Specifications for:

Accessory Storage Building
Mount Crest Court

Prepared for:
Greater Dayton Premier Management
400 Wayne Avenue
Dayton, Ohio 45410
937.910.7500

Website posting at www.gdpm.org

Prepared by:

RDA GROUP ARCHITECTS
7662 PARAGON ROAD | DAYTON, OH 45459 | 937.610.3440

Bid / Construction Set
February 27, 2026

THIS SHEET LEFT INTENTIONALLY BLANK

DOCUMENT 00 01 10 - TABLE OF CONTENTS

TECHNICAL SPECIFICATIONS

DRAWINGS

END OF DOCUMENT

SECTION 01 00 00 - GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 DESCRIPTION OF THE PROJECT DOCUMENTS

A. The work covered by these specifications consists of furnishing all labor, equipment and materials necessary in connection with construction of an Accessory Storage Building at Mount Crest Court for Greater Dayton Premier Management. Work includes items as shown, subject to the terms and conditions of the contract, specifications and the drawings as listed.

1.2 CONTRACT DESCRIPTION

A. Project Identification: **Accessory Storage Building**

B. Project Locations: Mount Crest Court
700 Mount Crest Court
Dayton, OH 45403

C. Owner: Greater Dayton Premier Management
400 Wayne Avenue
Dayton, OH 45410

D. Architect: RDA Group Architects, LLC
7662 Paragon Road
Dayton, OH 45459
937.610.3440 phone

E. Civil Engineer: Burkhardt Engineering
28 N. Cherry Street
Germantown, OH 45327
937.388.0060

F. Structural Engineer: L2 Engineering
7949 Washington Woods Drive
Dayton, OH 45459
937.361.6731

G. PME Engineer: L2 Engineering
7949 Washington Woods Drive
Dayton, OH 45459
937.361.6731

H. Perform Work of Contract under a stipulated sum contract with Owner in accordance with Conditions of Contract.

1.3 SCOPE OF WORK

A. Work of the Project includes the limited site development and construction of an Accessory Storage Building located at Mount Crest Court.
   1. Site Improvements – Asphalt, Concrete, Grading, and Site Restoration.
   2. Building Utilities – Extend new utilities to the buildings from the public infrastructure
   3. Building Construction – Foundation, framing, exterior finishes, insulation, interior finishes, mechanical, and electrical improvements.

B. Provide all materials and labor for work as noted herein for a complete project.
   1. IMPORTANT: Contractor shall field verify all existing conditions, and coordinate all applicable requirements as related to the scope of the work.

2. Drawings indicate general diagrammatic areas/extent of work, but in no way indicate the intricate nature of the work required for the successful completion of the project.

C. Provide any and all ancillary work related to the above work scope including repair of any Contractor damaged finishes within or adjacent to the work area.

D. Coordinate with GDPM for all construction activities.

1.4 CONTRACTOR'S USE OF PREMISES

A. Provide and maintain a safe living environment for Residents of the building at all times during the course of work. The adjacent dwelling units / housing site will remain OCCUPIED throughout the duration of the work.
   1. Provide all required provisions for protecting the project site and residents.

B. Provide a clearly defined project schedule to GDPM for the work of this contract.
   1. Provide appropriate notification of GDPM and Residents. Coordinate with GDPM as appropriate.

C. Provide all required temporary protection to minimize the spread of dust, dirt, and debris to other portions of the site.

D. Provide temporary protection of adjacent site areas / finishes at the work areas as well as any areas traversed as a result of construction activities.

E. Determine how the various disciplines work together and are scheduled to permit the work as outlined.

F. Work Hours: 8 AM to 5 PM Monday thru Friday, unless work outside of these hours and days is requested and granted by Owner.

G. Provide a detailed construction schedule with specific dates, activities, etc. to GDPM.
   1. Coordinate with GDPM to minimize conflict, and to facilitate residents as necessary.
   2. Update schedules as appropriate for weather delays, progress, etc.

H. Staff project every day with a full crew capable of timely completion of work.

1.5 CONTRACT PERIOD / TIME OF COMPLETION

A. Contract Period
   1. Upon issuance of a contract from the Owner, Supply a work start date within [5] working days. A start date and completion date will be negotiated and a notice to proceed will be issued stating those dates.
   2. Consideration for material lead-times will be given for establishing the NTP dates as applicable.
   3. Notify the Architect, in writing, upon determination of any delay in material delivery.

B. The time for completion of this contract work is ONE HUNDRED [100] calendar days from the date of the Notice to Proceed.
   1. The start date established on the notice to proceed will be communicated and agreed to between GDPM and the Contractor upon execution of the Owner-Contractor Agreement.
   2. Final schedule and phasing will be coordinated with the contractor.

C. The Contractor shall notify GDPM in writing fourteen [14] days prior to the Contract Completion date if an extension of contract time is necessary with a request for the extension and the reasoning for such request.
   1. Failure to comply may result in enforcement of liquidated damages, cancellation of the contract, and possible disablement from future bidding opportunities.

D. Notify GDPM in writing seven [7] days prior to substantial completion of the project.

E. It is anticipated that the work of this contract will be accomplished Summer 2026

F. Coordinate construction schedule/activities with holidays, etc. so as to not inconvenience residents unnecessarily over holiday weekends, etc.

G. Failure to complete work in the specified contract period will be cause for enforcement of liquidated damages per GDPM requirements.

H. Coordinate schedule / activities so as not to inconvenience the Owner unnecessarily.

1.6 PROJECT ALLOWANCES

A. Building Systems Allowance: include **$10,000 [ten thousand dollars]** in the base bid amount of the project for use as a project contingency allowance.

B. Aid to Construction Allowance: include **$10,000 [ten thousand dollars]** in the base bid amount of the project for use in paying Aid to Construction Costs which may be charged by the public utility companies to extend new utilities to the building. **ACTUAL** costs only for this allowance, no provision for any markup, overhead, or profit.

C. Building Permit Allowance: include **$2,000 [two thousand dollars]** in the base bid amount of the project for use in obtaining required building permits. All trade permits shall be included by the trade contractor. Unused funds shall be credited back to the Owner.

D. Contingency funds shall only be used at the approval of RDA and Owner.

E. Track actual expenditures over the duration of the project. Any unused funds will be deducted from the contract at the end of the project.

F. Identify and document all expenditures as they occur, not afterward. Work commenced without the approval of the Owner shall be at the Contractor's risk.

1.7 INSTRUCTIONS/RESPONSBILITIES OF THE CONTRACTOR

A. Protect all finishes and equipment scheduled to remain.

B. Commence and complete work as noted in the contract.

C. Furnish labor, materials, equipment, and management required to complete the project.

D. Furnish all required logistics required to accomplish the work – including lifts, scaffolding, ladders, trash chutes, safety equipment, etc.
   1. Coordinate and receive Owner approval for all Contractor staging areas and layout areas prior to the start of the project.
   2. Provide protection of all existing pavement, turf, etc. from lifts, lulls, etc. which may be utilized on the project.

E. Visit the site to become thoroughly familiar with all working conditions, check and verify all dimensions, and site conditions. Any dimensions given or referred to in the specification or drawing is to be used purely as approximate and not as a basis for exact amounts for bidding. Promptly advise the Architect of any discrepancies, errors with the specifications and drawings before bidding the work.

F. Provide a valid Certificate of Insurance, follow all Workman's Compensation requirements and regulations, and conduct all work according to OSHA recognized safe work practices.

G. Provide all bonds, payment schedule, and insurance as noted in the contract documents.

H. The plans and specifications are intended to depict the general scope, layout and quality of workmanship required, they are not intended to show or describe in detail every item necessary for the proper installation of the work.

I. Provide Safety Data Sheets (SDS) on all products used.

1. Submit directly to Owner. RDA does not review nor approve SDS.

J. The term 'Architect' as referenced in these contract documents is RDA Group Architects.

K. The term 'Owner' as referenced in this specification is Greater Dayton Premier Management.

1.8 WORK BY THE OWNER

A. Not Applicable

B. Contractor shall coordinate all aspects of Work by Owner as they interface with Work.

1.9 APPLICABLE REFERENCES, CODES, AND PERMITS

A. References will be found in each section that applies to that section. In addition, comply with the Ohio Building Code requirements as they relate to the work.

B. Procure, at Contractor's expense, all necessary permits from municipal or other agencies and give all notices required. Fines levied due to non-compliance shall be paid by the contractor.

1.10 WAGES

A. Refer to Section 01 29 00.

1.11 TAXES

A. Refer to Section 01 29 00.

1.12 SMOKING

A. Smoking is not permitted on HUD property– inside or outside of any facility.

B. Contractor or crewmembers found to be smoking on the jobsite will be subject to a $500 fine per occurrence. Any habitual offenders will be dismissed from the project site.

1.13 CONTRACTOR / GENERAL REQUIREMENTS

A. Visit the project sites to verify general and pertinent conditions and take measurements necessary for bidding purposes. Arrangements to visit the site may be made by contacting Kevin Arnold or Kurt Beck at GDPM.

B. Pay for all building permits, trade permits, ROW permits, and any other required permits and inspections necessary to complete all work related to these specifications. Comply with Federal, State, and Local Codes. Comply with HUD General Conditions of the Contract for Construction [HUD Form 5370]

C. Taxes: Pay all applicable taxes, including applicable sales and use taxes, and other taxes as required by governing law.
   1. GDPM is a tax-exempt entity.
   2. Tax Exempt forms shall be provided upon request.

D. Provide dumpsters or trash containers needed. Do not use GDPM dumpsters or trash containers at any time for removal of materials, trash, or debris related to the Contractor's work. Remove debris from the site regularly and place within appropriate trash receptacles. Keep all work areas neat at all times. Do not permit trash to be left around the site. Take all considerations for resident safety. No trash or debris shall be left on the ground.
   1. Run magnet around work areas daily to pickup stray nails, etc. when appropriate.

E. Furnish workers with potable drinking water and all sanitary requirements during the project. Use of GDPM facilities and property is prohibited.

F. Provide portable generator or required equipment as needed for the completion of the work. Do not use GDPM and/or resident electricity.

G. A Contractor, working under a contractual agreement with **GDPM, MUST BE IN COMPLIANCE WITH OSHA STANDARDS 1926 – REGULATIONS FOR CONSTRUCTION.** Any and all sub-contractors, doing work on this project, **MUST ALSO BE IN COMPLIANCE WITH OSHA STANDARDS**. Non-compliance shall be a basis for making a bid non-responsive. And, if a Contractor or sub-contractor is found to be in **VIOLATION (NON-COMPLIANCE) AT ANY TIME**, this could be a basis for termination of the purchase order/contract. Comply with all Safe Work Practices.

H. Failure to show or mention petty details shall not be warranted for the omission of anything necessary for the proper completion of the work.

I. Do not take advantage of any clerical errors, omissions, contradictions, or conflicts that may develop in plans, specifications, or details. Report such errors, ambiguities and discrepancies to the Architect immediately for clarification, revision, or correction prior to the submission of bids. If no notification is given, it shall be assumed that all specifications and conditions will be met.

J. Contract Period
   1. If an extension of time is necessary, submit a request in writing to the Owner at least [14] days prior to the contract completion date.
   2. Notify the Architect, in writing, upon determination of any delay in material delivery.

K. Security: Contractor's Liability for Vandalism
   1. Contractor shall be responsible at the Contractor's cost and expense, for the securing and protection of the project which is under the control of the Contractor, and for the repair and replacement of the work until that portion of the work is accepted as completed by the Owner. The Contractor shall take the measures necessary to provide such security.

L. Qualifying Contractors and Sub-Contractors: The Owner may require the Contractor/sub-contractor to provide references of similar projects, past performance, financial disclosures, etc. in the interest of selection of the lowest and best bidder for the project.
   1. The Contractor is responsible for all work performed by Sub-Contractors.
   2. The Owner has the final authority to request a particular sub-contract not be engaged in the project. If this occurs, The Owner and Contractor shall determine if there is an impact to the Contract amount, and negotiate, if necessary, to an adjustment in the Contract amount.
      a. No change to the Contract amount will be permitted if there is a change to the sub-contractor due to them utilizing alternate manufacturers or products that were not approved substitution requests.

1.14 CONTRACTOR QUALIFICATIONS

A. Establish and provide qualifications to Owner for their ability to complete this type of work. Qualifications may be established by:
   1. Provide references of similar projects, past performance, financial disclosures, etc. in the interest of selection of the lowest and best bidder for the project.
   2. Providw a letter of approval for the installation of the products from the manufacturer.
      a. Contractor must be properly trained and approved by the manufacturer for the installation of the products.
   3. Provide a recommendation from the supplier of the products.
   4. Demonstrating to GDPM the capability to do the work. The Contractor will have a minimum of five years documented experience in similar work.

B. Contractor is responsible for all work performed by the Sub-contractors.

1.15 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.

1.16 CHANGE PROCEDURES

A. Architect or Owner may issue a Proposal Request including a detailed description of proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change. Prepare and submit estimate within 7 days.

B. Architect or Owner will issue a change order for all changes to the Contract Sum and for all changes to Contract Time, upon Owner approval of a proposal from Contractor.

C. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation.

D. Unit Price Change Order: For pre-determined unit prices and quantities, 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.

E. Construction Change Order: Architect may issue directive, on AIA / HUD Forms signed by Owner, instructing Contractor to proceed with changes in the Work. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.

F. Change Order Forms: AIA / HUD Approved Forms with all required backup documentation.

G. 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.

H. Architect will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions on Architect’s approved forms.

I. Important: All change orders must be fully executed prior to beginning any work. Failure to comply will result in contractor request being denied and completed at no cost to the Owner.

1.17 APPLICATIONS FOR PAYMENT

A. Refer to Section 01 29 00.

1.18 UNIT PRICES

A. Document unit price quantities. RDA and/or Owner will confirm quantities as required. Provide and assist in taking of measurements.
   1. Contractor will not be paid for unit cost work without documentation of the work accomplished.

B. Unit Price Schedule:
   1. None

C. Unit Price includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services, and incidentals; erection, application or installation of item of the Work; overhead and profit.

D. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by RDA multiplied by unit price for Work incorporated in or made necessary by the Work.

1.19 ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option.

B. Coordinate related Work and modify surrounding Work as required.

C. Schedule of Alternates:
   1. None

1.20 COORDINATION

A. Coordinate scheduling, submittals, and Work of various sections of specifications to ensure efficient and orderly sequence of installation of interdependent construction elements.

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, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.

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

1.21 QUALITY CONTROL

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturer’s instructions.

C. Request clarification from Architect / Owner when manufacturers' instructions conflict with Contract Documents, prior to 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.

1.22 TOLERANCES

A. Monitor fabrication and installation tolerance control of installed Products over suppliers, manufacturers, Products, site conditions, and workmanship, to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply fully with manufacturer’s tolerances.

1.23 REFERENCES

A. Conform to reference standards by date of issue current as of date of Contract Documents.

B. Request clarification from Architect / Owner when reference standards conflict with Contract Documents, prior to proceeding.

1.24 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.

1.25 PRECONSTRUCTION MEETING

A. Owner/Architect will schedule preconstruction meeting after Notice of Award for affected parties.

B. Owner, Architect, Contractor Project Manager, and Foreman shall be in attendance.

C. Agenda:
   1. Execution of Owner-Contractor Agreement.
   2. Submission of executed bonds and insurance certificates.
   3. Distribution of Contract Documents.
   4. Scheduling of construction events, set-up, storage and etc.
   5. Project personnel with contact information.
   6. Sequence of construction, starting points, events and required resources.
   7. Subcontractors list with contact information.
   8. Temporary utilities.
   9. Inspection and acceptance of existing conditions – roof drains, units, etc.
   10. Project Safety
   11. Owner’s requirements.
   12. Designation of personnel representing parties in Contract, and Architect.
   13. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
   14. Scheduling.
   15. Use of premises by Owner and Contractor.
   16. Owner requirements for procedures and inspections
   17. Construction facilities and controls provided by Owner.
   18. Security and housekeeping procedures.
   19. Application for payment procedures.
   20. Procedures for maintaining record documents.
   21. Requirements for start-up of equipment.
   22. Inspection and acceptance of equipment put into service during construction period.

D. Architect will record minutes and distribute copies via email within two days after meeting to participants and those affected by decisions made.

1.26 PROGRESS MEETINGS

A. RDA will be providing periodic observation of the work. RDA will issue field reports at each site visit. RDA will be observing the work for compliance with the specifications and will not be responsible for the ways, means and methods of constructing the project or managing the day to day operations.

B. Schedule and administer meetings throughout progress of the Work as applicable to the work at weekly intervals.

C. Architect will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.

D. Attendance Required: Job superintendent, major subcontractors and suppliers, Architect, Owner, as appropriate to agenda topics for each meeting.

E. 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.

F. Architect shall record minutes and distribute copies via email within two days after meeting to participants and those affected by decisions made.

1.27 PRE-INSTALLATION MEETINGS

A. Determine any and all necessary pre-installation meetings and schedule the same.

B. When required in individual Specification Sections, convene preinstallation meetings at Project Site one week before starting Work of specific Section.

C. Require attendance of parties directly affecting, or affected by, Work of specific Section.

D. Prepare agenda and preside over meeting:

E. Review conditions of installation, preparation, and installation procedures.

F. Review coordination with related Work.

G. Record minutes and distribute to participants after meeting, and those affected by decisions made.

1.28 CONTRACT ADMINISTRATION

A. RDA is providing contract administration services for this project to the Owner. Contractor and Owner are responsible to coordinate the proposed work, schedules, installations, permits, inspections, etc. as RDA is not on-site every day.

B. Contact RDA for clarification should there be questions regarding the interpretation or intent of the documents, field discovery, etc. that would impact or affect the work as proposed. RDA is not liable for deviations, field changes, and Client / Owner changes during construction.

C. Field confirm all existing conditions, proposed installations and how they interface to ensure the systems can be installed per the intent of the documents and to meet applicable building and zoning codes, local requirements, Client / Owner requirements, provide a watertight detail, meet aesthetic requirements, etc.

D. Meet all applicable building and zoning codes requirements whether specifically noted herein or not. Building codes represent the minimum acceptable standard.

E. Install all products, materials, installations, and the like in accordance with applicable industry standards, applicable manufacturer's details and instructions, in accordance with best practices, and building code provisions. The manufacturer details / requirements are the minimum acceptable standard, RDA drawings may require additional work.

1.29 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching new Work; restore Work with new Products.

B. Submit written request in advance of cutting or altering 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 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. Restore Work with new Products in accordance with requirements of Contract Documents.

F. Fit Work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

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. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated materials, to full thickness of penetrated element. Follow applicable UL assemblies.

J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit. For painted surfaces, paint entire wall from corner to corner, floor to ceiling.

K. Identify hazardous substances or conditions exposed during the Work to Architect for decision or remedy.

1.30 CONSTRUCTION PROGRESS SCHEDULES

A. Utilize Microsoft Project Schedule or similar spreadsheet with separate line for each major section of Work or operation, identifying first work day of each week.

B. Illustrate order and interdependence of activities and sequence of work; how start of given activity depends on completion of preceding activities, and how completion of activity may restrain start of subsequent activities. Illustrate complete sequence of construction by activity, identifying work of separate buildings/units.

C. Submit initial progress schedule in duplicate within three [3] days prior to the Preconstruction meeting for Architect/Owner review. Schedule will be reviewed and approved at the Preconstruction Meeting by all project team members.

D. Submit revised schedules with each Application for Payment, identifying changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission.

E. Participate in joint review and evaluation of project schedule with Architect/Owner at each submittal.

F. Evaluate project status to determine work behind schedule and work ahead of schedule. Indicate changes required to maintain Date of Substantial Completion.

G. After review, revise project schedule incorporating results of review, and resubmit electronically to all parties within 3 days.

1.31 SUBMITTAL PROCEDURES

A. Refer to Section 01 33 00.

1.32 MOCK-UPS

A. Accomplish mockups as directed by the Owner / RDA.

B. Accepted mock-ups are representative of quality required for the Work.

C. Where mock-up has been accepted by Owner / RDA and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

1.33 TEMPORARY UTILITIES

A. Refer to GDPM's Terms and Conditions

B. Provide temporary power and lighting for construction operations as required by conditions and where existing lighting has been removed to facilitate work.

C. Provide temporary emergency egress and exit signage as required by conditions and where existing has been temporarily removed to facilitate work.

1.34 TEMPORARY HEATING / COOLING / VENTILATION

A. Shut down HVAC systems during dusty activities. Provide and maintain filtration media at all HVAC systems.

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

C. Provide temporary fan units as required to maintain clean air for construction operations.

1.35 TEMPORARY SANITARY FACILITIES

A. Provide temporary sanitary facilities for use during construction. Maintain daily in clean and sanitary condition.
   1. Contractor may not use resident toilet facilities for temporary facilities.

B. Provide potable drinking water for workers.

1.36 TEMPORARY BARRICADES

A. Erect temporary barricades as applicable to the work to maintain security, dust control, etc.

B. Provide all applicable signage to limit non-construction personnel from entering the construction area.

1.37 STAGING AREA / MATERIAL STORAGE

A. Coordinate with Owner on acceptable location of project staging and material storage area, prior to the start of work.

B. Owner will make reasonable effort to provide suitable space on the site for the Contractor to set up operations. Moving from this space may be necessary when instructed by the Owner and shall

be accomplished without charge to the Owner. Cooperate with Owner to minimize conflict from Owner's operations.

C. Enclose exterior project staging area with a minimum of a 6' high chain link fence to the satisfaction of the Owner.

1.38 FIELD OFFICES AND SHEDS

A. Provide securable on-site space for storage as required by the Contractor. Coordinate with GDPM for approved location of such storage space.

B. Provide field office for construction operations as deemed necessary by Contractor. Pay for field offices and related expenses.

1.39 VEHICULAR ACCESS

A. Utilize existing street parking / driveways / parking areas for construction activities. Contractor shall not block or prohibit vehicular access to adjacent buildings / parking areas. Do not allow driving/parking in turf areas.

B. Provide unimpeded access for emergency vehicles. Maintain 20 feet wide driveways with turning space between and around combustible materials.

C. Provide and maintain access to fire hydrants and control valves free of obstructions.

1.40 PARKING

A. Use of designated existing on-site driveways / street parking used for construction traffic is permitted. Tracked vehicles not allowed on paved areas. Do not block resident vehicles or those of adjacent buildings with a shared driveway.

B. Use of designated areas of existing parking facilities used by construction personnel is permitted.

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 and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

E. Removal, Repair:
   1. Repair existing and permanent facilities damaged by use, to original or specified condition.

1.41 PROGRESS CLEANING AND WASTE REMOVAL

A. Collect and maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition to the satisfaction of the Owner. Clean up shall occur on a daily basis.

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. Failure to provide routine and daily cleanup may result in a back charge from the Owner to accomplish this work.

E. Provide dumpsters or trash containers needed for the proper removal of project materials, trash, or debris related to the Work Keep all work areas and project sites neat and free of trash and clutter at all times. Take all considerations for safety.

1.42 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 project site during work operations.
   2. Supplement as necessary per the local fire department requirements for construction operations.

1.43 PROTECTION OF INSTALLED WORK

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. Protect finished pavement, concrete, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

D. Prohibit traffic or storage upon waterproofed or roofed surfaces, finished surfaces, etc as is applicable to the work. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer and provide all required protection as determined necessary. Any damage caused shall be repaired to like new condition.

E. Prohibit traffic from landscaped areas.

1.44 DUST CONTROL

A. Execute work by methods to minimize raising dust from Construction operations.

B. Provide positive means to prevent air-borne dust from dispensing into atmosphere and to other areas of the project as applicable.

C. Provide temporary visqueen dust control measures to minimize the spread of dust and debris. Provide drop cloths, protective coverings as necessary.

D. Provide protection of HVAC / distribution systems.

1.45 POLLUTION AND ENVIRONMENTAL CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

B. Provide dust control, erosion and sediment control, etc. to allow for proper execution of the Work.

C. Provide protective coverings, etc. as necessary to protect work.

1.46 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove existing utilities, connections, finishes, etc. as applicable to the work. Remove back to the nearest termination, junction box, etc. as applicable to the work. Coordinate with requirements on the drawings.

B. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion review.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.47 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of Contract Documents to be utilized for record documents.

B. Record actual revisions to the Work. Record information concurrent with construction progress.

C. Specifications: Legibly mark and record at each Product section description of actual Products installed.

D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction.

E. Submit documents to Owner.

1.48 FINAL CLEANING

A. Execute final cleaning at completion of work in each unit prior to final project assessment / punch list inspection.
   1. Clean interior and exterior surfaces exposed to view.
   2. Remove manufacturer or temporary labels, stains, and foreign substances from surfaces.
   3. Polish transparent and glossy surfaces.
   4. Vacuum carpeted and soft surfaces.
   5. Clean interiors of all cabinetry.
   6. Clean all fixtures and finishes.
   7. Replace filters of operating equipment.
   8. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.
   9. Clean site; sweep paved areas, rake clean landscaped surfaces.
   10. Remove waste and surplus materials, rubbish, and construction facilities from site.

B. Restore all work staging and lay-out areas to pre-construction conditions, including but not limited to, removal of debris, temporary facilities, grading and grass seeding and cleaning or repair of impacted structures.

1.49 SECURITY

A. Security Program:
   1. Protect Work and existing premises from theft, vandalism, and unauthorized entry.
   2. Maintain program throughout construction period until Owner occupancy

B. Entry Control:
   1. Restrict entrance of persons into Project site.
   2. Allow entrance only to authorized persons with proper identification.
   3. Maintain log of workers and visitors, make available to Owner on request.

1.50 STARTING OF SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify RDA and GDPM seven [7] 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 Contractor’s personnel in accordance with manufacturer’s instructions.

1.51 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled times, at equipment location.

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.
   1. Prepare and insert additional data into the operations and maintenance manuals when the need for additional data becomes apparent during instruction.

1.52 TESTING, ADJUSTING, AND BALANCING

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

1.53 CLOSE OUT PROCEDURES

A. Refer to Section 01 77 00

1.54 PROJECT RECORD DOCUMENTS

A. Refer to Section 01 77 00

1.55 OPERATION AND MAINTENANCE DATA

A. Refer to Section 01 77 00.

1.56 WARRANTIES

A. Refer to Section 01 77 00.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Follow all applicable requirements of the Owner’s Terms and Conditions. If there should be a conflict between the Owner Requirements and those herein, the higher standard shall apply.

B. Required Inspections by GDPM
   1. Contact GDPM Project Manager to:
      a. Inform GDPM when the job is actually going to start to allow resident notification.
      b. Mockup inspections.
      c. Inspection at random or when problems / field conditions arise.
      d. Final Inspection.
      e. Punchlist requirements.
      f. Acceptance of the project by GDPM.

2.2 MANUFACTURED PRODUCTS

A. Where a particular system, product, or material is specified by name it shall be considered a standard and most satisfactory for its particular purpose. Any other product or material considered equal or better in all respects must be approved by the Architect prior to bidding.

B. All products used on this project shall be new, unless otherwise noted on the drawings or as specified herein.

2.3 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.

B. Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by the Contract Documents.

C. Provide interchangeable components of same manufacturer for components being replaced.

D. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.

E. **Products shall be ordered in the first 30 days of the contract**. **Provide documentation of orders upon request.**

F. **It shall be solely the Contractor's responsibility to order products to allow timely delivery for installation. The failure to order materials early in the project shall not be a reason for a contract time extension or additional costs related to expedited shipping and/or delivery. Nor shall this be a reason for a product substitution.**

2.4 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 information, and the following information, as applicable, on each label.
   1. Model number
   2. Serial number
   3. Performance characteristics

2.5 DELIVERY, HANDLING, STORAGE, AND PROTECTION

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

B. Contractor shall be responsible for storage and safekeeping of all materials, including company's personal property. All damaged materials shall be removed from the site.

C. Remove any / all damaged materials from the site.

D. Coordinate material delivery to avoid Owner involvement.

E. Locations of ground level storage and waste dumpster must be approved by the Owner.

F. Secure all materials to prevent blow off during weather, wind, etc.

2.6 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 manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for manufacturers not named.

2.7 SUBSTITUTIONS

A. Refer to Section 01 25 00.

2.8 EXTRA MATERIALS

A. Coordinate turnover of extra materials to Owner, assist in placing materials in a location suitable to the Owner.

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/job-site conditions.**

B. Verify utility services are available, of correct characteristics, and in correct location.

C. Contact OUPS a minimum of 48 hours prior to beginning work to verify location of existing utilities, coordinate requirements as applicable.
   1. Contact private utility locating services as required by the conditions. It is the Contractor's responsibility to locate all public and private utilities that may be impacted by the work.

3.2 FIELD VERIFICATION

A. Prior to ordering materials, verify the actual dimensions of existing conditions and assume responsibility for workable solutions for all new work. Verification that the new work and items are workable for existing conditions while providing adequate clearances is the responsibility of the Contractor.

3.3 PROTECTION

A. Accomplish all work in accordance with the provision of Federal, State American Standard Safety Code for Building Construction and OHSA safety requirements.
   1. Provide all aspects of project safety including protective railings and guards, tie-offs, fall protection, and other safety measures as required by OSHA, even if not specified. Fall protection is required. RDA is not a safety consultant and as such does not direct the means and methods of compliance with safety regulations.

B. Protect and maintain all building entrances, interior contents, building exterior and grounds.
   1. Return all surfaces to their original condition after all work is complete.

C. Replace / Repair any damages [including interior or exterior equipment / finishes] at no expense to the Owner in the event of damages of any kind caused by improper protection.

D. Comply with all regulations of the Local Fire Department and the Owner's requirement regarding storage and handling of flammable materials, etc. Comply with the safety provisions of the National Fire Code pertaining to such hot work. Contractor is responsible for all damage or fines resulting from failure to comply.

3.4 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

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

3.5 DEFECT ASSESSMENT

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

B. If, in the opinion of the Architect/Owner, it is not practical to remove and replace the Work, the Architect/Owner will direct appropriate remedy.

C. Authority of Architect/Owner to assess defects and identify payment adjustments is final.

D. Non-Payment For Rejected Products: Payment will not be made for rejected products.

3.6 JOB SUPERINTENDENT/EMPLOYEES

A. Each Contractor shall have a qualified foreman on the project at all times when work is being accomplished.

B. Refrain from fraternization with building occupants.

C. Furnish the Owner with a list of personnel with phone numbers that will be working on the project and emergency contacts names and numbers that has the authority to handle emergencies on 24 hour/seven days a week.

3.7 SAFETY PROGRAM

A. Maintain a written safety program for all operations/ work performed on this project. Maintain all documents at the job site and be make available to the Owner or RDA when requested.

B. Assume all responsibility for project safety, ways, and means and methods of constructing the project.

C. In addition, the Owner may require special safety requirements to be performed by the Contractor, these requirements will be provided prior to commencement of work.

3.8 DAILY JOB LOGS

A. Maintain a daily job log that indicates the personnel on-site and activities performed (including all sub-contractors)

B. Indicate any safety concerns and incidents.

C. Indicate weather conditions.

D. Indicate any visitors or other personnel visiting the project site.

E. Job log shall be accessible to GDPM and Architect upon request.
   1. Email GDPM with daily reports upon request.

3.9 REMOVALS AND CLEANUP

A. Remove and dismantle of all items / components / construction that are required for proper completion of the work as applicable in each section. All debris resulting from the work not designated for reuse becomes the property of the Contractor unless stated otherwise.

B. At the completion of each day, maintain the work area clean of all debris to the satisfactory of the Owner, including all the subcontractors work area.

C. Provide dumpsters or trash containers needed for the proper removal of project materials, trash, or debris related to the work. Always keep all work areas and project sites neat and free of trash and clutter.
   1. No Debris, materials, etc. may be left unprotected on the grounds.
   2. All exterior staging / dumpster areas shall be fenced / protected.

3.10 SPECIAL PROCEDURES

A. Materials: As specified in product sections; match existing with new 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. Remove, cut, and patch Work in manner to minimize damage and to permit restoring products and finishes to original or specified condition.

H. Refinish existing visible surfaces to remain in renovated rooms and spaces, to renewed condition for each material, with neat transition to adjacent finishes.

I. Where new Work abuts or aligns with existing, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

J. 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 for review.

K. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.

L. Finish surfaces as specified in individual product sections.

3.11 GENERAL PROJECT REQUIREMENTS

A. Coordinate equipment delivery and equipment staging with Owner prior to start of project.

B. Safety is paramount and all personnel on site must wear appropriate personal protection equipment [PPE]. The Contractor is responsible for means and methods to ensure that proper PPE is provided. Failure to comply may result in dismissal from site.

C. Barricade work area with appropriate construction grade barriers to establish boundaries of work area and assure safety for all workers and general public. All work areas must be properly barricaded from the general public prior to starting any work.

D. Job sites will be maintained in an orderly and neat fashion at all times.

E. Pre-determine work phases with Owner to minimize disruption of business operations.

F. IMPORTANT: Failure to show or mention petty details shall not be warranted for the omission of anything necessary for the proper completion of the work.

G. The plans and specifications are intended to depict the general scope, layout and quality of workmanship required. The documents are not an "instruction manual" to execute the work nor are they intended to show or describe in detail every item necessary for the proper installation of the work. The means and methods required to execute the work described is the sole responsibility of the Contractor. The Contractor shall include the ancillary work required, whether explicitly stated or not, for the proper completion of the work as intended. The Contractor is required to meet or exceed building code requirements, applicable industry standards, ASTM standards, and/or manufacturer installation requirements as they relate to the work.

H. The plans and specifications represent a single complete design package indicating the intended scope of the project in its entirety. As such, the project is structured to be awarded to a single Prime Contractor. The documents do not delineate bid packages or assign responsibilities to any subsequent subcontractors, dictate construction sequencing, nor provide coordination between any "trades". Such activities are the responsibility of the holder of the construction contract. In the event of a discrepancy within the drawings or between the drawings and the specifications, the more stringent requirement represented in the documents shall prevail.

I. Submission of a bid shall be considered the Contractor's Certification that the bid is based upon equipment and/or materials that meet or exceed the standards set forth by specification or equipment and/or materials identification. Should a Contractor's product be determined not equal to that specified, the Contractor shall be required to provide and install a product acceptable as equal by the Architect at no additional cost to the Owner.

J. The submission of a bid shall indicate that the Contractor has visited the project site and is familiar with the conditions as they exist, and the modifications that may be necessary to provide a complete and professional finished project.

K. Security: Contractor's Liability for Vandalism
   1. Contractor shall be responsible at the Contractor's cost and expense, for the securing and protection of the project which is under the control of the Contractor, and for the repair and replacement of the work until that portion of the work is accepted as completed by the Owner. The Contractor shall take the measures necessary to provide such security.
   2. Contractor shall be liable for and shall promptly repair or otherwise remedy any and all damages to said portion of the project and of the accepted construction work caused by vandalism up to $5,000.00 per incident. Contractor shall indemnify and hold the Owner harmless from and against all damages, liabilities, costs and expenses, including, without limitation, reasonable attorney fees, which may be imposed upon or incurred by the Owner as a result of the Contractor's failure to comply with the requirements of this section.

L. Insurance: **Refer to GDPM Terms and Conditions.**
   1. Contractor to provide copy of Certificate of Insurance to GDPM.
   2. Contractor to submit evidence of Worker's Compensation insurance coverage and builder's risk insurance.

M. Damages: Any and all damages to Housing Authority Property or resident property shall be repaired equivalent to the existing by the Contractor at no cost to the Authority. NO EXCEPTIONS.

N. Safety: The work will be accomplished within a high traffic area and the Contractor is responsible for taking all safety precautions necessary or directed to ensure public safety.
   1. RDA nor GDPM are safety consultants. Any and all safety provisions shall be managed and coordinated by the Contractor.

O. Provide appropriate notification of Residents prior to starting work.

END OF SECTION

SECTION 01 25 00 – SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 WORK INCLUDES

A. Includes administration and procedural requirement for Substitutions.
   1. Substitutions' for Cause: Changes due to project conditions, such as unavailable of product.
   2. Substitutions' for Convenience: Changes that may offer advantages to the Owner.

1.2 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 manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions / Approved Equal: Submit request for substitution as outlined in this section for manufacturers not named.
   1. RDA/Owner is the decision maker if the proposed "approved equal" is in fact equal and approved. Any decision rendered is final.
   2. Any Contractor, Sub-contractor, or Supplier who makes their own judgement as to "approved equal" and includes within their bid without a formal approval is doing so at their own risk.

1.3 SUBSTITUTIONS PROCEDURES

A. RDA will consider requests for Substitutions by the Bidder only [not materials suppliers, etc].

B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

C. A request constitutes a representation that the 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.

D. Substitution Procedure
   1. **Submit copy of request for Substitution for consideration to RDA no later than 10 days before bid opening date**.
   2. Submit shop drawings, product data, and applicable certified test results attesting to proposed product equivalence. Burden on proof is on proposer.
   3. RDA will notify Contractor in writing of decision to accept or reject request within 5 days of receipt of request or request additional information or documentation for evaluation.

E. Substitutions will not be considered when they are indicated or implied on Submittals, without written request or when acceptance will require revision to the Contract Documents.

F. If the Substitution will require modifications to the Contract / Bidding Documents, the cost for updating the documents shall be paid by the Contractor making the request.

G. Substitutions will not be considered after award of the project without justification.

H. Approved substitutions will be identified by Addenda.
   1. Bidders shall not rely upon approvals made in any other manner.

END OF SECTION

SECTION 01 29 00 – PAYMENT PROCEDURES

PART 1 GENERAL

1.1 WORK INCLUDES

A. Includes administration and procedural requirement for necessary to prepare and process Application for Payment.

1.2 SCHEDULE OF VALUES

A. Submit schedule on AIA Form G703 or other approved HUD forms.
   1. Provide line items for each applicable CSI division / defined work scope such that the Owner and RDA can review and determine/confirm progress.
   2. Include line items for each allowance, alternates [as applicable], and general conditions.

B. Submit Schedule of Values in duplicate three days prior to the Pre-Construction meeting for approval by Architect and Owner.

C. Approved Schedule of Values will be signed at the Pre-Construction meeting.

D. Format: Utilize Table of Contents of this Project Manual. Identify each line item with number and title of major specification Section. Identify site mobilization/general conditions, bonds and insurance.
   1. Schedule of values should be broken down by building and also by division / work scope for each building.

E. Revise schedule to list approved Change Orders, with each Application for Payment.

1.3 APPLICATIONS FOR PAYMENT

A. Use AIA form G702 and G703 [or other approved HUD forms] for Application for payment as required by Owner.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Complete every entry, notarize and execute by a person authorized to sign document on behalf of the contractor. Include amounts for work completed following previous Application for Payment whether or not payment has been received, include amounts of Change Orders issued before last day of construction period covered by application.
   1. Stored materials included in application must have supporting documentation that verifies amount required, do not include overhead and profit on stored material.
   2. Submit to RDA for review and processing.
      a. E-mail submittal is acceptable unless otherwise directed by the Owner. Verify hard copies with Owner if required.

D. Each application for payment following the initial Application for Payments shall be consistent for payment with previous applications.

E. Payment Period: Monthly. First pay application at 30 days into contract period.

F. Submit updated construction schedule with each Application for Payment as applicable to the work. Failure to submit the updated construction schedule can delay the processing of the Application for Payment.

G. Submit all required waivers of lien/partial release of lien, payroll reports as required by GDPM, etc. Failure to submit required paperwork can delay the processing of the Application for Payment

1.4 RETAINAGE

A. Refer to GDPM Terms and Conditions.

1.5 PREVAILING WAGE / PAYROLL REPORTS

A. The work of this project is subject to Davis-Bacon Prevailing Wages.

B. Include in the bid amount all applicable prevailing wages.

C. Provide payroll reports indicating compliance to the Owner on a monthly basis.
   1. Pay Applications will not be processed without approved payroll reports submitted to the Owner.

1.6 TAXES

A. GDPM is tax exempt. Tax Exempt Certificates will be provided upon request.

B. GDPM will not compensate the Contractor for any taxes paid on the project.

1.7 SUBMITTAL PROCEDURES

A. Submit [1] copy of each payment application on AIA Form G702 and G703, in PDF format
   1. Pencil copy to RDA for review/acceptance. RDA will review and provide any comments or questions.
   2. Submit final payment application in PDF format to RDA for processing.
   3. RDA will certify and process the payment application and will forward to Owner for payment.

B. Submit all required waivers of lien / partial release of lien [including vendors and subcontractors as requested by Owner], payroll reports, etc. as required by the Owner. Failure to submit required paperwork can delay processing of Application for Payment.

1.8 FINAL APPLICATION FOR PAYMENT

A. Refer to provisions in Section 01 77 00 for Application for Payment at Substantial Completion.

END OF SECTION

SECTION 01 33 00 – SUBMITTALS

PART 1 GENERAL

1.1 WORK INCLUDES

A. Review of shop drawings and product data by Owner/RDA.

1.2 SUBMITTAL PROCEDURES

A. Submit product data and shop drawings for all applicable components of the project. Refer to individual sections for additional requirements.
   1. Provide a submittal log at the beginning of the project for review by Owner / RDA. Identify proposed submittals by Specification Section.
   2. Owner / RDA review of the submittals will be general in nature and does not relieve the Contractor in any way of the responsibility in compliance with the contract requirements, manufacturer requirements, and/or applicable codes.

B. Accomplish submittals in a digital [PDF format]. Any hard copies received will be scanned and returned electronically. Provide those submittals required to maintain orderly progress of the work and those required for early lead time for manufacturer fabrication.
   1. Any hard copies received will be scanned and returned electronically.
   2. Provide those submittals required to maintain orderly progress of the work and those required for early lead time for manufacturer fabrication.
   3. Mark each component to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this project. Non-identified submittals will be rejected.

C. Provide Submittal form / cover sheet to identify Project, Contractor, subcontractor or supplier; and pertinent Contract Document references.

D. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.

E. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of completed Work.

F. Revise and resubmit submittals as required; identify changes made since previous submittal.

G. Accomplish submittals at the beginning of the project to allow the proper ordering of materials for the project.
   1. Failure by the Contractor to provide submittals in a timely fashion does not change the project start date nor contract period.

H. Any materials on the job site that have not been reviewed as part of the submittal process are subject to rejection / removal from the job-site. Any work undertaken without review of the submittal data is at the Contractor's risk and subject to rejection or replacement at no cost to the Owner if submittals are not in conformance with the project documents.

I. Allow 7 days for review of submittal items.

J. Allow space on submittals for Contractor and Architect review stamps.

K. When revised for resubmission, identify changes made since previous submission.

L. Distribute copies of reviewed submittals as appropriate (electronically as appropriate). Instruct parties to promptly report inability to comply with requirements.

M. All submittals shall be completed within the first 30 days of the project.

1.3 SUBMITTALS/PRODUCT DATA / SHOP DRAWINGS

General: Submitted to Owner / RDA for review for limited purpose of checking for conformance with information given information expressed in the Contract Documents.

A. Product Data/Shop Drawings:
   1. Submitted to RDA for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
   2. All shop drawings shall be to scale, submit drawings on sheets no larger than 24-inch x 36 inch, all other product data can be on 8 ½ X 11-inch sheets.

B. Samples for Review:
   1. Submitted to RDA for review and selection for aesthetic, color, or finish.
   2. Submit samples of finishes from full range of manufacturer's standard colors, textures, and patterns for Owners selection.
   3. Submit samples to illustrate functional and aesthetic characteristics of Product.

C. Personnel/Other Contractors
   1. Submit a list of all subcontractors and on-site personnel with the list of lead contact and associated phone numbers.
   2. Submit emergency contact sheet with contacts for an emergency – 24/7 call list.

D. Contract Items:
   1. Submit Certificate of Insurance, Worker's Comp Certificates as required by Owner.
   2. Submit bonds if applicable to the contract.
   3. Submit a written Construction Schedule / Implementation and Sequencing Plan outlining starting points and length of time to complete work in each section.

E. Safety Data Sheets: Submit Safety Data Sheets [SDS] on all products to the Owner.
   1. Owner shall be responsible to provide to employees as applicable.
   2. Owner's representative /RDA does not review / approve any SDS sheets.

F. Site Specific Safety Plan
   1. Provide to Owner for their Review.

G. Site Logistics Plan
   1. Provide to Owner for their Review.

1.4 SAMPLES

A. Physical Samples: Submit to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
   1. Physical samples are required to allow Architect to make selections for color and finish. Electronic images of colors/finishes, etc. are not sufficient.

B. Samples For Selection as Specified in Product Sections:
   1. Submit to Architect for aesthetic, color, or finish selection.
   2. Submit samples of finishes from full range of manufacturers' standard colors, textures, and patterns for Architect selection.

C. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

D. Include identification on each sample, with full Project information.

E. Submit 2 copies of each sample, Architect will retain 1 copy.

F. Reviewed samples which may be used in the Work are indicated in individual specification sections.

1.5 PROPOSED PRODUCTS LIST

A. Within 5 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. All products for the project shall be ordered in the first 30 days of the contract. Contractors' failure to order materials is not a reason for a time extension or selection of an alternate material. This is imperative to allow work as scheduled.

C. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.6 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit manufacturer printed instructions for delivery, storage, assembly, installation, [start-up,] adjusting, and finishing, in quantities specified for Product Data.

1.7 MANUFACTURER'S CERTIFICATES

A. When specified in individual specification sections, submit certifications by manufacturer to Owner, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

1.8 CONSTRUCTION PHOTOGRAPHS

A. Provide digital photographs of construction throughout progress of Work as taken by project superintendent as applicable to document the existing conditions, work in progress, completed work, project wrap up, etc. It is in the best interest of the contractor to document the conditions as this is an occupied unit project.

B. Deliver photographs to Architect/Owner upon request on CD. Catalog and index in chronological sequence with date indexed.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 01 40 00 - QUALITY REQUIREMENTS/PROJECT INSPECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Quality control and control of installation.

B. GDPM Construction Inspection Procedures

C. Tolerances

D. References.

E. Mock-up requirements.

F. Examination & Inspection.

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/Owner 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 GDPM CONSTRUCTION INSPECTION PROCEDURES

A. GDPM Staff have clear goals with regard to the importance of thorough construction inspection that ensures compliance with the bid documents. The compliance documents shall include the project specifications, drawings, contract, notice to proceed, codes, regulations and ordinances.

B. GDPM intends for a GDPM Staff (Project Manager) and an A/E representative to routinely monitor the Contractor’s work and progress on all projects. Quality control is an important element which is the responsibility of the Contractor. The Contractor shall provide full cooperation with all inspection steps through the construction process and include such coordination in the base bid of the project.

C. Accessibility to the work shall be arranged by the Contractor. The necessary ladders, scaffolding, hoisting, etc shall be provided by the Contractor in order to make all areas of the work available to the construction inspector and consultant. The contractor shall have his authorized representative (superintendent) available to interface with and assist with the inspection process.

D. Acceptance of Conditions:
   1. The construction inspector and consultant shall not allow work to proceed when there is a construction deficiency document in place that has not been cleared.

2. The construction inspector and consultant shall not allow work to proceed that requires mock-ups until such mock up is acceptable. Subsequent work in like kind shall be equal to or better than the mock-up.

E. Prior to final completion, the contractor is to be required to inspect all of his work. He shall correct any deficiencies and enter a document that all of the contracted for work has been completed within the scope of the contract and request "final inspection" by the GDPM representative.

F. The final inspection shall result in either complete acceptance or generation of a punch list that is to be corrected in a timely manner and back punched by GDPM and the consultant.

G. After review by GDPM Project Manager, GDPM will review project acceptance with site and senior staff for final acceptance of the project. This review may prompt additional punchlist work that may need to be completed.

H. If work that is clearly not complete, the Punchlist will be suspended until such time that it is evident that the Contractor has completed and reviewed/inspected their own work.

I. The final inspection acceptance shall include approval and sign-off by the construction inspector, construction coordinator and consultant. Sign off approvals

J. The warranty blanketing the contract will not be allowed to commence until all work under the contract is completed and accepted for beneficial use by GDPM.
1. This will be accomplished on a building by building basis.

K. An anniversary inspection for the one year interval following acceptance of the project shall be performed and documented by the construction coordinator and consultant.

1.4 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.5 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 before proceeding.

E. Neither contractual relationships, duties, nor responsibilities of parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in reference documents.

1.6 MOCK-UP REQUIREMENTS

A. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

B. Accepted mock-ups shall be comparison standard for remaining Work follow requirements of individual sections.

C. Provide mockups of the work as directed / required by the Architect / GDPM.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

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

END OF SECTION

SECTION 01 77 00 - CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 WORK INCLUDES

A. Close-out of the actual work, including warranties, maintenance manuals and final cleaning. Close-out of all contract obligations.

1.2 CLOSE-OUT PROCEDURES

A. Notify Owner five [5] days prior to the work being complete to establish the desired inspection date. Owner / RDA will either proceed with the inspection or notify Contractor of unfulfilled requirements.
   1. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for punch list inspection.

B. Owner / RDA shall inspect the completed project and notify the contractor of any deficiencies. Deficiencies will form 'punch list' for final acceptance.

C. Provide submittals to Owner required by authorities having jurisdiction.

D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.3 PUNCHLIST REQUIREMENTS

A. Review and inspect all work prior to notifying the Owner for a Punchlist inspection of the work. Provide written documentation certifying review along with documentation of Contractor generated Punchlist.

B. If work is clearly not complete, the Punchlist will be suspended until such time that it is evident that the Contractor has completed and reviewed/inspected their own work.
   1. RDA anticipates [1] punchlist inspection and [1] back-punch / final inspection as part of our services to the Owner.
   2. Failures by the Contractor to complete the work, complete punchlists, etc. may result in a backcharge to the Contractor for the additional time to closeout the project.

C. Review and provide the noted repairs and corrective work necessary at each of the Punchlist inspections to allow project close out.
   1. Back-punch walk through may result in additional punchlist items which need to be addressed by the Contractor.

D. Provide adequate time in the construction schedule to accomplish punchout work within the overall contract period indicated within the bid documents.

E. The failure to identify any punchlist item during a walk through / inspection does not release the Contractor from contractual responsibility to address any item during the warranty period.

1.4 SUBSTANTIAL COMPLETION

A. Certificate of Substantial Completion will be issued upon completion of all the work.

1.5 PREREQUISITIES TO FINAL ACCEPTANCE AND PAYMENT

A. Prior to acceptance and final payment, all claims or disputes must have been resolved and the Contractor must have provided the following items to the Owner:
   1. Notarized affidavit of waiver of liens [contractor of record], sub-contractors and material suppliers
   2. Certificates of release from authorities having jurisdiction over permitting.
   3. Final statement of charges [100% application for payment].

   a. Submit a final Application for Payment according to Section 01 29 00, Payment Procedures.
4. Documented evidence of completing 'punch list' as applicable.
5. Manufacturer's original warranties [copy to RDA].
6. Evidence that claims have been settled.
7. O+M Manuals including Manufacturer's maintenance and repair instructions.
8. Manufacturer's maintenance and repair instructions.
9. Record Drawings.
10. Final cleaning of all work areas:
11. Restore all work staging and lay-out areas to pre-construction conditions, including but not limited to, removal of debris, temporary facilities, grading and grass seeding and cleaning or repair of impacted structures.

1.6 PHOTOGRAPHIC DOCUMENTATION

A. When requested by the Owner, photos of the completed punch list along with any supporting documentation can be submitted, in lieu of a final walkthrough.

1.7 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 Directives/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. Submit documents to Architect.

1.8 PROJECT WARRANTIES

A. General: Original warranties are required to be provided to the Owner prior to final payment.

B. Submit two sets prior to final inspection or when available, bound in 8-1/2 x 11-inch text pages, binder covers.

C. Prepare binder cover with printed title "WARRANTIES" and title of project.

D. Bind warranties in a heavy duty three ring loose leaf binder. Provide a typed description of the product under warranty and phone number of the installer.

E. General: The warranty and guarantee provisions of the General Conditions apply to all work of the contract, including but not limited to the following specific categories related to individual units of work specified in various sections of these specifications:
   1. Refer to GDPM Contract Requirements / Terms and Conditions for additional information / requirements.

2. Special Project Warranty (Guarantee): A warranty specifically written and signed by the Contractor for a defined portion of the work, and, where required, countersigned by sub-contractor, installer, manufacturer, or other entity engaged by the Contractor.
3. Specified Product Warranty: A warranty which is required by the contract documents, to be provided for a manufactured product incorporated in the Work, regardless of whether manufacturer has published a similar warranty without regard for specific incorporation into the work, or has written and executed a special project warranty as a direct result of contract document requirements.
4. Coincidental Product Warranty: A warranty which is not specifically required by the Contract Documents (other than as specified in this Section); but which is available on a product incorporated into the work, by virtue of the fact that the manufacturer of the product has published a warranty in connection with purchases and users of the product without regard for specific applications except as otherwise limited by terms of the warranty.

F. All work undertaken as part of the project shall be warranted for a period of not less than [1] year. Individual sections / products may have specific additional warranty requirements.

G. Provide notarized copies of warranty documents to the Owner.
1. Execute and assemble transferable warranty documents from subcontractors, suppliers, and manufacturers.

H. Original warranties are required to be provided to the Owner prior to final payment.

1.9 OPERATION AND MAINTENANCE DATA

A. Submit TWO sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, three D side ring binders with durable plastic covers.
1. **Submit one copy for review by the Architect/Owner, electronic submission preferred**. Submit at 75% of overall gross contract completion. Failure to submit O+M at this point will delay Applications for Payment.
2. Prepare one final copy upon approval and correction of any missing or deficient items by the Architect/Owner.
3. Provide (2) CDs of the O+M Manual in PDF format that is formatted and organized to match the hard copy.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project. Label on the front and spine of the binder.

C. Internally subdivide binder contents with permanent page dividers, logically organized, with tab titles legibly printed under reinforced laminated plastic tabs.

D. Contents:
1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, subcontractors, and major equipment suppliers.
2. Part 2: Permit and Inspection Information
3. Part 3: Project submittals, organized by CSI division
4. Part 4: Operation and maintenance instructions, arranged by system.
    a. Building Products, Equipment, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations.
    b. 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.
    c. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and special operating instructions.

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. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
f. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
g. Include original shop drawing submittals, fold larger submittals to fit into binder.

5. Part 5: Project documents and certificates.
   a. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers.
6. Part 6: Colors / finishes / samples
7. Part 7: Other documentation required.

1.10 FINAL CLEANING AND SITE REPAIR

A. Final cleaning of all work areas.

B. Restore all work staging and lay-out areas to pre-construction conditions, including but not limited to, removal of debris, temporary facilities, grading and grass seeding and cleaning or repair of impacted structures.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Formwork.
   2. Reinforcement and Accessories.
   3. Cast-in place concrete.
   4. Finishing and curing.

1.2 SYSTEM DESCRIPTION

A. Design, engineer and construct formwork, shoring and bracing in accordance with ACI 301 to conform to design and applicable code requirements to achieve concrete shape, line and dimension as indicated on Drawings or required by proposed work.

B. Vapor Retarder Permeance: Maximum 1 perm when tested in accordance with ASTM E96/E96M, water method.

1.3 SUBMITTALS

A. Design Data: Submit mix designs, admixtures, reinforcement, and anchors.

1.4 QUALITY ASSURANCE

A. Construct and erect concrete formwork, reinforcing, and cast-in-place concrete in accordance with ACI 301.

PART 2 PRODUCTS

2.1 FORM MATERIALS AND ACCESSORIES

A. Form Materials: At discretion of Contractor.

B. Form Release Agent: Colorless mineral oil not capable of staining concrete or impairing natural bonding characteristics of coating intended for use on concrete.

C. Slab Edge Joint Filler: ASTM D1751, Premolded asphaltic board, 1/2 inch thick. As applicable to conditions.

D. Vapor Retarder: ASTM E1745 Class A; 10 mil thick clear polyethylene film; type recommended for below grade application. Furnish joint tape recommended by manufacturer.

2.2 REINFORCEMENT MATERIALS

A. Reinforcing Steel: ASTM A615/A615M, 60 ksi yield grade, plain and/or deformed billet bars to suit condition and application, uncoated finish.

B. Welded Plain Wire Fabric: ASTM A185/A185M; in flat sheets; unfinished.

C. Fabricate concrete reinforcement in accordance with ACI 301.

2.3 CONCRETE MATERIALS

A. Cement: ASTM C150, Normal-Type I Portland type.

B. Fine and Coarse Aggregates: ASTM C33.

C. Lightweight Concrete Aggregate: ASTM C330

D. Water: Clean and not detrimental to concrete.

E. Air Entrainment Admixture: ASTM C260.

F. Fiber Mesh Reinforcing: ASTM 1116-C.

G. Bonding Agent: Latex emulsion.

H. Non-shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.

2.4 COMPOUNDS, HARDENERS AND SEALERS

A. Membrane Curing Compound and Sealer: ASTM C1315 Type I, Class A. Dayton Superior or Equal
   1. Install only at areas not receiving finish flooring system.

2.5 CONCRETE MIX

A. Mix and deliver concrete in accordance with ASTM C94/C94M, Option A.

B. INTERIOR CONCRETE SLAB ON GRADE: Furnish concrete of the following strength:
   1. 150 PCF
   2. Compressive strength 4,000 psi (28 day).
   3. Slump limit of 5 inches at point of placement.
   4. Minimum Cement Content: 610 pounds/cu yd.
   5. Maximum water-cement ratio: 0.50
   6. Air Entrainment: Entrapped.
   7. Transit Mixed.

C. EXTERIOR CONCRETE SLAB ON GRADE: Furnish concrete of the following strength:
   1. 150 PCF
   2. Compressive strength 4,500 psi (28 day).
   3. Slump limit of 4 inches at point of placement.
   4. Minimum Cement Content: 660 pounds/cu yd.
   5. Maximum water-cement ratio: 0.45
   6. Air Entrainment: 6% +/- 1.5%.
   7. Transit Mixed.

D. FOUNDATIONS AND GRADE BEAMS: Furnish concrete of the following strength:
   1. 150 PCF
   2. Compressive strength 3,000 psi (28 day).
   3. Slump limit of 4 inches at point of placement.
   4. Minimum Cement Content: 565 pounds/cu yd.
   5. Maximum water-cement ratio: 0.55
   6. Air Entrainment: Entrapped.
   7. Transit Mixed.

E. LEAN CONCRETE: Furnish concrete of the following strength:
   1. 150 PCF
   2. Compressive strength 1,500 psi (28 day).
   3. Slump limit of 4 inches at point of placement.
   4. Minimum Cement Content: 235 pounds/cu yd.
   5. Maximum water-cement ratio: N/A
   6. Air Entrainment: Entrapped.
   7. Transit Mixed.

2.6 GRANULAR BASE

A. Interior slabs:
   1. Install 4” (6” where noted on drawings) pea gravel, clean and graded, washed river-run gravel, ASTM C33, Size #7.

PART 3 EXECUTION

3.1 FORMWORK ERECTION

A. Erect formwork, shoring and bracing to achieve design requirements.

B. Apply form release agent to formwork prior to placing form accessories and reinforcement.

C. Clean forms as erection proceeds, to remove foreign matter.

3.2 INSERTS, EMBEDDED COMPONENTS, AND OPENINGS

A. Provide formed openings where required for work to be embedded in and passing through concrete members.

B. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.

C. Install concrete accessories straight, level, and plumb.

D. Place joint filler at perimeter of floor slab, penetrations, and isolation joints.

3.3 REINFORCEMENT PLACEMENT

A. Place reinforcement, supported and secured against displacement.

B. Ensure reinforcing is clean, free of loose scale, dirt, or other foreign coatings.

C. Do not weld reinforcement bars for assembly.

D. Space reinforcement bars with a minimum clear space in accordance with ACI 301 of not less than 1 inch.

E. Maintain concrete cover around reinforcement in accordance with ACI 301 of not less than 1 1/2" inches for concealed work and 3 inches for concrete exposed to weather.

3.4 PLACING CONCRETE

A. Install 4 inch minimum thickness granular base (6 inch where noted on drawings) over undisturbed soils and compact as applicable.

B. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent.

C. Install vapor barrier under interior slabs on grade in accordance with ASTM E1643. Lap joints minimum 6 inches and seal watertight using manufacturer supplied tape.

D. Seal vapor barrier tight around all penetrations in accordance with manufacturer requirements.

E. Repair damaged vapor retarder with vapor retarder material, lap over damaged areas minimum 6 inches and seal watertight.

F. Place concrete continuously between predetermined expansion, control and construction joints. Do not break or interrupt successive pours creating cold joints.

G. Separate slabs-on-grade from vertical surfaces with 1/2 inch thick joint filler, extended from bottom of slab to within 1/4 inch of finished slab surface.

H. Where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack with non-shrink grout.

I. Screed slabs-on-grade level.

3.5 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Remove formwork progressively and in accordance with code requirements.

3.6 FLOOR FINISHING

A. Finish concrete floor surfaces in accordance with ACI 301.

B. Uniformly spread, screed, and float concrete with steel trowel.
   1. Smooth finish at interior slabs.
   2. Align flush with adjacent concrete finishes.

C. Maintain surface flatness, with maximum variation of 1/8 inch in 10 ft.

D. Control joints:
   1. Locate at maximum of 12’-0” o.c. each way.
   2. Sawcut joints permitted only at concealed concrete areas.
   3. Trowel and re-trace joints at all exposed concrete areas.

3.7 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
   1. Protect concrete footings from freezing for a minimum of 7 days.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete for not less than 7 days.

C. Apply sealer on floor surfaces not receiving finish floor system.

3.8 ERECTION TOLERANCES

A. Install reinforcement within tolerances required by ACI 301.

3.9 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with ACI 301 at the request of Architect.

B. Field Testing:
   1. Measure slump and temperature for each compressive strength concrete sample.
   2. Measure air content in air entrained concrete for each compressive strength concrete sample.

C. Cylinder Compressive Strength Testing:
   1. Test Method: ASTM C39.
   2. Test Acceptance: In accordance with ACI 301.
   3. Test two cylinders at 28 days.
   4. Dispose remaining cylinders when testing is not required.

3.10 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to required lines, details and elevations, as directed by Architect.

END OF SECTION

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Shop-fabricated metal items.
   2. Loose steel lintels.
   3. Bollards.
   4. Structural supports for miscellaneous attachments.

1.2 SUBMITTALS

A. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

1.3 QUALITY ASSURANCE

A. Finish joints according to NOMMA Guideline 1.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept metal fabrications on-Site in labeled shipments. Inspect for damage.

B. Protect metal fabrications from damage by exposure to weather or by ground contact.

1.5 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements prior to fabrication. Indicate field measurements on Shop Drawings.

PART 2 PRODUCTS

2.1 LINTELS

A. Steel sections, size and configuration as indicated on Drawings, length to allow 8 in minimum bearing on both sides of opening.
   1. Exterior Locations: Galvanized.

2.2 BOLLARDS

A. Bollards: Steel pipe, concrete filled, crowned cap, 6 in diameter, length as indicated on Drawings; **galvanized**.
   1. Finish: painted: colors as selected by Architect.

B. Concrete Fill: 3,000 psi as specified in Section 03 30 00 - Cast-in-Place Concrete.

C. Anchors: Concealed type as indicated on Drawings.

2.3 STRUCTURAL SUPPORTS

A. Miscellaneous Structural Supports: Steel sections, shape and size as indicated on Drawings or as required to support applied loads with maximum deflection of 1/240 of the span; prime paint, one coat.

2.4 MATERIALS

A. Steel:
   1. Structural W-shapes: ASTM A992/A992M; ASTM A572, Grade 60
   2. Channels and Angles: ASTM A36/A36M; ASTM A572, Grade 60

3. Square and Rectangular Structural Sections: ASTM A500/A500M, Grade B
4. Structural Pipe: ASTM A53/A53M, Grade B.
5. Structural Plates and Bars: ASTM A36/A36M; ASTM A572, Grade 60
6. BOLTS, CONNECTORS, AND ANCHORS
   a. Bolts: Heavy hex, structural type.
      1) ASTM A325; Type 1, hot dipped galvanized, or Type 3, plain.
   b. Nuts: ASTM A563 heavy hex type.
      1) Finish: Hot dipped galvanized.
   c. Washers: ASTM F436; Type 1, circular. Furnish clipped washers where space limitations require.
      1) Finish: Hot dipped galvanized.
   d. Tension Control Assemblies: ASTM F1872; Type 1, heavy hex head, twist off type, complete with washers and heavy hex nuts.
      1) Finish: Mechanically galvanized
   e. Shear Connectors: ASTM A108; Grade 60, headed, unfinished and in accordance with AWS D1.1; Type B
   f. Anchor Rods: ASTM F1554; Grade 55, weldable. Hooked shape.
   g. Threaded Rods: ASTM A36/A36M.
      1) Finish: Hot dipped galvanized.
7. Welding Materials: AWS D1.1; type required for materials being welded.

B. Stainless Steel:
   1. Bars and Shapes: ASTM A276; Type 304.
   2. Tubing: ASTM A269; Type 304.
   3. Pipe: ASTM A312, seamless; Type 304.
   4. Plate, Sheet, and Strip: ASTM A240; Type 304.
   5. Bolts, Nuts, and Washers: ASTM A354.
   6. Welding Materials: AWS D1.6; type required for materials being welded.

C. Aluminum:
   1. Extruded Aluminum: ASTM B221 Alloy 6063, Temper T5.
   2. Sheet Aluminum: ASTM B209 Alloy, Temper F.
   3. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210 Alloy 6063, Temper T6.
   4. Aluminum-Alloy Bars: ASTM B211 Alloy 6063, Temper T6.
   5. Bolts, Nuts, and Washers: Stainless steel.
   6. Welding Materials: AWS D1.1; type required for materials being welded.

D. Bolts, Nuts, and Washers for Equipment and Piping:
   1. Carbon Steel:
      a. Structural Connections: ASTM A307, Grade **A or B**, hot-dip galvanized.
      b. Anchor Bolts: ASTM A307, Grade A, hot-dip galvanized.
      c. Pipe and Equipment Flange Bolts: ASTM A193, Grade B-7.
   2. Stainless Steel: Type 316 stainless steel, class 2; ASTM A193 for bolts; ASTM A194 for nuts.

2.5 FABRICATION

A. Fit and shop assemble items in largest practical sections for delivery to Site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by **continuous welds**.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small, uniform radius.
   1. Exposed Welded Joints:
      a. Exterior Work: NOMMA Guideline 1 Joint Finish #2 or better

b. Interior Work: NOMMA Guideline 1 Joint Finish #1

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

G. Fabrication Tolerances:
1. Squareness: 1/8 in maximum difference in diagonal measurements.
2. Maximum Offset between Faces: 1/16 in.
3. Maximum Misalignment of Adjacent Members: 1/16 in.
4. Maximum Bow: 1/8 inch in 48 in.
5. Maximum Deviation from Plane: 1/16 inch in 48 in.

2.6 FINISHES

A. Steel:
1. Prepare surfaces to be primed according to SSPC SP 2.
2. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
3. Do not prime surfaces in direct contact with concrete or where field welding is required.
4. Prime paint items with **one coat** except where galvanizing is specified.
5. Galvanizing: ASTM A123; hot-dip galvanize after fabrication.
6. Galvanizing for Fasteners, Connectors, and Anchors:
   a. Hot-Dip Galvanizing: ASTM A153.
   b. Mechanical Galvanizing: ASTM B695; Class 50 minimum.
7. Sheet Steel: Galvanized with Class 2 coating class.
8. Bolts: Hot-dip galvanized.
9. Nuts: Hot-dip galvanized.
10. Washers: Hot-dip galvanized.
11. Shop Primer: SSPC Paint 15, Type 1, red oxide.
12. Touch-Up Primer: Match shop primer.

B. Stainless Steel:
1. Satin-Polished Finish: Number 4, satin directional polish parallel with long dimension of finished face.
2. Mirror-Polished Finish: Number 8, mirror polish with preliminary directional polish lines removed.

C. Aluminum:
1. Finish coatings to conform to AAMA 2603. Comply with AA DAF-45.

PART 3 EXECUTION

3.1 INSTALLATION

A. Field weld components indicated on Drawings or Shop Drawings.

B. Obtain approval of Architect/Engineer prior to Site cutting or making adjustments not scheduled.

3.2 FIELD QUALITY CONTROL

A. Inspect welds according to AWS D1.1.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

A. Section includes structural wall and roof framing, built-up structural members, non-structural interior wall framing, wall and roof sheathing; sill gaskets and flashings; preservative and fire retardant treatment; miscellaneous blocking, framing, and sheathing; telephone and electrical panel back boards; wood blocking for support of toilet and bath accessories, cabinets, millwork, trim, wall mounted handrails, and related furring and framing materials.

1.2 REFERENCES

A. American National Standards Institute:
   1. ANSI A135.4 - Basic Hardboard.
   2. ANSI A208.1 - Mat-Formed Wood Particleboard.

B. American Wood-Preservers' Association:
   1. AWPA M4 - Standard for the Care of Preservative-Treated Wood Products.
   2. AWPA U1 - Use Category System: User Specification for Treated Wood.

C. ASTM International:
   1. ASTM A153 – Standard Specification for Zinc Coating on Iron and Steel Hardware
   2. ASTM C1396/C1396M - Standard Specification for Gypsum Board.
   3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   4. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
   5. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

D. Forest Stewardship Council:
   1. FSC Guidelines - Forest Stewardship Council Guidelines.

E. Green Seal:
   1. GS-36 - Aerosol Adhesives.

F. National Lumber Grades Authority:
   1. NLGA - Standard Grading Rules for Canadian Lumber.

G. Northeastern Lumber Manufacturers Association:
   1. NELMA - Standard Grading Rules for Northeastern Lumber.

H. South Coast Air Quality Management District:
   1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

I. Southern Pine Inspection Bureau:
   1. SPIB - Standard Grading Rules for Southern Pine Lumber.

J. U.S. Department of Commerce National Institute of Standards and Technology:
   1. DOC PS 1 - Construction and Industrial Plywood.
   2. DOC PS 2 - Performance Standard for Wood-Based Structural-Use Panels.
   3. DOC PS 20 - American Softwood Lumber Standard.

K. West Coast Lumber Inspection Bureau:
   1. WCLIB - Standard Grading Rules for West Coast Lumber.

L. Western Wood Products Association:
   1. WWPA G-5 - Western Lumber Grading Rules.

1.3 SUBMITTALS

A. Product Data: Submit product data on applicable building components, including light gauge hangers, fasteners.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with the following agencies:
   1. Lumber Grading Agency: Certified by DOC PS 20.
   2. Wood Structural Panel Grading Agency: Certified by EWA - The Engineered Wood Association.
   3. Plywood Grading Agency: Certified by APA.
   4. Lumber: DOC PS 20.
   5. Wood Structural Panels: DOC PS 1 or DOC PS 2.

B. Perform Work in accordance with Ohio Building Code.

C. Surface Burning Characteristics:
   1. Fire Retardant Treated Materials: Maximum 25/450 flame spread / smoke developed index when tested in accordance with ASTM E84.

D. Apply label from agency approved by authority having jurisdiction to identify each preservative treated and fire retardant treated material.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect framing from warping or other distortion caused by improper handling or storage.

B. Store framing materials up off grade or floor slab with dunnage.

C. Protect framing materials and components with breathable tarps or other protection as is applicable to the site conditions and where appropriate and in accordance with manufacturer guidelines.

PART 2 PRODUCTS

2.1 LUMBER MATERIALS

A. Lumber Grading Rules: SPIB, ASLS.

B. Beam Framing: southern yellow pine [SYP] species, No. 1 grade, 2” and wider size classification, 19 percent maximum moisture content.

C. Engineered Joist Framing: Truss Joist, size and grading as indicated on drawings.

D. Joist Framing: southern yellow pine [SYP] species, No. 1 grade, 2” and wider size classification, 19 percent maximum moisture content.

E. Columns: southern yellow pine [SYP] species, No. 2 grade, 4” and wider size classification, 19 percent maximum moisture content.

F. Non-structural Light Framing: Stress Group D, spruce, pine, fir [SPF] species, 19 percent maximum moisture content.

G. Studding: Stress Group D, spruce, pine, fir [SPF] species, 19 percent maximum moisture content.

H. Miscellaneous Framing: Stress Group D, spruce, pine, fir [SPF] species, 19 percent maximum moisture content.

I. Sill Plate: AWPA C2 Lumber, Stress Group D, spruce, pine, and fir [SPF] species, and 19 percent maximum moisture content, pressure preservative treated.

2.2 SHEATHING MATERIALS

A. Wood Structural Panel Wall Sheathing: APA PS 2-10 Sheathing; Oriented Strand Board [OSB]; wood chips set with waterproof resin binder; unsanded faces; 7/16 inch thickness; span rating 32/16, Exposure 1, 48x96 inch sized sheets; square edges

B. Wood Structural Panel Roof Sheathing: APA PS 2-10 Sheathing; Oriented Strand Board [OSB]; wood chips set with waterproof resin binder; unsanded faces; 1/2 inch [0.469 inch minimum] thickness; span rating 32/16; Exposure 1, 48x96 inch sized sheets; square edges

2.3 FIREBLOCKING AND FIRESTOPPING

A. Fireblocking: Solid lumber, structural wood panel, or particleboard.
   1. Solid lumber nominal 2 inches thick.
   2. Structural wood panel 23/32 inch thick with joints backed by structural wood panel.

B. Draftstopping: Gypsum board or OSB
   1. Gypsum board: 1/2 inch thick.
   2. OSB: 7/16 inch thick.

2.4 ACCESSORIES

A. Fasteners and Anchors:
   1. Fasteners: ASTM A153/A153M, hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
   2. Nails and staples: ASTM F1667.
   3. Screws: ASTM C1002, corrosion resistant treated.
   4. Anchors:
      a. Toggle type for anchorage into hollow masonry
      b. Expansion shield and lag bolt type for anchorage to solid masonry or concrete
      c. Bolt or ballistic fastener for anchorages to steel.

B. Die Stamped Connectors: galvanized steel, specific type/profile as applicable

C. Structural Framing Connectors: Galvanized steel, sized to suit framing conditions. Refer to drawings.
   1. Simpson or Equal.

D. Sill Gasket on Top of Foundation: 1/4 inch thick; plate width, closed cell foam strip from continuous rolls.

E. Sill Flashing: Polyethylene Sheet or Galvanized Steel.

F. Weather Resistive Barrier / Building Paper: ASTM D226; 100% flash spunbonded high density polyethylene fibers bonded together by heat and pressure, without binders or fillers, into a tough durable sheet structure, UV light resistance to provide 9 months of UV exposure,
   1. Tyvek Commercial Wrap or Equal.
   2. Not required with use of Insulated Sheathing with integral Weather Resistive Barrier.

G. Self Adhered Flashing: AAMA 711, Specification for Self Adhering Flashing Used for Installation of Exterior Wall Fenestration Products, ASTM D1970: Dupont Flashing Tape, FlexWrap, Straightflash, or Equal

2.5 WOOD TREATMENT

A. Wood Preservative (Pressure Treatment): AWPA U1, Commodity Specification A-Sawn Products or F-Wood Composites using water-borne preservative with .25 pcf retention.

B. Moisture Content After Treatment: Kiln dried (KDAT).
   1. Lumber: Maximum 19 percent.
   2. Structural Panels: Maximum 15 percent.

PART 3 EXECUTION

3.1 FRAMING

A. Set structural members level and plumb, in correct position.

B. Fasten framing in accordance with Ohio Building Code.

C. Place horizontal members crown side up.

D. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in alignment until completion of erection and installation of permanent bracing.

E. Provide all required shoring and temporary bracing required to support structure prior to removing any load-bearing components.

F. Construct load bearing framing members full length without splices.

G. Double members at openings. Space short studs over and under opening to stud spacing.

H. Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joint 4 inches.

I. Place sill gasket directly on cementitious foundation. Puncture gasket clean and fit tight to protruding foundation anchor bolts.

J. All exterior framing intended to be left exposed to weather shall be pressure treated and anchored with galvanized fasteners and appropriate connectors.

K. All framing in contact with concrete shall be treated. Interior or exterior walls.

L. Frame new walls, partitions, and openings to suit conditions and as designed.

M. Install solid 2x bearing at each end of beams and headers. Ensure that blocking is positioned with full support/blocking under to existing bearing conditions. Install supplemental blocking as required between joists, framing, etc.

N. Bridge joists at mid-space with solid 2x blocking.

O. Coordinate installation of prefabricated wood trusses.

3.2 SHEATHING

A. Install sheathing over framing members in full size sheets in accordance with APA Construction Guide.

B. Fasten sheathing in accordance with Ohio Building Code.

C. Secure roof sheathing with longer edge perpendicular to framing members and with ends staggered and sheet ends over bearing.

D. Install sheathing clips between roof framing members.

E. Secure wall sheathing with long dimension parallel to wall studs with ends over firm bearing, staggered if appropriate.

F. Install weather resistive barrier horizontally over wall sheathing, weather lap edges and ends. Secure in place per manufacturer installation instructions. Coordinate flashing installation to ensure continuous water resistant barrier.

3.3 FIREBLOCKING AND DRAFTSTOPPING

A. Install fireblocking to cut off concealed draft openings.

1. Concealed Framed Wall and Furred Spaces: Install fireblocking vertically at floor and ceiling levels and horizontally at maximum 10 feet on center.
2. Connections Between Horizontal and Vertical Spaces: Install fireblocking between vertical walls and partitions and the following:
    a. Horizontal floor and roof framing.
    b. Soffits, dropped ceilings, cove ceilings and other horizontal concealed spaces.

B. Install draftstopping in attics at locations indicated on drawings.
1. Attics: in locations to limit each area to 3,000 SF.

3.4 SITE APPLIED WOOD TREATMENT

A. Treat site sawn cuts. Brush apply one coat of preservative treatment on untreated wood in contact with cementitious materials.

B. Allow preservative to cure prior to erecting members.

3.5 TOLERANCES

A. Framing members: 1/4 inch from indicated position, maximum.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 06 16 13 – INSULATED SHEATHING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes insulated wall sheathing with integral water resistance barrier and air barrier.

1.2 REFERENCES

A. American Society of Mechanical Engineers (ASME): www.asme.org
   1. ASME B18.6.1 - Wood Screws (Inch Series)

B. ASTM International (ASTM): www.astm.org
   1. ASTM A153/A153M - Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
   2. ASTM C1289 - Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
   3. ASTM D779 - Test Method for Water Resistance of Paper, Paperboard, and Other Sheet Materials by the Dry Indicator Method
   4. ASTM D1621 - Test Method for Compressive Properties Of Rigid Cellular Plastics
   5. ASTM D2247 - Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
   6. ASTM E96/E 96M - Test Methods for Water Vapor Transmission of Materials
   7. ASTM E331 - Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
   8. ASTM E2357 - Test Method for Determining Air Leakage of Air Barrier Assemblies
   9. ASTM F1667 - Specification for Driven Fasteners: Nails, Spikes, and Staples
   10. ASTM G154 - Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials

C. US Department of Commerce (DOC): http://gsi.nist.gov/global/index.cfm/L1-5/l2-44/A-355
   1. DOC PS 2 - Performance Standard for Wood-Based Structural Panels

D. International Code Council (ICC): www.iccsafe.org
   1. ICC IBC - International Building Code
   2. ICC IRC - International Residential Code for One and Two-Family Dwellings

E. ICC Evaluation Service, Inc. (ICC-ES): www.icc-es.org
   1. ICC-ES AC12 - Acceptance Criteria For Foam Plastic Insulation
   2. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers
   3. ICC-ES AC116 - Acceptance Criteria for Nails and Spikes
   4. ICC-ES AC148 - Acceptance Criteria For Flexible Flashing Materials
   5. ICC-ES AC201 - Acceptance Criteria for Staples
   6. ICC-ES AC269 - Acceptance Criteria for Racking Shear Evaluation of Proprietary Sheathing Materials attached to Light-Frame Wall Construction or Code-Complying Sheathing Attached to Light-Framed Walls with Proprietary Fasteners
   7. ICC-ES AC310 - Acceptance Criteria for Water-Resistive Membranes Factory-bonded to Wood-based Structural Sheathing, Used as Water-Resistive Barriers
   8. ICC-ES ESR-1539 - Power Driven Staples and Nails for Use in Engineered and Non-Engineered Connections
   9. ICC-ES NER-272 - Power Driven Staples and Nails for Use in All Types of Building Construction

1.3 SUBMITTALS

A. Product Data: Submit product data on applicable building components and fasteners.

B. Product Certifications: From manufacturer, indicating that sheathing products comply with ICC-ES AC269 and ICC-ES AC310.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide wood products from manufacturer certified by SFI, FSC, or comparable sustainable forestry program acceptable to Architect.

B. Provide wall sheathing products meeting requirements for water-resistive barrier in accordance with ICC-ES AC310.

C. Provide wall sheathing products meeting requirements of ICC-ES AC269.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's written instructions for protection of sheathing products from weather prior to installation.

1.6 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which sheathing manufacturer agrees to repair or replace sheathing products that demonstrate deterioration or failure under normal use due to manufacturing defects within warranty period specified, when installed according to manufacturer's instructions.
   1. Warranty Period for Sheathing Products: 30 years following date of Substantial Completion.
   2. Warranty Conditions: Special warranties exclude deterioration or failure due to structural movement resulting in stresses on sheathing products exceeding manufacturer's written specifications, or due to air or moisture infiltration resulting from cladding failure or mechanical damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Huber Engineered Woods, Insulated Zip Sheathing, Basis of Design

B. Approved Equal

2.2 PERFORMANCE REQUIREMENTS

A. Air-Barrier Assembly Air Leakage: Less than 0.04 cfm/sq. ft. at 1.57 lbf/sq. ft., per ASTM E2375.

B. Water-Vapor Permeance, Facer: Minimum 12 perms, ASTM E96/E96M.

C. Weather Exposure: Manufacturer warranty applies for maximum allowable exposure period of 180 days.

2.3 MATERIALS

A. Oriented Strand Board: DOC PS 2, made with binder containing no added urea formaldehyde.

B. Rigid Foam Plastic Insulating Board: Rigid polyisocyanurate foam core complying with ASTM C1289 Type II, Class 2, and ICC-ES AC12, with coated glass fiber facers on both sides, with the following characteristics:
   1. Nominal Density: 2.0 pcf.
   2. Compressive Strength, ASTM D1621: Not less than 20 psi.
   3. Vapor Permeance, ASTM E96/E96M: Less than 1.0 perm.
   4. Edge Configuration: Square finished.

2.4 COMPOSITE INSULATING WALL SHEATHING

A. Composite Insulating Wall Sheathing: Oriented-strand-board Exposure 1 sheathing 7/16 inch thick, with factory-laminated water-resistive barrier exterior facer, and with rigid foam plastic insulating board laminated to interior face.
   1. Basis-of-Design Product: Provide Huber Engineered Woods LLC; ZIP System R Sheathing.
   2. Span Rating and Performance Category of Sheathing Layer: Not less than 24/16; 7/16 Performance Category.
   3. Thickness: 1-1/2 inch.
   4. Thermal Resistivity (R Value): 6.6 deg F x h x sq. ft./Btu x in. at 75 deg F.
   5. Edge Profile: Square edge.
   6. Exterior Facer: Medium-density, phenolic-impregnated polymer-modified sheet material meeting requirements for ASTM D779 Grade D weather-resistive barrier in accordance with ICC AC38 and AC310, with fastener spacing symbols on exterior facer for 16-inch and 24-inch on center spacing, with the following characteristics
      a. Water Resistance of Coatings, ASTM D2247: Pass 14 day exposure test.
      b. Moisture Vapor Transmission, ASTM E96: Not less than 12 perms.
      c. Water Penetration, ASTM E331: Pass at 2.86 lbf/sq. ft.
      d. Wind Driven Rain, TAS-100: Pass.
      e. Accelerated Weathering, ASTM G154: Pass.

2.5 FASTENERS

A. Fasteners, General: Size and type complying with manufacturer's written instructions for Project conditions and requirements of authorities having jurisdiction.
   1. Corrosion Resistance: Hot-dip zinc coating, ASTM A153/A 153M.

B. Nails, Brads, and Staples: ICC AC116 and ICC AC201.

C. Power-Driven Fasteners: ICC-ES-1539 or NER-272.

D. Wood Screws: ASME B18.6.1.

2.6 SHEATHING JOINT AND PENETRATION TREATMENT MATERIAL

A. Self-Adhering Seam and Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape consisting of polyolefin film with acrylic adhesive, meeting ICC AC148.
   1. Basis-of-Design Product: Provide Huber Engineered Woods; ZIP System Tape.
   2. Thickness: 0.012 inch.

2.7 WOOD TREATMENT

A. Wood Preservative (Pressure Treatment): AWPA U1, Commodity Specification A-Sawn Products or F-Wood Composites using water-borne preservative with .25 pcf retention.

B. Moisture Content After Treatment: Kiln dried (KDAT).
   1. Lumber: Maximum 19 percent.
   2. Structural Panels: Maximum 15 percent.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine framing spacing and alignment to determine if work is ready to receive sheathing. Proceed with sheathing work once conditions meet requirements.

3.2 SHEATHING INSTALLATION

A. Install sheathing panels in accordance with manufacturer's written instructions, requirements of applicable Evaluation Reports, and requirements of authorities having jurisdiction.

B. Air and Moisture Barrier: Coordinate sheathing installation with flashing and joint sealant installation and with adjacent building air and moisture barrier components to provide complete, continuous air- and moisture- barrier.

C. Do not bridge expansion joints; allow joint spacing equal to spacing of structural supports.

D. Install panels with laminated facer to exterior. Stagger end joints of adjacent panel runs.

E. Attach sheathing panels securely to substrate with manufacturer-approved fasteners in compliance with the Ohio Building Code.

F. Apply seam tape at all panel seams, penetrations, and facer defects or cracks to form continuous weathertight surface. Apply tape according to manufacturer's written instructions and requirements of ICC-ES applicable to tape application.

END OF SECTION

SECTION 06 17 53 - SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes shop fabricated wood trusses for roof framing; bridging, bracing, and anchorage; and preservative treatment of wood.

1.2 REFERENCES

A. American National Standards Institute:
   1. ANSI A208.1 - Mat-Formed Wood Particleboard.

B. APA-The Engineered Wood Association:
   1. APA/EWA TB 200 - Fire Retardant Treated Plywood.

C. American Wood-Preservers' Association:
   1. AWPA M4 - Standard for the Care of Preservative-Treated Wood Products.
   2. AWPA U1 - Use Category System: User Specification for Treated Wood.

D. ASTM International:
   1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   2. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
   3. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
   4. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
   5. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   6. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
   7. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

E. Forest Stewardship Council:
   1. FSC Guidelines - Forest Stewardship Council Guidelines.

F. The Redwood Inspection Service:
   1. RIS - Standard Specifications for Grades of California Redwood Lumber.

G. Southern Pine Inspection Bureau:
   1. SPIB - Standard Grading Rules for Southern Pine Lumber.

H. Truss Plate Institute:
   1. TPI 1 - National Design Standard for Metal Plate Connected Wood Truss Construction.

I. U. S Department of Commerce National Institute of Standards and Technology:
   1. DOC PS 1 - Construction and Industrial Plywood.
   2. DOC PS 2 - Performance Standard for Wood-Based Structural-Use Panels.
   3. DOC PS 20 - American Softwood Lumber Standard.

J. West Coast Lumber Inspection Bureau:
   1. WCLIB - Standard Grading Rules for West Coast Lumber.

K. Western Wood Products Association:
   1. WWPA G-5 - Western Lumber Grading Rules.

1.3 SYSTEM DESCRIPTION

A. Design Roof Live Load: 20 lbs/sq ft with deflection limited to 1/240 of span including ceiling load.

1.4 SUBMITTALS

A. Shop Drawings: Submit truss layout diagram with indication of each truss type. Submit truss profile / diagram for each truss type. Indicate sizes and spacing of trusses and associated components, web and chord sizes, plate sizes, fastener descriptions and spacings, loads and truss cambers, framed openings. Submit design calculations under the seal of a licensed Ohio Engineer.

B. Product Data: Submit truss configurations, bearing and anchor details and requirements, bridging and bracing and installation requirements.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
   1. Lumber Grading Agency: Certified by DOC PS 20.
   2. Plywood Grading Agency: Certified by APA.
   3. Lumber: DOC PS 20.
   4. Wood Structural Panels: DOC PS 1 or DOC PS 2.

B. Truss Design, Fabrication, and Installation: In accordance with TPI 1.

C. Surface Burning Characteristics:
   1. Fire Retardant Treated Materials: 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 five years' experience.

B. Design trusses under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Ohio.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Handle and store trusses in accordance with fabricator requirements. Protect from damage.

B. Store truss depth in vertical position resting on intermittent bearing pads.

C. Contact original fabricator for direction for any required truss repairs or field modifications.

PART 2 PRODUCTS

2.1 MATERIALS

A. Lumber Grading Rules: NFPA.

B. Wood Members: as applicable to the engineered truss design for size, species, and grade.

C. Steel Plate Connectors: ASTM A446, Grade A, TPI 1, Section 6; hot dip galvanized to G60 coating designation; die stamped with integral teeth; 0.036 inch thick minimum.

D. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.2 ACCESSORIES

A. Wood Blocking: S/P/F species, construction grade, 19 percent maximum and 7 percent minimum moisture content, unless otherwise directed by truss manufacturer.

B. Fasteners and Anchors:
   1. Fasteners: ASTM A153/A153M, hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
   2. Nails and Staples: ASTM F1667.

3. Anchors:
    a. Toggle bolt type for anchorage to hollow masonry.
    b. Expansion shield and lag bolt type for anchorage to solid masonry or concrete.
    c. Bolt or ballistic fastener for anchorages to steel.

2.3 FABRICATION

A. Fabricate trusses to achieve structural requirements specified.

B. Fabricate top chord extensions as indicated on Drawings.

C. Frame special sized openings in web framing as indicated on Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify supports and openings are ready to receive trusses.

3.2 PREPARATION

A. Coordinate placement of bearing and support items.

3.3 ERECTION

A. Set members level and plumb, in correct position.

B. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in alignment until completion of erection and installation of permanent bracing.

C. Do not field cut or alter structural members without approval of Truss Engineer.

D. Place headers and supports to frame openings.

E. Frame openings between trusses with lumber in accordance with Section 06 10 00.

F. Coordinate placement of sheathing with work of this Section.

3.4 ERECTION TOLERANCES

A. Framing Members: 1/2 inch maximum, from indicated position.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 06 20 00 - FINISH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

A. Section includes exterior and interior finish carpentry items, other than shop fabricated casework.

1.2 SUBMITTALS

A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, finishes, and accessories.

1.3 REFERENCE STANDARDS

A. American National Standards Institute:
   1. ANSI A135.4 - Basic Hardboard.
   2. ANSI A156.9 - Cabinet Hardware.
   3. ANSI A208.1 - Mat-Formed Wood Particleboard.

B. APA-The Engineered Wood Association:
   1. APA/EWA PS 1 - Voluntary Product Standard for Construction and Industrial Plywood.

C. Architectural Woodwork Institute, Woodwork Institute, and Architectural Woodwork Manufacturers Association of Canada:
   1. AWS - Architectural Woodwork Standards.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with AWI Quality Standards, Custom Grade.

B. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect Work from moisture damage.

B. Maintain storage space relative humidity within ranges indicated in AWS Section 2.

1.6 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements prior to fabrication, provide adjustments to design intent to meet field conditions.

PART 2 PRODUCTS

2.1 EXTERIOR FINISH CARPENTRY

A. Aluminum Wrapped Exterior Trim: SPF / SYP species, suitable for aluminum wrap [Refer to Section 07 62 00 for aluminum cladding specifications]
   1. 1x or 2x running trim x width as indicated on drawings.

2.2 WOOD TREATMENT

A. Wood preservative Pressure Treatment: WDMA I.S.4

B. Moisture Content after Treatment: Kiln Dried [KDAT]
   1. Lumber: as specified for exterior lumber.

2.3 ACCESSORIES

A. Fasteners and Anchors:
   1. Fasteners: Size and type to suit application, stainless steel for exterior, high humidity and treated wood locations, plain finish elsewhere.
   2. Nails and Staples: ASTM F1667.

B. Lumber for Shimming, Blocking: softwood lumber as required by conditions.

C. Primer: Alkyd primer sealer type.

D. Hardware: as required to suit application.

2.4 FABRICATION

A. Fabricate to AWI Custom standards.

B. When necessary to cut and fit on-site, fabricate materials with ample allowance for cutting. Furnish trim for scribing and site cutting.

2.5 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

A. Prime paint surfaces of items or assemblies in contact with cementitious materials, before installation.

3.3 INSTALLATION

A. Install work in accordance with AWI Custom quality standard.
   1. Set and secure materials and components in place, plumb and level.
   2. Install trim by nails.
   3. Miter trim and return to wall where applicable.
   4. Install hardware.

B. Preparation For Finish:
   1. Sand work smooth and set exposed fasteners. Apply wood filler in exposed fastener indentations.
   2. Site Finishing: Refer to Section 09 90 00.

END OF SECTION

SECTION 07 21 00 - THERMAL INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes rigid board insulation at perimeter foundation walls and slab on grade; batt thermal insulation in exterior walls; attic loose insulation pneumatically placed through access openings; foamed in place insulation at junctions of dissimilar wall and roof materials to achieve thermal and air seal.

1.2 SYSTEM DESCRIPTION

A. Provide continuity of thermal barrier at building enclosure elements.

B. Vapor Retarder Permeance: Maximum 1 perm when tested in accordance with ASTM E96/E96M, desiccant method.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data indicating product characteristics, performance criteria, limitations, adhesives, accessories
   1. Include thermal performance of materials.
   2. Provide requirements for over coat of foamed in place insulation if in exposed cavities.

1.4 QUALITY ASSURANCE

A. Insulation Installed in Concealed Locations Surface Burning Characteristics:
   1. Foam Plastic Insulation: Maximum 75/450 flame spread/smoke developed index when tested according to ASTM E84.
   2. Batt Insulation: 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

B. Insulation Installed in Exposed Locations Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested according to ASTM E84.
   1. Attic Floor Insulation: Minimum 0.12 watt per sq cm critical radiant flux when tested according to ASTM E970.

C. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation board.

1.5 SEQUENCING

A. Sequence Work to ensure firestopping, vapor retarder, and air barrier materials are in place before beginning Work of this Section.

1.6 COORDINATION

A. Coordinate Work with installation of vapor retarder for air seal materials.

PART 2 PRODUCTS

2.1 BUILDING INSULATION

A. Manufacturers:
   1. Johns Manville.
   2. Certain Teed.
   3. Owens-Corning.

2.2 COMPONENTS

A. Extruded Polystyrene Insulation for Foundations: ASTM C578 Type IV**,** cellular extruded polystyrene board; with following characteristics:
   1. Board Density: 1.55 lb/cu ft.
   2. Board Size: 48 x 96 inch [cut to fit to conditions].
   3. Board Thickness: 3 inches
   4. Thermal Resistance: R of 15.0.
   5. Water Absorption: According to ASTM D2842; 0.3 percent by volume maximum.
   6. Compressive Strength: Minimum 25 psi.
   7. Board Edges: Square edges.

B. Extruded Polystyrene Insulation for Foundation / Underslab: ASTM C578 Type VI**,** cellular extruded polystyrene board; with following characteristics:
   1. Board Density: 1.80 lb/cu ft.
   2. Board Size: 48 x 96 inch [cut to fit to conditions].
   3. Board Thickness: 3 inches
   4. Thermal Resistance: R of 15.0.
   5. Water Absorption: According to ASTM D2842; **0.3** percent by volume maximum.
   6. Compressive Strength: Minimum 40 psi.
   7. Board Edges: Square edges.

C. Thermal Batt Insulation for Exterior Walls: ASTM C665, preformed glass fiber batt, friction fit, conforming to the following:
   1. Thermal Resistance: R 19
   2. Facing: Kraft faced [asphalt treated mesh reinforced kraft paper]
      a. If not kraft faced, provide 4 mil vapor barrier at interior face of insulation [warm side of wall]

D. Blown In Insulation in Attics: Fiber Fill Insulation ASTM C764, glass fiber type, bulk for pneumatic placement
   1. Thermal Resistance: R-49

E. Foamed in Place Insulation: ASTM C1029, Type II, Two-component, Closed Cell Polyurethane
   1. Thermal Resistance: R of 6.9 per inch.
   2. Compressive Strength: 25 psi.

2.3 ACCESSORIES

A. Adhesive: Type recommended by insulation manufacturer for application.

B. Tape: Polyester self-adhering type, mesh reinforced, 2 inch wide.

C. Insulation Fasteners: Steel impale spindle and clip on flat metal base, self adhering backing, length to suit insulation thickness, capable of securely and rigidly fastening insulation in place.

D. Primer for Foamed in Place Insulation: As required by insulation manufacturer.

E. Overcoat for Exposed Foamed in Place Insulation: As required by insulation manufacturer.

F. Ventilation Baffles: Formed plastic or cardboard, sized to fit between framing members.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate, adjacent materials, and insulation boards are dry and ready to receive insulation.

3.2 INSTALLATION

A. Foundation / Underslab Insulation

1. Install insulation boards over compacted gravel base and vapor barrier.
2. Place boards to maximize contact bedding, adhere in place as applicable to the conditions.
3. Extend boards over control joints, leave unbonded.
4. Cut and fit insulation tight to protrusions or interruptions in insulation plane.
5. Protect insulation boards from damage after installation and prior to concrete slab on grade being cast in place.

B. Thermal Batt Insulation:
1. Install in exterior wall stud cavities without gaps or voids. Do not compress insulation.
2. Trim / fit insulation tight in spaces. Leave no gaps or voids. Insulate miscellaneous gaps and voids.
3. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within plane of insulation.
4. Install with factory applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.
5. Staple facing flanges in place at 12 inches on center, or as recommended by insulation manufacturer.
6. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

C. Blown In Attic Insulation:
1. Verify light fixtures have thermal cut-out devices to restrict overheating in soffit or ceiling spaces.
2. Verify spaces are unobstructed to allow placement of insulation.
3. Place insulation pneumatically in ceiling cavities to achieve R 49 insulation value.
4. Place insulation against baffles. Do not impede natural attic ventilation to soffit.
5. Place against and behind mechanical and electrical devices within the plane of insulation.
6. Completely fill intended spaces. Leave no gaps or voids.

D. Foamed In Place Insulation:
1. Mask and protect adjacent surfaces from overspray or dusting.
2. Apply primer as applicable for the conditions and in accordance with manufacturer installation instructions.
3. Spray apply insulation to uniform monolithic density without voids.
4. Apply to fit the requirements of the irregular void or condition.
5. Apply overcoat where required.

E. Miscellaneous gaps and cracks in building envelope: Fill gaps with expanding foam sealant where applicable such as gaps at window and door openings, etc. Install minimal expansion foam at all locations where sealant may bow or warp materials.

F. Expanding foam sealant: Install at all penetrations of ductwork, conduits, etc. through the floor, walls or ceiling. Cap all chases with a rigid air barrier as applicable for the condition.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTIONS 07 31 13 - SHINGLES AND ACCESSORIES

PART 1 GENERAL

1.1 WORK INCLUDES, BUT NOT LIMITED TO:

General: Intent of new shingle roof system and replacement of existing shingle roof systems is to provide a functional 50-year new water resistance shingle system, resisting wind uplift pressures, thermally induced movement and exposure to weather without failure. Roof system must have been tested and approved [industry standard test] and have field experience by the manufacturer.

A. Removal of existing shingles/underlayment and related items.

B. Installation of shingles and underlayment.

C. Installation of associated ice and water shield membrane and synthetic underlayment.

D. Installation of vents, pipe boots and accessories.

1.2 APPLICABLE REFERENCES

A. The following references form a part of this specification.
1. ASTM D3462 Asphalt Shingles, Fiberglass, Class A, Mineral surfaced
2. ASTM D1970 Rubberized Asphalt Membrane.
3. ASTM B209 Aluminum.
4. ASTM E 108 Fire Test of Roof Coverings
5. [SMACNA] Sheet Metal and Air Conditioning Contractors Association- 6th Edition or Current Manual
6. [OSHA] Occupational Safety and Health Administration, Guidelines
7. ANSI/SPRI WD-1 Wind Design Standards
8. CertainTeed, Shingle Applicators Manual [Current Edition].
9. ASTM D3161 Wind Testing for Steep Sloped Roofing.
10. ASTM D226/D4869 Underlayment.
11. ASTM D7158 H, Wind Rating for Asphalt Shingles

1.3 PRECAUTIONS

A. Do not install shingles or roofing when the temperature is below 45 degrees F or when rain or snow is falling.

B. Do not overload the structure with storage of materials or equipment.

1.4 SEQUENCING/SCHEDULING AND PROTECTION

A. Coordinate the work of installing all associated items in such sequence that will not necessitate movement of workers and equipment over completed roof areas.

B. Sequence work so that all underlayment, flashing, etc. is installed to produce a watertight condition as work progresses.

C. Protect building surfaces/interior spaces against damage from roofing work. It is the Contractor's responsibility to take any necessary actions to prevent construction-related leaks, to include but not limited to repairing watertight existing surrounding roofing scheduled to be replaced or overlaid. Surrounding roofing areas include roof top material storage areas, workers roof top access to from roofing work site areas and any drainage system [roof drain-scuppers] leak issues located in work area. Contractor must include the cost to deal with these existing leak sources into the overall project unless the Owner is made aware of these leak sources prior to commencement of the project.

D. Provide, erect barricades, guardrails as required by applicable regulatory advisory to protect occupants of building and workers.

1.5 MANUFACTURER'S WARRANTY [SHINGLES / PROTECTIVE MEMBRANE]

A. Provide a manufacturer's warranty for both repairs/replacements due to any faults in the material and workmanship [Total System Responsibility]. Any leak repairs/replacement due to normal wear and tear, membrane defects, workmanship defects, damage due to wind speeds as noted [10 meters above ground], shall be performed at no charge to the owner through the period of the warranty.
   1. Shingles: Furnish a 15 year,110 miles per hour wind warranty, 15-year algae resistance warranty, [50] fifty-year manufacturer's defects warranty with a prorated 10-year labor and material replacement warranty.
   2. Protective Membrane: Furnish a [30] thirty year prorated waterproof warranty.
   3. Vents: Lifetime warranty.

1.6 MEETINGS/COORDINATION

A. A pre-installation conference one week prior to commencing work of this section will be mandatory. All parties responsible for work in this section are required to attend.

B. Progress meetings will be held during construction. Memos resulting from these meetings will be provided to the Owner and Contractor by RDA.

C. Daily reporting by the Contractor is required.
   1. Contractor to email project team daily with outline summary of work accomplished, any problems encountered such as bad deck, etc.
   2. Contractor to email project team on days when weather prohibits work to indicate a 'weather day'

PART 2 PRODUCTS

2.1 ASPHALT SHINGLES

A. ASTM D 3462, CertainTeed SAINT-GOBAIN, Landmark PRO, Dimensional, two-piece laminated fiber glass construction, UL class A rating, 240 -267 pounds per square, self-sealing type, class F, algae resistance, wind rated and a manufactures defects and replacement warranty. Color to be selected by Owner from full range of colors.
   1. All shingles shall be from the same dye lot.

2.2 FASTENERS

A. General: Fasteners/Anchors: strength, type and configuration must meet the required pull test resistance for each attachment application. Fasteners rate and pattern must be FMG or local code approved to meet the intent of the wind uplift rating specified. The Contractor shall determine fastener lengths, minimum embedment: wood decking 3/4 inch in accordance with manufacturer requirements. All fasteners shall be corrosion resistant steel in accordance with meeting ASTM F1667.

2.3 ACCESSORIES

A. Cap Nails for Underlayment: Simplex, Plex-Cap, length as required to penetration wood decking 3/4 inch.

B. Nails for shingles: Round wire type, corrosion resistant, 3/8-inch minimum diameter head, 11- or 12-gauge shank, length as required to penetration wood decking 3/4 inch [use longer nails for attachment of ridge vent, when required].

C. Ridge Vents: Certainteed filtered ridge vent, shingle-over vent, 9 Inches or 12 inches wide, polypropylene construction, internal baffles to deflect wind and drainage system, weep holes, 9 square inches of net free venting per linear foot, color black.

D. Roof [static vents]: Lomanco, 750 series, slant back, weather tight seamed collar, pre-finished aluminum, size as required. Color to closely match shingle color.

E. Pipe Boots: Manning Building Products 'Perma-boot or Protech Specialty Products , pipe boot.

F. Plastic Cement: ASTM D4586, Asphalt type with mineral fiber components, free of toxic solvents, capable of setting within 24 hours at temperatures of 75 degrees F and 50 percent RH.

G. Lap Cement: Fibrated cutback asphalt type, recommended for use in application of underlayment, free of toxic solvents.

H. Flashing Materials:
   1. Sheet Flashings: As specified in Section 07 62 00.

I. Gutters and Downspouts: As specified on Section 07 62 00.

J. Base Flashing: 24 gauge galvanized steel, 4 inch roof / vertical flange, 7 inch long.

2.4 SHINGLE UNDERLAYMENT/RUBBERIZED ASPHALT PROTECTIVE MEMBRANE

A. Ice and Water Shield: ASTM D 1970, Certainteed WinterGuard or Equal, 40 mil thick self-adhering membrane with strippable release paper, homogeneous rubberized asphalt waterproofing compound, fiberglass reinforced, skid resistant sand / granular surface, self sealing

B. Synthetic Underlayment: ASTM D-828; Synthetic high strength woven roof underlayment; 100% polypropylene fabrication; CertainTeed RoofRunner or Equal.
   1. Install and secure using the pre-printed nailing pattern for increased wind resistance.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify all existing and newly replaced wood decks are level and smooth after existing roof system, underlayment, and deteriorated decking is removed. Verify deck surfaces are dry, free of ridges, warps, or voids.

B. Remove and replace deteriorated wood decking [deteriorated framing/conditions allowance].

C. Verify roof penetrations and plumbing stacks are in place and flashed to deck surface.

D. Verify roof openings are correctly framed.

3.2 PREPARATION

A. Fill knot holes and surface cracks with latex filler at areas of eave and valley protection membrane. Cover knot holes with sheet metal.

B. Broom clean deck surfaces under ice dam membrane and underlayment.

C. Ensure penetrations are correctly framed.

D. Fill all holes in areas where eave/valley protection membrane is being installed.

E. Replace any deteriorated wood decking.

3.3 SHINGLE UNDERLAYMENT AND ICE AND WATER SHIELD MEMBRANE

A. Ice and Water Shield Membrane Installation:
   1. Install ice and water shield membrane parallel with eave edge, flush with face of eave edge flashing with edges lapped shingle style and ends lapped and staggered between rows. Unroll underlayment parallel to the eave. Install over the drip edge at the eave flashing and under the rake edge flashing. Install underlayment in accordance with manufacturer's instructions without distortions capable of preventing shingles from sealing.
   2. Weather lap joints minimum 2 inches at side laps and 6 inches at end laps.

3. Secure underlayment in place with fasteners at the perimeter of the roll and in field of roll per manufacturer installation instructions.
4. Install self-adhered protective ice and water shield membrane / underlayment at entire roof area, carefully detailing eave conditions, intersections of roof-wall [1 full sheet], rake / roof edges [1 full sheet], and valleys [1 full sheet centered in valley].

B. Synthetic Underlayment Installation:
1. Install synthetic underlayment parallel to the eave edge with edges lapped shingle style and ends lapped and staggered between rows. Install underlayment in accordance with manufacturer's instructions without distortions capable of preventing shingles from sealing.
2. Weather lap joints a minimum of 3 inches at side laps and 6 inches at end laps.
3. Weather lap and seal items projecting through or mounted on roof watertight with plastic cement.
4. Secure underlayment in place with fasteners at the perimeter of the roll and in field of roll per manufacturer installation instructions.
5. Install synthetic roof underlayment at all roof areas which do not receive ice and water shield.

C. Synthetic Underlayment Installation for roof slopes between 2:12 and 4:12
1. Install [2] layer application in accordance with the manufacturer's installation instructions for low slope applications.

3.4 ACCESSORIES INSTALLATION

General, all accessories shall be installed in accordance with manufacturer's written guidelines with installation summary as outlined herein.

A. Ridge Vents shall be installed on ridges as where shown. After the underlayment is installed. Cut roof deck on both sides of the ridge. Center ridge vent over opening and nail in place. Install ridge shingles with nails long enough to penetrate the deck 1 inch.

B. Intake Vents shall be installed on the lower section of the roof just above the eaves as shown. After the underlayment is installed, cut a slot thru the decking to allow for the venting. Center the vent over the opening and nail in place. Install new underlayment over the vent, over the underlayment install the starter shingles. Nail pattern may be deviated to avoid nailing into the slot.

C. Static Box Vents to be located as shown and evenly spaced. Center the vent between rafters and approx. 24 inches down from the ridge. Saw out the deck where the vent is being installed. If the shingles have been installed, remove the nails so the flashing flange of the vent will slide under the shingles with the embossed arrow pointing up centered over opening. Once the throat of the vent is aligned, apply roof cement to the bottom of the vent. Seven nails are required to fasten the vent keeping the nail heads under shingles where possible or applying roof cement to exposed nail heads in accordance with manufacturer's recommendations.

D. Metal Flashing and Accessories Installation:
1. Flashings shall be provided at the intersection of the roofs, adjoining walls, or projections through the deck.
2. Shingle base flashing shall be installed in accordance with SMACNA Fig. 4-22A recommendations.
3. Counter-flashing shall be surface mounted attached with wood fasteners as applicable fitted with EPDM washer at 12 inches on center with minimum of 1 inch embedment. Apply bead of sealant on the top of the flashing. Counter flashing shall overlap base flashing sheet metal a minimum of 3 inches and shall terminate no lower than 4 inches above the finished roof surface, unless approved by the manufacturer.
4. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.
5. Secure in place with nails. Conceal fastenings.

6. Flash and seal Work weather tight, projecting through or mounted on roofing with plastic cement.

3.5 SHINGLE APPLICATION

General, all shingles shall be installed in accordance with manufactures written guidelines**.**

A. Apply starter strips at eaves. Starter strips shall consist of one layer of strip shingles laid with cutouts reversed. Project strip 1/2 inch beyond eaves line to form a drip overlap. Fasten strip in place within row of nails 1 inch above lower edge and spaced 3 inches on center. Lay first course of shingles directly on top of starter strip, flush with drip edge. Succeeding courses shall have chalk lines snapped as required for proper alignment. Nail 1 inch from each end of the shingle and 12 inches from each end, **6 nails per shingle.** All 6 nails must be placed on a white line 5-5/8 above the butt edge of the shingle. A cutout must never overlap another cutout in the below course. Firmly press each tab into the factory applied sealant. If the sealant appears not to be adhering the shingle apply new sealant.

B. Ridges shall be 3-tab shingles cut in three sections or ridge shingles. Bend shingle at center, nail in place using 2 nails each located 4-1/2 inches from the exposed butt end and 1 inch from the side edge. Place to avoid exposed nails, all exposed nails shall have roof cement applied over nail heads. Use nails long enough to penetrate thru both layers of shingles and into wood ¾ inch. Shingles installed over ridge vents shall have nails long enough to penetrate shingle all layers and into decking 1 inch.

C. Valleys shall be the closed cut type [no metal], Install full length [course] shingles 12 inches beyond the valley center, nail shingles in place avoiding nails 6 inches from the center of valley. Chalk a line in the valley center, then cut shingles along chalk line using a sheet metal under shingles avoiding cut thru shingles below. Trim corners of each shingles at a 45-degree angle and apply sealant under shingles on both sides of the valley and any other area requiring sealant. Follow printed manufacturers installation instructions.

3.6 CLEAN UP

A. Clean up all debris resulting from each day’s work.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 07 46 00 – VINYL SIDING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes vinyl lap siding, soffits, composite trim, flashings, accessories, and fastenings.

1.2 SUBMITTALS

A. Product Data: Submit data indicating materials, component profiles, fastening methods, jointing details, sizes, surface texture, finishes, and accessories.

B. Samples: Submit two samples illustrating surface texture and color.

1.3 PERFORMANCE REQUIREMENTS

A. PVC Fire Resistance: Provide vinyl siding products that meet or exceed the following ratings:
   1. Flame spread index 20, fuel contribution 0, smoke development rating 360, per ASTM E 84.
   2. Self-ignition temperature: 824 degrees F per ASTM D 1929.
   3. Fire endurance classification of 1 hour, per ASTM E 119 as wall assembly.

B. Siding: TPO Fire Resistance: Provide thermoplastic polyolefin siding products that meet or exceed the following ratings:
   1. Minimum self-ignition temperature of 650 degrees F per ASTM D 1929.
   2. Smoke density rating of 40, per ASTM D 2843.

1.4 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.5 WARRANTY

A. Furnish lifetime limited manufacturer warranty for prefinished siding products.

PART 2 PRODUCTS

2.1 SIDING

A. Manufacturers:
   1. Westlake Royal Building Products, Exterior Portfolio, Market Square D5 [basis of design]
   2. Certainteed, Siding Products Group.
   3. Alcoa Building Products.
   4. Mastic Home Exteriors

B. Product Description: Furnish vinyl lap siding and trim components.

2.2 COMPONENTS

A. Vinyl Siding Components: Extruded polyvinyl chloride; comply with requirements of ASTM D3679.
   1. Provide elongated nailing slots on nailing flanges to allow for movement.
   2. Factory-notch ends of horizontal panels to form overlapping joints.
   3. Provide products that meet weathering requirements of ASTM D3679.

2.3 VINYL LAP SIDING

A. Double 5” Clapboard Siding, Crane Parkview Vinyl Siding
   1. Design: Double 5 inches
   2. Projection: 5/8 inch.

3. Finish: Cedargrain
4. Length: 12 feet
5. Average Thickness: 0.044 inch.
6. Color: As selected from full range of Smart Style and Smart Styles Premium Collections to match existing finishes at each respective site.

2.4 VINYL SOFFITS

A. Soffits: Polyvinyl Chloride: PVC compound with cell classification of 13344-B, as defined by ASTM D 4216, meeting or exceeding the following properties:
   1. Provide elongated nailing slots on nailing flanges to allow for movement.
   2. Factory-notch ends of horizontal panels to form overlapping joints.
   3. Provide products that meet weathering requirements of ASTM D 4477.

B. Triple 4” soffit, fully vented, Triple 4 Traditional Soffit, Vented
   1. Design: Triple 4 inches fully vented.
   2. Width: 12 inches plus or minus .062 inch.
   3. Length: 12 feet plus or minus) .025 inch.
   4. Average Thickness: 0.040 inch.
   5. Exposure: 12 inches single nailing hem.
   6. Panel Projection: 1/2 inch.
   7. Maximum Warp (per 2 panels): 0.250 inch.
   8. Ventilation: 10.0 sq. inches per sq. ft.

C. Soffit Accessories:
   1. J-Channel: 3/8 inch (10 mm) by 12 feet, 6 inch length, for vertical and eave applications.
   2. F-Channel: 5/8 inch (15.88 mm) and 3/4 inch by 12 feet 6 inches (3.81 m) length.
   3. Soffit Double Channel Lineal: 3/8 inch or 1/2 inch by 12 feet, 6 inches length, for eave applications.
   4. Soffit Cove Trim: 1/2 inch by 12 feet, 6 inches length.
   5. Color: Match soffit color.

2.5 ACCESSORIES

A. Provide all related accessories, trim, etc. for a complete installation.

B. Nails: Hot dipped galvanized type, non-staining, for concealed installation.
   1. Vinyl Siding Nails: Minimum 0.313 inch diameter head and 0.125 inch shank diameter; length required to penetrate support minimum 0.75 inch.

C. Building Paper: Spun bonded polyolefin sheeting, Tyvek or Equal.

D. Flashings: 26 gauge thick metal to match siding.

E. Accessory Components:
   1. Vinyl starter strips, J-mold, F-mold, interior and exterior corner posts, and related trim profiles; of same material and finish as siding/soffits.

PART 3 EXECUTION

3.1 PREPARATION

A. Verify framing conditions are within allowable tolerances without twists, bows, waves, etc.

3.2 INSTALLATION

A. Install vinyl siding in accordance with ASTM D4756 and manufacturer’s instructions.

B. Install all required supplemental blocking and furring as required to allow installation as scheduled.

C. Nail vinyl siding into solid backing per manufacturer’s requirements.

1. Nail to aligned pattern.

D. Align level, and plumb.

E. Install metal flashings at areas required by siding manufacturer.

F. Install corner strips, closures, trim.

G. Install sealant as applicable to prevent weather penetration. Maintain neat appearance.

H. Install flashing around openings, etc.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTIONS 07 62 00 - SHEET METAL, FLASHING AND TRIM

PART 1 GENERAL

1.1 WORK INCLUDES BUT NOT LIMITED TO:

General: Intent of project is to provide new sheet metal components for the roof systems and related fascia / rake components.

A. Installation of new sheet metal items:
   1. Drip edges [face less than 3 ½ inches, non-wind rated]
   2. Fascia and rake metal covers.
   3. Fasteners.
   4. Bib flashing, counter flashing and other sheet metal items.
   5. Gutters and downspouts.

1.2 APPLICABLE REFERENCES

A. General: The following references form a part of this specification.
   1. ASTM A653 Metallic Coated, Sheet Steel [Galvanized], Grade A, Hot Dipped, Zinc Coated, Coating Class G90.
   2. ASTM A792, Metallic Coated, Sheet Steel [Galvalume and Galvalume plus], Grade 40, Coating Class A250 [galvalume] or AZ55 [galvalume plus], 55 % Aluminum-45 % Zinc Alloy.
   3. ASTM A755, Pre-Finished, Sheet Steel [Galvanized/galvalume], Grade 40, Coating Class A250 or G90, Pre-painted by the coil coating process.
   4. ASTM B209, Aluminum.
   5. ASTM E108 Fire Test of Roof Coverings.
   6. [FMG] Factory Mutual Global - Current Approval System [NAV assembly numbers], Loss Prevention Data Sheets for Roof Deck Securement for Above Deck Roof Components, Perimeter Flashings, Wind Design-ANSI/FM 4474, Approval Standard FM 4470 and Roof Loads for Construction
   7. [UL] Underwriters Laboratories - Roofing Materials and Systems Directory, Fire Resistance Directory, Current Edition.
   8. [NRCA] National Roofing Contractors Association - Current Roofing and Waterproofing Manual, including shop-fabricated edge metal testing data.
   9. [AISC] Manual of Steel Construction
   10. [SMACNA] Sheet Metal and Air Conditioning Contractors Association-Current Manual
   11. [OSHA] Occupational Safety and Health Administration, Guidelines
   12. [ASCE] 7-10 Minimum Design Loads for Buildings
   13. [ANSI/SPRI/FM] 4435 standard ES-1-17 Wind Design for Edge Systems
   14. [NFPA] National Fire Protection Association, 58 Liquefied Petroleum Gas Code
   15. [ANSI/SPRI] WD-1 Wind Design Standards

1.3 QUALITY ASSURANCE

A. Fabricator/Installer: Company specializing with skilled workers in sheet metal with minimum five years documented experience, never been terminated by a manufacturer for workmanship problems and be capable of providing the warranties as specified.

B. Sheet Metal items and installation shall comply with SMACNA's [Architectural Sheet Metal] and NRCA [Roofing] current manuals.

1.4 COORDINATION

A. Coordinate sheet metal flashing, trim layout installation with adjoining roofing to provide a leakproof, secure, non-corrosive installation.

1.5 PERFORMANCE REQUIREMENTS

A. Fire Hazard Classification: Underwriters Laboratories [UL], Use only Class A fire-rated materials as tested in accordance with ASTM E 108 or UL 790 for exterior fire.

B. Install sheet metal items to withstand wind loads, structural movement, by preventing buckling, opening of joints, hole elongation, failure of joint sealant, failure of connections and other detrimental effects.

C. All perimeter metal items [copings and edges] must have been tested to resist equal or greater wind design load.

1.6 DELIVERY, STORAGE and HANDLING

A. Do not overload structure with storage of materials; verify roof deck weight capacity and location of structural supports, only items needed that day shall be stored on the roof. Limit loads on roof to 25 pounds per square foot for uniformly distributed loads for wood decks. Store and protect products in accordance with manufacturer's instructions.

B. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact. Protect sheet metal items during transportation and handling.

C. Store products in weather-protected environment [manufacturer's plastic wrap is accepted for proper protection, unless wrap is broken, torn, removed], clear of ground 4 inches minimum and exposure from direct sunlight. Use breathable tarps for moisture protection as needed. Damaged materials will be marked 'rejected' by the Contractor / Owner or RDA and removed from the site.

D. Storage of flammable liquids in buildings is prohibited. All combustible debris shall be removed from the site daily.

1.7 WEATHER CONDITIONS

A. Do not apply materials during inclement weather, high winds or when the chance of rain is 60% or greater, percentage as listed on www: weather.com for the local area, percentage as listed when read at 7 AM local time or at time of work commencement.

1.8 SEQUENCING and SCHEDULING

A. Building space underneath roof work is utilized by on-going operations. Coordinate all work with Owner including, material storage, scaffolding [as required] and Contractor parking. Owner's approval required before proceeding with the work. **Contractor must provide overhead protection from falling materials/debris at building entry points.**

1.9 MANUFACTURERS WARRANTIES

A. Provide a manufacturer's warranty for both repairs/replacements due to any faults in the material and workmanship. Any repairs/replacement due to normal wear and tear, material finish defects and workmanship defects. Warranty shall cover finish fading, chalking, cracking, peeling or failure of paint to adherer to base metal.
   1. Sheet metal manufacturer of record must provide a [20] twenty-year finish warranty for the metal fascia, coping and edge as outlined herein, covering, finish and base metal. Warranty shall be a lifetime warranty for defects of material or failure to resist wind speeds.

B. In the event of a default by the contractor, the manufacturer will provide a new contractor to fulfill the warranty obligation.

1.10 DEFINITIONS

A. Shop fabricated includes items that will be formed at the fabricators shop predominately by press brake. Prefabricated or manufactured items will be plant manufactured ready for installation. Both items must be wind rated in compliance with ANSI/SPRI/FM ES-1-17

PART 2 PRODUCTS

General: All products shall be state approved and Building Code approved as applicable. Some items below may not be required for this project, but are outlined herein if required during course of work due to changing conditions or changes in scope.

2.1 FABRICATION

A. Fabricate sheet metal items to comply with recommendations in SMACNA [architectural Sheet metal manual] and NRCA's [the NRCA roofing manual]. Conceal fasteners and expansion provisions where possible on exposed to view items. Provide expansion provisions as recommended where lapped or bayonet type expansion cannot be used.

2.2 FASTENERS/SPECIALTY ITEMS

General: Fasteners/Anchors: strength, type and configuration must meet the required pull test resistance for each attachment application. Fasteners rate and pattern must be FMG or local code approved to meet the intent of the wind uplift rating specified. The Contractor shall determine fastener lengths, minimum embedment: steel 3/4-inch, concrete/concrete block-1 ¼ inch, wood-1 1/4 inch. Fastener manufacturers listed are ITW Buildex, IWT Red Head and Tru-Fast or Equal. All fasteners shall be corrosion resistant steel in accordance with meeting ASTM F1667 or type 304 - 316 stainless.

A. Summary of fasteners and requirements are as follows:

1. Metal Counterflashing and other LG metal sheets to Wood, ITW Buildex, 'Scots Teks' [AB point] stainless steel-hex head, ¼ inch, corrosion resistance steel shank with EPDM washer.
2. Metal Counterflashing and Other LG Sheet Metal [exposed] to Masonry, ITW Red Head, 1/4 inch, 'Scots Tapcon', stainless steel-hex head, HL treads, corrosion resistant steel shank, with EPDM washer.
3. Termination Bars [exposed] to Masonry, ITW Red Head, ¼ inch, 'Scots Tapcon', stainless steel-hex head, HL treads, corrosion resistant steel shank, with EPDM washer.
4. General Purpose Stainless Steel: Series 304 fasteners, with or w/out EPDM washers.

B. Summary of specialty items and requirements as follows:

1. Counter-flashing: Pre-finished, .032 aluminum, fabricated in lengths maximum 12 feet, designed to be removable. CF to be notched and lapped at inside corners and joints. Flashings shall be provided at the intersection of the roofs, adjoining walls or projections through the deck [chimney/ vent stacks etc.].
2. Exposed Flashing: .032 pre-finished aluminum, brake formed to profiles required.
3. Concealed Flashing: .024 pre-finished aluminum, brake formed to profiles required.
4. Fascia / Rake Cover: .032 pre-finished aluminum, brake formed to profiles required.
5. Downspouts: .024 inch thick pre-finished aluminum, corrugated rectangular profile with smooth with flat lock seams, complete with mitered elbows, size 3 x 4 inches, unless otherwise noted.
6. Gutter: .032 inch thick pre-finished aluminum, K style profile, continuous, straight back, size 5 inch x 3 1/2 inch, with gutter spacers, spaced at 24 inches on center. Complete with end pieces, outlet tubes and other items required. Fabricate expansion joints, expansion joint covers with same metal as the gutter. Longest length possible, 50 foot maximum, between expansion butt joints.
7. Downspout Hangers: 1/16-inch-thick aluminum. Straps with hidden anchors
8. Drip Edge: .024 prefinished aluminum, formed profile
9. Step Flashing, Sheet Metal: 24 gauge pre-finished galvanized metal as shown.

2.3 SHEET METAL

General: All metal shall be shop fabricated in accordance with SMACNA 6th Edition or other details or pre-manufactured as shown. All pre-finished metal shall be fabricated using galvanized steel unless not available [Coordinate with Building Manufacturer Requirements].

A. Pre-Finished Aluminum: ASTM B209, 3105 H15 alloy, thickness .032 [or as noted], primed and repainted by the coil coating, finished exposed to view side with a fluoropolymer kynar 500 PVDF resin coating and a wash coat .5 mil thick applied to the reverse side, 20-year warranty covering fade, chalking and film integrity.
   1. Colors as selected by Owner

B. Galvanized Sheet Steel: ASTM A653, hot dipped, zinc-coated, G90, gauges as shown.

2.4 SEALANTS/TAPES

General: Provide joint sealants, backings and other materials as required to seal joint that are compatible with each other based on test and field experience.

A. ASTM C920, Type S, Grade NS, Class 25 as required for each joint condition, single component, elastomeric silicone polymer, non-staining, non-shrinking, non-sagging and ultra-violet resistance, clear or to match surrounding existing color.
   1. Provide where sealant is exposed or movement exceeds butyl sealant capability.

B. Gutter: GE Silicone II or equal, Clear in color.

C. Butyl Sealant: ASTM C1311, single component, solvent released butyl rubber sealant, polyisobutylene plasticized.

D. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release paper.

2.5 ACCESSORIES

A. Anchors and Supports: Profiled to suit gutters and downspouts.
   1. Anchoring Devices: Hidden hanger / anchors In accordance with SMACNA requirements with screw type fasteners.
   2. Gutter Supports: Concealed Hanger Brackets.
   3. Aluminum Downspout Supports: Straps with hidden fasteners.

B. Splash guard: Pre-finished aluminum valley splash guards, standard size and type.

C. Gutter Expansion Joint: SMACNA Figure 1-6 Lap Type Gutter Expansion Joint. Locate at 50’ maximum intervals.

D. Fasteners: Hidden screw type, same material and finish as gutters and downspouts.

E. Primer: Zinc molybdate and Galvanized iron type for aluminum.

PART 3 EXECUTION

3.1 EXAMINATION AND CONDITIONS

A. Verify that surfaces and site conditions are ready to receive work.

3.2 PROTECTION

A. Protect building surfaces/interior spaces against damage from work.

B. Provide, erect barricades, guardrails as required by applicable regulatory advisory to protect occupants of building and workers.

3.3 INSTALLATION OF SHEET METAL AND SPECIALTY ITEMS

General: Sheet metal items shall be installed in accordance with manufacturers and NRCA's / SMACNA recommendations and details from their current manual. Anchor sheet metal items securely in place with provisions for expansion. Use items as required to complete the sheet metal or drainage system. Where dissimilar metals contact each other, protect against galvanic action by coating material as recommended by the fabricator. Seal joints with sealant as required for a watertight condition.

A. Counter-flashing [CF] shall be surfaced mounted [SM] or in existing or new reglets / receivers with lap joints 4 inches. Attach SM with concrete self-tapping [tapcon] or wood fasteners, as applicable fitted with an EPDM washer at 12 inches on center, 1-inch minimum embedment. Attach reglets installed CF with components recommended by the manufacturer, including metal wedges and edge crimping. Apply a bead of sealant on the top of 45% angle lip of the metal flashing, if SM type. CF shall overlap base flashing a minimum of three inches, fit tightly to base flashing and shall terminate no lower than 4 inch above finished roof surface, unless approved by the manufacturer.

B. Downspouts shall be attached to the gutter with screws. Ensure downspout sections are attached to the wall with 1-inch-wide, .063-inch-thick aluminum straps [2 per 10 foot section] - Fig 1-35G SMACNA 6th Edition, using 2 fasteners per strap. Downspouts terminating at ground shall be provided with an elbow fitting and a concrete splash block.

C. Gutter to be attached to fascia / substrate at 24 inches on center with stainless steel screws thru spacers/gutter back. Screws to penetrate wood 1 ¼ inch. Provide mitered corners, end caps, splash guards and other items required. Drip edge shall extend into gutter 2-3 inches.

3.4 INSTALLATION

A. Comply with SMACNA's "Architectural Sheet Metal Manual." Allow for thermal expansion; set true to line and level. Install Work with laps, joints, and seams permanently watertight and weatherproof; conceal fasteners where possible.
   1. Roof-Edge Flashings: Secure metal flashings at roof edges according to FM Loss Prevention Data Sheet 1-49 for specified wind zone.

B. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.

C. Fabricate nonmoving seams in sheet metal with flat-lock seams. For metals other than aluminum, tin edges to be seamed, form seams, and solder.

D. Separations: Separate non-compatible metals or corrosive substrates with a coating of asphalt mastic or other permanent separation.

E. Install pre-finished metal flashings as required by conditions and as necessary to watershed adjacent building materials and components.

F. Install pre-finished metal cladding / cover over wood fascia in continuous lengths, brake formed to suit conditions.

G. Install gutters in one continuous sections sloped at ¼"- ½" every 20'-0" maximum. Anchor gutters to building using concealed gutter hanger brackets at 24 inches on center typical screwed directly into fascia/building structure. Attach aluminum gutters to fascia between ½" and 1" below drip edge of shingle. Shingle should extend 1" over gutter.
   1. Install gutter expansion joints at maximum of 50' intervals.

H. Sheet Metal: Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts and accessories.

I. Direct downspout to discharge to underground storm drain piping connect via adaptor sized to fit downspout.

3.5 CLEANING

A. In areas where finished surfaces are soiled by any other source of soiling caused by work of this section, consult manufacturer for cleaning advice.

END OF SECTION

SECTION 07 90 00 - JOINT PROTECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes sealants and joint backing.

1.2 SUBMITTALS

A. Product Data: Submit data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

1.3 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.

1.4 QUALITY ASSURANCE

A. Sealant shall be installed by a qualified sealant applicator for any/all joint sealant exposed to view. Owner reserves the right to request a mockup of the quality for the joint sealant installation.

PART 2 PRODUCTS

2.1 JOINT SEALERS

A. Manufacturers:
   1. Tremco [basis of design]
   2. Sika
   3. GE Silicones.
   4. Pecora Corp.
   5. DAP

B. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

C. Low-Emitting Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Liquid-Applied Sealants: Comply with ASTM C920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C920 classifications for type, grade, class, and uses related to exposure and joint substrates.

E. Suitability for Contact with Food: Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

F. Additional Movement Capability: Where additional movement capability is specified, provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, to withstand the specified percentage change in the joint width existing at the time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated.

G. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range, unless otherwise noted.

2.2 SILICONE JOINT SEALANTS:

A. **Type S-1**: Single component, nonsag, Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 100/50, Use NT

1. Tremco Spectrem 1 or Spectrem 800 or Equal

B. **Type S-2**: Single Component, nonsag, Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 50, use NT
   1. Tremco Spectrem 2 or Spectrem 3 or Equal

C. **Type S-3**: Multi-Component, Nonsag, Silicone Joint Sealant: ASTM C920, Type M, Grade NS, Class 50, Use NT
   1. Tremco Spectrem 4-TS or Equal

D. **Type S-4**: Single Component, nonsag, Traffic-Grade, Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 100/50, Use T
   1. Tremco Spectrem 800 or Equal

E. **Type S-5**: Mildew Resistant, Single Component, Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 25, Use NT
   1. Tremco Tremsil 200 Sanitary or Equal

2.3 URETHANE JOINT SEALANTS

A. **Type U-1**: Single Component, nonsag, Urethane Joint Sealant: ASTM C920, Type S, Grade NS, Class 25 or 35, Use NT:
   1. Tremco Dymonic or Dymonic FC or Equal

B. **Type U-2**: Single Component, nonsag, Traffic Grade, Urethane Joint Sealant: ASTM C920, Type S, Grade NS, Class 25, Use T.
   1. Tremco Vulkem 116 or Equal.

C. **Type U-3**: Multi-Component, nonsag, Urethane Joint Sealant: ASTM C920, Type M, Grade NS, Class 25, Use T.
   1. Tremco Dymeric 240 or Dymeric 240 FC or Equal

D. **Type U-4**: Multi-Component, nonsag, Urethane Joint Sealant: ASTM C920, Type M, Grade NS, Class 25, Use NT.
   1. Tremco Vulken 227 or Equal

E. **Type U-5**: Multi-Component, nonsag, Traffic Grade, Urethane Joint Sealant: ASTM C920, Type M, Grade NS, Class 25, Use T.
   1. Tremco Vulken 227 or Equal

2.4 BUTYL JOINT SEALANTS

A. **Type B-1**: Butyl Rubber based Joint Sealants: ASTM C 1311
   1. Tremco General Purpose Butyl Sealant or Equal

2.5 LATEX JOINT SEALANTS

A. **Type L-1**: Latex Joint Sealant: Acrylic latex or Siliconized Acrylic Latex: ASTM C834, Type OP, Grade NF or better
   1. Tremco Tremflex 834 or Equal.

B. **Type L-2**: Paintable Mildew-Resistant Latex Joint Sealant: Acrylic Latex or Siliconized Acrylic Latex: ASTM C834, Type OP, Grade NF or better.
   1. Tremco Tremflex 834 or Equal.

2.6 ACCESSORIES

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin) as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and

density to control sealant depth and otherwise contribute to producing optimum sealant performance:
1. Oversized to 30 to 50 percent larger than joint width.

C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

E. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated. Non-staining type, recommended by sealant manufacturer to suit application.

F. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

G. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate surfaces and joint openings are ready to receive work.

B. 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.

3.3 INSTALLATION

A. Perform installation in accordance with ASTM C1193.

B. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.

C. Install bond breaker where joint backing is not used.

D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

F. Tool joints concave.

3.4 SCHEDULE

A. Joint-Sealant Application: Exterior joints in vertical surfaces and non-traffic horizontal surfaces.
1. Joint locations such as, but not limited to:
   a. Construction joints in cast-in-place concrete.
   b. Control joints in unit masonry.
      1) Provide joint sealants slightly darker than the adjacent masonry units. Provide multiple colors as may be required for match.

c. Perimeter joints between masonry, concrete, or stone and frames of doors, windows, storefronts, louvers, and similar openings.
d. Lintels and shelf angles to masonry construction.
e. Butt joints between metal panels.
f. Control and expansion joints in ceiling/soffit and similar overhead surfaces.
g. Exterior joints between dissimilar materials where the joining of the two surfaces leaves a gap between the meeting materials or components as may be dictated by various methods of construction to make building watertight.
h. Other joints as indicated on Drawings.

2. Provide one of the following acceptable sealants as approved by manufacturer for substrates and uses indicated: **Type S-1, Type S-2, Type S-3**
3. Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
1. Joint locations such as, but not limited to:
a. Isolation joints in cast-in-place concrete slabs.
b. Perimeter of floor slabs or concrete curbs which abut vertical surfaces.
c. Areas around all piping systems that penetrate the slab or foundation walls below grade (utility trenches, electrical conduits, plumbing penetrations, etc.).
d. Control and expansion joints in tile flooring.
e. Other joints as indicated on Drawings.
2. Provide one of the following acceptable sealants as approved by manufacturer for substrates and uses indicated: **Type S-4**
3. Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal non-traffic surfaces, subject to movement, unless otherwise noted.
1. Joint locations such as, but not limited to:
a. Control joints on exposed interior surfaces of exterior walls.
b. Interior joints where interior partitions meet exterior walls of dissimilar materials and components.
c. Other joints as indicated on Drawings.
2. Provide one of the following acceptable sealants as approved by manufacturer for substrates and uses indicated: **Type U-1**
3. Color: As selected by Architect from manufacturer's full range of colors. Paintable Sealant, prep for painted finish.

D. Joint-Sealant Application: Interior joints in vertical surfaces subject to abuse and movement.
1. Joint locations such as, but not limited to:
a. Vertical joints, including control joints and joints between masonry and structural support members, on exposed surfaces of interior unit masonry walls and partitions.
2. Provide one of the following acceptable sealants as approved by manufacturer for substrates and uses indicated: **Type U-2**
3. Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Interior joints in vertical surfaces not subject to movement.
1. Joint locations such as, but not limited to:
a. Interior perimeter joints of exterior openings.
b. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
c. Interior joints between dissimilar materials where a gap is created where materials meet, unless otherwise noted.
2. Provide one of the following acceptable sealants as approved by manufacturer for substrates and uses indicated: **Type L-1, Type L-2**
3. Color: As selected by Architect from manufacturer's full range of colors.

F. Joint-Sealant Application: Mildew-resistant interior joints in non-painted vertical surfaces and horizontal nontraffic surfaces.
   1. Joint locations such as, but not limited to:
      a. Interior joints between plumbing fixtures and adjoining floors and counters.
      b. Joints between countertops and backsplashes.
      c. For interior joints in non-painted vertical and horizontal surfaces where incidental food contact may occur.
      d. Tile control and expansion joints where indicated.
      e. Other joints as indicated on Drawings.
   2. Provide one of the following acceptable sealants as approved by manufacturer for substrates and uses indicated: **Type S-5**
      a. For potable water storage sealant shall be certified by National Sanitation Foundation as conforming to the requirements of NSF Standard 61 – Drinking Water System Components – Health Effect.
      b. For surfaces where incidental food contact may occur sealant must comply with United States Department of Agriculture (USDA) guidelines for incidental food contact with cured sealant.
   3. Color: As selected by Architect from manufacturer's full range of colors.

G. Joint-Sealant Application: Mildew-resistant interior joints in painted vertical surfaces and horizontal non-traffic surfaces.
   1. Joint locations such as, but not limited to:
      a. Interior joints between plumbing fixtures and adjoining painted walls.
      b. Joints where countertops or backsplashes intersect painted walls.
      c. For interior joints in painted vertical and horizontal surfaces where incidental food contact may occur.
   2. Provide one of the following acceptable sealants as approved by manufacturer for substrates and uses indicated: **Type L-2**
   3. Color: As selected by Architect from manufacturer's full range of colors.

H. Joint-Sealant Application: Interior or exterior joints in vertical surfaces between laps in fabrications of sheet metal.
   1. Provide one of the following acceptable sealants as approved by manufacturer for substrates and uses indicated: **Type U-1**
   2. Color: As selected by Architect from manufacturer's full range of colors.

I. Joint-Sealant Application: Exterior joints under metal thresholds and saddles, sill plates, or as bedding sealant for sheet metal flashing and frames of metal or wood.
   1. Provide one of the following acceptable sealants as approved by manufacturer for substrates and uses indicated: **Type S-1, Type U-1, Type B-1**
   2. Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes steel doors and frames; non-rated.

1.2 SUBMITTALS

A. Shop Drawings: Indicate door and frame elevations, internal reinforcement, cut-outs for glazing, and finishes.

B. Product Data: Submit door and frame configurations, location of cut-outs for hardware reinforcement.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
   1. ANSI 250.8 - Recommended Specifications for Standard Steel Doors and Frames.
   2. DHI - Door Hardware Institute - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.

B. Fire Rated Door Construction: Conform to NFPA 252.

C. Surface Burning Characteristics:
   1. Foam Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

D. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation material.

PART 2 PRODUCTS

2.1 STEEL DOORS AND FRAMES

A. Manufacturers:
   1. Ceco Door Products.
   2. Fleming Steel Doors and Frames.
   3. Kewanee Corp.
   4. Republic Doors.
   5. Steelcraft.

B. Product Description: Standard shop fabricated steel doors, and frames; fire rated and non-rated types; flush face.

2.2 DOOR TYPES

A. Exterior Doors (Insulated): ANSI A250.8, SDI 108, 1-3/4 inch thick.
   1. Level 3 – Extra Heavy Duty, Model 1, full flush design, 16 gauge face galvanized sheets, steel construction, factory applied baked on primer.
   2. Door Face sheets: One sheet of metal with no visible seams.
   3. Lock and Hinge Edge: Continuously of spot welded full height of door, with welds filled and ground smooth.
   4. Top: Closed with a flush steel and closure treatment.
   5. Bottom: Closed with a recessed channel end closure.
   6. Interior Core: Foamed in place, closed cell, polyurethane chemically bonded to the door face sheets.

2.3 FRAME TYPES

A. General: Provide steel frames for doors, transoms, sidelights, borrowed lights, and other openings that comply with ANSI A250.8 and with details indicated for type and profile. Conceal fastenings, unless otherwise indicated.

B. Thermal Break Exterior Frames: Subject to the same compliance standards and requirements as standard hollow metal frames. Tested for thermal performance in accordance with NFRC 400. Exterior frames shall be thermally broken for use in masonry construction. Fabricate with 1/16 inch positive thermal break and integral vinyl weatherstripping.

C. Frames for exterior door openings shall be fabricated with 2 inch face at jambs, heads and mullions, unless otherwise indicated.
   1. 16 gauge steel, galvanized, A60, steel with factory applied baked on primer, for Level 3 doors.
   2. Thermally break frames with manufacturers standard thermal break material, at exterior openings, unless otherwise noted or fire-rating is required.

2.4 FRAME ASSEMBLIES

A. Stops and Beads: Furnish minimum 20 gauge metal glazing beads with the hollow metal frames at transoms, side lights, interior glazed panels, and other locations where beads are indicated in pressed steel frames. Glazing beads for exterior frames shall be on the interior side of transoms and sidelights. Glazing beads for interior frames shall be on the same side of door.

B. Mortar/Plaster Guards: Provide minimum 26 gauge steel plaster guards or mortar boxes, welded to the frame, at back of door hardware cutouts where materials might obstruct hardware operation.

C. Provide minimum 9 MSG hinge reinforcement, including all doors with continuous type hinges.

D. Provide minimum 12 MSG frame head reinforcement for closers, surface, and concealed overhead stop and holders, removable mullions, flush bolts, and top latch of vertical rod exit devices.

E. Door Silencers: Drill stops and install 3 silencers on strike jambs of single swing frames and 2 silencers on heads of double swing frames.

F. Hollow metal frames requiring continuous hinges shall have a continuous mortar guard of a minimum 26 gauge steel, welded to frame, the full height of the door. Mortar guards shall be shop applied by frame supplier.

G. Exterior door frames shall be furnished with a mortar box installed, as a junction box for door security monitoring contacts. Install junction box in frame head 12 inches from strike edge of frame to centerline of box. Weld junction box to inside of 1-15/16 inch frame rabbet.
   1. Mortar Box
      a. 10 inch by 1-3/4 inch by 1-3/4 inch inside dimensions.
      b. Serves as mortar shield.
      c. Knock outs at each end for standard conduit fittings.

2.5 FRAME ANCHORAGE

A. Jamb Anchors
   1. Frames Set in Wood or Metal Stud Partitions: Provide a minimum of three 18 gauge metallic coated "Z" shaped sheet metal jamb anchor clips welded in each jamb.

B. Provide head anchors at door or window heads over 5 feet wide at minimum 3 feet o.c. mounted in metal-stud partitions.

C. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottom of jambs.
   1. Provide 14 gauge minimum anchors punched for two 3/8 inch diameter bolts each.

2.6 FABRICATION

A. Fabricate steel door and frame units to comply with ANSI A250.8 and to be rigid, neat in appearance, and free from defects, warp, or buckle. Accurately form metal to required sizes and profiles. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at the Project site.

B. Hollow-Metal Doors:
   1. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches, unless otherwise noted.
   2. Top Edge Closures: Close top edges of doors with inverted closures, except provide flush closure at exterior doors of same material as face sheets.
   3. Bottom Edge Closures: Close bottom edge of doors with end closures or channels of same material as face sheets. Coordinate with weatherstripping.
   4. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

C. Hollow-Metal Frames: Where frames are fabricated in Sections due to shipping or handling limitations, provide alignment plates of angles at each joint, fabricated of same thickness metal as frames.
   1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings
   2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
      a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
      b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

D. Fabricate concealed stiffeners, reinforcement, edge channels, and moldings from either cold rolled or hot rolled steel (at fabricator's option).
   1. Minimum hardware reinforcement gage shall comply with Table 4 of ANSI/SDI A250.8 “SDI 100, Recommended Specifications for Standard Steel Doors and Frames”.

E. Clearances for Non-Fire Rated Doors: Not to exceed 1/8 inch at jambs and heads, 3/32 inch between pairs of doors, and 3/4 inch at bottom.

F. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.

G. Door Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
   1. Prepare hollow metal units to receive mortised and concealed door hardware, including cutouts, steel reinforcing, drilling, and tapping in accordance with final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A250.6 and ANSI/BHMA A156.115 for preparation of hollow-metal work for hardware.
   2. Reinforce hollow metal units to receive nontemplated, mortised, and surface mounted hardware. Hardware installer shall drill and tap for surface applied hardware.

H. Stops and Moldings: Manufacturer's standard, formed from minimum 20 gauge steel sheet stops and moldings around glazed lites and louvers. Form corners of stops and moldings with butted or mitered hairline joints.
   1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
   2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite are capable of being removed independently.
   3. Provide nonremovable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
   4. Provide screw applied, removable, glazing stops on inside of glass, louvers, and other panels in doors.
   5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.7 STEEL FINISHES

A. General: Comply with recommendations in "Metal Finishes Manual by Architectural and Metal Products (AMP) Division of National Association of Architectural Metal Manufacturers (NAAMM) for applying and designating finishes.
   1. Finish standard steel door and frames after assembly.

B. Metallic Coated Steel Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A780.
   1. Galvanizing Repair Paint: High zinc dust content paint for regalvanizing welds in steel, complying with SSPC Paint 20.

C. Steel Surface Preparation: Clean surfaces to comply with SSPC-SP1, SSPC-SP 3, SSPC-SP 6/NACE No. 3.

D. Factory Priming for Field Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 0.7 mils.
   1. Shop Primer: Manufacturer's standard, fast curing, lead and chromate free primer complying with ANSI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field applied finish paint system indicated; and providing a sound foundation for field applied topcoats despite prolonged exposure.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify opening sizes and tolerances are acceptable.

3.2 PREPARATION

A. Prior to installation, adjust and securely brace standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
   1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   2. Alignment: Plus or minus 1/16 inch, measured on jambs on a horizontal line parallel to plane of wall.
   3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines,
   4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

B. Drill and tap doors and frames to receive nontemplated mortised and surface mounted door hardware.

3.3 INSTALLATION

A. General: Provide doors and frames of sizes, thicknesses, and designs indicated. Install standard steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Install doors and frames in accordance with ANSI A250.11.

C. Install fire rated doors and frames in accordance with NFPA 80.

D. Coordinate installation of doors and frames with installation of hardware specified in Section 08 71 00.

E. Coordinate door frames with masonry and gypsum board wall construction for frame anchor placement.

F. Steel Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
   1. Non Fire Rated Standard Steel Doors:
      a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
      b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
      c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
      d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.
   2. Fire Rated Doors: Install with clearances according to NFPA 80.
   3. Smoke Control Door Assemblies: Install according to NFPA 105.

G. Coordinate installation of glass and glazing specified in Section 08 80 00.

H. Adjust door for smooth and balanced door movement.

I. Tolerances:
   1. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.4 SCHEDULE

A. Refer to Drawings.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 08 36 13 - SECTIONAL DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes electrical overhead sectional doors, operating hardware, and controls.

1.2 SYSTEM DESCRIPTION

A. Operating System: Conform to following criteria:
   1. Electric operation with manual operation in case of power failure; transit speed of 12 inches per second.

1.3 REFERENCES

A. ANSI/DASMA 108 - Standard Method for Testing Sectional Garage Doors and Rolling Doors: Determination of Structural Performance Under Uniform Static Air Pressure Difference

B. UL: Underwriters Laboratories, Inc.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Wind Loads: Design and size components to withstand loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with applicable code.

B. Wiring Connections: Requirements for electrical characteristics.
   1. 115 volts, single phase, 60 Hz.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

D. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.5 SUBMITTALS

A. Shop Drawings: Indicate opening dimensions and tolerances, component construction, connections and details, anchorage methods and spacing, hardware and locations, and installation details.

B. Product Data: Submit data on electric operating devices.

C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit data for motor and transmission, shaft and gearing, lubrication frequency, control adjustments, spare part sources.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened labeled packaging until ready for installation.

B. Protect materials from exposure to moisture until ready for installation.

C. Store materials in a dry, ventilated weathertight location.

D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.9 WARRANTY

A. Provide manufacturers product warranty as follows:
   1. Warranty: Limited lifetime against splitting and cracking, 10 year against delamination of polyurethane foam from steel face and all other components for 1 year.

PART 2 PRODUCTS

2.1 SECTIONAL OVERHEAD DOORS

A. Manufacturers:
   1. Overhead Door Company – Basis of Design, Thermacore 490 Series
   2. Clopay Building Products
   3. Wayne-Dalton Corporation
   4. Raynor
   5. CHI Overhead Doors

B. Insulated Steel Sectional Overhead Doors: Thermacore 490 Series Insulated Steel Doors by Overhead Door Corporation.
   1. Door Assembly: Rigid steel fully insulated construction with a metal foam metal sandwich panel. Fabricated with EPDM seals between sections.
      a. Size: As indicated on the Drawings.
      b. Panel Thickness: 2 inches (51 mm) nominal.
      c. Panel Style: Shiplap panels.
         1) Classic Raised Panel (short panel), 494 Series.
      d. Exterior Steel: .012 inch (.030 mm) nominal, high strength hot dipped galvanized steel with an embossed wood grain texture.
      e. Insulation: CFC-free foamed in place polyurethane.
      f. Thermal Values: R-value of 17.5. U-Factor of < 0.37
      g. Air Infiltration: <0.40.
      h. Windload Design: Provide to meet the Design/Performance requirements specified.
   2. Finish/Color: Two coat baked-on polyester. Color as selected from full range of available colors and finishes.
   3. Bottom fixture: DASMA 103 red-head fasteners.
   4. Standard rollers.
   5. Electric Openers.
      a. Operator Controls:
         1) Push-button operated control stations with open, close, and stop buttons.
         2) Surface mounting.
         3) Interior location.
         4) Each overhead door shall have [2] remote control operators. This is in addition to the push button controls within the building.

2.2 TRACKS, SUPPORTS, AND ACCESSORIES

A. Tracks: Manufacturer's standard, galvanized-steel track system of configuration indicated, sized for door size and weight, designed for lift type indicated and clearances shown on Drawings, and complying with ASTM A 653 for minimum G60 zinc coating. Provide complete track assembly

including brackets, bracing, and reinforcement for rigid support of ball-bearing roller guides for required door type and size. Slot vertical sections of track spaced 2 inches apart for door-drop safety device. Slope tracks at proper angle from vertical or design tracks to ensure tight closure at jambs when door unit is closed.

B. Track Reinforcement and Supports: Galvanized-steel track reinforcement and support members, complying with ASTM A 36 and ASTM A 123. Secure, reinforce, and support tracks as required for door size and weight to provide strength and rigidity without sag, sway, and vibration during opening and closing of doors.
   1. Vertical Track Assembly: Track with continuous reinforcing angle attached to track and attached to wall with jamb brackets.
   2. Horizontal Track Assembly: Track with continuous reinforcing angle attached to track and supported at points from curve in track to end of track by laterally braced attachments to overhead structural members.

C. Weatherseals: Replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom and top of sectional door unless otherwise indicated.

2.3 HARDWARE/SAFETY DEVICES

A. General: Provide heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless-steel, or other corrosion-resistant fasteners, to suit door type.

B. Hinges: Heavy-duty, galvanized-steel hinges of not less than 0.079-inch nominal coated thickness at each end stile and at each intermediate stile, according to manufacturer's written recommendations for door size. Attach hinges to door sections through stiles and rails with bolts and lock nuts or lock washers and nuts. Use rivets or self-tapping fasteners where access to nuts is not possible. Provide double-end hinges where required, for doors over 16 feet wide unless otherwise recommended by door manufacturer.

C. Rollers: Heavy-duty rollers with steel ball-bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Extend roller shaft through both hinges where double hinges are required. Provide 3-inch diameter roller tires for 3-inch wide track and 2-inch diameter roller tires for 2-inch wide track.

D. Push/Pull Handles: For push-up or emergency-operated doors, provide galvanized-steel lifting handles on each side of door.

E. Safety Devices
   1. Provide roller shields, to help to prevent fingers from getting caught by roller in track.
   2. Provide tapered reverse angle mounted tracks, in lieu of standard reverse angle mounted, to keep fingers from reaching in from the outside.
   3. Provide center back-hang and rear back-hanging device in case one would ever fail.

2.4 LOCKING DEVICES

A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on single-jamb side, operable from inside only.

2.5 COUNTERBALANCE MECHANISM

A. Torsion Spring: Counterbalance mechanism consisting of adjustable-tension torsion springs fabricated from steel-spring wire complying with ASTM A 229/A 229M, mounted on torsion shaft made of steel tube or solid steel. Provide springs designed for number of operation cycles indicated.

B. Cable Drums and Shaft for Doors: Cast-aluminum or gray-iron casting cable drums mounted on torsion shaft and grooved to receive door-lifting cables as door is raised. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of torsion shaft.

Provide one additional midpoint bracket for shafts up to 16 feet long and two additional brackets at one-third points to support shafts more than 16 feet long unless closer spacing is recommended by door manufacturer.

C. Cables: Galvanized-steel lifting cables with cable safety factor of at least 7 to 1.

D. Cable Safety Device: Include a spring-loaded steel or spring-loaded bronze cam mounted to bottom door roller assembly on each side and designed to automatically stop door if either lifting cable breaks.

E. Bracket: Provide anchor support bracket as required to connect stationary end of spring to the wall and to level the shaft and prevent sag.

F. Bumper: Provide a spring bumper at each horizontal track to cushion door at end of opening operation.

2.6 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Requirements for electrical characteristics.
   1. 1/2 hp motor.
   2. 115 volts, single phase, 60 Hz service.
   3. 20 amperes maximum circuit breaker size.

B. Motor Type: NEMA MG1, Type 4.

C. Wiring Terminations: Furnish terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.

D. Disconnect Switch: Factory mount disconnect switch on equipment.

E. Electric Operator: Center mounted draw bar assembly, adjustable safety friction clutch; brake system actuated by independent voltage solenoid controlled by motor starter; enclosed gear driven limit switch; enclosed magnetic cross line reversing starter; mounting brackets and hardware.

F. Control Station: Standard three button (open-close-stop) momentary type, control for each electric operator; 24 volt circuit, surface mounted.

G. Hand Held Transmitter: Digital control, resettable.

H. Safety Edge: At bottom of door panel, full width; electro-mechanical sensitized type, wired to reverse door upon striking object; hollow neoprene or rubber covered to provide weatherstrip seal.

I. Photoelectric Sensor: Furnish system which detects obstruction and reverses door without requiring door to contact obstruction.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify wall openings are ready to receive work and opening dimensions and tolerances are within limits.

3.2 PREPARATION

A. Prepare door opening components to permit installation of door unit and preserve continuity of wall air barrier and vapor retarder seal.

3.3 INSTALLATION

A. Anchor components securely to wall construction and building framing without distortion or stress. Secure tracks to structural members only.

B. Fit and align door assembly including hardware, level and plumb, to provide smooth operation.

C. Coordinate installation of electrical service. Complete wiring from disconnect to unit components.

D. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07 90 00.

3.4 ERECTION TOLERANCES

A. Maximum Variation From Plumb: 1/16 inch.

B. Maximum Variation From Level: 1/16 inch.

C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 08 71 00 - DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes commercial door hardware for the following:
   1. Swinging doors.
   2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:
   1. Mechanical door hardware.

C. Related Sections:
   1. Division 08 Section “Hollow Metal Doors and Frames”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
   1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
   2. ICC/IBC - International Building Code.
   3. NFPA 70 - National Electrical Code.
   4. NFPA 80 - Fire Doors and Windows.
   5. NFPA 101 - Life Safety Code.
   6. NFPA 105 - Installation of Smoke Door Assemblies.
   7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:
   1. ANSI/BHMA Certified Product Standards - A156 Series.
   2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
   3. ANSI/UL 294 - Access Control System Units.
   4. UL 305 - Panic Hardware.
   5. ANSI/UL 437- Key Locks.

1.2 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
   1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
   2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
   3. Content: Include the following information:
      a. Type, style, function, size, label, hand, and finish of each door hardware item.
      b. Manufacturer of each item.
      c. Fastenings and other pertinent information.
      d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.

e. Explanation of abbreviations, symbols, and codes contained in schedule.
f. Mounting locations for door hardware.
g. Door and frame sizes and materials.
h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Keying Schedule: After a keying meeting with the Owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

D. Informational Submittals:
1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation.

1.3 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 5 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Supplier Qualifications: Supplier/Dealers, verifiably authorized and in good standing with the primary product manufacturers, with a minimum of five (5) years of experience supplying integrated access control systems similar in material, design, and scope to that indicated for this Project and whose work has resulted in construction with a proven record of successful in-service performance.
1. ASSA ABLOY access control products are required to be supplied only through designated “Authorized Channel Partners.”

F. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

G. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

H. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
   1. Function of building, purpose of each area and degree of security required.
   2. Plans for existing and future key system expansion.
   3. Requirements for key control storage and software.
   4. Installation of permanent keys, cylinder cores and software.
   5. Address and requirements for delivery of keys.

I. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
   1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
   2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
   3. Review sequence of operation narratives for each unique access controlled opening.
   4. Review and finalize construction schedule and verify availability of materials.
   5. Review the required inspecting, testing, commissioning, and demonstration procedures

J. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.5 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.6 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
   1. Structural failures including excessive deflection, cracking, or breakage.
   2. Faulty operation of the hardware.
   3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:
   1. Ten years for mortise locks and latches.
   2. Five years for exit hardware.
   3. Twenty five years for manual overhead door closer bodies.

1.7 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
   1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
   1. Quantity: Provide the following hinge quantity:
      a. Three Hinges: For doors with heights 61 to 90 inches.
   2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
      a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
   3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
      a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
   4. Hinge Options: Comply with the following:

a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

5. Manufacturers:
   a. Hager Companies (HA) - BB Series, 5 knuckle.
   b. Ives (IV) - 5BB Series, 5 knuckle.
   c. McKinney (MK) - TA/T4A Series, 5 knuckle.

2.3 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.
   1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
   2. Furnish dust proof strikes for bottom bolts.
   3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
   4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
   5. Manufacturers:
      a. Burns Manufacturing (BU)
      b. Door Controls International (DC).
      c. Trimco (TC).

2.4 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
   1. Manufacturers:
      a. Falcon, Match Existing Facility Keyway[s], Field Verify
      b. No substitution.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:
   1. Threaded mortise cylinders with rings and cams to suit hardware application.
   2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
   3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
   4. Tubular deadlocks and other auxiliary locks.
   5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
   6. Keyway: Match Facility Standard with interchangeable cores.

C. Keying System: Each type of lock and cylinders to be provided as “0” bitted for Owner keying at later date. Provide construction cylinders at exterior perimeter doors.
   1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
   2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
   3. Existing System: Field verify and key cylinders to match Owner's existing system.

D. Key Quantity: Provide the following minimum number of keys:
   1. Change Keys per Cylinder: Two (2)

E. Construction Keying: Provide construction master keyed cylinders at exterior doors.

F. Key Registration List (Bitting List):
   1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.

2. Provide transcript list in writing or electronic file as directed by the Owner.

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
   1. Mortise locks to be certified Security Grade 1.
   2. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.13 requirements to 14.5 million cycles or greater.
   3. Where specified, provide status indicators with highly reflective color and wording for “locked/unlocked” or “vacant/occupied” with custom wording options if required. Indicator to be located above the cylinder with the inside thumb-turn not blocking the visibility of the indicator status. Indicator window size to be a minimum of 2.1” x 0.6” with a curved design allowing a 180 degree viewing angle with protective covering to prevent tampering.
   4. Manufacturers:
      a. Facility Standard – No Substitutions.

2.6 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
   1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
   2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
   3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
   4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:
   1. Strikes for Mortise Locks and Latches: BHMA A156.13.
   2. Strikes for Bored Locks and Latches: BHMA A156.2.
   3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
   4. Dustproof Strikes: BHMA A156.16.

2.7 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:
   1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
   2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
   3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
   4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
   5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
   6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
   1. Heavy duty surface mounted door closers shall have a 25-year warranty.
   2. Manufacturers:
      a. Norton Rixson (NO) - 7500 Series.

2.8 ARCHITECTURAL TRIM

A. Door Protective Trim
   1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
   2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1” LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
   3. Where plates are applied to fire rated doors with the top of the plate more than 16” above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer’s catalog and template book for specific requirements for size and applications.
   4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
      a. Stainless Steel: 300 grade, 050-inch thick.
   5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
   6. Manufacturers:
      a. Hager Companies (HA).
      b. Rockwood (RO).
      c. Trimco (TC).

2.9 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

C. Manufacturers:
   1. National Guard Products (NG).
   2. Pemko (PE).
   3. Reese Enterprises, Inc. (RE).

2.10 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.11 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

3.3 INSTALLATION

A. Install each item of mechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
   1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
   1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
   2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
   3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
   4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Door Closers:
   1. Install closers on room side of corridor doors, and stair side of stairways.
   2. Lobby doors: Mount on vestibule side.
   3. Exterior doors: Parallel rigid arm installation.
   4. Where through-bolts are required, install closers using only manufacturer-furnished through-bolts.
   5. Install closers using only manufacturer-furnished template machine screws for metal doors and manufacturer -furnished wood screws for wood doors.
   6. Coordinate with door supplier to provide proper blocking for surface mounting.
   7. Use of self-drilling or self-tapping fasteners is not allowed.
   8. Where full glazed door units are specified, use closer arm and mounting configuration as required to avoid use of drop brackets whenever possible.

E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.
   1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
   1. Quantities listed are for each pair of doors, or for each single door.
   2. The supplier is responsible for handing and sizing all products.
   3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
   4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Hardware Sets – Refer to Drawings

END OF SECTION

SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Gypsum board and joint treatment.

1.2 SUBMITTALS

A. Product Data: Submit data on gypsum board, joint tape, and accessories.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with:
   1. ASTM C840.
   2. GA-201 - Gypsum Board for Walls and Ceilings.
   3. GA-214 - Recommended Specification: Levels of Gypsum Board Finish.
   4. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.
   5. GA-600 - Fire Resistance Design Manual.

B. Furnish framing materials in accordance with SSMA - Product Technical Information.

C. Fire Rated Wall Construction: Rating as indicated on Drawings.
   1. Tested Rating: Determined in accordance with ASTM E119.
   2. Fire Rated Partitions: Listed assembly by UL.
   3. Fire Rated Ceilings and Soffits: Listed assembly by UL.

D. Surface Burning Characteristics:
   1. Textile Wall Coverings: Comply with one of the following:
      a. Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Manufacturers:
   1. United States Gypsum Co. [basis of design]
   2. BPB Americas Inc.
   3. G-P Gypsum Corp.
   4. National Gypsum Co.
   5. Certainteed.

2.2 COMPONENTS

A. Gypsum Board Materials: ASTM C1396/C1396M; Type X fire resistant where indicated on Drawings.
   1. GB-1: Standard Gypsum Board: 5/8 inch thick, maximum available length in place; ends square cut, tapered and beveled edges.

2.3 ACCESSORIES

A. Gypsum Board Accessories: ASTM C1047; metal; corner beads, edge trim, and expansion joints.
   1. Metal Accessories: Galvanized steel.
   2. Edge Trim: Type LC, L, or U bead as appropriate for conditions

B. Joint Materials: ASTM C475/C475M, GA-201 and GA-216, reinforcing tape, joint compound, and water.

C. Fasteners: ASTM C1002, GA-216; length to suit application.

D. Gypsum Board Screws: ASTM C954, ASTM C1002; length to suit application.
   1. Screws for Steel Framing: Type W and S as appropriate for wall type.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions are ready to receive work.

3.2 INSTALLATION

A. Gypsum Board:
   1. Install gypsum board in accordance with GA-216.
   2. Fasten gypsum board to furring or framing with screws.
   3. Place control joints consistent with lines of building spaces as directed by Architect.
   4. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
   5. Seal cut edges and holes in gypsum board as appropriate for the condition.

B. Joint Treatment:
   1. Finish in accordance with GA-214 for all new work. Gypsum board to be fire taped and spackled only.

C.

3.3 SCHEDULE

A. Gypsum Board Ceiling Finishes: GB-1: Tape and Spackle

END OF SECTION

SECTION 10 44 00 - FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Fire extinguishers.

1.2 PERFORMANCE REQUIREMENTS

A. Conform to **NFPA 10 and Local Fire Department Requirements**.

B. Provide extinguishers classified and labeled by UL for purpose specified and indicated.

C. Provide fire extinguisher cabinets classified and labeled by UL or testing firm acceptable to authority having jurisdiction for purpose specified and indicated.

1.3 SUBMITTALS

A. Shop Drawings: Indicate cabinet physical dimensions, rough-in measurements for recessed cabinets, wall bracket mounted measurements, location, fire ratings.

B. Product Data: Extinguisher operational features, color and finish, anchorage details.

C. Manufacturer's Installation Instructions: Special criteria and wall opening coordination requirements.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Test, refill or recharge schedules, and re-certification requirements.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Do not install extinguishers when ambient temperature are capable of freezing extinguisher ingredients.

PART 2 PRODUCTS

2.1 FIRE EXTINGUISHERS

A. Manufacturers:
   1. Larsen
   2. Kidde
   3. Equal

B. Dry Chemical Type: Aluminum tank, with pressure gage; Class A: B: C, Size 10.

2.2 ACCESSORIES

A. Extinguisher Brackets: Formed steel, white enamel finish.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify rough openings for cabinet are correctly sized and located.

3.2 INSTALLATION

A. Install wall brackets maximum 48 inches from finished floor to top of extinguisher handle.

B. Position cabinet signage as required by authorities having jurisdiction.

END OF SECTION

SECTION 31 10 00 - SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Removing surface debris,
   2. Removing designated paving, curbs, and site development, etc.
   3. Removing topsoil and subsoil.
   4. Rough grading and site contouring.
   5. Removing trees, shrubs, and other plant life.

B. Coordinate Scope on the Civil Engineering drawings. Follow intent of the Civil Drawings, and the full extent of the requirements to provide the proposed improvements for the building addition, site and utility improvements.

1.2 SUBMITTALS

A. Product Data: Submit data for herbicide.

PART 2 PRODUCTS

2.1 SITE CLEARING

A. Herbicide: approved by authority having jurisdiction.

PART 3 EXECUTION

3.1 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work. Identify all public and private utilities as is applicable to the work. Provide services of private utility location services as is applicable to the work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

3.2 PROTECTION

A. Locate, identify, and protect utilities indicated to remain, from damage.

B. Protect trees, plant growth, and features designated to remain, as final landscaping.

C. Protect bench marks, [survey control points,] [and existing structures] from damage or displacement.

3.3 CLEARING

A. Clear areas required for access to site and execution of Work.

B. Remove paving, curbs, and other site improvements to be removed.

C. Remove trees and shrubs. Remove stumps, main root ball and root system.

D. Apply herbicide to remaining stumps or plant life to inhibit growth.

3.4 REMOVALS

A. Remove debris, rock, and extracted plant life from the Site.

B. Remove paving, curbs, and existing site improvements as identified.
   1. Neatly saw cut edges at right angle to surface. Replace / re-cut any failed edges for a new clean cut.

C. Remove abandoned utilities. Indicate removal termination point on as-built drawings if applicable.

D. Continuously clean up and remove waste materials from the Site. Do not allow materials to accumulate on Site.

E. Do no burn or bury materials on Site. Leave Site in clean condition.

3.5 TOPSOIL EXCAVATION

A. Excavate topsoil from **areas to be further excavated, relandscaped, or regraded** without mixing with foreign materials for use in finish grading.

B. Do not excavate wet topsoil.

C. Stockpile in area designated on Site to depth not exceeding **8** feet and protect from erosion. Stockpile material per the Civil Drawings until disposal.

D. Remove excess topsoil not intended for reuse from Site, unless directed otherwise by Owner.

3.6 ROUGH GRADING

A. Identify required lines, levels, contours, and datum.

B. Identify known underground, above ground, and aerial utilities. Stake and flag locations.

C. Notify utility company to remove and relocate utilities as applicable.

D. Excavate topsoil and subsoil from areas to be further excavated, re-landscaped or re-graded.

E. Stockpile topsoil in area designated on site.

F. Remove excess topsoil and subsoil not being reused, from site.

3.7 CLEAN UP

A. Remove debris, rock larger than 1.5 cu ft, and extracted plant life from site.

3.8 SCHEDULE

A. Refer to Civil Drawings for extent of scope and work areas.

END OF SECTION

SECTION 31 20 00 - EARTH MOVING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes site grading, removal of topsoil and subsoil, building excavating and trenching, backfilling, and compacting.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

A. Topsoil: Reusable excavated or Imported friable loam; free of subsoil, roots, grass, weeds, large stone, and foreign matter. ASTM D 4268, pH range of 5.5 to 7, minimum of 4 percent organic material content.
   1. Amend existing in place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Surface soil may be supplemented with imported or manufactured topsoil from off-site sources.

B. Subsoil: Excavated material, graded free of lumps larger than 6 inches, rocks larger than 2 inches, organic material, and debris. ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM or a combination there of.

2.2 FILL MATERIALS

A. Type A - Select Granular Material: Coarse stone: Pit run, washed natural stone; free of shale, clay, friable material, sand, debris.
   1. Grading: AASHTO M147; Grade 57.

2.3 ACCESSORIES

A. Geotextile Fabric: See 32 90 00.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Call OUPS to mark locations of all underground utilities a minimum of 3 working days prior to starting work.

B. Identify required lines, levels, contours, and datum.

C. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

D. Maintain and protect existing utilities to remain.

E. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil bearing water runoff of airborne dust to adjacent properties.

F. Prevent surface water and ground water from entering excavations, from ponding on prepared sub-grades, and from flooding the project site and surrounding areas.

G. Verify foundation walls are braced to support surcharge forces imposed by backfilling operations.

3.2 PROTECTION OF ADJACENT WORK

A. Underpin adjacent structures which may be damaged by excavation work, including service utilities and pipe chases.

B. Grade excavation top perimeter to prevent surface water run-off into excavation or to adjacent properties.

C. Contractor shall be responsible for damage to existing utilities caused by construction operations.

3.3 TOPSOIL EXCAVATING

A. Do not excavate wet topsoil.

B. Excavate topsoil and stockpile for reuse. Remove excess topsoil not planned / required for reuse from the Site.

3.4 SUBSOIL EXCAVATING

A. Do not remove wet subsoil. Remove groundwater by pumping to keep excavations dry.

B. Excavate subsoil required for new building foundations and construction operations, and other Work.

C. Slope banks [to angle of repose or less, until shored.

D. Do not interfere with 45 degree bearing splay of foundations.

E. Correct unauthorized excavation at no cost to Owner.

F. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; follow requirements of Geo-Technical Report.

G. Proof roll bearing surfaces. Fill soft spots with engineered fill and compact uniformly to 95 percent of maximum density.

H. Correct unauthorized excavation at no cost to the Owner.

I. Fill over-excavated areas under structure bearing surfaces in accordance with direction by Architect/Engineer.

J. Stockpile subsoil in area designated on site. Remove excess subsoil not being reused from site.

3.5 PREPARATION FOR BACKFILLING

A. Compact subgrade to density requirements for subsequent backfill materials.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with structural fill and compact to density equal to or greater than requirements for subsequent fill material.

C. Scarify subgrade surface as recommended for the conditions.

D. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

3.6 FILLING

A. Fill areas to contours and elevations with unfrozen materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

C. Place fill material in continuous layers and compact, Coordinate with Civil Drawings. Layer in maximum 8 inches compacted depth unless otherwise approved by Architect / Engineer.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Make grade changes gradual. Blend slope into level areas.

F. Repair or replace items indicated to remain damaged by excavation or filling.

3.7 TRENCHING

A. Excavate for storm sewer, sanitary sewer, electric, water, gas and other utilities per the Civil Drawings and to meet the applicable installation standards by the local municipality.

B. Cut trenches sufficiently wide to enable installation of utilities and allow inspection.

C. Hand trim excavation and leave free of loose matter.

D. Support pipe during placement and compaction of bedding fill.

E. Backfill trenches to required contours and elevations.

F. Place and compact fill materials as for Backfilling.

3.8 BACKFILLING

A. Backfill areas to contours and elevations. Use unfrozen and unsaturated materials.

B. Backfill systematically, as early as possible, to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

C. Place geotextile fabric over unstable subsoil.

D. Place material in continuous layers as follows:
   1. Soil Materials: Maximum 8 inches compacted depth.
   2. Fill Materials: Maximum 8 inches compacted depth.

E. Employ placement method so not to disturb or damage foundations or utilities in trenches.

F. Maintain optimum moisture content of backfill materials to attain required compaction density.

G. Backfill against supported foundation walls.

H. Slope grade away from building minimum 2 percent for a minimum distance of 10 feet, unless noted otherwise. Coordinate with Civil Drawings.

3.9 PLACING TOPSOIL

A. Place topsoil in areas where seeding, sodding, and planting is scheduled.

B. Fine grade topsoil eliminating rough or low areas. Maintain levels, profiles, and contours of subgrade.

C. Remove large stone, roots, grass, weeds, debris, and foreign material while spreading.

D. Lightly compact placed topsoil.

E. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.10 SCHEDULE

A. Coordinate with Civil Engineering Drawings.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 31 23 17 - TRENCHING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Excavating trenches for utilities outside building to utility service.
   2. Compacted fill from top of utility bedding to subgrade elevations.
   3. Backfilling and compaction.

1.2 QUALITY ASSURANCE

A. Perform Work according to authority having jurisdiction standards as applicable.

1.3 FIELD MEASUREMENTS

A. Verify field measurements, inverts, etc prior to fabrication.

1.4 COORDINATION

A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A. Subsoil / Granular Fill: Type as required to suit conditions, suitability installed in compacted lifts.

2.2 ACCESSORIES

A. Geotextile Fabric: Non-biodegradable, woven.

PART 3 EXECUTION

3.1 LINES AND GRADES

A. Lay pipes to lines and grades indicated.
   1. Architect/Engineer may make changes in lines, grades, and depths of utilities when changes are required for Project conditions.

B. Use laser-beam instrument with qualified operator to establish lines and grades.

3.2 PREPARATION

A. Call local utility line information service not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum locations.

C. Protect plant life, lawns and other features remaining as portion of final landscaping.

D. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E. Maintain and protect above and below grade utilities indicated to remain.

F. Establish temporary traffic control when trenching is performed in public right-of-way. Relocate controls as required during progress of Work.

3.3 TRENCHING

A. Excavate subsoil required for utilities to utility service.

B. Perform excavation within 24 inches of existing utility service according to utility's requirements.

C. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with Work.

D. Excavate bottom of trenches maximum 24 inches wider than outside diameter of pipe.

E. Excavate trenches to depth required for utilities. Provide uniform and continuous bearing and support for bedding material and pipe and utilities.

F. Do not interfere with 45-degree bearing splay of foundations.

G. When Project conditions permit, slope side walls of excavation starting 24 inches above top of pipe. When side walls cannot be sloped, provide sheeting and shoring to protect excavation as specified in this Section.

H. When subsurface materials at bottom of trench are loose or soft, excavate to greater depth as directed by Architect/Engineer until suitable material is encountered.

I. Cut out soft areas of subgrade not capable of compaction in place. Backfill 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 backfill as specified for authorized excavation or replace with fill concrete as directed by Architect/Engineer.

L. Remove excess subsoil not intended for reuse, from Site.

3.4 SHEETING AND SHORING

A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.

B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.

C. Design sheeting and shoring to be removed at completion of excavation Work.

D. Repair damage caused by failure of sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

E. Repair damage to [new] [and] [existing] Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.5 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 geotextile fabric prior to placing subsequent fill materials.

D. Place material in continuous layers as follows:
   1. Subsoil Fill: Maximum 8 inches compacted depth.
   2. Structural Fill: Maximum 6 inches compacted depth.
   3. Granular Fill: Maximum 6 inches compacted depth.

E. Employ placement method that does not disturb or damage foundation perimeter drainage, utilities in trench, and any other obstructions or utilities encountered.

F. Maintain optimum moisture content of fill materials to attain required compaction density.

G. Protect open trench to protect the public/residents.

3.6 TOLERANCES

A. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.7 FIELD QUALITY CONTROL

A. Perform laboratory material tests according to ASTM D1557.

B. Perform in place compaction tests according to following:
   1. Density Tests: ASTM D1556.
   2. Moisture Tests: ASTM D3017.

C. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

3.8 PROTECTION OF FINISHED WORK

A. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 31 31 16 - TERMITE CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Soil treatment for termite control.

1.2 SUBMITTALS

A. Product Data: Submit toxicants to be used, composition by percentage, dilution schedule, intended application rate. Include product label information.

B. Test Reports: Indicate regulatory agency approval reports.

C. Manufacturer's Application Instructions: Indicate caution requirements and in accordance with current product label of chosen pesticide.

D. Certify applications followed NPMA WDO for termite control or other regional location guidance.

1.3 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record [moisture content of soil before application, date and rate of application, areas of application, diary of toxicity meter readings and corresponding soil coverage, and any other pertinent data.

B. Operation and Maintenance Data: Indicate re-treatment schedule.

1.4 WARRANTY

A. Furnish five year warranty for damage and repairs to building and building contents caused by termites. Repair damage. Re-treat where required.

PART 2 PRODUCTS

2.1 MATERIALS

A. Toxicant Chemical: EPA FIFRA approved; synthetically color dyed to permit visual identification of treated soil.

B. Diluent: Recommended by toxicant manufacturer.

2.2 MIXES

A. Mix toxicant to manufacturer's instructions.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.

B. Verify final grading and excavation are complete.

3.2 APPLICATION

A. Apply toxicant at locations indicated in Schedule at end of section.

B. Apply extra treatment to structure penetration surfaces including pipe or ducts, and soil penetrations including grounding rods or posts.

C. Re-treat disturbed treated soil with same toxicant as original treatment.

D. When inspection or testing identifies presence of termites, re-treat soil and re-test.

3.3 SCHEDULES

A. Locations:
   1. Under Slabs-on-Grade.
   2. Both Sides of Foundation Surface.

END OF SECTION

SECTION 32 11 23 - AGGREGATE BASE COURSES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Aggregate subbase.
   2. Aggregate base course.

1.2 SUBMITTALS

A. Product Data:
   1. Geotextile fabric and herbicide.

B. Materials Source: Name of aggregate materials suppliers.

1.3 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout Work.

B. Perform Work according to ODOT standards.

PART 2 PRODUCTS

2.1 AGGREGATE MATERIALS

A. Subgrade: ODOT Item 204.
   1. Compact the subgrade materials that have a maximum dry density of 100 to 105 pounds per cubic foot to not less than 102 percent of maximum dry density. Compact all other subgrade materials to not less than 100 percent of maximum dry density. Determine the maximum dry density using AASHTO T99, AASHTOT T272, or test section method in Supplement 1015.

B. Aggregate Base Course: ODOT Item 304 [304.01 and 304.02].
   1. 98% of the material's maximum dry density as determined by the modified Proctor Test (AASHTOT-180 or ASTM D-1557)
   2. Blended Aggregate Mix.

2.2 ACCESSORIES

A. Geotextile Fabric: AASHTO M288; non-woven, polypropylene.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify compacted substrate is dry and ready to support paving and imposed loads.
   1. Proof-roll substrate in minimum two perpendicular passes to identify soft spots.
   2. Remove soft substrate and replace with compacted fill.

B. Verify substrate has been inspected, gradients and elevations are correct.

3.2 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place fill on soft, muddy, or frozen surfaces.

3.3 AGGREGATE PLACEMENT

A. Install geotextile fabric over subgrade according to manufacturer's instructions.
   1. Lap ends and edges minimum 6 inches.

2. Anchor fabric to subgrade when required to prevent displacement until aggregate is installed.

B. Spread aggregate over prepared substrate to total compacted thickness indicated.

C. Roller compact aggregate to 95 percent maximum density.

D. Level and contour surfaces to elevations, profiles, and gradients indicated.

E. Add small quantities of fine aggregate to coarse aggregate when required to assist compaction.

F. Maintain optimum moisture content of fill materials to attain specified compaction density.

G. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.4 TOLERANCES

A. Maximum Variation From Flat Surface: 1/2 inch measured with 10 foot straight edge.

B. Maximum Variation From Thickness: 1/4 inch.

C. Maximum Variation From Elevation: 1/2 inch.

3.5 COMPACTION

A. Compact materials to 98 percent of maximum density as determined from test strip, according to ASTM D2940.

END OF SECTION

SECTION 32 12 16 - ASPHALT PAVING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Asphalt Paving, Base, Asphalt Maintenance and Rehabilitation and related materials.

1.2 SUBMITTALS

A. Product Data:
   1. Submit product information for asphalt and aggregate materials.
   2. Submit mix design with laboratory test results supporting design.

1.3 QUALITY ASSURANCE

A. Perform Work according to State of Ohio, ODOT standards as applicable.
   1. State of Ohio Department of Transportation Construction and Materials Specifications Guide shall be used as a reference for all applicable materials, construction conditions, operations, and finished products, etc.

B. Mixing Plant: Conform to State of Ohio, ODOT standard.

C. Obtain materials from same source throughout.

1.4 AMBIENT CONDITIONS

A. Do not place asphalt when ambient air or base surface temperature is less than 50 degrees F, or surface is wet or frozen.

B. Place bitumen mixture when temperature is not more than 15 degrees F below bitumen suppliers bill of lading and not more than maximum specified temperature.

PART 2 PRODUCTS

2.1 ASPHALT MATERIALS

A. Subgrade: ODOT Item 204.
   1. Compact the subgrade materials that have a maximum dry density of 100 to 105 pounds per cubic foot to not less than 102 percent of maximum dry density. Compact all other subgrade materials to not less than 100 percent of maximum dry density. Determine the maximum dry density using AASHTO T99, AASHTOT T272, or test section method in Supplement 1015.

B. Aggregate Base Course: ODOT Item 304.
   1. 98% of the material's maximum dry density as determined by the modified Proctor Test (AASHTOT-180 or ASTM D-1557)

C. Tack Coat: ODOT Item 407.
   1. Use one of following types: 702.04 RS-1, SS-1, SS-1h, CRS-1, CSS-1, or CSS-1h; or 702.13

D. Intermediate Asphalt Surface: ODOT Item 403/448, Type 1, medium duty.

E. Asphaltic Concrete Surface Course: ODOT Item 404/448, Type 1, medium duty.

2.2 ASPHALT MAINTENANCE MATERIALS

A. Sealcoat: ASTM D244; ASTM D 2939
   1. Asphalt Emulsion Pavement Sealer with mineral/sand filler, polymer additive, water.

B. Spot Primer: Oil spot primer formulated to ensure adhesion of pavement sealer to oil, gas, grease, and chemical stained areas on asphalt pavement.

C. Crack Seal: ODOT Item 423.
   1. Type II; mixture of PG 64-22 certified binder and polyester fibers; hot applied type. Modified, single component, rubber/asphalt joint and crack sealant. Formulated for sealing asphalt cracks.

PART 3 EXECUTION

3.1 EXAMINATION

A. General:
   1. Install Work in accordance with ODOT and City of Eaton standards, including all base and preparation.
   2. Scheduling: Schedule and manage work to minimize cold joints in the paving system. Coordinate requirements with Owner prior to mobilizing on the job.
   3. Clean all existing surfaces and remove any foreign debris.
   4. Ensure positive drainage to storm drains/ catch basins throughout. Provide leveling course as required to attain proper drainage [confirm conditions with Owner prior to proceeding].

B. Mechanically sweep, blow, or scrub pavement surfaces immediately prior to commencement of Work. Clean pavement surfaces of all loose foreign matter. Verify surfaces are dry.

C. Protect existing improvements, adjacent finishes, overhanging trees, and plant life from heat damage by individual shielding and water spray.

D. Protect manhole covers and frames, catch basin covers and frames.

3.2 APPLICATION – GENERAL REQUIREMENTS

A. New Asphalt Paving
   1. Adjust sub-grade elevations to prep for new asphalt paving and to match adjacent elevations of parking lot where applicable.
   2. Install new compacted aggregate base course.
   3. Notify Owner of any subgrade deficiencies requiring undercut.
   4. NOTE: Contractor responsible to maintain positive drainage across entire lot. Contact Owner for additional directive as needed by existing conditions.
   5. Apply Tack Coat
   6. Machine install base course asphalt over primed area. Minimum thickness of finished, compacted pavement to be as specified and asphalt tonnage yield should be based on the specified compacted minimum thickness. Tickets will be collected at end of each day and final tonnage yield must be within 5% of expected fully compacted yield.
   7. Apply Tack Coat
   8. Machine install surface asphalt over primed area. Minimum thickness of finished, compacted pavement to be as specified and asphalt tonnage yield should be based on the specified compacted minimum thickness. Tickets will be collected at end of each day and final tonnage yield must be within 5% of expected fully compacted yield.
   9. Compact each layer using 3 ton or greater vibratory rollers.
   10. Seal all edges of paved area where matched to existing asphalt surfaces using non-tracking sealant.

END OF SECTION

SECTION 32 13 13 - CONCRETE PAVING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Concrete paving for: paving, curbs, and sidewalks

1.2 SUBMITTALS

A. Product Data:
   1. Submit product information for concrete, cement, and aggregate materials.
   2. Submit mix design with laboratory test results supporting design.

1.3 QUALITY ASSURANCE

A. Perform Work according to State of Ohio, ODOT standards as applicable.
   1. State of Ohio Department of Transportation Construction and Materials Specifications Guide shall be used as a reference for all applicable materials, construction conditions, operations, and finished products, etc.
   2. Perform Work in accordance with ACI 330.

PART 2 PRODUCTS

2.1 MATERIALS

A. Subgrade: ODOT Item 204.
   1. Compact the subgrade materials that have a maximum dry density of 100 to 105 pounds per cubic foot to not less than 102 percent of maximum dry density. Compact all other subgrade materials to not less than 100 percent of maximum dry density. Determine the maximum dry density using AASHTO T99, AASHTOT T272, or test section method in Supplement 1015.

B. Aggregate Base Course: ODOT Item 304 [304.01 and 304.02].
   1. 98% of the material's maximum dry density as determined by the modified Proctor Test (AASHTOT-180 or ASTM D-1557)

C. Concrete: ODOT Item 452 Nonreinforced Portland cement concrete pavement

D. Concrete: ODOT Item 499.
   1. Class QC 1, 4,000 PSI design strength at 28 days; 2,000 Coulombs maximum Permeability; Cement Content minimum 520 lb.; well –graded aggregate
   2. Maximum slump 4 inches.
   3. Air Content: 6% +/- 2%; ASTM C260

E. Cement: ASTM C150 Normal Type I Portland type, gray color.

F. Fine and Coarse Aggregates: ASTM C33, Class 4S.

G. Water: ASTM C94, potable, Clean, not detrimental to concrete without deleterious amounts of chloride ions.

2.2 REINFORCEMENT MATERIALS

A. Reinforcement:
   1. Reinforcing Steel: ASTM A615/A615M, 60 ksi yield grade, deformed billet bars, uncoated finish.
   2. Welded Deformed Wire Fabric: ASTM A497/A497M; in flat sheets; unfinished.
   3. Dowels: ASTM A615/A615M; 60 ksi yield strength, plain steel bars; cut to length indicated on Drawings, square ends with burrs removed; unfinished.

2.3 ACCESSORIES

A. Forms: Wood or steel material, profiled to suit conditions; conform to ACI 301.

B. Joint Filler: ASTM D1751; Asphalt impregnated wood fiberboard.

C. Reinforcement Mesh: 6x6-W1.4xW1.4 welded wire reinforcement

D. Liquid Surface Sealer: Penetrating Silane/Siloxane Sealer; clear, non-yellowing UV resistant; vapor permeable.

E. Curing Compound: ASTM C309, white pigmented water based liquid membrane.

F. Use accelerating admixtures in cold weather only when approved by the Architect/Engineer in writing. Use of admixtures will not relax cold weather placement requirements.

G. Use set retarding admixtures during hot weather only when approved by the Architect/Engineer in writing.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify gradients and elevations of base.

B. Verify compacted base is ready to support paving and imposed loads.

C. Moisten substrate to minimize absorption of water from fresh concrete.

D. Sawcut and remove existing concrete to allow installation of new concrete as indicated.

3.2 FORMING

A. Place and secure forms to correct location, dimension, and profile. Secure forms to allow the placement of concrete to be continuous and true.

B. Place joint filler in joints, vertical in position, in straight lines. Secure to formwork.

C. Place control joints at maximum 30 foot intervals. Align joints.

D. Place joint filler between paving components and other appurtenances.

E. Chamfer outside corners and edges of permanently exposed concrete. – ¾” chamfer

3.3 PLACING CONCRETE - GENERAL

A. Place concrete in accordance with ACI 330.

B. Place reinforcement to achieve pavement and concrete alignment as appropriate.

C. Check with electronic level that the correct slopes have been achieved to provide drainage.

D. Do not disturb reinforcement or formwork components during concrete placement.

E. Place concrete continuously between predetermined joints.

F. Apply surface sealer per manufacturer’s instructions.

3.4 INSTALLATION

A. Finishing:
   1. Apply surface retarder where exposed aggregate finish is required.
   2. Area Paving: Light broom.
   3. Sidewalk Surfaces: Light broom, radiused and trowel joint edges.
   4. Curbs and Gutters: Light broom.
   5. Apply curing compound on exposed concrete surfaces immediately after finishing.

END OF SECTION

THIS SHEET LEFT INTENTIONALLY BLANK

SECTION 32 92 19 – SEEDING / SITE REPAIR

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Seeding and Site Repairs related to the site development.

1.2 DEFINITIONS

A. Weeds: Vegetative species other than specified species to be established in given area.

1.3 SUBMITTALS

A. Product Data: Topsoil, 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. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 PRODUCTS

2.1 SEED MIXTURE

A. Seed Mixture: Green Velvet's Finest mixture, fescue or bluegrass to match existing and for soils conditions, sun/shade, etc. ODOT Item 659.

B. Commercial Fertilizer for seed: Commercial-grade complete fertilizer, consisting of 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

C. Slow-Release Fertilizer: Granular fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium; 5 percent nitrogen; 10 percent phosphorous; and 5 percent potassium; by weight.

D. Straw Mulch: Clean, mildew- and seed-free salt hay or threshed straw.

2.2 SOIL AND SOIL MODIFICATION MATERIALS

A. Topsoil: ASTM D 5268, Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, free of subsoil, clay or impurities, plants, weeds and roots, free of stones 1 inch or larger. Equal to ODOT Item 653.

B. Fertilizer: Fifty percent of elements derived from organic sources,

C. Lime: ASTM C602, Class T agricultural limestone containing a minimum 80 percent calcium carbonate equivalent.

D. Organic Compost: leaf and mushroom compost to be added to mulch at 1 cubic yard per 5 cubic yards of mulch.

E. Weed-Control Additive: Preen weed control.

2.3 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.

2.4 SOURCE QUALITY CONTROL

A. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.

B. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.

C. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify prepared soil base is ready to receive Work of this Section.

3.2 PLACING TOPSOIL

A. Spread topsoil to minimum depth of 6 inches. Rake smooth.

B. Grade topsoil to eliminate rough, low or soft areas. Slope for positive drainage.

C. Place topsoil into pits and beds intended for plant root balls to minimum thickness of 6 inches.

D. At affected areas of the site, strip existing topsoil and stockpile for reuse. Spread as required to meet new grades.

E. Provide additional fill as required to complete the work. Additional fill material shall be free of organic matter, rubbish, debris, and rocks greater than 4” diameter.

3.3 SEEDING

A. Apply seed at a rate of 10 lb per 1000 sq ft, evenly in two intersecting directions.

B. Immediately following seeding, apply agricultural mulch to a thickness of 1/8 inches.

C. Apply water with fine spray immediately after each area has been mulched.

3.4 SEED PROTECTION

A. Identify seeded areas with stakes and string around area periphery.

3.5 MAINTENANCE

A. Water to prevent grass and soil from drying out. Maintain until vigorously growing.

B. Control growth of weeds. Apply herbicides. Remedy damage resulting from improper use of herbicides.

C. Immediately reseed areas showing bare spots.

D. Repair washouts or gullies.

3.6 SCHEDULE OF SITE REPAIR

A. Backfill areas impacted by work with topsoil.

B. Re-seed area impacted by work.

C. Apply mulch/straw.

D. Water and maintain seed until vigorously growing.

END OF SECTION