract drawings, and shall meet TIA/EIA 568-B “Commercial Building Wiring Standard”.

1.02 SUBMITTALS

A. Submit all materials and equipment for review. Each sheet of descriptive literature submitted shall be clearly marked to identify the material or equipment as follows:
   1. Submit manufacturer's product data for all cable, termination, equipment, connectors, frames, faceplates, electronic components, and other material and connective hardware. A manufacturer's standard flyer showing the specific item highlighted will be accepted.
   2. Equipment and materials descriptive literature not readily cross-referenced with the drawings or specifications shall be identified by a suitable notation.
   3. Equipment and materials descriptive literature and drawings shall show the specification paragraph for which the equipment applies.
   4. The Contractor shall submit within thirty (30) days of the award of the contract for the Owner/Engineer's approval and prior to any purchase or installation of the items, six (6) bound and indexed copies of materials, equipment, devices, wire, and other pertinent items proposed to be incorporated within the work. where manufacturers are indicated for an item in the drawings or specifications, only designated by catalog number of the manufacturer of the item to be used shall be required. All other items shall be listed with catalog numbers and descriptive information. The list must be complete to receive consideration. Items judged by the Owner/Engineer to be in non-conformance will be rejected.

B. Shop Drawings:
   1. Composite wiring and/or schematic diagrams of the complete system to be installed showing cable run number.

C. Product Data:
   1. Catalog sheets, factory assembly drawings, specifications and installations for all products. Documents will not be accepted for review unless they are submitted as a package where they pertain to related items, and clearly identified or highlighted to indicate all items which are applicable.

D. Sample: Provide sample for each of the following items:
   1. Category 6 Cable
   2. Cable connector
   3. Wiring device plate complete with label
   4. Identification label

1.03 CABLE DELIVERY

A. No cable over one (1) year old when delivered to the site will be accepted.

1.04 QUALITY ASSURANCE

A. Installer’s Qualifications:
   1. Installer(s) must be certified installer for the proposed cabling solution and have minimum 2-years experience. Installer must provide Owner with proof of certification.

PART 2 – PRODUCT

2.01 MANUFACTURERS

A. All equipment shall be the product of one manufacturer for compatibility and shall fully meet all the requirements of this specification.

2.02 LOCAL AREA NETWORK

A. Local area network cabling system described herein are based upon TAI/EIA 568B Commercial Building Wiring standard. The installation shall include but not be limited to the following:
   1. Category 6 Patch Panel:
      a. Patch panels shall be Category 6 with 24 or 48 ports, as necessary with modular PS6, 2.4 GIG jacks. Panels shall be TIA/EIA 568B wiring standards. Patch panels by Commscope/Systimax, Nordx, Belden/CDT or Hubbell are acceptable.
   2. Category 6 Cabling/Wiring
      a. Work Station horizontal voice, data and wireless access point cable
         1) Cabling shall be plenum rated in areas as indicated on the electrical plans.
         2) All station wiring shall have legible color-coding of conductors and be four (4) pair, Unshielded Twisted Pair (UTP), 24 gauge. Data cable must adhere to all performance specifications indicated for TIA/EIA Category 6 media as cited in TIA/EIA 568 standard. The cable shall meet the following performance requirements in addition to other standard Cat 6 performance requirements.
            (a) Frequency - 100 MHz
            (b) Max. Attenuation - 22-db/100 meter
            (c) NEXT - 40 db minimum tolerance
            (d) ACR - 27.2 db at 90 meter
         3) Horizontal work station data cable color shall be **GREEN** in color, or as directed by the Owner.
         4) Cable must be Commscope/ Systimax, Nordx, Belden/CDT, Berk-Tek or General Cable and must bear exterior jacket markings of “Verified Level 6” or “Classified Level 6”.
      b. Work Station Faceplates
         1) Faceplates shall consist of one (6) port, single gang plate populated with the number of Category 6 voice and data drops notated on the contract drawings. Populate the unused ports with matching blank inserts.
         2) Faceplate finish to be determined in the field and coordinated with the Architect/Owner.
         3) Faceplate shall be by Commscope/Systimax, Nordx, Belden/CDT or Hubbell suitable for mounting on single device box.
      c. Work Station Voice, Data and Wireless Access Point Outlets
         1) Terminate all voice and data Category 6 outlets using T568B convention
         2) Terminate in accordance with BICSI ANSI/TIA/EIA installation guidelines
         3) Cable terminations shall be free of stress or tension when complete.
         4) Provide sufficient slack and manage cables accordingly.
         5) Terminate data drops using a Category 6 **ORANGE** colored insert.
         6) Data jack shall be by Commscope/Systimax, Nordx, Belden/CDT or Hubbell
      d. UTP Patch Cords
         1) The contractor is to provide Category 6 patch cods according to the percentages of the final work station data cable drop count listed below.
            (a) 3' patch cords = 40% of the total data drop count
            (b) 7' patch cords = 40% of the total data drop count
            (c) 12' patch cords = 20% of the total data drop count
         2) All patch cords shall be rated category 6, and shall have a certified bandwidth of 250 MHz and shall meet or exceed all BICSI ANSI/TIA/EIA requirements for the category 6 standard.

3) All RJ-45 patch cord connectors shall be booted.
4) The patch cord color shall be green in color, or as directed by the Owner.

3. Supply Cable Locator Chart.
4. Label each cable within 4 inches of each termination, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
5. A 3 foot service loop of cable shall be secured with a cable tie above the ceiling tile (or under the floor) immediately before entering the conduit leading to the switch box where the cable is terminated. A 10 foot service loop shall be provided at the MDF end to allow for re-termination or repositioning of the cable at a later date.

2.03 RACEWAY AND CABLE SUPPORT

A. Refer to Specification and Engineered Drawings, Basic Materials and Methods, for the routing of the telephone and data cable.

B. Do not fill communications raceway beyond 40% capacity for conduit and sleeves

C. Support cable every 4 feet horizontally with “J” hooks. Approved manufacturers: Caddy CAT series and Panduit J-Pro.

D. Observe manufacturer recommended load ratio and do not over fill support to minimize pressure on cables.

E. If cable supports are installed on ceiling support wires, the contractor MUST install an additional support wire painted orange to comply with the NEC.

F. Sleeves shall be installed by the electrical contractor and must include nylon bushings for cable protection.

G. Do not exceed manufacturers minimum bend radius

H. Do not tie-wrap cable. Provide UL approved Velcro cable ties and leave cable loose in ties

2.04 FIRE STOPPING

A. Comply with Chapter 7 of the Telecommuncations Distribution Methods manual 11th edition

B. Comply with EIA/TIA-569-A, Annex A “Firestopping”

C. Install firestopping label in to each side of penetrated fire barrier within 12 inches of firestopping material. Labeling shall comply with TIA/EIA-606 latest revision.

2.05 LABELS

A. Provide typewritten labels on all cables detailing cable run number. Identification shall be by means of wrap around “brady” type labels. All workstation outlets must be labeled and all circuits clearly identified utilizing designation strips in compliance with TIA/EIA 606 standards.

2.06 TERMINATIONS

A. Cable Runs shall terminate as follows:
   1. Each station shall have the quantity of four pair cables as indicated on the drawings terminated on an Commscope/ Systimax, Nordx, Belden/CDT or Hubbell faceplate with eight conductor modular outlet configured as per TIA/EIA jack designation T568B terminating the four pairs of Category 6 cable. Connecting hardware shall be marked and comply with TIA/EIA performance levels associated with the particular cable being terminated.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Work Station Drops:
   1. All voice and data drops shall originate out of the MDF and observe the BICSI ANSI/TIA/EIA convention for distance and care. A 10' service loop shall be installed in the MDF and neatly stored above the ceiling or in the installed cable tray.

2. The installation contractor is responsible for verifying all distance measurements on the contract drawings including the service loop.
3. Data drops shall be terminated on Commscope/ Systimax, Nordx, Belden/CDT or Hubbell patch panels and may be 24 or 48 port pre-configured Category 6, or configurable with color coordinated category 6 connectors.
4. The new Patch panel shall be rack mounted in an existing 19" rack.

B. Horizontal Distribution Cable Installation:
1. Maintain the twist of horizontal and backbone cables to within 0.5” at the point of termination.
2. When running cable through dropped ceiling space, the Contractor shall assure proper cable strain relief at all times. After the cable is installed, the installer shall make sure that all parts of the cable are supported every 4 foot and shall be stress free at both ends and throughout their length.
3. Cable shall be installed so that there are no bends less than four times the cable’s outside diameter (4X Cable O.D.) for copper or ten (10) times the diameter of the fiber at any point in the run.
4. Horizontal distribution cables shall not be bundled in groups of greater than 40 cables. Cable bundle quantities in excess of 40, may cause deformation of the bottom cables within the bundle.
5. Pulling tension on 4-pai UTP cables shall not exceed 25-pounds for a single cable.

C. Labeling of Cables, Jacks, and Panels:
1. Contractor shall indicate the run number assigned to each cable on a separate data communication shop drawings. The contractor shall submit these shop drawings for the Engineer’s approval prior to cable installation. The intent of this system is to provide a grounding system that is equal in potential to the building electrical ground system.
2. Patch panel numbering scheme and labels:
   a. The modular patch panels are pre-numbered. In lieu of using these numbering schemes, the number from the wall outlets (i.e. room number) shall be used to label the corresponding port on the patch panels. Where there are more than one data outlet in a room, identify them as A, B, C etc. Identification of all equipment, racks, patch panels etc. shall be by means of engraved lamacoid nameplates showing ¼” high white lettering on a black background fastened in a upper left-hand corner of the equipment. Identification for the cables shall be by means of wrap around “brady” type labels.
3. Provide riser diagram framed under glass or laminated and mounted on wall near Main Rack.

3.02 TESTING

A. All tests are to be performed after installation of the complete system.

B. The equipment indicated below represents test equipment utilized to develop this test specification. Substitute test equipment may be used only upon approval be the Owner’s Engineer provided the same level and quality of testing is performed.

C. Test Equipment:
1. MICRO-TEST PENTA SCANNER 350 or equal.

D. All tests are to be performed on the following aspects of data cabling system:
1. Form Telecommunication room’s data rack (LDF) patch panel to corresponding telecommunication closets’ patch panel (backbone cable). For fiber optic backbone see section 16728.
2. From each telecommunication closet’s patch panel to each and every workstation termination (workstation cable).

E. Tests to be performed:
   1. The test equipment shall be configured to test the maximum transmission performance for which the cable is rated (i.e. for category 6 cable is 2400 Megabits per second).
   2. The following minimum information shall be provided for each cable link:
      a. Length: Total length from LDF to workstation termination. The cable length shall conform to the maximum distance set forth in the TIA/EIA 568-B standard.
      b. Resistance: measure for each cable pair.
      c. Noise: measure for each pair at the following frequencies: 150KHZ to 16MHZ, 16MHZ-100 MHZ.
      d. Attenuation: (db loss): measure cable for proper attenuation according to manufacturer specifications at 10 MHZ and 100 MHZ. Expected result is 21.6 db at 100 MHz.
      e. Near End Cross talk (NEXT): Measure NEXT in dB and the associated frequency. Expected result is 32.0 db at 100 MHz.
      f. Wire Map: Indicate that the wiring at the near end and the far end meets manufacturer specification.
      g. Attenuation to Cross-talk Ratio (ACR): Expected result is 10.4 db.

F. All test results shall be provided in the following formats:
   1. Printed (3 bound copies) -or-
   2. Electronic in PDF form.

G. All tests shall be coordinated with and performed in the presence of the Owners Representative.

H. Upon completion of testing and problem resolution, all corrections tested are to be 100% error free.

3.03 EQUIPMENT INSTALLATION AND TESTING:

A. The Contractor shall be available during LAN equipment (i.e. wiring concentrators, server, and workstations) installation and testing and assist computer integrator to isolate faults, which may exist in the cabling system installation.

3.04 TRAINING & WARRANTY

A. Components, parts and assemblies supplied by a manufacturer shall be warranted against defects in material and workmanship for a period of 12 months from the date of completion. Warranty services shall be provided by a qualified factory-trained representative of the equipment manufacturer during normal working hours. The Representative shall be based in a fully staffed branch office and located within a reasonable distance from the job site.

B. The warranty stated in the preceding paragraph shall be the minimum warranty for all material and installation. Certain systems shall have additional warranty requirements which shall be listed under their individual sections.

END OF SECTION

SECTION 28 31 03
ADDRESSABLE LIFE SAFETY SYSTEM REVISIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the contract apply to this section.

B. The work covered by this section is to be coordinated with related work as specified elsewhere in the specifications.

1.02 SUMMARY

A. System shall consist of providing a new addressable devices and equipment to support system operation and all required components required for the building renovation. The new devices and equipment is to be interfaced with the existing GE Fireshield fire alarm panel.

B. Alterations and additions to existing fire alarm system
   1. Provide all local and state required permits, labor, equipment, materials and services to furnish and install a fully tested functional, UL Listed, code compliant, for the revisions of the existing GE Fireshield control panel for the renovated area including but not limited to all initiation and notification appliances, all raceways and wiring. The system supplied under this specification shall utilize modular low voltage components. The new control panel needs to be interconnected with the existing GE Fireshield panel and compatible with existing equipment provided for previous renovations.
   2. The system drawings show the intended areas of coverage and suggested device locations. Final device quantity, location, and AHJ approval are the responsibility of the contractor. The system shall be complete, tested, and ready for operation as described elsewhere in this specification, before owner acceptance.
   3. Strict conformance to this specification is required to ensure that the installed and programmed system will function as designed, is compatible with existing systems, and will accommodate the future requirements and operations of the building owner. All specified operational features and manufacturer's equipment must be met without exception.
   4. **The installing company shall prepare and submit appropriate plans and documentation for fire alarm system plan review(s) to the Authority(ies) Having Jurisdiction. All associated plan review fees shall be included.**

1.03 REFERENCES

A. Codes-General
   1. All work and materials shall conform to all applicable federal, state and local codes and regulations governing the installation. If there is a conflict between the referenced standards, federal, state or local codes, and this specification, it is the bidder's responsibility to immediately bring the conflict to the attention of the engineer for resolution. National standards shall prevail unless local codes are more stringent.
   2. The bidder shall not attempt to resolve conflicts directly with the local authorities unless specifically authorized by the engineer.

B. Fire Code
   1. The equipment and installation shall comply with the provisions of the latest edition of the following codes and standards:
      a. Michigan Building Code
      b. National Fire Protection Association (NFPA)
         1) National Electric Code®
         2) NFPA 72 - National Fire Alarm Code®
         3) NFPA 90A - Installation of Air-Conditioning and Ventilating Systems
         4) NFPA 101 - Life Safety Code®

c. Underwriter's Laboratories, Inc
   1) UL 864 - Control Units for Fire Protective Signaling Systems.
   2) UL 268 - Smoke Detectors for Fire Protective Signaling Systems.
   3) UL 268A - Smoke Detectors for Duct Applications.
   4) UL 217 - Single and Multiple Station Smoke Alarms
   5) UL 521 - Heat Detectors for Fire Protective Signaling Systems.
   6) UL 228 - Door Closers-Holders, With or Without Integral Smoke Detectors.
   7) UL 464 - Audible Signaling Appliances.
   8) UL 38 - Manually Actuated Signaling Boxes for Use with Fire-Protective Signaling Systems
   9) UL 346 - Waterflow Indicators for Fire Protective Signaling Systems.
   10) UL 1971 - Signaling Devices for the Hearing-Impaired.
   11) UL 1635 - Digital Alarm Communicator System Units
   12) UL 1638 - Signaling Appliances - Private Mode Emergency and General Utility Signaling
d. International Code Council
   1)) International Building Code
   2) International Fire Code
   3) International Mechanical Code
e. Federal Codes and Regulations
   1) Americans with Disabilities Act (ADA)

1.04 SYSTEM DESCRIPTION - FIRE

A. General Fire Alarm Operation
   1. Upon the alarm activation of any area smoke detector, heat detector, manual pull station or sprinkler waterflow the following functions shall automatically occur:
      a. The system shall remain in the alarm mode until all initiating devices are reset and the fire alarm panel is manually reset and restored to normal. The internal audible device shall sound at the control panel.
      b. The LCD display shall indicate all applicable information associated with the alarm condition including; zone, device type, device location and time/date. Any remote or local annunciator LCD/LED's associated with the alarm zone shall be illuminated and activate the existing control panel
      c. Release any doors to allow egress from the building
      d. Activate notification audible and visual appliances on all floors (zones). The visual strobe shall continue to flash until the system has been reset.
      e. Audible alarm signals shall be silenced from the fire alarm control panel by an alarm silence switch. Visual signals shall be programmable to flash until system reset or alarm silencing, as required.
      f. The notification appliance dedicated to sprinkler system water flow alarm shall not be silenced while the sprinkler system is flowing at a rate of flow equal to a single head.
      g. Transmit signal to the central monitoring station with point identification.

B. Supervisory Operation
   1. Upon supervisory activation of any sprinkler valve supervisory the following functions shall automatically occur:
      a. The internal supervisory event audible device shall sound at the control panel.
      b. The LCD display shall indicate all applicable information associated with the supervisory condition including; zone, device type, device location and time/date.
      c. Any remote or local annunciator LCD/LED's associated with the supervisory zone shall be illuminated.
      d. Transmit signal to the central monitoring station with point identification.

C. Trouble Operation
   1. Upon activation of a trouble condition or signal from any device or internal system integrity monitoring function on the system, the following functions shall automatically occur:
      a. The internal panel audible device shall sound at the control panel.
      b. The LCD keypad display shall indicate all applicable information associated with the trouble condition including; zone, device type, device location and time/date.
      c. Trouble conditions that have been restored to normal shall be automatically removed from the trouble display queue and not require operator intervention. This feature shall be software selectable and shall not prevent the logging of trouble events to the historical file.
      d. Any remote or local annunciator LCD/LED's associated with the trouble zone shall be illuminated.
      e. Transmit a trouble signal to the central monitoring station with point identification.

1.05 SUBMITTALS

A. Submittal General
   1. The contractor shall not purchase any equipment for the specified system until the owner has approved the project submittals in their entirety and has returned them to the contractor.
   2. Approved submittals allow the contractor to proceed with the installation and shall not be construed to mean that the contractor has satisfied the requirements of these specifications.
   3. Each submittal shall include a detailed list of variations that the submittal may have from the requirements of the contract documents.
   4. The contractor shall provide specific notation on each shop drawing, sample, data sheet, installation manual, etc. submitted for review and approval, of each variation.
   5. Any conflicts in the contract documents and/or with Authority Having Jurisdiction (AHJ) requirements shall be submitted to the owner in writing 7 days prior to bid.

B. Submittal Books
   1. Submit for approval electronic copies of a submittals to the consulting engineer for review and comment.
   2. Submittal books shall meet the following requirements: Product data sheets, as detailed elsewhere in this specification

C. C. Product Data
   1. System components proposed in this specification shall be UL listed to operate together as a system. The supplier shall provide evidence, with his submittal, of listings of all proposed equipment and combinations of equipment.
   2. For each product submitted provide the following information:
      a. Manufacturer’s catalog data, to include material description, agency approvals, operating characteristics, electrical characteristics, dimensions, mounting requirements and accessories.
      b. Product data sheets for system components shall be highlighted to indicate the specific products, features, or functions required to meet this specification.
      c. Alternate or as-equal products submitted under this contract shall provide a detailed line-by-line comparison of how the submitted product meets, exceeds, or does not comply with this specification.
      d. Manufacturer’s product installation sheets: A copy of the documentation that is required to be shipped with all listed products by UL.

D. Design Calculations
   1. Battery Capacity
      a. Provide battery capacity calculations for each power supply that uses batteries for secondary power. Identify all loads. Identify any loads shed during alarm operation. Use the manufacturer’s recommended methods and/or forms.

2. 24 VDC Notification Appliance Circuits
   a. For each 24VDC NAC, provide worst case voltage drop calculations. The load shall be treated as a lump sum at the end of the circuit. Worst case power supply terminal voltage shall include all applicable internal power supply losses. Using 85% of nominal circuit voltage (20.4VDC) shall not be accepted as lowest terminal voltage without manufacturer's published documentation stating there are no internal losses in the power supply.

E. Shop Drawings
1. Submit for approval electronic shop drawings to the consulting engineer for review and comment. Drawings shall be either D-size or E-size blue line drawings and of a sufficient resolution to be completely read.
2. Contained in the title block of each drawing shall be symbol legends with device counts, wire tag legends, circuit schedules for all addressable and notification appliance circuits, the project name/address, and a drawing description which corresponds to that indicated in the drawing index on the coversheet drawing. A section of each drawing title block shall be reserved for revision numbers and notes.
3. Shop drawings shall meet the following requirements:
   a. Shop drawings shall be prepared by persons with the following qualifications:
      1) Trained and certified by the manufacturer of the submitted equipment in fire-alarm system design.
      2) NICET-certified fire-alarm technician, Level II minimum or STATE registered Professional Engineer.
4. Coversheet with project name, address and drawing index.
5. General notes drawing with peripheral device back box size information, part numbers, device mounting height information, and the names, addresses, point of contact, and telephone numbers of all contract project team members.
6. Provide device floor plans for all areas served by the fire alarm system. Utilize the CAD Files provided by the consulting engineer in the preparation of the floor plans. Floor plans shall indicate accurate locations for all control and peripheral devices. Drawings shall be NO LESS THAN 1/8-INCH SCALE. If individual floors need to be segmented to accommodate the 1/8" scale requirements, KEY PLANS and BREAK-LINES shall be provided on the plans in an orderly and professional manner.
   a. . All addressable devices shall be shown. Coordinate the device address with the same device shown on the riser diagram.
   b. Identify all notification appliances with a circuit and item number. Coordinate the circuit and item number with the same device shown on the riser diagram.
7. Device riser diagram, which individually depict all control panels, annunciators, addressable devices, and notification appliances. Shall include a specific, proposed device description above each addressable device. Shall include a specific, discrete device address that corresponds to addresses shown on the floor plans. Drawings shall provide wire specifications, and wire identification for all conductors depicted on the riser diagram. All circuits shall have identifiers that shall correspond with those required on the control panel and floor plan drawings. End-of-line resistors (and values) shall be depicted.
8. Control panel drawing(s) shall show internal component placement and all internal and field terminations. Provide details indicating where conduit connections shall be made to avoid conflicts with internally mounted batteries. For each additional fire alarm panel, a separate drawing which clearly indicated the panel designation, service and location of the control enclosure.
9. Provide typical device wiring diagrams that show all system components, and the respective field wiring. Wire type, gauge, and jacket shall be indicated. When an addressable module is used in multiple configurations for monitoring or controlling equipment, provide a drawing for each application. End-of-line resistors (and values) shall be shown.

10. Provide a fire alarm system function matrix that illustrates alarm input/out events in association with initiation devices. Matrix summary shall include system supervisory and trouble output functions.
11. System Calculations as detailed elsewhere in this specification.

F. Closeout
1. Two (2) copies of the following documents shall be delivered to the building owner's representative at the time of system acceptance.
2. Project specific operating and maintenance manuals covering the system as installed. The manuals shall contain a description of the system architecture, inputs, notification signaling, auxiliary functions, annunciation, and sequence of operations, expansion capability, application considerations and limitations. A generic instruction and operation manual shall not be acceptable.
3. Technical literature (manufacturer's data sheets and installation manuals/instructions) for all parts of the system, including control panels, smoke detectors, batteries, manual stations, alarm notification appliances, power supplies, and remote alarm transmission means.
4. Software and Firmware Operational Documentation:
   a. THE END-USER SHALL RETAIN COMPLETE RIGHTS AND OWNERSHIP TO ALL SITE-SPECIFIC SOFTWARE RUNNING IN THE SYSTEM. The fire alarm equipment supplier shall provide hard and soft copies of the software database to the end-user at the end of the warranty period. The database provided shall be useable by any authorized and certified distributor of the product line, and shall include all applicable passwords necessary for total and unrestricted use and modification of the database.
5. Drawings
   a. Provide “As Built” drawings of record of all the shop drawings used in the installation of the system.
   b. Refer to the Submittals - Shop Drawings section of this specification for drawing requirements.
6. Record of Completion
   a. System supplier and contractor shall provide a certified test report to verify that the system and all components functioned properly and as intended.
   b. A filled out Record of Completion similar to NFPA 72, 2007 edition figure 4.5.2.1 shall be provided.
7. Warranty
   a. Provide copies of the warranty documentation as detailed in the Warranty section of this specification.
8. Service Organization
   a. Provide the name, address and telephone of the authorized factory representative.
9. Training
   a. Conduct the required training as detailed in the Startup and Commissioning - Training section of this specification.

G. Project Conditions
1. Responsibility
   a. It shall be the contractor's responsibility to inspect the job site and become familiar with the conditions under which the work will be performed.

H. Warranty
1. Installation Workmanship and Parts
   a. The contractor shall warranty the installation and workmanship for one (1) year and all parts for one (1) year from date of final acceptance. A copy of the manufacturer’s warranty shall be provided with closeout documentation and included with the operation and installation manuals. The full cost of maintenance, labor and materials required to correct any defect during the warranty period shall be included in the submittal bid.

b. During the warranty period, each year the contractor shall perform detector sensitivity testing and provide a report to the owner. If the system is UL Listed to perform automatic detector sensitivity testing without manual intervention, and if a detector falls outside of sensitivity window the system automatically indicates a devices trouble, then this requirement shall be waived. Documentation from UL shall be provided as proof of automatic sensitivity testing operation.
c. The system supplier shall maintain a service organization with adequate spare parts stock within 50 miles (80.47 kilometers) of the installation. Provide a telephone response to owner's questions within 4 hours and on-site assistance within 24 hours.
d. Permit the owner's fire alarm technicians to perform temporary bypasses and emergency repairs on the system without voiding the warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. The existing system is manufactured by GE Fireshield and compatible for the building addition. The service provider for the school is Summit Companies and they can be contacted by telephone at (231) 947-6035 or by email at dsargent@summitfire.com

2.02 REMOTE ANNUNCIATOR

A. The system shall support up to eight (8) individually addressable Remote Annunciators as required for the project.

B. Remote LCD Alphanumeric Annunciator: Shall have LCD display functions for alarm, supervisory, and trouble indications as well as event location information. The annunciator shall provide control switches for: event acknowledge/silence, signal silence, reset, drill, and lamp test. The control switches shall require a password to be enabled. The annunciator shall support a 24 LED point annunciator expansion display. (option) Shall be housed in a metal enclosure with key lock door.

2.03 ADDRESSABLE MANUAL FIRE-ALARM PULL STATIONS

A. Manual Fire Alarm Pull Stations shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on a recessed electrical box. If indicated as surface mounted, provide manufacturer's surface mounting back box. The manual pull station shall feature:
1. Double-action mechanism requiring two actions to initiate an alarm, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire alarm control unit.
2. The manual pull station will have an intelligent module integral of the unit.
3. Station Reset: key operated switch shall match the control panel key.
4. Manual pull stations that initiated an alarm condition by opening the unit are not acceptable.

B. Indoor Protective Shield: Factory-fabricated clear plastic enclosure. Hinged at the top to permit lifting for access to initiate alarm. Lifting the cover actuates an integral battery powered audible horn (where noted on the drawings) intended to discourage false-alarm operation.

2.04 INTELLIGENT ADDRESSABLE SYSTEM SMOKE DETECTORS

A. General Requirements for Intelligent Addressable Detectors
1. Integral Microprocessor: All decisions are made at the detector determining if the device is in the alarm or trouble condition.
2. Non-Volatile Memory: Permanently stores serial number, and type of device. Automatically updates historic information including hours of operation, last maintenance date, number of alarms and troubles, time of last alarm and analog signal patterns for each sensing element just before last alarm.
3. Addressing: It shall be possible to address each intelligent module with the use of rotary switches.

4. Sensitivity Range: Each intelligent addressable smoke detector's sensitivity shall be capable of being programmed individually as: most sensitive, more sensitive, normal, less sensitive or least sensitive. It shall be possible to automatically change the sensitivity of individual analog/addressable detectors for the day and night periods. It shall be possible to program control panel activity to each level.
5. Pre-Alarm: Detector stores 8 pre-alarm sensitivity values to alert local personnel prior to the sensor reaching alarm sensitivity. Sensitivity values can be set in 5-10% increments.
6. Environmental Compensation: The detector's sensing element reference point shall automatically adjust, compensating for background environmental conditions such as dust, temperature, and pressure. Periodically, the sensing element real-time analog value shall be compared against its reference value. The detector shall provide a maintenance alert signal when the detector reaches 80% compensation has been used. The detector shall provide a dirty fault signal and light the Service Detector LED on control panel.
7. Status LED: Flashing Green LED shows normal; flashing RED shows alarm state.
8. Replaceable chambers: Photo detectors shall have field replaceable optical chambers.
9. UL Sensitivity Testing: The detector shall utilize a supervised microprocessor that is capable of monitoring the sensitivity of the detector. If the detector sensitivity shifts outside of the UL limits, a trouble signal shall be sent to the panel.

2.05 DEVICE REPLACEMENT: THE SYSTEM SHALL ALLOW FOR CHANGING OF DETECTOR TYPES FOR SERVICE REPLACEMENT PURPOSES WITHOUT THE NEED TO REPROGRAM THE SYSTEM. THE REPLACEMENT DETECTOR TYPE SHALL AUTOMATICALLY CONTINUE TO OPERATE WITH THE SAME PROGRAMMED SENSITIVITY LEVELS AND FUNCTIONS AS THE DETECTOR IT REPLACED. SYSTEM SHALL DISPLAY AN OFF-NORMAL CONDITION UNTIL THE PROPER DETECTOR TYPE HAS BEEN INSTALLED OR CHANGE IN THE APPLICATION PROGRAM PROFILE HAS BEEN MADE.

A. Intelligent Addressable Photoelectric Detector
   1. Provide intelligent addressable photoelectric smoke detectors at the locations shown on the drawings. The photoelectric detector shall work on the light scattering principle.

B. Intelligent 135 Degree Fixed Temperature / Rate of Rise Heat Detector
   1. Provide intelligent combination fixed temperature/rate-of-rise heat detectors at the locations shown on the drawings. The heat detector shall have a low mass thermistor heat sensor and operate at a fixed temperature and at a temperature rate-of-rise. It shall continually monitor the temperature of the air in its surroundings to minimize thermal lag to the time required to process an alarm. The integral microprocessor shall determine if an alarm condition exists and initiate an alarm based on the analysis of the data. The heat detector shall be rated for ceiling installation at a minimum of 50 ft centers and be suitable for wall mount applications.
   2. Provide SIGA series by EST model SIGA-HRS.

C. Detector Base Types
   1. Standard detector mounting bases shall be suitable for mounting on North American 2-gang, or 4 inch square electrical boxes. The base shall, contain no electronics and support all FX series detector types. Bases with electronics or dip-switches are not acceptable.
   2. Provide relay detector mounting bases suitable for mounting on North American 2-gang, or 4 inch square electrical boxes. The relay base shall support all FX series detector types and have the following minimum requirements:
      a. The relay shall be a bi-stable type and selectable for normally open or normally closed operation.
      b. The position of the contact shall be supervised.
      c. The operation of the relay base shall be controlled by its respective detector. Form “C” Relay contacts shall have a minimum rating of 2 amp @ 30 Vdc / 0.5A (60W/62.5VA) @ 120VAC.

d. Removal of the detector from the relay base shall not affect communications with other detectors.

2.06 INTELLIGENT ADDRESSABLE MODULES

A. It shall be possible to address each intelligent module with the use of rotary switches. The personality of multifunction modules shall be configurable on site.
   1. Integral Microprocessor: All decisions are made at the module determining if the device is alarm or trouble condition. Each module shall provide its own ground fault detection.
   2. Non-Volatile Memory: Permanently stores serial number, and type of device. Automatically updates historic information including hours of operation, number of alarms and troubles, time of last alarm.
   3. Status LEDs: The modules shall have a bi-colored LED visible through a finished cover plate. A green LED shall flash to confirm communication with the loop controller. A red LED shall flash to display active status.
   4. Where required by code, circuit wiring shall be supervised for open and ground faults.

B. Intelligent Input Modules. The Input Modules shall provide one or two supervised Class B or 1 Class A input circuit capable of a minimum of 4 personalities, each with a distinct operation. The modules shall be suitable for mounting on North American 2 ½" (64mm) deep 4" square electrical box and 2-gang electrical box. The input module shall support the following circuit types:
   1. Normally-Open Alarm Latching (Manual Stations, Heat Detectors, etc.)
   2. Normally-Open Alarm Delayed Latching (Water flow Switches)
   3. Normally-Open Active Non-Latching (Monitor, Fans, Dampers, Doors, etc.)
   4. Normally-Open Active Latching (Supervisory, Tamper Switches)

C. Intelligent Relay Module. Provide addressable control relay circuit modules with one (1) form C dry relay contacts rated at 24Vdc @ 2 amps (pilot duty) to control external appliances or equipment. The module shall also be capable of reverse polarity operation for use with sounder bases. The position of the relay contact shall be confirmed by the system firmware. The module shall be suitable for mounting on North American 2 ½" (64mm) deep, 4" square electrical box and 2-gang electrical boxes.

D. NAC Control Module: Provide intelligent NAC control module shall provide one (1) supervised Class B or Class A output circuit capable of a minimum of 2 personalities, each with a distinct operation. The gang box -mounted version shall be suitable for mounting in North American 2-gang electrical boxes and 2 ½" (38mm) deep, 4" square electrical boxes. The NAC control module shall support the following operations:

2.07 INITIATING DEVICES

A. All other initiating devices for the building renovation are to match the existing devices installed in the previous renovations.

2.08 NOTIFICATION APPLIANCES

A. General
   1. All appliances supplied for the requirements of this specification shall be UL Listed for Fire Protective Service, and shall be capable of providing the "equivalent facilitation" which is allowed under the Americans with Disabilities Act Accessibilities Guidelines (ADA(AG)), and shall be UL 1971 Listed.
   2. All appliances shall be of the same manufacturer as the fire alarm control panel specified to insure absolute compatibility between the appliances and the control panels, and to insure that the application of the appliances are done in accordance with the single manufacturer's instructions.
   3. Any appliances that do not meet the above requirements, and are submitted for use must show written proof of their compatibility for the purpose intended. Such proof shall be in the form of documentation from all manufacturers that clearly states that their equipment (as submitted) is 100% compatible with each other for the purpose intended.

4. All strobes shall be provided with lens markings oriented for wall mounting. Exterior mounted devices shall be provided with a weatherproof back box.
5. All visual appliances shall be synchronized. Light and audible output levels shall be designed to meet ADA and NFPA requirements
6. All notification appliances shall be white unless noted otherwise on the drawings.

B. Low Profile
1. Horns
   a. Provide low profile wall or ceiling mounted horns at the locations shown on the drawings.
   b. Low profile horns shall mount in a North American 1-gang box, and protrude less than 1” from the finished wall.
   c. The horns shall emit a tone with a 91 dBA peak sound output level.
   d. Horn power, horn silencing, and strobe synchronization shall be accomplished over a single pair of wires. In and out screw terminals shall accommodate 18AWG to 12 AWG wiring and have captive hardware.
2. Strobes
   a. Provide low profile wall or ceiling mounted strobes at the locations shown on the drawings.
   b. Low profile wall mounted strobes shall mount in a North American 1-gang box, and protrude less than 1” from the finished wall. Ceiling mounted devices mount on a North-American 4” square box, 2 1/8” (2.13 inch (54 mm)) deep (indoor wall or ceiling applications only).
   c. The strobe output shall be switch selectable as required by its application from the following available settings: 15cd, 30cd, 75cd & 110cd. Selected strobe rating shall be visible when the strobe is in its installed position. Amber lens strobes shall be available with outputs of 12/24/60/88cd. Light shall be evenly distributed throughout the required volume using cavity and mask “FullLight” technology to prevent hot spots. Strobes using specular reflectors shall not be considered as equal.
   d. When multiple strobes are installed within view of each other, their outputs shall be synchronized within ten (10) milliseconds of each other for an indefinite period without the need for separate synchronization modules.
   e. Horn and strobe power, horn silencing, and strobe synchronization shall be accomplished over a single pair of wires. In and out screw terminals shall accommodate 18AWG to 12 AWG wiring and have captive hardware.
3. Horn-Strobes
   a. Provide wall or ceiling mounted horn-strobes at the locations shown on the drawings.
   b. Low profile wall mounted horn-strobes shall mount in a North American 1-gang box, and protrude less than 1” from the finished wall. The word FIRE shall be prominently displayed on the housing. Ceiling mounted devices mount on a North-American 4” square box, 2 1/8” (2.13 inch (54 mm)) deep (indoor wall or ceiling applications only).
   c. The horn-strobe shall be UL listed for private mode operation, and shall emit a tone with a 91 dBA peak sound output level. It shall be possible to adjust the volume on individual chimes using a concealed volume control.
   d. The strobe output shall be switch selectable as required by its application from the following available settings: 15cd, 30cd, 75cd & 110cd. Selected strobe rating shall be visible when the chime- strobe is in its installed position. Light shall be evenly distributed throughout the required volume using cavity and mask “FullLight” technology to prevent hot spots. Strobes using specular reflectors shall not be considered as equal.
   e. When multiple strobes are installed within view of each other, their outputs shall be synchronized within ten (10) milliseconds of each other for an indefinite period without the need for separate synchronization modules.

f. Horn and strobe power, horn silencing, and strobe synchronization shall be accomplished over a single pair of wires. In and out screw terminals shall accommodate 18AWG to 12 AWG wiring and have captive hardware.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

A. The entire system shall be installed in a skillful manner in accordance with approved manufacturer's installation manuals, shop drawings and wiring diagrams.

B. All work shall be performed in accordance with the requirements of NFPA 70 and NFPA 72.

C. Coordinate locations of all devices with all other divisions' drawings and specifications.

D. All fire alarm devices shall be accessible for periodic maintenance. Should a device location indicated on the contract drawings not meet this requirement, it shall be the responsibility of the installing contractor to bring it, in writing, to the attention of the Project Engineer.

E. Fasten equipment to structural members of building or metal supports attached to structure, or to concrete surfaces.

F. All systems and system components listed to UL 864 Control Units for Fire Protective Signaling Systems may be installed within a common conduit raceway system, in accordance with the manufacture's recommendations. System(s) or system components not listed to the UL 864 standard shall utilize a separate conduit raceway system for each of the sub-systems.

G. No wiring except life safety system circuits and system power supply circuits shall be permitted in the control panel enclosures.

H. Any low-voltage copper wiring that leaves the protection of a building shall be provided with a compatible UL 497B listed transient protection devices where the circuit leaves the building and where it enters the next building.

I. Devices containing end-of-line resistors shall be appropriately labeled. Devices should be labeled such that removal of the device is not required to identify the EOL device.

3.02 FIRE ALARM COMPONENTS

A. All devices and appliances shall be mounted to or in an approved electrical box.

B. All wall mounted control equipment shall comply with requirements defined by the International Building Code and Acceptance Criteria for Seismic Qualification by Shake-Table Testing of Nonstructural Components and Systems (AC-156) using a seismic component importance factor of 1.5.

C. Fire Alarm Control Panels - Existing to Remain

D. Remote power supplies and auxiliary fire alarm panels
   1. Locate the panel or cabinet with the top of the panel 72" above the finished floor or center the panel at 63", whichever is lower.
   2. Do not locate these panels above ceilings or where inaccessible by a person standing on the finished floor of the space.
   3. Label the power supplies and auxiliary FACPs with the room number, electrical panel number and circuit breaker number feeding them.
   4. Paint the handles of the dedicated circuit breakers feeding fire alarm panels red, and install handle locks.
   5. Within the panel, all non-power limited wiring must be properly separated from power limited circuits.

E. Manual Pull Stations
   1. Mount stations so that their operating handles are between 42" and 48" above the finished floor.

F. Notification Appliances: Mount assemblies as follows:
   1. All wall mounted audio/visual devices shall be mounted so the entire lens is between 80” and 96” above the finished floor. Where low ceilings exist, devices shall be mounted within 6” of the ceiling.
   2. Each speaker’s (horn) output shall be set to the wattage value indicated for its specific location as shown on the drawings.
   3. Each strobe’s output shall be set to the candela value indicated for its specific location as shown on the drawings.
   4. Each speaker (horn)-strobe’s outputs shall be set to the wattage/candela value indicated for its specific location as shown on the drawings.
   5. Where ceiling height exceeds 30 feet (914.4 cm), appliances shall be suspended from the ceiling to a height of 30 feet maximum above the finished floor.
   6. Appliances installed outdoors shall be UL listed for outdoor use.

G. Smoke Detectors:
   1. Smoke and heat detector heads shall not be installed until after construction clean-up is completed. Detector heads installed prior to construction clean-up shall be cleaned by the manufacturer or replaced.
   2. Detectors located on the wall shall have the top of the detector at least 4" and not more than 12” below the ceiling.
   3. On smooth ceilings, detectors shall not be installed over 30 feet (914.4 cm) apart in any direction.
   4. Install smoke detectors no closer than 3 feet (91.44 cm) from air handling supply air diffusers or return air openings.
   5. Locate detectors no closer than 12” from any part of a lighting fixture.

H. End-of-Line Resistors
   1. Devices containing end-of-line resistors shall be appropriately labeled.

I. Addressable Control Modules
   1. Install the module less than 3 feet (91.44 cm) from the device controlled.
   2. Orient the device mounting for best maintenance access.
   3. Label all addressable control modules as to their function.
   4. Provide a dedicated 24VDC circuit to feed all auxiliary relays required for inductive loads (auxiliary relays, door holders). Circuits shall be supervised via an end-of-line relay and addressable input module. Auxiliary relays shall not derive their power from the starter or load being controlled.

END OF SECTION

SECTION 31 23 17

TRENCHING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Excavating trenches for utilities from 5 feet outside building.
2. Compacted fill from top of utility bedding to subgrade elevations.
3. Backfilling and compaction.

B. Related Sections:
1. 32 92 19 – Seeding.

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. 2012 MDOT Standard Specifications for Construction.

1.3 DEFINITIONS

A. Utility: Any buried pipe, duct, conduit, or cable.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with MDOT Standard Specifications for Construction.

1.5 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A. Subsoil Fill: MDOT Class II material.
1. Existing subsoil may be reused if meeting gradation requirements for fill.

B. Topsoil: Screened topsoil free of clay, rocks and debris. Existing material may be removed, stockpiled and reused. Supplement existing material with imported topsoil as required to achieve specified depth.

PART 3 EXECUTION

3.1 LINES AND GRADES

A. Lay pipes to lines and grades required.

B. Use laser-beam instrument with qualified operator to establish lines and grades.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Protect plant life, lawns, and other features remaining as portion of final landscaping.

C. Protect bench marks, existing structures, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

D. Maintain and protect above and below grade utilities indicated to remain.

3.3 TRENCHING

A. Excavate subsoil required for utilities.

B. Do not advance open trench more than 200 feet ahead of installed pipe.

C. Cut trenches sufficiently wide to enable installation.

D. Excavate bottom of trenches maximum 2 feet wider than outside diameter of pipe.

E. Excavate trenches to depth required for installation of utilities. Provide uniform and continuous bearing and support for bedding material and pipe.

F. Do not interfere with 45 degree bearing splay of foundations.

G. Slope side walls of excavation starting 2 feet above top of pipe.

H. When subsurface materials at bottom of trench are loose or soft, excavate to greater depth until suitable material is encountered.

I. Cut out soft areas of subgrade not capable of compaction in place. Backfill with MDOT Class II fill and compact to density equal to or greater than requirements for subsequent backfill material.

J. Trim excavation. Remove loose matter.

K. Correct areas over excavated areas with compacted fill as specified for authorized excavation.

L. Remove excess subsoil not intended for reuse, from site.

3.4 BACKFILLING

A. Backfill trenches to contours and elevations with unfrozen fill 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.
   1. 12 inches compacted depth.

D. Employ placement method that does not disturb or damage utilities in trench.

E. Maintain optimum moisture content of fill materials to attain required compaction density.

F. Do not leave trench open at end of working day.

3.5 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.6 RESTORATION

A. Restore areas disturbed in execution of the work.

B. Fine grade surface and place topsoil to a depth of 4” over prepared subgrade.

C. Seed and mulch restored area under provision of Section 32 92 19.

3.7 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 during construction.

3.8 SCHEDULE

A. General Trenching:
   1. Cover pipe and bedding with MDOT Class II material to subgrade elevation.
   2. Compact uniformly to minimum 95 percent of maximum density.

END OF SECTION

SECTION 32 92 19

SEEDING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Fertilizing.
2. Seeding.
3. Mulching.

1.2 DEFINITIONS

A. Weeds: Vegetative species other than specified species to be established in given area.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data for seed mix, fertilizer, mulch, and other accessories.

1.4 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 PRODUCTS

2.1 SEED MIXTURE

A. Seed Mixture:
1. All seed to be used shall be labeld in accordance with the U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act and shall be in accordance with the State seed rules and regulations. Seed mixture shall be "Sunny Mix" with composition of 50% Kentucky Blue Grass, 25% Creeping Red Fescue and 25% Perennial Rye Grass, by weight. Common varieties of specified seed mix will be permitted.

2.2 ACCESSORIES

A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.

B. Fertilizer: Commercial grade; recommended for grass; of proportion necessary to eliminate deficiencies of topsoil: Fertilizer shall be Starter blend, high phosphorous, 15-30-15 composition.

C. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify prepared soil base is ready to receive the Work of this section.

3.2 FERTILIZING

A. Apply fertilizer at application rate recommended by manufacturer.

B. Apply after smooth raking of topsoil and prior to roller compaction.

C. Do not apply fertilizer at same time or with same machine used to apply seed.

D. Mix fertilizer thoroughly into upper 2 inches of topsoil.

E. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

3.3 SEEDING

A. Apply seed at rate of 6 to 7 lbs per 1000 sq ft evenly in two intersecting directions. Rake in lightly.

B. Do not seed areas in excess of that which can be mulched on same day.

C. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.

D. Roll seeded area with roller not exceeding 112 lbs/linear foot.

E. Immediately following seeding and compacting, apply mulch to a uniform covering. Maintain clear of shrubs and trees.

F. Apply water with fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

END OF SECTION