Contract Documents

for

Rochester Housing Authority 675 West Main Street Rochester, NY 14611

Scattered Sites

Porch Replacements – P14

## 111 Rugby Ave 134A & B York Street 24 Chandler St

Rochester N.Y. July 31, 2022.



APD Engineering & Architecture. PLLC 615 Fishers Run

Victor, NY 14564

**Table of Contents**

[Division 1 - General Requirements 1](#_bookmark0)

[SECTION 01 10 00 – SUMMARY OF WORK 2](#_bookmark1)

[SECTION 01 20 00 – PRICE & PAYMENT PROCEDURES 5](#_bookmark2)

[SECTION 01 30 00 – ADMINISTRATIVE REQUIREMENTS 6](#_bookmark3)

[SECTION 01 32 16 – CONSTRUCTION PROGRESS SCHEDULE 9](#_bookmark4)

[SECTION 01 33 00 – SUBMITTAL PROCEDURES 11](#_bookmark5)

[SECTION 01 60 00 – PRODUCT REQUIREMENTS 15](#_bookmark6)

[SECTION 01 61 16 – VOLATILE ORGANIC COMPOUND 18](#_bookmark7)

[SECTION 01 73 00 – EXECUTION 21](#_bookmark8)

[SECTION 01 74 00 – CLEANING & WASTE MANAGEMENT 23](#_bookmark9)

[SECTION 01 77 00 – CLOSEOUT PROCEDURES 25](#_bookmark10)

[SECTION 01 78 00 – CLOSEOUT SUBMITTALS 27](#_bookmark11)

[SECTION 01 78 36 – WARRANTIES 31](#_bookmark12)

[Division 2 - Existing Conditions 34](#_bookmark13)

[SECTION 02 41 19 – SELECTIVE DEMOLITION 35](#_bookmark14)

[Division 3 - Concrete 38](#_bookmark15)

[SECTION 03 30 00 – CONCRETE 39](#_bookmark16)

[Division 6 - Carpentry 41](#_bookmark17)

[SECTION 06 10 00 – ROUGH CARPENTRY 42](#_bookmark18)

[SECTION 06 17 53 – PREFABRICATED WOOD TRUSSES 44](#_bookmark19)

[SECTION 06 73 00 – COMPOSITE DECKING 46](#_bookmark20)

[SECTION 06 81 00 – COMPOSITE RAILINGS 48](#_bookmark21)

[Division 7 – Thermal & Moisture Protection 2](#_bookmark22)

[SECTION 07 25 00 – WEATHER RESISTIVE BARRIER 3](#_bookmark23)

[SECTION 07 31 13 – FIBERGLASS-BASED ASPHALT SHINGLES AND ACCESSORIES 6](#_bookmark24)

[SECTION 07 46 33 - PLASTIC SIDING 11](#_bookmark25)

[SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM 14](#_bookmark26)

[SECTION 07 92 00 – JOINT SEALANTS 18](#_bookmark27)

[Division 09 – Finishes 20](#_bookmark28)

[SECTION 09 91 00 – PAINTING 21](#_bookmark29)

[Division 09 – Finishes 20](#_bookmark28)

[SECTION 09 91 00 – PAINTING 21](#_bookmark29)

[Division 31 - Earthwork 25](#_bookmark30)

[SECTION 31 23 00 – EXCAVATION & FILL 43](#_bookmark31)

[Division 32 – Exterior Improvements 45](#_bookmark32)

SECTION 32 16 23 – SIDEWALKS Error! Bookmark not defined.

[SECTION 32 92 00 LAWN RESTORATION 48](#_bookmark33)

# Division 1 - General Requirements

# SECTION 01 10 00 – SUMMARY OF WORK

## PART 1 – GENERAL

1. This section includes:
	1. Project description and general scope of work covered by Contract Documents.
	2. Additional contractor's requirements.
	3. Work sequence.
	4. Contractor use of premises.
2. Owner / Consultant Identification
	1. The Owner is: Rochester Housing Authority, 675 W. Main Street, Rochester, NY 14611.
	2. The Architect is:

APD Engineering & Architecture, PLLC, 615 Fishers Run, Victor, NY 14564

**Steven Palmeri**, RA Senior Architect spalmeri@apd.com Direct Phone +1.585.742.0238.

1. Project Description:
	1. Project Name: Scattered Sites Porch Improvements – P9, 10 &11.
	2. Project Location: Various sites located in Rochester New York.
	3. Summary of Scope: The project generally consists of the removal and replacement of wooden porches with new pressure treated structure and composite decking and vinyl railing systems. Each site is unique and may also include concrete and asphalt paving work, as described in the drawings and specification, summarized as:
		1. Demolition of the existing wooden porches and railings including all sub-structure.
		2. Some existing foundations and piers are to remain while others are removed and replaced as noted on the drawings.
		3. Install new pressure treated sub-structure.
		4. Install new pressure treated columns with column wraps to support the existing roof where indicated.
		5. Install new pressure treated railing posts with vinyl post covers.
		6. Install new composite stair and deck design.
		7. Install new vinyl railing system.
		8. Install new concrete walkways, flatwork and stairs as indicated.
		9. Access to each unit is to be maintained at all times. Provide code compliant temporary stairs or ramps as required for tenant access.
	4. The requirements described in the Sections of Division 1 shall apply to the Work described in all other Divisions.
	5. The Work shall be implemented under **Three Single Prime** contracts.
2. Other Requirements Integral to the Contract:
	1. All bidders are forewarned to review all information within the Contract Documents.
	2. All Contractors are responsible for the layout and survey of their own work or work requirements.
	3. All Contractors shall be responsible for obtaining the applicable permits required for their work prior to beginning the Work.
	4. All Work shall be performed in accordance with City of Rochester regulations, including the Bureau of Water, Street Specifications, and Bureau of Planning & Zoning.
	5. All contractors are required to construct the project by the completion date listed in the RHA Bid Proposal Form. All contractors shall comply with the intentions of the Schedule.
	6. All Contractors shall provide any and all temporary shoring, bracing, supports or protection systems necessary to expedite the work requirements including the maintenance of worker safety.
	7. All contractors are responsible for the safety of their own workers, subcontractors, work area, and other personnel on site. Each and every contractor is responsible for maintaining a safe work site and utilizing best safety procedures.
	8. All contractors are responsible for providing a safe exit/entrance to a unit for tenants to use at all times.
3. Order of Precedence in the Contract Documents

In the event that a discrepancy exists between the Drawings and Specifications, interpretation shall be given preference in the following descending order, with later dates taking precedence over earlierdates:

* 1. Addenda amendments to the Drawings.
	2. Addenda amendments to the Specifications.
	3. Drawings.
	4. Schedules, piping and wiring diagrams take precedence over other data shown on the drawings.
	5. Notes take precedence over other data shown on the drawings and except schedules.
	6. Specifications.

If discrepancies are found between the plans and specifications, include the more costly value of the detail or specification item in the bid price, unless the discrepancy is resolved by addenda.

1. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in HUD Form 5370, the Contractor is responsible for the following:
	1. Progress cleaning of its own areas on a daily basis.
	2. Secure lockup of its own tools, materials, and equipment.
	3. Construction aids, miscellaneous services, field office and facilities necessary exclusively for its own construction activities.

## PART 2 – NOT USED PART 3 – EXECUTION

1. All Work shown on the Contract Documents shall be completed.
2. The Contractors shall adhere to the construction schedule and commit the staff necessary to produce the work in a timely manner, to meet the schedule.
3. Work hours shall be within the hours of 8:30 AM to 4:30 PM daily, Monday through Friday. Shift work that results in work activity outside the hours of 8:30 AM to 4:30 PM, or on weekends, may only occur with the permission of the Owner and in accordance with Owner and HUD regulations.
	1. Should overtime or second shift work be required by any Contractor to ensure the completion within the specified (milestone) schedule, all costs for this work is the responsibility of that Contractor, at no additional cost to the Owner.
4. Contractor Use of Premises
	1. General: The Contractor shall limit their use of the premises to the work areas indicated.
	2. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated, or if not indicated, to within the confines of the property.
		1. Do not disturb portions of the site beyond the areas in which the Work is indicated.
		2. Coordinate any staging area beyond the work area with the Owner.
	3. Driveways and Entrances: Keep temporary driveways and entrances serving the premises clear and available to the Owner, Engineer, Tenants and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
	4. Staging and Parking: Staging and contractor parking areas shall be determined before commencing the work, in locations acceptable to the Owner. Activity in the staging area shall be conducted in a manner that causes minimal disruption.

**END OF SECTION**

# SECTION 01 20 00 – PRICE & PAYMENT PROCEDURES

PART 1 – GENERAL

1. This section includes:
	1. Schedule of values.
	2. Applications for payment.
	3. Change procedures.
	4. Defect assessment.
2. Schedule of Values: Refer to HUD form 51000.
3. Applications For Payment: Refer to HUD forms 5370 and 51001, as amended by RHA requirements.
4. Change Procedures: Refer to HUD form 5370, and as per RHA requirements at the time of Contract award.
5. Defect Assessment: Replace the Work, or portions of the Work, not conforming to specified requirements.
	1. If, in the opinion of the Architect/Engineer or Owner, it is not practical to remove and replace the Work, the Architect/Engineer or Owner will direct appropriate remedy or adjust payment.
	2. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.
	3. Authority of Architect/Engineer and Owner to assess defects and identify payment adjustments is final.
	4. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
		1. Products wasted or disposed of in a manner that is not acceptable.
		2. Products determined as unacceptable before installation or rendered unacceptable after or by the installation.
		3. Products not completely unloaded from transporting vehicle.
		4. Products placed beyond lines and levels of required Work.
		5. Products remaining on hand after completion of the Work.
		6. Loading, hauling, and disposing of rejected products.

## PART 2 – NOT USED PART 3 – NOT USED

**END OF SECTION**

# SECTION 01 30 00 – ADMINISTRATIVE REQUIREMENTS

PART 1 – GENERAL

1. This section includes:
	1. Coordination and project conditions.
	2. Site mobilization meeting.
	3. Progress meetings.
2. Coordination and Project Conditions
	1. Coordinate scheduling, submittals, and work of various sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
	2. 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.
	3. Coordinate space requirements, supports, and installation of mechanical and electrical work. Routing for pipes, ducts, and conduit, place 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.
	4. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Install utilities parallel with structure and as inconspicuous as possible in exposed spaces.
	5. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.
	6. 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.
	7. The Contractor is responsible to obtain all permits.

## PART 2 – NOT USED PART 3 – EXECUTION

1. Site Mobilization Meeting
	1. Attendance is required by representatives for:
		1. Contractor.
		2. Owner.
		3. Architect/Engineer.
		4. Special Consultants.
		5. Contractor's Superintendent.
		6. Major Subcontractors.
	2. Meeting Agenda Items:
		1. Use of premises by Owner and Contractor.
		2. Owner's requirements and occupancy prior to completion.
		3. Construction facilities and controls provided by Owner.
		4. Temporary utilities provided by Owner.
		5. Survey and building layout.
		6. Security and housekeeping procedures.
		7. Schedules.
		8. Application for payment procedures.
		9. Procedures for testing.
		10. Procedures for maintaining record documents.
		11. Preconstruction photo documentation.
	3. Architect/Engineer will record minutes and distribute copies in electronic format via email within two days after meeting to participants, with two copies to Contractor, Owner, participants, and those affected by decisions made.
2. Progress Meetings
	1. Architect/Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings. Meetings will be on a maximum bi-weekly basis.
	2. Attendance is Required for Job superintendent, major Subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to upcoming work and agenda topics for each meeting.
	3. Agenda Items:
		1. Review minutes of previous meetings.
		2. Review of Work progress.
		3. Field observations, problems, and decisions.
		4. Identification of problems that impede, or will impede, 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. Maintenance of quality and work standards.
		11. Effect of proposed changes on progress schedule and coordination.
		12. Other business relating to Work.
	4. Architect/Engineer will record minutes and distribute copies in electronic format via email within two days after meeting to participants, with two copies to Contractor, Owner, participants, and those affected by decisions made.
3. Pre-installation Meetings
	1. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing the specified work.
	2. Require attendance of parties directly affecting or affected by Work of specific section.
	3. Notify Owner's Representative and Architect/Engineer seven days in advance of meeting date.
	4. Contractor shall prepare the agenda and lead the meeting.
		1. Review conditions of installation, preparation and installation procedures.
		2. Review coordination with related work.
	5. Architect/Engineer will record minutes and distribute copies within two days after meeting to participants and those affected by decisions made.

**END OF SECTION**

# SECTION 01 32 16 – CONSTRUCTION PROGRESS SCHEDULE

PART 1 – GENERAL

1. This section includes:
	1. Format.
	2. Progress Schedules.
	3. Submittals.
	4. Distribution.
	5. Responsibility for Completion.
2. Format: Refer to example schedule in the appendices.
3. Progress Schedules
	1. Illustrate the complete sequence of construction by activity, identifying work of separate stages. Indicate dates for submittals and return of submittals; dates for procurement and delivery of critical products; and dates for installation and provision for testing. Include legend for symbols and abbreviations used.
	2. Coordinate contents with Schedule of Values in HUD 51000 form.
4. Submittals:
	1. Gantt Chart: A Gantt chart is a type of bar chart that illustrates a project schedule. Within 5 days after the date of Owner-Contractor Agreement, submit a proposed Progress Schedule in the form of a Gantt style chart, showing the planned operations from start to completion of the contract.

A free Gantt chart spreadsheet can be downloaded from [*http://www.vertex42.com/ExcelTemplates/excel-gantt-chart.html*](http://www.vertex42.com/ExcelTemplates/excel-gantt-chart.html) if the Contractor is interested in computerizing the process.

* 1. Review the proposed Progress Schedule and chart jointly with the Architect/Engineer. If revisions are necessary, revise and submit the final version for approval.
	2. Submit updated Progress Schedules with each Application for Payment.
1. Distribution
	1. Following joint review, distribute copies of updated schedules to Owner, Architect/Engineer, Contractors, and project site file.
	2. Instruct recipients to promptly report, in writing, problems anticipated in meeting the projections shown in schedules.
2. Responsibility for Completion
	1. The Contractor shall furnish sufficient labor, temporary utilities and equipment, and shall work such hours including night shift and overtime operations, as necessary to ensure the prosecution of the work in accordance with the current monthly update of the Project Schedule.
		1. If, in the opinion of the Owner’s Representative, the Contractor falls behind in meeting the schedule as presented in the current monthly update, the Contractor shall take such steps as may be necessary to improve his progress, and the Owner’s Representative may require him to increase the hours of work, the number of shifts, overtime operations and/or the amount of construction plant and equipment without additional cost to the Owner.
		2. All additional expenses incurred by the Owner and Architect/Engineer due to such work will be deducted from the amount due the Contractor.
		3. The provisions of this section shall not be construed as prohibiting work on Saturdays, Sundays and holidays if the Contractor so elects and if approved by the Owner’s Representative in writing.
	2. Failure of a Contractor to comply with the requirements of this subsection shall be a basis for determination by the Owner that the Contractor is not performing the work with sufficient diligence to ensure completion of the Work within the stipulated time. Upon such determination, the Owner may terminate the Contractor's right to proceed with the Work or any separable part thereof, and may take such other actions as deemed appropriate to complete the Work.

## PART 2 – NOT USED PART 3 – NOT USED

**END OF SECTION**

# SECTION 01 33 00 – SUBMITTAL PROCEDURES

PART 1 – GENERAL

1. This section includes:
	1. Submittal procedures.
	2. Proposed products list.
	3. Product data.
	4. Shop drawings.
	5. Samples.
	6. Design data.
	7. Test reports.
	8. Certificates.
	9. Manufacturer's instructions.
	10. Architect/Engineer's action.
2. Submittal Procedures
	1. **Use of Procore Software to be implemented for this project. There is no cost to the architect or contractors.**
	2. Transmit each submittal with a cover page or transmittal form. Owner will be copied in on each submittal. See appendices for sample cover page.
	3. Submit one electronic PDF copy of each submittal to the Architect via PROCORE software. Paper submittals are not permitted.
	4. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
	5. Identify Project, Contractor, subcontractor and supplier; pertinent drawing and detail number, and specification section number, appropriate to submittal.
	6. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
	7. Schedule submittals to expedite Project, and deliver to Architect/Engineer's business address. Coordinate submission of related items.
	8. For each submittal for review, allow 5 business days excluding delivery time to and from Contractor.
	9. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
	10. Allow space on submittals for Architect/Engineer review stamps.
	11. When revised for resubmission, identify changes made since previous submission.
	12. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
	13. Incomplete submittals or submittals that are not requested will not be recognized or processed. The contractor will be notified about this.
3. **Proposed Products List**: Within 5 business 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. See appendices for list of major products required for this project.
4. Submit exterior finish material submittals together, to facilitate color selection process.
5. **Product Data**: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
	1. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
	2. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
6. **Shop Drawings**: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
	1. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
7. **Samples**: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
	1. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
	2. Include identification on each sample, with full Project information.
	3. Samples for selection of colors and finishes:
		1. Submit to both Architect/Engineer and Owner, for aesthetic, color, and/or finish selection.
		2. Submit samples of finishes from full range of manufacturers' standard colors, in custom colors selected, textures, and patterns to Owner for Owner's selection.
	4. Submit number of samples specified in individual specification sections; Architect will retain two samples.
	5. Reviewed samples that may be used in the Work are indicated in individual specification sections.
	6. Samples will not be used for testing purposes unless specifically stated in specification section.
8. **Design Data**: Submit for Architect/Engineer's knowledge as contract administrator or for Owner, for the limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
9. **Test Reports**: Submit for Architect/Engineer's knowledge as contract administrator or for Owner, the limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
	1. Submit Name and Qualifications of firm(s) selected by Contractor to perform the required 3rd Party Testing and certifications for the review and approval of Architect/Engineer and Owner.
	2. See appendices for summary of testing results to be provided.
10. Certificates
	1. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Architect, in quantities specified for Product Data.
	2. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
	3. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.
11. Manufacturer's Instructions
	1. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Architect/Engineer for delivery to Owner in quantities specified for submittal of Product Data.
	2. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
12. Architect/Engineer's Action
	1. Submittals that require action and return: Architect/Engineer or his consultant will review each submittal, and mark it to indicate action taken, and return it to the contractor.
		1. Compliance with specified characteristics is the Contractor's responsibility.
		2. Submittals made solely for the record or information will not be returned.
	2. Action Stamp: The Architect/Engineer will stamp each submittal with a uniform, action stamp. The Architect/Engineer will mark the stamp appropriately to indicate the action taken, as follows:
		1. Final Unrestricted Release: When the Architect/Engineer marks a submittal "**Reviewed**" the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
		2. Final-But-Restricted Release: When the Architect/Engineer marks a submittal "**Reviewed as Noted**", the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
		3. Returned for Re-submittal: When the Architect/Engineer marks a submittal "**Revise and Resubmit**", do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
		4. Do not use, or allow others to use, submittals marked "Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.
		5. Rejected: When the Architect/Engineer marks a submittal “**Rejected**”, do not proceed with any Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Prepare a new submittal conforming to the product characteristics specified by the contract documents; resubmit without delay. Repeat if necessary to obtain different action mark.

## PART 2 – NOT USED PART 3 – NOT USED

**END OF SECTION**

# SECTION 01 60 00 – PRODUCT REQUIREMENTS

PART 1 – GENERAL

1. This section includes:
	1. Products.
	2. Product delivery requirements.
	3. Product storage and handling requirements.
	4. Product options.
2. Submittals:
	1. Certification Letter: Submit a certification letter that documents that each and every product and material used on this project contains less than one percent of asbestos by weight.
	2. Submit manufacturer's certification letters for products known to have historically contained asbestos, such as putty, caulk, high temperature insulation, etc., that their product contains less than one percent of asbestos by weight.
3. Product Delivery Requirements
	1. Transport and handle products in accordance with manufacturer's instructions.
	2. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
	3. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
4. Product Storage and Handling Requirements
	1. Store and protect products in accordance with manufacturers' instructions.
	2. Store with seals and labels intact and legible.
	3. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
	4. Provide bonded off-site storage and protection when site does not permit on-site storage orprotection.
	5. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
	6. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, damage, or vandalism.
	7. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

## PART 2 – PRODUCTS / MATERIALS

1. General Product Requirements:
	1. American Made: All products shall be manufactured in the United States and shall be clearly indicated in submittals unless specifically approved otherwise by the Architect/Engineer.
	2. Provide products that comply with the Contract Documents.
	3. Provide products from qualified manufacturers that are suitable for intended use. Products of each type shall be sourced from a single manufacturer unless specified otherwise.
	4. Provide interchangeable components from same manufacturer for components being replaced.
	5. Provide products that are new and undamaged at the time of installation, unless an exception is made and documented in writing by the Owner's Representative.
	6. Do not use materials and equipment removed from existing premises, except as specifically noted and/or permitted by Contract Documents.
2. Products Specified by Naming One or More Manufacturers, with Provision for Substitutions: Submit request for substitution for any manufacturer not named in accordance with the following Product Selection Procedure.
3. Product Selection Procedure: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:
	1. Where Specifications list two or more acceptable products, provide the product or an equal product complying with the characteristics of the specified products.
	2. When an "Equal" product has been submitted, the contractor represents that they have:
		1. Investigated the "equal" product and determined it meets or exceeds the quality and characteristics of the specified products.
		2. Will provide the same warranty as the specified product.
	3. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.
		1. General overall performance of a product is implied where a product is specified for a specific application.
		2. Manufacturer's product performance may be contained in published product literature or by the manufacturer's certification of performance.
	4. Visual Matching: Where specifications require matching an established sample, the Architect/Engineer's decision will be final on whether a proposed product matches satisfactorily.
	5. Visual Selection: Where specified product requirements include the phrase "as selected from manufacturer's standard colors, patterns, textures " or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect/Engineer or Owner will select the color, pattern, and texture from the product line selected.
4. No Asbestos Containing Material Allowed.
	1. All materials to be used on this project which are incorporated into the finished work are to be certified as asbestos free by the manufacturer and installer.
	2. Material found to test positive as ACM shall be removed from this project and properly disposed of by the installing contractor at no additional expense to the Owner and new asbestos free materials installed in their place, also at no additional expense to the Owner.

## PART 3 – EXECUTION

1. Installation: Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
2. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

**END OF SECTION**

# SECTION 01 61 16 – VOLATILE ORGANIC COMPOUND

(VOC) CONTENT RESTRICTIONS

## PART 1 – GENERAL

1. This section includes:
	1. Requirements for Indoor-Emissions-Restricted products.
	2. Requirements for VOC-Content-Restricted products.
	3. Requirement for installer certification that they did not use any non-compliant products.
2. Related Requirements Specified Elsewhere:
	1. Section 01 33 00 - Submittal Procedures.
	2. Section 01 60 00 - Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.
3. Reference Standards (Latest editions, herein made a part of these specifications)

40 CFR 59, Subpart D National Volatile Organic Compound Emission Standards for Architectural Coatings.

ASTM D3960 Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2013).

CARB2 (SCM) Suggested Control Measure for Architectural Coatings; California Air Resources Board;

SCAQMD 1113 South Coast Air Quality Management District Rule No.1113; current edition; [www.aqmd.gov.](http://www.aqmd.gov/)

SCAQMD 1168 South Coast Air Quality Management District Rule No.1168; current edition; [www.aqmd.gov.](http://www.aqmd.gov/)

1. Definitions
	1. Indoor-Emissions-Restricted Products:

All products in the following product categories, whether specified or not:

* + 1. Interior paints and coatings.
		2. Interior adhesives and sealants, including flooring adhesives.
		3. Flooring.
		4. Composite wood.
		5. Products making up wall and ceiling assemblies.
	1. VOC-Content-Restricted Products:

All products in the following product categories, whether specified or not:

* + 1. Interior paints and coatings.
		2. Interior adhesives and sealants, including flooring adhesives.
	1. Interior of Building: Anywhere inside the exterior weather barrier.
	2. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether

specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

* 1. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.
	2. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
		1. Concrete, concrete block and Clay brick.
		2. Metals, free of oil coatings, including those that are plated, anodized, or powder-coated.
		3. Glass.
		4. Ceramics.
		5. Solid wood flooring that is unfinished and untreated.
1. Submittals: Submit product data in accordance with Section 01 33 00.
	1. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.
	2. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either:
2. no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of his products; or,
3. that such products used comply with these requirements.
4. Quality Assurance:
	1. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
	2. Evidence of Compliance: Acceptable types of evidence are:
		1. Report of laboratory testing performed in accordance with requirements.
		2. Published product data showing compliance with requirements.
		3. Certification by manufacturer that product complies with requirements.

## PART 2 – MATERIALS

1. VOC-Content-Restricted Products: VOC content not greater than required by the following:
	1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
	2. Joint Sealants: SCAQMD 1168 Rule.
	3. Paints and Coatings: Each color; most stringent of the following:
		1. 40 CFR 59, Subpart D.
		2. SCAQMD 1113 Rule.
		3. CARB (SCM).

## PART 3 – EXECUTION

1. Field Quality Control
	1. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.
	2. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

**END OF SECTION**

# SECTION 01 73 00 – EXECUTION

PART 1 – GENERAL

1. This section includes Execution Requirements:
	1. Cutting and patching.
	2. Protecting installed construction.
	3. Testing, adjusting and balancing.
	4. Demonstration and instructions.
2. Related Work Specified Elsewhere:
	1. Section 22 00 00 – Plumbing Common Requirements
	2. Section 23 00 00 – Mechanical Common Requirements
	3. Section 23 05 93 – Testing, Adjusting & Balancing for HVAC
	4. Section 26 00 00 – Electrical Common Requirements
	5. Section 26 05 26 – Grounding and Bonding
	6. Section 28 31 00 – Fire Detection & Alarm
3. Quality Assurance: Workers employed in Cutting and Patching operations shall be skilled in and employed in the trade needed for the work.

## PART 2 – PRODUCTS / MATERIALS

A. Products used for Cutting and Patching shall be the same material used in the construction of the material being patched.

## PART 3 – EXECUTION

1. Cutting and Patching
	1. Employ original and skilled and experienced installer to perform cutting and patching.
	2. 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.
	3. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
		1. Fit the several parts together, to integrate with other Work.
		2. Uncover Work to install or correct ill-timed Work.
		3. Remove and replace defective and non-conforming Work.
		4. Remove samples of installed Work for testing.
		5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
	4. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.
	5. Cut masonry and concrete materials using masonry saw or core drill.
	6. Restore Work with new products in accordance with requirements of Contract Documents.
	7. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
	8. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
	9. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
	10. Identify hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.
2. Protecting Installed Construction
	1. Protect installed Work and provide special protection where specified in individual specification sections.
	2. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
3. Testing, Adjusting and Balancing
	1. Contractor shall test the systems upon completion. Testing shall be performed by an inspector approved by the owner and architect.
	2. In the event that the system does not test properly, the contractor shall take all necessary steps to provide a complete functioning system, including rebuilding and/or replacing components or the entire system, if necessary.
	3. Contractor shall provide final test report to the Owner, Rochester Housing Authority.
4. Demonstration and Instruction
	1. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
	2. Demonstrate Project equipment and instruct in classroom environment located at owners facilities and instructed by manufacturer's representative who is knowledgeable about the Project and equipment installed.
	3. 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.
	4. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
	5. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
	6. Required instruction time for each item of equipment and system is specified in individual sections.

**END OF SECTION**

# SECTION 01 74 00 – CLEANING & WASTE MANAGEMENT

PART 1 – GENERAL

1. This section includes:
	1. Progress cleaning.
	2. Cleaning for installation and protection of new materials.
	3. Waste management and disposal.
	4. Final cleaning.
2. Related Work Specified Elsewhere:

Section 01 77 00 – Closeout Procedures

Section 02 41 19 – Selective Demolition

Section 02 89 00 – Smoke Odor Removal

Section 23 01 30.51 – HVAC Air Distribution System Cleaning

## PART 2 – NOT USED PART 3 – EXECUTION

1. Progress Cleaning
	1. Daily Cleaning: Collect construction debris on a daily basis. Do not allow the accumulation of debris in and around the job site.
		1. Sweep all interior spaces "clean", meaning free from dust and other material capable of being removed by use of reasonable effort and handheld broom.
		2. Deposit waste and debris in a dumpster or other substantial container.
		3. Set aside material to be retained by the Owner in a suitable location and container.
	2. Arrange stored items in an orderly manner, allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials. Weekly, and more often if necessary, review all arrangements of materials stored on the site, restack, tidy up, as necessary.
2. Cleaning for Installation and Protection of New Materials
	1. Clean surfaces to receive new finishes to the degree of cleanliness recommended and/or required by the manufacturer of the finish material, using recommended cleaning methods, materials and equipment.
	2. Following the installation of finish floor materials, provide a protective covering at all times while work is being performed in the space in which finish materials have been installed. Alternatively, clean the finish floor daily, or more often if necessary, to be free from all foreign material that may be injurious to the floor finish.
3. Waste Management and Disposal: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain as Owner's property, remove demolished materials and construction scrap material from Project site and legally dispose of them.

 1. Comply with regulations of authorities having jurisdiction and safety standards for

handling construction debris. Comply with applicable OSHA, EPA and other environmental and safety regulations.

1. Do not bury debris or excess materials on the Owner's property.
2. Do not discharge volatile, harmful, or dangerous materials into drainage systems.
3. Do not burn demolished materials.
4. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
5. Remove waste packaging, rubbish and surplus materials from site.
6. Provide adequate storage capacity for construction debris. Hold debris in a dumpster or other appropriate container until full, and then remove debris from the site. Do not allow demolished materials to accumulate around the site or in the building.
	1. Owner's dumpsters and trash receptacles at the site are not available to the contractor.
7. Observe all requirements for fire protection and protection of the environment.
8. Extra materials of value remaining after completion of associated Work is the Owner's property. Dispose of these materials as directed by the Owner.
9. Remove and transport debris in a manner that will prevent spillage on properties and public ways.
10. Dispose of waste materials legally, in compliance with all applicable state and Federal safety requirements.
11. Final Cleaning
	1. Execute final cleaning prior to final project assessment.
	2. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
	3. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
	4. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.

**END OF SECTION**

# SECTION 01 77 00 – CLOSEOUT PROCEDURES

PART 1 – GENERAL

1. This section includes Closeout procedures:
	1. Substantial completion.
	2. Final cleaning.
	3. Final acceptance. SPART 2 – NOT USED PART 3 – EXECUTION
2. Substantial Completion
	1. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is substantially complete in accordance with Contract Documents and ready for Architect/Engineer's review. A sample Letter of Substantial Completion is included in the appendices.
	2. Provide submittals to Architect/Engineer and Owner.
	3. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
	4. Upon receipt of a request for inspection for substantial completion, the Architect/Engineer will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect/Engineer will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
		1. The Architect/Engineer will repeat inspection when requested and assured that the Work is substantially complete.
		2. Results of the completed inspection will form the basis of requirements for final acceptance.
3. **Final Cleaning:** Refer to Section 01 74 00 – Cleaning & Waste Management for detailed instructions.
	1. Extra materials of value remaining after completion of associated Work, become the Owner's property. Dispose of these materials as directed by the Owner.
4. Final Acceptance
	1. The Contractor shall submit, prior to requesting final inspection, written certification that:
		1. Work has been completed in accordance with contract documents, listing any exceptions.
		2. Project has been inspected for compliance with contract documents.
		3. Equipment and systems have been tested in the presence of the Engineer or the Owner and is operational.
		4. Owner’s designated staff has been instructed on all equipment and systems and an Owner- signed receipt has been furnished to the Architect/Engineer.
		5. Operational and Maintenance Manuals have been submitted to, reviewed and accepted

by the Architect/Engineer.

* + 1. Owner has been furnished the specified warranties, guarantees and spare parts and an Owner-signed receipt has been furnished to the Architect/Engineer.
		2. Project has been completed and is ready for final inspection.
	1. If the Architect/Engineer considers the work complete in accordance with the requirements of the Contract Documents, the Contractor will submit his final requisition (including final changes to the Contract Sum) together with the following through the Architect/Engineer.
		1. Release of Liens and Final Waiver of Liens.
		2. Consent of Surety to Final Payment.
		3. Evidence of continuing insurance coverage.
	2. If the Architect/Engineer and/or Owner does not consider the work finally complete, the Contractor will be notified in writing by the Architect/Engineer with a copy to the Owner, with the reasons stated.
	3. Re-inspection Procedure: The Architect/Engineer will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect/Engineer.
		1. Upon completion of re-inspection, the Architect/Engineer will prepare a certificate of final acceptance. If the Work is incomplete, the Engineer will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
		2. The Contractor shall achieve FINAL COMPLETION of all Work, including correction of punch list items, preparation and delivery of manuals, presentation of training and completion of final paper submissions prior to the Contract-scheduled Substantial Completion date.
		3. In the event the Contractor fails to achieve Final Completion in a timely manner in accordance with these provisions, the Contractor and the Contractor’s Surety shall be liable for and shall reimburse the Owner for any and all Engineering fees, materials or expenses made necessary by the Contractor’s failure. Additional fees and expenses shall be charged by the Owner against any Final Payment due or which may become due the Contractor.

**END OF SECTION**

# SECTION 01 78 00 – CLOSEOUT SUBMITTALS

PART 1 – GENERAL

1. This section includes Closeout Submittals for:
	1. Project record documents.
	2. Operation and maintenance data.
	3. Manual for materials and finishes.
	4. Manual for equipment and systems.
	5. Product warranties and product bonds.
	6. Spare parts and maintenance products.
2. Related Work Specified Elsewhere:

Section 01 33 00 – Submittal Procedures

Section 01 77 00 – Closeout Procedures

Section 01 78 00 – Warranties

1. Closeout Submittals: Project Record Documents
	1. Maintain on site one set of the following record documents; record actual revisions to the Work:
		1. Drawings.
		2. Specifications.
		3. Addenda.
		4. Change Orders and other modifications to the Contract.
		5. Reviewed Shop Drawings, Product Data, and Samples.
		6. Manufacturer's instruction for assembly, installation, and adjusting.
	2. Ensure entries are complete and accurate, enabling future reference by Owner.
	3. Store record documents separate from documents used for construction.
	4. Record information concurrent with construction progress, not less than weekly.
	5. 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 utilized.
		3. Changes made by Addenda and modifications.
	6. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
		1. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
		2. Field changes of dimension and detail.
		3. Details not on original Contract drawings.
	7. Submit documents to Architect/Engineer with claim for final Application for Payment.
2. Closeout Submittals: Operation And Maintenance Data
	1. Submit data bound in 8-1/2 x 11 inch (A4) text pages, three D side ring binders with durable plastic covers.
	2. Prepare binder cover with printed title "OPERATION & MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
	3. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
	4. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
	5. Contents: Prepare Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
		1. PART 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
		2. PART 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
			* Significant design criteria.
			* List of equipment.
			* Parts list for each component.
			* Operating instructions.
			* Maintenance instructions for equipment and systems.
			* Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
		3. PART 3: Project documents and certificates, including the following: o Shop drawings and product data.
			* Air and water balance reports.
			* Certificates.
			* Originals of warranties and bonds.
3. Closeout Submittals: Manual For Materials and Finishes
	1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.
	2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
	3. Submit one copy of completed volumes 5 days prior to final inspection. Draft copy to be reviewed and returned after final inspection, with Architect/Engineer comments. Revise

content of document sets as required prior to final submission.

* 1. Submit two sets of revised final volumes in final form within 5 days after final inspection.
	2. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations.
	3. 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.
	4. Additional Requirements: As specified in individual product specification sections.
	5. Include listing in Table of Contents for design data, with tabbed flysheet and space for insertion of data.
1. Closeout Submittals: Manual For Equipment and Systems
	1. Submit two sets of revised final volumes in final form within 10 days after final inspection.
	2. 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.
	3. Panel board Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
	4. Include color-coded wiring diagrams as installed.
	5. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
	6. Include manufacturer's printed operation and maintenance instructions.
	7. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
	8. Additional Requirements: As specified in individual product specification sections.
	9. Include listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.
2. Closeout Submittals, Product Warranties and Bonds: Submit documentation of all warranties and bonds as required in Section 01 70 40 "Warranties."

## PART 2 – PRODUCTS / MATERIALS

1. Spare Parts And Maintenance Products:
	1. Furnish spare parts, maintenance, and extra products in quantities specified in individual specification sections.
	2. Deliver to Project site and place in location as directed by Owner; obtain receipt prior to final payment.

## PART 3 – NOT USED

**END OF SECTION**

# SECTION 01 78 36 – WARRANTIES

PART 1 – GENERAL

1. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturer’s standard warranties on products and special warranties.
2. Warranty Period
	1. The **Contractor shall provide a 2-year warranty** on all labor and workmanship and materials.
	2. Manufacturers' Warranties: If no term is specified, the terms shall be a minimum of two years, but not less than the standard period of the manufacturer’s warranty for the item.
3. **Disclaimers and Limitations**: Manufacturer’s disclaimers and limitations on product warranties do not relieve the Contractor of its warranty on the Work that incorporates the products.
	1. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.
4. General contractor is responsible for all warranties.
5. Related Work Specified Elsewhere:

Section 01 33 00 – Submittal Procedures; specifies procedures for submitting warranties.

Section 01 70 00 – Execution and Closeout Requirements; specifies contract closeout procedures.

* 1. All technical divisions for specific requirements for warranties on products and installations specified to be warranted.
	2. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
1. **Submittals**: Submit warranties in accordance with Section 01 33 00.
	1. Submit written warranties to the Owners representative 5 days prior to the date certified for Substantial Completion. If the Architect/Engineer's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
		1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within 10 days of completion of that designated portion of the Work.
	2. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties.
	3. Submit a draft to the Architect through the Owner's representative, for approval prior to final execution.
		1. Refer to all technical divisions for specific content requirements and particular requirements for submitting special warranties.
		2. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
	4. Form of Submittal: At Final Completion compile 2 copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Contract Documents.
	5. Verify documents are in proper form, contain full information, and are notarized.
	6. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl- covered loose-leaf binders, and thickness as necessary to accommodate contents, and sized to receive 8- 1/2 by 11 inch paper.
	7. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
	8. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
	9. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.
2. Warranty Requirements
	1. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.
	2. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
	3. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
	4. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
		1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
	5. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

## PART 2 – NOT USED PART 3 – EXECUTION

1. List of Warranties
	1. The Contractor shall obtain and furnish to the Architect/Engineer and Owner's representative the written manufacturer warranties for all major materials, systems and equipment.
	2. The terms of the warranty shall be as individually specified in manufacturer's standard warranty for the items included in the technical divisions of this manual.

**END OF SECTION**

# Division 2 - Existing Conditions

# SECTION 02 41 19 – SELECTIVE DEMOLITION

PART 1 – GENERAL

1. This section includes:
	1. Demolition and removal of selected portions of building or structure or infrastructure.
	2. Demolition and removal of selected site elements.
2. Reference Standards (Latest editions, herein made a part of these specifications)

ANSI/ASSE A10.6-2006 Safety & Health Program Requirements for Demolition Operations

NFPA 241-2013 Standard for Safeguarding Construction, Alteration, and Demolition Operations

1. Definitions
	1. Remove: Detach items from existing construction and legally dispose of off-site.
	2. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and store for reuse or for delivery to Owner.
	3. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
	4. Existing to Remain (E.T.R.): items that are not to be permanently removed and are not otherwise indicated to be removed.
2. Demolition workers shall be familiar with and comply with applicable OSHA, EPA and other safety regulations which apply to the work site, including rules governing the use of ladders and scaffolds, fall protection, propane heaters, as well as eye, hearing and respiratory hazards.
3. Performance Requirements
	1. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
	2. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

## PART 2 – (NOT USED) PART 3 – EXECUTION

1. Existing Conditions
	1. Survey existing condition of building and site elements that are to remain untouched. Record all existing damage on drawings and photographically, and submit documentation to the Architect prior to commencing demolition operations.
	2. Survey existing conditions relative to the Work identified on drawings, to determine extent of selective demolition required to achieve the results.
	3. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
2. Preparation
	1. Site Access and Temporary Controls: Conduct selective demolition and debris-removal

operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

* 1. Access to each unit is to be maintained at all times. Only one stair / entry per unit may be closed off at any time. At the close of work each day all stairs / entries are to be useable by the tenant for egress.
	2. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
	3. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Utility Service:
	1. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
	2. Existing Utilities to be Removed, Relocated or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
		1. Arrange to shut off indicated and/or required services/systems with Owner.
		2. Arrange to shut off indicated and/or utilities with utility companies.
		3. Provide temporary services/systems to bypass areas of selective demolition, to maintain continuity of services/systems to remaining occupied parts of building.
	3. Verify that utilities have been disconnected and capped before starting demolition operations.
2. Selective Demolition, General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
	1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
	2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
	3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire suppression devices during flame-cutting operations.
	4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
	5. Dispose of demolished items and materials promptly. Comply with requirements in Division 01 Section "Construction Waste Management and Disposal."
3. Reuse of Building Elements: Project has been designed to result in end-of-Project reuse of building elements. Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.
	1. Building Structure and Shell: Maintain existing walls, floors, and roof as indicated. Maintain existing building structure not indicated to be demolished; do not demolish such existing construction beyond indicated limits.
	2. Non-Structural Elements: Maintain existing interior nonstructural elements not indicated to be demolished; do not demolish such existing construction beyond indicated limits.
	3. Non-shell Elements: Maintain existing non-shell, non-structural components not indicated

to be demolished; do not demolish such existing construction beyond indicated limits.

1. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.
2. Disposal of Demolished Materials: Comply with requirements of Section 01 74 00.
	1. Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain as Owner's property, remove demolished materials from project site and legally dispose of them.
	2. Comply with applicable state, federal, OSHA, EPA and other safety regulations
3. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

**END OF SECTION**

# Division 3 - Concrete

# SECTION 03 30 00 – CONCRETE

PART 1 – GENERAL

1. Provide cast-in-place concrete as shown on drawings and specified herein, including but not limited to:
	1. Concrete sills at lower level windows.
	2. Deck post footings.
2. Reference Standards (latest edition) herein made a part of these specifications:

ACI 304 "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete" ACI 305 "Hot Weather Concrete Placing"

ACI 306 "Cold Weather Concrete Placing"

## PART 2 – PRODUCTS / MATERIALS

1. Concrete materials:
	1. Cement: conform to ASTM C-150 Type 1. Cement containing lumps, crusts or hardened materials shall not be used.
	2. Water: potable
	3. Fine aggregate: sand conforming to ASTM C-33, free of deleterious materials.
	4. Coarse aggregate: crushed limestone conforming to ASTM C-33, free of deleterious materials.
	5. Air-Entraining Admixture: Dewey & Alemy Chemical Co. "DAREX" or "SIKA AER" or equivalent product conforming to ASTM C 260.
	6. Other admixtures, including calcium chloride, *shall not be permitted!*
2. Reinforcement steel: conform to ASTM A-615, Grade 40.
3. Bonding Agent for patching and repairs: Thoro Acryl 60 acrylic polymer liquid additive.
4. Concrete mixes shall attain the following minimum compressive strength at 28 days: F'c = 4,000 PSI, with 5 to 7% air entrainment, except footing concrete may be 2,500 PSI.

## PART 3 – EXECUTION

1. The concrete work shall be performed in accordance with ACI-318 and ACI-347.
2. Hot Or Cold Weather Concrete Work: For requirements see American Concrete Institute Standard, ACI- 306, *"Recommended Practice for Cold Weather Concreting"*, and ACI-305, *"Recommended Practice for Hot Weather Concreting"*. No concrete work shall be performed during heavy rain, snow, or hail, or when the temperature of the outside air is below 40ºF or above 100ºF. Protect concrete from freezing for at least 48 hours. Materials used and materials built upon shall be free from ice and snow. Materials that are allowed to freeze shall be removed and replaced with new work, at the expense of the Contractor.
3. Before placing concrete, the Contractor shall verify proper placement of items of work which are embedded in the concrete work. Refer to mechanical and electrical drawings for locations of pipes, conduits, etc.
4. All reinforcing steel, dowels, anchor bolts, etc. shall be well secured in place prior to placing concrete.
5. Reinforcing shall have the following minimum concrete cover:
	1. Concrete - formed: 2"
	2. Concrete against earth - not formed: 3"
6. Concrete shall be mixed and delivered in accordance with ASTM C-94. Hand mixing done on a watertight platform is allowed for small batches of patching concrete. Soak coarse aggregate first. Mix ingredients dry, then add water.

**END OF SECTION**

# Division 6 - Carpentry

# SECTION 06 10 00 – ROUGH CARPENTRY

PART 1 – GENERAL

1. Provide rough carpentry and framing as shown on drawings and specified herein. Workmanship shall be first class and meet the requirements of a standard good practice normal to the trade.
2. Reference Standards (latest edition) herein made a part of these specifications:

ALSC American Lumber Standards Committee: Softwood Lumber Standards.

APA American Plywood Association – Residential & Commercial Construction Guide

AWPA- C1 (American Wood Preservers Assn) - All Timber Products Preservative Treatment by Pressure Process.

NFPA National Forest Products Association

WCD #1 American Wood Council Manual for Wood Frame Construction

WCLIB West Coast Lumber Inspection Bureau WWPA Western Wood Products Association

1. Submittals: Submit product data in accordance with Section 01 33 00.
	1. Submit manufacturer's information on chemical preservative and fire retardant treatments.
	2. Submit manufacturer's information on fabricated and stamped metal connectors.
2. Product Handling:
	1. Store materials in area protected from weather immediately upon delivery to project, above ground on blocking and cover with waterproof covering and provide adequate ventilation.
	2. Do not store seasoned materials in damp or wet area of building.
	3. Protect sheet materials from corner breakage and surface damage while handling.
	4. Protect treated materials from high humidity and moisture during storage and erection.

## PART 2 – PRODUCTS / MATERIALS

1. Framing Lumber: Structural lumber and fasteners shall conform to the "National Design Specification for Stress-Grade Lumber and its Fastenings". Lumber shall be free of rot, warping, twisting or splitting, and shall be kiln dried to 19% maximum moisture content.
	1. Studs: Hem-Fir or SPF Stud Grade; Hem-Fir for jack studs supporting beams.
	2. Plywood: APA rated exterior grade sheathing for walls and roofs, as noted on drawings.
	3. Preservative treated lumber: Southern Pine # 2 or better, pressure treated with Alkaline Copper Quat (ACQ), or Copper Azole type CA-B or CA-C based preservative, in accordance with AWPA specification C1 and P5; kiln drying after treatment to 19 % maximum moisture content for lumber and 18 % for plywood. Each piece shall be marked to indicate compliance with specified requirements.
		1. Above grade use, net retention: ACQ 0.25 lb/cu ft.; CA-B 0.10 lb/cu.ft.; CA-C 0.06 lb/cu.ft.
		2. At & below grade use, net retention: ACQ 0.40 lb/cu ft.; CA-B 0.21 lb/cu.ft.; CA-C 0.15 lb/cu.ft.

*Other species of lumber with equal or greater stress values, as recommended by National Forest Products Association, may be substituted for that shown.*

1. Accessories:
	1. Joist hangers and connectors: 16 gauge galvanized steel, sized for member and load.
		1. Hangers and connectors for preservative treated lumber and plywood shall be hot dipped (G185) galvanized or stainless steel only.
		2. Adjustable Stair-Stringer Connector: Simpson #LSCSS, 18 gauge Type 316 stainless steel. Install with 1½" 9gauge stainless steel nails.
	2. Fasteners: Coated or galvanized steel as needed complying with applicable Federal Specifications for nails, screws, bolts and other anchoring devices.
		1. Fasteners for ACQ preservative treated lumber and plywood shall be hot dipped (G185) galvanized, a proven equivalent coating, or stainless steel only.
	3. Thru-bolts: threaded rod with washers and nuts both ends; 3/8" diameter unless noted otherwise. Stainless steel or hot-dipped galvanized when used with preservative treated lumber.
	4. Construction adhesive: exterior grade waterproof type adhesive; "Liquid Nails" or approved equal.

## PART 3 – EXECUTION

1. All lumber and sheet materials bearing on concrete or masonry if less than 48" above grade, or if deck materials, shall be preservative treated.
2. Holes for bolts shall be bored 1/32" to 1/16" larger than nominal bolt diameter. Bolts bearing on wood shall have washers under head and/or nut. Bolts shall be retightened prior to application of drywall, plywood, etc.
3. Fastening joist and beam hangers: Fill all holes provided in hangers with nails recommended by hanger manufacturer to provide full load bearing capability.
4. Tolerances, Framing Members: ¼ inch from true position, maximum.

Surface Flatness of Floor: ¼ inch in 10 feet maximum, and ½ inch maximum in 30 feet.

**END OF SECTION**

# SECTION 06 17 53 – PREFABRICATED WOOD TRUSSES

PART 1 – GENERAL

* 1. Provide prefabricated wood trusses as shown on drawings and details, as needed for spans shown.
	2. Reference Standards (latest edition) herein made a part of these specifications:

ALSC American Lumber Standards Committee: Softwood Lumber Standards.

ASTM A-446 Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality. NDS National Design Specification for Wood Construction

NFPA National Forest Products Association.

SPIB Southern Pine Inspection Bureau. TPI - BWT-76Bracing Wood Trusses. TPI - HET-80 (Truss Plate Institute) Handling and Erecting Wood Trusses.

TPI - PCT-80 (Truss Plate Institute) Metal Plate Connected Parallel Chord Wood Trusses. TPI - TPI- 85

(Truss Plate Institute) Metal Plate Connected Wood Trusses.

TPI - QST-88 (Truss Plate Institute) Metal Plate Connected Wood Trusses. Truss Manufacturer's printed installation instructions.

* 1. Submit shop drawings of trusses for review by the Architect in accordance with Section 01 33 00. All truss designs shall be stamped and signed by an Engineer licensed to practice in New York. All truss submittals shall be complete, accurate and contain the following information:

Slope or depth, span and spacing of the trusses. Heel bearing location.

Design loads including: top & bottom chord live & dead loads, concentrated loads & their points. Adjustments to design values for conditions of use. Plate type, gauge and size.

Lumber size, species and grade of all members. Locations for permanent bracing of webs and chords

* 1. Truss Design: Truss members and joints shall be designed in accordance with TPI recommendations, and be reviewed, stamped and signed by a Engineer licensed in New York State.
		1. Wood Trusses: The design of wood members must be in accordance with the formulas published in *National Design Specification for Wood Construction*. Design stresses allowed are those listed in the current editions of respective lumber association's grading rules. Lumber used in the design of wood trusses shall be kiln dried and graded according to current industry grading rules.
		2. Engineering analysis and design data must be available upon request. This shall include the following information:

Axial forces and bending moments for each member. Basic plate design value. Design analysis for each joint showing that proper plates have been used.

* 1. Delivery / Storage / Handling
		1. Deliver trusses only when erection of trusses can proceed without delay. Handle and store trusses as recommended by truss manufacturer. Protect trusses from excessive stresses and/or damage while handling and erecting. Replace any trusses that are deformed, distorted or damaged from handling or storage stresses.
		2. Temporary Storage of trusses on site: Protect from weather immediately upon delivery to project. Place on stable blocking above the ground, away from standing water, cover with waterproof covering and provide adequate ventilation. Trusses stored vertically shall be blocked at bearing points. Trusses stored horizontally shall be blocked at 8 to 10 ft. centers and as required to prevent lateral bending. Prevent toppling or sliding.

## PART 2 – PRODUCTS / MATERIALS

1. Truss Framing Components: Kiln dried and graded according to current industry grading rules; Southern Yellow Pine DSS and No. 1 dense grades; Spruce/PineFir No.2 and 1650F 1.5E; as required to meet stress values.
2. Connectors: Light metal toothed connector plates and joint design shall conform to TPI *Design Specification for Metal Plate Connected Wood Trusses*.
	1. Truss anchors: Simpson TCP Truss Clip; TECO Ty-Down rafter anchors or equivalent product.

## PART 3 – EXECUTION

1. Erect and brace trusses in strict accordance with truss manufacturer's printed guidance.
2. Provide temporary bracing during erection in accordance with truss manufacturer's guidance.
3. Permanent Bracing: Provide permanent stabilizing and cross bracing during truss erection.
	1. Bottom chord: Install continuous 2x4 lateral bracing spaced 8 to 10 feet on center, at or near panel points, and install 2x4 diagonal bracing at both ends of roof and at 20 foot intervals in between.
	2. Provide continuous bracing at webs where indicated by truss manufacturer's shop drawings.
	3. Provide diagonal "X" bracing at longest webs at each end of roof structure, and at 20 foot intervals in between.

**END OF SECTION**

# SECTION 06 73 00 – COMPOSITE DECKING

PART 1 – GENERAL

1. Provide Trex Transcend Composite Decking, Porch Flooring & Fascia in (rot-resistant, slip- resistant, related trim, fasteners and accessories) or approved equal. Colors shall be selected by the Owner from standard color chart.
2. Reference Standards (Latest editions, herein made a part of these specifications)

ASTM D-6662 Standard Specification for Polyolefin-Based Plastic Lumber Decking Board

1. Submittals: Submit product data in accordance with Section 01 33 00.
	1. Product Data: Indicate sizes, profiles, surface finishes, performance characteristics, sample warranty.
2. Delivery/Storage/Handling: Plastic/composite decking is more flexible and heavier than wood. Follow manufacturer's instructions for stacking, supporting and handling.
	1. Store composite wood level and flat, off ground or floor, with supports placed level to each other, at each end and spaced maximum 24 inches on center.
	2. Do not stack composite wood over 12 feet high.
	3. Cover composite wood with waterproof covering and vent to prevent moisture buildup.
3. Warranties:

Manufacturer’s 15-year limited warranty.

Contractor's Warranty: Refer to Section 01 78 36 – Warranties.

## PART 2 – PRODUCTS / MATERIALS

1. Composite Wood: Extruded composite planks composed of integrally colored reclaimed wood and plastic, with simulated wood grain protective top surface and ribbed back. Free from toxic chemicals and preservatives. Mold and mildew resistant.
	1. Acceptable Manufacturer: Veranda Decking as manufactured by Fiberon, or TrexSelect, or equivalent product.
	2. Decking Boards: square edge; size 5.3"×0.93"×12 or 16 ft lengths.
	3. Fascia Boards: ¾"×11¼ × 8 or 12 ft lengths.
	4. Color: To selected by Owner for each location from manufacturers full range of standard colors.
2. Accessories:
	1. Deck fasteners (without pre-drilling): Self-drilling #9 or #10 type 305 stainless steel composite screws of length recommended by composite wood manufacturer for profile being fastened.
		1. SplitStop Star Drive Titan 3; Simpson Dexxter Composite Screw; FastenMasterTrapEaseII or manufacturer approved equal.
		2. Or as indicated on drawings.
		3. Do not use drywall type screws.

## PART 3 – EXECUTION

1. Examine joists to receive plastic/composite decking for levelness and uniformity. Make sure your joists are level and spaced 16" on-center, maximum. If installing decking at an angle other than 90º to the joists, joists must be spaced 12" on-center. Do not proceed if joists cannot produce a level deck surface. Notify Architect.
	1. Caution: Do not use composite wood material for structural load-bearing applications.
2. Layout: Deck surface grain pattern is directional and can vary by lengths and bundles of material. Arrange decking before installation to achieve the desired pattern and color effect.
3. Follow manufacturer's printed guidelines for cutting and installation.
	1. Each deck boards shall span a minimum of 3 joists.
	2. Make clean cuts using carbide tipped fine cutting blades. Cut ends square.
	3. Drill and rout using carbide tipped blades.
	4. Pre-drill holes for fasteners to prevent immediate or eventual end splitting. Pre-drill holes located closer than 1½ inches from ends of plank.

Pre-drilling is mandatory in cold temperatures.

* 1. Provide two fasteners in each deck board at every joist. Drive fasteners perpendicular to face of deck board surface.
	2. Do not fasten within 1½" of the end of a board or 1" from the side of the board. Do not toe-nail.

Provide treated wood blocking where ends of boards abut to accommodate fastener location restrictions.

* 1. Drive screw heads flush with board surface. Do not over-tightening fasteners.
	2. Gapping: Provide gaps between adjacent pieces of plastic/composite decking and fascia, both end-to-end and width-to-width to facilitate drainage, accommodate thermal movement and to account for the shrinkage of pressure-treated joists. Provide gaps between boards as recommended by manufacturer for temperature conditions.
1. Fascia is a non-structural covering for rim joists, risers. Fasten at 12" interval maximum, with three screws across the face at each interval, for a full width section (spaced 5" maximum from each other). Do not over-tighten screws as buckling and cracking may result.

**END OF SECTION**

# SECTION 06 81 00 – COMPOSITE RAILINGS

PART 1 – GENERAL

1. Provide vinyl composite railing system including all accessories as shown on drawings and specified herein that are necessary for a complete installation.
2. Reference Standards (Latest editions, herein made a part of these specifications)

ASTM F 964 Standard Specificationfor Rigid PVC Exterior Profiles Used for Fencing

1. Submittals: Submit product data in accordance with Section 01 33 00.
	1. Submit manufacturer's product data for all system components.
	2. Submit manufacturer's installation instructions.
	3. Test Reports: Submit manufacturer's certified test reports of railings for use as a guardrail from independent testing agency.
	4. Warranty Documentation.
2. Delivery / Storage / Handling:
	1. Store materials in manufacturer's unopened packaging until ready for installation, in area protected from weather immediately upon delivery to project, above ground on blocking and cover with waterproof covering and provide adequate ventilation.
3. System Engineering: Railing system shall be able to resist a single concentrated load applied in any direction at any point along the railing, resist a uniform load of 50 lbs per linear foot applied in any direction along the top rail, resist a concentrated load of 50 lbs applied to each component individually at every point in the system, and be able to transfer these loads to the supporting structure.
4. Warranties:

Manufacturer’s standard 20-year warranty.

Contractor's Warranty: Refer to Section 01 78 36 – Warranties.

## PART 2 – PRODUCTS

1. Vinyl Railing System: Rigid Polyvinyl Chloride (PVC) composite complying with ASTM F 964, with impact modifiers for cold weather resistance and Titanium dioxide (10 parts) for UV resistance.
	1. Acceptable Manufacturers: Barrett/Veranda, Trex Transcend Post Sleeve, Post Sleeve Cap with Rail & Baluster Kit, in classic white with mounting hardware or equivalent product. Veranda model numbers are used to establish quality and aesthetic criteria.
	2. Railing Post Covers: 4" square capped composite post sleeves, Veranda "Regency/Enclave " #POST SLV48, 4"×4"×0.1875"thick ×48" high, for sleeving over nominal 4"×4" wood posts or 4" aluminum post mounts or approved equal.
	3. Post Sleeve Caps: Veranda "New England" #73012500, 6.25"×6.25"×2.375"high for 4"×4" posts or approved equal.
	4. Post Sleeve Base Trim: Veranda "New England" #73012503, 5.687"×5.687"×1.562"high or approved equal.
	5. Rails: PVC composite core with PVC surface cap layer, 0.1875"thick, Veranda "Enclave" style,

in 6' and 8' lengths as required or approved equal. Aluminum channel reinforced when needed to meet structural requirements.

Top rails: 2¾"×3" moulded profile.

Bottom rails: 1¾"×3½", rectangular, with composite crush block.

* 1. Spindles: 0.875"×0.875" square extrusion, spaced at 3-7/8" on center.
	2. Railing Mounts: External stainless steel brackets and fasteners. Veranda "Regency/Enclave" stainless steel line rail hardware kit #BKT14 LINE HW or approved equal. Provide adjustable hinged brackets for stair rails.
	3. Color: White.

## PART 3 – EXECUTION

1. Examine areas to receive railings. Notify Architect of conditions that would adversely affect installation or subsequent use of railings. Do not proceed with installation until unsatisfactory conditions are corrected.
2. Install railings using manufacturer's supplied mounts, hardware and fasteners, at locations indicated on the drawings in accordance with manufacturer's printed instructions. Install railings plumb, level, straight, square, accurately aligned, correctly located, to proper elevation. Secure to building structure.
3. Erection Tolerances:
	1. Variation from Plumb, Posts: Maximum 3/32 inch in 3 feet.
	2. Offset from True Alignment: Maximum 1/4 inch in 12 feet of length, non-accumulative.
	3. Align handrails so variations from level for horizontal members and variations from parallel, with rake of steps and ramps for sloping members: Maximum 1/4 inch in 25 feet of length, non- accumulative.
4. Attach caps to top of posts with PVC glue.
5. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.
6. Cleaning: Remove labels and temporary protective coverings. Clean railings promptly after installation in accordance with manufacturer's instructions. Do not use harsh cleaning materials or methods that would damage finish.
7. Protect installed railings to ensure that, except for normal weathering, railings will be without damage or deterioration at time of Substantial Completion.

**END OF SECTION**

# Division 7 – Thermal & Moisture Protection

# SECTION 07 25 00 – WEATHER RESISTIVE BARRIER

PART 1 – GENERAL

1. Provide Weather-Resistive Barrier to completely wrap exterior sheathing of building envelope under new siding to make an air-tight barrier that resists liquid water penetration, as shown on drawings and specified herein, including but not limited to:.
	1. Barrier membrane, lap seam tape and fasteners.
2. Reference Standards (Latest editions, herein made a part of these specifications)

AAMA 711 Voluntary Specification for Self Adhering Flashing Used for Installation of Exterior Wall Fenestration Products

ASTM E2556 Standard Specification for Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment

1. Related Work Specified Elsewhere: Section 08 53 13 – Vinyl Windows
2. Submittals: Submit product data in accordance with Section 01 33 00.
3. Delivery / Storage / Handling:
	1. Deliver weather barrier materials and components in manufacturer’s original, unopened, undamaged containers with identification labels intact.
	2. Store weather barrier materials as recommended by system manufacturer.
4. Warranties:

Manufacturer's ten (10) year limited warranty on material performance. Contractor's Warranty: Refer to Section 01 78 36 – Warranties.

## PART 2 – PRODUCTS / MATERIALS

1. Basis of design: Dupont Inc. "Tyvek Homewrap" or equivalent product meeting the specified requirements.
2. Weather-Resistive Barrier (**WRB**): extremely fine high-density polyethylene (HPDE) fibers spunbonded and fused to form a strong, uniform water vapor permeable web; non-perforated, non- woven, non-water-absorbing, in 10' wide rolls, meeting the following performance characteristics:

|  |  |
| --- | --- |
| Air Porosity (TAPPI T-460): | 491 |
| sec/100cc Air Resistance (TAPPI Test Method T-460): | 1200 seconds |
| Air Resistance/Wall Assembly, ASTM E 2178: | <0.004 cfm/ft² @ 1.57 PSF |
| Basis Weight, TAPPI Test Method T-410: | 1.8 oz/yd2. |
| Water Vapor Permeance ASTM E 96 Method A: | 56 perms |
| Surface Burning Characteristics, ASTM E84: | Class A. |
| Flame Spread 15. Smoke Developed 15. Tear Resistance, ASTM D1117: | 8/6 lbs. |
| Tensile Strength, ASTM D882: | 30/30 lbs/in. |
| Water Penetration Resistance ATTCC Test Method 127 | 250 cm |
| Water Resistance (ASTM D779): | Pass |

|  |  |
| --- | --- |
| Water Vapor Transmission Rate (g/m²/24 hrs): |  |
| ASTM E 96 Procedure A | 105 |

1. Accessories, by same manufacturer as WRB:
	1. Seam / Flashing Tape (straight): Self-Adhering polypropylene laminate with butyl adhesive layer containing fire retardant additive, 30 mils thick, with siliconized release layer,

Seam tape minimum 2" wide. Dupont Installation Tape

Flashing tape minimum 6" wide DuPont "StraightFlash" or equivalent.

1. Flashing Tape (flexible): Self-Adhering elasticized polypropylene laminate with butyl adhesive layer containing fire retardant additive, 60 mils thick, with siliconized release layer;

9" wide or as recommended by window manufacturer. DuPont "FlexWrap" or equivalent.

1. Fasteners: #4 nails with large 1-inch plastic cap fasteners, or 1-inch plastic cap staples with leg length sufficient to achieve a minimum penetration of 5/8-inch into the wood stud.

DuPont Tyvek "Wrap Caps" or equivalent.

## PART 3 – EXECUTION

1. Sunlight / Ultraviolet Light exposure limit: The weather-resistive barrier sheet must be covered within 9 months (270 days) of installation and that all other products such as flashing tapes be covered within 4 months (120 days) of installation. If exposure exceeds time limit, overlay with new WRB.
2. Install WRB before windows are installed, wrapping into openings, in accordance with manufacturer’s recommendations. Lap vertical seams at least 12" and seal lap with specified tape. Lap horizontal seams at least 6" and seal lap with specified tape. Secure WRB every 12” to 18” on vertical stud line using plastic cap nails, large head nails or 1” crown staples.
3. Seal laps and at window and door nailing flanges with sealer tape.
	1. Make a modified “I-cut” in the WRB. Cut a flap above the rough opening to allow head flashing installation. Fold side and bottom flaps into rough opening and secure. Flip head flap up and temporarily secure.
	2. Remove release paper and install flashing tape to rough opening sill and adhere into rough opening across sill. Remove release paper and install 12” long pieces of flexible flashing tape to each corner, align edge of sill flashing with inside edge of sill, and up jambs (minimum 6”). Sill flashing should not wrap onto interior surface of framing. Fan flexible flashing tape at bottom corners onto face of wall and firmly press flashing to ensure full adhesion. Secure outer edges of corner flashing with approved sealing tape or mechanical fasteners.
	3. Flip WRB head flap up to clear door/window installation. Apply continuous bead of caulk to wall or backside of window nailing flanges across jambs and head. Do not apply caulk across sill. Install window/door according to manufacturer’s instructions.
	4. Jambs: Remove release paper and install straight flashing tape to door/window jamb, overlapping entire mounting flange of both jambs. Extend jamb flashings 6 inches above top of rough opening to below bottom of sill flashing.
	5. Flat head: Remove release paper and install straight flashing tape as head flashing, overlapping entire mounting flange at door/window head. Head flashing shall extend beyond outside edges of both jamb flashings.

Round head: Use flexible flashing in lieu of straight flashing. Secure outer edges of head flashing with approved sealing tape or mechanical fasteners

* 1. Flip head flap down over the head flashing. Secure flap above window with approved sealing

tape.

* 1. Caulk (using backer rod if necessary) to seal rear of window/door frame to rough opening
1. Other Openings and Penetrations: Provide flashings for other openings as required to provide weather-tight barrier. Install lapped components to direct water to exterior of building.
2. Do not leave exposed to sunlight longer than allowed by manufacturer. If exposure exceeds time limit, overlay with new WRB.

**END OF SECTION**

# SECTION 07 31 13 – FIBERGLASS-BASED ASPHALT SHINGLES AND ACCESSORIES

PART 1 – GENERAL

1. Section includes
	1. Fiberglass-based asphalt shingles.
	2. Moisture shedding underlayment, eaves, valley and ridge protection
	3. Associated metal flashing and roof accessories.
	4. Other related items and products.
2. Related Sections
	1. Section 07 6200 - Sheet Metal Flashing and Trim.
3. References
	1. ASTM A 653/A 653M – Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron-Alloy-Coated (Galvannealed) by the Hot-DipProcess
	2. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
	3. ASTM D 225 – Standard Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules.
	4. ASTM D 226 – Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
	5. ASTM D 1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials used as Steep Roofing Underlayment for Ice Dam Protection.
	6. ASTM D 3018 – Standard Specification for Class A Shingles Surfaced with Mineral Granules.
	7. ASTM D 3161 – Standard Test Method for Wind Resistance of Asphalt Shingles (Fan- InducedMethod).
	8. ASTM D 3462 – Standard Specification for Asphalt Shingles Made from Glass Felt and Surfacedwith Mineral Granules.
	9. ASTM D 4586 – Standard Specification for Asphalt Roof Cement, Asbestos-Free
4. Submittals
	1. Product Data: Provide manufacturer’s printed product information indicating material characteristics, performance criteria and product limitations.
	2. Manufacturer’s Installation Instructions: Provide published instructions that indicate preparation required and installationprocedures.
	3. Certificate of Compliance: Provide Certificate of Compliance from an independent laboratory indicating that the asphalt fiberglass shingles made in normal production meet or exceed the requirements of the following:
		1. ASTM E 108/UL 790 Class A Fire Resistance
		2. ASTM D 3161/UL 997 Wind Resistance.
		3. ASTM D 3462
	4. Shop Drawings: Indicate specially configured metal flashing, jointing methods and locations, fastening methods and locations and installation details as required by project conditions indicated.
5. Quality Assurance
	1. Installer Minimum Qualifications: Installer shall perform work in accordance with NRCA Roofing and Waterproofing Manual Work shall be acceptable to the manufacturer.
	2. Pre-Installation Meeting – Conduct a pre-installation meeting at the site prior to commencing work of this section: Require attendance of entities directly concerned with roof installation. Agenda will include:
		1. Installation procedures and manufacturer’s recommendations
		2. Safety procedures
		3. Coordination with installation of other work
		4. Coordination with asbestos removal, if applicable.
		5. Availability of roofing materials.
		6. Preparation and approval of substrate and penetrations through roof.
		7. Other items related to successful execution of work
	3. Maintain one copy of manufacturers application instructions on the project site.
	4. Verify that manufacturer’s label contains references to specified ASTM standards
6. Delivery, Storage, and Handling
	1. Store Products in manufacturer’s unopened packaging until ready for installation
	2. Store and dispose of solvent-based materials and materials used with solvent based materials, in accordance with requirements of local authorities having jurisdiction.
	3. Deliver shingles to site in manufacturer’s unopened labeled bundles. Promptly verify quantities and conditions. Immediately remove damaged products from site.
7. Project Conditions
	1. Anticipate and observe environmental conditions (temperature, humidity and moisture) within limits recommended by manufacturer for optimum results. Do not install products under environment conditions outside manufacturer’s absolute limits.
	2. Provide 100 square feet of extra shingles of each color specified, if requested by RHA’sRepresentative.
	3. Take special care when applying Winterguard Waterproofing Shingle Underlayment, or equal, and shingles when ambient or wind chill temperature is below 45 degrees F (7 degrees C). Tack WinterGuard in place if it does not adhere immediately to the deck.
8. Warranty
	1. Manufacturer’s Warranty: Furnish shingle manufacturer’s warranty for the product listed in Part 2.
		1. Lifetime limited warranty.
	2. Warranty Supplement: Provide manufacturer’s supplemental warranty (CertainTeed’s Surestart or Surestart Plus) to cover labor and materials in the event of a material defect for the following period after completion of application of shingles:
		1. First Ten Years (All Lifetime Warranty products
		2. First Five Years (All 25 to 30 year Shingles)
		3. First Three Years (CT20 and CT20 AR)
		4. No Surestart or Surestart Plus for any shingle applied to inadequately ventilated roof deck.
	3. Warranty Transferability Clause: Make available to Owner shingle manufacturer’s standard option for transferring warranty to a new owner.
	4. Wind Warranty Upgrade to 130 mph for first 15 years provided all manufacturers’ conditions and instructions are met by contractor.

## PART 2 - - PRODUCTS

1. Manufacturers
	1. Acceptable Manufacturer: CertainTeed Landmark Shingle: Conforming to ASTM D 3018 Type I – Self-Sealing, UL Certification of ASTM D 3462, ASTM D 3161/UL997 70-mph Wind Resistance and UL Class A Fire Resistance, glass fiber mat base, ceramically colored/UV resistant mineral surface granules across entire face of shingle, two piece laminate shingle.
	2. Weight: 240-245 pounds per square (100 square feet) (12.0 kg/sq m).
	3. Acceptable Singles by other manufacturers;
		1. GAF Timberline.
		2. IKO Cambridge.
		3. Or approved equal.
	4. Color: To be selected by RHA from manufacturer’s standards.
2. Sheet Materials
	1. **Eaves Protection:** CertainTeed “WinterGuard”, or approved equal; ASTM D1970 sheet barrier of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement and “split” back plastic release film; provide material warranty equal in duration to that of shingles being applied.
	2. Underlayment: ASTM D 226, Asphalt saturated felt, 15-lb (non-perforated).
	3. **Waterproofing Underlayment:** CertainTeed “WinterGuard”, or approved equal; ASTM D 1970 sheet barrier of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement, and “split” back plastic release film; **Use in “low slope’ areas (below 4:12, but no less that 2:12 pitch);** provide material warranty with equal in duration to that of shingles being applied .
		1. CertainTeed WinterGuard Granular
		2. Or approved equal.
3. Flashing Materials
	1. Sheet Flashing: ASTM A 361/A361M; 26 Guage (0.45 mm) steel with minimum G115/Z350 galvanized coating
	2. Sheet Flashing: ASTM B 209; 0.025 (0.63mm) thick aluminum, mill finish.
	3. Bitumious Paint: Acid and alkali resistant type; black color.
	4. Tinner’s Paint: Color as selected by RHA to coordinate with shingle color.
4. Accessories
	1. Nails: Standard round wire type roofing nails, corrosion resistant; hot dipped zinc coated steel, aluminum or chormated steel; minimum 3.8 inch (9.5mm) head diameter; minimum 11 or 12 gage (2.5mm) shank diameter; shank to be sufficient length to penetrate through the roof sheathing or ¾ inch (19mm) into solid wood, plywood or non-veneer wood decking.
	2. Asphalt Roofing Cement: ASTM D 4586, Type I or II
5. Other Items and Products
	1. **Metal Drip and Apron Flashing:** Minimum .024 inch aluminum, fluoropolymer finish, break

and formed to provide 3 inch roof deck flange, 1-1/2 inch fascia flange, with 5/16 inch drip at lower edge. Provide in minimum 8 foot lengths.

* 1. **Ridge Vents:** Manufacturer’s standard low profile, on the rooftop ventilation strip made of polypropylene or other UV-stabilized plastic.
		1. Air Vent, Shingle-over ridge vent.
		2. Or approved equal.
1. Flashing Fabrication
	1. Form flashing to profiles indicated on attached Drawings and to protect roofing materials from physical damage and shed water.
	2. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.

## PART 3 – EXECUTION

1. Examination
	1. Verify existing site conditions under provisions of Division 1 Sections.
	2. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surfaces
	3. Verify deck surfaces are dry and free of ridges, warps or voids.
2. Roof Deck Preparation
	1. Follow shingle manufacturer’s recommendations for acceptable roof deck material
	2. Broom clean deck surfaces under eave protection and underlayment prior to their application
3. Installation – Eave Ices Dam Protection
	1. Place eave edge and gable metal edge flashing tight with fascia boards. Weather-lap joints 2 inches. Secure flange with nails spaced 8 inches on center.
	2. Apply CertainTeed “WinterGuard”, or equal, Waterproofing Shingle Underlayment as eave protection in accordance with manufacturer’s instructions.
	3. Extend eave protection membrane minimum 24 inches up slope beyond interior face of exterior wall. See drawings for full extent of self-adhered underlayment.
4. Installation – Protective Underlayment
	1. Roof Slopes between 2:12 and 4:12: Apply one layer of “WinterGuard”, or equal, over all areas not protected by WinterGuard at eaves, with end and edges weather lapped minimum of 19 inches. Stagger end laps each consecutive layer. Nail in place.
	2. Roof Slopes 4:12 or Greater: Install one layer of asphalt felt shingle underlayment perpendicular to slope of roof and lap minimum 4 inches over eave protection.
	3. Weather-lap and seal watertight with asphalt roofing cement items projecting through or mounted on roof. Avoid contact or solvent-based cements with WinterGuard , or equal.
5. Installation – Valley Protection
	1. For “closed-cut,” “woven,” and “open” valleys, first place one ply of WinterGuard, or equal, minimum 36 inches (910 mm) wide, centered over valleys. Lap joints minimum of 6 inches (152 mm) Follow instructions of shingle an waterproofing membranemanufacturer.
6. Installation – Metal Flashing
	1. Weather-lap joints minimum 2 inches (50 mm).
	2. Seal work projecting through or mounted on roof with asphalt roofing cement and make

weather tight.

1. Installation – Asphalt Shingles
	1. Install shingles in accordance with manufacturer’s instructions for product type and application specified.
2. Field Quality Control
	1. Field inspection will be performed by the RHA Representative.
	2. Visual inspection of the work will be provided by the RHA Representative. If conditions are unacceptable, correct work to the satisfaction of the RHA.
3. Protection of Finished Work
	1. Protect finished work until the time of acceptance by the RHA.
	2. Do not permit traffic over finished roof surface.

**END OF SECTION**

# SECTION 07 46 33 - PLASTIC SIDING

PART 1 - GENERAL

1. Summary
	1. Section Includes:
		1. Plastic siding, soffits and fascia.
		2. Insulation, trim, anchorage, and accessories.
		3. Other project specific items.
2. Related Sections:
	1. Division 01: Administrative, procedural, and temporary work requirements
	2. Section 07 6200 - Sheet Metal Flashing and Trim.
	3. Section 07 9200 - Joint Sealers.
3. References
	1. ASTM International (ASTM) ([www.astm.org](http://www.astm.org/)):
		1. D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
		2. D3679 - Standard Specification for PVC Siding.
		3. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
4. Submittals
	1. Submittals for Review:
		1. Product Data: Indicate materials, profiles, sizes, fastening methods, surface texture, finishes, and accessories.
		2. Samples: 3 x 3 inch plastic samples showing available colors.
	2. Quality Control Submittals:
		1. Certificates of Compliance: Certification from an independent testing laboratory that siding meets fire hazard classification requirements.
5. Quality Assurance
	1. Installer Qualifications: Minimum 3 years documented experience in work of this Section.
6. Project Conditions
	1. Do not install siding on wet or frozen substrate.
	2. Do not install siding at temperatures below 40 degrees F.

## PART 2 - PRODUCTS

1. Manufacturers
	1. Acceptable Manufacturers **(Match Existing):**
		1. Mitten, Inc. (Design Standard). [(www.mittensiding.com](http://www.mastic.com/))
		2. CertainTeed Corp. ([www.certainteed.com](http://www.certainteed.com/))
		3. Mastic Home Exteriors. [(www.mastic.com](http://www.mastic.com/))
		4. Alside, Inc. ([www.alside.com](http://www.alside.com/))
		5. Or approved equal.
2. Materials
	1. Plastic Siding:
		1. Material: Extruded PVC; ASTM D3679.
		2. Fire hazard classification:
			1. Maximum flame spread rating of 25, tested to ASTM E84.
			2. \Average time of burning less than 5 seconds and average length of burning less than 20 mm, tested to ASTM D635.
		3. Siding(MatchExisting):
			1. Profile: Clapboard.
			2. Exposure: 4-1/2 inch with 5/8 inch projection.
			3. Finish: Woodgrain, low gloss.
			4. Thickness: 0.044 inch. Meet or exceed ASTM D3679 requirements.
			5. Butt edge: 1 inch.
			6. Product: Double 4-1/2 inch.
		4. Soffits (Aluminum to Match Existing):
			1. Material: 0.032 gage Aluminum.
			2. Profile: Solid and Perforated.
			3. Width: 16-inches.
			4. Free Area: 7.8 square inches per lineal foot.
			5. Finish: Smooth, low gloss.
			6. Gentek Building Products, or approved equal.
		5. Other Trim (MatchExisting):
			1. Provide other trim pieces as required to match adjacent siding and trim.
		6. Colors:
			1. Fascia, Soffit, Vinyl Corners, Window Trim: **Match Existing.**
3. Accessories
	1. Fasteners: Type recommended by siding manufacturer; hot-dip galvanized or stainless steel.
	2. Joint Sealers: Specified in Section 07 9200.
4. Other
	1. Air Infiltration Barrier: Tyvek HomeWrap by DuPont, or approved equal, complying with ASTM E-1677, Class A Surface Burning Characteristics.
	2. Air Infiltration Barrier Tape: Tyvek Tape by DuPont, or approved equal, constructed of UV resistant oriented polypropylene film coated with permanent acrylic adhesive. Provide tape at all overlapping joints HomeWrap and tie to surrounding construction per Building Code requirements for “continuous air barrier and details shown on drawings.
	3. Insulation:
		1. Dow Styrofoam Brand Square Edge Insulation, or approved equal.
			1. ASTM C578 for rigid cellular polystyrene insulation.
			2. Minimum compressive strength: 25 PSI.
			3. Thermal resistance: Minimum R value of 5 per inch. 4. Size: 2'x8' or 4'x8'

5. Thickness: **Matchexisting.**

* + 1. Insulation Tape: Minimum
			1. 2-7/8-inches wide, pressure sensitive, waterproof tape.
			2. “Weathermate” Construction tape by Dow, or approved equal.
		2. Fasteners:
			1. Type best suited to application, hot-dip galvanized or fluoropolymer coated steel with pan washers.

## PART 3 - EXECUTION

1. Installation
	1. Install insulation, insulation tape, siding, trim, and accessories in accordance with manufacturer's instructions.
	2. Install aligned, level, and plumb.
	3. Lock each siding panel into preceding panel.
	4. Cut panels with clean, smooth edges to provide maximum 1/8 inch gaps.
	5. Fasten at maximum 16 inches on center with fasteners through slotted hole in flange. Locate fasteners in center of hole. Do not drive fasteners tight; allow for thermal movement.
	6. Install trim at internal and external corners and where siding abuts dissimilar material or stops with edge exposed.
	7. Apply joint sealer between siding and trim and adjacent surfaces as specified in Section 07 9200. Ensure watertight condition.

**END OF SECTION**

# SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1. Summary
	1. Section Includes:
		1. Metal flashings and trim.
		2. Gutters and downspouts.
		3. Flashings at shingle roofing.
	2. Related Sections:
		1. Division 01: Administrative, procedural, and temporary work requirements.
		2. Section 07 3113 - Fiberglass-Based Asphalt Shingles.
		3. Section 07 4633 - Plastic Siding.
		4. Section 07 9200 - Joint Sealers.
2. References
	1. American Architectural Manufacturers Association (AAMA) ([www.aamanet.org](http://www.aamanet.org/)):
		1. 611 - Voluntary Specification for Anodized Architectural Aluminum.
		2. 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Steel Substrates.
		3. 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Architectural Extrusions and Panels.
		4. 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Architectural Extrusions and Panels.
	2. American National Standards Institute/Single Ply Roofing Institute (ANSI/SPRI) ([www.spri.org](http://www.spri.org/)) ES-1 - Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
	3. ASTM International (ASTM) ([www.astm.org](http://www.astm.org/)):
		1. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
		2. A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
		3. A755/A755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
		4. A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy- Coated by the Hot-Dip Process.
		5. B32 - Standard Specification for Solder Metal.
		6. B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
		7. B370 - Standard Specification for Copper Sheet and Strip for Building Construction.
		8. B506 - Specification for Copper-Clad Stainless Steel Sheet and Strip for Building Construction.
		9. B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
	4. Copper Development Association (CDA) ([www.copper.org](http://www.copper.org/)) - Contemporary Copper, A Handbook of Sheet Copper Fundamentals, Design, Details and Specifications.
	5. Sheet Metal and Air Conditioning Manufacturer’s Association International (SMACNA) ([www.smacna.org](http://www.smacna.org/)) - Architectural Sheet Metal Manual.
3. Submittals
	1. Submittals for Review:
		1. Shop Drawings: Show locations, types and thicknesses of metal, profiles, dimensions, fastening methods, provisions for expansion and contraction, and joint details.
		2. Samples:
			1. Each flashing and trim profile, minimum 12-inches long. Include corners where applicable.
			2. 3 x 3 inch prefinished metal samples in specified color.
4. Quality Assurance
	1. Fabricator and Installer Qualifications: Minimum 5-years documented experience in work of this Section.
	2. Mockup: N/A

## PART 2 - PRODUCTS

1. Materials
	1. Aluminum Sheet:
		1. ASTM B209, alloy 3003, temper H14, 0.024-inch thick.
		2. Finish: Polyester enamel coating, color to be selected from manufacturer's full color range.
2. Accessories
	1. Solder: ASTM B32.:
	2. Fasteners: Aluminum, same material and finish as sheet metal.
	3. Joint Sealers: Specified in Section 07 9200.
3. Fabrication
	1. Fabricate components in accordance with [SMACNA Manual.] [CDA Handbook.]
	2. Profiles:
		1. Gutters: “Ogee” Style.
			1. .032 gauge.

2. 3-1/2-inch by 5-1/2-inch.

1. Continuous type formed from aluminum rolls.
2. Concealed fastening system with screws.
3. Manufacturer standard end caps.
4. Strainers shall be wire basket type.
	* 1. Downspouts: Rectangular shape.
			1. .019 gauge.
			2. 2-inch by 3-inch.
			3. U-clip supports.
			4. Elbows shall be .016 to match downspouts.
		2. Base, Roof to Wall, Step and Other Flashings:
			1. .032 gauge.
			2. Hem all exposed edges.
			3. Size per drawing dimensions.
		3. Fabricate end caps, downspout outlets and headers, straps, brackets, and downspout strainers in profile to suit gutters and downspouts.
		4. Color to match existing at Bronson Court.
	1. Fabricate corners in single units with minimum 18 inch long legs.
	2. Fabricate vertical faces with bottom edge formed outward 1/4-inch and hemmed to form drip.
	3. Form sections accurate to size and shape, square and free from distortion and defects.
	4. Provide for thermal expansion and contraction in sheet metal:
		1. Gutters:
			1. Place expansion joints at maximum 50 feet on center.
			2. Locate expansion joints between downspouts; prevent water flow over joint.
		2. Other sheet metal:
			1. Provide expansion joints in sheet metal exceeding 15 feet in running length.
			2. Place expansion joints at 10 feet on center maximum and maximum 2 feet from corners and intersections.
		3. Joint width: Consistent with types and sizes of materials, minimum width 1/4-inch.
	5. Fabricate cleats and starter strips of same material as sheet metal.

## PART 3 - EXECUTION

1. Installation
	1. Install flashing and sheet metal as indicated and in accordance with SMACNA Manual.
	2. Secure flashings with concealed fasteners where possible.
	3. Apply plastic cement between metal and bituminous flashings.
	4. Fit flashings tight, with square corners and surfaces true and straight.
	5. Seam and seal field joints.
	6. Separate dissimilar metals with bituminous coating or non-absorptive gaskets.
	7. Reglets: N/A
	8. Gutters: Secure with concealed fasteners spaced maximum 24-inches on center and within 12-inches of ends.
	9. Downspouts:
		1. Secure with straps spaced maximum 8-feet on center and within 2-feet of ends and elbows.
		2. Flash downspouts into gutters and fasten.
		3. Flash upper sections into lower sections minimum 2-inches at joints; fasten sections together.
	10. Apply joint sealers as specified in Section 07 9200.
2. Cleaning
	1. Clean sheet metal; remove slag, flux, stains, spots, and minor abrasions without etching

surfaces.

**END OF SECTION**

# SECTION 07 92 00 – JOINT SEALANTS

PART 1 – GENERAL

1. Provide labor, materials, tools and equipment necessary for caulking and sealant work shown on the drawings and specified herein, including but not limited to:
	1. Exterior siding
	2. Exterior brake metal.
	3. Other locations noted on drawings.
2. Reference Standards (Latest editions, herein made a part of these specifications)

ASTM C-920 Specifications for Elastomeric Joint Sealants - minimum unaltered requirements ASTM C-1021 Required testing for Elastomeric Joint Sealants.

ASTM C-1193 Guide for Installation of Elastomeric Sealants.

1. Related Work Specified Elsewhere:

Section 07 71 23 – Manufactured Gutters & Downspouts (caulking for gutter components)

1. Submittals: Submit product data in accordance with Section 01 33 00.
2. Delivery / Storage / Handling:
	1. Store materials in area protected from weather and temperature immediately upon delivery to project.
3. Warranty: Refer to Section 01 78 36 – Warranties.

## PART 2 – PRODUCTS / MATERIALS

1. Manufacturers are specified under each type of product.
	1. Other sealants specifically recommended for compatibility with certain substrates by the substrate manufacturer are hereby included even if not listed below.
	2. Equivalent products will be considered under Section 01 33 00.
2. Products:

**Type A**: Single component elastomeric sealant, moisture cured, polyurethane-base complying with ASTM C-920 Type S, Grade NS, Class 25, Use NT; and meeting Fed Spec TT-S- 00230C Type II Class A.

Product: Tremco "DyMonic"; Sikaflex-1a; or equivalent product.

Color: Owner shall select from manufacturer's standard colors.

Location: Joints at cementitious materials. Other locations as shown on the drawings.

**Type B**: Single component medium modulus sealant, neutral cure, architectural grade silicone complying with ASTM C-920 Type S, Grade NS, Class 25, Use NT, G, A, M, O; and meeting Fed Spec TT-S-00230C Type II, Class A.

Product: Dow Corning 791 Silicone Perimeter Sealant; or equivalent GE Silicones product. Color: Owner shall select from manufacturer's standard color range of at least 5 colors. Location: Exterior joint sealing at flashings and siding.

**Type C**: Single component mildew-resistant silicone sealant formulated with fungicide, air cured; complying with ASTM C-920 Type S, Grade NS, Class 25, Use NT.

Product: Dow Corning 786 Mildew Resistant; GE Silicones Sanitary 1700; Tremco Tremsil 600.

Color: Owner shall select from manufacturer's standard color range of at least 3 colors.

Location: Interior locations at non-porous substrates exposed to water, high humidity and temperature extremes; bathroom fixtures, sinks, countertop backsplashes and other interior wet locations shown on the drawings.

**Type D:** Single component non-hardening, non-skinning, non-bleeding synthetic butyl rubber complying with ASTM D-217.

Product: Tremco Acoustical Sealant; Tremco "Curtainwall Sealant" or equivalent product.

Location: Concealed joints in metal fascia system.

1. Primers as recommended by sealant manufacturer for the applicable substrates and conditions.
2. Joint backing (where needed): Preformed compressible, resilient, non-waxing, non-gassing, non- staining foam rods or shapes. Open or closed cell as required for each joint profile. Foam tape shall be self-adhering.
3. Cleaning agents and sealant removers: non-staining, oil-free and compatible with substrate finishes.

## PART 3 – EXECUTION

1. Commencing sealant work shall constitute acceptance of job conditions and acknowledgment of liability for replacement of defective sealing which may occur later.
2. Prepare surfaces, prime and apply sealing compounds in strict accordance with the manufacturer's printed directions.
	1. Apply primers to porous substrates (including concrete and masonry).
	2. Install joint backing where movement can be anticipated.
	3. Protect adjacent surfaces from smears and drips. Use masking tape when needed to make tight, straight edges to sealant joints.
3. Cracks to be caulked with sealant shall be a minimum of 1/4" wide and deep unless otherwise approved.
4. Remove drips and smears using cleaners and procedures recommended by sealant manufacturer. Surfaces that cannot be cleaned shall be replaced at no additional cost.

**END OF SECTION**

# Division 09 – Finishes

# SECTION 09 91 00 – PAINTING

PART 1 – GENERAL

1. Provide materials, labor and equipment to paint unfinished surfaces and existing surfaces to be refinished, including but not limited to:
	1. New gypsum board (drywall) and existing gypsum board and plaster in spaces being altered.
	2. Interior wood and/or composite materials such as trim, doors, frames.
	3. Wood floor alterations.
	4. New exterior trim (except prefinished materials) and wood siding.
	5. Light sanding of existing surfaces to be refinished.
2. Reference Standards (Latest editions, herein made a part of these specifications)

ASTM D7073 Standard Guide for Application & Evaluation of Brush and Roller Applied Paint Films.

Society for Protective Coatings (SSPC) Surface Preparation Standards.

1. Related Work Specified Elsewhere:

Section 09 26 00 – Gypsum Board Assemblies

1. Submittals: Submit product data in accordance with Section 01 33 00.
	1. Manufacturer's product data.
	2. Manufacturer's paint systems proposed by the Contractor, if different from specifications.
	3. Color charts for color selection.
2. Delivery / Storage / Handling: Store materials in secure, protected interior location immediately upon delivery to project.
3. Warranty: Refer to Section 01 78 36 – Warranties.

## PART 2 – PRODUCTS / MATERIALS

1. Products: Richards Paints, Benjamin Moore & Co. ("Coronado" and " Benwood ") products are listed in the schedule. Equivalent products by Pratt & Lambert, Martin Senour, Sherwin Williams, Glidden, Devoe & Reynolds will be considered as substitutions under Section 01 33 00.
	1. Colors as selected by RHA property manager.
2. Surfaces and Applications: (Apply "KILZ" primer to surfaces affected by mold or mildew.) PT-1 Interior gypsum board ceilings (flat, acrylic )

Primer Richards Paint 306 Rich-Tex Primer Sealer. VOC Level < 50 g/L.

2 coats Richards Paint 6500TW Rich Pro 6000 Acrylic Flat. VOC Level < 100 g/L. PT-2 Interior gypsum board walls (eggshell, acrylic)

Primer Richards Paint 306 Rich-Tex Primer Sealer. VOC Level < 50 g/L.

2 coats Richards Paint RP6530TW Rich Pro 6000 Acrylic Eggshell, VOC Level < 50 g/L. PT-3 Interior gypsum board walls and ceilings (semi-gloss, acrylic)

Primer Richards Paint 306 Rich-Tex Primer Sealer. VOC Level < 50 g/L.

2 coats Coronado Super Kote 5000 Series 32 , VOC Level < 100 g/L. PT-4 Interior wood trim (semi-gloss, acrylic)

Primer AllPro "AllPrime" 250960 Multi-Purpose Acrylic Primer. VOC Level < 100 g/L.

2 coats Coronado Super Kote 5000 Series 32 , VOC Level < 100 g/L.

PT-5 Interior metal trim (semi-gloss, acrylic)

Primer PPG 90-712 Pittech DTM Acrylic Metal Primer

2 coats Richards Excel 1250 Series Acrylic Semi-Gloss Enamel, VOC Level < 250 g/L.

PT-11 Exterior wood (semi-gloss, acrylic)

Primer Richards 6-210 Rich Shield Exterior Acrylic Primer Sealer 2 coats PPG 78 Series Sun Proof Exterior Semi-Gloss

PT-12 Exterior metal (semi-gloss, acrylic)

Primer PPG 90-712 Pittech DTM Acrylic Metal Primer

2 coats Richards 1250 Series Excel DTM Acrylic Semi-Gloss CLF-1 Interior wood trim (clear acrylic polyurethane, semi-gloss)

Filler Benwood Paste Wood Filler #238. open-grain paste wood filler, VOC Level < 171

g/L.

Stain Benwood Penetrating Stain #234, alkyd-based, VOC Level < 540 g/L.

Sealer Moore's Interior Wood Finishes Quick-Dry Sanding Sealer #413, VOC Level < 494 g/L.

2 coats Rich Wood 73-1 Acrylic Urethane Varnish Semi-gloss, VOC Level < 275 g/L.

Sand between coats

## PART 3 – EXECUTION

1. Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work.
	1. The presence of defects causing an unsuitable finish as determined by the Owner shall be cause for rejection. Such areas shall be corrected to the Owner's satisfaction.
	2. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Applicator.
	3. Starting of painting work will constitute Applicator's acceptance of surfaces and conditions within a particular area, and responsibility for making any corrections overlooked.
2. Surface Preparation: Remove dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film, or that will show through clear finishes.
	1. Fill dents and holes, including nail holes in trim and millwork, with appropriate filler for the finish being applied. Set nails below surface, to receive filler.
	2. Sand existing gloss finishes with fine grit sandpaper to dull finish.
	3. Shellac knots and pitch streaks after priming.
	4. Apply "KILZ" primer or approved equivalent product to surfaces affected by mold or mildew.
	5. Remove finish hardware and electrical covers prior to painting, and replace when paint is cured.
	6. Protect other finished work from drips and spatter. Remove temporary protective wrappings after completion of finishing operations.
3. Comply with manufacturer's recommendations for environmental conditions, mixing and application. Examine existing finishes in order to verify appropriate primers and surface preparations.
	1. New or bare surfaces shall receive the total number of coats specified under " Surfaces and Applications " in Part 2, as reference in the Painting Schedule.
	2. Apply first-coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
	3. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb

pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

* 1. Apply with a brush or roller, and touch-up using same method. Use application techniques best suited for substrate and material being applied, to produce a surface uniform in appearance, free from runs, sags, defective brushing, clogging or excessive flooding.
	2. Edges of painting adjoining other color or materials shall be sharp and clean without overlapping.
	3. Omit primer coat on shop-primed metal surfaces but touchup damage to film before applying top coats, unless otherwise indicated.
1. Clean-Up & Protection:
	1. During progress of work, remove discarded paint materials, rubbish, cans and rags from site at the end of each work day.
	2. Upon completion of painting work, clean window glass and other paint-splattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.
	3. Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.
	4. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
	5. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces. Touch up painting shall be applied by the same method as the final coat.
2. Paint Schedule

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Room Name | Walls | Wall Color | Wood Trim/ Frame | Trim Color | Ceiling | Ceiling Color |
| Lower Level: Bedrooms, Closets, Hall, Furnace, Water Meter | PT-2 |  | PT-4 |  | PT-1 |  |
| Upper Level: Living/Dining/Kitchen, Closets, Foyer | PT-2 |  | PT-4 |  | PT-1 |  |
| Bathroom, Laundry | PT-3 |  | PT-4 |  | PT-1 |  |

* 1. Factory-primed wood doors: PT-4; Color as selected by Owner. Special note: Paint all 6 surfaces, which includes all edges. This is a door warranty related requirement.
	2. Factory-primed insulated metal doors and frames: PT-12; Color as selected by Owner. Paint all 6 surfaces.
	3. Ferrous railings: PT-5; Color as selected by Owner.
	4. Wood handrails: CLF-1

**END OF SECTION**

DIVISION 26 – ELECTRICAL

**SECTION 26 00 00 – ELECTRICAL COMMON REQUIREMENTS**

**PART 1 – GENERAL**

1. Reference Standards (Latest editions, herein made a part of these specifications) ANSI/NECA 1-2009 Standard Practice of Good Workmanship in Electrical Construction. ANSI/NECA 200-2002 Recommended Practice for Installing and Maintaining Temporary

Electric Power at Construction Sites ANSI/NFPA 70 National Electrical Code.

1. Comply the standards of the latest editions of the National Electrical Code (NEC), Building Code of New York State, other applicable codes and local codes having authority. Certificate of inspection by electrical inspection agency is required.
2. Drawings are diagrammatic in nature and cannot show necessary offsets, fittings, etc. Install Work substantially as indicated on Drawings. Verify exact location and elevations on the Site.
	1. Include items not shown or specified but that are necessary to make a complete working code compliant installation.
3. Size loads, design circuit layouts and provide necessary components to make a complete electrical system to serve devices, equipment and fixtures shown on the Drawings and specified herein.
4. Employ only competent workers for the job, skilled in their branch of the trade, supervised by a licensed electrician.
5. Include and pay fees and taxes applicable to the work of this Contract.
6. Coordinate work of this Contract with other trades and utility companies to avoid conflicts. Install materials and equipment in time so as not to cause delays for other trades. Make field adjustments as necessary at no additional cost.
	1. Right of Way: Yield right of way to piping and ductwork systems, except at panel boards where required clearances may have to be negotiated.
	2. Provide electrical service to fixtures and equipment provided by other trades, such as exhaust fans and appliances.
7. Refer to Division 1 and 2 specifications for allocation of responsibilities for cutting, patching and demolition.
8. Refer to Section 06 10 00 for permitted size and location of holes and notches in joists and studs. Holes larger than 1" diameter need written permission from Architect.
9. Protect installed equipment and fixtures from damage until final acceptance.
10. Do not cover up rough-in work until it has been reviewed by inspection agency and/or Code Official.
11. Remove unsatisfactory work and correct immediately, to the satisfaction of the Architect.
12. Delivery / Storage / Handling:
	1. Store materials in a secure, protected location immediately upon delivery to project.
	2. Protect materials, equipment and fixtures from high humidity and moisture during storage and installation until final acceptance
13. Warranty: Refer to Section 01 78 36 – Warranties..

**PART 2 – PRODUCTS / MATERIALS**

A. Products and materials are listed in other sections of Division 26. Include all items necessary to make a complete working installation.

**PART 3 – EXECUTION**

1. Demolition: Refer to Division 01 Section "Cutting and Patching" and Division 02 Section "Selective Demolition" for general demolition requirements, procedures and allocation of responsibilities among the subcontractors.
	1. Disconnect, demolish, and remove electrical systems, cable, rough-in boxes, devices, equipment, fixtures and components indicated to be removed, including underground utilities.
		1. Existing to Remain: Do not disturb active services to remain. Repair services to remain that are damaged by the Work.
		2. Inactive: When encountered, remove, then cap or plug.
		3. Abandoned circuits: Remove circuits that no longer will serve active devices, back to closets junction box or panel.
	2. Remove, relocate and extend existing services to accommodate new construction.
	3. Repair adjacent construction and finishes damaged during demolition.
	4. Provide temporary electrical services during construction for all contractors; Contractor shall coordinate with Utility Company to obtain temporary service.
2. Electrical Work – Common Requirements
	1. Comply with NECA 1, OSHA and NEC, latest editions.
	2. Install all electrical items indicated on construction documents. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall- mounting items.
	3. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
	4. Install electrical equipment so that it is serviceable without dismantling it or adjacent equipment or construction.
3. Sleeves: Install sleeves for electrical penetrations through exterior walls, and seal with approved filler material.
	1. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and cable, unless indicated otherwise.
4. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials complying with Section 07 84 13–Firestopping.
	1. Install sleeves for penetrations of fire-rated wall assemblies unless openings that are compatible with firestop system are installed during construction of floor or wall.
	2. Apply firestopping to electrical penetrations of fire-rated wall assemblies, to maintain the intended fire-resistance rating of assembly.

**END OF SECTION**

**SECTION 26 05 19 – LOW-VOLTAGE ELECTRICAL PART 1 – GENERAL**

1. POWER CONDUCTORS & CABLES
	1. Building wires, cables, connectors, splices and terminations rated 600 V and less.
2. Reference Standards (Latest editions, herein made a part of these specifications) ANSI/NECA/AA 104-2006 Standard for Installing Aluminum Building Wire and Cable ANSI/NECA 120-2006 Standard for Installing Armored Cable (Type AC) and Metal-Clad Cable (Type MC) ANSI/NECA 121-2007 Standard for Installing Nonmetallic-Sheathed Cable (Type NM) and Underground

Feeder and Branch-Circuit Cable (Type UF)

ANSI/NETA ATS-2013 Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems

1. Related Work Specified Elsewhere:

Section 26 00 00 – Electrical Common Requirements

1. Submittals: Submit product data in accordance with Section 01 33 00.
	1. Product Data: For each type of product indicated.
2. Delivery / Storage / Handling: Store materials in a secure, protected location immediately upon delivery to project.
3. Warranty: Refer to Section 01 78 36 – Warranties.

**PART 2 – PRODUCTS / MATERIALS**

1. Conductors and Cables:
	1. Aluminum and Copper Conductors: Comply with NEMA WC 70. Conductor sizes #8 and larger shall be stranded. Comply with ASTM B-3, B-8 and B-174, and UL-62.
	2. Conductor Insulation: Comply with NEMA WC 70 for Types THW, THHN-THWN UF and USE
	3. Multi-conductor Cable: Comply with NEMA WC 70 for armored cable, Type AC, metal-clad cable, Type MC, Type NM nonmetallic-sheathed cable, and Type E with ground wire.
		1. Non-metallic sheathed cable: Type NM (romex) conforming to UL Std 719. Use where allowed by code.
		2. Electrical Metallic Tubing (EMT): Mild steel, electro-galvanized, conforming to UL Std 797.
		3. Flexible conduit: spirally wound, interlocking zinc coated strip steel conforming to UL Std.
	4. Conductor Material Applications:
		1. Feeder cables: Copper for feeders smaller than #4 AWG; copper or aluminum for feeders #4 AWG and larger. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.
		2. Branch Circuits: Copper. Solid for #10 AWG and smaller; stranded for #8 AWG and larger.
	5. Low-Voltage Control Cable: Paired Cable: NFPA 70 Type CMG, one pair twisted, #16 stranded (19x29) or #18 AWG stranded (19x30) tinned-copper conductors, as scheduled. Unshielded PVC insulation with PVC jacket. Flame Resistance complying with UL 1581.
	6. Single Line Telephone System Cable: 24 AWG, 4 conductor telephone wire, thermoplastic insulated general-purpose communication / single line telephone station wire. Soft annealed solid copper per ASTM B3-90. Fire resistant PVC jacket. UL444; NEC Article 725 Type CM. UL444; NEC Article 725 Type CM.
	7. Coaxial Cable for CATV:

RG6 Quad Shield Cable - 3 GHz ; meeting UL and specifications for CM / CL2 (flammability test) installations # UL1581, UL1655, UL13, UL444, UL1424; Belden #7916A or equivalent product.

Center Conductor: 18 AWG solid copper

Dielectric: Foam Polyethylene 0.180" nominal diameter

Inner Shield: 0.003" aluminum foil tape with 34 AWG aluminum wire braid, 60% coverage, 0.212" nominal diameter

Outer Shield: 0.002" aluminum foil tape with 34 AWG aluminum wire braid, 40% coverage, 0.232" nominal diameter

Jacket: FR-PVC; 0.033"

thick Electrical Properties:

Spark Test: 4000 VAC Dielectric Strength: to shield 2500 VDC Capacitance: 16.0 pF/ft, nominal Impedance: 75.0 ± 3.0 ohms

1. Interior circuit wiring: NM non-metallic sheathed cable, insulated solid copper conductors with a ground wire. Romex brand or equal. Size wire per circuit load as required by NEC.
2. Power circuits (20A): non-metallic outer sheathing, 2-conductor #12 plus ground.
3. Lighting circuits (15A): non-metallic outer sheathing, 2-conductor #14 plus ground.

a. Dedicated and Kitchen circuits (20A): non-metallic outer sheathing, 2-conductor #12 minimum, plus ground.

1. Electric Range circuit (50A): non-metallic outer sheathing, 3-conductor #6 plus ground.
2. Electric Dryer circuit (30A): non-metallic outer sheathing, 3-conductor #10 plus ground.
3. Doorbell: 2-conductor #18 insulated solid copper wire in non-metallic sheath.
4. Thermostat: 5-conductor #18 insulated solid copper wire in non-metallic sheath.
5. Telephone: 4-conductor #24 insulated solid copper wire in non-metallic sheath.
6. Television cable: single conductor, double shielded RG6, 75-ohm, 2200 MHZ cable.
7. Connectors and Splices: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.
	1. Coaxial Fittings and Accessories:
		1. Compression Connectors: Thomas and Betts #SNS1P6U 'Ultimate Snap-N- Seal' RG6 compression connector or equivalent product.
		2. Ground Blocks: single and dual as required; Gold anodized; Thomas & Betts LRC Coax Ground Blocks or equivalent product.
		3. RF Splitters: 3GHz Rated; SCTE compliant; DC Power Pass on 1 Port; RFI Shielding > - 120dB; 5MHz to 3000MHz; Suttle H3S2, H3S3, H3S4 as required, or equivalent product.
8. Cable Support:
	1. Steel metal staples: 3-conductor 9/16" wide × 1⅛" long for 14/3, 12/3 NS 10/3; 1/2" wide × 1⅛" long for 14/2, 12/2 and 10/2 Romex and NM cables for fastening Romex and non-metallic cable to wood
	2. Metal Insulated Cable Staples: Plastic insulator protected type to prevent arc faults, if required by code.
	3. Cable Strap Anchors: Galvanized steel or PVC insulator type, as allowed by code.

**PART 3 – EXECUTION**

1. Installation: Include all cabling, supports, connectors, splitters termination boards for a complete and functional installation.
	1. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
	2. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
	3. Conduits:
		1. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
		2. Use pulling means; including fish tape, cable, rope, and basket weave wire/cable grips that will not damage cables or raceway.
	4. Support cables and conduit according to code requirements.
	5. Tighten electrical connectors and terminals according to manufacturer's published torque

tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

* 1. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than non-spliced conductors.
		1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.
	2. Wiring to panels, equipment, and rough-in boxes: Install conductor at each outlet, with at least 6" of slack. Install conductors at panel boards with at least 18" of slack.
1. Install sleeves and firestopping where required under Section 26 00 00 – Electrical Common Requirements.
2. Tests and Inspections:
	1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors, and services for compliance with requirements.
	2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
	3. Remove and replace malfunctioning units and retest as specified above.

**END OF SECTION**

**SECTION 26 05 26 – GROUNDING AND BONDING**

**PART 1 – GENERAL**

1. This Section Includes:
	1. Grounding systems and equipment.
2. Reference Standards (Latest editions, herein made a part of these specifications) UL 467 Grounding and Bonding

Equipment. NEC Article 250 Grounding and Bonding

NECA 331-2004 Standard for Building and Service Entrance Grounding and Bonding

1. Related Work Specified Elsewhere:

Section 26 00 00 – Electrical Common Requirements

Section 26 24 16 – Panel boards

1. Submittals: Submit product data in accordance with Section 01 33 00.
	1. Product Data: For each type of product indicated.
2. Warranty: Refer to Section 01 78 36 – Warranties.

**PART 2 – PRODUCTS / MATERIALS**

1. Conductors:
	1. Insulated Conductors: Copper or tinned-copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
	2. Bare Copper Conductors:
		1. Solid Conductors: ASTM B 3.
		2. Stranded Conductors: ASTM B 8.
		3. Tinned Conductors: ASTM B 33.
		4. Bonding Cable: 28 kcmil, 14 strands of #17 AWG conductor, 1/4" in diameter.
		5. Bonding Conductor: #4 or #6 AWG, stranded conductor.
		6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules;1⅝" wide

and 1/16" thick.

* + 1. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper

ferrules; 1⅝" wide and 1/16" thick.

* 1. Use:

Solid conductor for #10 AWG and smaller;

Stranded conductors for #8 AWG and larger, unless otherwise indicated.

Underground Grounding Conductors: bare tinned-copper conductor, #1/0 AWG minimum.

* 1. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. Isolated Grounding on Feeders: Alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
1. Connectors:
	1. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
	2. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, pressure type with at least two bolts; clamp type, sized for pipe. Use for:
		1. Pipe and equipment grounding conductor terminations.
		2. Connections to ground rods .
2. Ground Rods: Zinc-coated steel; 5/8" diameter, 8 feet long or as required by local governing code.

**PART 3 – EXECUTION**

1. General: Comply with UL 467 for grounding and bonding materials and equipment.
2. Equipment Grounding:
	1. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
		1. Feeders and branch circuits.
		2. Lighting circuits.
		3. Receptacle circuits.
		4. Single-phase motor and appliance branch circuits.
		5. Armored and metal-clad cable runs.
		6. Telephone circuits.
		7. CATV circuits.
3. Installation:
	1. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
	2. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade unless otherwise indicated.
		1. Ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
		2. For grounding electrode system, install at least 2 rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.
	3. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
		1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
		2. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.
	4. Grounding and Bonding for Piping:
		1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange using one of the lug bolts of the flange.

Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.

* + 1. **Water meter piping: Use insulated copper conductor bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.**
	1. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install bonding jumper to bond across flexible duct connections to achieve continuity.
1. Field Quality Control
	1. Perform the following tests and inspections and prepare test reports:
		1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
		2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
		3. Test completed grounding system at each location where a maximum ground- resistance level is specified, at service disconnect enclosure grounding terminal. Make tests at ground rods before any conductors are connected.
	2. Report measured ground resistances that exceed the following values:
		1. Power and Lighting Equipment or System with Capacity of 500 kVA and less: 10 ohms.
	3. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance

**END OF SECTION**

**SECTION 26 05 33 – RACEWAYS & BOXES FOR ELECTRICAL SYSTEMS**

**PART 1 – GENERAL**

1. This Section includes:
	1. Conduits, tubing, and fittings.
	2. Rough-in boxes.
2. Reference Standards (Latest editions, herein made a part of these specifications) ANSI/NECA 111- 2003 Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC)
3. Related Work Specified Elsewhere:

|  |  |  |
| --- | --- | --- |
| Section | 26 00 00 | – Electrical Common Requirements |
| Section | 26 05 26 | – Conductors and Cables |
| Section | 26 27 26 | – Wiring Devices |

1. Submittals: Submit product data in accordance with Section 01 33 00.
	1. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
2. Warranty: Refer to Section 01 78 36 – Warranties.

**PART 2 – PRODUCTS / MATERIALS**

1. Nonmetallic Conduits, Tubing, and Fittings
	1. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
	2. ENT: Electrical Nonmetallic Tubing complying with NEMA TC 13 and UL 1653. Fittings complying with NEMA TC 3 for tubing type.
	3. RNC: Rigid Nonmetallic Conduit, Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated. Fittings complying with NEMA TC 3 for conduit type.
	4. LFNC: Liquid-tight Flexible Non-Metallic Conduit complying with UL 1660. Fittings complying with UL 514B.
	5. Continuous HDPE: Complying with UL 651B.
	6. Solvent cements and adhesive primers shall have a VOC content of 510 and 550 g/L or less, respectively, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
	7. Solvent cements and adhesive primers 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."
2. Boxes, Enclosures, and Cabinets, General Requirements:
	1. Device Box Dimensions: 4"square ×2⅛"deep or 4"×2⅛"×2⅛" deep.

Box extensions used to accommodate new building finishes shall be of same material as recessed box.

* 1. Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
	2. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
	3. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.
	4. Nonmetallic Outlet and Device Boxes: Comply with NEMA OS 2 and UL 514C.
	5. Boxes located in fire-rated assemblies: Fire-rated and UL listed.

**a. Boxes installed in fire rated partitions shall adhere to Section 713.3.2 of the International Building Code.**

* 1. Ceiling Boxes: 1-Gang 25 cu.in. hard shell ceiling box, adjustable 11-1/2" to 18-1/2" hanger bar, 50 lb. capacity, UL listed.
	2. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

**PART 3 – EXECUTION**

1. Indoor Raceway Application: Install raceway products as specified below unless otherwise indicated.
	1. Exposed, Not Subject to Physical Damage: EMT.
	2. Concealed in Ceilings and Interior Walls and Partitions: EMT.
	3. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 3R nonmetallic in damp or wet locations.
2. Minimum Raceway Size: 3/4-inch trade size.
3. Raceway Fittings: Compatible with raceways and suitable for use and location.
4. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
5. Install surface raceways only where indicated on Drawings.
6. Do not install nonmetallic conduit where ambient temperature exceeds 120°F.
7. Installation: Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter.
	1. Comply with NFPA 70 limitations for types of raceways allowed in specific locations.
	2. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot- water pipes. Install horizontal raceway runs above water and steam piping.
	3. Arrange stub-ups so curved portions of bends are not visible above finished slab.
	4. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.
	5. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
		1. Support conduit within 12 inches of enclosures to which attached.
	6. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
	7. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.
	8. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, use industry standard. Install boxes with height measured to centerline of box unless otherwise indicated.
	9. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
	10. Locate boxes so that cover or plate will not span different building finishes.
	11. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
	12. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.
8. Sleeve and Sleeve-Seal Installation for Electrical Penetrations: Install sleeves and sleeve seals at penetrations of exterior wall assemblies.
9. Firestopping: Install firestopping at penetrations of fire-rated wall assemblies. Comply with requirements in Division 07 Section "Firestopping."

**END OF SECTION**

**SECTION 26 27 26 – WIRING DEVICES**

**PART 1 – GENERAL**

1. This section includes:
	1. Receptacles, receptacles with integral GFCI, and associated device plates.
	2. Snap switches, and associated device plates.
	3. Weather-resistant receptacles and weatherproof covers.
	4. Communications outlets.
2. Reference Standards (Latest editions, herein made a part of these specifications) ANSI/NFPA 70 National Electrical Code.
3. Related Work Specified Elsewhere:

|  |  |  |
| --- | --- | --- |
| Section | 26 00 00 | – Electrical Common Requirements |
| Section | 26 05 26 | – Conductors and Cables |
| Section | 26 05 33 | – Raceways & Boxes for Electrical Systems |

1. Submittals: Submit product data in accordance with Section 01 33 00.
	1. Product Data: For each type of product.
	2. Quality Control Field Test Report: Submit upon completion of installation.

**PART 2 – PRODUCTS / MATERIALS**

1. Basis of design: Leviton Residential ProGrade. Equivalent products from the following manufacturers are acceptable as substitutions under Section 01 33 00.
	1. Cooper Wiring Devices; Division of Cooper Industries, Inc. (Cooper).
	2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
	3. Pass&Seymour/Legrand (Pass & Seymour).
2. Single source: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.
3. Wiring Devices, General Requirements
	1. Wiring Devices, Components, and Accessories shall comply with NFPA 70.
	2. Wiring devices shall have screw pressure-plate terminals for wiring connection.
4. **Straight-Blade Receptacles**: Tamper-resistant convenience receptacles, 125 V, 20 A complying with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.
5. Acceptable products:
6. Eaton #TR1877V-BXSP #TRBR15V-BXSP
7. Or equivalent product considered as substitutions under Section 01.33.00 by one of the following:
	* Leviton
	* Hubbell
	* Cooper
8. Provide water-resistant tamper-resistant type at laundry and exterior locations.
9. **GFCI Receptacles**: Tamper-resistant duplex, straight blade, feed-through type, 125 V, 20 A complying with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596. Self- testing type with indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection, and trip indicator light.
	1. Acceptable products:
10. Leviton #GTR1-I
11. Or equivalent product considered as substitutions under Section 01.33.00 by one of the following:
	* Pass & Seymour
	* Hubbell
	* Cooper
12. **Electric Dryer Receptacle** (recessed flush-mount): 125/250V 30A, NEMA 14-30R; 3-pole 4- wire flush mount receptacle, straight blade, industrial grade, grounding, side wired; matching cover plate; 10 Year warranty.
	1. Acceptable products:
		1. Leviton #278
		2. Cooper #1257
		3. Hubbell #HBL9430A
		4. Pass&Seymour #3864-CC6
13. **Electric Range Receptacle** (recessed flush-mount): 125/250V 50A, NEMA 14-50R, 3-pole, 4-wire, flush mount receptacle, straight blade, industrial grade, grounding, side wired, steel strap, matching cover plate. 10 Year warranty.
	1. Acceptable products:
		1. Leviton #279
		2. Cooper #1258
		3. Hubbell #HBL9450A
		4. Pass & Seymour #3894-CC6
14. **Telephone Outlet**: Flush mount phone wall plate with single RJ-45 jack for terminating 100- ohm, balanced, four-pair UTP; TIA/EIA-568-B.1; complying with Category 5e. Comply with UL 1863. Acceptable products: Leviton #C0249 or approved equal.
15. **Cable Television (CATV) Outlet**: Flush mount wall plate with single F-connector twist- on wall jack, for terminating 75-ohm shielded coaxial cable.

Acceptable products: Leviton # C5256 or approved equal.

1. **Toggle Switches**: 120/277 V, 20 A complying with NEMA WD 1, UL 20, and FS W-S-896.
	1. Acceptable products:
		1. Leviton #CSB1 #CSB3 #CSB4
		2. Or equivalent product considered as substitutions under Section 01.33.00 by one of the following:
			* Pass & Seymour
			* Hubbell
			* Cooper
2. **Exhaust Fan Switches:** Furnished by fan manufacturer, installed under electrical contract.
3. **Wall Plates**: high-impact thermoplastic, flush plate style; single and combination types, to match corresponding devices. Do not use oversized or extra-deep plates.
	1. Plate-securing screws: Metal with head color to match plate finish.
	2. Material for unfinished spaces: Galvanized steel.
	3. Wet-location weatherproof cover plates: NEMA 250, complying with Type 3R, cast aluminum with spring-loaded lift cover, listed and labeled for use in wet and damp locations, weather- resistant thermoplastic with lockable cover.
4. **Floor Plates:** metallic box cover, 1-Gang, two door/dual service for duplex receptacle. Brushed aluminum or brass.

Acceptable products: Legrand, Wiremold #828R / 828R- TCAL, Lew Electric # RRP-2-LR / RRP-s-LR-A, or equivalent product.

1. **Device and Wall Plate Color**: White or ivory, as selected by Owner. unless otherwise indicated or required by NFPA 70 or device listing.

**PART 3 – EXECUTION**

1. Installation: Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.
2. Coordination with Other Trades:
	1. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
	2. Install wiring devices after all wall preparation, including painting, is complete.
3. Conductors: Follow NECA recommendations and NFPA 70 regarding stripping insulation from conductors, length of free conductors at outlets.
4. Device Installation: Wire in accordance with NFPA 70.
	1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
	2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
	3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
	4. Pigtails shall be same AWG as conductors.
	5. Use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two- thirds to three-fourths of the way around terminal screw. Tighten all terminal screws on the device.
	6. When mounting into metal boxes, remove the fiber or plastic washers used to hold device- mounting screws in yokes, allowing metal-to-metal contact.
5. GFCI Receptacles: Install feed-through-type GFCI receptacles where protection of downstream receptacles is required.
6. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top and on horizontally mounted receptacles to the right. Group adjacent switches under single, multi-gang wall plates.
7. Quality Control Field Testing: Perform diagnostic tests, to locate damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified below.
	1. Test Instruments: Use instruments that comply with UL 1436.
	2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.
	3. Tests for Convenience Receptacles:
		1. Line Voltage: Acceptable range is 105 to 132 V.
		2. Percent Voltage Drop under 15-A Load: less than 6% is acceptable.
		3. Ground Impedance: Values of up to 2 ohms are acceptable.
		4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
		5. Using the test plug, verify that the device and its outlet box are securely mounted.
	4. Wiring device will be considered defective if it does not pass tests and inspections.
	5. Record test and inspection results and submit to Architect for review.

**END OF SECTION**

**SECTION 26 50 00 – LIGHTING**

**PART 1 – GENERAL**

1. This section includes:
	1. Interior lighting fixtures, lamps, and ballasts.
2. Reference Standards (Latest editions, herein made a part of these specifications) NECA/IESNA 500- 2006 Standard for Installing Indoor Lighting Systems
3. Related Work Specified Elsewhere:

Section 26 05 19 – Low Voltage Electrical Power Conductors & Cable Section 26 05 33 – Raceways and Boxes for Electrical Systems Section 26 27 26 – Wiring Devices

1. Submittals: Submit product data in accordance with Section 01 33 00.
2. Product Data on features, accessories, dimensions, weights and finishes for each type of lighting fixture, arranged in order of fixture designation.
3. Product Certificates: For each type of ballast for bi-level and dimmer-controlled fixtures, from manufacturer.
4. Delivery / Storage / Handling:

1. Store materials in secure, protected location immediately upon delivery to project, in manufacturer's labeled packaging.

1. Warranty: Manufacturers' standard limited warranty to be free from defects and capable of performing their function.

Contractor's Warranty: Refer to Section 01 78 36 – Warranties.

**PART 2 – PRODUCTS / MATERIALS**

1. General Requirements for Lighting Fixtures and Components:
	1. Fixtures shall be listed and labeled, as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application. Fixtures shall comply with UL 1598.
	2. Luminaire Efficacy Ratings tests shall comply with NEMA LE 5 or LE 5A, as applicable.
	3. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.
	4. Metal Parts:
		1. Sheet Metal Components: Formed free of burrs, sharp corners and edges, capable of being supported without warping or sagging. Steel unless otherwise indicated.
		2. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, designed to permit relamping without use of tools and prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
	5. Lighting Diffusers:
		1. Acrylic: 100 percent virgin acrylic plastic, UV stabilized, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

a. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.

1. Power Supplies and Drivers
	1. Power Factor: 0.90 or higher
	2. 2. Maximum driver case temperature not to exceed driver manufacturer recommended operation.
	3. 3. Output operating frequency: 60Hz.
	4. 4. Interference: EMI and RFI compliant with FCC 47 CFR Part 15.
	5. 5. Total Harmonic Distortion Rating: 20% Maximum.
	6. 6. Meet electrical and thermal conditions as described in LM-80 Section 5.0.
	7. 7. Fully dimmable, 0 – 10 VDC standard.
	8. 8. Secondary Current: Confirm secondary current specified by individual luminaire
	9. manufacturers.
	10. 9. Compatibility of dimming switches: Certified by manufacturer for use with individually specified luminaire and individually specified control components.
2. Basis of Design Lighting Fixtures: Provide light fixture and accessories as listed below, or equivalent product. Equivalent products will be considered as substitutions under Section 01 33 00.

**Type J – Exterior, front and rear porches**: Ceiling mount, 11” diameter aluminum painted black with white acrylic diffuser, textured aluminum housing, 4000K LED, 830 lumens, suitable for wet locations, Hampton Bay # Model #54471291 or approved equal. Provide (1) LED lamp. (Available at Home Depot).

**PART 3 – EXECUTION**

1. Installation, General:
	1. Follow manufacturer's installation instructions. Set lighting fixtures level, plumb, and square with ceilings and walls. Comply with NFPA 70 for fixture supports.
	2. Connect to wiring using specified connections.
	3. Install lamps in each fixture.
	4. Clean finishes and diffusers.
2. Damaged fixtures: Replace at no additional cost.

**END OF SECTION**

# Division 31 – Earthwork

# SECTION 31 23 00 – EXCAVATION & FILL

PART 1 – GENERAL

1. Provide excavation, backfill and compaction required to facilitate other work as shown on drawings and specified herein, including but not limited to:
	1. Tree root removal
	2. Sidewalk relocation
2. Related Work Specified Elsewhere: Section 32 16 23 – Sidewalks Section 32 92 00 – Lawn Restoration
3. Coordination/Preparation: Make required notifications to utility companies in advance of excavation to locate all subsurface utilities and structures prior to commencing trenching work.

## PART 2 – PRODUCTS / MATERIALS

1. Materials:
	1. *Unclassified Fill Material –* Satisfactory soil material for backfill and fill shall be free of rock or gravel larger than 2" in dimension, debris, waste, frozen material, roots, vegetable, and other deleterious matter.
	2. *Granular Fill , Permeable Fill –* Bank-run gravel, well graded from coarse to fine, free from organic and other deleterious materials, with 100% passing 4" sieve, not more than 0-70% passing #40 sieve and not more than 15% passing #200 sieve when tested in accordance with AASHTO T27.
	3. *Crushed Stone Base, Graded Gravel –* Washed, uniformly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100% passing a 1-1/2" sieve and not more than 5% passing No. 4 sieve.
	4. *Drain Fill* – Crushed stone or pea gravel comply with NYSDOT Article 703-02 for screened gravel (size 1A, Table 703-4).
	5. *Loam* – Onsite or borrowed topsoil free of lumps, plants, roots, debris and stones larger than 1".

## PART 3 – EXECUTION

1. Excavation: Remove materials as required for installation of work shown and/or specified. Protect excavations and foundations against freezing. Bottom of excavations shall be level, firm, dry, undisturbed earth.
2. Fill where removals have been made, using granular fill or crushed stone under areas to be paved, and when specified under other sections.
3. Compaction: Compact fill and backfill soils to not less than 95% maximum dry density. Place backfill and fill material in layers not more than 8" in loose depth for material compacted by heavy equipment, and not more than 4" loose depth for material compacted by hand operated equipment.
4. Grading: Bring fill areas up to required grade to receive final cover, as shown on the drawings. Establish rough grades in areas to receive loam using on site or common material. Uniformly grade the areas disturbed around the building to drain away from the foundations and pavements. Loosen

subgrade to a depth of 4 inches, removing stones greater than 2 inches and debris to permit bonding with loam.

1. Spread loam (topsoil) 4" to 6" deep. Place loam so that after natural settlement and light rolling, the final grades as established by the drawings will be maintained.
2. Remove excess materials from the site.

**END OF SECTION**

# Division 32 – Exterior Improvements

SECTION 32 16 23 – SIDEWALKS PART 1 – GENERAL

1. Provide all labor, materials and equipment for cementitious concrete pavement work, including but not limited to the following:
	1. Stone base for concrete pavements.
	2. Concrete sidewalks
	3. Demolition and hand excavation as necessary to perform above work.
	4. Topsoil and grass seed to repair areas adjacent to sidewalks affected by excavation and formwork.
2. Reference Standards (Latest editions, herein made a part of these specifications)

ACI 304 Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete ACI 305 Hot Weather Concrete Placing

ACI 306 Cold Weather Concrete Placing ASTM C-33 Standard Specifications for Concrete

Aggregates ASTM C-94 Standard

Specification for Ready-Mixed Concrete

ASTM C-175 Standard Specification for Air-Entraining Portland Cement

CRSI Concrete Reinforcing Steel Institute, "Manual of Standard Practice"

1. Related Work Specified Elsewhere: Section 31 23 00 – Excavation and Fill Section 32 17 13 – Parking Bumpers

Section 32 17 23 – Pavement Markings

Section 32 12 16 – Asphalt Paving

Section 32 92 00 – Lawn Restoration

1. Submittals: Submit product data in accordance with Section 01 33 00.
	1. Submit the proposed sources of cement and aggregates and test reports on materials and mix designs.
	2. Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design test as specified.
	3. Furnish batch certificates for each batch discharged and used in the Work within 24 hours of delivery.
2. Warranty: Two (2) year warranty against defects resulting from materials and installation, beginning at time of Substantial Completion.

## PART 2 – PRODUCTS / MATERIALS

1. Sidewalk Base: Crushed stone, graded gravel *,* washed, uniformly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100% passing a 1-1/2" sieve and not more than 5% passing No. 4 sieve.
2. Concrete Materials:
	1. Portland Cement: ASTM C-150 Type 1 or 2. Cement containing lumps, crusts or hardened material shall not be used. All cement shall be from a single manufacturer. .
	2. Aggregates: Normal-weight conforming to ASTM C-33 coarse aggregate, uniformly graded. Maximum size 3/4". Provide aggregates from a single source. .
	3. Water: clean, potable, free of deleterious materials, conforming to ASTM C-94.
3. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain no more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
	1. Air-Entraining Admixture: Dewey & Alemy Chemical Co. "DAREX" or "SIKA AER" or equivalent product conforming to ASTM C 260.
	2. Water-Reducing and Retarding Admixture: Conform to ASTM C-494, Type D.
	3. Plasticizing and Retarding Admixture: Conform to ASTM C-1017, Type II.
	4. Accelerator: Non-chloride type, used only if allowed in writing by the Architect, in accordance with manufacturer's recommendations.
4. Concrete Mixes:
	1. Ready-Mixed Concrete: Measure, batch and mix concrete materials and concrete according to ASTM C-94 and ASTM C-1116.

Furnish batch certificates.

6 sacks of cement / cubic yard.

Maximum 6 gallons of water per sack of cement, Air Entraining Admixture: in the amount of 6%.

* 1. Minimum Strength: 4,000 PSI at 28 days per ASTM C-39.
1. Accessories:
	1. Reinforcement and dowels: reinforcing bars conforming to ASTM A-615, Grade 60.Curing Materials:
		1. Curing Compound: "Kurez" by Euclid Chemical Co., or equal, complying with ASTM C-309, Types 1 & 1D, Class A & B.
		2. Absorptive Cover
		3. Moisture-Retaining Cover
		4. Insulating blankets

## PART 3 – EXECUTION

1. Preparation:
	1. Before commencing work, check all grades in work areas. Coordinate grades for walks with grades established at finished ground floor.
	2. Establish subgrade for all walks as necessary to properly accomplish the Work to meet specified grades and thicknesses.
	3. Place forms securely staked into the ground to prevent dislodgement vertically and horizontally. Space stakes close enough to prevent bowing. Use metal forms to make smooth continuous curved edges.
	4. Tolerances: Not more than 1/2" from established grades. Profile to have no deviation in excess of ⅜" as shown on a 10' straight edge in all directions. Thickness to be not less than 1/4" from detail on Drawings.
	5. No work shall be done when there is frost or water in subgrade. Protect subgrade from rutting before base course is placed.
2. Stone/Gravel Base:
	1. Subgrade shall be made firm and even by compacting with a 1-ton roller. Compact small inaccessible areas using a vibratory plate tamper.
	2. Start placing gravel only after subgrade has the Owner's Representative's approval, in layers not more than 6"in depth. Final thickness shall be as indicated on drawings.
	3. Each layer shall be moistened or dried as required, and compacted to *95 percent of maximum density*, unless otherwise specified in the project drawings or specifications. Compaction densities specified herein shall be the percentage of the maximum density obtainable at optimum moisture content, as determined and controlled in accordance with ASTM D-1557.
3. Concrete Walk:
	1. No concrete shall be placed if the temperature is below 40ºF. Comply with ACI requirements for hot and cold weather conditions.
	2. Placing Concrete: Place on a compacted base, to depth indicated on drawings. Pour concrete in forms and spade to a dense mix, screed off concrete to an even level.
	3. Score control joint pattern spaced to be equal in length to width of sidewalk or as indicated on the drawings, making unscored areas not exceeding 36 square feet. Score pattern shall be 1" to 1¼" deep, cut straight and perpendicular to the edge of the walk unless shown otherwise. A n expansion joint filler shall be placed full depth every 5 score patterns.
	4. Finishing: Shall be done by competent masons who can produce a walk of uniform texture and color. The top shall be wood floated and steel troweled to a dense surface. Finish all edges with an edging tool and then texture the entire surface with a hair broom to form a non-slip surface.
	5. Curing: Spray with curing compound. Follow manufacturer's directions. Cover with insulating blankets if air temperature can be expected to drop below 40ºF within 48 hours after placing concrete.
	6. Protect concrete against damage from rain and vandalism. Contractor will be responsible for any and all damage prior to owner accepting the work
	7. Maintenance Guarantee: This Contractor shall repair any cracks, spalling or other defects within the guarantee period by complete replacement of the defective slabs. No patching of the surface will be accepted.
4. Clean Up: Contractor shall leave site in a neat and orderly condition with no piles of excess concrete or earth left as spoil.

**END OF SECTION**

SECTION 32 92 00 LANDSCAPING AND LAWN RESTORATION

PART 1 – GENERAL

1. Restore lawn areas altered, damaged or otherwise affected by work of this project, including but not limited to:
	1. Placing, spreading and raking topsoil.
	2. Installing perennial plantings.
	3. Seeding, mulching and maintaining areas affected by the work.
2. Reference Standards (Latest editions, herein made a part of these specifications)

ASTM D-2487 Classification of Soils for Engineering Purposes. FS O-F-241 Fertilizers, Mixed, Commercial.

1. Related Work Specified Elsewhere: Section 31 23 00 – Excavation & Fill
2. Warranty: Minimum two (2) year warranty on plant materials, including replacement costs. The grass shall be at least 80% established and plants and shrubs shall be in a healthy growing condition before the contractor is relieved of responsibility.

## PART 2 – PRODUCTS / MATERIALS

1. Materials:
	1. Topsoil: Refer to Section 31 23 00.
2. Seed mixture shall conform to the following requirements:
	1. 30% Kentucky Bluegrass,; 35% Pennlawn Red Fescue, 35% Pennfine Perennial Rye Grass; minimum 85% pure; minimum 80% germination; applied at a rate of 4 lbs/100 sq.ft.
3. Fertilizer: FS O-F-241, slow-release nitrogen type conform to the following requirements:
	1. 3-1-2 or 3-1-1, applied at a rate of 1-½ lbs. of nitrogen / 1000 sq.ft./ fertilization.
4. Mulch: Hydromulch consisting of recycled paper and/or fibrous raw wood and tackifier applied at a rate of 40 lbs/1,000 sq.ft.
5. Perennial Plantings: Min. 2 gal. pot, plant @ 2’ o.c., Start with 6” bed of topsoil with top of soil 3” below adjacent grass, Install plants, add weedblock fabric, mulch with 3” deep hardwood mulch.
* Lilac
* Hosta
* Holly
* Hosta
* Spirea
* Hosta
* Viburnum
* Hosta
* Hydrangea
* Hosta

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## PART 3 – EXECUTION

1. Preparation:
	1. Topsoil shall be applied at a four (4) inch depth, minimum. Immediately before seeding, cultivate to a depth of 3" and rake until surface is smooth with a uniformly fine texture, free of stones over 3/4" diameter. Drag a wooden float over the surface to even out minor lumps and depressions.
2. Application:
	1. Seed and fertilize at rates indicated above. Rake into the ground and roll with a 200 lb. roller.
	2. Soak with water immediately to saturate soil to 1/2" depth.
	3. Permissible period of restoration: Seed and mulch work may be conducted only during the following periods:

between April 15 through June 15, or between August 15 through October 15.

1. Maintenance:
	1. Begin immediately after seeding is completed. Water, fertilize, mow and re-seed as necessary for 90 days or longer until final acceptance, to establish a uniform stand of healthy grass. Repair all washouts and gullies.
	2. Perform three (3) to four (4) fertilizations over the course of the year, as needed to establish vigorous growth.

**END OF SECTION**