

HWY 14 SENIOR AND COMMUNITY CENTER FOR SANTA FE COUNTY



CERRILLOS, NEW MEXICO

PROJECT MANUAL

DOCUMENTS FOR BID

OCTOBER 20, 2017

Architect of Record

Autotroph Inc.

422 Greg Ave.

Santa Fe, NM 87501

505.216.7555

Set No:

Note: PRIOR APPROVAL REQUIRED ON ALL SUBSTITUTIONS – REFER TO SECTION 01 63 00

PROJECT MANUAL TITLE SHEET

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PROJECT: HWY 14 SENIOR/COMMUNITY CENTER

ADDRESS: Cerrillos, New Mexico 87010

OWNER: Santa Fe County
102 Grant Avenue
Santa Fe, New Mexico 87501
(505) 986 – 6200

OWNER'S PROJECT CONTACT: Ron Sandoval, Project Manager
Santa Fe County
Public Works Projects Division
P.O. Box 276
Santa Fe, New Mexico 87504 -0276
(505) 992 – 9863
rsandoval@santafecountynm.gov

ARCHITECT OF RECORD: Alexander Dzurec, AIA
Autotroph, Inc.
422 Greg Ave.,
Santa Fe, NM 87501
(505) 216 – 7555

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PROJECT MANUAL TITLE SHEET

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

ARCHITECTURAL AND ENGINEERING FIRMS HWY 14 SENIOR/COMMUNITY CENTER

Architectural and Engineering Firms participating in this project are as follows:

ARCHITECT & INTERIORS:	Alexander Dzurec, AIA Autotroph, Inc. 422 Greg Ave., Santa Fe, NM 87501 (505) 216 – 7555
CIVIL ENGINEER:	Martin Garcia, PE Anchor Engineering, Inc. 1035 Bosque Loop Bosque Farms, NM 87068 (505) 362 – 1530
STRUCTURAL ENGINEER:	George Bradley III, PE Chavez Grieves Consulting Engineers 4700 Lincoln Road NE Albuquerque, NM 87109 (505) 344-4080
MEP ENGINEER:	Kyle Garber M & E Engineering, Inc. 1222 Luisa Street, Suite B Santa Fe, NM 87505 (505) 983-2389
LANDSCAPE ARCHITECT:	Sandra Donner Surroundings 1611 Paseo de Peralta Santa Fe, NM 87501 (505) 982-3454
KITCHEN DESIGN CONSULTANT:	Richard Dobbs RDA DESIGN GROUP 9445 Coors Blvd. NW Albuquerque, NM 87114 (505) 898-3344

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SECTION 000115 – LIST OF DRAWINGS

HWY 14 SENIOR/COMMUNITY CENTER
LOS CERRILLOS, NEW MEXICO

LIST OF DRAWINGS

Drawings: Drawings consist of the Contract Drawings and other drawings listed on the Table of Contents page of the separately bound drawing set titled Hwy 14 Senior/Community Center, dated October 20, 2017, as modified by subsequent Addenda and Contract modifications.

List of Drawings: Drawings consist of the following Contract Drawings and other drawings of type indicated:

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SECTION 000115 – LIST OF DRAWINGS

HWY 14 SENIOR/COMMUNITY CENTER
LOS CERRILLOS, NEW MEXICO

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S3.5	ROOF FRAMING SECTIONS & DETAILS
S5.1	DETAILS
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SECTION 000115 – LIST OF DRAWINGS

HWY 14 SENIOR/COMMUNITY CENTER
LOS CERRILLOS, NEW MEXICO

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SECTION 01 1000 – SUMMARY

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

SUMMARY

Section includes procedures for:

- General description of Work and Contractor's duties.
- Work by others.
- Work sequence.
- Contractor use of site.
- Identification of Entities
- Definitions.
- Abbreviations.

WORK COVERED BY CONTRACT DOCUMENTS

Work of this Contract covers the following: new construction at the future Hwy14 Senior/Community Center in Los Cerrillos, New Mexico.

Santa Fe County – Phase 1 of the Hwy 14 Senior/Community Center: New construction of an approximately 5,500 SF senior/community center and associated site work. The project consists of 100% new design and construction. Building Program shall include a large Commercial Kitchen, Senior Dining Room, Arts Center, Reading Room, Senior Services Office, Large Entry/game room with adjoining storage, mechanical areas and accessible restrooms. The new building will be fully sprinkled and will have a fire protection system sized to accommodate the future Phase 2 that will add a large Community hall with associated storage and restrooms of approximately 2,500 SF. The building will seek to be a good neighbor, echoing the aesthetic vernacular of Northern New Mexico and more specifically the village of Los Cerrillos with stucco walls, corrugated metal roofs, stepped parapets/garden walls, and a courtyard layout reminiscent of traditional New Mexican haciendas. A large portal will run the length of this courtyard providing ample covered outdoor space for seniors to congregate, dine and enjoy the outdoors. Sustainable strategies such as orienting the building to absorb heat in the winter while keeping cool in the summer, ample south-facing roof surface can accommodate rooftop solar panels and electronically controlled operable windows will allow for air circulation and some natural ventilation in parts of the building.

Site work on the virgin lot will include a new driveway off of Main St., public and employee parking with concealed garbage, delivery dock and building mechanical equipment behind attractive garden walls. Any disturbed area on the site will be re-seeded with native grasses and wildflowers while new Cottonwood Trees in addition to fruit varieties such as Honeycrisp apples and cherries will be spread throughout the site to both screen the building from the road and provide fresh fruit to the community and building users. The site will be re-graded to divert surface run-off to the existing Bosque on the Southwest portion of the site, keeping much needed water on site and in use watering existing vegetation. Sustainable site strategies include harvesting roof runoff into underground cisterns which will in turn be used to irrigate the site.

CONTRACTOR'S DUTIES

Except as noted, provide and pay for all labor, materials, and equipment.

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SECTION 01 1000 – SUMMARY

HWY 14 SENIOR/COMMUNITY CENTER
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Pay required sales, gross receipts, and other taxes. Owner will pay Contractor applicable New Mexico gross receipts tax including local option tax and any increase in tax becoming effective after Contract date.

Contractor to pay for permits (including plan CID checking fees) and licenses necessary for execution of work as applicable at time of receipt of bids.

Give required notices.

Comply with codes, ordinances, regulations, and other legal requirements of public authorities which bear on performance of Work.

Request required inspections from public authorities, correct any noted deficiencies, and obtain certifications of satisfactory inspection. Deliver certificates to Owner in accordance with Section 01 78 00 - Closeout Submittals.

WORK BY OTHERS

Items noted "NOT IN CONTRACT" (NIC) or as "BY OWNER" will be supplied and installed by Owner:

Items as identified in the Drawings

Work to be performed by others under separate contract to Owner:

Items as identified in the Drawings

Products supplied by Owner for installation by Contractor:

Certain Toilet Accessories - refer to Drawings and to Section 10 28 00.

Owner's responsibilities:

Schedule and assist Contractor in coordination of work by Owner's own forces and separate contractors.

Schedule delivery of Owner supplied products.

Obtain and provide to Contractor shop drawings, product data, and installation instructions for Owner supplied products.

Arrange and pay for delivery of Owner supplied products to site.

Submit claims for transportation damage and replace damaged, defective, or deficient items.

Contractor's responsibilities:

Participate in coordination of work with other installers, including Owner's own forces and separate contractors.

Inform Owner of required delivery dates for Owner supplied products and installation dates for work by others.

Review shop drawings, product data, and installation instructions; coordinate installation with other work; and provide blocking and other preparation required for Owner supplied products.

Unload Owner-supplied products required to be installed by Contractor at site and inspect for completeness and damage. Assemble, finish and install products as indicated by Contract Documents.

Repair or replace items damaged after receipt.

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SECTION 01 1000 – SUMMARY

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

WORK SEQUENCE

Refer to Division 0 - Instruction to Bidders and to Construction Documents for time of completion for each phase of project.

Coordinate construction schedule and operations with Owner and Design Professional.

CONTRACTOR USE OF SITE

Access to site by trucks, equipment, and automobiles: Limited to route and entrances shown on drawings per Section 01 50 00 - Temporary Facilities and Controls.

Off-site construction vehicle and equipment traffic shall be limited to pathways, areas and time periods approved in advance by Owner to ensure safe site conditions. Do not proceed with altered arrangements prior to designated Santa Fe County representative(s) approval.

Parking: Contractor and work force shall parking shall be on the project property. Do not park on adjacent roads without advanced permission of Santa Fe County.

Use of new restroom facilities by Contractor is prohibited during construction unless otherwise approved by Santa Fe County.

Do not allow dust and debris to blow offsite.

Emergency exits shall be maintained during construction in a manner satisfactory to the Architect, Owner, and local officials having jurisdiction over emergency procedures and fire safety at the facility.

Utility outages and shutdowns:

Owner reserves right to place and install equipment and furnishings in completed areas of building prior to Substantial Completion, provided such occupancy does not interfere with construction. Placing of equipment and furnishings does not constitute Substantial Completion of any portion of the Work. An inspection by Contractor, Owner and Architect shall be made prior to such limited occupancy solely for the purpose of establishing the condition of finishes and other items that might be damaged or obscured by placement and installation of Owner's items.

IDENTIFICATION OF ENTITIES

Where the term "Design Professional" or "Architect" is used in the Contract Documents it is defined as the authorized representative designated by Owner and acting within the scope of the duties entrusted to such representative.

Design Professional: Autotroph, Inc.
Architect: Alexander Dzurec, AIA
Project Manager: Luca Marino-Baker, LEED AP
Address: 422 Greg Ave., Santa Fe 87501
Telephone number: 505-216-7555
E-mail address: dzurec@autotrophdesign.com/baker@autotrophdesign.com

Where the term "Owner" is used in the Contract Documents, it is defined as Santa Fe County (SFC).

SFC Contact (Project Manager): Mr. Ron Sandoval
Address: Santa Fe County - Public Works Projects Division,
P.O. Box 276, Santa Fe, New Mexico 87504
Telephone number: Ron Sandoval: 505-992-9863
Email Address: rsandoval@santafecountynm.gov

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SECTION 01 1000 – SUMMARY

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

DEFINITIONS

Refer to Division 0 - Instructions to Bidders for definitions of terms used within Contract Documents.

Additional terms used within Specifications but not defined by Division 0 shall have the following definitions:

Products: Materials, manufactured items, components, fixtures, machinery, equipment or systems forming the Work but not including machinery, equipment, and other aids used for preparing, fabricating, conveying, and installing the Work.

Supply: Furnish, deliver, and unload at Project site. Same meaning as furnish.

Furnish: Supply, deliver, and unload at Project site. Same meaning as supply.

Install: Operations at Project site to incorporate products into the Work such as unpacking, assembling, anchoring, erecting, applying, placing, curing, finishing, and preparing for use.

Provide: To supply or furnish a product and to also install it.

Execution: Operations at Project site including preparatory actions, installing, and PO installation adjusting, testing, cleaning, and demonstrating.

ABBREVIATIONS

Abbreviations used within the Specifications are defined as follows. For abbreviations not listed, contact Architect for definitions.

ASTM	- American Society for Testing and Materials.
ANSI	- American National Standards Institute
CF	- Cubic feet
CFM	- Cubic feet per minute
F	- Fahrenheit
LF	- Linear feet
LB	- Pound
MPH	- Miles per hour
SF	- Square feet
SY	- Square yards
PSI	- Pounds per square inch
PSF	- Pounds per square foot
RPM	- Revolutions per minute
IBC	- International Building Code as published by International Code Council.
UL	- Underwriters Laboratory

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 01 1000

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SECTION 012300 – ALTERNATES

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes administrative and procedural requirements for alternates.

DEFINITIONS

Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

PROCEDURES

Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

Execute accepted alternates under the same conditions as other work of the Contract.

Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (NOT USED)

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SECTION 012300 – ALTERNATES

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 3 - EXECUTION

SCHEDULE OF ALTERNATES

ADDITIVE ALTERNATES:

Additive Alternate #1:

This Alternate concerns the shed roof over the Loading Dock in the Service Area. See 1E/A3.2 for roof assembly elements. In addition to aforementioned roofing are the wood post, beam and associated foundation structure that would be added to the base plan to provide a covered loading dock.

Additive Alternate #2:

This Alternate consists of wood casework and cabinetry along North wall of Senior Dining. The casework is comprised of an 18" high banco with vertical partitions allowing for storage below. There is an additional 3' section of this casework that will be cubby storage. Finishes on wood/veneer product to match stain/color on kitchenette casework, per Architect. See A4.3 for details.

Additive Alternate #3:

This Alternate consists of (15) Electronically operated awning windows. See A4.2 for locations in Arts Center. See 1B & 1E/A2.1 - Elevations for locations of operable awning windows in Senior Dining. Basis of design: Truth Hardware Electric Window Operator, with Sentry 2 Motor System (24 Volt DC Motor) mounted on each window. Each motor will need a control box switch for every motor and a 3rd party switch that these can be configured with. An approved alternate system per Contractor to be reviewed by Architect.

Additive Alternate #4:

Add 4" asphalt layer to the service driveway and parking lot. See Civil for paving details. See A1.0 Architectural Site Plan and Civil for location of end of pavement in base bid.

DEDUCTIVE ALTERNATES:

Deductive Alternate #1:

Substitute wood framing for steel framing throughout.

END OF SECTION 012300

SECTION 013100 – PROJECT MANAGEMENT & COORDINATION

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

- Coordination Drawings.
- Administrative and supervisory personnel.
- Project meetings.

COORDINATION

Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different sections that depend on each other for proper installation, connection, and operation.

Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.

Make adequate provisions to accommodate items scheduled for later installation.

Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

Preparation of Contractor's Construction Schedule.

- Preparation of the Schedule of Values.
- Installation and removal of temporary facilities and controls.
- Delivery and processing of submittals.
- Progress meetings.
- Preinstallation conferences.
- Project closeout activities.
- Startup and adjustment of systems.
- Project closeout activities.

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Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.

SUBMITTALS

Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:

Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.

Indicate required installation sequences.

Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

ADMINISTRATIVE AND SUPERVISORY PERSONNEL

General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

Include special personnel required for coordination of operations with other contractors.

PROJECT MEETINGS

General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.

Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.

Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the

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conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

Agenda: Discuss items of significance that could affect progress, including the following:

- Tentative construction schedule.
- Phasing.
- Critical work sequencing and long-lead items.
- Designation of key personnel and their duties.
- Procedures for processing field decisions and Change Orders.
- Procedures for requests for interpretations (RFIs).
- Procedures for testing and inspecting.
- Procedures for processing Applications for Payment.
- Distribution of the Contract Documents.
- Submittal procedures.
- Preparation of Record Documents.
- Use of the premises and existing buildings.
- Work restrictions.
- Owner's occupancy requirements.
- Responsibility for temporary facilities and controls.
- Construction waste management and recycling.
- Parking availability.
- Office, work, and storage areas.
- Equipment deliveries and priorities.
- First aid.
- Security.
- Progress cleaning.
- Working hours.

Minutes: Record and distribute meeting minutes.

Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.

Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

- The Contract Documents.
- Options.
- Related requests for interpretations (RFIs).
- Related Change Orders.
- Purchases.
- Deliveries.
- Submittals.

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- Review of mockups.
- Possible conflicts.
- Compatibility problems.
- Time schedules.
- Weather limitations.
- Manufacturer's written recommendations.
- Warranty requirements.
- Compatibility of materials.
- Acceptability of substrates.
- Temporary facilities and controls.
- Space and access limitations.
- Regulations of authorities having jurisdiction.
- Testing and inspecting requirements.
- Installation procedures.
- Coordination with other work.
- Required performance results.
- Protection of adjacent work.
- Protection of construction and personnel.

Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

Progress Meetings: Conduct progress meetings at bi-weekly intervals. Coordinate dates of meetings with preparation of payment requests.

Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

Review schedule for next period.

Review present and future needs of each entity present, including the following:

- Interface requirements.
- Sequence of operations.
- Status of submittals.
- Deliveries.

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- Off-site fabrication.
- Access.
- Site utilization.
- Temporary facilities and controls.
- Work hours.
- Hazards and risks.
- Progress cleaning.
- Quality and work standards.
- Status of correction of deficient items.
- Field observations.
- Requests for interpretations (RFIs).
- Status of proposal requests.
- Pending changes.
- Status of Change Orders.
- Pending claims and disputes.
- Documentation of information for payment requests.

Minutes: Record and distribute minutes of the meeting to each party present and to parties who should have been present.

Contractor shall clearly indicate responsible party of each unresolved issue with timeframe for expected resolution.

Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

REQUESTS FOR INFORMATION (RFI'S)

Procedure: Immediately on discovery of the need for information of the Contract Documents, and if not possible to request information at Project meeting, prepare and submit an RFI in the form specified.

RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.

Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

Content of the RFI: Include a detailed, legible description of item needing information and the following:

- Project name.
- Date.
- Name of Contractor.
- Name of Architect.
- RFI number, numbered sequentially.
- Drawing number and detail references, as appropriate.
- Field dimensions and conditions, as appropriate.
- Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
- Contractor's signature.

Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing information.

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Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

Architect's Action: Architect will review each RFI, determine action required, and return it. Allow seven working days for Architect's response for each RFI.

The following RFIs will be returned without action:

- Requests for coordination information already indicated in the Contract Documents.
- Requests for interpretation of Architect's actions on submittals.
- Incomplete RFIs or RFIs with numerous errors.

Architect's action may include a request for additional information, in which case Architect's time for response will start again.

Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."

If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 7 days of receipt of the RFI response.

On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:

- Project name.
- Name and address of Contractor.
- Name and address of Architect.
- RFI number and description.
- Date the RFI was submitted.
- Date Architect's response was received.
- Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013100

SECTION 013200 – CONSTRUCTION PROGRESS DOCUMENTATION

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

- Contractor's Construction Schedule.
- Submittals Schedule.
- Daily construction reports.
- Material location reports.
- Field condition reports.
- Special reports.

Related Sections include the following:

- Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
- Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and RFI requirements.
- Division 1 Section "Submittal Procedures" for submitting schedules and reports.
- Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.

SUBMITTALS

Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:

- Scheduled date for first submittal.
- Specification Section number and title.
- Submittal category (action or informational).
- Name of subcontractor.
- Description of the Work covered.
- Scheduled date for Architect's final release or approval.

Contractor's Construction Schedule Submittal Procedure:

Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

Submit a working electronic copy of schedule, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

Field Condition Reports: Submit at time of discovery of differing conditions.

Special Reports: Submit two copies at time of unusual event.

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SECTION 013200 – CONSTRUCTION PROGRESS DOCUMENTATION

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COORDINATION

Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

Secure time commitments for performing critical elements of the Work from parties involved.

Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

SUBMITTALS SCHEDULE

Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.

Initial Submittal: Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.

Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

Activities: Treat each separate building or area as a separate numbered activity for each principal element of the Work. Comply with the following:

Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.

Startup and Testing Time: Include sufficient time for startup and testing of HVAC equipment.

Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.

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Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

Phasing: Arrange list of activities on schedule by phase.

Work Restrictions: Show the effect of the following items on the schedule:

- Coordination with existing construction.
- Limitations of continued occupancies.
- Uninterruptible services.
- Partial occupancy before Substantial Completion.
- Use of premises restrictions.
- Provisions for future construction.
- Seasonal variations.
- Environmental control.

Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

- Subcontract awards.
- Submittals.
- Purchases.
- Mockups.
- Fabrication.
- Sample testing.
- Deliveries.
- Installation.
- Tests and inspections.
- Adjusting.
- Curing.
- Startup and placement into final use and operation.

Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

CONTRACTOR'S CONSTRUCTION SCHEDULE

Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type schedule within 30 days of date established for the Notice to Proceed.

Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and indicate date by which recovery will be accomplished.

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REPORTS

Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site. Make report available to the Owner or Architect upon request:

- List of subcontractors at Project site.
- List of separate contractors at Project site.
- Approximate count of personnel at Project site.
- Equipment at Project site.
- Material deliveries.
- High and low temperatures and general weather conditions.
- Accidents.
- Meetings and significant decisions.
- Unusual events (refer to special reports).
- Stoppages, delays, shortages, and losses.
- Meter readings and similar recordings.
- Emergency procedures.
- Orders and requests of authorities having jurisdiction.
- Change Orders received and implemented.
- Construction Change Directives received and implemented.
- Services connected and disconnected.
- Equipment or system tests and startups.
- Partial Completions and occupancies.
- Substantial Completions authorized.

Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

SPECIAL REPORTS

General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

CONTRACTOR'S CONSTRUCTION SCHEDULE

Contractor's Construction Schedule Updating: Prior to each job conference, update schedule to reflect actual construction progress and activities. Issue schedule at each regularly one week before before each regularly scheduled progress meeting.

Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

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Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

As the Work progresses, indicate Actual Completion percentage for each activity.

Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

Post copies in Project meeting rooms and temporary field offices.

When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013300 – SUBMITTAL PROCEDURES

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

Related Sections include the following:

Division 1 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.

Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.

Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.

Division 1 Section "Quality Requirements" for submitting test and inspection reports and for mockup requirements.

Division 1 Section "Closeout Procedures" for submitting warranties.

Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.

Division 1 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.

Divisions 2 through 33 Sections for specific requirements for submittals in those Sections.

DEFINITIONS

Action Submittals: Written and graphic information that requires Architect's responsive action.

Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

SUBMITTAL ADMINISTRATIVE REQUIREMENTS

Architect's Digital Data Files: Electronic digital data files of the Contract Drawings may be provided by Architect for Contractor's use in preparing submittals.

Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

Contractor shall execute a data licensing agreement in the form of provided by the Architect and their consultants.

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Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

Submit electronic copies of each action submittal.

Submit electronic copies of each informational submittal. Architect will return electronic copies indicating that they have been reviewed.

Architect will return submittals, without review, received from sources other than Contractor.

Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.

Name file with unique identifier, including project identifier, Specification Section number, and revision identifier.

Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.

Identify options requiring selection by Architect.

Identify deviations from the Contract Documents on submittals.

Submit required submittals in the following format:

PDF electronic file.

Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.

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Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.

Resubmittal Review: Allow 15 days for review of each resubmittal.

Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.

Submittals requiring sequential review shall be indicated on the initial submittal schedule submission.

Structural submittals in Division 3 through 6 require sequential review. Mechanical, Electrical, Plumbing, Civil and Landscaping submittal in Division 22 through 33 will require sequential review.

Identification: Provide an electronic submittal form on each submittal for identification.

Indicate name of firm or entity that prepared each submittal on label or title block.

Provide a space approximately 4 x 5 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.

Include the following information on label for processing and recording action taken:

Project name.

Date.

Name and address of Architect.

Name and address of Contractor.

Name and address of subcontractor.

Name and address of supplier.

Name of manufacturer.

Submittal number or other unique identifier, including revision identifier.

Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).

Number and title of appropriate Specification Section.

Drawing number and detail references, as appropriate.

Location(s) where product is to be installed, as appropriate.

Other necessary identification.

Architect will return submittals, without review, received from sources other than Contractor.

On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.

Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

Note date and content of previous submittal.

Note date and content of revision in label or title block and clearly indicate extent of revision.

Resubmit submittals until they are marked "approved".

Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.

Show distribution on transmittal forms.

Use for Construction: Use only final submittals with mark indicating "approved" taken by Architect.

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SECTION 013300 – SUBMITTAL PROCEDURES

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PART 2 - PRODUCTS

ACTION SUBMITTALS

General: Prepare and submit Action Submittals required by individual Specification Sections.

Submit electronic submittals by email.

Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

Mark each copy of each submittal to show which products and options are applicable.

Include the following information, as applicable:

- Manufacturer's written recommendations.
- Manufacturer's product specifications.
- Manufacturer's installation instructions.
- Standard color charts.
- Manufacturer's catalog cuts.
- Wiring diagrams showing factory-installed wiring.
- Printed performance curves.
- Operational range diagrams.
- Mill reports.
- Standard product operation and maintenance manuals.
- Compliance with specified referenced standards.
- Testing by recognized testing agency.
- Application of testing agency labels and seals.
- Notation of coordination requirements.

Submit Product Data before or concurrent with Samples.

Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

- Dimensions.
- Identification of products.
- Fabrication and installation drawings.
- Roughing-in and setting diagrams.
- Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
- Shopwork manufacturing instructions.
- Templates and patterns.
- Schedules.
- Design calculations.
- Compliance with specified standards.
- Notation of coordination requirements.
- Notation of dimensions established by field measurement.
- Relationship to adjoining construction clearly indicated.

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Seal and signature of professional engineer if specified.

Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

Identification: Attach label on unexposed side of Samples that includes the following:

- Generic description of Sample.
- Product name and name of manufacturer.
- Sample source.
- Number and title of appropriate Specification Section.

Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

Number of Samples: Submit three sets of Samples. Architect will retain one sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.

Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

Type of product. Include unique identifier for each product.

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Number and name of room or space.

Location within room or space.

Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. Architect will return two copies.

Mark up and retain one returned copy as a Project Record Document.

Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation" for Construction Manager's action.

Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."

Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."

Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

Name, address, and telephone number of entity performing subcontract or supplying products.

Number and title of related Specification Section(s) covered by subcontract.

Drawing number and detail references, as appropriate, covered by subcontract.

Number of Copies: Submit three copies of subcontractor list, unless otherwise indicated. Architect will return two copies.

Mark up and retain one returned copy as a Project Record Document.

INFORMATIONAL SUBMITTALS

General: Prepare and submit Informational Submittals required by other Specification Sections.

Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."

Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."

Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

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Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

- Name of evaluation organization.
- Date of evaluation.
- Time period when report is in effect.
- Product and manufacturers' names.
- Description of product.
- Test procedures and results.
- Limitations of use.

Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."

Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."

Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

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Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

- Preparation of substrates.
- Required substrate tolerances.
- Sequence of installation or erection.
- Required installation tolerances.
- Required adjustments.
- Recommendations for cleaning and protection.

Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

- Name, address, and telephone number of factory-authorized service representative making report.
- Statement on condition of substrates and their acceptability for installation of product.
- Statement that products at Project site comply with requirements.
- Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
- Results of operational and other tests and a statement of whether observed performance complies with requirements.
- Statement whether conditions, products, and installation will affect warranty.
- Other required items indicated in individual Specification Sections.

Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect, except as required in "Action Submittals" Article.

Architect will not review submittals that include MSDSs and will return the entire submittal for resubmittal.

DELEGATED DESIGN

Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

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PART 3 - EXECUTION

CONTRACTOR'S REVIEW

Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

ARCHITECT'S ACTION

General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

Final Unrestricted Release: Where submittals are marked "Approved," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

Final-But-Restricted Release: When submittals are marked "Approved as Noted," that part of 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 acceptance will depend on that compliance.

Returned for Resubmittal: When submittal is marked "Not Approved" or "Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.

Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 013310 – SUBMITTAL TRANSMITTAL FORM

HWY 14 SENIOR/COMMUNITY CENTER
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SUBMITTAL TRANSMITTAL FORM

The undersigned, as Contractor for the above project, submits the following and certifies that submittal has been reviewed and it conforms with requirements of Contract Documents except as noted.

SUBMITTAL NUMBER: _____ RESUBMITTAL: YES NO

DATE: _____ NUMBER OF COPIES SUBMITTED: _____

DESCRIPTION: _____

ASSOCIATED SPECIFICATION SECTION NO: _____

REFERENCED DRAWING SHEET NO: _____

NAME OF SUBCONTRACTOR/SUPPLIER: _____

SUBMITTED

BY: _____ DATE: _____

SIGNATURE: _____

DATE RECEIVED BY ARCHITECT: _____

DISTRIBUTED TO:

OWNER CIVIL LANDSCAPE STRUCTURAL MECHANICAL ELECTRICAL

OTHER: _____

***** Architect may modify specific language below in accordance with Architect's review stamp. *****

ACTION: No exceptions taken _____
Make corrections noted _____
Revise and resubmit _____
Rejected _____

COMMENTS: _____

Submittal review corrections and comments by Architect do not relieve Contractor from compliance with Contract Documents. Review is only for general conformance with design concept and general compliance with information given in Contract Documents. Contractor is responsible for verifying dimensions, selecting fabrication processes and techniques of construction, coordination with other trades, and performing work in safe and satisfactory manner.

REVIEWED BY: _____ DATE: _____

SIGNATURE: _____

SECTION 014000 – QUALITY REQUIREMENTS

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes administrative and procedural requirements for quality assurance and quality control.

Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.

Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

Related Sections include the following:

Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.

Division 1 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.

Divisions 2 through 33 Sections for specific test and inspection requirements.

DEFINITIONS

Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

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Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

CONFLICTING REQUIREMENTS

General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

SUBMITTALS

Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

Schedule of Tests and Inspections: Prepare in tabular form and include the following:

- Specification Section number and title.
- Description of test and inspection.
- Identification of applicable standards.
- Identification of test and inspection methods.
- Number of tests and inspections required.
- Time schedule or time span for tests and inspections.
- Entity responsible for performing tests and inspections.
- Requirements for obtaining samples.
- Unique characteristics of each quality-control service.

Reports: Prepare and submit certified written reports that include the following:

- Date of issue.
- Project title and number.
- Name, address, and telephone number of testing agency.
- Dates and locations of samples and tests or inspections.
- Names of individuals making tests and inspections.

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Description of the Work and test and inspection method.
Identification of product and Specification Section.
Complete test or inspection data.
Test and inspection results and an interpretation of test results.
Record of temperature and weather conditions at time of sample taking and testing and inspecting.
Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
Name and signature of laboratory inspector.
Recommendations on retesting and reinspecting.

Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

QUALITY ASSURANCE

General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

Requirement for specialists shall not supersede building codes and regulations governing the Work.

Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.

NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

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Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

Contractor responsibilities include the following:

Provide test specimens representative of proposed products and construction.

Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.

Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.

Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.

When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.

Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect], with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

QUALITY CONTROL

Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."

Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

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Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

Determine the location from which test samples will be taken and in which in-situ tests are conducted.

Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.

Do not perform any duties of Contractor.

Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

Access to the Work.

Incidental labor and facilities necessary to facilitate tests and inspections.

Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

Facilities for storage and field curing of test samples.

Delivery of samples to testing agencies.

Preliminary design mix proposed for use for material mixes that require control by testing agency.

Security and protection for samples and for testing and inspecting equipment at Project site.

Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

Schedule times for tests, inspections, obtaining samples, and similar activities.

Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.

Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

SPECIAL TESTS AND INSPECTIONS

Special Tests and Inspections: Owner will engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction and as indicated in individual Specification Sections. Special tests and inspection requirements include, but are not limited to, the following:

Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.

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Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.

Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.

Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.

Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.

Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

TEST AND INSPECTION LOG

Prepare a record of tests and inspections. Include the following:

- Date test or inspection was conducted.
- Description of the Work tested or inspected.
- Date test or inspection results were transmitted to Architect.
- Identification of testing agency or special inspector conducting test or inspection.

Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

REPAIR AND PROTECTION

General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."

Protect construction exposed by or for quality-control service activities.

Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 – REFERENCES

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PART 1 - GENERAL

DEFINITIONS

General: Basic Contract definitions are included in the Conditions of the Contract.

"Approved": The term "approved," when used to convey Architect's action on Contractor's submittals, applications, and requests, is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

"Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by Architect, requested by Architect, and similar phrases.

"Indicated": The term "indicated" refers to graphic representations, notes, or schedules on Drawings or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.

"Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

"Furnish": The term "furnish" means to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

"Install": The term "install" describes operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

"Provide": The term "provide" means to furnish and install, complete and ready for the intended use.

"Installer": An installer is the Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

The term "experienced," when used with an entity, means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

"Project site" is the space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

INDUSTRY STANDARDS

Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

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SECTION 014200 – REFERENCES

HWY 14 SENIOR/COMMUNITY CENTER
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Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available on request.

Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

GENERAL REQUIREMENTS

Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ICC - International Code Council; www.iccsafe.org.

ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 014200

SECTION 015000 – TEMPORARY FACILITIES & CONTROLS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

Related Sections include the following:

Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.

Division 1 Section "Execution Requirements" for progress cleaning requirements.

Divisions 2 through 33 Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.

DEFINITIONS

Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

USE CHARGES

General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, testing agencies, and authorities having jurisdiction.

Sewer Service: Pay sewer service use charges for sewer usage by all entities for construction operations.

Water Service: Pay water service use charges for water used by all entities for construction operations.

Electric Power Service: Pay electric power service use charges for electricity used by all entities for construction operations.

QUALITY ASSURANCE

Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

PROJECT CONDITIONS

Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

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SECTION 015000 – TEMPORARY FACILITIES & CONTROLS

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PART 2 - PRODUCTS

MATERIALS

Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts.

Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide concrete or galvanized steel bases for supporting posts.

Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry".

TEMPORARY FACILITIES

Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

Common-Use Field Office: Of sufficient size to accommodate needs of construction personnel. Keep office clean and orderly. Furnish and equip offices as follows:

- Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.

- Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- (1.2-m-) square tack board.

- Heating and cooling equipment necessary to maintain a uniform indoor temperature of 69 to 80 deg F.

- Lighting fixtures capable of maintaining average illumination of 20 fc (215 lx) at desk height.

Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

- Store combustible materials apart from building.

EQUIPMENT

Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

- Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

- Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

- Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction.

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SECTION 015000 – TEMPORARY FACILITIES & CONTROLS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 3 - EXECUTION

INSTALLATION, GENERAL

Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

TEMPORARY UTILITY INSTALLATION

General: Install temporary service or connect to existing service.

Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

Telephone Service: Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

Electronic Communication Service: Provide temporary electronic communication service, including electronic mail, in common-use facilities.

SUPPORT FACILITIES INSTALLATION

General: Comply with the following:

Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.

SECTION 015000 – TEMPORARY FACILITIES & CONTROLS

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Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

Traffic Controls: Comply with requirements of authorities having jurisdiction.

Protect existing site improvements to remain including curbs, pavement, and utilities.

Maintain access for fire-fighting equipment and access to fire hydrants.

Parking: Provide temporary parking areas for construction personnel.

Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.

Remove snow and ice as required to minimize accumulations.

Project Identification and Temporary Signs: Provide Project identification and other signs. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.

Provide temporary, directional signs for construction personnel and visitors.

Maintain and touchup signs so they are legible at all times.

Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 1 Section "Execution Requirements" for progress cleaning requirements.

SECURITY AND PROTECTION FACILITIES INSTALLATION

Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

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Site Enclosure Fence: Before construction operations begin for each phase, furnish and install work area enclosure fence in a manner that will prevent people and animals from easily entering the work area except by entrance gates.

Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate each phase of construction operations.

Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide Owner with one set of keys.

Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

Prohibit smoking in construction areas.

Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.

Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

MOISTURE AND MOLD CONTROL

Before installation of weather barriers, protect materials from water damage and keep porous and organic materials from coming into prolonged contact with concrete.

Protect stored and installed material from flowing or standing water.

Remove standing water from decks.

Keep deck openings covered or dammed.

After installation of weather barriers but before full enclosure and conditioning of building, protect as follows:

Do not load or install drywall or porous materials into partially enclosed building.

Discard water-damaged material.

Do not install material that is wet.

Discard, replace, or clean stored or installed material that begins to grow mold.

Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

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OPERATION, TERMINATION, AND REMOVAL

Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

Maintenance: Maintain facilities in good operating condition until removal.

Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.

Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 1 Section "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 – PRODUCT REQUIREMENTS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

Related Sections include the following:

Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.

Divisions 2 through 33 Sections for specific requirements for warranties on products and installations specified to be warranted.

DEFINITIONS

Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.

New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.

Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

SUBMITTALS

Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.

Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.

Form: Tabulate information for each product under the following column headings:

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Specification Section number and title.

Generic name used in the Contract Documents.

Proprietary name, model number, and similar designations.

Manufacturer's name and address.

Supplier's name and address.

Installer's name and address.

Projected delivery date or time span of delivery period.

Identification of items that require early submittal approval for scheduled delivery date.

Completed List: Within 60 days after date of commencement of the Work, submit 2 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.

Architect's Action: Architect will respond in writing to Contractor within 15 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

PRODUCT DELIVERY, STORAGE, AND HANDLING

Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

Delivery and Handling:

Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.

Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

Storage:

Store products to allow for inspection and measurement of quantity or counting of units.

Store materials in a manner that will not endanger Project structure.

Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

Store cementitious products and materials on elevated platforms.

Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

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Protect stored products from damage and liquids from freezing.

Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

PRODUCT WARRANTIES

Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

PRODUCT SELECTION PROCEDURES

General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

Where products are accompanied by the term "as selected," Architect will make selection.

Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in 016300 – Product Substitution Procedures to obtain approval for use of an unnamed product.

Product Selection Procedures:

Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in 016300 – Product Substitution Procedures for consideration of an unnamed product.

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Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in 016300 – Product Substitution Procedures for consideration of an unnamed product.

Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in 016300 – Product Substitution Procedures for consideration of an unnamed product by the other named manufacturers.

PART 3 - EXECUTION (NOT USED)

END OF SECTION 016000

SECTION 017000 – EXECUTION REQUIREMENTS

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

- Construction layout.
- Field engineering and surveying.
- General installation of products.
- Coordination of Owner-installed products.
- Progress cleaning.
- Starting and adjusting.
- Protection of installed construction.
- Correction of the Work.

Related Sections include the following:

Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.

Division 1 Section "Submittal Procedures" for submitting surveys.

Division 1 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.

Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

SUBMITTALS

Qualification Data: For land surveyor.

Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

Certified Surveys: Submit two copies signed and sealed by land surveyor.

QUALITY ASSURANCE

Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

SECTION 017000 – EXECUTION REQUIREMENTS

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

EXAMINATION

Existing Conditions: The existence and location of site improvements and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

Before construction, verify the location and points of connection of utility services.

Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.

Furnish location data for work related to Project that must be performed by public utilities serving Project site.

Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

PREPARATION

Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

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CONSTRUCTION LAYOUT

Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

General: Engage a land surveyor to lay out the Work using accepted surveying practices.

Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.

Do not scale Drawings to obtain required dimensions.

Inform installers of lines and levels to which they must comply.

Check the location, level and plumb, of every major element as the Work progresses.

Notify Architect when deviations from required lines and levels exceed allowable tolerances.

Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

FIELD ENGINEERING

Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.

Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.

Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

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Final Property Survey: The Owner will retain a licensed surveyor to prepare a final property survey (ALTA) showing significant features (real property) for Project. Include on the survey a certification, signed and sealed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.

Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

INSTALLATION

General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

Make vertical work plumb and make horizontal work level.

Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.

Allow for building movement, including thermal expansion and contraction.

Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

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PROGRESS CLEANING

General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.

Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

Site: Maintain Project site free of waste materials and debris.

Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

Remove liquid spills promptly.

Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

STARTING AND ADJUSTING

Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

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Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

PROTECTION OF INSTALLED CONSTRUCTION

Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

Comply with manufacturer's written instructions for temperature and relative humidity.

CORRECTION OF THE WORK

Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."

Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

Restore permanent facilities used during construction to their specified condition.

Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017000

SECTION 017419 – CONSTRUCTION WASTE MANAGEMENT & DISPOSAL

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes administrative and procedural requirements for the following:

- Salvaging nonhazardous construction waste.
- Recycling nonhazardous construction waste.
- Disposing of nonhazardous construction waste.

Related Sections include the following:

- Division 1 Section "Sustainable Design Requirements" for additional sustainability requirements.
- Division 1 Section "Temporary Facilities and Controls" for environmental-protection measures during construction, and location of waste containers at Project site.

DEFINITIONS

Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

Disposal: Removal off-site of construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

Recycle: Recovery of construction waste for subsequent processing in preparation for reuse.

Salvage and Reuse: Recovery of construction waste and subsequent incorporation into the Work.

SECTION REQUIREMENTS

Action Submittals:

Waste Management Plan: Submit plan within seven days of date established for commencement of the Work.

Informational Submittals:

Waste Reduction Progress Reports: Submit concurrent with each Application for Payment. Include total quantity of waste, total quantity of waste salvaged and recycled, and percentage of total waste salvaged and recycled.

Recycling and Processing Facility Records: Manifests, weight tickets, receipts, and invoices.

Landfill and Incinerator Disposal Records: Manifests, weight tickets, receipts, and invoices.

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SECTION 017419 – CONSTRUCTION WASTE MANAGEMENT & DISPOSAL

HWY 14 SENIOR/COMMUNITY CENTER
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Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations.

Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 013000 "Administrative Requirements." Review methods and procedures related to waste management.

Waste Management Plan: Develop a waste management plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.

PART 2 - PRODUCTS

PERFORMANCE REQUIREMENTS

Achieve end-of-Project rates for salvage/recycling of 25 percent by weight of total nonhazardous solid waste generated by the Work.

PART 3 - EXECUTION

PLAN IMPLEMENTATION

General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

RECYCLING CONSTRUCTION WASTE, GENERAL

General: Recycle paper and beverage containers used by on-site workers.

Packaging:

Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.

Polystyrene Packaging: Separate and bag materials.

Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.

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Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

Wood Materials:

Sort and stack reusable members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

Clean Cut-Offs of Lumber: Grind or chip into small pieces.

Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

Metals: Separate metals by type.

Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

Stockpile materials away from construction area. Do not store within drip line of remaining trees.

Store components off the ground and protect from the weather.

Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

DISPOSAL OF WASTE

Except for items or materials to be recycled remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.

Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

Do not burn waste materials.

Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 017419

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SECTION 017500 – STARTING & ADJUSTING

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 – GENERAL

SUMMARY

Section includes: General procedures for starting, monitoring, and adjusting items of equipment and complete systems.

Related sections:

Division 23 - Mechanical Specifications

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Scheduling:

Coordinate schedule for starting of systems and equipment to ensure proper sequencing.

Notify Architect and Owner 7 days prior to startup of each system.

Refer to project schedule and Division 23 for other project specific requirements.

Refer to Mechanical and Electrical divisions for additional start up requirements.

Preparation:

Prior to startup, inspect items of equipment and systems to ensure that:

1. Installation is in accordance with manufacturer's instructions.
2. No defective items have been installed and there are no loose connections.
3. Power supplies are correct voltage, phasing, and frequency.
4. Grounding and transient protection systems are properly installed.
5. Items have been properly lubricated, belts tensioned, and control sequence and other conditions which may cause damage have been addressed.

Verify that system wiring has been tested.

Verify that provisions have been made for safety of personnel.

Starting of Systems:

Execute starting under supervision of responsible personnel in accordance with manufacturer's instructions.

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When specified in individual sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment and system installation prior to startup and to supervise placing equipment and system in operation.

Adjustment: Monitor systems and verify performance. Correct deficiencies. Replace defective components and equipment. Adjust equipment and systems for smooth and proper installation.

Submit written report in accordance with Section 01 33 00 -Submittal Procedures that equipment and systems have been properly installed and are functioning correctly.

Provide in startup reports all equipment settings after start-up is complete. As a minimum include flows, temperatures and pressures of all liquids and gases and voltages and currents to all drives. Measure currents and voltages upstream of the VFD.

END OF SECTION 017500

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SECTION 017700 – CLOSEOUT PROCEDURES

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

- Inspection procedures.
- Warranties.
- Final cleaning.

Related Sections include the following:

- Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
- Division 1 Section "Execution Requirements" for progress cleaning of Project site.
- Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
- Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
- Divisions 2 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

SUBSTANTIAL COMPLETION

Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

- Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
- Advise Owner of pending insurance changeover requirements.
- Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
- Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
- Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.

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Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.

Complete startup testing of systems.

Submit test/adjust/balance records.

Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

Advise Owner of changeover in heat and other utilities.

Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

Complete final cleaning requirements, including touchup painting.

Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

Results of completed inspection will form the basis of requirements for Final Completion.

FINAL COMPLETION

Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

Submit a final Application for Payment according to Division 1 Section "Payment Procedures."

Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

Submit evidence of final, continuing insurance coverage complying with insurance requirements.

Submit pest-control final inspection report and warranty.

Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

LIST OF INCOMPLETE ITEMS (PUNCH LIST)

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Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.

Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

Include the following information at the top of each page:

Project name.

Date.

Name of Architect.

Name of Contractor.

Page number.

WARRANTIES

Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated phases of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.

Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark 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 Installer.

Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

MATERIALS

Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

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SECTION 017700 – CLOSEOUT PROCEDURES

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PART 3 - EXECUTION

FINAL CLEANING

General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

Remove tools, construction equipment, machinery, and surplus material from Project site.

Remove snow and ice to provide safe access to building.

Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

Sweep concrete floors broom clean in unoccupied spaces.

Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

Remove labels that are not permanent.

Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

Replace parts subject to unusual operating conditions.

Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

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HWY 14 SENIOR/COMMUNITY CENTER
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Clean ducts, blowers, and coils if units were operated without filters during construction.

Clean light fixtures, globes, and reflectors to function with full efficiency. Replace any defective or inoperative components or lamps to comply with requirements for new fixtures.

Leave Project clean and ready for occupancy.

Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 017700

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SECTION 017800 – CLOSEOUT SUBMITTALS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 – GENERAL

SUMMARY

Section includes procedures for preparing and submitting closeout submittals:

- Project Record Documents .
- Operation and maintenance manuals and data.
- Warranties.
- Insurance information.
- Certificates of inspection and compliance.
- Maintenance tools.
- Extra materials.
- Keys.

PROJECT RECORD DOCUMENTS

Maintain on site, one set of the following record documents; record actual revisions to work:

- Contract Drawings.
- Specifications.
- Addenda.
- Change Orders and other modifications to the Contract.
- Reviewed submittals.

Store Record Documents separate from documents used for construction. Label "Project Record Documents".

Record information concurrent with construction progress. Use erasable colored pencil. Date all entries. Call attention to entry by circling area affected.

Specifications: Legibly mark and record in each section description of actual products installed, including the following:

- Manufacturer's name and product model and number.
- Product substitutions or alternates utilized.
- Changes made by Addenda and modifications.

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Contract Drawings and shop drawings: Legibly mark each item to record actual construction including:

Actual items of equipment and system components installed.

Actual locations of components and routing of piping and raceways.

Measured horizontal and vertical locations of underground water, sewer, irrigation, electrical, and other utilities and appurtenances, referenced to permanent surface improvements.

Measured locations of piping, raceways, and other items concealed in construction, referenced to visible and accessible features.

Field changes of dimension and detail.

Details not on original Contract Drawings.

Documents will be reviewed by Architect at each submittal of Application for Payment to ensure that entries are current.

Submit documents to Architect prior to or in conjunction with submission of Contractor's request for Substantial Completion and in accordance with Owner's procedures. Record Documents shall be submitted to Architect in hard-copy and scanned PDF format.

OPERATION AND MAINTENANCE DATA

Provide operation and maintenance data for:

Section 08 62 50 - Tubular Daylighting System

Section 09 96 23 - Anti-Graffiti Coating

Automatic sprinkler system and controls specified in Division 21

Plumbing equipment, systems, and controls specified in Division 23 - Plumbing

Mechanical equipment, systems, and controls specified in Division 23 - Heating, Ventilating, and Air Conditioning

Electrical equipment, systems, and controls specified in Division 26 – Electrical

Other equipment and systems for which operation and maintenance data is requested in individual specification sections.

Submission:

Submit binders. All to electronic Architect files one shall (1) be digital in PDF copy on format CD and hard-copies in one or more binders. All electronic files shall be in PDF format and shall have descriptive file names.

Submit for review one digital draft copy 30 days prior to need date or as otherwise specified. This copy will be returned after review with A&E comments. Revise content as required.

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Once approved, submit 3 copies of final operation and maintenance manuals to Owner. Include organized CDs with digital copies of all material included in O&M manuals. All manuals shall be submitted prior to or in conjunction with Contractor' request for Substantial Completion and prior to demonstration and training session.

Contents:

Appropriate design criteria.

Equipment and parts lists.

Operating instructions.

Maintenance instruction for equipment and finishes.

Shop drawings and product data.

Testing, balancing, and other field quality reports.

Copies of warranties. Deliver original Roofing Warranties separately to Owner, with copies in the Operations and Maintenance Manuals.

Directory listings

Other material and information as indicated in individual specification sections and as necessary for operation and maintenance by Owner's personnel.

Form:

Hard copies of manuals shall be 8-1/2 x 11 inch text pages bound in three ring expansion binders with a hard durable plastic cover. All documents to be originals unless otherwise noted.

Prepare binder covers with printed subject title of manual, title of project, date, and volume number when multiple binders are required. Printing shall be on face and spine.

Internally subdivide the binder contents with divider sheets with typed tab titles under reinforced plastic tabs. Place dividers at beginning of each chapter, part, section, and appendix.

Provide a table of contents for each volume.

Provide directory listing as appropriate with names addresses, and telephone numbers of Architect, Contractor, subcontractors, equipment suppliers, and nearest service representatives. Provide emergency 24-hour service contact information for all sub-contractors, service contractors and principal vendors.

Include an organized CD which contains copies of all documents. Digital files shall be saved in PDF format.

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Warranties:

Provide duplicate notarized copies of special and extended warranties as required by individual specifications sections.

Submit warranties to Architect prior to or in conjunction with submission of Notice of Substantial Completion.

Execute and assemble warranties from subcontractors, suppliers, and manufacturers.

Provide Table of Contents and assemble in three ring binder with a hard durable plastic cover. Internally subdivide the binder contents with permanent page dividers, with tab titling clearly typed under reinforced laminated plastic tabs .

For items of work delayed beyond date of Substantial Completion, provide updated warranty submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

Certificates of Inspection & compliance:

For inspections throughout the construction period required by regulatory agencies, obtain and maintain certificates issued to show compliance.

Assemble certificates and any formal written evidence of regulatory compliance in three ring binder with table of contents and submit to Architect prior to or in conjunction with submission of Notice of Substantial Completion.

Certificate of Occupancy: 'Prior to Substantial Completion and as identified in Section 01 77 00 – Closeout Procedures, obtain from authorities having jurisdiction Certificate of Occupancy. Submit with Notice for Substantial Completion.

Insurance Information:

Submit it prior to or in conjunction with submission of Contractor's request for Substantial Completion information regarding insurance including change over requirements and insurance extensions.

Maintenance Tools:

Provide all special tools, instruments, and other implements required for the functional operation and maintenance of equipment, systems, and other components installed as of this project. Include screw drivers, crescent wrenches, pliers, and alien wrenches as well as more unique and atypical tools.

Tools shall be as provided or recommended by manufacturers of installed equipment and systems. Types and sizes shall be as specifically required for installed products.

Tools shall be available and their use demonstrated during training sessions specified in Section 01 75 00 - Starting and Adjusting.

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Prior to or concurrent with Contractor's request for Substantial Completion, deliver maintenance tools to Owner's representative. Prepare inventory of tools provided and obtain receipt from Owner's representative.

Extra Materials:

Provide spare parts and maintenance materials in quantities specified in individual sections. If no specific quantity is specified in individual sections, provide 5% "attic stock" for all architectural finishes.

Extra materials shall be produced by the same manufacturer of and compatible with the installed products.

Prior to or concurrent with submission of Notice of Substantial Completion deliver extra materials in unopened containers to Owner's representative at designated storage area project site and place in location as directed. Obtain receipt from Owner's representative.

During one year correction period:

1. Extra materials may be used by Contractor to replace expendable and normally worn parts.
2. Extra materials used by Contractor for replacement of defective products shall be replaced at no additional cost to Owner.

Keys:

Prior to or in conjunction with submission of Contractor's request for Substantial completion provide Owner with all keys for:

1. Door hardware locks after rekeying in accordance with Section 08 71 00 - Door Hardware.
2. Access doors and panels.
3. Electrical panelboards and other equipment.

Provide a minimum of three keys for each lock.

Clearly label each key as to function and location of lock.

Obtain receipt from Owner's representative.

Prior to, or in conjunction with Final Completion, return all keys lent out by Owner to Contractor for access to existing spaces, gates, etc. for the Work. Obtain receipt from Owner.

Miscellaneous Security-related Materials and Components:

Prior to or in conjunction with Final Completion and in accordance with General Conditions of the Contract, deliver to Owner and obtain receipt for:

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All miscellaneous security-related items loaned to Contractor during the progress of the job, including:

Owner-furnished security badges and passes

Owner-furnished construction signs

All security software and codes, if any.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION 017800

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SECTION 017823 – OPERATION & MAINTENANCE DATA

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

- Operation and maintenance documentation directory.
- Emergency manuals.
- Operation manuals for systems, subsystems, and equipment.
- Maintenance manuals for the care and maintenance of products, materials, and finishes systems and equipment.

Related Sections include the following:

- Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
- Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
- Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
- Divisions 2 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

DEFINITIONS

System: An organized collection of parts, equipment, or subsystems united by regular interaction.

Subsystem: A portion of a system with characteristics similar to a system.

SUBMITTALS

Initial Submittal: Submit 1 draft copies of each manual at least 15 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return one copy of draft and mark whether general scope and content of manual are acceptable.

Final Submittal: Submit one copy of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.

Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

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PART 2 - PRODUCTS

MANUALS, GENERAL

Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

- Title page.
- Table of contents.
- Manual contents.

Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

- Subject matter included in manual.
- Name and address of Project.
- Name and address of Owner.
- Name, address, and telephone number of Contractor.
- Name and address of Architect.
- Cross-reference to related systems in other operation and maintenance manuals.

Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.

Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.

Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

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If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.

If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

EMERGENCY MANUALS

Content: Organize manual into a separate section for each of the following:

- Type of emergency.
- Emergency instructions.
- Emergency procedures.

Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

- Fire.
- Flood.
- Water leak.
- Power failure.
- Water outage.
- System, subsystem, or equipment failure.
- Chemical release or spill.

Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

Emergency Procedures: Include the following, as applicable:

- Instructions on stopping.
- Shutdown instructions for each type of emergency.
- Operating instructions for conditions outside normal operating limits.
- Required sequences for electric or electronic systems.
- Special operating instructions and procedures.

OPERATION MANUALS

Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

- System, subsystem, and equipment descriptions.
- Performance and design criteria if Contractor is delegated design responsibility.
- Operating standards.
- Operating procedures.
- Operating logs.
- Wiring diagrams.
- Control diagrams.
- Piped system diagrams.
- Precautions against improper use.

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License requirements including inspection and renewal dates.

Descriptions: Include the following:

- Product name and model number.
- Manufacturer's name.
- Equipment identification with serial number of each component.
- Equipment function.
- Operating characteristics.
- Limiting conditions.
- Performance curves.
- Engineering data and tests.
- Complete nomenclature and number of replacement parts.

Operating Procedures: Include the following, as applicable:

- Startup procedures.
- Equipment or system break-in procedures.
- Routine and normal operating instructions.
- Regulation and control procedures.
- Instructions on stopping.
- Normal shutdown instructions.
- Seasonal and weekend operating instructions.
- Required sequences for electric or electronic systems.
- Special operating instructions and procedures.

Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

PRODUCT MAINTENANCE MANUAL

Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

Product Information: Include the following, as applicable:

- Product name and model number.
- Manufacturer's name.
- Color, pattern, and texture.
- Material and chemical composition.
- Reordering information for specially manufactured products.

Maintenance Procedures: Include manufacturer's written recommendations and the following:

- Inspection procedures.
- Types of cleaning agents to be used and methods of cleaning.

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List of cleaning agents and methods of cleaning detrimental to product.
Schedule for routine cleaning and maintenance.
Repair instructions.

Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

Include procedures to follow and required notifications for warranty claims.

SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

- Standard printed maintenance instructions and bulletins.
- Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
- Identification and nomenclature of parts and components.
- List of items recommended to be stocked as spare parts.

Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

- Test and inspection instructions.
- Troubleshooting guide.
- Precautions against improper maintenance.
- Disassembly; component removal, repair, and replacement; and reassembly instructions.
- Aligning, adjusting, and checking instructions.
- Demonstration and training videotape, if available.

Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.

Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

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Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

MANUAL PREPARATION

Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

Do not use original Project Record Documents as part of operation and maintenance manuals.

Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

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Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

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SECTION 017839 – PROJECT RECORD DOCUMENTS

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes administrative and procedural requirements for Project Record Documents, including the following:

- Record Drawings.
- Record Specifications.
- Record Product Data.

Related Sections include the following:

- Division 1 Section "Closeout Procedures" for general closeout procedures.
- Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
- Divisions 2 through 33 Sections for specific requirements for Project Record Documents of the Work in those Sections.

SUBMITTALS

Record Drawings: Comply with the following:

Number of Copies: Submit one set(s) of marked-up Record Prints.

Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.

Record Product Data: Submit one copy of each Product Data submittal.

Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

RECORD DRAWINGS

Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

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Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

Accurately record information in an understandable drawing technique.

Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

Content: Types of items requiring marking include, but are not limited to, the following:

- Dimensional changes to Drawings.
- Revisions to details shown on Drawings.
- Depths of foundations below first floor.
- Locations and depths of underground utilities.
- Revisions to routing of piping and conduits.
- Revisions to electrical circuitry.
- Actual equipment locations.
- Duct size and routing.
- Locations of concealed internal utilities.
- Changes made by Change Order or Construction Change Directive.
- Changes made following Architect's written orders.
- Details not on the original Contract Drawings.
- Field records for variable and concealed conditions.
- Record information on the Work that is shown only schematically.

Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.

Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

Mark important additional information that was either shown schematically or omitted from original Drawings.

Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

Identification: As follows:

- Project name.
- Date.
- Designation "PROJECT RECORD DRAWINGS."
- Name of Architect.
- Name of Contractor.

RECORD SPECIFICATIONS

SECTION 017839 – PROJECT RECORD DOCUMENTS

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Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.

Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.

For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.

Note related Change Orders, Record Product Data, and Record Drawings where applicable.

RECORD PRODUCT DATA

Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.

Note related Change Orders, Record Specifications, and Record Drawings where applicable.

MISCELLANEOUS RECORD SUBMITTALS

Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

RECORDING AND MAINTENANCE

Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 017839

SECTION 017900 – DEMONSTRATION & TRAINING

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

SUMMARY

This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

- Demonstration of operation of systems, subsystems, and equipment.
- Training in operation and maintenance of systems, subsystems, and equipment.
- Demonstration and training videotapes.

See Divisions 2 through 33 Sections for specific requirements for demonstration and training for products in those Sections.

SUBMITTALS

Instruction Program: Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

At completion of training, submit one complete training manual(s) for Owner's use.

Digital recording of the all training programs.

PART 2 - PRODUCTS

INSTRUCTION PROGRAM

Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:

- Motorized doors, including automatic entrance doors.
- Fire-protection systems, including fire alarms.
- Intrusion detection systems.
- Heat generation, including heat pumps and associated equipment.
- HVAC systems.
- HVAC instrumentation and controls.
- Electrical service and distribution, including transformers, switchboards, panel boards, uninterruptible power supplies, and motor controls.
- Lighting equipment and controls.

Comply with requirements of LEED checklist item (AE) 2 regarding the education of the building manager. Provide an Operations and Training Manual and a minimum one-hour walkthrough with the building manager that comply with LEED requirements.

Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

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Basis of System Design, Operational Requirements, and Criteria: Include the following:

- System, subsystem, and equipment descriptions.
- Performance and design criteria if Contractor is delegated design responsibility.
- Operating standards.
- Regulatory requirements.
- Equipment function.
- Operating characteristics.
- Limiting conditions.
- Performance curves.

Documentation: Review the following items in detail:

- Emergency manuals.
- Operations manuals.
- Maintenance manuals.
- Project Record Documents.
- Identification systems.
- Warranties and bonds.
- Maintenance service agreements and similar continuing commitments.

Emergencies: Include the following, as applicable:

- Instructions on meaning of warnings, trouble indications, and error messages.
- Instructions on stopping.
- Shutdown instructions for each type of emergency.
- Operating instructions for conditions outside of normal operating limits.
- Sequences for electric or electronic systems.
- Special operating instructions and procedures.

Operations: Include the following, as applicable:

- Startup procedures.
- Equipment or system break-in procedures.
- Routine and normal operating instructions.
- Regulation and control procedures.
- Control sequences.
- Safety procedures.
- Instructions on stopping.
- Normal shutdown instructions.
- Operating procedures for emergencies.
- Operating procedures for system, subsystem, or equipment failure.
- Seasonal and weekend operating instructions.
- Required sequences for electric or electronic systems.
- Special operating instructions and procedures.

Adjustments: Include the following:

- Alignments.
- Checking adjustments.
- Noise and vibration adjustments.

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Economy and efficiency adjustments.

Troubleshooting: Include the following:

Diagnostic instructions.

Test and inspection procedures.

Maintenance: Include the following:

Inspection procedures.

Types of cleaning agents to be used and methods of cleaning.

List of cleaning agents and methods of cleaning detrimental to product.

Procedures for routine cleaning

Procedures for preventive maintenance.

Procedures for routine maintenance.

Instruction on use of special tools.

Repairs: Include the following:

Diagnosis instructions.

Repair instructions.

Disassembly; component removal, repair, and replacement; and reassembly instructions.

Instructions for identifying parts and components.

Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

INSTRUCTION

Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

Owner will furnish Contractor with names and positions of participants.

Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

Schedule training with Owner with at least seven days' advance notice.

Provide a digital video recording of all training programs.

Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 017900

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SECTION 022310 – TREE PROTECTION & TRIMMING

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SECTION 02231 – TREE PROTECTION AND TRIMMING

QUALITY ASSURANCE

Contractor's Arborist Qualifications: **[Certified Arborist as certified by ISA] [Certified Arborist-Municipal Specialist as certified by ISA] [Licensed arborist in jurisdiction where Project is located] [Current member of ASCA] [Registered Consulting Arborist as designated by ASCA].**

MATERIALS

Backfill Soil: **[Stockpiled soil] [Stockpiled soil mixed with planting soil] [Planting soil].**

Organic Mulch: **[Shredded hardwood] [Ground or shredded bark] [Wood and bark chips].**

Protection-Zone Fencing and Gates: **[Galvanized-steel chain link] [Polymer-coated chain link] [Plywood] [Wood posts and rails] [Plastic]** with height of **[48 inches (1200 mm)]**

EXECUTION

Protection Zones: **[Enclosed with protection-zone fencing and signage] [Areas mulched inside tree-protection zones].**

Trenching near Trees: **[Excavation under or around roots or tunneling under the roots][and roots redirected in backfill areas].**

Crown Pruning: **[Cleaning] [Raising] [Reducing] [Thinning] [Structural] [Restoration] [Vista] [Espalier] [Pollarding] [Palm] [Utility].**

Regrading: **[Lowering grade] [Lowering grade within protection zone] [Raising grade] [Minor fill within protection zone].**

Tree Replacement: Replacement of protected trees that are dead or unhealthy due to construction operations.

Small Trees: New trees of same size and species as those being replaced.

Large Trees: **[One] [Two] <Insert number> tree(s) of [6-inch (150-mm)]**END OF SECTION
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SECTION 023000 – EARTHWORK

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SECTION 02300 – EARTHWORK

SUMMARY

Rough grading the Site.

Preparing subgrades for **walks, turf and grasses and plants**.

Excavating and backfilling for buildings and structures.

QUALITY ASSURANCE

Blasting: Seismographic monitoring provided by independent seismic survey agency.

MATERIALS

Soil Materials: Satisfactory and unsatisfactory soil classifications, **base course**

EXCAVATION

Explosives: **Not allowed**. Hand-excavate in tree- and plant-protection zones.

Disposal of Surplus and Waste Materials: **Satisfactory soil to designated storage areas on Owner's property; waste materials and unsatisfactory soil off Owner's property.**

FIELD QUALITY CONTROL

Special Inspector and Testing Agency: Owner engaged.

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SECTION 028100 – IRRIGATION SYSTEMS

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SECTION 02810 – IRRIGATION SYSTEMS

PERFORMANCE REQUIREMENTS

Irrigation zone control shall be **[automatic operation with controller and automatic control]**
[manual operation with manual] valves.

Minimum Working Pressures:

Irrigation Main Piping: **200 psig** (1380 kPa)
Circuit Piping: **150 psig** (1035 kPa)

ABOVEGROUND IRRIGATION MAIN PIPING

Pipe NPS 4 (DN 100) and Smaller:

[Schedule 40] **[Schedule 80]**, PVC pipe; socket-type PVC fittings; and solvent-cemented joints.
Schedule 80, PVC pipe; Schedule 80, threaded PVC fittings; and threaded joints.

UNDERGROUND IRRIGATION MAIN PIPING

Pipe NPS 4 (DN 100) and Smaller:

NPS 3 and NPS 4 (DN 80 and DN 100) ductile-iron, mechanical-joint pipe and fittings; and gasketed joints.
NPS 3 and NPS 4 (DN 80 and DN 100) ductile-iron, push-on-joint pipe and fittings; and gasketed joints.
Type L (Type B) soft copper tube, wrought-copper fittings, and brazed joints.
NPS 4 (DN 100) PE pressure pipe; PE butt, heat-fusion or socket-type fittings; and heat-fusion joints.
[Schedule 40] PVC pipe and socket fittings, and solvent-cemented joints.
Schedule 80, PVC pipe; Schedule 80, PVC fittings; and threaded joints.
SDR 21, PVC, pressure-rated pipe; Schedule 80, PVC socket fittings; and solvent-cemented joints.

CIRCUIT PIPING

Pipe NPS 2 (DN 50) and Smaller:

[SIDR 7] **[SIDR 9]**, PE, controlled ID pipe; insert fittings; and fastener joints.
[DR 9] **[DR 11]**, PE, controlled OD pipe; PE butt, heat-fusion, or socket-type fittings; and heat-fusion joints.
Schedule 40, PVC pipe and socket fittings; and solvent-cemented joints.
SDR 26, PVC, pressure-rated pipe; Schedule 40, PVC socket fittings; and solvent-cemented joints.

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SECTION 028100 – IRRIGATION SYSTEMS

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RISERS TO ABOVEGROUND SPRINKLERS AND SPECIALTIES

Type L hard copper tube, wrought-copper fittings, and [**brazed**] [**soldered**] joints.

DRAIN PIPING

SDR 9, 11.5, or 15, PE, controlled ID pipe; insert fittings; and banded or fastener joints.

Schedule 40, PVC pipe and socket fittings; and solvent-cemented joints.

SDR 21, 26, or 32.5, PVC, pressure-rated pipe; Schedule 40, PVC socket fittings; and solvent-cemented joints.

ABOVEGROUND, SHUTOFF-DUTY VALVES

NPS 2 (DN 50) and Smaller:

Brass ball valve.

Bronze gate valve.

DRAIN VALVES

NPS 1/2 and NPS 3/4 (DN 15 and DN 20): **Automatic drain**

NPS 1 to NPS 2 (DN 25 to DN 50): **Brass ball Bronze gate** valve.

MANUFACTURED UNITS

Automatic Control Valves: **Plastic**

Exposed, Impact-Drive Rotary Sprinklers: **Plastic**.

Pop-up, Impact-Drive Rotary Sprinklers: **Plastic**.

Surface Spray Sprinklers: **Plastic**.

Surface, Pop-up Spray Sprinklers: **Plastic**.

Boxes for Automatic Control Valves: **Plastic**

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SECTION 029110 – SOIL PREPARATION

HWY 14 SENIOR/COMMUNITY CENTER
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SECTION 029110 – SOIL PREPARATION

PRECONSTRUCTION TESTING

Preconstruction testing of **existing, on-site soil**

MATERIALS

Regional Materials: **Imported soil**

Planting soils produced by modifying the following soil sources:

Existing, On-Site Surface Soil **Stockpiled On-Site**
Imported Soil: TBD

PREPARATION OF UNAMENDED, ON-SITE SOIL BEFORE AMENDING

Excavate soil to a depth of **4 inches**

Screen soil with a **2-inch** sieve to remove large materials.

PLACING AND MIXING PLANTING SOIL OVER EXPOSED SUBGRADE

Till subgrade to depth of **4 inches**

Spread unamended soil to total depth of **4 inches** and amend in place.

Compact each lift of planting soil.

PLACING MANUFACTURED PLANTING SOIL OVER EXPOSED SUBGRADE

Till subgrade to depth of **4 inches**

Spread planting soil to total depth of **4 inches**

Compact each lift of planting soil.

BLENDING PLANTING SOIL IN PLACE

Till unamended, existing soil to depth of **4 inches**

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SECTION 029110 – SOIL PREPARATION

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Apply amendments and blend.

Compact blended planting soil.

FIELD QUALITY CONTROL

Testing Agency: [Owner] [Contractor] engaged.

SECTION 02920 – LAWNS & GRASSES

QUALITY ASSURANCE

Installer's Personnel Certifications: **Certified Lawncare Technician.**

MATERIALS

Wildflower Seed: TBD

Native-Grass Seed: TBD.

Wildflower and Native-Grass Seed: TBD

Mulches: TBD

Erosion-Control Materials: **Mats.**

INSTALLATION

Seeding Method: **Hydroseed.**

Protect seeded areas with **straw mulch**

MAINTENANCE SERVICE

Meadows: **40** days from date of **planting completion**

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SECTION 031000 – CONCRETE FORMING & ACCESSORIES

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

GENERAL

1.1 WORK INCLUDED

This section includes formwork for cast-in-place concrete, including water stops, and installation of embedded items.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete Reinforcement - Section 03 20 00
- B. Cast-In-Place Concrete - Section 03 30 00
- C. Under-Slab Vapor Retarder – Section 07 26 00

1.3 QUALITY ASSURANCE

- A. Comply with the American Concrete Institute Standard, ACI 347-04, Recommended Practice for Concrete Formwork.

1.4 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)

ASTM D 226-09	Specification for Asphalt - Saturated Organic Felt used in Roofing and Waterproofing"
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ASTM D 1751-04	Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
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PART 2: PRODUCTS

2.1 MATERIALS

Forms for Exposed Finish Concrete: Plywood complying with Voluntary Product Standard PS 1-07 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better or metal, metal-

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framed plywood or other acceptable panel-type materials. Plywood shall be mill-oiled and edge-sealed, with each piece bearing legible inspection trademark. Furnish in largest practicable sizes to minimize number of joints. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.

Forms for Unexposed Finish Concrete: Use plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

Form Coatings: Commercial formulation that will not bond with, stain, or adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

Chamfer Strips: $\frac{3}{4}$ inch by $\frac{3}{4}$ inch wood, PVC, or rubber.

Preformed Construction Joint: 24-gage steel, galvanized, shaped to form a continuous tongue and groove key.

Preformed Control Joint: Rigid plastic or metal strip with removable top section.

Expansion Joint Material: Asphalt saturated fiberboard, $\frac{1}{2}$ inch thick, meeting the requirements of ASTM D 1751.

Felt: Asphalt-saturated organic felt, weighing 30 pounds per 100 square feet, meeting the requirements of ASTM D 226.

Water stops: PVC, meeting the requirements of CRD-C572. Provide 6 inches wide dumbbell shape water stop with 3/16-inch minimum web thickness and 3/8 inch minimum end bulb diameter.

OR

Water stops: Volclay RX manufactured by Colloid Environmental Technologies Co. (CETCO).

Recycled Content: Minimum 5 percent post-consumer content, or minimum 20 percent pre-consumer recycled content at contractor's option.

PART 3: EXECUTION

3.1 COORDINATION

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SECTION 031000 – CONCRETE FORMING & ACCESSORIES

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- A. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel. Set screeds accurately. Embedded items shall be accurately aligned and adequately supported. Verify installation of mechanical, plumbing, and electrical items to be embedded in concrete. Correct any unsatisfactory condition before proceeding further.

3.2 PREPARATION

- A. Form Coating: Coat contact surfaces of forms with a form coating compound before reinforcement is placed. Thin form-coating compounds with thinning agent and apply as specified in manufacturer's instructions. Do not allow excess form-coating material to accumulate in forms or to come into contact with concrete surfaces against which fresh concrete will be placed.

3.3 INSTALLATION

- A. Formwork: Formwork shall support vertical and lateral loads that are applied until such loads can be supported by concrete structure. Formwork shall be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials. Construct forms to sizes, shapes, lines and dimensions shown. Perform surveys to obtain accurate alignment. Provide for recesses, chamfers, blocking, anchorages, inserts, and other features required in work. Select materials to obtain required finishes. Butt joints solidly and provide backup at joints to prevent leakage of cement paste.
- B. Chamfer Strips: Provide at exposed corners and edges.
- C. Form Ties: Use factory fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection and to prevent spalling concrete surfaces upon removal.
- D. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris before concrete is placed. Retighten forms and bracing after concrete placement as required to eliminate mortar leaks and maintain proper alignment.

3.4 INSTALLATION OF EMBEDDED ITEMS

- A. General: Set anchorage devices and other embedded items accurately. Use setting drawings, diagrams, templates and printed instructions provided by supplier. Secure embedded items such that they are not displaced during placement of concrete.

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- B. Water stops: Install according to manufacturers printed instructions. Splice water stop sections using square cut butt joints and fuse sections together with indirect heat from preheated splicing iron. Use of direct flame is prohibited.
- 1. Place water stops in all concrete construction joints in basement walls around the building perimeter that are exposed to soil, weather, or moisture, and in any other construction joints that have the potential to allow water infiltration into the building.

3.5 JOINTS

- A. Construction Joints in Elevated Slabs and Beams: Construction joints in Elevated Slabs, Beams, Grade Beams, and other flexural members shall only be made as shown in the contract drawings or as approved by the Engineer of Record. Joints shall be constructed in accordance with ACI 318 Section 6.4 with provisions made for the transfer of shear and other forces. Reinforcement shall be continuous through these joints unless noted otherwise.
- B. Construction Joints in Walls, Foundations, and Slabs on Grade: Provide keyways at least 1 ½ inches deep in vertical construction joints in walls and construction joints in slabs on grade and foundations. Discontinue every other horizontal bar through slab on grade construction joints unless noted otherwise.
- C. Preformed Construction Joint for Slabs on Grade: Secure with galvanized steel stakes, 1/8 inch thick by 1-1/8 inches wide with ½ inch deep rib and tapered point. Splice adjoining joints with 24 gage steel, galvanized splice plates.
- D. Isolation Joints in Slabs on Grade: Construct isolation joints in interior slabs using 30 lb. felt. Provide isolation joints at points of contact between slabs on grade and vertical surfaces, such as column pedestals, foundation walls, grade beams and elsewhere as indicated. Construct isolation joints on exterior slabs abutting vertical surfaces with ½ inch thick expansion joint material.
- E. Control Joints in Slabs-on-Grade:
 - 1. Preformed Strip: Insert premolded rigid plastic, or metal strip into fresh concrete. Cut groove for strip using 10-foot long straight edge cutting tool. Depths of strip shall be one fourth of slab thickness. Press strip into groove such that top of strip is level with the concrete surface. Pull off removable top section, if any, prior to troweling.
 - 2. Saw Cut: Contractor may saw cut control joints instead of using preformed strips. Saw cut joints shall be 1/8 inch wide. Saw cut depth should equal 1/3 of slab depth. Cut joints after concrete has hardened sufficiently to prevent raveling;

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SECTION 031000 – CONCRETE FORMING & ACCESSORIES

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

usually 4 to 12 hours after slab has been cast and finished. Use diamond or silicone-carbide blades.

- F. Control Joints in Walls: Create weakened planes in cantilevered retaining walls at 25 feet on center. Use preformed strips, placed vertically, full height in each face of wall. Depth of strips shall be one inch.

3.6 REMOVAL OF FORMWORK

- A. General: Prevent excessive deflection, distortion, and damage to concrete when forms are stripped. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces.
- B. Formwork and supports at sides of concrete shall remain in place for 24 hours after concrete placement. This period represents cumulative number of hours, not necessarily consecutive, during which the temperature of the air surrounding the concrete is above 50 degrees F. Formwork and shoring which support the weight of concrete shall not be removed until concrete has attained its specified compressive strength.
- C. Ensure safety of the structure. Do not superimpose any load on concrete until forms are removed and concrete is cured.

3.7 RE-USE OF FORMS

- A. General: Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated, or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.

When forms are intended for successive concrete placement, thoroughly clean surfaces and remove fins and latence. Align and secure joints to avoid offsets. Do not use "patched" forms for exposed concrete surfaces.

END OF SECTION 031000

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SECTION 032000 – CONCRETE REINFORCEMENT

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This section includes fabrication and installation of deformed bar and welded wire fabric reinforcing steel.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete Forming and Accessories - Section 03 10 00.
- B. Cast In Place Concrete - Section 03 30 00.

1.3 QUALITY ASSURANCE

- A. Reference Standards:

- 1. American Concrete Institute (ACI)

- a. ACI 301-05 Specifications for Structural Concrete for Buildings
 - b. ACI 315-99 Details and Detailing of Concrete Reinforcement
 - c. ACI 318-05 Building Code Requirements for Structural Concrete

- 2. American Society for Testing and Materials (ASTM)

- a. ASTM A 82/
A82M-07 Standard Specification for Steel Wire, plain, for Concrete Reinforcement
 - b. ASTM A 185/
A185M-07 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete

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SECTION 032000 – CONCRETE REINFORCEMENT

HWY 14 SENIOR/COMMUNITY CENTER
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- c. ASTM A 615/ Standard Specification for Deformed and
 A 615M-09b Plain Carbon-Steel Bars for Concrete
 Reinforcement

- 3. Concrete Reinforcing Steel Institute (CRSI). Design Handbook - 2002 Edition

1.4 SUBMITTALS

- A. Shop Drawings: Submit shop drawings for reinforcing steel. Comply with ACI 315 requirements showing layout, bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of reinforcing steel. Shop Drawings shall not be made by reproduction of the Contract Drawings.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Reinforcing Bars: ASTM A 615, Grade 60. Stirrups and ties may be Grade 40.
- B. Welded Wire Fabric: ASTM A 185, flat sheets.
- C. Steel Wire: ASTM A 82, 16 gage.
- D. Supports for Reinforcing Steel: Wire bar type and precast concrete block type meeting the requirements of CRSI Manual of Standard Practice.

2.2 FABRICATION

- A. Fabricate reinforcing steel in accordance with fabricating tolerances in ACI 315.
- B. Do not fabricate reinforcing steel until shop drawings are approved.

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SECTION 032000 – CONCRETE REINFORCEMENT

HWY 14 SENIOR/COMMUNITY CENTER
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PART 3 - EXECUTION

3.1 PLACING BAR SUPPORTS

- A. General: Provide bar supports meeting the requirements of CRSI Specification for Placing Bar Supports.
- B. Slabs-on-grade: Use supports with sand plates or precast concrete blocks or horizontal runners where base material will not support chair legs.

3.2 PLACING REINFORCING STEEL

- A. General: Comply with CRSI Code of Standard Practice for "Placing Reinforcing Bars".
- B. Clean reinforcing steel of loose rust and mill scale, earth, ice, and other materials, which reduce or destroy bond with concrete.
- C. Accurately position, support and secure reinforcing steel against displacement by formwork, construction, or concrete placement operations. Place reinforcing steel to obtain minimum coverages. Arrange, space and securely tie bars and bar supports to hold reinforcing steel in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

Concrete Cover:

Concrete cast against and permanently exposed to earth 3 inches

Concrete exposed to earth or weather:

Bars larger than No. 5 2 inches

Bars No. 5 or smaller. 1 ½ inches

- D. Rebar Splices: Locate at points of minimum stress or as shown on contract drawings. Unless noted otherwise, provide lap splices 30 bar diameters (18 inches minimum) in length.

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SECTION 032000 – CONCRETE REINFORCEMENT

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- E. Welded Wire Fabric Splices: Lap one complete wire spacing.
- F. Corner Reinforcing: Provide corner bars of same size and spacing as horizontal reinforcing steel. Lap with horizontal reinforcing 30 bar diameters or 18 inches minimum length.
- G. Reinforcing at Construction/Control Joints: Continue reinforcing steel through construction joints unless noted otherwise. Discontinue reinforcing steel 2 inches from preformed construction joints in slabs-on-grade. Cut alternate longitudinal bars at weakened plane control joints in walls.

END OF SECTION 032000

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SECTION 033000 – CAST IN PLACE CONCRETE

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This section covers cast-in-place concrete including finishing, surface repair and curing.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete Forming and Accessories - Section 03 10 00
- B. Concrete Reinforcement - Section 03 20 00
- C. Under Slab Vapor Retarder – Section 07 26 00

1.3 QUALITY ASSURANCE

- A. Reference Standards: Meet the requirements of the following codes, specifications and standards.

- 1. American Concrete Institute (ACI) Publications;

- a. ACI 301-05 Specifications for Structural Concrete for Buildings
 - b. ACI 306.1-90 Standard Specification for Cold Weather Concreting
 - c. ACI 318-05 Building Code Requirements for Structural Concrete.

- 2. ASTM International (ASTM);

- a. ASTM C 31/
C31M-10 Standard Practice for Making and Curing Concrete Test Specimens in the Field

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SECTION 033000 – CAST IN PLACE CONCRETE

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

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| b. | ASTM C 33/
C33M-11a | Standard Specification for Concrete
Aggregates |
| c. | ASTM C 39/
C39M-11a | Standard Test Method for Compressive
Strength of Cylindrical
Concrete Specimens |
| d. | ASTM C 94/
C 94M-11b | Standard Specification for Ready-Mixed
Concrete |
| e. | ASTM C 131-06 | Standard Test Method for Resistance to Degradation
of Small-Size Coarse Aggregate by Abrasion and
Impact in the Los Angeles Machine |
| f. | ASTM C 136-06 | Standard Test Method for Sieve Analysis of Fine and
Coarse Aggregates |
| g. | ASTM C 143
C 143M-10a | Standard Test Method for Slump of
Hydraulic Cement Concrete |
| h. | ASTM C 150/
C150M-11 | Standard Specification for Portland Cement |
| i. | ASTM C 171-07 | Standard Specification for Sheet Materials for Curing
Concrete |
| j. | ASTM C 172/
C172M-10 | Standard Practice for Sampling Freshly
Mixed Concrete |
| k. | ASTM C 173/
C 173M-10b | Standard Test Method for Air Content of
Freshly Mixed Concrete
by the Volumetric Method |
| l. | ASTM C 231/
C 231M-10 | Standard Test Method for Air Content of
Freshly Mixed Concrete
by the Pressure Method |

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1. V.O.C. content shall be a maximum 250 (55) gm/liter, unless more stringent codes or laws apply.

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SECTION 033000 – CAST IN PLACE CONCRETE

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

- A. Product Data: Submit manufacturer's product data with application and installation instructions for proprietary materials and admixtures.
- B. Concrete Mix Design:
 - 1. Submit mix design in accordance with ACI-301, Section 4.
 - 2. Submit with mix design results of laboratory tests performed within previous 12 months indicating aggregates from the proposed source comply with the requirements of ASTM C 33 or C 330 as applicable.
 - 3. Submit the proposed area of use for each mix design submitted (footings, stemwalls, slabs, walls, columns, etc.).
- C. Granular Base Course: Submit gradation, plasticity index, and wear information.
- D. Test Reports: Submit copies of test reports for concrete compressive strength, air content, temperature and slump. Submit copies of granular base course test reports.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Environmental Requirements: Manufacturer and Contractor shall conform to Federal, State, and Local V.O.C. (Volatile Organic Compound) Regulations in area where Project is located. Notify A/E in writing if variations to Specifications herein are required.
 - 1. V.O.C. content shall be a maximum 250 (55) gm/liter, unless more stringent codes or laws apply.

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SECTION 033000 – CAST IN PLACE CONCRETE

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, low alkali. Use one brand of cement throughout project.
- B. Normal Weight Aggregates: ASTM C 33. Provide aggregates from a single source for exposed concrete.
- C. Lightweight Aggregates: ASTM C330. Provide aggregates from single source for each class of concrete.
- D. Water: Potable.
- E. Air-Entraining Admixture: ASTM C 260.
- F. Water Reducing Admixture: ASTM C 494.
- G. Fly-Ash: ASTM C 618, Class F [Class F] [Class C] [Class F is for reactive aggregates].
- H. Moisture-Retaining Cover: Provide waterproof paper, polyethylene film, or polyethylene-coated burlap meeting the requirements of ASTM C 171.
- I. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound meeting the requirements of ASTM C 309; Type 1-D with fugitive dye for interior concrete and foundations; Type 2, white pigmented, for exposed exterior concrete except exposed exterior Architectural concrete, use Type 1-D.

Curing compound shall NOT be used on interior slabs, except exposed integrally colored concrete slabs. Curing compound to be used on integrally colored concrete slabs shall be approved by the manufacturer of the color.
- J. Vapor Retarder shall comply with Section 07 26 00 of these Specifications.

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SECTION 033000 – CAST IN PLACE CONCRETE

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

- K. Granular base shall meet the following grading requirements when tested in accordance with ASTM C 136.

Granular base shall meet the gradation and material properties requirements as listed in the General Structural Notes.

The plasticity Index shall be no greater than 3 when tested in accordance with ASTM D 4318. The coarse aggregate shall have a percent wear of 50 or less when tested in accordance with ASTM C 131.

2.2 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial mixture or field experience methods as specified in ACI 301, Section 4. If trial mixture method is used, employ an independent testing facility, acceptable to Architect, for preparing and reporting proposed mix designs.
- B. Submit written reports to Architect, or Engineer, of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been approved.
- C. Structural lightweight concrete shall have a measured equilibrium density not exceeding 115 pounds per cubic foot when tested in accordance with ASTM C 567.
- D. Refer to the General Structural Notes for concrete strengths.
- E. Slabs-on-ground or on vapor retarder shall have a water/total cementitious ratio not to exceed 0.45.
- F. Admixtures
1. Structural lightweight concrete may have an entrained air content up to a maximum of 10 percent.
 2. Use water reducing admixture conforming to ASTM C 494, Type A, in all concrete unless approved otherwise by the Structural Engineer.

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HWY 14 SENIOR/COMMUNITY CENTER
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3. All other admixtures shall have the written approval of the Architect or Structural Engineer.
4. Calcium chloride is not permitted.
5. All admixtures, except high range water reducers, shall be added to the concrete at the batch plant.

PART 3 - EXECUTION

3.1 COORDINATION

- A. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel. Set screeds accurately. Embedded items shall be accurately aligned and adequately supported. Verify installation of mechanical, plumbing, and electrical items to be embedded in concrete. Correct any unsatisfactory condition before proceeding further.

3.2 PREPARATION

- A. Before placing concrete, clean and roughen surface of previously placed concrete. Clean reinforcing steel. Remove debris, providing clean-outs at bottom of forms when necessary. Moisten surfaces to receive concrete unless otherwise prepared. Remove excess water before placing concrete.

3.3 CONCRETE PLACEMENT

- A. General: Comply with ACI 301.
- B. Place concrete continuously in layers not deeper than 24 inches. Concrete shall not be placed against concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints. Deposit concrete as nearly as practicable to its final location to avoid segregation. Do not use vibrators to transport concrete.
- C. Maintain reinforcing in proper position during concrete placement operations.

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HWY 14 SENIOR/COMMUNITY CENTER
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- D. Consolidate concrete, immediately after placing, by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.
- E. Bring slab surfaces to correct level with straightedge and strikeoff. Use bull floats or darbies to smooth surface. Do not disturb slab surfaces prior to beginning finishing operations.
- F. Cold Weather Concreting: Protect concrete work from physical damage or reduced strength caused by frost, freezing or low temperatures. Comply with ACI 306.1.
- G. Hot Weather Concreting: When hot weather conditions exist that would impair quality and strength of concrete, reduce delivery time of ready mix concrete, lower the temperature of materials, or add retarder to ensure that the concrete is plastic. Retempering with water is not allowed. Comply with ACI 305R.

3.4 FINISH OF FORMED SURFACES

- A. Rough Form Finish: Provide where formed concrete surfaces are not exposed to view. Tie holes and surface imperfections shall be repaired and patched and fins and other projections exceeding ¼ inch in height rubbed down or chipped off.

3.5 FINISH OF HORIZONTAL SURFACES

- A. At tops of foundation walls and grade beams finish with a texture matching adjacent formed surfaces unless otherwise indicated.

3.6 SLAB FINISHES

- A. Float Finish: Begin floating when surface water has disappeared and when concrete has stiffened sufficiently to permit operation of power-driven or hand floats. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to a tolerance not exceeding ¼ inch in 10 feet when tested with a 10 foot straightedge.
- B. Scratch Finish: Apply scratch finish to slab surfaces that are to receive floor topping. Roughen surface before final set, using stiff brushes, or brooms.

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- C. Trowel Finish: Apply trowel finish to all slab surfaces unless noted otherwise. After floating, begin first trowel finish using a power-driven or hand trowel. Finish concrete surface by a final hand-trowel operation, free of trowel marks, and uniform in texture and appearance. The final surface finish for slabs-on-grade shall have a minimum FF = [25] and a minimum FL = [20] per ACI requirements. The final surface finish for elevated slabs shall have a minimum FF = [25]. [Verify with Architectural requirements.]
- D. Broom Finish: Apply on exterior slabs, ramps, steps, and sidewalks. Immediately after concrete has received a float finish, draw a broom or burlap belt across the surface to give a coarse transverse scored texture.

3.7 CONCRETE CURING AND PROTECTION

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Continue curing for at least 7 days.
- B. Moisture-retaining Cover curing: All interior concrete slabs, except exposed integrally colored concrete slabs, are to be cured with a moisture retaining cover for the first 7 days. After that time, the cover shall be removed and the slab should be allowed to dry. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed. Repair any holes or tears in cover during curing period.
- C. Curing compound: At contractor's option, exterior concrete slabs may be cured using curing compound. All vertical concrete (walls, beams, etc...) shall be cured using curing compound – apply compound to the vertical surface as soon as the forms are removed. Apply curing compound uniformly in accordance with the manufacturer's printed instructions. Curing compound shall NOT be used on interior slabs, except exposed integrally colored concrete slabs.
- D. Exposed integrally colored concrete slabs: Use curing compound recommended by the concrete supplier. Apply with and airless sprayer.

3.8 CONCRETE SURFACE REPAIRS

- A. Patching Surface Imperfections: Remove loose material and patch surface imperfections and holes left by tie rods with cement mortar. Surface imperfections include honeycomb, excessive air voids, sand streaking and cracks.

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HWY 14 SENIOR/COMMUNITY CENTER
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3.9 FOR EXPOSED-TO-VIEW SURFACES

- A. Blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

3.10 FIELD QUALITY CONTROL

- A. The Owner shall employ the services of a qualified testing laboratory to perform tests and submit test reports.
- B. Sampling Fresh Concrete: ASTM C 172.
- C. Slump: ASTM C 143; one test for each set of compressive strength test specimens.
- D. Air Content: ASTM C 173 or C 231 for each set of compressive strength test specimens.
- E. Concrete Temperature: Test hourly when air temperature is 40 degrees F. and below, when 80 degrees F and above; and when compression test specimens are made.
- F. Compression Test Specimen: ASTM C 31, one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field cure test specimens are required. Mold one set of standard cylinders for volume of concrete specified below or fraction thereof.
 - 1. Slabs on Grade or Metal Deck 30 cubic yards
 - 2. Footings and stem walls 50 cubic yards
 - 3. All other locations (unless noted otherwise) 30 cubic yards
- G. Compressive Strength Tests: ASTM C 39; test 1 specimen at 7 days, 2 specimens at 28 days, and retain one specimen in reserve for later testing. Additional Tests: The testing laboratory will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the

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structure as directed by the Architect. The testing laboratory may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by the Architect or Engineer. The Owner shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

- H. Granular Base Course: ASTM C 136 and ASTM D 4318 for every 500 square yards of building slab area.

END OF SECTION 033000

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SECTION 051000 – STRUCTURAL STEEL

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This section covers cast-in-place concrete including finishing, surface repair and curing.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete Forming and Accessories - Section 03 10 00
- B. Concrete Reinforcement - Section 03 20 00
- C. Under Slab Vapor Retarder – Section 07 26 00

1.3 QUALITY ASSURANCE

- A. Reference Standards: Meet the requirements of the following codes, specifications and standards.

- 1. American Concrete Institute (ACI) Publications;

- a. ACI 301-05 Specifications for Structural Concrete for Buildings
 - b. ACI 306.1-90 Standard Specification for Cold Weather Concreting
 - c. ACI 318-05 Building Code Requirements for Structural Concrete.

- 2. ASTM International (ASTM);

- a. ASTM C 31/
C31M-10 Standard Practice for Making and Curing Concrete Test Specimens in the Field

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SECTION 051000 – STRUCTURAL STEEL

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

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| b. | ASTM C 33/
C33M-11a | Standard Specification for Concrete
Aggregates |
| c. | ASTM C 39/
C39M-11a | Standard Test Method for Compressive
Strength of Cylindrical
Concrete Specimens |
| d. | ASTM C 94/
C 94M-11b | Standard Specification for Ready-Mixed
Concrete |
| e. | ASTM C 131-06 | Standard Test Method for Resistance to Degradation
of Small-Size Coarse Aggregate by Abrasion and
Impact in the Los Angeles Machine |
| f. | ASTM C 136-06 | Standard Test Method for Sieve Analysis of Fine and
Coarse Aggregates |
| g. | ASTM C 143
C 143M-10a | Standard Test Method for Slump of
Hydraulic Cement Concrete |
| h. | ASTM C 150/
C150M-11 | Standard Specification for Portland Cement |
| i. | ASTM C 171-07 | Standard Specification for Sheet Materials for Curing
Concrete |
| j. | ASTM C 172/
C172M-10 | Standard Practice for Sampling Freshly
Mixed Concrete |
| k. | ASTM C 173/
C 173M-10b | Standard Test Method for Air Content of
Freshly Mixed Concrete
by the Volumetric Method |
| l. | ASTM C 231/
C 231M-10 | Standard Test Method for Air Content of
Freshly Mixed Concrete
by the Pressure Method |

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1. V.O.C. content shall be a maximum 250 (55) gm/liter, unless more stringent codes or laws apply.

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SECTION 051000 – STRUCTURAL STEEL

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

- A. Product Data: Submit manufacturer's product data with application and installation instructions for proprietary materials and admixtures.
- B. Concrete Mix Design:
 - 1. Submit mix design in accordance with ACI-301, Section 4.
 - 2. Submit with mix design results of laboratory tests performed within previous 12 months indicating aggregates from the proposed source comply with the requirements of ASTM C 33 or C 330 as applicable.
 - 3. Submit the proposed area of use for each mix design submitted (footings, stemwalls, slabs, walls, columns, etc.).
- C. Granular Base Course: Submit gradation, plasticity index, and wear information.
- D. Test Reports: Submit copies of test reports for concrete compressive strength, air content, temperature and slump. Submit copies of granular base course test reports.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Environmental Requirements: Manufacturer and Contractor shall conform to Federal, State, and Local V.O.C. (Volatile Organic Compound) Regulations in area where Project is located. Notify A/E in writing if variations to Specifications herein are required.
 - 1. V.O.C. content shall be a maximum 250 (55) gm/liter, unless more stringent codes or laws apply.

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, low alkali. Use one brand of cement throughout project.
- B. Normal Weight Aggregates: ASTM C 33. Provide aggregates from a single source for exposed concrete.
- C. Lightweight Aggregates: ASTM C330. Provide aggregates from single source for each class of concrete.
- D. Water: Potable.
- E. Air-Entraining Admixture: ASTM C 260.
- F. Water Reducing Admixture: ASTM C 494.
- G. Fly-Ash: ASTM C 618, Class F [Class F] [Class C] [Class F is for reactive aggregates].
- H. Moisture-Retaining Cover: Provide waterproof paper, polyethylene film, or polyethylene-coated burlap meeting the requirements of ASTM C 171.
- I. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound meeting the requirements of ASTM C 309; Type 1-D with fugitive dye for interior concrete and foundations; Type 2, white pigmented, for exposed exterior concrete except exposed exterior Architectural concrete, use Type 1-D.

Curing compound shall NOT be used on interior slabs, except exposed integrally colored concrete slabs. Curing compound to be used on integrally colored concrete slabs shall be approved by the manufacturer of the color.
- J. Vapor Retarder shall comply with Section 07 26 00 of these Specifications.

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SECTION 051000 – STRUCTURAL STEEL

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

- K. Granular base shall meet the following grading requirements when tested in accordance with ASTM C 136.

Granular base shall meet the gradation and material properties requirements as listed in the General Structural Notes.

The plasticity Index shall be no greater than 3 when tested in accordance with ASTM D 4318. The coarse aggregate shall have a percent wear of 50 or less when tested in accordance with ASTM C 131.

2.2 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial mixture or field experience methods as specified in ACI 301, Section 4. If trial mixture method is used, employ an independent testing facility, acceptable to Architect, for preparing and reporting proposed mix designs.
- B. Submit written reports to Architect, or Engineer, of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been approved.
- C. Structural lightweight concrete shall have a measured equilibrium density not exceeding 115 pounds per cubic foot when tested in accordance with ASTM C 567.
- D. Refer to the General Structural Notes for concrete strengths.
- E. Slabs-on-ground or on vapor retarder shall have a water/total cementitious ratio not to exceed 0.45.
- F. Admixtures
1. Structural lightweight concrete may have an entrained air content up to a maximum of 10 percent.
 2. Use water reducing admixture conforming to ASTM C 494, Type A, in all concrete unless approved otherwise by the Structural Engineer.

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SECTION 051000 – STRUCTURAL STEEL

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

3. All other admixtures shall have the written approval of the Architect or Structural Engineer.
4. Calcium chloride is not permitted.
5. All admixtures, except high range water reducers, shall be added to the concrete at the batch plant.

PART 3 - EXECUTION

3.1 COORDINATION

- A. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel. Set screeds accurately. Embedded items shall be accurately aligned and adequately supported. Verify installation of mechanical, plumbing, and electrical items to be embedded in concrete. Correct any unsatisfactory condition before proceeding further.

3.2 PREPARATION

- A. Before placing concrete, clean and roughen surface of previously placed concrete. Clean reinforcing steel. Remove debris, providing clean-outs at bottom of forms when necessary. Moisten surfaces to receive concrete unless otherwise prepared. Remove excess water before placing concrete.

3.3 CONCRETE PLACEMENT

- A. General: Comply with ACI 301.
- B. Place concrete continuously in layers not deeper than 24 inches. Concrete shall not be placed against concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints. Deposit concrete as nearly as practicable to its final location to avoid segregation. Do not use vibrators to transport concrete.
- C. Maintain reinforcing in proper position during concrete placement operations.

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- D. Consolidate concrete, immediately after placing, by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.
- E. Bring slab surfaces to correct level with straightedge and strikeoff. Use bull floats or darbies to smooth surface. Do not disturb slab surfaces prior to beginning finishing operations.
- F. Cold Weather Concreting: Protect concrete work from physical damage or reduced strength caused by frost, freezing or low temperatures. Comply with ACI 306.1.
- G. Hot Weather Concreting: When hot weather conditions exist that would impair quality and strength of concrete, reduce delivery time of ready mix concrete, lower the temperature of materials, or add retarder to ensure that the concrete is plastic. Retempering with water is not allowed. Comply with ACI 305R.

3.4 FINISH OF FORMED SURFACES

- A. Rough Form Finish: Provide where formed concrete surfaces are not exposed to view. Tie holes and surface imperfections shall be repaired and patched and fins and other projections exceeding ¼ inch in height rubbed down or chipped off.

3.5 FINISH OF HORIZONTAL SURFACES

- A. At tops of foundation walls and grade beams finish with a texture matching adjacent formed surfaces unless otherwise indicated.

3.6 SLAB FINISHES

- A. Float Finish: Begin floating when surface water has disappeared and when concrete has stiffened sufficiently to permit operation of power-driven or hand floats. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to a tolerance not exceeding ¼ inch in 10 feet when tested with a 10 foot straightedge.
- B. Scratch Finish: Apply scratch finish to slab surfaces that are to receive floor topping. Roughen surface before final set, using stiff brushes, or brooms.

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- C. Trowel Finish: Apply trowel finish to all slab surfaces unless noted otherwise. After floating, begin first trowel finish using a power-driven or hand trowel. Finish concrete surface by a final hand-trowel operation, free of trowel marks, and uniform in texture and appearance. The final surface finish for slabs-on-grade shall have a minimum FF = [25] and a minimum FL = [20] per ACI requirements. The final surface finish for elevated slabs shall have a minimum FF = [25]. [Verify with Architectural requirements.]
- D. Broom Finish: Apply on exterior slabs, ramps, steps, and sidewalks. Immediately after concrete has received a float finish, draw a broom or burlap belt across the surface to give a coarse transverse scored texture.

3.7 CONCRETE CURING AND PROTECTION

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Continue curing for at least 7 days.
- B. Moisture-retaining Cover curing: All interior concrete slabs, except exposed integrally colored concrete slabs, are to be cured with a moisture retaining cover for the first 7 days. After that time, the cover shall be removed and the slab should be allowed to dry. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed. Repair any holes or tears in cover during curing period.
- C. Curing compound: At contractor's option, exterior concrete slabs may be cured using curing compound. All vertical concrete (walls, beams, etc...) shall be cured using curing compound – apply compound to the vertical surface as soon as the forms are removed. Apply curing compound uniformly in accordance with the manufacturer's printed instructions. Curing compound shall NOT be used on interior slabs, except exposed integrally colored concrete slabs.
- D. Exposed integrally colored concrete slabs: Use curing compound recommended by the concrete supplier. Apply with and airless sprayer.

3.8 CONCRETE SURFACE REPAIRS

- A. Patching Surface Imperfections: Remove loose material and patch surface imperfections and holes left by tie rods with cement mortar. Surface imperfections include honeycomb, excessive air voids, sand streaking and cracks.

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3.9 FOR EXPOSED-TO-VIEW SURFACES

- A. Blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

3.10 FIELD QUALITY CONTROL

- A. The Owner shall employ the services of a qualified testing laboratory to perform tests and submit test reports.
- B. Sampling Fresh Concrete: ASTM C 172.
- C. Slump: ASTM C 143; one test for each set of compressive strength test specimens.
- D. Air Content: ASTM C 173 or C 231 for each set of compressive strength test specimens.
- E. Concrete Temperature: Test hourly when air temperature is 40 degrees F. and below, when 80 degrees F and above; and when compression test specimens are made.
- F. Compression Test Specimen: ASTM C 31, one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field cure test specimens are required. Mold one set of standard cylinders for volume of concrete specified below or fraction thereof.
 - 1. Slabs on Grade or Metal Deck 30 cubic yards
 - 2. Footings and stem walls 50 cubic yards
 - 3. All other locations (unless noted otherwise) 30 cubic yards
- G. Compressive Strength Tests: ASTM C 39; test 1 specimen at 7 days, 2 specimens at 28 days, and retain one specimen in reserve for later testing. Additional Tests: The testing laboratory will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the

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structure as directed by the Architect. The testing laboratory may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by the Architect or Engineer. The Owner shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

- H. Granular Base Course: ASTM C 136 and ASTM D 4318 for every 500 square yards of building slab area.

END OF SECTION 051000

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SECTION 054000 – COLD FORMED METAL FRAMING

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This section includes all lightgauge studs, joists and track, 20 gage or heavier, including bridging, and related accessories as indicated on the Contract Drawings and specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Structural Steel - Section 05 10 00
- B. Steel Joists - Section 05 21 00

1.3 QUALITY ASSURANCE

- A. Reference Standards:

American Iron and Steel Institute (AISI) North American Specification for the Design of Cold-Formed Steel Structural Members, 2001.

American Welding Society of (AWS) D1.3, Structural Welding Code-Sheet Steel.

ASTM International.

- a. ASTM A 653/
A653M-11 Standard Specification for Steel Sheet,
 Zinc-Coated (Galvanized) or Zinc-Iron
 Alloy-Coated (Galvannealed) by the Hot-Dip
 Process
- b. A 1008/
A 1008M-11 Standard Specification for Steel, Sheet,
 Cold-Rolled, Carbon, Structural, High-
 Strength Low Alloy, High-Strength Low Alloy with
 Improved Formability

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- B. Waste Management and Disposal: As specified in Division 01 Section "Construction Waste Management" and as follows:
 - 1. Collect off cuts and scrap and place in designated area for recycling in accordance with the Waste Management Plan and local recycler standards.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Metal Framing:
 - 1. All 12, 14, and 16 gage steel studs and joists shall be formed from steel that meets the requirements of one of the following standards with a minimum yield strength of 50,000 psi:
 - a. Painted Material - ASTM A 1011, Grade 50.
 - b. Galvanized Material - ASTM A 653 Grade 50.
 - 2. All 18 and 20 gage steel studs and joists; all track, bridging and accessories shall be formed from steel that meets the requirements of one of the following with a minimum yield strength of 33,000 psi:
 - a. Painted Material - ASTM A 1008, Grade C.
 - b. Galvanized Material - ASTM A 653.
- B. Material Finishes: All stud and joist components shall be primed with paint meeting the performance requirements of TT-P-1636C, or shall be formed from steel having a G-60 galvanized coating or better.

2.2 FABRICATION

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- A. Framing components may be prefabricated into panels prior to erection. Prefabricated panels shall be square, with components attached to prevent racking. Handling and lifting of panels shall be done in a manner as to not cause distortion in any member.
- B. All framing components shall be cut squarely for attachment to perpendicular members, or as required for an angular fit against abutting members. Members shall be held positively in place until properly fastened.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install metal framing systems in accordance with manufacturer's printed instructions and recommendations, unless otherwise indicated on Contract Drawings.
- B. Install and align tracks accurately to layout at base and tops of studs. Secure tracks as indicated on Contract Drawings. Provide fasteners at corners and ends of tracks.
- C. Install supplementary framing, blocking and bracing in metal framing system to support fixtures, equipment, etc. Comply with stud manufacturer's recommendations and industry standards, considering weight and loading of each item.
- D. Secure studs to top and bottom tracks by welding at both inside and outside flanges or with a minimum of 2-#8 self tapping screws (one per flange) up to 16 gage material and 2-#10 self tapping screws (one per flange) for 14 gage and thicker, unless noted otherwise.
- E. Frame wall openings larger than 2 foot-0 inches square with double studs at each jamb of frame except where more than 2 are either shown or indicated in manufacturer's instructions. Install tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with stud shoes or by welding, and space jack studs same as full-height studs of wall. Secure stud system wall opening frame in manner indicated.
- F. All components of build-up stud sections, including jack studs, full height studs, columns, headers, etc. shall be welded together with utilizing 1/8" fillet welds 1" long at 12" on center along the full height of each flange to flange connection.

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- G. Install horizontal bridging in stud system, spaced (vertical distance) at no more than 4 foot – 0 inches o.c. Weld at each intersection.
- H. Touch-up shop-applied protective coatings damaged during handling and installation. Use compatible primer for prime coated surfaces; use galvanizing repair paint for galvanized surfaces, such as zinc-rich paint.

END OF SECTION 054000

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PART 1 - GENERAL**RELATED DOCUMENTS**

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

- Refuse enclosure gate fabrication.
- Privacy screen framing.

REFERENCE STANDARDS

American Disability Act (ADA)

ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1

American Institute of Steel Construction

Manual of Steel Construction
Code of Standard Practice

American Iron and Steel Institute (AISI):

AISI 121: Standard Definitions for Use in the Design of Steel Structures.

American National Standards Institute (ANSI):

ANSI A117.1: Accessible and Usable Buildings and Facilities Standards.

ASTM International formerly American Standards for Testing and Materials (ASTM):

ASTM 1008: Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardened.

ASTM A1011/A 1011M: Standard Specification for Steel, Carbon, Hot-Rolled Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

ASTM A 283/A 283M: Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

ASTM A 36/A 36M: Standard Specification for Carbon Structural Steel.

ASTM A 513: Standard Specification for Electric-Resistance-Welded Carbon and Alloy Mechanical Tubing.

ASTM A 53: Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc-Coated, Welded and Seamless.

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ASTM A 6/A 6M: Standard specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.

ASTM A 780/A 780M: ASTM A 786: Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.

American Welding Society (AWS):

AWS D1.1/D1.1M: Structural Welding Code - Steel.

AWS D1.3: Structural Welding Code - Sheet Steel.

Society for Protective Coatings (SSPC):

SSPC-SP 3: Power Tool Cleaning

Miscellaneous:

Local construction codes and guidelines enforced by the local code officials having jurisdiction over code enforcement.

SUBMITTALS

Product Data: For the following:

Paint products.

Shop Drawings: Show fabrication and installation details for metal fabrications.

Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

Provide templates for anchors and bolts specified for installation under other Sections.

Welding certificates.

QUALITY ASSURANCE

Welding: Qualify procedures and personnel according to the following:

AWS D1.1, "Structural Welding Code-Steel."

PROJECT CONDITIONS

Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.

Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.

Provide allowance for trimming and fitting at site.

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PART 2 - PRODUCTS**METALS, GENERAL**

Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

FERROUS METALS

Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

Steel Tubing: ASTM A 513.

Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

FASTENERS

General: Provide zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls. Select fasteners for type, grade, and class required.

Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

MISCELLANEOUS MATERIALS

Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

Shop Primers: Provide primers that comply with Division 9 painting Sections.

Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79.

FABRICATION, GENERAL

Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

Form exposed work true to line and level with accurate angles and surfaces and straight edges.

Weld corners and seams continuously to comply with the following:

Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

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Obtain fusion without undercut or overlap.

Remove welding flux immediately.

At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 2 welds: completely sanded joint, some undercutting and pinholes okay.

Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.

Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

FINISHES, GENERAL

Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

Finish metal fabrications after assembly.

STEEL AND IRON FINISHES

Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:

Exteriors: SSPC-SP 3, "Power Tool Cleaning."

Shop Priming: Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

INSTALLATION, GENERAL

Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or

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abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and wood, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.

Set railings accurately in location, alignment, and elevation and free of rack.

Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

ADJUSTING AND CLEANING

Touchup Painting: Immediately after erection, clean bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

END OF SECTION 055000

SECTION 061000 – ROUGH CARPENTRY

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

1.1 WORK INCLUDED

Furnish and install all structural plywood, blocking, supports, non-structural nailers, and stripping as required for securing other work, shown on Drawings. Furnish all hardware, miscellaneous rough carpentry and related accessories as indicated on the Drawings or specified herein for a complete installation.

1.2 QUALITY ASSURANCE

- A. Codes and Standards: All lumber shall conform to all requirements of the Uniform Building Code. All framing lumber and plywood shall be appropriately grade marked with an agency certified by the American Lumber Standards Committee Board of Review for lumber or the American Plywood Association for plywood.
- B. Coordination: Contractor shall coordinate location of blocking with other related trades. Other Contractors will furnish exact locations of grounds and blockings to this Contractor for proper installation of their Work.

1.3 SUBMITTALS

- A. Product Data: Submit copies of manufacturer's product data indicating specifications and installation requirements for rough hardware items specified, i.e., connectors, joist hangers, etc.
- B. Letters: Submit letter of compliance that all lumber is grademarked in compliance with specified products and that lumber is of species and fiber stress specified.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Lumber:

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1. Standard Grade Hem-Fir: Non-structural furring, concealed blocking and stripping, and miscellaneous nailers, grade marked with WWPA stamp.

B. Framing Lumber:

1. Studs, sills, plates, ledgers, stiffeners, bridging, etc. Size and spacing as indicated and as required, shall be:

Species: Spruce-Pine-Fir: Grade No. 2 or better

Fb =	875 psi
Ft =	450 psi
Fv =	70 psi
Fc =	425 psi perpendicular to grain
Fc =	725 psi parallel to grain
Ec =	1,300,000 psi

2. Wood members 2" to 4" thick, 5" and wider.

Species: Hem-Fir: Grade No. 1 or better

Fb =	1200 psi
Ft =	800 psi
Fv =	75 psi
Fc =	425 psi perpendicular to grain
Fc =	1050 psi parallel to grain
Ec =	1,500,000 psi

3. Beam and Stringers.

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Species: Hem-Fir: Grade No. 1 or Douglas Fir-Larch: Dense No. 2

Fb =	1050 psi
Ft =	525 psi
Fv =	70 psi
Fc =	405 psi perpendicular to grain
Fc =	750 psi parallel to grain
Ec =	1,300,000 psi

C. Plywood:

1. Floor Sheathing: APA Structural I, exterior 3/4" thick. Span rating not less than 48/24.

D. Fasteners:

1. Nails: Meeting the requirements of ASTM F1667
 - a. Common wire nails. Use galvanized box nails where rough carpentry is exposed to moisture.
 - b. Non-corrosive finish nails of either stainless steel, aluminum or high quality hot-dipped galvanized shall be used on all exposed decorative lumber and redwood flooring.
2. Bolts: ASTM A307-94 "Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength," galvanized for exterior connections. Use washers under all heads where in contact with wood; use washers under all nuts. Bolts shall meet the requirements of ANSI/ASME Standard B18.2.1.
3. Screws: In accordance with ANSI/ASME Standard B18.6.1.

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4. Connectors, Joist Hangers, Anchors, Etc.: Type and size to meet job conditions and as indicated on the Drawings, or as required, as manufactured by Simpson Co., San Leandro, California 94577 or acceptable substitution.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide and securely fasten wood nailing strips, plates, blocking, etc., at proper levels in stud partitions, to anchor all items which require use of wood blocking to fasten or support components and accessories, and as nailers used in conjunction with roofing membrane, sheet metal and flashing and roofing accessories.
- B. Workmanship and General Framing
 1. Selection of Lumber Pieces: Carefully select all members, selecting pieces so that knots and obvious defects will not interfere with placing bolts, nailing or making connections. Lumber may be rejected by Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.
 2. Shimming: Do not shim sills, joists, short studs, trimmers, headers, lintels, or other framing components.
 3. Framing: Set all horizontal or sloped members with crown up. Do not notch, bore, or cut members for pipes, ducts, conduits, or other reasons except as indicated on Drawings or approved by Architect.
 4. Bearings: Make all bearings full unless indicated otherwise. Finish all bearing surfaces on which structural members are resting to give sure and even support. Where framing members slope, cut or notch ends as required for uniform bearing surface.
 5. Blocking: Install all blocking required to support all items of finish and to cut off all concealed draft openings, both vertical and horizontal, between ceiling and floor areas. Fire stops shall be two (2) inches (nominal) thick, by full width of opening being blocked. Provide fire stop in accordance with the Uniform Building Code, Chapter 25.

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6. Bridging: Cross bridging shall be of not less than two (2) inches by three (3) inches nominal wood or of metal cross bridging of equal strength. Space lines of bridging at eight (8) feet max.
7. Nailing:
 - a. All nailing shall be in accordance with the Contract Drawings.
 - b. For conditions not covered in the Contract Drawings, provide penetration into piece receiving the point of not less than 1/2 the length of the nail or spike.
 - c. Do all nailing without splitting wood. Pre-bore as required. Replace all split members at Contractor's expense.
8. Bolting: Drill holes 1/16 inch larger in diameter than bolts being used. Drill straight and true from one side only.
 - a. Bolt threads shall not bear on wood. Use washers under head and nut where both bear on wood. Use washers under all nuts.

SCREWS: PRE-BORE HOLES IN ACCORDANCE WITH THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION.

END OF SECTION 061000

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

- Wood blocking and nailers.
- Plywood backing panels.
- Sill seal

Related Sections include the following:

- Division 6 Section "Rough Carpentry" for structural carpentry items.
- Division 6 Section "Finish Carpentry" for nonstructural carpentry items exposed to view and not specified in another Section.

REFERENCES

ASTM International (ASTM):

- ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- ASTM A653 / A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

American Wood-Protection Association (AWPA):

- AWPA E12 - Standard Method of Determining the Corrosion of Metal in Contact with Wood.
- AWPA M4 - Standard for the Care of Preservative Treated Wood Products.
- AWPA P5 - Standard for Waterborne Preservatives.
- AWPA T1 - Use Category System: Processing and Treatment Standard.
- AWPA U1 - Use Category System: User Specification for Treated Wood.

SUBMITTALS

Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.

For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

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SECTION 061053 – MISCELLANEOUS CARPENTRY

HWY 14 SENIOR/COMMUNITY CENTER
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Include copies of warranties from chemical treatment manufacturers for each type of treatment.

Research/Evaluation Reports (ICC-ES evaluation reports): For the following, showing compliance with building code in effect for Project:

Preservative-treated wood.

QUALITY ASSURANCE

Wood Treatment Plant Qualifications: Wood treatment plant experienced in performing work of this section.

Source Quality: Obtain treated wood products from a single approved source.

Preservative Treatment: Mark each piece of plywood and lumber to show compliance with specified standards.

Regulatory Requirements: Provide fire retardant treatment which complies with the following regulatory requirements:

International Building Code (IBC).

International Code Council Evaluation Service ICC-ES ESR 2645.

DELIVERY, STORAGE, AND HANDLING

Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

WOOD PRODUCTS, GENERAL

Lumber: Provide dressed lumber, S4S, marked with grade stamp of inspection agency.

Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38-mm actual) thickness or less, unless otherwise indicated.

WOOD PRESERVATIVE TREATED MATERIALS

Preservative-Treated Materials: AWPAC U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

Use treatment containing no arsenic or chromium.

Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.

Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

Provide preservative-treated materials for items indicated on Drawings, and the following:

Wood nailers, blocking, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

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Wood blocking, furring, and similar concealed members in contact with masonry or concrete.

LUMBER

Miscellaneous Dimension Lumber: Standard, Stud, or No. 3 grade with 19 percent maximum moisture content of any species. Provide for nailers, blocking, and similar members.

Concealed Boards: Northern species, No. 3 Common: NLGA; Mixed southern pine, No. 2: SPIB; or Western woods, Standard: WCLIB; or No. 3 Common: WWPA; with 19 percent maximum moisture content.

FASTENERS

Fasteners: Size and type indicated. Where rough carpentry is exposed to weather or in ground contact provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or of Type 304 stainless steel.

Fasteners used in Wood Preservative Treated Wood: Provide corrosion resistant hardware per ASTM A653 / A653M Class G-185 in compliance with building code requirements.

SILL SEAL

Polyethylene gasketing strip used to reduce air infiltration between concrete foundation and sill plate.

Basis-of-Design Product: Styrofoam Sill Seal

Width: Match wall plate.

PART 3 - EXECUTION

INSTALLATION

Set miscellaneous rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

Securely attach miscellaneous rough carpentry to substrates, complying with the following:

CABO NER-272 for power-driven fasteners.

Table 2304.9.1, "Fastening Schedule," in the IBC.

END OF SECTION 061053

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

SUMMARY

Section Includes:

- Wall sheathing.
- Roof sheathing.
- Composite nail base insulated roof sheathing.
- Subflooring.
- Sheathing joint and penetration treatment.

Related Requirements:

- Section 06 10 00 "Rough Carpentry" for plywood backing panels.
- Section 07 25 00 "Weather Barriers" for water-resistive barrier applied over wall sheathing.

ACTION SUBMITTALS

Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.

For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

Include copies of warranties from chemical treatment manufacturers for each type of treatment.

INFORMATIONAL SUBMITTALS

Evaluation Reports: For following products, from ICC-ES:

- Preservative-treated plywood.
- Foam-plastic sheathing.

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DELIVERY, STORAGE, AND HANDLING

Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

WOOD PANEL PRODUCTS

Emissions: Products shall meet 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."

Certified Wood: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":

Plywood.

Oriented strand board.

Fiberboard wall sheathing.

Particleboard underlayment.

Hardboard underlayment.

Plywood: Either DOC PS 1 or DOC PS 2 unless otherwise indicated.

Oriented Strand Board: DOC PS 2.

Thickness: As needed to comply with requirements specified, but not less than thickness indicated.

Factory mark panels to indicate compliance with applicable standard.

PRESERVATIVE-TREATED PLYWOOD

Preservative Treatment by Pressure Process: AWPAC U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

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Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

Application: Treat all plywood unless otherwise indicated] [Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

WALL SHEATHING

Plywood Wall Sheathing: sheathing.

Span Rating: as indicated on the drawings.

Nominal Thickness: as indicated on the drawings

Oriented-Strand-Board Wall Sheathing: Exposure 1 sheathing.

Span Rating: as indicated on the drawings

Nominal Thickness: as indicated on the drawings

ROOF SHEATHING

Plywood Roof Sheathing: Exposure 1 sheathing.

Span Rating: Not less than 32/16.

Nominal Thickness: Not less than 15/32 inch.

Oriented-Strand-Board Roof Sheathing: Exposure 1 sheathing.

Span Rating: Not less than 32/16.

Nominal Thickness: Not less than 15/32 inch (11.9 mm)

SUBFLOORING

Plywood Subflooring: Exposure 1 sheathing.

Span Rating: Not less than 48/24.

Nominal Thickness: Not less than 23/32 inch

Oriented-Strand-Board Subflooring: Exposure 1

Span Rating: Not less than 48/24.

Nominal Thickness: Not less than 23/32 inch

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FASTENERS

General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

For roof[and wall] sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M

Nails, Brads, and Staples: ASTM F 1667.

Power-Driven Fasteners: NES NER-272.

Wood Screws: ASME B18.6.1.

Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

For wall and roof sheathing panels, provide screws with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.

Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.

For steel framing less than 0.0329 inch (0.835 mm) thick, use screws that comply with ASTM C 1002.

For steel framing from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick, use screws that comply with ASTM C 954.

Screws for Fastening Oriented-Strand-Board-Surfaced, Polyisocyanurate-Foam Sheathing to Metal Roof Deck: Steel drill screws, in type and length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117. Provide washers or plates if recommended by sheathing manufacturer.

SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

Sealant for Paper-Surfaced Gypsum Sheathing: Elastomeric, medium-modulus, neutral-curing silicone joint sealant compatible with joint substrates formed by gypsum sheathing and other

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materials, recommended by sheathing manufacturer for application indicated and complying with requirements for elastomeric sealants specified in Section 07 92 00 "Joint Sealants."

Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C 834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.

Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches (50 mm) wide, 10 by 10 or 10 by 20 threads/inch (390 by 390 or 390 by 780 threads/m), of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.

Sheathing Tape for Foam-Plastic Sheathing: Pressure-sensitive plastic tape recommended by sheathing manufacturer for sealing joints and penetrations in sheathing.

MISCELLANEOUS MATERIALS

Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 or ASTM D 3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

Adhesives shall have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

Adhesives 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."

PART 3 - EXECUTION

INSTALLATION, GENERAL

Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

Securely attach to substrate by fastening as indicated, complying with the following:

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NES NER-272 for power-driven fasteners.

Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."

Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's "International Residential Code for One- and Two-Family Dwellings."

Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials.

Make tight connections. Install fasteners without splitting wood.

Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

WOOD STRUCTURAL PANEL INSTALLATION

General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

Fastening Methods: Fasten panels as indicated below:

Subflooring:

Glue and nail to wood framing.

Screw to cold-formed metal framing.

Space panels 1/8 inch (3 mm) apart at edges and ends.

Wall and Roof Sheathing:

[Nail] [Nail or staple] to wood framing.[Apply a continuous bead of glue to framing members at edges of wall sheathing panels.]

Screw to cold-formed metal framing.

Space panels 1/8 inch (3 mm) apart at edges and ends.

GYPSUM SHEATHING INSTALLATION

Comply with GA-253 and with manufacturer's written instructions.

Fasten gypsum sheathing to wood framing with [nails] [or] [screws].

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Fasten gypsum sheathing to cold-formed metal framing with screws.

Install boards with a 3/8-inch (9.5-mm) gap where non-load-bearing construction abuts structural elements.

Install boards with a 1/4-inch (6.4-mm) gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.

Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent boards without forcing. Abut ends of boards over centers of studs, and stagger end joints of adjacent boards not less than one stud spacing. Attach boards at perimeter and within field of board to each steel stud.

Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of boards.

For sheathing under stucco cladding, boards may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.

Vertical Installation: Install board vertical edges centered over studs. Abut ends and edges of each board with those of adjacent boards. Attach boards at perimeter and within field of board to each stud.

Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of boards.

For sheathing under stucco cladding, boards may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.

Seal sheathing joints according to sheathing manufacturer's written instructions.

Apply elastomeric sealant to joints and fasteners and trowel flat. Apply sufficient amount of sealant to completely cover joints and fasteners after troweling. Seal other penetrations and openings.

Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel silicone emulsion sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.

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HARDBOARD UNDERLAYMENT INSTALLATION

Comply with CPA's recommendations and hardboard manufacturer's written instructions for preparing and applying hardboard underlayment.

FASTENING METHOD: [NAIL] [NAIL OR STAPLE] UNDERLAYMENT TO SUBFLOORING.

END OF SECTION 061600

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

SUMMARY

Section Includes:

- Wood roof trusses.
- Wood floor trusses.
- Wood girder trusses.
- Wood truss bracing.
- Metal truss accessories.

Related Requirements:

- Section 06 16 00 "Sheathing" for roof sheathing and subflooring.
- Section 31 31 16 "Termite Control" for site application of borate treatment to wood trusses.

Allowances: Provide wood truss bracing under the Metal-Plate-Connected Truss Bracing Allowance as specified in Section 01 21 00 "Allowances."

DEFINITIONS

Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.

ACTION SUBMITTALS

Product Data: For wood-preservative-treated lumber metal-plate connectors, metal truss accessories, and fasteners.

Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to truss fabricator.

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Include copies of warranties from chemical treatment manufacturers for each type of treatment.

Shop Drawings: Show fabrication and installation details for trusses.

Show location, pitch, span, camber, configuration, and spacing for each type of truss required.

Indicate sizes, stress grades, and species of lumber.

Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.

Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.

Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.

Show splice details and bearing details.

Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer in the state of Texas responsible for their preparation.

INFORMATIONAL SUBMITTALS

Qualification Data: For metal connector-plate manufacturer professional engineer and fabricator.

Material Certificates: For dimension lumber specified to comply with minimum specific gravity.

Indicate species and grade selected for each use and specific gravity.

Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss fabricating firm.

Evaluation Reports: For the following, from ICC-ES:

Wood-preservative-treated lumber.

Fire-retardant-treated wood.

Metal-plate connectors.

Metal truss accessories.

QUALITY ASSURANCE

Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.

Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.

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Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

Fabricator Qualifications: Shop that participates in a recognized quality-assurance program that complies with quality-control procedures in TPI 1 and that involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

DELIVERY, STORAGE, AND HANDLING

Handle and store trusses to comply with recommendations in TPI BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

Store trusses flat, off of ground, and adequately supported to prevent lateral bending.

Protect trusses from weather by covering with waterproof sheeting, securely anchored.

Provide for air circulation around stacks and under coverings.

Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

PART 2 - PRODUCTS

PERFORMANCE REQUIREMENTS

Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design metal-plate-connected wood trusses.

Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.

Design Loads: As indicated.

Maximum Deflection Under Design Loads:

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Roof Trusses: Vertical deflection of 1/360 of span.

Floor Trusses: Vertical deflection of 1/360 of span.

Comply with applicable requirements and recommendations of the following publications:

TPI 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."

TPI DSB, "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."

TPI BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

DIMENSION LUMBER

Certified Wood: For metal-plate-connected wood trusses and permanent bracing, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

Factory mark each piece of lumber with grade stamp of grading agency.

For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency.

Provide dressed lumber, S4S.

Provide dry lumber with 19 percent maximum moisture content at time of dressing.

Minimum Chord Size for Roof Trusses: 2 by 6 inches nominal for both top and bottom chords].

Minimum Specific Gravity for Top Chords: 0.50.

Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 06 10 00 "Rough Carpentry".

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WOOD-PRESERVATIVE-TREATED LUMBER

Preservative Treatment by Pressure Process: AWPAC U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

For exposed trusses indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

For exposed trusses indicated to receive a stained or natural finish, mark end or back of each piece.

METAL CONNECTOR PLATES

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Alpine Engineered Products, Inc.; an ITW company.

Cherokee Metal Products, Inc.; Masengill Machinery Company.

CompuTrus, Inc.

Eagle Metal Products.

Jager Building Systems, Inc.; a Tembec/SGF Rexfor company.

MiTek Industries, Inc.; a subsidiary of Berkshire Hathaway Inc.

Robbins Engineering, Inc.

Truswal Systems Corporation; an ITW company.

Source Limitations: Obtain metal connector plates from single manufacturer.

General: Fabricate connector plates to comply with TPI 1.

Hot-Dip Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 (Z180) coating designation; and not less than 0.036 inch (0.9 mm) thick.

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Use for interior locations unless otherwise indicated.

Hot-Dip Heavy-Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.

Use for wood-preservative-treated lumber and where indicated.

Stainless-Steel Sheet: ASTM A 666, Type 304 Type 316, and not less than 0.035 inch (0.88 mm) thick.

Use for exterior locations[, wood-preservative-treated lumber, and where indicated.

FASTENERS

General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.

Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

Nails, Brads, and Staples: ASTM F 1667.

METAL FRAMING ANCHORS AND ACCESSORIES

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

Cleveland Steel Specialty Co.

KC Metals Products, Inc.

Phoenix Metal Products, Inc.

Simpson Strong-Tie Co., Inc.

USP Structural Connectors.

Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of products of manufacturers listed. Manufacturer's

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published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

Use for interior locations unless otherwise indicated.

Hot-Dip Heavy-Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.

Use for wood-preservative-treated lumber and where indicated.

Stainless-Steel Sheet: ASTM A 666, Type 304 or Type 316.

Use for exterior locations and where indicated.

Truss Tie-Downs: Bent strap tie for fastening roof trusses to wall studs below, 1-1/2 inches (38 mm) wide by 0.050 inch (1.3 mm) thick. Tie fastens to one side of truss, top plates, and side of stud below.

Truss Tie-Downs (Hurricane or Seismic Ties): Bent strap tie for fastening roof trusses to wall studs below, 2-1/4 inches (57 mm) wide by 0.062 inch (1.6 mm) thick. Tie fits over top of truss and fastens to both sides of truss, top plates, and one side of stud below.

Truss Tie-Downs (Hurricane or Seismic Ties): Bent strap tie for fastening roof trusses to wall studs below, 2-1/2 inches (63 mm) wide by 0.062 inch (1.6 mm) thick. Tie fits over top of truss and fastens to both sides of truss, inside face of top plates, and both sides of stud below.

Roof Truss Clips: Angle clips for bracing bottom chord of roof trusses at non-load-bearing walls, 1-1/4 inches (32 mm) wide by 0.050 inch (1.3 mm) thick. Clip is fastened to truss through slotted holes to allow for truss deflection.

Floor Truss Hangers: U-shaped hangers, full depth of floor truss, with 1-3/4-inch- (44-mm-) long seat; formed from metal strap 0.062 inch (1.6 mm) thick with tabs bent to extend over and be fastened to supporting member.

Roof Truss Bracing/Spacers: U-shaped channels, 1-1/2 inches (38 mm) wide by 1 inch (25 mm) deep by 0.040 inch (1.0 mm) thick, made to fit between two adjacent trusses and accurately space them apart, and with tabs having metal teeth for fastening to trusses.

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MISCELLANEOUS MATERIALS

Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 94 percent zinc dust by weight.

Protective Coatings: SSPC-Paint 22, epoxy-polyamide primer or SSPC-Paint 16, coal-tar epoxy-polyamide paint.

FABRICATION

Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.

Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.

Fabricate wood trusses within manufacturing tolerances in TPI 1.

Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

SOURCE QUALITY CONTROL

Special Inspections: Owner will engage a qualified special inspector to perform special inspections.

Provide special inspector with access to fabricator's documentation of detailed fabrication and quality-control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to approved construction documents and referenced standards.

Provide special inspector with access to places where wood trusses are being fabricated to perform inspections.

Correct deficiencies in Work that special inspections indicate does not comply with the Contract Documents.

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PART 3 - EXECUTION

INSTALLATION

- Install wood trusses only after supporting construction is in place and is braced and secured.
- If trusses are delivered to Project site in more than one piece, assemble trusses before installing.
- Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- Install and brace trusses according to TPI recommendations and as indicated.
- Install trusses plumb, square, and true to line and securely fasten to supporting construction.
- Space trusses as indicated; adjust and align trusses in location before permanently fastening.
- Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable.
 - Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.
- Securely connect each truss ply required for forming built-up girder trusses.
 - Anchor trusses to girder trusses as indicated.
- Install and fasten permanent bracing during truss erection and before construction loads are applied.
 - Anchor ends of permanent bracing where terminating at walls or beams.
 - Install bracing to comply with Section 06 10 00 "Rough Carpentry."
 - Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.
- Install wood trusses within installation tolerances in TPI 1.
- Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.
- Replace wood trusses that are damaged or do not meet requirements.
 - Damaged trusses may be repaired according to truss repair details signed and sealed by the qualified professional engineer responsible for truss design, when approved by Architect.

REPAIRS AND PROTECTION

- Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

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SECTION 061753 – SHOP FABRICATED WOOD TRUSSES

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

Protect wood trusses from weather. If, despite protection, wood trusses become wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

Protective Coating: Clean and prepare exposed surfaces of metal connector plates. Brush apply primer, when part of coating system, and one coat of protective coating.

Apply materials to provide minimum dry film thickness recommended by coating system manufacturer.

END OF SECTION 061753

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SECTION 062000 – FINISH CARPENTRY

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

- Exterior wood soffit
- Exterior wood fascia
- Interior ceiling board paneling
- Acoustic insulation (duct liner) for slotted ceiling assembly.

Related Sections include the following:

- Division 6 Section "Miscellaneous Carpentry" and "Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view.

SUBMITTALS

Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

Samples for Verification:

- For each species and cut of lumber and panel products with non-factory-applied transparent or semi-transparent finish, with 1/2 of exposed surface finished, 50 sq. in. for lumber and 8 by 10 inches for panels.

QUALITY ASSURANCE

Installer Qualifications: A qualified installer.

DELIVERY, STORAGE, AND HANDLING

Protect materials against weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.

Deliver interior finish carpentry only when environmental conditions meet requirements specified for installation areas. If finish carpentry must be stored in other than installation areas, store only where environmental conditions meet requirements specified for installation areas.

PROJECT CONDITIONS

Environmental Limitations: Do not deliver or install interior finish carpentry until building is enclosed and weatherproof, wet work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

MATERIALS, GENERAL

Lumber: DOC PS 20 and grading rules of inspection agencies certified by American Lumber Standards Committee Board of Review.

Exterior Lumber Trim: Kiln dried.

Sub-fascia to be wrapped with metal fascia cover:

Species: Douglas Fir.

Grade: No. 1 & Btr. S4S

Maximum Moisture Content: 19 percent.

Exterior board soffit paneling for exterior semi-transparent stain finish:

Species: Douglas Fir.

Grade: No. 1 & Btr.

Pattern: V-joint, tongue-and-groove.

Nominal dimension: 1x4-inch.

Interior board soffit paneling for interior stain finish.

Species: Douglas Fir.

Grade: No. 1 & Btr.

Pattern: V-joint, tongue-and-groove or square edge as indicated.

Nominal dimension: 1x4-inch.

MISCELLANEOUS MATERIALS

Fasteners for Exterior Finish Carpentry: Stainless-steel or hot-dip galvanized.

Fasteners for Interior Finish Carpentry: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.

Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer.

Wood glue shall have a VOC content of 30 g/L or less.

Acoustic Insulation (duct liner): Non-corrosive, incombustible glass fiber complying with ASTM C1071; flexible blanket, rigid board, and preformed round liner board; impregnated surface and edges coated with poly vinyl acetate polymer, acrylic polymer, or black composite.

Fungal Resistance: No growth when tested according to ASTM G21.

Apparent Thermal Conductivity: Maximum of 0.31 at 75 degrees F.

Service Temperature: Up to 250 degrees F.

Rated Velocity on Coated Air Side for Air Erosion: 5,000 fpm, minimum.

Minimum Noise Reduction Coefficients:

1 inch thickness: 0.45.

Adhesive: Waterproof, fire-retardant type, ASTM C916.

SECTION 062000 – FINISH CARPENTRY

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 3 - EXECUTION

EXAMINATION

Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

Before installing finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours.

Prime and backprime lumber for semi-transparent finish exposed on the exterior. Cut to length and prime ends.

INSTALLATION

Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.

Install finish carpentry level, plumb, true, and aligned with adjacent materials. Scribe and cut to fit adjoining work. Refinish and seal cuts.

Install to tolerance of 1/8 inch in 96 inches (3 mm in 2438 mm) for level and plumb. Install adjoining exterior finish carpentry with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1.5-mm) maximum offset for reveal installation.

Scribe and cut finish carpentry to fit adjoining work.

Countersink fasteners, fill surface flush, and sand where face fastening is unavoidable.

Install standing and running trim with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches (610 mm) long except where necessary. Stagger joints in adjacent and related trim. Cope at returns and inside corners and miter at outside corners.

Board Paneling: Install according to manufacturer's written instructions. Arrange in random-width pattern suggested by manufacturer, unless boards or planks are of uniform width.

Install in full lengths without end joints where possible.

Stagger end joints in random pattern to uniformly distribute joints on each ceiling or soffit.

Select and arrange boards on each wall to minimize noticeable variations in grain character and color between adjacent boards. Install with uniform tight joints between boards.

Fasten paneling by blind nailing through tongues where possible.

Fasten paneling by face nailing, setting nails, and filling over nail heads.

ADJUSTING

Replace finish carpentry that is damaged or does not comply with requirements. Finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing. Adjust joinery for uniform appearance.

END OF SECTION 062000

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SECTION 064113 – ARCHITECTURAL CABINETS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

Section Includes:

- Architectural wood cabinets.

- Wood furring, blocking, shims, and hanging strips for installing architectural wood cabinets unless concealed within other construction before cabinet installation.

- Shop finishing of architectural wood cabinets.

Related Requirements:

- Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets and concealed within other construction before cabinet installation.

ACTION SUBMITTALS

Product Data: For each type of product, including panel products, cabinet hardware and accessories and finishing materials and processes.

Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

- Show details full size.

- Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.

- Show locations and sizes of cutouts and holes for electrical switches and outlets and other items installed in architectural wood cabinets.

- Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

- Apply AWI Quality Certification Program label to Shop Drawings.

Samples for Verification:

- Lumber for transparent finish, not less than 5 inches wide by 24 inches long, for each species and cut, finished on one side and one edge.

INFORMATIONAL SUBMITTALS

Qualification Data: For Installer fabricator.

Woodwork Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

SECTION 064113 – ARCHITECTURAL CABINETS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

QUALITY ASSURANCE

Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance. Shop is a certified participant in AWI's Quality Certification Program.

Installer Qualifications: Fabricator of products.

DELIVERY, STORAGE, AND HANDLING

Do not deliver cabinets until painting and similar operations that could damage woodwork have been completed in installation areas. If cabinets must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

FIELD CONDITIONS

Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.

Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed, and indicate measurements on Shop Drawings.

Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

COORDINATION

Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that wood-veneer-faced architectural cabinets can be supported and installed as indicated.

PART 2 - PRODUCTS

ARCHITECTURAL CABINET FABRICATORS

Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of architectural wood cabinets.

ARCHITECTURAL WOOD CABINETS, GENERAL

Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural wood cabinets indicated for construction, finishes, installation, and other requirements.

SECTION 064113 – ARCHITECTURAL CABINETS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

Provide labels from AWI certification program indicating that woodwork, including installation, complies with requirements of grades specified.

The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

WOOD CABINETS FOR TRANSPARENT FINISH

Grade: Custom.

Type of Construction: Frameless.

Cabinet and Door and Drawer Front Interface Style: Flush overlay.

Wood for Exposed Surfaces: As indicated.

Species: White birch.

Cut: Plain sliced/plain sawn.

Grain Direction: Vertically for drawer fronts, doors, and fixed panels.

Matching of Veneer Leaves: Book match.

Veneer Matching within Panel Face: Center-balance match.

Semiexposed Surfaces Other Than Drawer Bodies: Compatible species to that indicated for exposed surfaces, stained to match.

Drawer Subfronts, Sides, and Backs: Solid-hardwood lumber.

Drawer Bottoms: Hardwood plywood.

Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners.

WOOD MATERIALS

Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

Wood Moisture Content: 5 to 10 percent.

Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

CABINET HARDWARE AND ACCESSORIES

General: Provide cabinet hardware and accessory materials associated with architectural cabinets.

Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 135 degrees of opening, self-closing.

Wire Pulls: Back mounted, solid metal, 4 inches long, 5/16 inch in diameter.

Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081.

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SECTION 064113 – ARCHITECTURAL CABINETS

HWY 14 SENIOR/COMMUNITY CENTER
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Shelf Rests: BHMA A156.9, B04013; metal.

Drawer Slides: BHMA A156.9, B05091.

Grade 1, Grade 1HD-100 and Grade 1HD-200: Side mounted; full-overtravel-extension type; zinc-plated-steel ball-bearing slides.

For drawers not more than 3 inches high and not more than 24 inches wide, provide Grade 1.

For drawers more than 3 inches high but not more than 6 inches high and not more than 24 inches wide, provide Grade 1HD-100.

For drawers more than 6 inches high or more than 24 inches wide, provide Grade 1HD-200.

Door and Drawer Silencers: BHMA A156.16, L03011.

Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.

Satin Stainless Steel: BHMA 630.

For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

MISCELLANEOUS MATERIALS

Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

Anchors: Select material, type, size, and finish required for each substrate for secure anchorage.

Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

FABRICATION

Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

Corners of Cabinets: 1/16 inch unless otherwise indicated.

Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.

Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.

Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

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SECTION 064113 – ARCHITECTURAL CABINETS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

SHOP FINISHING

General: Finish architectural wood cabinets at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

General: Shop finish transparent-finished architectural wood cabinets at fabrication shop as specified in this Section.

Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural wood cabinets, as applicable to each unit of work.

Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of cabinets.

Apply a wash coat sealer to woodwork made from closed-grain wood before staining and finishing.

Transparent Finish:

Grade: Custom.

Staining: Water based wood stain

Color: As selected from manufacturer's full range of standard color.

Finish: System - 12, water-based polyurethane.

Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D 523.

PART 3 - EXECUTION

PREPARATION

Before installation, condition cabinets to average prevailing humidity conditions in installation areas.

Before installing cabinets, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

INSTALLATION

Grade: Install cabinets to comply with same grade as item to be installed.

Assemble cabinets and complete fabrication at Project site to the extent that it was not completed in the shop.

Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.

For shop finished items use filler matching finish of items being installed.

SECTION 064113 – ARCHITECTURAL CABINETS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.

Maintain veneer sequence matching of cabinets with transparent finish.

Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips.

Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are applied in shop.

ADJUSTING AND CLEANING

Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

Clean, lubricate, and adjust hardware.

Clean cabinets on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 064113

SECTION 066116 – SOLID SURFACING FABRICATION

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

Section Includes: Provide solid surfacing fabrications including but not limited to following:

Counter tops.

Related Sections: Following description of work is included for reference only and shall not be presumed complete:

Provision of architectural cabinets: Section 064113, Architectural Woodwork.

Provision of elastomeric joint sealants: Section 079200, Joint Sealants.

Provision of tile work: Section 093000, Tiling.

Provision of plumbing and plumbing fixtures: Division 22, Plumbing.

REFERENCES

Definitions:

Solid Surface: Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

SUBMITTALS

Product Data: Indicate Product description including solid surface sheets, sinks, bowls and illustrating full range of standard colors, fabrication information and compliance with specified performance requirements. Submit Product data with resistance to list of chemicals.

Shop Drawings: Submit Shop Drawings for work of this Section in accordance with Section 013000. Indicate plans, sections, dimensions, component sizes, edge details, thermosetting requirements, fabrication details, attachment provisions, sizes of furring, blocking, including concealed blocking and coordination requirements with adjacent work. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacles and other items installed in solid surface.

Coordination Drawings: Submit coordination drawings indicating plumbing and miscellaneous steel work indicating locations of wall rated or non-rated, blocking requirements, locations and recessed wall items and similar items.

Samples: Submit samples in accordance with Section 013000. Submit minimum 6" x 6" samples. Cut sample and seam together for representation of inconspicuous seam. Indicate full range of color and pattern variation. Approved samples will be retained as standards for work.

Test and Evaluation Reports: Submit flammability test reports [and food preparation zone certifications/listing confirming compliance with NSF/ANSI 51. Refer to www.nsf.org for the latest compliance to NSF/ANSI 51 for Food Zone — all food types.]

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SECTION 066116 – SOLID SURFACING FABRICATION

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

CLOSEOUT SUBMITTALS

Operational and Maintenance Data:

Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in Project closeout documents.

Provide a commercial care and maintenance kit and video. Review maintenance procedures and warranty details with Owner upon completion.

QUALITY ASSURANCE

Qualifications:

Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

DELIVERY, STORAGE AND HANDLING

Delivery and Acceptance Requirements: Deliver no components to Project site until areas are ready for installation.

Storage and Handling Requirements:

Store components indoors prior to installation.

Handle materials to prevent damage to finished surfaces.

WARRANTY

Manufacturer Warranty: Provide manufacturer's standard warranty for material only for period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Architect and at no expense to Owner.

PART 2 - PRODUCTS

MANUFACTURERS

Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

Corian® by DuPont; www.corian.com (Basis of Design)

Wilsonart Contract; www.wilsonartcontract.com

SECTION 066116 – SOLID SURFACING FABRICATION

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

MATERIALS

Description:

Performance/Design Criteria:

Property	Requirement (min or max)	Test Procedure
Solid Surface Based Products:		
Tensile Strength	6000 psi min	ASTM D638
Tensile Modulus	1.5 x 10 ⁶ psi min	ASTM D638
Tensile Elongation	0.4% min.	ASTM D638
Flexural Strength	10000 psi min	ASTM D790
Flexural Modulus	1.2 x 10 ⁶ psi min	ASTM D790
Hardness	>85-Rockwell "M" scale min.	ASTM D785
Thermal Expansion	2.2 x 10 ⁻⁵ in./in./°F	ASTM E228
Fungi and Bacteria	Does not support microbial growth	ASTM G21 & G22
Microbial Resistance	Highly resistant to mold growth	UL 2824
Ball Impact	No fracture - 1/2 lb. Ball: 6 mm slab - 36" drop 12 mm slab - 144" drop	NEMA LD 3, Method 3.8
Weatherability	ΔE*94<5 in 1,000 hrs	ASTM G155
Flammability		ASTM E84, NFPA 255 & UL 723
	All Colors	
	6 mm	12 mm
Flame Spread	<25	<25
Smoke Developed	<25	<25
Class	A	A
		NFPA 101®, Life Safety Code

Solid Surface Material:

Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment; not coated, laminated or of composite construction; meeting following criteria:

Flammability: Class 1 and A when tested to UL 723.

Food Equipment Material Compliance: Food Zone to NSF/ANSI 51.

Ensure material has minimum physical and performance properties specified under "Performance/Design Criteria".

Ensure superficial damage to a depth of 0.010" is repairable by sanding and polishing.

Adhesive for Bonding to Other Products: One component silicone to ASTM C920.

Sealant: A standard mildew-resistant, FDA/UL® and NSF/ANSI 51 compliant in Food Zone area, recognized silicone color matched sealant or clear silicone sealants.

Sink/Bowl Mounting Hardware: Manufacturer's approved bowl clips, brass inserts and fasteners for attachment of undermount sinks/bowls.

SECTION 066116 – SOLID SURFACING FABRICATION

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

COMPONENTS

Counter Perimeter Frame: Ensure 3/4" thick, moisture resistant cores for counter tops in wet areas having sinks or lavatories are 3/4" thick exterior grade plywood with waterproof adhesive, Fir or Poplar plywood, veneer core only.

Fabrication:

Fabricate components in shop to greatest extent practical to sizes and shapes indicated, in accordance with approved Shop Drawings and solid polymer manufacturer requirements. Form joints between components using manufacturer's standard joint adhesive without conspicuous joints. Provide factory cutouts for plumbing fittings and bath accessories as indicated on Drawings.

Where indicated, thermoform corners and edges or other objects to shapes and sizes indicated on Drawings, prior to seaming and joining. Cut components larger than finished dimensions and sand edges to remove nicks and scratches. Heat entire component uniformly prior to forming.

Ensure no blistering, whitening and cracking of components during forming.

Fabricate backsplashes from solid surfacing material with optional radius cove where counter and backsplashes meet as indicated on Drawings. Backsplashes for most colors may be fabricated by traditional means discussed in K-25294 Backsplashes. Colors with metallic/mica particle or veined colors creating directional aesthetics (K-26833 Directional Aesthetics) may require the techniques in Technical Bulletin K-28235 Thermoformed Backsplash.

Fabricate joints between components using manufacturer's standard joint adhesive. Ensure joints are inconspicuous in appearance and without voids. Attach 50 mm (2") wide reinforcing strip of solid polymer material under each joint. Reinforcing strip of solid polymer material is not required when using DuPont™ Joint Adhesive 2.0.

Provide holes and cutouts for plumbing and bath accessories as indicated on Drawings.

Rout and finish component edges to a smooth, uniform finish. Rout cutouts, then sand edges smooth. Repair or reject defective or inaccurate work.

Finish: Ensure surfaces have uniform finish:

Matte, with a 60° gloss rating of 5 - 20.

Fabrication Tolerances:

Variation in Component Size: $\pm 1/8"$.

Location of Openings: $\pm 1/8"$ from indicated location.

PART 3 - EXECUTION

EXAMINATION

VERIFICATION OF CONDITIONS:

Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work. Proceed with installation only after unsatisfactory conditions have been corrected.

Verify actual site dimensions and location of adjacent materials prior to commencing work.

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SECTION 066116 – SOLID SURFACING FABRICATION

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

Examine cabinets upon which counter tops are to be installed. Verify cabinets are level to within 1/8" in 10' - 0".

Notify Architect in writing of any conditions which would be detrimental to installation.

Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

INSTALLATION

Install components plumb, level, rigid, scribed to adjacent finishes in accordance with reviewed Shop Drawings and Product installation details.

Fabricate field joints using manufacturer's recommended adhesive, with joints being inconspicuous in finished work. Exposed joints/seams are not permitted. Keep components and hands clean when making joints. Reinforce field joints as specified herein. Cut and finish component edges with clean, sharp returns.

Route radii and contours to template. Anchor securely to base component or other supports. Align adjacent components and form seams to comply with manufacturer's written recommendations using adhesive in color to match work. Carefully dress joints smooth, remove surface scratches and clean entire surface.

Install countertops with no more than 1/8" sag, bow or other variation from a straight line.

Adhere undermount/submount/bevel mount sinks/bowls to countertops using manufacturer's recommended adhesive and mounting hardware.

Adhere topmount sinks/bowls to countertops using manufacturer recommended adhesives and color-coordinated silicone sealant. [Secure seam mount bowls and sinks to counter tops using color matched joint adhesive.]

Seal between wall and components with joint sealant as specified herein and in Section 07 92 00, as applicable.

Provide backsplashes and endsplashes as indicated on Drawings. Adhere to countertops using a standard color-coordinated silicone sealant. Adhere applied sidesplashes to countertops using a standard color-matched silicone sealant. Provide coved backsplashes and sidesplashes at walls and adjacent millwork. Fabricate radius cove at intersection of counters with backsplashes to dimensions shown on reviewed Shop Drawings. Adhere to countertops using manufacturer's standard color-coordinated joint adhesive.

Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Ensure components are clean on date of Substantial Completion of the Work.

Coordinate connections of plumbing fixtures with [Division 22] [Mechanical]. Make plumbing connections to sinks in accordance with [Division 22] [Mechanical].

REPAIR

Repair minor imperfections and cracked seams and replace areas of severely damaged surfaces in accordance with manufacturer's "Technical Bulletins".

SITE QUALITY CONTROL

Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Architect at no cost to Owner.

SECTION 066116 – SOLID SURFACING FABRICATION

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CLEANING

Remove excess adhesive and sealant from visible surfaces.

Clean surfaces in accordance with manufacturer's "Care and Maintenance Instructions".

PROTECTION

Provide protective coverings to prevent physical damage or staining following installation for duration of Project.

Protect surfaces from damage until date of Substantial Completion of the Work.

END OF SECTION 066116

SECTION 072100 – BUILDING INSULATION

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

- Perimeter wall insulation (supporting backfill).
- Concealed building insulation.
- Spray foam Insulation

Related Sections include the following:

- Division 9 Section "Gypsum Board" for sound batt insulation.
- Division 9 Section "Exterior Portland Cement Plaster (Stucco)" for continuous board insulation installed as part of the stucco system.

SUBMITTALS

Product Data: For each type of product indicated.

Manufacturer's application or installation instructions.

PERFORMANCE REQUIREMENTS

Conform to applicable code for flame and smoke, concealment, and over coat requirements.

Spray Applied Polyurethane Insulation shall be approved for use as a nonstructural thermal insulating material in Type V construction under IBC when installed in accordance with ICC ES Report ESR-1655. Insulation is for use in attics when installed in accordance with Section 4

QUALITY ASSURANCE

Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

Spray Foam Manufacturer Qualifications: Company specializing in manufacturing urethane foam products and systems of this section with minimum ten years documented experience.

Spray Foam Installer Qualifications: A an applicator specializing in performing Work of this section with minimum three years documented experience.

Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

Surface-Burning Characteristics: ASTM E 84.

Fire-Resistance Ratings: ASTM E 119.

Combustion Characteristics: ASTM E 136.

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DELIVERY, STORAGE, AND HANDLING

Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

Protect plastic insulation as follows:

Do not expose to sunlight, except to extent necessary for period of installation and concealment.

Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.

Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

Store spray foam products in manufacturer's unopened packaging, clearly marked with the manufacturer's name, brand name, product identification, type of material, safety information, manufacture date, and lot numbers until ready for installation.

Store spray foam materials between 65 degrees F (18 degrees C) and 85 degrees F (29 degrees C) with careful handling to prevent damage to products.

Protect all spray foam materials from freezing and other damage during transit, handling, storage, and installation.

PROJECT CONDITIONS

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

Do not apply the polyurethane foam when substrate or ambient air temperatures are below 40 degrees F (4.4 degrees C) or above 120 degrees F (49 degrees C) and relative humidity is greater than 85 percent unless advance means and methods are recommended by the manufacturer.

Do not apply polyurethane foam when wind velocity exceeds 15 miles per hour unless advance means and methods are recommended by the manufacturer. Use precautions to prevent damage to adjacent areas from fugitive overspray.

PART 2 - PRODUCTS

MANUFACTURERS

In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

SECTION 072100 – BUILDING INSULATION

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GLASS FIBER INSULATION PRODUCTS

Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

Wall insulation: R-19 minimum.

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

CertainTeed Corporation.
Guardian Fiberglass, Inc.
Johns Manville.
Knauf Fiber Glass.
Owens Corning.

FOAM-PLASTIC BOARD FOUNDATION INSULATION

Extruded-Polystyrene Board Insulation (XPS): ASTM C 578, of type and density indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively:

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Dow Chemical Company.
Owens Corning.

Type IV, 1.60 lb/cu. ft. (26 kg/cu. m), unless otherwise indicated.

CLOSED CELL POLYURETHANE FOAM INSULATION

Spray Polyurethane Foam: Two-component spray polyurethane cellular plastic foam, complying with the following methods and meeting the following physical properties:

Thermal Resistance (R), ASTM C518 at 180 days aged: 6.06 degrees F. ft.²; h/Btu at 1 inch thickness and 6.6 degrees F. ft.²; h/Btu at 3.5 inch thickness, minimum.

Water Vapor Permeability, ASTM E96: 0.93 per 1.2 inch, maximum.

Water Absorption, Percent by Volume, ASTM D2842: 1.0 percent, maximum.

Air Leakage, ASTM E283: 0.002 L/s.m².

Core Density, ASTM D1622: 1.8 to 2.3 lb./ft.²

Tensile Strength, ASTM D1623: 22.3 to 25 psi.

Flame Spread, ASTM E84: 25, maximum.

Smoke Developed, ASTM E84: 450, maximum.

Available Products:

SWD Quik-Shield 112XC
STYROFOAM™ Spray Polyurethane Foam Insulation (CM Series).
Icynene ProSeal LE

Primers: Follow manufacturer's recommendations for surfaces conditions.

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For oily steel surface like Z-bar, roof deck, curtain wall pan, aluminum tube or PVC pipes cleaning, etching or a primer may be needed before spraying polyurethane foam.

Thermal Barrier: Where indicated and where polyurethane insulation is not separated from the interior of the with gypsum wall board provide manufactures intumescent alternative thermal barrier coating.

The alternative thermal barrier coating system shall be applied to the closed cell polyurethane foam insulation and tested for the insulation used to the criteria of NFPA 286, UL 1715 for duration of 15 minutes by an accredited fire testing facility and satisfies the International Building Code (IBC) requirements.

Application equipment shall be maintained and in good operating conditions and approved by the foam manufacturer for type of application.

PART 3 - EXECUTION

EXAMINATION

Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.

Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.

Spray foam preparation: Mask and protect adjacent surfaces from over spray.

Prepare surfaces using the methods recommended by the spray foam manufacturer for achieving the best result for the substrate under the project conditions.

Wood:

Plywood shall contain no more than 18 percent water, as measured in accordance with ASTM D 4449 and ASTM D 4444.

Most untreated and unpainted wood surfaces need not be primed. The spray polyurethane foam can be applied directly to the dry wood. Priming may be required under certain conditions as recommended by the manufacturer.

INSTALLATION, GENERAL

Comply with insulation manufacturer's written instructions applicable to products and application indicated.

Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.

Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

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For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

INSTALLATION OF PERIMETER INSULATION

On vertical surfaces, set insulation units in adhesive applied according to manufacturer's written instructions. Use adhesive recommended by insulation manufacturer.

If not otherwise indicated, extend insulation a minimum of 24 inches (610 mm) below exterior grade line.

On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

INSTALLATION OF GENERAL BUILDING INSULATION

Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions.

Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.

Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

Install mineral-fiber insulation in cavities formed by framing members according to the following requirements:

Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.

Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

Stuff glass-fiber insulation into miscellaneous voids and cavity spaces where shown or present. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).

INSTALLATION OF SPRAY FOAM

Install in spray foam in accordance with manufacturer's instructions.

Spray polyurethane foam components (A) and (B) shall be processed in accordance with instructions found on the manufacturers product datasheet.

Schedule application to anticipate climatic conditions prior to application to ensure highest quality foam and to maximize yield. All substrates to be sprayed must be dry at the time of application. Moisture in the form of rain, fog, frost, dew, or high humidity greater than 85 percent R.H is not permitted unless Contractor reviews means and methods of spraying with manufacturer's representative prior to installation. Use screens, masking and other precautions to prevent damage to adjacent areas from fugitive overspray.

Application in attics with minimum 1/2 inch (12.7 mm) Gypsum Board.

In attics, spray foam insulation may be spray-applied to the underside of roof sheathing and roof rafters.

Thickness of open-cell foam applied to horizontal surfaces must not exceed 16 inches (406 mm).

When applied to vertical surfaces, the thickness of open-cell foam must not exceed 12 inches (305 mm).

Exothermic Caution:

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Polyurethane foam shall be sprayed in minimum 1/2 inch (12.7 mm) thick passes or lifts. Overall thickness applied in one pass shall be limited to that recommended by manufacturer of open cell foam to avoid fire hazards resulting from excessive heat generation.

If a second pass is needed, wait 10 to 15 minutes between passes to allow reaction heat to dissipate. If more passes are needed, wait 30 minutes between passes to allow reaction heat to dissipate.

The exothermic reaction can cause temporary substrate thermal rises in excess of 150 degrees F, which may result in substrate thermal expansion. If the substrate then contracts when the reaction heat dissipates, substrate deformation can occur.

The full thickness of spray polyurethane foam to be applied within any given area should be completed in one day.

Install thermal barrier coating where required in accordance with manufacturer's instructions.

PROTECTION

Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

Any open flame or welding shall not be in contact with plastic insulation.

All plastic insulation must be protected from interior occupancy space by an approved thermal barrier to meet the requirements of local Building Codes. A suspended acoustical tile ceiling is not an approved thermal barrier.

END OF SECTION 072100

SECTION 072500 – WEATHER BARRIERS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

SECTION INCLUDES

Weather resistant barrier
Flexible flashing
Fasteners

SUBMITTALS

Product Data: Submit manufacturer's literature for each type of membrane.

Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tests physical and performance properties of products.

INFORMATIONAL SUBMITTALS

Evaluation Reports: For water-resistive barrier and flexible flashing, from ICC-ES, IAPMO, or evaluation organization.

DELIVERY, STORAGE, AND HANDLING

Remove and replace liquid materials that cannot be applied within their stated shelf life.

Protect stored materials from direct sunlight.

FIELD CONDITIONS

Environmental Limitations: Apply building paper within the range of ambient and substrate temperatures recommended by manufacturer.

Protect substrates from environmental conditions that affect air-barrier performance.

Do not apply building paper to a damp or wet substrate or during snow, rain, fog, or mist.

PART 2 - PRODUCTS

MANUFACTURER

Basis of Design Manufacturer: Fortifiber® Building Systems Group, 1-800-773-4777.

WATER-RESISTIVE BARRIERS

General: Product shall be capable of performing as a water-resistive barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

Vapor Permeable Weather-Resistive Barriers: Two-ply asphalt saturated kraft Grade D breather type sheathing paper.

Types: Premier: Fortifiber® / Two-Ply Jumbo Tex®.

Reference Standard; Federal Specification UU-B-790a, Type 1, Grade D, Style 2.

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Moisture Vapor Transmission: 35 grams minimum; ASTM E 96.

Water Resistance: 110 minutes (premier); ASTM D 779.

Flexible Flashings at windows, doors and storefronts, and wall penetrating mechanical, electrical, and plumbing items such as hose bibs, vents, electrical boxes and exterior lights:

Fortifiber® / FortiFlash® self-adhesive, self-sealing SBS modified asphalt waterproof membrane laminated to high density, cross-laminated polyethylene film reinforcement.

Thickness: 40 mil.

Reference Standards: ICC Acceptance Criteria 148 (waterproof); ASTM E-2112.

Water Vapor Permeance: <.05 perms 40-Mil (waterproof); ASTM F 1249.

Water Resistance: 200 hours (waterproof); ASTM D-779

ACCESSORIES

Provide products recommended by building paper manufacturer for complete installation.

Adhesives: Types as recommended by building manufacturer for specific materials and application indicated.

Primer: Fortifiber Primer; polymer emulsion based primer for self-adhered membranes

Joint Sealers: Fortifiber Moistop Tape; Fortifiber Fortifiber Sheathing Tape; pressure sensitive tape or mastic as recommended by building paper manufacturer for specific material and application indicated.

Sealant: Fortifiber Moistop Sealant; polyurethane, one-component balanced modulus, moisture curing, nonsag elastomeric sealant.

Reference Standards: AAMA 808.3-92 (Exterior Perimeter Sealing Compound); ASTM C-920 Type S, Grade NS, Class 25.

Penetration Seal: Fortifiber The Boot™; pre-sized, multi-purpose penetration seal manufactured from puncture resistant polyolefin membrane.

PART 3 - EXECUTION

EXAMINATION

Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.

Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

Ensure items which pass through building paper are properly and rigidly installed, substrate is free of projections and irregularities which may be detrimental to proper installation of building paper.

WATER-RESISTIVE BARRIER INSTALLATION

Cover exposed exterior surface of sheathing with two layers of water-resistive barrier securely fastened to sheathing immediately after sheathing is installed.

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Cover sheathing with water-resistive barrier as follows:

Apply barrier to cover vertical flashing with a minimum 4-inch (100-mm) overlap unless otherwise indicated.

Apply building paper in accordance with manufacturer's recommendations, laid smooth without folds or bunches of material.

Seam Overlap: As recommended by building paper manufacturer for specific building paper material and application indicated.

Inspect and repair building paper prior to application of finish material over building paper; tape tears, perforations and similar damage

Seal around all wall penetrations using a self-adhering flashing membrane. Refer to manufacturer's installation instructions for proper integration of weather resistant barriers and flashing at wall openings, terminations, and other wall penetrations.

Seal seams, edges, fasteners, and penetrations with tape.

Extend into jambs of openings at windows and doors without mounting flanges and seal corners with flexible flashing.

FLEXIBLE FLASHING INSTALLATION

Apply flexible flashing where indicated to comply with manufacturer's written instructions.

Prime substrates as recommended by flashing manufacturer.

Lap seams and junctures with other materials at least 4 inches (100 mm) except that at flashing flanges of other construction, laps need not exceed flange width.

Lap flashing over water-resistive barrier at bottom of openings.

Lap water-resistive barrier over flashing at heads of openings.

After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

PROTECTION

Protect water resistant barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

Coordinate with installation of materials which cover water resistant barriers and flashings, to ensure exposure period does not exceed that recommended by manufacturer.

END OF SECTION 072500

SECTION 072600 – UNDER SLAB VAPOR RETARDER FOR CONCRETE SLABS ON-GRADE

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

1.1 SUMMARY

A. Products Supplied Under This Section

1. Vapor Retarder, seam tape, mastic, pipe boots for installation under concrete slabs.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Cast-in-place Concrete - Section 03 30 00
- B. Concrete Forming and Accessories - Section 03 20 00
- C. Earthwork for Building Construction - Section 31 23 11

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM)

- | | | |
|----|-----------------------|---|
| 1. | ASTM E 96/
E96M-10 | Standard Test Methods for Water Vapor
Transmission of Materials |
| 2. | ASTM E 154-08a | Standard Test Methods for Water Vapor
Retarders Used in Contact with Earth Under
Concrete Slabs |
| 3. | ASTM E 1643-11 | Standard Practice for Selection, Design,
Installation and Inspection of Water Vapor
Retarders Used in Contact with Earth or Granular
Fill Under Concrete Slabs |

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4. ASTM E 1745-11 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs

B. American Concrete Institute (ACI)

1. ACI 302.2R-06, Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

1.4 SUBMITTALS

A. Quality Control / Assurance

1. Comply with Section 01 33 00 – Submittal Procedures.
2. Independent laboratory test results showing compliance with ASTM & ACI Standards.
3. Manufacturer's samples, literature
4. Manufacturer's installation instructions for placement, seaming and pipe boot installation

B. Delivery, Storage, and Handling

1. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
2. Store materials in a clean dry area in accordance with manufacturer's instructions.
3. Stack membrane on smooth ground or wood platform to eliminate warping.
4. Protect materials during handling and application to prevent damage or contamination.

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5. Ensure membrane is stamped with manufacturer's name, product name and membrane thickness at intervals of no more than 85" (220 cm).
- C. Environmental requirements
1. Product not intended for uses subject to abuse or permanent exposure to the elements.
 2. Do not apply on frozen ground.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Vapor Retarder (Performance-Based Specifications)
1. Vapor Retarder must have the following qualities at minimum and meet floor finish manufacturer's warranty requirements.
 - a. Water Vapor Retarder ASTM E1745: Meets or exceeds Class A
 - b. Maximum Permeance ASTM E96: 0.01 perms or as required to meet Flooring Manufacturer's Warranties.
 - c. Tensile Strength ASTM E154, Section 9: not less than 45 LBS. Force/Inch
 - d. Puncture Resistance ASTM D1709, Method B.
 - e. Thickness of Retarder (plastic) ACI 302.1R-96: Not less than 15 mils
 - f. Material: Virgin Polyethylene or Polyolefin

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2. Vapor Retarder Products, may be by one of the following manufacturers or an approved equal, as long as the requirements above are met.
 - a. Epro, <http://eproserv.com>
 - b. Fortifiber, <http://www.fortifiber.com>
 - c. Stego Industries, <http://www.stegoindustries.com>
 - d. W.R. Meadows, <http://www.wrmeadows.com>
 - e. Raven Industries, <http://www.vaporblock.com>
 - f. Reef Industries, <http://www.reefindustries.com>
 - g. Insulation Solutions, <http://www.insulationsolution.com>

2.2 ACCESSORIES

A. Seam Tape

1. Tape must have the following qualities:
 - a. Water Vapor Transmission Rate ASTM E 96 0.3 perms or lower

B. Vapor Proofing Mastic

1. Mastic must have the following qualities:
 - a. Water Vapor Transmission Rate ASTM E 96 0.3 perms or lower

C. Pipe Boots

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1. Construct pipe boots from vapor Retarder material, pressure sensitive tape and/or mastic per manufacturer's instructions.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to receive membrane. Ensure compaction requirements have been completed and geotechnical firm has confirmed compaction requirements have been met. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Prepare surfaces in accordance with manufacturers instructions.

3.3 INSTALLATION

- A. Install Vapor Retarder:
 1. Installation shall be in accordance with manufacturer's instructions and ASTM E 1643.
 - a. Unroll Vapor Retarder with the longest dimension parallel with the direction of the pour.
 - b. Lap Vapor Retarder over footings and seal to foundation walls.
 - c. Overlap joints 6 inches and seal with manufacturer's tape.
 - d. Seal all penetrations (including pipes) per manufacturer's instructions.
 - e. No penetration of the Vapor Retarder is allowed except for reinforcing steel and permanent utilities.

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**REPAIR DAMAGED AREAS BY CUTTING PATCHES OF VAPOR RETARDER, OVERLAPPING
DAMAGED AREA 6 INCHES AND TAPING ALL FOUR SIDES WITH TAPE.**

END OF SECTION 072600

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SECTION 074113 – METAL ROOF & WALL PANELS

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

Factory-formed and field-assembled, exposed-fastener, lap-seam metal roof panels.

Related Sections include the following:

Division 7 Section "Sheet Metal Flashing and Trim" for roof drainage systems, flashing and trim not otherwise specified in this Section.

Division 7 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.

DEFINITIONS

Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories necessary for a complete weathertight roofing system.

Steel Sheet Thickness: Minimum thickness of base metal without metallic coatings or painted finishes.

REFERENCES

ASTM International

ASTM D 751; Standard Test Methods for Coated Fabrics.

ASTM D 4533; Standard Test Method for Trapezoid Tearing Strength of Geotextiles.

ASTM D 4869; Standard Specification For Asphalt-Saturated Organic Felt Underlayment Used In Steep Slope Roofing.

ASTM E108; Standard Test Methods for Fire Tests of Roof Coverings

ASTM G154; Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials.

ICC Evaluation Service (ICC-ES)

ICC-ES AC48 (Section 3.0); Acceptance Criteria for Roof Underlayment for Use in Severe Climate Areas, Required Test Data.

ICC-ES AC48 (Section 4.4); Acceptance Criteria for Roof Underlayment for Use in Severe Climate Areas, Water-ponding Test.

ICC-ES AC48 (Section 4.7); Acceptance Criteria for Roof Underlayment for Use in Severe Climate Areas, Accelerated Aging.

PERFORMANCE REQUIREMENTS

General: Provide metal roof panel assemblies that comply with performance requirements specified as determined by testing manufacturers' standard assemblies similar to those indicated for this Project, by a qualified testing and inspecting agency.

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Thermal Movements: Provide metal roof panel assemblies that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

SUBMITTALS

Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal roof panel and accessory.

Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

Metal Roof Panels: 12 inches (300 mm) long by actual panel width. Include fasteners, and other exposed roof panel accessories.

Roof Underlayment: 8 inch x 8 inch minimum.

Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for the following:

Metal Roof Panels: Include reports for air infiltration, water penetration, fire-test-response characteristics, solar reflectance, and structural performance.

Maintenance Data: For metal roof panels to include in maintenance manuals.

Warranties: Special warranties specified in this Section.

QUALITY ASSURANCE

Installer Qualifications: A form with five-year minimum experience installing specified products.

Source Limitations: Obtain each type of metal roof panels through one source from a single manufacturer.

Source Limitations: Obtain each type of metal roof panels through one source from a single manufacturer.

Product Options: The project intention is to match the profile of existing metal roofing panels to remain. Confirm existing profile dimensions in all respects and confirm compatibility with a representative sample of the proposed roofing.

Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:

Meet with Owner, Architect, metal roof panel Installer, and installers whose work interfaces with or affects metal roof panels including installers of roof accessories and roof-mounted equipment.

Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

Review methods and procedures related to metal roof panel installation, including manufacturer's written instructions.

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Examine deck substrate and rafter conditions for compliance with requirements, including flatness and attachment to structural members.

Review structural loading limitations of deck and rafters during and after roofing.

Review flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.

Review governing regulations and requirements for insurance, certificates, and testing and inspecting if applicable.

Review temporary protection requirements for metal roof panel assembly during and after installation.

Review roof observation and repair procedures after metal roof panel installation.

Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

DELIVERY, STORAGE, AND HANDLING

Deliver components, sheets, metal roof panels, and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.

Unload, store, and erect metal roof panels in a manner to prevent bending, warping, twisting, and surface damage.

Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting, or other surface damage.

Protect strippable protective covering on metal roof panels from exposure to sunlight and high humidity, except to extent necessary for period of metal roof panel installation.

PROJECT CONDITIONS

Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal roof panels to be performed according to manufacturers' written instructions and warranty requirements.

COORDINATION

Coordinate installation of roof penetrations.

Coordinate metal panel roof assemblies with, flashing, trim, and construction of decks, purlins and rafters, walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

WARRANTY

Special Warranty (Metal Roofing): Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal roof panel assemblies that fail in materials or workmanship within specified warranty period.

Failures include, but are not limited to, the following:

Structural failures, including rupturing, cracking, or puncturing.

Deterioration of metals, metal finishes, and other materials beyond normal weathering.

Warranty Period: Two years from date of Substantial Completion.

SECTION 074113 – METAL ROOF & WALL PANELS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 2 - PRODUCTS

METAL ROOF AND WALL PANELS

General: Provide factory-formed metal roof panels designed to be field assembled by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps. Include accessories required for weathertight installation.

Metallic-Coated Steel Roof Panels: Fabricated from aluminum-zinc alloy-coated steel sheet (Galvalume), ASTM A 792/A 792M, Class AZ50 ((Class AZM150)).

Nominal Metal Thickness: 24 gauge

Metallic-Coated Steel Wall Panels: Fabricated from aluminum-zinc alloy-coated steel sheet (Galvalume), ASTM A 792/A 792M, Class AZ50 ((Class AZM150)).

Nominal Metal Thickness: 24 gauge

Rib Configuration: Sinusoidal.

Surface Finish: Acrylic coated Galvalume.

Minimum roof slope capability: 1:12.

Basis-of-Design Product: The design for each metal roof panel specified is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product.

Western States Metal Roofing: 7/8" Corrugated Panel.

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

American Building Components, Inc.
Berridge Manufacturing Company.
MBCI; Div. of NCI Building Systems.
McElroy Metal, Inc.
Metal Sales Manufacturing Corporation.
Morin Corporation; a Metecno Group Company.
Petersen Aluminum Corporation.

UNDERLAYMENT MATERIALS

Self-Adhering, High-Temperature Sheet: 30 to 40 mils (0.76 to 1.0 mm) thick minimum, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D 1970.

Low Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.

Available Products:

Carlisle Coatings & Waterproofing, Div. of Carlisle Companies Inc.; Dri-Start "HR."
Grace, W. R. & Co.; Ultra.
Henry Company; Blueskin PE200HT.
Metal-Fab Manufacturing, LLC; MetShield.

Slip Sheet: Building paper, minimum 5 lb/100 sq. ft. (0.24 kg/sq. m), rosin sized.

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SECTION 074113 – METAL ROOF & WALL PANELS

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ACCESSORIES

Roof and Wall Panel Accessories: Provide components required for a complete metal roof panel assembly including trim, flashings, sealants, sealant tape and other gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof and wall panels, unless otherwise indicated.

Closures: Provide closures at eaves and high eaves, fabricated of same metal as metal roof and wall panels.

Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal roof and wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

Flashing and Trim: Formed from 0.025-inch (0.64-mm) nominal thickness, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet. Provide flashing and trim as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal roof and wall panels. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, and fillers.

Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

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

Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal roof and wall panels by means of factory-applied coating.

Fasteners for Roof and Wall Panels: Self-drilling or self-tapping 410 stainless or zinc-alloy steel hex washer head, with EPDM or PVC washer under heads of fasteners bearing on weather side of metal roof and wall panels.

Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.

Pipe Penetration Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

PART 3 - EXECUTION

EXAMINATION

Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal roof panel supports, and other conditions affecting performance of work.

Examine framing to verify that rafters and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.

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Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.

Examine roughing-in for components and systems penetrating metal roof panels to verify actual locations of penetrations relative to seam locations of metal roof panels before metal roof panel installation.

Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

Clean substrates of substances harmful to insulation, including removing projections capable of interfering with underlayment attachment.

Install flashings and other sheet metal to comply with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim."

Install fasciae and copings to comply with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim."

UNDERLAYMENT INSTALLATION

Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free, on roof sheathing under metal roof panels. Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply at locations indicated below, in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). [Extend underlayment into gutter trough.] Roll laps with roller. Cover underlayment within 14 days.

Apply to entire roof to receive metal roof panels.

Install flashings to cover underlayment to comply with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim."

Apply slip sheet over underlayment before installing metal roof panels as recommended by metal roofing manufacturer.

METAL ROOF AND WALL PANEL INSTALLATION, GENERAL

General: Install panels per manufacturer's installation instructions. Provide metal roof and wall panels of full length from eave to ridge, unless otherwise indicated or restricted by shipping limitations. Anchor metal roof and wall panels and other components of the Work securely in place, with provisions for thermal and structural movement. Where replacing existing that have obsolete penetration panels, replace entire panel from eave to ridge.

Field cutting of metal roof and wall panels by torch is not permitted.

Rigidly fasten eave end of metal roof and wall panels and allow ridge end free movement due to thermal expansion and contraction. Predrill panels.

Provide metal closures at peaks, rake edges, rake walls and each side of ridge caps.

Flash and seal metal roof and wall panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws.

Locate and space fastenings in uniform vertical and horizontal alignment.

Install ridge caps as metal roof panel work proceeds.

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Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.

Lap metal flashing over metal roof and wall panels to allow moisture to run over and off the material.

Fasteners:

Steel Roof and Wall Panels: Use stainless-steel fasteners for surfaces exposed to the exterior and galvanized steel fasteners for surfaces exposed to the interior.

Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof and wall panel manufacturer.

Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal roof and wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal roof and wall panel manufacturer.

Seal metal roof and wall panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal roof and wall panel manufacturer.

Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

FIELD-ASSEMBLED METAL PANEL INSTALLATION

Lap-Seam Metal roof and wall Panels: Fasten metal roof and wall panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Apply panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.

Provide metal-backed neoprene or EPDM washers under heads of exposed fasteners bearing on weather side of metal roof and wall panels.

Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.

Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.

Provide sealant tape at lapped joints of metal roof and wall panels and between panels and protruding equipment, vents, and accessories.

Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps, and on side laps of corrugated nesting-type; and elsewhere as needed to make panels weatherproof to driving rains.

At panel splices, nest panels with minimum 6-inch (150-mm) end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.

ACCESSORY INSTALLATION

General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

Install components required for a complete metal roof and wall panel assembly including trim, flashings, sealants, gaskets, fillers, closure strips, and similar items.

SECTION 074113 – METAL ROOF & WALL PANELS

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Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.

Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

END OF SECTION 074113

SECTION 076200 – SHEET METAL FLASHING & TRIM

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes sheet metal flashing and trim in the following categories:

- Roof drainage systems
- Manufactured receivers and counterflashing.
- Roof flashing and trim.
- Field or shop formed wall flashing and trim.
- Copings

PERFORMANCE REQUIREMENTS

General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing.

SUBMITTALS

General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

Product Data including manufacturer's material and finish data, installation instructions, and general recommendations for each specified flashing material and fabricated product.

Shop Drawings for exposed flashing showing layout, profiles, methods of joining, and anchorage details.

Samples of sheet metal flashing, trim, and accessory items, in the specified finish.

8-inch- (200-mm-) square Samples of specified sheet materials to be exposed as finished surfaces.

QUALITY ASSURANCE

Installer Qualifications: Engage an experience Installer who has completed sheet metal flashing and trim work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

Standards:

Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

Comply with The NRCA Roofing and Waterproofing Manual installation details.

PROJECT CONDITIONS

Coordinate Work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.

SECTION 076200 – SHEET METAL FLASHING & TRIM

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PART 2 - PRODUCTS

METALS

Metallic-Coated Steel Sheet: Galvanized steel sheet, ASTM A 653/A 653M, G90 (Z275), or aluminum-zinc alloy-coated steel sheet (galvalume), ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40 (Class AZM150 coating designation, Grade 275); 0.028-inch (0.71-mm), 24 gauge minimum nominal thickness.

MISCELLANEOUS MATERIALS AND ACCESSORIES

Fasteners: Wood screws, annular-threaded nails, self-tapping screws, selflocking rivets and bolts, and other suitable fasteners.

Fasteners for Metallic-Coated Steel Sheet: Hot-dip galvanized steel or Series 300 stainless steel.

Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, non-sag, nontoxic, non-staining tape.

Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.

FABRICATION, GENERAL

Sheet Metal Fabrication Standard: Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated.

Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

Form exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.

Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer.

Expansion Provisions: Space movement joints at maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.

Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.

Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.

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Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.

Size: As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

ACCESSORIES

Metal coping cap with galvanized steel anchor cleats and gutter support chairs available in 10 foot lengths.

Basis of design: M-Weld Snap-On Coping by GAF®. 24 gauge galvanized steel coping cap. 20 gauge galvanized steel coping cleat and joint splice drainage system. Provide fabricated miters and end caps

Color: Galvanized or galvalume finish.

Fascia Cover: Galvanized or galvalume steel, 24 gage. Formed to wrap exposed fascia surfaces. Lapped seams and expansion provisions.

Counterflashing: Units of type, material, and profile indicated, formed to provide secure interlocking of separate receiver and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions.

Material: Galvanized or galvalume steel, 24 gage.

Metal counter-flashing shall have a minimum 4" (10.2 cm) face with a drip lip. The bottom edge of the counterflashing shall cover the roofing membrane and/or base flashing by a minimum of 4" (10.2 cm).

Metal counter flashing shall be a two piece design to allow for installation and later removal. End joints shall be lapped 3" (7.6 cm) or more. Adequate fasteners must be provided to secure against wind forces. Skirt fasteners shall be watertight.

Hanging Gutters: Formed from 24 gage (0.0276") thick, zinc-coated (galvanized) or galvalume steel sheet. Profile indicated, complete with end pieces, premanufactured outlet tubes, and other special pieces as required. Install in longest lengths possible with fewest seams and fabricated according to SMACNA's "Architectural Sheet Metal Manual." Furnish flat-stock gutter spacers and gutter brackets spaced 36 inches (900 mm) o.c., fabricated from same metal as gutters. Provide heavy duty metal gutter hangers with screw fasteners. Spike and ferrule fasteners are not permitted. Field fabricated outlets at downspout connections are not permitted.

Gutter Style: F.

Downspouts: Formed from 26 gage (0.0217") thick, zinc-coated (galvanized) or galvalume steel sheet in longest length possible with the fewest seams with formed mitered elbows and offsets. Furnish with metal hangers and anchors, from same material as downspouts.

PART 3 - EXECUTION

EXAMINATION

Examine substrates and conditions under which sheet metal flashing and trim are to be installed and verify that Work may properly commence. Do not proceed with installation until unsatisfactory conditions have been corrected.

SECTION 076200 – SHEET METAL FLASHING & TRIM

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INSTALLATION

General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.

Install exposed sheet metal Work that is without oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.

Use joint adhesive for nonmoving joints.

Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.

Separations: Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.

Underlayment: Where installing aluminum directly on cementitious or wood substrates, install a slip sheet of red-rosin paper and a course of polyethylene underlayment.

ROOF DRAINAGE SYSTEM INSTALLATION

Roof-Drainage System: Install drainage items fabricated from sheet metal, with straps, adhesives, and anchors recommended by SMACNA's Manual or the item manufacturer, to drain roof in the most efficient manner. Slope to downspouts.

Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.

ROOF FLASHING INSTALLATION

General: Install sheet metal coping and roof flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.

Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches (100 mm) over base flashing. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with elastomeric sealant.

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Secure in a waterproof manner by means of snap-in installation and sealant or lead wedges and sealant.

CLEANING AND PROTECTION

Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Completion.

END OF SECTION 076200

SECTION 079200 – JOINT SEALANTS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes joint sealants for the following applications, including those specified by reference to this Section:

Exterior joints in the following vertical surfaces and horizontal nontraffic surfaces:

- Perimeter joints between materials listed above and frames of doors, windows and louvers.
- Other joints as indicated.

Exterior joints in the following horizontal traffic surfaces:

- Isolation and contraction joints in cast-in-place concrete slabs.
- Joints between different materials listed above.
- Other joints as indicated.

Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:

- Joints between plumbing fixtures and adjoining walls, floors, and counters.
- Other joints as indicated.

Related Sections include the following:

- Division 8 Section "Glazing" for glazing sealants.

PERFORMANCE REQUIREMENTS

Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

SUBMITTALS

Product Data: For each joint-sealant product indicated.

Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

- Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.

- Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

SECTION 079200 – JOINT SEALANTS

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QUALITY ASSURANCE

Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

DELIVERY, STORAGE, AND HANDLING

Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multicomponent materials.

Store and handle materials in compliance with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

PROJECT CONDITIONS

Do not proceed with installation of joint sealants under the following conditions:

When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).

When joint substrates are wet.

Joint-Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

Joint-Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

PART 2 - PRODUCTS

MANUFACTURERS

Products: Subject to compliance with requirements, provide products as manufactured by one of the following:

Pecora
Tremco Vulkem
Dow Corning Corp.
General Electric
Sika Corp

Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

MATERIALS, GENERAL

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

VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

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Sealants: 250 g/L.

Sealant Primers for Nonporous Substrates: 250 g/L.

Sealant Primers for Porous Substrates: 775 g/L.

Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

ELASTOMERIC JOINT SEALANTS

Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

Suitability for Immersion in Liquids. Where elastomeric sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247 and qualify for the length of exposure indicated by reference to ASTM C 920 for Class 1 or 2. Liquid used for testing sealants is deionized water, unless otherwise indicated.

Single-Component Nonsag Urethane Sealant: For vertical joints exposed to view where normal movement is anticipated.

Type and Grade: S (single component) and NS (nonsag).

Class: 100/50.

Uses Related to Exposure: T (traffic) and NT (nontraffic).

Uses Related to Joint Substrates: G, M, A, and as applicable to joint substrates indicated, O.

Sika Corporation: Sikaflex – 15 LM.

Single-Component Pourable Urethane Sealant: For horizontal surface joints such as concrete paving joints, slab/wall junctions, and similar conditions. Not for vehicle traffic areas.

Type and Grade: S (single component) and P (pourable).

Class: 25 or 50.

Uses Related to Exposure: T (traffic) and NT (nontraffic).

Sika Corporation, Inc.; Sikaflex - 1 CSL.

Single-Component Mildew-Resistant Neutral-Curing Silicone Sealant (For Interior Use in Sanitary Areas):

Type and Grade: S (single component) and NS (nonsag).

Class: 25.

Use Related to Exposure: NT (nontraffic).

Uses Related to Joint Substrates: M, G, A, and, O.

Color: White at plumbing fixtures

Color: Clear at countertops

SECTION 079200 – JOINT SEALANTS

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LATEX JOINT SEALANTS

Sealant for Interior Use at Perimeters of Door and Window Frames

Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

Chem-Calk 600; Bostik Inc.

ALEX Painters Caulk; DAP Products Inc.

AC-20; Pecora Corporation.

PSI-701; Polymeric Systems, Inc.

Sonolac; Sonneborn Building Products Div., ChemRex, Inc.

Tremflex 834; Tremco.

ACOUSTICAL JOINT SEALANTS

Acoustical Sealant for Exposed and Concealed Joints (For Joints in Walls and Ceilings with acoustic insulation.

Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following:

Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

JOINT-SEALANT BACKING

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

Cylindrical Sealant Backings: ASTM C 1330, Type of the type recommended by joint-sealant manufacturer for the joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

Type C: Closed-cell material with a surface skin.

Type O: Open-cell material.

Type B: Bicellular material with a surface skin.

Type: Any material indicated above.

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

MISCELLANEOUS MATERIALS

Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

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PART 3 - EXECUTION

PREPARATION

Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions and the following requirements:

Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

- Metal.
- Glass.
- Porcelain enamel.
- Glazed surfaces of ceramic tile.

Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

INSTALLATION OF JOINT SEALANTS

General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal perimeters, control joints, openings, and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions. Comply with ASTM C 919.

Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

Do not leave gaps between ends of sealant backings.

Do not stretch, twist, puncture, or tear sealant backings.

Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

SECTION 079200 – JOINT SEALANTS

HWY 14 SENIOR/COMMUNITY CENTER
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Install sealants using proven techniques that comply with the following and at the same time backings are installed:

Place sealants so they directly contact and fully wet joint substrates.

Completely fill recesses in each joint configuration.

Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

Remove excess sealant from surfaces adjacent to joints.

Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

Use masking tape to protect surfaces adjacent to recessed tooled joints.

CLEANING

Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

PROTECTION

Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200

PART 1 - GENERAL**RELATED DOCUMENTS**

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

- Hollow-metal steel doors.
- Hollow-metal steel frames.

Related Sections include the following:

- Division 8 Sections for door hardware for steel doors.
- Division 9 painting Sections for field painting steel doors and frames.

DEFINITIONS

Minimum Thickness: Minimum thickness of base metal without coatings.

SUBMITTALS

Product Data: Include construction details, material descriptions, core descriptions, label compliance, and finishes for each type of steel door and frame specified.

Shop Drawings: In addition to requirements below, provide a schedule of standard steel doors and frames using same reference numbers for details and openings as those on Drawings:

- Elevations of each door design.
- Details of doors, including vertical and horizontal edge details.
- Frame details for each frame type, including dimensioned profiles.
- Details and locations of reinforcement and preparations for hardware.
- Details of each different wall opening condition.
- Details of anchorages, accessories, joints, and connections.
- Details of glazing frames and stops showing glazing.
- Details of conduit and preparations for electrified door hardware and controls if required.

QUALITY ASSURANCE

Source Limitations: Obtain standard steel doors and frames through one source from a single manufacturer.

DELIVERY, STORAGE, AND HANDLING

Deliver doors and frames palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

SECTION 081113 – HOLLOW METAL DOORS AND FRAMES

HWY 14 SENIOR/COMMUNITY CENTER
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Store doors and frames under cover at Project site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4-inch- (102-mm-) high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber.

If wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PROJECT CONDITIONS

Field Measurements: Verify openings by field measurements before fabrication and indicate measurements on Shop Drawings. Many of the door frames are being installed in openings with existing wood frames. Verify existing rough openings at existing frames prior to ordering.

Established Dimensions: At new openings where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating standard steel frames without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to established dimensions.

PART 2 - PRODUCTS

MANUFACTURERS

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

Amweld Building Products, LLC.
Ceco Door Products; an ASSA ABLOY Group Company.
CURRIES Company; an ASSA ABLOY Group Company.
Pioneer Industries, Inc.
Republic Builders Products Company.
Steelcraft; an Ingersoll-Rand Company.

MATERIALS

Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum A40 (ZF120) zinc-iron-alloy (galvannealed) coating designation.

Electrolytic Zinc-Coated Steel Sheet: ASTM A 591/A 591M, Commercial Steel (CS), Class B coating; mill phosphatized.

Supports and Anchors: After fabricating, galvanize units to be built into exterior walls according to ASTM A 153/A 153M, Class B.

Inserts, Bolts, and Fasteners: Provide items to be built into exterior walls, hot-dip galvanized according to ASTM A 153/A 153M.

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Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching standard steel door frames of type indicated.

Glazing: Comply with requirements in Division 8 Section "Glazing."

STEEL DOORS

General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces, unless otherwise indicated. Comply with ANSI A250.8.

Design: As indicated on Drawings.

Core Construction: Manufacturer's standard polystyrene or polyurethane core that produces doors complying with ANSI A250.8.

Thermal-Rated (Insulated) Doors: Where indicated, provide doors fabricated with thermal-resistance value (R-value) of not less than 4.0 deg F x h x sq. ft./Btu (0.704 K x sq. m/W) when tested according to ASTM C 1363.

Locations: Exterior doors.

Vertical Edges for Single-Acting Doors: Beveled edge at lock side and square edge at hinge side.

Beveled Edge: 1/8 inch in 2 inches (3 mm in 50 mm).

Top and Bottom Edges: Closed with flush or inverted 0.042-inch- (1.0-mm-) thick end closures or channels of same material as face sheets.

Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."

Exterior Doors: Face sheets fabricated from metallic-coated steel sheet. Provide doors complying with requirements indicated below by referencing ANSI A250.8 for level and model and ANSI A250.4 for physical-endurance level:

Level 3 and Physical Performance Level A (Extra Heavy Duty), Model 2 (Seamless) and 3 (Stile and Rail) as indicated.

Interior Doors: Face sheets fabricated from steel sheet. Provide doors complying with requirements indicated below by referencing ANSI A250.8 for level and model and ANSI A250.4 for physical-endurance level:

Level 3 and Physical Performance Level A (Extra Heavy Duty), Model 2 (Seamless) and 3 (Stile and Rail) as indicated.

Hardware Reinforcement: Fabricate reinforcement plates from same material as door face sheets to comply with the following minimum sizes:

Hinges: Minimum 0.123 inch (3.0 mm) thick by 1-1/2 inches (38 mm) wide by 6 inches (152 mm) longer than hinge, secured by not less than 6 spot welds.

Pivots: Minimum 0.167 inch (4.2 mm) thick by 1-1/2 inches (38 mm) wide by 6 inches (152 mm) longer than hinge, secured by not less than 6 spot welds.

Lock Face Closers, and Concealed Holders: Minimum 0.067 inch (1.7 mm) thick.

All Other Surface-Mounted Hardware: Minimum 0.067 inch (1.7 mm) thick.

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Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

STANDARD STEEL FRAMES

General: Comply with ANSI A250.8 and with details indicated for type and profile.

Exterior Frames and Interior Frames for Hollow Metal Doors: Fabricated from metallic-coated steel sheet.

Fabricate frames with mitered or coped and welded face corners and seamless face joints.

Frames for Level 3 Steel Doors: 0.067-inch- (1.7-mm-) thick steel sheet.

Interior Frames for Wood Doors: Fabricated from cold-rolled steel sheet, unless otherwise indicated to comply with exterior frame requirements.

Fabricate knocked-down, drywall slip-on frames for in-place gypsum board partitions.

Frames for Wood Doors: 0.053-inch- (1.0-mm-) thick steel sheet.

Hardware Reinforcement: Fabricate reinforcement plates from same material as frames to comply with the following minimum sizes:

Hinges: Minimum 0.123 inch (3.0 mm) thick by 1-1/2 inches (38 mm) wide by 6 inches (152 mm) longer than hinge, secured by not less than 6 spot welds.

Lock Face, Flush Bolts, Closers, and Concealed Holders: Minimum 0.067 inch (1.7 mm) thick.

All Other Surface-Mounted Hardware: Minimum 0.067 inch (1.7 mm) thick.

Supports and Anchors: Fabricated from electrolytic zinc-coated or metallic-coated steel sheet.

Jamb Anchors:

Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch (1.0 mm) thick.

Compression Type for Slip-on Frames: Adjustable compression anchors.

Floor Anchors: Formed from same material as frames, not less than 0.042 inch (1.0 mm) thick, and as follows:

Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

STOPS AND MOLDINGS

Moldings for Glazed Lites in Doors: Minimum 0.032 inch (0.8 mm) thick, fabricated from same material as door face sheet in which they are installed.

Fixed Frame Moldings: Formed integral with standard steel frames, minimum 5/8 inch (16 mm) high, unless otherwise indicated.

Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch (0.8 mm) thick, fabricated from same material as frames in which they are installed.

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GLASS PRODUCTS

Heat-Treated Float Glass: ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.

Provide Kind FT (fully tempered) float glass.

Thickness of each lite: 1/4".

Pyrolytic-Coated Float Glass: ASTM C 1376, float glass with metallic-oxide coating applied by pyrolytic deposition process during initial manufacture, and complying with other requirements specified.

Insulating-Glass Units, General: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements specified in this Article and in Part 2 "Insulating-Glass Units" Article.

Sealing System: Dual seal, with primary and secondary sealants as follows:

Manufacturer's standard sealants.

Spacer Specifications: Manufacturer's standard spacer material and construction.

Corner Construction: Manufacturer's standard corner construction.

Low-E Insulating-Glass Units at all exterior openings:

Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum SHGC of 0.40.

Thermal Transmittance: NFRC 100 maximum U-factor of 0.35 Btu/sq. ft. x h x deg F (2.0 W/sq. m x K).

Overall Unit Thickness and Thickness of Each Lite: 1" and 1/4".

Interspace Content: Air.

Outdoor Lite: Class 1 (clear) float glass.

Kind FT (fully tempered).

Indoor Lite: Class 1 (clear) float glass.

Kind FT (fully tempered).

Low-E Coating: Pyrolytic on second surface.

FABRICATION

General: Fabricate standard steel doors and frames to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

Standard Steel Doors:

Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

Glazed Lites: Factory cut openings in doors.

Standard Steel Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

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Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners, unless otherwise indicated.

Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.

Jamb Anchors: Provide number and spacing of anchors as follows:

Stud-Wall Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:

Four anchors per jamb from 60 to 90 inches (1524 to 2286 mm) in height.

Five anchors per jamb from 90 to 96 inches (2286 to 2438 mm) in height.

Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches (610 mm) or fraction thereof more than 96 inches (2438 mm) in height.

Two anchors per head for frames more than 42 inches (1066 mm) wide and mounted in metal stud partitions.

Compression Type: Not less than two anchors in each jamb.

Hardware Preparation: Factory prepare standard steel doors and frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping, according to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."

Reinforce doors and frames to receive nontemplated mortised and surface-mounted door hardware.

Comply with applicable requirements in ANSI A250.6 and ANSI/DHI A115 Series specifications for door and frame preparation for hardware. Locate hardware as indicated on Shop Drawings or, if not indicated, according to ANSI A250.8.

Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

Single Glazed Lites: Provide fixed stops and moldings welded on secure side of door or frame.

Multiple Glazed Lites: Provide fixed and removable stops and moldings such that each glazed lite is capable of being removed independently.

Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.

Provide loose stops and moldings on inside of doors and frames.

Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

STEEL FINISHES

General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

Finish standard steel door and frames after assembly.

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Metallic-Coated Steel Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.

Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

Steel Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning"; remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel; comply with SSPC-SP 3, "Power Tool Cleaning," or SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

Factory Priming for Field-Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 0.7 mils (0.018 mm).

Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied finish paint system indicated; and providing a sound foundation for field-applied topcoats despite prolonged exposure.

PART 3 - EXECUTION

EXAMINATION

Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of standard steel doors and frames.

Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

Remove welded-in shipping spreaders installed at factory.

Prior to installation and with installation spreaders in place, adjust and securely brace standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:

Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.

Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a perpendicular line from head to floor.

Drill and tap doors and frames to receive nontemplated mortised and surface-mounted door hardware.

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General: Provide doors and frames of sizes, thicknesses, and designs indicated. Install standard steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

Standard Steel Frames: Install standard steel frames for doors and other openings, of size and profile indicated. Comply with SDI 105.

Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

Install frames with removable glazing stops located on secure side of opening.

Remove temporary braces necessary for installation only after frames have been properly set and secured.

Check plumb, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor and secure with postinstalled expansion anchors.

In-Place Gypsum Board Partitions: Secure frames in place with postinstalled expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

Installation Tolerances: Adjust standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:

Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.

Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

Standard Steel Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

Non-Fire-Rated Standard Steel Doors:

Jambs and Head: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).

Between Edges of Pairs of Doors: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).

Between Bottom of Door and Top of Threshold: Maximum 3/8 inch (9.5 mm).

Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch (19 mm).

Glazing: Comply with installation requirements in Division 8 Section "Glazing" and with standard steel door and frame manufacturer's written instructions.

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Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c., and not more than 2 inches (50 mm) o.c. from each corner.

ADJUSTING AND CLEANING

Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including standard steel doors or frames that are warped, bowed, or otherwise unacceptable.

Clean grout and other bonding material off standard steel doors and frames immediately after installation.

Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

Galvanized Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 081113

PART 1 - GENERAL**RELATED DOCUMENTS**

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

- Solid-core doors with wood-veneer, faces.
- Factory finishing flush wood doors.
- Factory fitting flush wood doors to frames and factory machining for hardware.

SUBMITTALS

Product Data: For each type of door. Include details of core and edge construction and trim for openings. Include factory-finishing specifications.

Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.

- Indicate dimensions and locations of mortises and holes for hardware.
- Indicate dimensions and locations of cutouts.
- Indicate doors to be factory finished and finish requirements.

Samples for Verification:

- Factory finishes applied to actual door face materials, approximately 8 by 10 inches (200 by 250 mm), for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.

QUALITY ASSURANCE

Source Limitations: Obtain flush wood doors through one source from a single manufacturer.

Quality Standard: Comply with NWWDA I.S.1-A, "Architectural Wood Flush Doors."

DELIVERY, STORAGE, AND HANDLING

Comply with requirements of referenced standard and manufacturer's written instructions.

Package doors individually in plastic bags or cardboard cartons.

Mark each door on top and bottom rail with opening number used on Shop Drawings.

PROJECT CONDITIONS

Environmental Limitations: Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

WARRANTY

Special Warranty: Manufacturer's standard form, signed by manufacturer, Installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship, have warped (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section, or show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch (0.25 mm in a 75-mm) span.

Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.

Warranty shall be in effect during the following period of time from date of Substantial Completion:

Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS**MANUFACTURERS**

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Flush Wood Doors:

Algoma Hardwoods Inc.
Ampco Products, Inc.
Eggers Industries; Architectural Door Division.
GRAHAM Manufacturing Corp.
Mohawk Flush Doors, Inc. (Basis of Design)
Weyerhaeuser Company.

DOOR CONSTRUCTION, GENERAL

Adhesives: Do not use adhesives containing urea formaldehyde.

Doors for Transparent Finish:

Grade: Custom (Grade A faces).
Species and Cut: Birch, plain sliced.
Match between Veneer Leaves: Book match.
Assembly of Veneer Leaves on Door Faces: Running match.
Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.

SOLID-CORE DOORS

Particleboard Cores: Comply with the following requirements:

Particleboard: ANSI A208.1, Grade [LD-1] [LD-2].

Use particleboard made with binder containing no urea-formaldehyde resin.

Blocking: Provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware and as follows:

SECTION 081416 – FLUSH WOOD DOORS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

- 5-inch (125-mm) top-rail blocking, in doors indicated to have closers.
- 5-inch (125-mm) bottom-rail blocking, in doors indicated to have kick, mop, or armor plates.
- 5-inch (125-mm) midrail blocking, in doors indicated to have exit devices.

Provide doors with either glued-block or structural composite lumber cores instead of particleboard cores at locations where exit devices are indicated.

Interior Veneer-Faced Doors:

- Core: Particleboard, glued block or structural composite lumber.
- Construction: Five or seven plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.

LIGHT FRAMES

Wood Beads for Light Openings in Wood Doors:

- Wood Species: Same species as door faces.
- Profile: Flush rectangular beads.

FABRICATION

Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels, unless otherwise indicated:

- Comply with clearance requirements of referenced quality standard for fitting. Comply with requirements in NFPA 80 for fire-rated doors.

Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.

Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.

Light Openings: Trim openings with moldings of material and profile indicated.

FACTORY FINISHING

General: Comply with referenced quality standard.

Finish doors at factory.

Transparent Finish:

- Grade: Custom.
- Finish: Meet or exceed NWWDA I.S.1-A System TR-6 catalyzed polyurethane.
- Staining: As selected from manufacturer's full range of stains.
- Effect: Closed-grain finish.
- Sheen: Satin.

GLASS PRODUCTS

Heat-Treated Float Glass: ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.

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SECTION 081416 – FLUSH WOOD DOORS

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Provide Kind FT (fully tempered) float glass.

Thickness of each lite: 1/4".

PART 3 - EXECUTION

EXAMINATION

Examine doors and installed door frames before hanging doors.

Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.

Reject doors with defects.

Proceed with installation only after unsatisfactory conditions have been corrected.

INSTALLATION

Hardware: For installation, see Division 8 Section "Door Hardware."

Manufacturer's Written Instructions: Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.

Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

ADJUSTING

Operation: Rehang or replace doors that do not swing or operate freely.

Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 083323 – OVERHEAD COILING DOORS

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

SECTION INCLUDES

Overhead coiling service doors.

Overhead coiling counter doors.

RELATED SECTIONS

Section 087100 - Door Hardware: Product Requirements for cylinder core and keys. E.

REFERENCES

ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

NEMA MG 1 - Motors and Generators.

DESIGN / PERFORMANCE REQUIREMENTS

Overhead coiling service doors:

Wind Loads: Design door assembly to withstand wind/suction load of 20 psf (958 Pa) without damage to door or assembly components.

Operation: Design door assembly, including operator, to operate for not less than 20,000 cycles.

Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

SUBMITTALS

Submit under provisions of Section 013300.

Product Data: Manufacturer's data sheets on each product to be used, including:

- Preparation instructions and recommendations.
- Storage and handling requirements and recommendations.
- Details of construction and fabrication.
- Installation methods.

Shop Drawings: Include detailed plans, elevations, details of framing members, required clearances, anchors, and accessories. Include relationship with adjacent construction.

Manufacturer's Certificates: Certify products meet or exceed specified requirements.

SECTION 083323 – OVERHEAD COILING DOORS

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Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

QUALITY ASSURANCE

Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years experience in the fabrication and installation of security closures.

Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.

DELIVERY, STORAGE, AND HANDLING

Store products in manufacturer's unopened packaging until ready for installation.

Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.

Store materials in a dry, warm, ventilated weathertight location.

PROJECT CONDITIONS

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

COORDINATION

Coordinate Work with other operations and installation of adjacent finish materials to avoid damage to installed materials.

WARRANTY

Warranty: Manufacturer's limited door warranty for 2 years for all parts and components.

PART 2 - PRODUCTS

MANUFACTURERS

Basis of Design Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: www.overhaddoor.com. E-mail: info@overhaddoor.com.

Other Acceptable Manufacturers:

Atlas Door
Cookson Company.

OVERHEAD COILING SERVICE DOORS

Industrial Doors: Overhead Door Corporation, Model 610 Service Doors. (Basis of Design)

Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.

Curved profile type C-187 for doors up to 15 feet 4 inches (4.67 m) wide, fabricated of:

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18 gauge galvanized steel.

Finish:

Galvanized Steel: Slats and hood galvanized in accordance with ASTM A 653 and receive rust-inhibitive, roll coating process.

Non-galvanized exposed ferrous surfaces shall receive one coat of rust-inhibitive primer.

Weatherseals:

Vinyl bottom seal.

Guide weatherseal.

Bottom Bar:

Extruded aluminum.

Guides: Three structural steel angles.

Finish: PowderGuard Zinc Finish for guides, bottom bar and head plate.

Brackets:

Galvanized steel to support counterbalance, curtain and hood.

Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03 inch per foot of span. Counterbalance is adjustable by means of an adjusting tension wheel.

Hood: 24 gauge galvanized steel with intermediate supports as required.

Electric Motor Operation: Provide UL listed electric operator, size as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second.

Sensing Edge Protection:

Electric sensing edge.

Operator Controls:

Key operation with open, close, and stop controls.

Controls for both interior and exterior location.

Controls surface mounted.

Special Operation: Radio control operation.

Motor Voltage: 115/230 single phase, 60 Hz.

Windload Design: Standard windload shall be 20 PSF.

Locking: Interior slide bolt lock for electric operation with interlock switch.

Wall Mounting Condition: Face-of-wall mounting.

OVERHEAD COILING STEEL COUNTER DOORS

Stainless Steel Counter Doors: Overhead Door Corporation, 651 Series. (Basis of Design)

Wall Mounting Condition: Face-of-wall mounting.

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Curtain: Interlocking slats, Type F-158 fabricated of 22 gauge stainless steel. Endlocks attached to alternate slats to maintain curtain alignment and prevent lateral slat movement.

Finish: Slats and hood stainless steel with a No. 4 stainless steel finish.

Bottom Bar: Single stainless steel angle bottom bar.

Guides: Stainless steel shapes.

Brackets: Steel plate to support counterbalance, curtain and hood.

Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel.

Hood: Provided with intermediate support brackets as required and fabricated of: Stainless steel.

Operation: Manual push up.

Locking: Slide bolt locks suitable for use with padlock mounted on kitchen side.

PART 3 - EXECUTION

EXAMINATION

Verify opening sizes, tolerances and conditions are acceptable.

Examine conditions of substrates, supports, and other conditions under which this work is to be performed.

If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

PREPARATION

Clean surfaces thoroughly prior to installation.

Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

INSTALLATION

Install in accordance with manufacturer's instructions.

Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

Fit and align assembly including hardware; level and plumb, to provide smooth operation.

Coordinate installation of electrical service with electrical drawings. Complete wiring from disconnect to unit components.

Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 079200.

Install perimeter trim and closures.

ADJUSTING

Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.

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Adjust hardware and operating assemblies for smooth and noiseless operation.

CLEANING

Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.

Remove labels and visible markings.

Touch-up, repair or replace damaged products before Substantial Completion.

PROTECTION

Protect installed products until completion of project.

END OF SECTION 083323

PART 1 - GENERAL

SUMMARY

This Section includes the following:

- Storefront framing
- Aluminum windows
- Aluminum entrances in storefront framing
- Aluminum entrance hardware
- Key Vaults

Related Sections include the following:

- Division 7 Section "Joint Sealants"
- Division 8 Section "Door Hardware" for hardware to the extent not specified in this Section.

REFERENCES

American Architectural Manufacturers Association (AAMA)
American Society for Testing and Materials (ASTM)
Aluminum Association (AA)
National Wood Window & Door Association (NWWDA)

SYSTEM DESCRIPTION - STOREFRONT

General: In addition to requirements shown or specified, comply with:

Applicable provisions of AAMA Aluminum Storefront and Entrance Manual for design, materials, fabrication and installation of component parts.

Design Requirements: Arcadia AG451T Series is a framing system that provides for flush glazing on all sides without projected stops, with glass in the center of the frame. Framing system suitable for outside or inside glazing.

Performance Requirements:

Limit air leakage through assembly to 0.06 CFM/min/sq. ft. (.00003 m³/sm²) of wall area at 6.24 PSF (300 Pa) as measured in accordance with ASTM E283.

Water Resistance: No water leakage when measured in accordance with ASTM E331 with a static test pressure of 12PSF (480 Pa).

Limit mullion windload deflection of L/175 with full recovery of glazing materials, when measured in accordance with ASTM E 330.

System shall not deflect more than 1/8" at the center point, or 1/16" at the center point of a horizontal member, once deadload points have been established.

System shall accommodate expansion and contraction movement due to surface temperature differential of 180 degrees F.

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Seismic testing shall conform to AAMA recommended static test method for evaluating performance of curtain walls and storefront wall systems due to horizontal displacements associated with seismic movements and building sway.

Thermal Performance – When tested in accordance with AAMA 1503.1 the following results should be attained: U-Maximum .63/CRF – minimum of 59.

National Fenestration Rating Council (NFRC) specific application evaluation.

SYSTEM DESCRIPTION - ENTRANCE

General: In addition to requirements shown or specified, comply with:

Applicable provisions of AAMA Aluminum Storefront and Entrance Manual for design, materials, fabrication and installation of component parts.

Design Requirements: Arcadia WS512 Series Wide Stile Entrance is a single source package of door, door-frame and hardware that is engineered for high-volume traffic conditions.

Performance Requirements: Each assembly tested by a recognized testing laboratory or agency in accordance with specified test methods.

Tested by the dual moment corner joint strength test.

Air infiltration tested in accordance with ASTM E283 (offset pivot or butt hung entrances).

Water penetration tested in accordance with ASTM E 331 (offset pivot or butt hung entrances).

Structural uniform load tested in accordance with ASTM E 330.

SYSTEM DESCRIPTION – INFILL WINDOWS IN STOREFRONT AND WINDOWS IN METAL FRAMES WALLS

General: In addition to requirements shown or specified, comply with:

Applicable provisions of AAMA Windows and Sliding Glass Doors Manual for design, materials, fabrication and installation of component parts.

Design Requirements: Arcadia T200 Series (thermal) Heavy Commercial Fixed, Casement, Awning and Hopper Windows 2-inch depth. Hinged compression sealed aluminum windows. Suitable for outside or inside glazing.

Performance Requirements: Each assembly shall be tested by a recognized testing laboratory or agency in accordance with specified test methods.

Conformance to F-AW55, C-AW80, AP-AW80 specifications in AAMA/NWWDA 101/I.S. 2/A440-8.

Air Infiltration: Accordance with ASTM E 283 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .30 cfm per square foot.

Water Resistance: Accordance with ASTM E 331/ASTM E 547 at a static air pressure difference of 12 psf. No water leakage.

Uniform Load Structural: Aluminum window systems comply with AAMA/WDMA/CSA 101/I.S.2/A440-08, Voluntary specifications for aluminum windows. Guidelines for specified AW rated product.

Component testing: Accordance with procedures described in AAMA/NWWDA 101/I.S. 2/A440-08.

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Forced Entry Resistance: All windows shall conform to CAWM 301-90.

Condensation Resistance Test: (CRF) when tested in accordance with AAMA 1503.1-88, the condensation resistance factor shall not be less than 51.

Thermal Transmittance Test: Accordance with AAMA 1503.1-88, (U-Value) not more than .59 BTU/hr/sf/°F.

Thermal Movements: Allow thermal movement resulting from the following maximum change (range) in ambient temperature.

120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

QUALITY ASSURANCE

Single Source Responsibility:

Obtain entrances, storefronts, window systems, and finish through one source from a single manufacturer.

Provide test reports from AAMA accredited laboratories certifying the performances.

Accessible Entrances: Comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)." ICC/ANSI A117.1. and FED-STD-795, "Uniform Federal Accessibility Standards."

SUBMITTALS

Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of product indicated.

See Section 087100 – Door Hardware for hardware submittal requirements

Shop Drawings: Include plans, elevations, sections, details, hardware mounting heights, and attachments to other work.

Include details of provisions for system expansion and contraction and for draining moisture occurring within the system to the exterior.

For entrances, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.

Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

Maintenance Data: For aluminum-framed systems to include in maintenance manuals.

Quality Assurance/Control Submittals:

Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

Closeout Submittals: Provide the following with project close-out documents.

Warranties.

WARRANTY

Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.

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Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for storefront, window and entrance system as follows:

Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by the manufacturer. In addition, welded door corner construction shall be supported with a limited lifetime warranty for the life of the door under normal use.

Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form, made out to Owner and signed by insulating-glass manufacturer agreeing to replace insulating-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

Warranty Period: 10 years from date of Substantial Completion.

DELIVERY, STORAGE AND HANDLING

Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle entrance doors and components to avoid damage. Protect entrance doors against damage from elements, construction activities, and other hazards before, during and after entrance installation.

PART 2 - PRODUCTS

MANUFACTURERS

Arcadia, Inc. (Basis of Design)
CR Laurence Company – US Aluminum
EFCO
Kawneer

Basis of Design Products - Storefront:

Arcadia, Inc., AG451T Series.

Basis of Design Products - Entrances:

Arcadia, Inc., WS512 Series, Wide Stile Door 1-3/4".

Vertical Stiles: 5 inches.

Top Rail: 5-1/8 inches.

Bottom Rail: 12 inches.

Glazing Stops: Square snap-in type for 1 inch infill.

Major portions of the door stiles a nominal .125 inches and glass stops .050 inches thick.

Acceptable Products - Windows:

Arcadia Inc., T200 Series (thermal)

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STOREFRONT FRAMING MATERIALS AND ACCESSORIES

Framing members, transition members, mullions, adaptors, and mounting: Extruded 6063-T6 aluminum alloy (ASTM B221 – Alloy G.S. 10a T6).

Screws, fastening devices, and internal components: Aluminum, stainless steel, or zinc-plated steel in accordance with ASTM A-164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from aluminum.

Glazing Gasket

Compression-type design, replaceable, molded or extruded, or ethylene propylene diene monomer (EPDM).

Shall be of type that locks securely into the glazing reglet to prevent glazing gaskets from disengaging.

System Fabrication

Continuous sub-sill shall be provided under sill members to collect water infiltration and divert from the interior of the system. Include end dams at jambs.

Framing members shall be internally reinforced and secured at head and sill as necessary for structural performance requirements, for hardware attachment, and as indicated.

Fasteners shall be so located as to ensure concealment from view in the final assembly.

Storefront Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

Construction: Manufacturer's standard or thermal-break construction as indicated to achieve thermal transmission performance requirements indicated above.

Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.

Reinforce members as required to receive fastener threads.

Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system

Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials. Form exposed flashing from sheet aluminum finished to match framing and of sufficient thickness to maintain a flat appearance without visible deflection.

Framing System Gaskets and Sealants: Manufacturer's standard recommended by manufacturer for joint type.

Aluminum (Storefront and Components):

Material Standard: Extruded Aluminum, ASTM B 221; 6063-T5 alloy and temper.

Member Wall Thickness: Each framing member shall provide structural strength to meet specified performance requirements.

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Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

ENTRANCE MATERIALS

Door members: Extruded 6063-T6 aluminum alloy (ASTM B221-Alloy G.S. 10a T6).

Screws, fastening devices, and internal components: Aluminum, stainless steel, or zinc plated steel in accordance with ASTM A-164. Shall be aluminum or steel, providing the steel is properly isolated from aluminum.

Glazing Gasket: Compression-type design.

Standard Entrance Hardware

See hardware schedule after Part 3 for additional information.

Weatherstripping: Hard-backed poly pile in door and/or frame. Meeting stile of all pair of doors have a double line hard-backed poly-pile astragal.

Threshold: Extruded Aluminum with ribbed surface. ADA compliant. 7" wide

Sill Sweeps: Brush strip concealed.

WINDOW MATERIALS

Extruded aluminum profiles 6063-T6 alloy and temper (ASTM B221 G.S. 10A-T6).

All framing members 0.125 minimum wall thickness.

At Awning windows provide heavy-duty four bar hinges shall be stainless steel only, with asymmetric end caps, and adjustable limit stops. Lock and latches cast white bronze, US-25D finish. Set adjustable stops for a maximum projection of 4"

Weatherstrip EPDM bulb type conforming to ASTM D2000 AA515 and shall be keyed into extruded grooves.

Back glazing two-sided adhesive, 15 lbs./ft.3 density, polyethylene tape. Glazing wedges shall be EPDM or Santoprene.

At operable windows provide screens made of extruded aluminum frame and screened with 18 x 14 aluminum mesh.

Thermal barrier material poured-in-place two part polyurethane.

Window Hardware; General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum; designed to smoothly operate, tightly close, and securely lock aluminum windows, and sized to accommodate sash weight and dimensions.

Projected Windows Typical Hardware:

Locking: Cast White Bronze Cam Locks (Standard)

FINISH

Finish all exposed areas of aluminum and components as indicated.

Fluorocarbon Coating: AAMA 2605.2.

Resin: 70% PVDF.

Substrate: cleaned and pretreated with chromium phosphate.

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Primer: Manufacturer's standard resin base compatible coating. Dry film thickness.

Extrusion: Minimum 0.20 mil.

Color Coat: 70% PVDF, dry film thickness.

Extrusion: 0.20 mil.

Color: Basis of design: Valspar 396B1082 "Slate Blue".

Acceptable Coatings Manufacturers:

PPG Industries, Inc.

Valspar Corporation

BASF

GLASS PRODUCTS

Heat-Treated Float Glass: ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.

Provide Kind FT (fully tempered) float glass.

Pyrolytic-Coated Float Glass: ASTM C 1376, float glass with metallic-oxide coating applied by pyrolytic deposition process during initial manufacture, and complying with other requirements specified.

Insulating-Glass Units, General: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements specified in this Article and in Part 2 "Insulating-Glass Units" Article.

Sealing System: Dual seal, with primary and secondary sealants as follows:

Manufacturer's standard sealants.

Spacer Specifications: Manufacturer's standard spacer material and construction.

Corner Construction: Manufacturer's standard corner construction.

Low-E Insulating-Glass Units at all storefront, entrances and aluminum storefront framed windows:

Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum SHGC of 0.40.

Thermal Transmittance: NFRC 100 maximum U-factor of 0.35 Btu/sq. ft. x h x deg F (2.0 W/sq. m x K).

Overall Unit Thickness and Thickness of Each Lite: 1" and 1/4".

Interspace Content: Air.

Outdoor Lite: Class 1 (clear) float glass.

Kind FT (fully tempered).

Indoor Lite: Class 1 (clear) float glass.

Kind FT (fully tempered).

Low-E Coating: Pyrolytic on second surface.

FABRICATION

Storefront System Fabrication:

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Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.

Prepare components to receive anchor devices. Fabricate anchors.

Arrange fasteners and attachments to conceal from view.

Door Frames: Reinforce as required to support loads imposed by door operation and for installing hardware.

At exterior doors, provide compression weather stripping at fixed stops.

Entrance System Fabrication:

Stiles and rails shall be tubular sections accurately joined, flush and hairline at corners with heavy concealed reinforcement brackets secured with machine bolts, with MIG weld. Exposed screws not permitted.

Each door leaf equipped with an adjusting mechanism, located in the top rail near the lock stile.

Prepare internal reinforcement for door hardware.

Custom hardware templates and physical hardware must be submitted prior to any fabrication.

Arrange fasteners and attachments to conceal from view.

Window System Fabrication:

Frame components mitered, reinforced extruded corner key, hydraulically crimped, and "cold welded."

All ventilator extensions tubular, each corner mitered, reinforced extruded corner key, hydraulically crimped, and "cold welded."

All corners weather sealed with an elastomeric sealant.

Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows in storefront framing where indicated.

ALUMINUM CLOSURES & TRIM

Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer for finish required, not less than 0.032 inch (0.8 mm) thick; finished as follows:

Finish: Manufacturer's standard two-coat fluoropolymer system with color coat containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight to match storefront.

Exposed Finish: Match storefront

Concealed Finish: Manufacturer's standard white or light-colored acrylic or polyester backer finish.

Fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited SMACNA's "Architectural Sheet Metal Manual" sheet metal standard that apply to the design, dimensions, geometry, metal thickness, and other characteristics of item indicated.

Minimum Thickness: 0.50-inch.

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Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

KEY VAULTS

Provide Key Vault per local Fire Department Standards. Obtain order code from Santa Fe County Fire Department

3200 Series KNOX-BOX as manufactured by Knox Company. Surface mount, without UL Listed tamper switches. 1/4" plate steel housing, 1/2" thick steel door with interior gasket seal and stainless steel hinge. Box and lock UL Listed. Lock has 1/8" thick stainless steel dust cover with tamper seal mounting capability.

Exterior Dimensions: Surface mount body - 4"H x 5"W x 3-3/4"D

Lock: UL Listed. Double-action rotating tumblers and hardened steel pins accessed by a biased cut key.

Finish: Knox-Coat® proprietary finishing process

Finish Color – Aluminum

PART 3 - EXECUTION

EXAMINATION

Site Verification of Conditions: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive entrance system and sill plate is level in accordance with manufacturer's acceptable tolerances.

Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

INSTALLATION

General:

Comply with manufacturer's written instructions and shop drawings.

Do not install damaged components.

Fit joints to produce hairline joints free of burrs and distortion.

Rigidly secure non-movement joints.

Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.

Seal joints watertight, unless otherwise indicated.

Install storefront entrance and window systems plumb, level, and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.

Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.

Weathertight Construction: Install sill members and other members in a bed of sealant or with joint filler or gaskets, to provide weathertight construction. Coordinate installation with wall flashings and other components of construction.

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Refer to Division 7 Joint Treatments (Sealants) for installation requirements.

Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

Set continuous sill members and flashing in full sealant bed as specified in Division 7 Section "Joint Sealants" and to produce weathertight installation.

Install components plumb and true in alignment with established lines and grades, without warp or rack.

General: Install entrance system in accordance with manufacturer's instructions and AAMA storefront and entrance guide specifications manual.

Exterior Entrances: Install to produce tight fit at weather stripping and weathertight closure.

Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

Provide alignment attachments and shims to permanently fasten system to building structure.

Align assembly plumb and level, free of warp and twist. Maintain assembly dimensional tolerances aligning with adjacent work.

Field-Installed Hardware: Install surface-mounted hardware according to hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

Set thresholds in bed of mastic and secure.

Install key vaults in locations indicated or as otherwise located by the Architect in the field. Install per manufacturer's instructions. Secure to building structure.

FIELD QUALITY CONTROL

Test the storefront framing and fixed glazing for water leaks in accordance with AAMA 501.2. Conduct test in the presence of the Architect. Correct deficiencies observed as a result of this test.

ADJUSTING

Adjust operating hardware for smooth operation according to hardware manufacturers' written instructions.

CLEANING AND PROTECTION

Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Protect installed product's finish surfaces from damage during construction. Protect aluminum entrances from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants. Remove and replace damaged aluminum entrances at no extra cost.

END OF SECTION 084113

PART 1 - GENERAL**RELATED DOCUMENTS**

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

Door hardware for the following:

Swinging doors.

Products furnished, but not installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.

SUBMITTALS

Product Data: Include installation details, material descriptions, dimensions of individual components and profiles, and finishes.

Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."

Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.

Organize door hardware sets in same order as in the Door Hardware Schedule at the end of Part 3.

Content: Include the following information:

Identification number, location, hand, fire rating, and material of each door and frame.

Type, style, function, size, quantity and finish of each door hardware item.

Manufacturer of each item.

Fastenings and other pertinent information.

Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.

Explanation of abbreviations, symbols, and codes contained in schedule.

Mounting locations for door hardware.

Door and frame sizes and materials.

Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected

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by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

Keying Schedule: Prepared by or under the supervision of supplier, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

Maintenance Data: For each type of door hardware to include in maintenance manuals specified in Division 1.

QUALITY ASSURANCE

Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

Supplier Qualifications: Door hardware supplier with warehousing facilities in Project's vicinity and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

Regulatory Requirements: Comply with provisions of the following:

Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)", ANSI A117.1 and FED-STD-795, "Uniform Federal Accessibility Standards" whichever is more restrictive.

Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.

Door Closers: Comply with the following maximum opening-force requirements indicated:

Interior Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.

Thresholds: Not more than 1/2 inch (13 mm) high. Bevel raised thresholds with a slope of not more than 1:2.

NFPA 101: Comply with the following for means of egress doors:

Latches, Locks, and Exit Devices: Not more than 15 lbf (67 N) to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.

Door Closers: Not more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.

Thresholds: Not more than 1/2 inch (13 mm) high.

Keying Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." In addition to Owner, Contractor, and Architect, conference participants shall also include Installer's Architectural Hardware Consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

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Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.

Preliminary key system schematic diagram.

Requirements for key control system.

Address for delivery of keys.

DELIVERY, STORAGE, AND HANDLING

Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

Deliver keys to Owner.

COORDINATION

Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

MAINTENANCE SERVICE

Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

SCHEDULED DOOR HARDWARE

General: Provide door hardware for each door to comply with requirements in this Section, door hardware sets indicated in door and frame schedule, and the Door Hardware Schedule at the end of Part 3.

Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and either the named manufacturer's products or products equivalent in function and comparable in quality to named products and where manufacturers are not listed, products complying with BHMA standard referenced.

Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Schedule at the end of Part 3. Products are identified by using door hardware designations, as follows:

Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

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HINGES, GENERAL

Standards: Comply with the following:

Butts and Hinges: BHMA A156.1.

Template Hinge Dimensions: BHMA A156.7.

Quantity: Provide the following, unless otherwise indicated:

Two Hinges: For doors with heights up to 60 inches (1524 mm).

Three Hinges: For doors with heights 61 to 90 inches (1549 to 2286 mm).

Four Hinges: For doors with heights 91 to 120 inches (2311 to 3048 mm).

Template Requirements: Provide only template-produced units.

Hinge Weight: Unless otherwise indicated, provide the following:

Entrance Doors: Heavy-weight or continuous geared hinges as scheduled.

Doors with Closers: Antifriction-bearing hinges.

Interior Doors: Standard-weight hinges.

Hinge Base Metal: Unless otherwise indicated, provide the following:

Exterior Hinges: Stainless steel, with stainless-steel pin unless otherwise scheduled.

Interior Hinges: Steel, with steel pin.

Fasteners: Comply with the following:

Machine Screws: For metal doors and frames. Install into drilled and tapped holes.

Wood Screws: For wood doors.

Screws: Phillips flat-head screws. Finish screw heads to match surface of hinges.

Hinge Options: Where indicated in door hardware sets or on Drawings:

Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for outswinging exterior doors and outswinging corridor doors with locks.

Corners: Square.

LOCKS AND LATCHES, GENERAL

Standards: Comply with the following:

Bored Locks and Latches: Exterior - BHMA A156.2, Grade 1; Series 4000. Interior - BHMA A156.2, Grade 1; Series 4000.

Lock Trim: Comply with the following:

Lever: Wrought, forged, or cast.

Escutcheon (Rose): Wrought, forged, or cast.

Dummy Trim: Match knob and lever lock trims and escutcheons.

Lock Functions: Function numbers and descriptions indicated in the Door Hardware Schedule comply with the following:

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Bored Locks: BHMA A156.2.

Lock Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:

Bored Locks: Minimum 1/2-inch (12.7-mm) latchbolt throw.

Deadbolts: Minimum 1-inch (25-mm) bolt throw.

Backset: 2-3/4 inches (70 mm), unless otherwise indicated. Confirm backset at replacement sets in existing doors.

Dustproof Strikes: BHMA A156.16, Grade 1.

EXIT DEVICES

Exit Devices: BHMA A156.3, Grade 1.

Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

CYLINDERS AND KEYING

Standards: Comply with the following:

Cylinders: BHMA A156.5, Grade 1. Bump Resistant.

Cylinders: Manufacturer's standard tumbler type, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:

Number of Pins: Seven.

Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.

Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.

Bored-Lock Type: Cylinders with tailpieces to suit locks.

Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:

Interchangeable Cores: Core insert, removable by use of a special key, and usable with other manufacturers' cylinders.

Construction Keying: Comply with the following:

Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

Replace construction cores with permanent cores, as directed by Owner.

Keying System: Unless otherwise indicated, provide a factory-registered keying system complying with the following requirements:

Grand Master Key System: Cylinders are operated by a change key, a master key, and a grand master key.

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Keys: Provide nickel-silver keys complying with the following:

Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

Notation: "DO NOT DUPLICATE."

Quantity: In addition to one extra blank key for each lock, provide the following:

Cylinder Change Keys: Three.

Master Keys: Five.

Grand Master Keys: Five.

Key Control System: BHMA Grade 1 system, including key-holding hooks, labels, two sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers. Contain system in metal cabinet with baked-enamel finish.

Wall-Mounted Cabinet: Cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.

Capacity: Able to hold keys for 150 percent of the number of locks.

CLOSERS

Standards: Comply with the following:

Closers: BHMA A156.4, Grade 1.

Certified Products: Provide door closers listed in BHMA's "Directory of Certified Door Closers."

Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

All manual door closers shall be certified to exceed (10,000,000) full load operating cycles by an independent testing laboratory.

Fully hydraulic, rack and pinion action with high strength cast iron cylinders and one piece forged steel pistons.

Pinion shaft shall be a minimum diameter of 1 1/16"

Separate adjustments for backcheck, general; speed and latch speed.

STOPS AND HOLDERS

Standards: Comply with the following:

Stops and Bumpers: BHMA A156.16. BHMA Grade 1.

Silencers for Metal Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame.

DOOR GASKETING

Standard: BHMA A156.22.

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General: Provide continuous weather-strip gasketing on exterior doors. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

Meeting Stile Astrugals: Fasten to active leaf meeting stiles, forming seal when doors are closed.

Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

Air Leakage: Not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length as tested according to ASTM E 283.

Gasketing Materials: ASTM D 2000 and AAMA 701/702.

THRESHOLDS

Standard: BHMA A156.21.

Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high. All thresholds ADA compliant.

FABRICATION

Manufacturer's Nameplate: Do not provide manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise approved by Architect.

Manufacturer's identification will be permitted on rim of lock cylinders only.

Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18 for finishes. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips flathead screws with finished heads to match surface of door hardware, unless otherwise indicated.

Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

Steel Machine or Wood Screws:

Mortise hinges to doors.

Strike plates to frames.

Closers to doors and frames.

Spacers or Sex Bolts: For through bolting of hollow-metal doors.

Fasteners for Wood Doors: Comply with requirements of DHI WDHS.2, "Recommended Fasteners for Wood Doors."

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FINISHES

Standard: Comply with BHMA A156.18.

Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION**EXAMINATION**

Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

Steel Doors and Frames: Comply with DHI A115 series.

Surface-Applied Door Hardware: Drill and tap doors and frames according to SDI 107.

Wood Doors: Comply with DHI A115-W series.

INSTALLATION

Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.

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Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

ADJUSTING

Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

Door Closers: Adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

CLEANING AND PROTECTION

Clean adjacent surfaces soiled by door hardware installation.

Clean operating items as necessary to restore proper function and finish.

Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

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HARDWARE SCHEDULE

Designations listed in this schedule refer to the following manufacturers unless otherwise notes.

Item:	Manufacturer:
Hinges	Stanley
Locksets, Deadbolts	Schlage/Ingersoll Rand
Exit Devices	Von Duprin
Closers	LCN
Door Stops, Flush Bolts, Protection Plates, Silencers, Pulls, Kick Down Holders	Ives/Ingersoll Rand
Continuous Hinges, Weatherstripping, Thresholds	Pemko Mfg. Co.

General: Provide hardware for each door to comply with requirements of Section "Door Hardware," hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.

Set #1 – Exterior Storefront Entrance (101A)

- 2 Geared Continuous Hinge; X Series
 - x clear anodized
 - x full mortise
 - x length as required
- 1 Exit Device; 9847 (active leaf)
 - x concealed vertical rod
 - x 338 top strike
 - x 385A bottom strike
 - x ANSI 03 – 9847NL-OP – night latch. Cylinder to accommodate IC removable core (provide construction core only).
 - x cylinder dogging
 - x US26D
- 1 Exit Device; 9847 (inactive leaf)
 - x concealed vertical rod
 - x 338 top strike
 - x 385A bottom strike
 - x ANSI 01 – 9847EO – exit only.
 - x cylinder dogging
 - x US26D
- 2 Door Pull; 8103EZHD
 - x 1" round
 - x 12" center to center
 - x concealed mounting
 - x barrier free clearance
 - x US26D
- 1 Automatic Door Operator (See Section 087113) (active leaf)
- 1 Closer; 4040XP Series (inactive leaf)

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- x top jamb (push side) mounting
- x ADA
- x mounting plate as required
- x metal cover ALUM
- 1 Threshold
 - x storefront manufacturer's standard
 - x ½" x 7" ADA compliant extruded aluminum, mill finish
 - x length as required
- 1 Weatherstripping
 - x Storefront manufacturer's standard

Set #2 – Vestibule Storefront Entrance (101B)

- 2 Geared Continuous Hinge; X Series
 - x clear anodized
 - x full mortise
 - x length as required
- 2 Straight Pull/Pushbar Combo; 9103EZ
 - x 1" round
 - x 12" center to center pull
 - x 33" center to center push
 - x NS mounting
 - x barrier free clearance
 - x US26D
- 1 Automatic Door Operator (See Section 087113) (active leaf)
- 2 Closer; 4040XP Series (inactive leaf)
 - x top jamb (push side) mounting
 - x ADA
 - x mounting plate as required
 - x metal cover ALUM
- 1 Threshold
 - x storefront manufacturer's standard
 - x ½" x 7" ADA compliant extruded aluminum, mill finish
 - x length as required
- 1 Weatherstripping
 - x entrance manufacturer's standard

Set #3 – Exterior Storefront Entrance (101C, 108B, 108C)

- 2 Geared Continuous Hinge; X Series
 - x clear anodized
 - x full mortise
 - x length as required
- 1 Exit Device; 9847 (active leaf)
 - x concealed vertical rod
 - x 338 top strike

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- x 385A bottom strike
- x ANSI 09 – 994L-NL – lever night latch. Cylinder to accommodate IC removable core (provide construction core only).
- x #07 lever design
- x cylinder dogging
- x US26D
- 1 Exit Device; 9847 (inactive leaf)
 - x concealed vertical rod
 - x 338 top strike
 - x 385A bottom strike
 - x ANSI 02 – 994L-DT – lever dummy trim.
 - x #07 lever design
 - x cylinder dogging
 - x US26D
- 2 Closer; 4040XP Series
 - x top jamb (push side) mounting
 - x ADA
 - x mounting plate as required
 - x metal cover ALUM
- 2 Kick Down Holder; FS452-4
 - x US26D
- 1 Threshold
 - x storefront manufacturer's standard
 - x ½" x 7" ADA compliant extruded aluminum, mill finish
 - x length as required
- 1 Weatherstripping
 - x entrance manufacturer's standard

Set #4 – Exterior Storefront Entrance (106B)

- 1 Geared Continuous Hinge; X Series
 - x clear anodized
 - x full mortise
 - x length as required
- 1 Rim Exit Device; 98 Series
 - x ANSI 09 - 98L-NL-F – lever night latch. Cylinder to accommodate IC removable core (provide construction core only).
 - x #07 lever design
 - x cylinder dogging
 - x US26D
- 1 Closer; 4040XP Series
 - x top jamb (push side) mounting
 - x ADA
 - x mounting plate as required
 - x metal cover ALUM

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- 1 Threshold
 - x storefront manufacturer's standard
 - x ½" x 7" ADA compliant extruded aluminum, mill finish
 - x length as required
- 1 Kick Down Holder; FS452-4
 - x US26D
- 1 Weatherstripping
 - x entrance manufacturer's standard

Set #5 – Senior Office (102), Reading Room (104), Office (109A), Arts Storage (106A), Mechanical 1 (103), Electrical (103A), Janitor (109D)

- 3 Hinges; F179
 - x 4½" x 4½"
 - x US26D
- 1 Classroom Lockset; ND70PD
 - x Athens (ATH) lever
 - x 2 3/4" backset
 - x ANSI strike
 - x strike box
 - x US26D
- 1 Wall Stop; 401
 - x convex
 - x provide solid wood blocking
 - x US26D
- 3 Silencers; #20 (Gray)

Set #6 – Arts & Crafts (106)

- 3 Hinges; F179
 - x 4½" x 4½"
 - x US26D
- 1 Classroom Lockset; ND70PD
 - x Athens (ATH) lever
 - x 2 3/4" backset
 - x ANSI strike
 - x strike box
 - x US26D
- 1 Dome Stop; FS17
 - x ½" base
 - x provide solid wood blocking
- 3 Silencers; #20 (Gray)

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Set #7 – Men's (105), Women's (107)

- 3 Hinges; FBB179
 - x 4½" x 4½"
 - x US26D
- 1 Classroom Lockset; ND70PD
 - x Athens (ATH) lever
 - x 2 3/4" backset
 - x ANSI strike
 - x strike box
 - x US26D
- 1 Closer; 4040XP Series
 - x hinge (pull) side mounting
 - x ADA compliant
 - x metal cover ALUM
- 1 Door Protection Plates; Series 8400
 - x B4E - Bevel 4 edges
 - x CS – Counter sink holes
 - x 12" high x width as required
 - x push side mounted
 - x US32D
- 3 Silencers; #20 (Gray)

Set #8 – Senior Storage (108D)

- 6 Hinges; F179
 - x 4 1/2" x 4 1/2"
 - x US26D
- 1 Classroom Lockset; ND70PD
 - x Athens (ATH) lever
 - x 2 3/4" backset
 - x ANSI strike
 - x strike box
 - x US26D
- 1 Single Dummy Trim; ND170
 - x Athens (ATH) lever
 - x 2 3/4" backset
 - x US26D
- 2 Flush Bolt; 262
 - x 6"
 - x strike
 - x on inactive leaf
 - x US26D
- 1 Dust Proof Strike; DP2
 - x US26D

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- 2 Silencers; #20 (Gray) (at head)

Set #9 – Hall (108)

- 6 Hinges; FBB179
 - x 4 1/2" x 4 1/2"
 - x ball bearing
 - x removable pin
 - x US26D
- 1 Exit Device; 9847 (active leaf)
 - x concealed vertical rod
 - x 338 top strike
 - x 385A bottom strike
 - x ANSI 09 – 994L-NL – lever night latch. Cylinder to accommodate IC removable core (provide construction core only).
 - x #07 lever design
 - x cylinder dogging
 - x US26D
- 1 Exit Device; 9847 (inactive leaf)
 - x concealed vertical rod
 - x 338 top strike
 - x 385A bottom strike
 - x ANSI 02 – 994L-DT – lever dummy trim.
 - x #07 lever design
 - x cylinder dogging
 - x US26D
- 2 Closer; 4040XP Series
 - x top jamb (push side) mounting
 - x ADA
 - x mounting plate as required
 - x metal cover ALUM
- 2 Door Protection Plates; Series 8400
 - x B4E - Bevel 4 edges
 - x CS – Counter sink holes
 - x 12" high x width as required
 - x push side mounted
 - x US32D
- 2 Kick Down Holder; FS452-4
 - x US26D
- 2 Wall Stop; 401
 - x convex
 - x provide solid wood blocking
 - x US26D

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Set #10 – Commercial Kitchen (109), Pantry (109B)

- 3 Hinges; F179
 - x 4½" x 4½"
 - x US26D
- 1 Classroom Lockset; ND70PD
 - x Athens (ATH) lever
 - x 2 3/4" backset
 - x ANSI strike
 - x strike box
 - x US26D
- 1 Dome Stop; FS17
 - x ½" base
 - x provide solid wood blocking
- 3 Silencers; #20 (Gray)

Set #11 – Loading Vestibule (109C)

- 3 Hinges; FBB179
 - x 4½" x 4½"
 - x US26D
- 1 Classroom Lockset; ND70PD
 - x Athens (ATH) lever
 - x 2 3/4" backset
 - x ANSI strike
 - x strike box
 - x US26D
- 1 Closer; 4040XP Series
 - x top jamb (push side) mounting
 - x ADA
 - x mounting plate as required
 - x metal cover ALUM
- 1 Wall Stop; 401
 - x convex
 - x provide solid wood blocking
 - x US26D
- 1 Threshold; 2750A
 - x 9"
 - x length as required
- 1 Kick Down Holder; FS452-4
 - x US26D

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- 1 Weatherstripping;
 - x Head and Jamb; 290APK
 - x length as required
 - x Door Shoe; 2173AV
 - x length as required

Set #12 – Loading Vestibule (109E)

- 2 Geared Continuous Hinges; X Series
 - x clear anodized
 - x full mortise
 - x length as required
 - x standard duty
- 1 Deadbolt; B660P
 - x keyed one-side
 - x 2 3/4" backset
 - x interchangeable core
 - x ADA
 - x US26D
- 1 Cylindrical Passage Leverset; ND10S
 - x Athens (ATH) lever
 - x 2 3/4" backset
 - x ANSI strike
 - x strike box
 - x US26D
- 2 Dummy Trim; ND170
 - x Athens (ATH) lever
 - x 2 3/4" backset
 - x ANSI strike
 - x strike box
 - x UL listed
 - x US26D
- 1 Automatic Flush Bolt; FB31P
 - x top and bottom bolt (pair)
 - x 12" rod length
 - x universal strike
 - x US26D
- 1 Dust Proof Strike; DP1
 - x mount in threshold
 - x US26D
- 2 Closer; 4040XP Series
 - x top jamb (push side) mounting
 - x ADA
 - x mounting plate as required
 - x metal cover ALUM

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- 1 Threshold; 2750A
 - x 9"
 - x length as required
- 2 Kick Down Holder; FS452-4
 - x US26D
- 2 Door Protection Plates; Series 8400
 - x B4E - Bevel 4 edges
 - x CS – Counter sink holes
 - x 12" high x width as required
 - x push side mounted
 - x US32D
- 1 Astrugal; 355 PWS
 - x length as required
 - x mount on active leaf
 - x USP (to be field painted)
- 2 Weatherstripping;
 - x Head and Jambs; 290APK
 - x length as required
 - x Door Shoe; 2173AV
 - x length as required

Set #13 – Mechanical 2 (110)

- 3 Hinges; F179
 - x 4½" x 4½"
 - x US26D
- 1 Classroom Lockset; ND70PD
 - x Athens (ATH) lever
 - x 2 3/4" backset
 - x ANSI strike
 - x strike box
 - x US26D
- 1 Wall Stop; 401
 - x convex
 - x provide solid wood blocking
 - x US26D
- 1 Threshold; 2750A
 - x 9"
 - x length as required
- 1 Weatherstripping;
 - x Head and Jambs; 290APK
 - x length as required
 - x Door Shoe; 2173AV
 - x length as required

END OF SECTION 087100

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following types of automatic door operators:

Exterior, automatic door operators, low energy, with visible mounting.

Automatic door operators shall be configured for doors as follows:

Single exterior doors, out swing.

REFERENCES

General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

Underwriters Laboratories (UL):

UL 325 – Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

American National Standards Institute (ANSI)/Builders' Hardware Manufacturers Association (BHMA):

ANSI/BHMA A156.10: Standard for Power Operated Pedestrian Doors.

ANSI/BHMA A156.19: Standard for Power Assist and Low Energy Power Operated Doors.

American Society for Testing and Materials (ASTM):

ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

Builders' Hardware Manufacturers Association (BHMA):

BHMA A156.10 - Standard for Power Operated Pedestrian Doors.

American Association of Automatic Door Manufacturers (AAADM):

National Fire Protection Association (NFPA):

NFPA 70 – National Electric Code.

National Association of Architectural Metal Manufacturers (NAAMM):

Metal Finishes Manual for Architectural and Metal Products.

2015 New Mexico Commercial Building Code

American Architectural Manufacturers Association (AAMA):

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AAMA 611 Voluntary Specification for Anodized Architectural Aluminum.

DEFINITIONS

Activation Device: Device that, when actuated, sends an electrical signal to the door operator to open the door.

PERFORMANCE REQUIREMENTS

Provide automatic door operators capable of withstanding structural loads and thermal movements based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

Operating Range: Minus 30 deg F (29 deg C) to 130 deg F (54 deg C).

Opening-Force Requirements for Egress Doors: In the event power failure to the operator, swinging automatic entrance doors shall open with a manual force, not to exceed 30 lbf (133 N) applied at 1" (25 mm) from the latch edge of the door.

Break Away Requirements: Automatic door operators shall breakaway with no more than 50 lbf (222 N) applied at 1" (25 mm) from the latch edge of the door.

Door Energy: The kinetic energy of a door in motion shall not exceed 1.25 lbf-ft (1.69 Nm).

Closing Time:

Doors shall be field adjusted to close from 90 degrees to 10 degrees in 3 seconds or longer.

Doors shall be field adjusted to close from 10 degrees to fully closed in not less than 1.5 seconds.

SUBMITTALS

Submit listed submittals in accordance with Conditions of the Contract and Division 01 submittal procedures.

Shop Drawings: Include plans, elevations, sections, details, hardware mounting heights, and attachments to other work. Indicate wiring for electrical supply.

Color Samples for selection of factory-applied color finishes.

Closeout Submittals: Provide the following with project close-out documents.

Owner's Manual.

Warranties.

QUALITY ASSURANCE

Installer Qualifications: Manufacturer's authorized representative who is trained for installation and maintenance of units required for this Project.

Manufacturer Qualifications: A qualified manufacturer with a manufacturing facility certified under ISO 9001 and with company certificate issued by AAADM.

Certifications: Automatic door operators shall be certified by the manufacturer to meet performance design criteria in accordance with the following standards:

ANSI A156.10.

NFPA 101.

UL 325 Listed (Fire Door Operator)

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Source Limitations: Obtain automatic door operators through one source from a single manufacturer.

Product Options: Drawings indicate sizes, profiles, and dimensional requirements of automatic entrance door assemblies and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

Power Operated Door Standard: ANSI/BHMA A156.19.

Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

Emergency-Exit Door Requirements: Comply with requirements of authorities having jurisdiction for swinging automatic entrance doors serving as a required means of egress.

PROJECT CONDITIONS

Field Measurements: General Contractor shall verify openings to receive automatic door operators by field measurements before fabrication and indicate measurements on Shop Drawings.
Mounting Surfaces: General Contractor shall verify all surfaces to be plumb, straight and secure; substrates to be of proper dimension and material.

Other trades: General Contractor advise of any inadequate conditions or equipment.

COORDINATION

Templates: Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing automatic door operators to comply with indicated requirements.

Electrical System Roughing-in: Coordinate layout and installation of automatic door operators with connections to, power supplies, and remote activation devices.

System Integration: Integrate automatic door operators with other systems as required for a complete working installation.

Where required for proper operation, provide a time delay relay to signal automatic door operator to activate only after electric lock system is released.

WARRANTY

Automatic door operators shall be free of defects in material and workmanship for a period of one (1) year from the date of substantial completion.

During the warranty period the Owner shall engage a factory-trained technician to perform service and affect repairs. A safety inspection shall be performed after each adjustment or repair and a completed inspection form shall be submitted to the Owner.

During the warranty period all warranty work, including but not limited to emergency service, shall be performed during normal working hours.

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PART 2 - PRODUCTS**AUTOMATIC DOOR OPERATORS**

Manufacturer: Stanley Access Technologies; Magic-Force™ Series automatic door operator.

MATERIALS

Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

Headers: 6063-T6.

Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.

Sheet and Plate: ASTM B 209.

COMPONENTS

Header Case: Header case shall not exceed 6" (152 mm) square in section and shall be fabricated from extruded aluminum with structurally integrated end caps, designed to conceal door operators and controls. The operator shall be sealed against dust, dirt, and corrosion within the header case. Access to the operator and electronic control box shall be provided by a full-length removable cover, edge rabbetted to the header to ensure a flush fit. Removable cover shall be secured to prevent unauthorized access.

Door Arms: A combination of door arms and linkage shall provide positive control of door through entire swing; units shall permit use of butt hung, center pivot, and offset pivot-hung doors.

Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.

Signage: Provide signage in accordance with ANSI/BHMA A156.19.

SWINGING DOOR OPERATORS

Provide door operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated.

Electromechanical Operators: Self-contained unit powered by a minimum 3/16 horsepower, permanent-magnet DC motor; through a high torque reduction gear system.

Operation: Power opening and spring closing.

Operator Type: Low energy; readily convertible to full energy; no tools required to change type.

Handing: Non-handed; no tools required to change handing.

Capacity: Rated for door panels weighing up to 350 pounds.

Mounting: Visible

Features:

Adjustable opening and closing speeds.

Adjustable opening and closing force.

Adjustable back-check.

Adjustable hold-open time between 0 and 30 seconds.

Reverse on obstruction.

Variable rate open/closed speed control.

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Closed loop speed control with active braking and acceleration.

Variable obstruction recycle time delay.

Optional Switch to open/Switch to close operation.

Field Adjustable Spring Closing Operation: The operator shall close the door by spring energy employing the motor, as a dynamic brake to provide closing speed control. The closing spring shall be a helical compression spring, adjustable for positive closing action. The spring shall be adjustable, without removing the operator from the header, to accommodate a wide range of field conditions.

Independent Adjustable Closing and Latching Speed Control: The operator shall employ a rheostat module to allow for independent field adjustment of closing and latching speeds using the motor as a dynamic brake.

Field Adjustable Open Stop: The operator shall provide a field adjustable open stop to accommodate opening angles from 80 to 135 degrees without the need for additional components.

Consistent Cycle: The operator shall deliver an even, consistent open force across the entire transition from door fully closed to door fully open. Additionally, the range of the force shall be field adjustable to accommodate a wide range of on-site conditions.

Quiet Performance: The operator shall be designed to output audible noise ratios less than or equal to 50dba.

Manual Use: The operator shall function as a manual door closer in the direction of swing with or without electrical power. The operator shall deliver an even, consistent open force across the entire transition from door fully closed to door fully open.

ELECTRICAL CONTROLS

Electrical Control System: Electrical control system shall include a microprocessor controller and position encoder. The encoder shall monitor revolutions of the operator shaft and send signals to microprocessor controller to define door position. Systems utilizing external magnets and magnetic switches are not acceptable.

Life Cycle Data Counter: The microprocessor control shall incorporate a non-re-settable counter to track door operation cycles.

Controller Protection: The microprocessor controller shall incorporate the following features to ensure trouble free operation:

Automatic Reset Upon Power Up.

Main Fuse Protection.

Electronic Surge Protection.

Internal Power Supply Protection.

Resettable sensor supply fuse protection.

Software "Watchdog" protection in the case of software malfunction.

Push Button Interface with LED: The controller shall have push button switches with LED readout to allow for selection or change of the following parameters: carpet or timer logic, single or dual door, activation options, normal back check or large back check, push-to-open assist on/off.

Soft Start/Stop: A "soft-start" "soft-stop" motor driving circuit shall be provided for smooth normal opening and recycling.

Safety Search Circuitry: Provide system to recycle the swinging panels when an obstruction is encountered during the closing cycle. If an obstruction is detected, the system shall search for that object on the next closing

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cycle by reducing door closing speed prior to the previously encountered obstruction location, and will continue to close in check speed until doors are fully closed, at which time the doors will reset to normal speed. If obstruction is encountered again, the door will come to a full stop. The doors shall remain stopped until obstruction is removed and operate signal is given, resetting the door to normal operation.

Programmable Controller: Microprocessor controller shall be programmable and shall be designed for connection to a local configuration tool. Local configuration tool shall be software driven and shall be utilized via Palm® handheld interface. The following parameters may be adjusted via the configuration tool.

- Operating speeds and forces as required to meet ANSI/BHMA A156.10.

- Adjustable and variable features as specified in 2.04, B., 6.

- Firmware update.

- Trouble Shooting

 - I/O Status.

 - Electrical component monitoring including parameter summary.

- Entrance profile copy/paste.

- Software for local configuration tool shall be available as a free download from the automatic door operators manufacturer's internet site.

Emergency Breakout Switch: A cam actuated emergency breakout switch shall be provided to disconnect power to the motor when an in-swinging door is manually pushed in the emergency out direction. The operator will then automatically reset and power will be resumed.

Control Switch: Automatic door operators shall be equipped with a three position function switch to control the operation of the door. Control switch shall provide three modes of operation, Automatic, Off, and Hold-Open.

Power Switch: Automatic door operators shall be equipped with a two position On/Off switch to control power to the door.

ACTIVATION DEVICES

Activation for Low Energy Doors:

- Push Plates: Where indicated provide 4½ inch (114 mm) square SPDT push plates with UL listed switch. Face plates and mounting studs shall be stainless steel. Face plates shall be engraved with the international symbol for accessibility and "Push To Open".

 - Provide manufacturers wireless radio-controlled push-plate unit for installation where indicated.

Configure operator for activation when door is operated manually (Stanley "Magic-Touch").

ALUMINUM FINISHES

Comply with NAAMM Metal Finishes Manual for Architectural and Metal Products for recommendations for applying and designing finishes. Finish designations prefixed by AA comply with system established by Aluminum Association for designing finishes.

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Class II, Clear Anodic Finish: AA-M12C22A31 Mechanical Finish: as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.40 mils minimum complying with AAMA 611-98, and the following:

AAMA 607.1

Applicator must be fully compliant with all applicable environmental regulations and permits, including wastewater and heavy metal discharge.

PART 3 - EXECUTION

INSPECTION

Examine conditions, with Installer present, for compliance with requirements for installation tolerances, header support, and other conditions affecting performance of swinging automatic entrance doors. Proceed with installation only after unsatisfactory conditions have been corrected.

INSTALLATION

Do not install damaged components. Fit joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.

Mounting: Install automatic door operators/headers plumb and true in alignment with established lines and grades. Anchor securely in place.

Install surface-mounted hardware using concealed fasteners to greatest extent possible.

Set headers, arms and linkages level and true to location with anchorage for permanent support.

Door Operators: Connect door operators to electrical power distribution system as specified in Division 16 Sections.

FIELD QUALITY CONTROL

Testing Services: Factory Trained Installer shall test and inspect each swinging automatic entrance door to determine compliance of installed systems with applicable ANSI standards.

ADJUSTING

Adjust door operators, controls, and hardware for smooth and safe operation, for weather-tight closure, and complying with requirements in ANSI/BHMA A156.19 by AAADM Certified Technician.

CLEANING AND PROTECTION

Clean surfaces promptly after installation. Remove excess sealant compounds, dirt, and other substances. Repair damaged finish to match original finish.

END OF SECTION 087113

PART 1 - GENERAL**RELATED DOCUMENTS**

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following types of silvered flat glass mirrors.

Annealed monolithic glass mirrors.

Film-backed, tempered glass mirrors qualifying as safety glazing.

SECTION REQUIREMENTS

Submittals: Product data.

Samples: As follows:

Mirrored Glass: 12 inches square, including edge treatment on 2 adjoining edges.

PART 2 - PRODUCTS**SILVERED, FLAT GLASS MIRRORS**

Glass Mirrors, General: ASTM C 1503; manufactured using copper-free, low-lead mirror-coating process.

Annealed Monolithic Glass Mirrors: Mirror Glazing Quality, clear float glass.

Nominal Thickness: 6.0 mm.

Safety Glazing Products: Film-backed mirrors complying with testing requirements in 16 CFR 1201 for Category II materials.

MISCELLANEOUS MATERIALS

Edge Sealer: Coating compatible with glass coating and approved by mirror manufacturer for use in protecting against silver deterioration at mirrored glass edges.

Mirror Mastic: An adhesive setting compound, asbestos free, produced specifically for setting mirrors and certified by both mirror manufacturer and mastic manufacturer as compatible with glass coating, safety backing and substrates on which mirrors will be installed.

Low-Emitting Materials: Mastic shall have a VOC content of not more than 70 g/L.

Film Backing for Safety Mirrors: Film backing and pressure-sensitive adhesive; both compatible with mirror-backing paint and mirror mastic as certified by mirror manufacturer.

Aluminum J-Channels: Clear satin anodized aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated and in lengths required to cover edges of each mirror in a single piece.

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FABRICATION

Mirror Edge Treatment: Flat polished.

Seal edges of mirrors with edge sealer after edge treatment to prevent chemical or atmospheric penetration of glass coating.

Film-Backed Safety Mirrors: Apply film backing with pressure-sensitive adhesive coating over mirror backing paint as recommended in writing by film-backing manufacturer to produce a surface free of bubbles, blisters, and other imperfections. Use adhesives and film backing compatible with mirror backing paint as certified by mirror manufacturer.

PART 3 - EXECUTION**INSTALLATION**

General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced GANA publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.

GANA Publications: "Glazing Manual" and "Mirrors, Handle with Extreme Care: Tips for the Professional on the Care and Handling of Mirrors."

Provide space for air circulation between back of mirrored glass units and face of mounting surface.

Wall-Mounted Mirrors: Install mirrors with mastic and mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed so heads do not impose point loads on backs of mirrors.

Top and Bottom Aluminum J-Channels: Provide setting blocks 1/8 inch (3 mm) thick by 4 inches (100 mm) long at quarter points. Set bottom channel where indicated.

Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.

Remove nonpermanent labels, and clean surfaces immediately after installation.

END OF SECTION 088300

SECTION 092400 – PORTLAND CEMENT PLASTER - STUCCO

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

On frame wall construction: Supply and installation of fiber reinforced, one-coat stucco assembly over continuous insulation and a fiberglass mesh embedded into the brown coat for crack resistance with an acrylic based elastomeric finish coat.

On masonry wall construction: Supply and installation of fiber reinforced, one-coat stucco assembly over concrete masonry units with a fiberglass mesh embedded into the brown coat for crack resistance with an acrylic based elastomeric finish coat.

Related Sections include the following:

Division 7 Section "Weather Barriers" for weather resistant barriers.

Division 7 Section "Building Insulation" for thermal insulations at foundations.

Division 7 Section "Joint Sealants" for sealants installed with exterior portland cement plaster (stucco).

REFERENCES

ASTM C144 - Standard Specification for Aggregate for Masonry Mortar

ASTM C578 - Specification for Preformed, Cellular Polystyrene Thermal Insulation

ASTM C847 - Standard Specification for Metal Lath

ASTM C897 - Standard Specification for Aggregate for Job-Mixed portland Cement-Based Plaster

ASTM C926 - Standard Specification for Application of portland Cement-Based Plaster

ASTM C933 - Standard Specification for Welded Wire Lath

ASTM C1032 - Standard Specification for Woven Wire Plaster Base

ASTM C1063 - Standard Specification for Installation of Lathing and Furring for portland Cement Based Plaster

ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials

UUB 790A - Specification for Building Paper

ASSEMBLY DESCRIPTION

One-Coat Stucco Assembly with a water-resistive barrier, continuous insulation, wire fabric or metal lath, pre-mixed stucco base coat, fiberglass reinforcing mesh embedded in stucco brown coat, and an acrylic based finish coat.

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SUBMITTALS

Product Data: For each type of product indicated.

Samples for Initial Selection: For each type of factory-prepared finish coat indicated.

Samples for Verification: For each type of finish coat indicated; 12 by 12 inches (305 by 305 mm), and prepared on rigid backing.

Manufacturer's Warranty: Submit sample copies of Manufacturer's Warranty.

QUALITY ASSURANCE

Qualifications:

Manufacturer: Shall have marketed stucco assemblies in United States for at least ten years and shall have completed projects of same general scope and complexity.

Applicator: Shall be experienced and competent in installation of stucco materials and liquid-applied membranes, and shall provide evidence of a minimum of five years experience in work similar to that required by this section.

Stucco Assembly Functional Criteria:

General: Stucco application shall be to vertical substrates or to substrates sloped for positive drainage. Substrates sloped for drainage shall have additional protection from weather exposure that might be harmful to coating performance.

Testing to meet International Code Council Acceptance Criteria AC11.

Performance Requirements of Stucco Assembly:

Test	Method	ICC AC 11 Criteria	Results
Accelerated Weathering	ASTM G153	2000 Hours	No deleterious effect
Freeze-Thaw Resistance	ICC AC 11	10 cycles	Pass
Transverse Wind Load Resistance	ASTM E330	Meet Design Loads	Refer to ICC-ES ESR-2564
Fire Resistance	ASTM E119	One hour fire	Refer to ICC-ES ESR-2564
Drainage	ICC AC 11	90 %	Refer to ICC-ES ESR-2564

Performance Requirements of Coatings applied to expanded polystyrene features: Must comply with ASTM E 2568 or ICC Acceptance Criteria AC 219 for EIFS.

Substrate Conditions:

Substrate materials and construction shall conform to the building code having jurisdiction.

Substrates shall be sound, dry and free of dust, dirt, laitance, efflorescence and other harmful contaminants.

Substrate Dimensional Tolerances: Flat with 1/4 in (6.4 mm) within any 10 ft (3 m) radius.

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Maximum deflection of substrate system under positive or negative design loads shall not exceed $L/360$ of span.

Expansion and Control Joints: Continuous expansion and control joints shall be installed at locations in accordance with ASTM C1063 and ASTM C926.

Substrate movement, and expansion and contraction of Stucco Assembly and adjacent materials shall be taken into account in design of expansion joints, with proper consideration given to sealant properties, installation conditions, temperature range, coefficients of expansion of materials, joint width to depth ratios, and other material factors. Minimum width of expansion joints shall be as specified by the designer or shown on the project drawings.

In accordance with ASTM C1063, expansion or control joints shall be installed in walls not more than 144 ft² (13.4 m²) in area, and not more than 100 ft² (9.3 m²) in area for all non-vertical applications. The distance between joints shall not exceed 18 ft (5.5 m) in either direction or a length-to-width ratio of 2-1/2 to 1.

For direct application to concrete or masonry, stucco joints are required only at control/expansion joints in the underlaying concrete or masonry.

DELIVERY, STORAGE, AND HANDLING

Delivery: Deliver Stucco Assembly products in original packaging with manufacturer's identification.

Storage: Store Stucco Assembly products in a dry location, out of direct sunlight, off the ground, and protected from moisture.

SITE / ENVIRONMENTAL CONDITIONS

Substrate Temperature: Do not apply stucco assembly products to substrates whose temperature are below 40°F (4°C) or contain frost or ice.

Inclement Weather: Do not apply stucco base during inclement weather, unless appropriate protection is employed.

Sunlight Exposure: Avoid, when possible, installation of the stucco assembly in direct sunlight. Application of finishes in direct sunlight in hot weather may adversely affect aesthetics.

Do not apply stucco base coats or finishes if ambient temperature falls below 40°F (4°C) within 24 hours of application. Protect stucco from uneven and excessive evaporation during dry weather and strong blasts of dry air.

Prior to installation, the wall shall be inspected for surface contamination, or other conditions that may adversely affect the performance of the stucco assembly and shall be free of residual moisture.

COORDINATION AND SCHEDULING:

Coordination: Coordinate stucco assembly installation with other construction operations.

WARRANTY

Warranty: Upon request, at completion of installation, provide manufacturer's Standard Limited Stucco Warranty

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PRODUCTS

MANUFACTURERS

Manufacturer, Basis of Design: brands of Parex USA, Inc., including Parex, El Rey Stucco, Lahabra Stucco or TEIFS, 4125 E. La Palma Ave., Suite 250, Anaheim, CA 92807 Contact: Architectural Sales, Andy Townes at (866.516.0061) or andy.townes@parexusa.com or Technical Support (800.226.2424).

Components: Obtain components of brands of Parex USA Stucco Assemblies from authorized distributors. No substitutions or additions of other materials are permitted without prior written permission from Parex USA for this project.

MATERIALS

Stucco System Base Coat (3/8 in – 1/2 in)

Fastwall™ Concentrate: Proprietary mixture of Portland cement and proprietary ingredients mixed with clean, cool, potable water, and ASTM C897 or ASTM C144 sand added in the field.

Reinforcing Meshes: For embedment into wet brown coat

Krak-Master Stucco Mesh: Weight 4.5 oz. per sq. yd (153 g/m²) reinforcing mesh. Typically green in color

Finish:

Perma-Flex Elastomeric Finish™: Factory blended, 100% acrylic elastomeric polymer based finish, integrally colored. Finish texture and color as selected by Project Designer.

RELATED MATERIALS AND ACCESSORIES

General: Stucco assembly and its related materials shall conform to the requirements of ICC-ES Evaluation Report No. 2564 and shall conform to this specification.

Substrate Materials:

Plywood: Minimum 5/16 in (8 mm) thick exterior grade or Exposure I plywood for studs spaced 16 in (406 mm) o.c. and 3/8 in (9 mm) thick exterior type plywood minimum for studs spaced 24 in (610 mm) o.c. Plywood shall comply be exterior grade or Exposure 1 and comply with DOC PS-1. See structural drawings for additional requirements.

Concrete Masonry Construction: Painted (coated) and non-painted (uncoated) must conform with the building code.

Other as approved by stucco manufacturer in writing prior to the project.

Water-Resistive Barriers: Over plywood Sheathing

See Section 072500 – Weather Barriers

Lath and Accessories: Conform to ASTM C847, ASTM C933, ASTM C1032, ASTM C1063 and Appendix

Accessories: Manufacturer's standard steel products with minimum G60 galvanizing. Includes plaster stops, control joints, weep screeds, corner beads, flashings, etc...

Metal Plaster Bases: 20 Gauge self-furred stucco netting or a minimum 2.5 lb/yd² (1.4 kg/m²) or 3.4 lb/yd² (1.8 kg/m²) expanded metal diamond lath, or welded wire lath in accordance with applicable codes and standards.

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Weep Screeds: Foundation weep screed with minimum 3-1/2 inch vertical attachment flange.

Continuous Rigid Insulation:

Extruded Polystyrene Board (XPS) Insulation: ASTM C 578, of type and density indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively:

Type IV or V

Nominal Density: 1.5 PCF

Compressive Resistance: 25 psi

R-Value: 5.0 / inch minimum.

Provide tongue and groove board edges.

Provide grooved drainage channels on one side of insulation to be installed adjacent to water resistant barrier. Vertical drainage channels shall be a minimum 1/2" wide by 1/4" deep spaced a minimum of 12" o.c.

Provide insulation produced by a manufacturer approved by Parex USA.

Thickness as indicated on drawings.

Seals, Sealants and Bond Breakers: Sealants shall conform to ASTM C920, Grade NS, Class 25, Use NT. Backer rod shall be closed-cell polyethylene foam.

PART 2 - EXECUTION

EXAMINATION

Compliance: Comply with manufacturer's instructions for installation of the stucco assembly.

Substrate Examination: Examine prior to stucco base installation as follows:

Substrate shall be of a type approved by stucco manufacturer. Plywood substrates shall be gapped 1/8 in (3.2 mm) at all edges.

Substrate shall be examined for soundness, and other harmful conditions.

Substrate shall be free of dust, dirt, laitance, efflorescence, and other harmful contaminants.

Substrate construction in accordance with substrate material manufacturer's specifications and applicable building codes.

Ensure that all flashings have been installed.

Advise Contractor of discrepancies preventing proper installation of the stucco assembly. Do not proceed with the stucco assembly work until unsatisfactory conditions are corrected.

PREPARATION

New Construction: Weather Barriers and Wire Fabric Lath and Metal Lath: Install according to ICC Evaluation Report ESR 2564, ASTM C1063 and Appendix and the Building Code.

Concrete Masonry Units: Remove projecting joint mortar so it is flush with the plane of the wall. Remove surface contaminants such as efflorescence, existing paint or any other bond inhibiting material by sandblasting, waterblasting, wire brushing, chipping or other appropriate means. Pre-moisten the surface

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with water just prior to placement of stucco, or apply one uniform coat of acrylic emulsion additive according to application instructions.

MIXING

Mix proprietary products in accordance with manufacturer's instructions and applicable Product Data Sheets.

APPLICATION

General: Stucco assembly and its related materials shall conform to the requirements of ICC-ES Evaluation Report No. 2564 and shall conform to this specification.

Stucco Base:

Stucco Base shall be applied in one or two coats to a minimum thickness of 3/8 in (9.5 mm) by hand troweling or machine spraying the mixture to the wire lath in accordance with product data Sheets. The maximum thickness applied in one pass is 1/2 in (17 mm).

Rod surface to true plane and float to densify.

Trowel to smooth and uniform surface to receive acrylic polymer finish coat.

While brown coat is still wet, embed the fiberglass mesh into surface and smooth to flush taking care to remove all loose ends, wrinkles etc. and over lapping ends a minimum of 2 inches

Finish:

Remove surface contaminants such as dust or dirt without damaging the substrate.

Ambient and surface temperature must be 40°F (4°C) or higher during application and drying time. Supplemental heat and protection from precipitation must be provided as needed.

Use only on surfaces that are sound, clean, dry, unpainted, and free from any residue that might affect the ability of the finish to bond to the surface.

Apply exterior wall finish coats according to manufacturer's product data sheets.

Protect finish coats from inclement weather until completely dry.

Curing

Stucco Base: Keep stucco moist for at least 48 hours (longer in dry weather) by lightly fogging walls. Start light fogging after initial set of 1–2 hours. Air cure an additional 3-5 days before application of finish coats

Air cure acrylic and elastomeric finish coats only. Do not wet cure.

CLEAN-UP

Remove and legally dispose of stucco assembly component debris material from job site.

PROTECTION

Provide protection of installed materials from water infiltration into or behind them.

Provide protection of installed stucco from dust, dirt, precipitation, and freezing during installation.

Provide protection of installed finish from dust, dirt, precipitation, freezing and continuous high humidity until fully cured and dry.

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Clean exposed surfaces using materials and methods recommended by the manufacturer of the material or product being cleaned. Remove and replace work that cannot be cleaned to the satisfaction of the Project Designer/Owner.

END OF SECTION 092400

SECTION 092900 – GYPSUM BOARD

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PART 1 - GENERAL

SUMMARY

This Section includes the following:

- Interior gypsum wallboard.
- Non-load-bearing steel framing.

SECTION REQUIREMENTS

Submittals: Product data.

DEFINITIONS

Gypsum Board Terminology: Refer to ASTM C 11 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

FIELD QUALITY CONTROL

Above-Ceiling Observation: Before Contractor installs gypsum board ceilings, Architect will conduct an above-ceiling observation and report deficiencies in the Work observed. Do not proceed with installation of gypsum board to ceiling support framing until deficiencies have been corrected.

Notify Architect seven days in advance of date and time when Project, or part of Project, will be ready for above-ceiling observation.

PART 2 - PRODUCTS

MANUFACTURERS

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Gypsum Board and Related Products:

- American Gypsum Co.
- G-P Gypsum Corp.
- National Gypsum Company.
- United States Gypsum Co.

Steel Framing and Furring:

- ClarkDietrich Building Systems.
- MarinoWare; Division of Ware Ind.
- Scafco Corporation.

STEEL PARTITION AND SOFFIT FRAMING

Components, General: As follows:

Comply with ASTM C 754 for conditions indicated.

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Steel Sheet Components: Complying with ASTM C 645. Thickness specified is minimum uncoated base-metal thickness.

Protective Coating: ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized or coating with equivalent corrosion resistance of ASTM A 653/A 653M, G40 (Z120) zinc coating.

Steel Studs and Runners: ASTM C 645.

Minimum Base Metal Thickness: 0.018 inch (0.45 mm) (25 gauge) unless otherwise indicated.

Depth: As indicated.

Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

Minimum Base Metal Thickness: 0.018 inch (0.45 mm).

Cold-Rolled Channel Bridging: 0.0538-inch (1.37-mm) bare steel thickness, with minimum 1/2-inch- (12.7-mm-) wide flange.

Depth: 1-1/2 inches (38.1 mm).

Clip Angle: 1-1/2 by 1-1/2 inch (38.1 by 38.1 mm), 0.068-inch- (1.73-mm-) thick, galvanized steel.

Hat-Shaped, Rigid Furring Channels: ASTM C 645.

Minimum Base Metal Thickness: 0.018 inch (0.45 mm).

Depth: 7/8 inch (22.2 mm) unless otherwise indicated.

Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (31.8 mm), wall attachment flange of 7/8 inch (22.2 mm), minimum bare metal thickness of 0.0179 inch (0.45 mm), and depth required to fit insulation thickness indicated.

Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PANEL PRODUCTS

Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.

Interior Gypsum Board: ASTM C 1396/C 1396M, in thickness indicated, with manufacturer's standard edges.

Moisture and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M, in thickness indicated.

ACCESSORIES

Trim Accessories: ASTM C 1047, formed from galvanized or aluminum-coated steel sheet or rolled zinc.

Provide cornerbead at outside corners unless otherwise indicated.

LC-Bead: J-shaped; exposed long flange receives joint compound; use at exposed panel edges.

Joint-Treatment Materials: ASTM C 475/C 475M.

Joint Tape:

Interior Gypsum Wallboard: Paper.

Joint Compounds: Drying-type, ready-mixed, all-purpose compounds.

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Use lightweight, all-purpose joint compound for texturing

Use setting-type compounds at exterior soffits.

Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant complying with ASTM C 834.

Sound-Attenuation Batt Insulation: Fiberglass. ASTM C 665, Type I (unfaced).

PART 3 - EXECUTION

INSTALLING STEEL FRAMING, GENERAL

Installation Standards: ASTM C 754.

Gypsum Board Assemblies: Also comply with ASTM C 840.

Install supplementary framing, blocking, and bracing at terminations in gypsum board assemblies to support fixtures, equipment services, or similar construction. Comply with details indicated and with gypsum board manufacturer's written recommendations or, if none available, with United States Gypsum's "Gypsum Construction Handbook."

At all partitions install cold-rolled channel bridging at mid-height.

INSTALLING STEEL SOFFIT AND CEILING FRAMING

Installation Tolerance: Install each steel framing and furring member so fastening surfaces vary not more than 1/8 inch (3 mm) from level in 12 feet.

Single-Layer Construction: 16 inches (406 mm) o.c., unless otherwise indicated.

All ceiling and soffit framing shall be 20 gauge (0.0296") thickness

APPLYING AND FINISHING PANELS, GENERAL

Gypsum Board Application and Finishing Standards: ASTM C 840 and GA-216.

Single-Layer Fastening Methods: Fasten gypsum panels to supports with screws.

Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

Install gypsum panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

Attach gypsum panels to framing provided at openings and cutouts.

Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members using resilient channels, or provide control joints to counteract wood shrinkage.

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STC-Rated Assemblies: Seal construction at perimeters, behind control and expansion joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.

Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's written recommendations.

PANEL APPLICATION METHODS

Single-Layer Application:

On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.

On partitions/walls, apply gypsum panels to minimize end joints.

Stagger abutting end joints not less than one framing member in alternate courses of board.

INSTALLING TRIM ACCESSORIES

General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

FINISHING GYPSUM BOARD ASSEMBLIES

General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

Prefill open joints, rounded or beveled edges, and damaged surface areas.

Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C 840, for locations indicated:

At concealed areas, provide Level 1 finish: Embed tape at joints.

At substrates for tile, provide Level 2 finish: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges.

Unless otherwise indicated, provide Level 4 finish: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges.

END OF SECTION 092900

PART 1 - GENERAL

SUMMARY

This Section includes the following:

- Ceramic tile.
- Quarry tile.

DEFINITIONS

Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.

Facial Dimension: Nominal tile size as defined in ANSI A137.1.

SUBMITTALS

Product Data: For each type of product indicated.

Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.

QUALITY ASSURANCE

Source Limitations for Tile: Obtain all tile of same type and color or finish from one source or producer.

Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

DELIVERY, STORAGE, AND HANDLING

Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.

Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

Store liquid latexes and emulsion adhesives in unopened containers and protected from freezing.

PROJECT CONDITIONS

Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

MANUFACTURERS

In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:

Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

PRODUCTS, GENERAL

ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.

Provide tile complying with Standard grade requirements, unless otherwise indicated.

For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.

ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.

Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:

As selected by Architect from manufacturer's full range.

Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

CERAMIC TILE

Basis-of-Design Product: The design tile specified is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product.

Daltile; Div. of Dal-Tile International Inc.

Heathland.

Ceramic Field Tile at Restroom Floors:

Composition: Vitreous or impervious natural clay.

Surface: Smooth.

Module Size: 18x18 inches.

Color: HL06 "Sage".

Trim Units: Coordinated with sizes and coursing of adjoining flat tile and matching characteristics of adjoining flat tile:

3"x12" Bullnose for use as transition to vinyl tile at doors.

Color: HL06 "Sage".

Ceramic Field Tile at Restroom Walls:

Composition: Vitreous or impervious natural clay.

Surface: Smooth.

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Module Size: 9x12 inches.

Color: HL02 "Raffia"

Trim Units: Coordinated with sizes and coursing of adjoining flat tile and matching characteristics of adjoining flat tile:

6"x12" Cove Base at transition to floor tile.

Color: HL02 "Raffia".

1"x6" Cove Corner at cove base transitions at corners.

Color: HL02 "Raffia".

QUARRY TILE

Basis-of-Design Product: The design tile specified is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product.

Daltile; Div. of Dal-Tile International Inc.

Quarry Textures.

Unglazed Quarry Tile: Square-edged flat tile as follows:

Wearing Surface: Abrasive.

Facial Dimensions: 8 by 8 inches

Thickness: 1/2 inch.

Color: OTO8 (2) "Adobe Brown"

Trim Units: Coordinated with sizes and coursing of adjoining flat tile and matching characteristics of adjoining flat tile:

5"x8" Cove Base at transition to floor tile.

Color: Match floor.

1"x5" Cove Corner at cove base transitions at corners.

Color: Match floor.

QUARRY TILE THRESHOLDS

General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

Bevel edges at 1:2 slope, aligning lower edge of bevel with adjacent floor finish. Limit height of bevel to 1/2 inch (12.7 mm) or less, and finish bevel to match face of threshold.

SETTING AND GROUTING MATERIALS

Latex-Portland Cement Mortar (Thin Set): ANSI A118.4, consisting of the following:

Prepackaged dry-mortar mix containing dry, redispersible, ethylene vinyl acetate additive to which only water must be added at Project site.

Prepackaged dry-mortar mix combined with acrylic resin or styrene-butadiene-rubber liquid-latex additive.

Ceramic Tile: Polymer-Modified Tile Grout: ANSI A118.7, color as selected from manufacturer's complete range.

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Polymer Type: Either ethylene vinyl acetate, in dry, redispersible form, prepackaged with other dry ingredients, or acrylic resin or styrene-butadiene rubber in liquid-latex form for addition to prepackaged dry-grout mix.

Sanded grout mixture for joints 1/8 inch (3.2 mm) and wider.

Color: As selected from manufacturer's complete range.

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Quarry Tile: Chemical Resistant Grade Epoxy Grout: ANSI A118.3, water cleanable, high chemical stain resistance. Recommended for commercial kitchens.

Color: as selected from manufacturer's complete range.

Laticrete Spectralock 2000 IG

Mapei Kerapoxy IEG

MISCELLANEOUS MATERIALS

Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

Temporary Protective Coating: Product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.

Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.

MIXING MORTARS AND GROUT

Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

Add materials, water, and additives in accurate proportions.

Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

EXAMINATION

Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

Provide concrete substrates for tile floors installed with thin-set mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.

Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.

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Remove protrusions, bumps, and ridges by sanding or grinding.

Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

Field-Applied Temporary Protective Coating: Where indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

INSTALLATION, GENERAL

ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.

Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments. In accessible unit extend tile under vanity.

Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

Locate joints in tile surfaces directly above joints in concrete substrates.

Grout tile to comply with requirements of the following tile installation standards:

For ceramic tile grouts (sand-portland cement; dry-set, commercial portland cement; and latex-portland cement grouts), comply with ANSI A108.10 and manufacturers installation instructions.

For epoxy grouts install per manufacturers installation instructions.

Where ceramic tile abuts other flooring finishes provide a suitable transition.

FLOOR TILE INSTALLATION

General: Install tile to comply with requirements referenced TCA installation methods and ANSI A108 Series of tile installation standards.

Joint Widths: Install tile on floors with the following joint widths:

Ceramic Tile: 3/16 inch.

Quarry Tile: 3/8 inch.

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CLEANING AND PROTECTING

Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

Remove latex-portland cement grout residue from tile as soon as possible.

Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 093013

SECTION 095113 – ACOUSTIC PANEL CEILING

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

SUMMARY

Section Includes:

- Acoustical ceiling panels.
- Exposed grid suspension system.
- Wire hangers, fasteners, main runners, cross tees, and wall angle moldings.

Related Sections:

- Divisions 23 - HVAC
- Division 26 Sections - Electrical Work

REFERENCES

American Society for Testing and Materials (ASTM):

- ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
- ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- ASTM E580 Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions
- ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
- ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.
- ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.
- ASTM E 1264 Classification for Acoustical Ceiling Products.
- ASTM E 1477 Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
- ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
- ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material.

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ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"

International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components

International Code Council-Evaluation Services - Evaluation Report, ESR-1308, Fire- and Nonfire-Resistance-Rated Suspended Ceiling Framing Systems

ASCE 7 Standard - American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures

SYSTEM DESCRIPTION

Seismic Loads: Provide all components to withstand seismic loads in accordance with the International Building Code, Section 1621 for Category D.

SUBMITTALS

Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

Shop Drawings: Layout and details of acoustical ceilings. Show locations of items which are to be coordinated with, or supported by the ceilings.

Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.

If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

QUALITY ASSURANCE

Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.

Flame Spread: 25 or less

Smoke Developed: 50 or less

Seismic Performance: Provide acoustical ceiling system that has been evaluated by an independent party and found to be compliant with the 2015 International Building Code, Seismic Category D.

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Tested per International Code Council - Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components as evidenced by International Code Council Evaluation Report, ESR-1308.

Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

DELIVERY, STORAGE, AND HANDLING

Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

PROJECT CONDITIONS

Space Enclosure:

All ceiling products and suspension systems must be installed and maintained in accordance with Armstrong written installation instructions for that product in effect at the time of installation and best industry practice. Prior to installation, the ceiling product must be kept clean and dry, in an environment that is between 32°F (0°C) and 120°F (49°C) and not subject to Abnormal Conditions. Abnormal conditions include exposure to chemical fumes, vibrations, moisture from conditions such as building leaks or condensation, excessive humidity, or excessive dirt or dust buildup.

WARRANTY

Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical panels that fail within the warranty period. Failures include, but are not limited to:

Acoustical Panels: Sagging and warping as a result of defects in materials or factory workmanship.

Grid System: Rusting and manufacturer's defects

Acoustical Panels with BioBlock Plus or designated as inherently resistive to the growth of micro-organisms installed with Armstrong suspension systems: Visible sag and will resist the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.

Warranty Period Humiguard:

Acoustical and clean room panels: Ten (10) years from date of substantial completion.

Grid: Ten (10) years from date of substantial completion.

Acoustical panels and grid systems with HumiGuard Plus or HumiGuard Max performance supplied by one source manufacturer is thirty (30) years from date of substantial completion.

The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

SECTION 095113 – ACOUSTIC PANEL CEILING

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

MAINTENANCE

Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.

Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2-PRODUCTS

MANUFACTURERS

Ceiling Panels:

Armstrong World Industries, Inc.

ACOUSTICAL CEILING UNITS

Acoustical Panels Type ACT-1:

Surface Texture: Medium

Composition: Mineral Fiber

Color: White

Size: 24in X 24in X 5/8in

Edge Profile: Angled Tegal for interface with compatible Armstrong grid.

Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.55.

Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 35.

Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"

Flame Spread: ASTM E 1264; Class A (UL)

Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.85.

Antimicrobial Protection:

Acceptable Product: Fine Fissured, 1732 as manufactured by Armstrong World Industries.

Acoustical Panels Type ACT-2:

Surface Texture: Medium

Composition: Mineral Fiber

Color: White

Size: 24in X 48in X 5/8in

Edge Profile: Angled Tegal for interface with compatible Armstrong grid.

Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.55.

Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 35.

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Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"

Flame Spread: ASTM E 1264; Class A (UL)

Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.85.

Antimicrobial Protection:

Acceptable Product: Fine Fissured, 1733 as manufactured by Armstrong World Industries.

Acoustical Panels Type ACT-3:

Surface Texture: Smooth

Composition: Mineral Fiber

Color: White

Size: 48in X 24in X 5/8in

Edge Profile: Square Lay-In.

Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, N/A.

Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 40

Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"

Flame Spread: ASTM E 1264; Class A (UL)

Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.80.

Dimensional Stability: HumiGuard Plus - Temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC systems to be functioning. All wet work (plastering, concrete, etc) must be complete and dry.

Antimicrobial Protection: BioBlock Plus - Resistance against the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.

Acceptable Product: Clean Room VL Unperforated, 870 as manufactured by Armstrong World Industries.

SUSPENSION SYSTEMS

Components: Main beams and cross tees In accordance with the International Building Code, Section 1621 for Category D as described in ESR-1308.

Structural Classification: ASTM C 635, Heavy Duty.

Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.

Represented Systems: Prelude XL 15/16" Exposed Tee System as manufactured by Armstrong World Industries.

Attachment Devices: In accordance with the International Building Code, Section 1621 for Category D.

Wire for Hangers and Ties: In accordance with the International Building Code, Section 1621.

Wall Moldings: In accordance with the International Building Code, Section 1621 for Category D or method as described in ESR-1308.

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Nominal 7/8 inch x 7/8 inch hemmed, pre-finished angle molding (7800) (7802) (7803) (780036) (HD7801)

Accessories:

BERC2 - 2 inch Beam End Retaining Clip, 0.034 inch thick, hot-dipped galvanized cold-rolled steel per ASTM A568 - used to join main beam or cross tee to wall molding as required for seismic performance.

PART 3 - EXECUTION

EXAMINATION

Do not proceed with installation until all wet work such as skim coating and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations.

PREPARATION

Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

INSTALLATION (CATEGORY D)

Install suspension system and panels in accordance with the International Building Code, except as noted in Section 4.4.3.1 of ESR-1308, and with the authorities having jurisdiction.

ESR-1308, Section 4.4.3.1, Alternate Seismic Design Category D, E and F Installation:

Under this installation, the runners must be rated heavy-duty and have a minimum simple span uniform load of 16.35 pounds per lineal foot (238 N/m); maximum ceiling weight permitted is 4.0 pounds per square foot (19.5 kg/m²).

The BERC-2 clip is used to secure the main runners and cross runners on two adjacent walls to the structure and the two opposite walls to the perimeter trim, as detailed below. A nominal 7/8-inch (22 mm) wall molding is used in lieu of the 2-inch (51 mm) perimeter supporting closure angle required by Section 9.6.2.6.2.2 (b) of ASCE-7 for Seismic Design Categories D, E and F. Except for the use of the BERC-2 clip and the 7/8-inch (22 mm) wall molding and elimination of spreader bars, installation of the ceiling system must be as prescribed by the applicable code.

The BERC-2 clip is attached to the wall molding by sliding the locking lances over the hem of the vertical leg of the wall molding. Clips installed on the walls where the runners are fixed are attached to the runner by a sheet metal screw through the horizontal slot in the clip into the web of the runner.

Clips installed on the walls where the runners are not fixed to the runner allow the terminal runner end to move 3/4 inch (19.1 mm) in both directions. BERC-2 clips installed in this manner are an acceptable means of preventing runners from spreading in lieu of spacer bars required in CISCA 3-4, which is referenced in ASCE 7, Section 9.6.2.6.2.2, which is referenced in IBC Section 1621.

For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

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Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces without gaps. Support edges by wall moldings.

FIELD QUALITY CONTROL

Suspended ceiling shall be subject to the special inspection requirements in Section 01 45 33 (01450) - Code-Required Special Inspections and Procedures.

ADJUSTING AND CLEANING

Replace damaged and broken panels.

Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage.

Ceiling Touch-Up Paint, (Item #5760, 8oz. bottles) (Item #5761, quart size cans), "global white" latex paint should be used to hide minor scratches and nicks in the surface and to cover field regularized edges that are exposed to view.

Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage

END OF SECTION 095113

SECTION 096500 – RESILIENT PLANK FLOORING

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

Resilient plank flooring. (LVT)

Resilient wall base and accessories.

SUBMITTALS

Product data. For each type of product provided under work of this Section:

Samples for Initial Selection: For each type of product indicated.

Maintenance Data: For resilient products to include in maintenance manuals.

QUALITY ASSURANCE

Fire-Test-Response Characteristics: Provide products identical to those tested for fire-exposure behavior per test method indicated by a testing and inspecting agency acceptable to authorities having jurisdiction.

VOC emissions: Provide low VOC products. Comply with California Department of Health Services Standard Practice for the Testing.

Adhesives and sealants: Comply with California's South Coast Air Quality Management District (SCAQMD) #11682.

Hard surface flooring: Comply with FloorScore

DELIVERY, STORAGE, AND HANDLING

Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store tiles on flat surfaces.

PROJECT CONDITIONS

The installation site must be acclimated with HVAC in operation as required. The floor and room temperature, as well as flooring materials and adhesive, must be maintained at 65°–85°F, and the humidity at or below 60% for 48 hours prior to, during, and after the testing and installation. Follow ASTM F 710 guidelines for subfloor testing and preparation.

After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

Close spaces to traffic during floor covering installation.

Close spaces to traffic for 48 hours after floor covering installation.

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Install resilient products after other finishing operations, including painting, have been completed.

EXTRA MATERIALS

Deliver to Owner one box of each type and color of resilient plank flooring installed.

Deliver to Owner at least 20 linear feet of each type and color of resilient wall base installed.

PART 2 - PRODUCTS

MANUFACTURERS

Basis of Design Luxury Vinyl Plank Products:

Shaw Commercial Hard Surface
Address: 131 Old Mill Road, Cartersville, GA 30120
Phone Number: 1-877-502-7429
Contact: Shaw Commercial Hard Surface, Inforum

LIGHT COMMERCIAL LUXURY VINYL PLANK

Style Name	Uncommon Ground 6
Style Number	0188V
Color	02750 "Colonial"
Construction	High Performance Luxury Vinyl Plank
Class / ASTM F1700	Class III Printed Film Vinyl Plank, Type B (embossed)
Wearlayer Thickness	20 mil or 0.020" (0.5 mm)
Overall Thickness	3 mm or 0.118"
Nominal Dimensions	6" wide x 36" long
Actual Size / ASTM F536	Width: 5.91" or 150 mm, Length: 36.22" or 920 mm
Backing Class	Commercial Grade
Finish	ExoGuard™ Quartz-Enhanced Urethane
Installation	Glue Down

TESTING

Slip Resistance / ASTM D 2047:	>0.65 (wet/dry)
Static Load Limit / (modi_ed) ASTM F 970:	1500 psi
Flexibility / ASTM F 137:	Passes
Resistance to Heat / ASTM F 1514:	Passes
Resistance to Light / ASTM F 1515:	Passes
Resistance to Chemicals / ASTM F 925:	Passes
Radiant Flux / ASTM 648:	Passes, >0.45 watts/cm ² , NFPA Class I
Smoke Density / ASTM E 662:	Passes, <450

INSTALLATION MATERIALS

Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.

LVT Adhesives: As recommended by manufacturer for flooring product selected. Shaw 4100 Resilient Flooring Adhesive.

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Green Label Plus, solvent free, water-based acrylic adhesive suitable for use in occupied buildings, low odor, and contains zero (calculated) VOCs as recommended by manufacturer to suit resilient products and substrate conditions indicated.

Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

VCT and Asphalt Tile Adhesives: 50 g/L.

RESILIENT WALL BASE

Wall Base: ASTM F 1861.

Johnsonite (basis of design)
Armstrong World Industries, Inc..
Roppe Corporation.
VPI, LLC, Floor Products Division.

Type (Material Requirement): TV (vinyl).

Group I (solid, homogeneous).

Style: Cove (with top-set toe).

Minimum Thickness: 0.125 inch (3.2 mm).

Height: 4 inches (102 mm).

Lengths: Coils in manufacturer's standard length.

Outside Corners: Job formed.

Inside Corners: Job formed.

Surface: Smooth.

Color: 47 "Brown"

Vinyl Base Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

RESILIENT MOLDING ACCESSORY

Reducer strip for resilient flooring.

Johnsonite. (basis of design)
Burke Mercer Flooring Products.
Marley Flexco (USA), Inc.
Roppe Corporation.

Material: Vinyl.

Color: 47 "Brown"

SECTION 096500 – RESILIENT PLANK FLOORING

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

EXECUTION

EXAMINATION

Substrates: Sound and properly prepared on grade concrete, APA approved wood subflooring. Substrates must be clean and dry, free of dust, dirt, paint, wax, curing compounds, sealers, hardeners, existing adhesives or other contaminants that may interfere with the adhesive bond. Do not use chemically cleaned substrates.

Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.

Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.

Concrete Substrates: Prepare according to ASTM F 710.

Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

Concrete substrates must comply with limitations of moisture and alkalinity. In-situ Relative Humidity test must be performed per ASTM F 2170. Results cannot exceed 87% RH and substrate pH readings should be between 7.0 and 10.0.

Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.

Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

Do not install resilient products until they are same temperature as space where they are to be installed.

Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

Proceed with installation only after unsatisfactory conditions have been corrected.

TILE INSTALLATION

Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

Lay tiles square with room axis in direction indicated.

Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

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Lay tiles with grain running in one direction

Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

Extend tile into toe spaces, door reveals, closets, and similar openings. Extend tiles under removable appliances and under accessible cabinetry with removable fronts.

Adhere tiles to flooring substrates per manufacturer's instruction using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

Adhesively install resilient wall base and accessories.

Install reducer strips at edges of floor coverings that would otherwise be exposed.

RESILIENT WALL BASE INSTALLATION

Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

Do not stretch wall base during installation.

On masonry surfaces or other similar irregular substrates, fill voids along top edge of wall base with manufacturer's recommended adhesive filler material.

Job-Formed Corners:

Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.

Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

RESILIENT ACCESSORY INSTALLATION

Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at all edges of floor coverings that would otherwise be exposed.

CLEANING AND PROTECTION

Perform the following operations immediately after completing resilient product installation:

Remove adhesive and other blemishes from exposed surfaces.

Sweep and vacuum surfaces thoroughly.

Damp-mop surfaces to remove marks and soil.

Do not wash surfaces until after time period recommended by manufacturer.

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Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

Cover products installed on horizontal surfaces with undyed, untreated building paper until Substantial Completion.

Do not move heavy and sharp objects directly over surfaces. Place hardboard or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

END OF SECTION 096500

SECTION 096813 – CARPET TILE

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes carpet tile and installation.

Related Sections include the following:

Division 9 Section "Resilient Tile Flooring" for resilient wall base and accessories installed with carpet tile.

SUBMITTALS

Product Data: For each type of product indicated. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation methods.

Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

Carpet Tile: Full-size Sample.

Maintenance Data: For carpet tile to include in maintenance manuals specified in Division 1. Include the following:

Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.

Precautions for cleaning materials and methods that could be detrimental to carpet tile.

QUALITY ASSURANCE

Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.

Fire-Test-Response Characteristics: Provide products with the critical radiant flux classification indicated in Part 2, as determined by testing identical products per ASTM E 648 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

Critical Radiant Flux Classification: Not less than 0.22 W/sq. cm per ASTM E 648.

Emissions: Provide carpet that complies with testing and product requirements of CRI's "Green Label Plus" program.

DELIVERY, STORAGE, AND HANDLING

General: Comply with CRI 104, Section 5, "Storage and Handling."

SECTION 096813 – CARPET TILE

HWY 14 SENIOR/COMMUNITY CENTER
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PROJECT CONDITIONS

General: Comply with CRI 104, Section 6.1, "Site Conditions; Temperature and Humidity."

Environmental Limitations: Do not install carpet tile until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

Do not install carpet tile over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

WARRANTY

General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

Special Carpet Tile Warranty: Written warranty, signed by carpet tile manufacturer agreeing to replace carpet tile that does not comply with requirements or that fails within specified warranty period. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, and delamination.

Warranty Period: Lifetime commercial limited

EXTRA MATERIALS

Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

PART 2 - PRODUCTS

CARPET TILE

Product: Subject to compliance with requirements, provide the following:

Shaw Contract – Kusa Tile

Collection Name:	Terasu
Style Number:	5T194
Color:	36103 "Sand"
Construction:	Multi-level pattern loop
Fiber:	Eco Solution Q® Nylon
Dye Method:	100% solution dyed
Primary Backing:	Synthetic
Secondary Backing:	EcoWorx® Tile
Protective Treatments:	SSP® Shaw soil protection
Product Size:	24.0 x 24.0 inches
Tufted Weight:	24 oz/yd ²
Gauge:	1/12 inch

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Stitches Per Inch:	12 per inch
Finished Pile Thickness:	0.119 inches
Total Thickness:	0.262 inches
Average Density:	7261 per cu.yd.
Pattern Repeat:	None
Antimicrobial Assessment:	passes (AATCC-174) (When installed using Shaw 5036 adhesive)
Pill Test:	pass
Radiant Panel:	class I
NBS Smoke:	Less than 450
Electrostatic Propensity:	Less than 3.5 kV

INSTALLATION ACCESSORIES

Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided by or recommended by carpet tile manufacturer.

Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and that is recommended by carpet tile manufacturer.

Shaw 5036 adhesive

PART 3 - EXECUTION

EXAMINATION

Examine substrates, areas, and conditions for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Verify that substrates and conditions are satisfactory for carpet tile installation and comply with requirements specified.

Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.

Subfloor finishes comply with requirements specified in Division 3 Section "Cast-in-Place Concrete" for slabs receiving carpet tile.

Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.

Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.

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SECTION 096813 – CARPET TILE

HWY 14 SENIOR/COMMUNITY CENTER
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Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.

Broom and vacuum clean substrates to be covered immediately before installing carpet tile. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

INSTALLATION

General: Comply with CRI 104, Section 13, "Carpet Modules (Tiles)."

Installation Method: Glue-down.

Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.

Install pattern parallel to walls and borders in direction indicated.

CLEANING AND PROTECTION

Perform the following operations immediately after installing carpet tile:

- Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.

- Remove yarns that protrude from carpet tile surface.

- Vacuum carpet tile using commercial machine with face-beater element.

Protect installed carpet tile to comply with CRI 104, Section 15, "Protection of Indoor Installations."

Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 097700 – FIBERGLASS REINFORCED PLASTIC PANELS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

SUMMARY

Section Includes: Prefinished polyester glass reinforced plastic sheets and adhered to unfinished gypsum wallboard.

RELATED SECTIONS

Section 92900 – Gypsum substrate board and non-structural metal stud framing.

Section 93013 – Quarry tile base.

SUBMITTALS

Product Data: Submit sufficient manufacturer's data to indicate compliance with these specifications, including:

- Preparation instructions and recommendations.
- Storage and handling requirements and recommendations.
- Installation methods.

Shop Drawings: Submit elevations of each wall showing location of paneling and trim members with respect to all discontinuities in the wall elevation.

Selection Samples: Submit manufacturer's standard color pattern selection samples representing manufacturer's full range of available colors and patterns.

Samples for Verification: Submit appropriate section of panel for each finish selected indicating the color, texture, and pattern required.

- Submit complete with specified applied finish.
- Exposed Molding and Trim: Provide samples of each type, finish, and color.

QUALITY ASSURANCE

Conform to building code requirements for interior finish for smoke and flame spread requirements as tested in accordance with:

- ASTM E 84 (Method of test for surface burning characteristics of building Materials)
- Wall Required Rating – Class C.

Sanitary Standards: System components and finishes to comply with:

- United States Department of Agriculture (USDA) requirements for food preparation facilities, incidental contact.
- Food and Drug Administration (FDA) 1999 Food Code 6-101.11.

DELIVERY, STORAGE AND HANDLING

Deliver materials factory packaged on strong pallets.

Store panels and trim lying flat, under cover and protected from the elements. Allow panels to acclimate to room temperature (range of 60 to 75°F) for 48 hours prior to installation.

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SECTION 097700 – FIBERGLASS REINFORCED PLASTIC PANELS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PROJECT CONDITIONS

Environmental Limitations: Building are to be fully enclosed prior to installation with sufficient heat (70°) and ventilation consistent with good working conditions for finish work

During installation and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.

Provide ventilation to disperse fumes during application of adhesive as recommended by the adhesive manufacturer.

WARRANTY

Furnish one year guarantee against defects in material and workmanship.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS

Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

Basis of Design; Marlite Standard FRP, 1 Marlite Drive, Dover, OH 44622. 800-377-1221 FAX (330) 343-4668 Email: info@marlite.com www.marlite.com.

Crane Composites, Inc. Glassboard, 23525 West Eames Street, Channahon, Illinois 60410. Toll Free 800-435-0080. Phone 815-467-8600. Fax 815-467-8666. Website www.cranecomposites.com. Email salesbp@cranecomposites.com.

Panolam FRP by Panolam Industries International, Inc., 20 Progress Drive, Shelton, CT 06484.. Tel: 877-726-6526, Fax: 203-225-0050. Web: www.panolam.com.

PANELS

Fiberglass reinforced thermosetting polyester resin panel sheets complying with ASTM D 5319.

Coating: Multi-layer print, primer and finish coats or applied over-layer.

Dimensions:

Thickness – 0.090 " (2.29mm) nominal

Width - 4'-0" (1.22m) nominal

Length – 10'-0" (3.0m) nominal

Tolerance:

Length and Width: $\pm 1/8$ " (3.175mm)

Square - Not to exceed $1/8$ " for 8 foot (2.4m) panels or $5/32$ " (3.96mm) for 10 foot (2.4m) panels

Properties: Resistant to rot, corrosion, staining, denting, peeling, and splintering.

Flexural Strength - 1.0×10^4 psi per ASTM D 790.

Flexural Modulus - 3.1×10^5 psi per ASTM D 790.

SECTION 097700 – FIBERGLASS REINFORCED PLASTIC PANELS

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Tensile Strength - 7.0 x 10³ psi per ASTM D 638.
Tensile Modulus - 1.6 x 10⁵ psi per ASTM D 638.
Water Absorption - 0.72% per ASTM D 570.
Barcol Hardness (scratch resistance) of 35 55 as per ASTM D 2583.
Izod Impact Strength of 72 ft. lbs./in ASTM D 256

Back Surface: Smooth. Imperfections which do not affect functional properties are not cause for rejection.

Front Finish:

Color: P440N Biscuit or as selected from manufacturers standard textures and colors if the basis of design is not provided

Surface: Pebbled

Fire Rating Class C (III) Fire Rating.

Size: 48" x length required to cover walls from top of base to ceiling without horizontal seams.

48" x 120" [1.2m x 3m] x .090" (3mm) nom.

MOLDINGS

PVC Trim: Thin-wall semi-rigid extruded PVC.

M 350 Inside Corner
M 360 Outside Corner
M 365 Division
M 370 Edge

Color: As selected from manufacturer's standard colors

ACCESSORIES

Fasteners: Non-staining nylon drive rivets.

Match panel colors.

Length to suit project conditions.

Adhesive: Construction adhesives complying with ASTM C 557 as recommended by manufacturer.

Sealant: Color matched to wall panel as recommended by manufacturer.

PART 3 - EXECUTION

PREPARATION

Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails countersunk, joints and cracks filled flush and smooth with the adjoining surface.

Verify that stud spacing does not exceed 24" (61cm) on-center.

Repair defects prior to installation.

Level wall surfaces to panel manufacturer's requirements. Remove protrusions and fill indentations.

SECTION 097700 – FIBERGLASS REINFORCED PLASTIC PANELS

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INSTALLATION

Comply with manufacturer's recommended procedures and installation sequence.

Cut sheets to meet supports allowing 1/8" (3 mm) clearance for every 8 foot (2.4m) of panel.

Cut and drill with carbide tipped saw blades or drill bits, or cut with shears.

Pre-drill fastener holes 1/8" (3mm) oversize with high speed drill bit.

Space at 8" (200mm) maximum on center at perimeter, approximately 1" from panel edge.

Space at in field in rows 16' (40.64cm) on center, with fasteners spaced at 12" (30.48 cm) maximum on center.

Apply panels to board substrate, above base, vertically oriented with seams plumb and pattern aligned with adjoining panels.

Install panels with manufacturer's recommended gap for panel field and corner joints.

Adhesive trowel and application method to conform to adhesive manufacturer's recommendations.

Drive fasteners for snug fit. Do not over-tighten.

Apply panel moldings to all panel edges using silicone sealant providing for required clearances.

All moldings must provide for a minimum 1/8" (3mm) of panel expansion at joints and edges, to insure proper installation.

Apply sealant to all moldings, channels and joints between the system and different materials to assure watertight installation.

CLEANING

Remove excess sealant from panels and moldings. Wipe panel down using a damp cloth and mild soap solution or cleaner.

Refer to manufacturer's specific cleaning recommendations Do not use abrasive cleaners.

END OF SECTION 097700

PART 1 - GENERAL

SUMMARY

This Section includes surface preparation, painting, and finishing of exposed interior and exterior items and surfaces.

Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.

Prefinished items not to be painted include the following factory-finished components:

- Light fixtures.

Concealed surfaces not to be painted include wall or ceiling surfaces in the following generally inaccessible areas:

- Foundation spaces.
- Furred areas.
- Pipe spaces.

Finished metal surfaces not to be painted include:

- Anodized aluminum.
- Stainless steel.
- Chromium plate.
- Copper.
- Bronze.
- Brass.

Labels: Do not paint over Underwriters Laboratories, Factory Mutual or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

DEFINITIONS

General: Standard coating terms defined in ASTM D 16 and ASTM D523 apply to this Section.

Flat: Lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.

Eggshell: Low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.

Semigloss: Medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.

Full gloss: High-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

SUBMITTALS

Product data for each paint system specified.

Provide the manufacturer's technical information including label analysis and instructions for handling, storage, and application of each material proposed for use.

List each material and cross-reference the specific coating, finish system, and application. Identify each material by the manufacturer's catalog number and general classification.

SECTION 099000 – PAINTING

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Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

Sample of each stain wood finish on specified wood.

QUALITY ASSURANCE

Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to those indicated for the Project that have resulted in a construction record of successful in-service performance.

Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.

Applicator Qualifications: A firm or individual with a minimum 5 years experience in applying paints and coatings similar in material, design, and scope to this project.

DELIVERY, STORAGE, AND HANDLING

Deliver materials to the job site in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:

- Product name or title of material.
- Product description (generic classification or binder type).
- Manufacturer's stock number and date of manufacture.
- Contents by volume, for pigment and vehicle constituents.
- Thinning instructions.
- Application instructions.
- Color name and number.

Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.

Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

JOB CONDITIONS

Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 deg F (10 deg C) and 90 deg F (32 deg C).

Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 deg F (7 deg C) and 95 deg F (35 deg C).

Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

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EXTRA MATERIALS

Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Furnish paint with manufacturer's original identifying labels describing contents. Deliver extra paint to Owner after completion of work and obtain a receipt for each color.

Furnish one gallon of finish paint for each type, color and sheen of applied paint.

PART 2 - PRODUCTS

MANUFACTURERS

Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company products indicated or comparable product from one of the following:

Benjamin Moore & Co.
Dunn Edwards
Frazee
ICI Dulux Paint Centers
PPG
Sherwin-Williams Co. (Basis of design)
Tnemec

PAINT MATERIALS, GENERAL

Material Compatibility: Provide, primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer based on testing and field experience.

Material Quality: Provide the manufacturer's best-quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.

Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish the manufacturer's material data and certificates of performance for proposed substitutions.

Colors: Provide color selections made by the Architect from the manufacturer's full range of custom mixed colors.

Accent colors indicated may be deep tones.

LATEX JOINT-SEALANT

Applications: Painter's caulk for interior joints.

Latex Sealant: Where joint sealants of this type are indicated or required to fill minor gaps, provide products complying with the following:

Products: Available products include the following:

Chem-Calk 600; Bostik Inc.
ALEX Painters Caulk; DAP Products Inc.
AC-20; Pecora Corporation.
PSI-701; Polymeric Systems, Inc.

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Sonolac; Sonneborn Building Products Div., ChemRex, Inc.
Tremflex 834; Tremco.

ACCESSORIES

Application Materials:

Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.

Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.

Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.

PART 3 - EXECUTION

EXAMINATION

Examine substrates and conditions under which painting will be performed for compliance with paint application requirements. Surfaces receiving paint must be thoroughly dry before paint is applied.

Do not begin to apply paint until unsatisfactory conditions have been corrected.

Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

Notify the Architect about anticipated problems using the materials specified over previously primed and finished substrates.

Test shop applied primer to verify compatibility with cover materials.

Verify moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture contents are at range acceptable to paint manufacturer.

PREPARATION

General: Remove hardware, electrical device plates, equipment, light fixtures, signage, equipment and similar removable items that are not to be painted. Do not attempt to mask or paint around these items unless acceptable to Architect. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.

Mask permanent labels.

Reinstall all items when paint is dry.

Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease prior to cleaning. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

Surface Preparation: Clean and prepare surfaces to be painted according to the manufacturer's instructions for each particular substrate condition and as specified.

Repair voids, cracks, nicks, and other surface defects, with appropriate patching material. Finish flush with surrounding surfaces and match adjacent finish texture.

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Determine moisture content of plaster, stucco, cementitious materials, wood, and other moisture-holding materials by use of a reliable electronic moisture meter.

Provide barrier coats over incompatible existing coatings or remove and reprime. Notify Architect in writing about anticipated problems using the specified finish-coat material with previously painted substrates.

Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.

Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

Aluminum Substrates: Remove loose surface oxidation.

Wood Substrates:

Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces to smooth and dust off.

Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer prior to applying primer.

After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler tinted to match wood color. Sand smooth when dried.

Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.

Backpriming:

Locations scheduled to receive transparent or stain finish: Backprime with VOC compliant varnish.

Backprime exterior woodwork, which is to receive paint finish, with exterior primer paint.

Backprime interior woodwork, which is to receive paint or enamel finish, with enamel undercoater paint.

Backprime wood trim before installation.

Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

Where existing stained surfaces are indicated to be coated with a transparent stain, test apply stain to small area where directed by Architect and obtain Architects approval of color.

Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.

Sand surfaces that will be exposed to view, and dust off.

Prime edges, ends, faces, undersides, and backsides of wood.

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After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

Previously Painted Surfaces: If in sound condition, clean the surface of all foreign material. Smooth, hard or glossy coatings and surfaces should be dulled by abrading the surface. Apply a test area, allowing paint to dry before testing adhesion. If adhesion is poor, additional abrasion of the surface and/or removal of the previous coating may be necessary. Retest surface for adhesion. If paint is peeling or badly weathered, sand and clean surface to sound substrate and treat as a new surface.

Ferrous Metals: Clean previously painted ferrous metal surfaces to remove oil, grease, dirt, and other foreign substances. Rust or other corrosion shall be removed to bare, shiny metal and immediately primed as specified. Use solvent or mechanical cleaning methods that comply with recommendations of the Steel Structures Painting Council (SSPC).

Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.

Repair holes, cracks, scuffed or marred surfaces and other existing damage in surfaces to be repainted. Sand repair smooth and spot prime so that no evidence of repair remains after painting. Use repair compounds and putties specifically formulated and recommended by the manufacturer for the specific repair.

Materials Preparation: Carefully mix and prepare paint materials according to manufacturer's directions.

Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.

Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

Use only thinners approved by the paint manufacturer and only within recommended limits.

Tinting: Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

APPLICATION

General: Apply paint according to manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, cracked surfaces or conditions detrimental to formation of a durable paint film. All loose existing paint shall be removed prior to beginning new painting.

Paint color locations, surface treatments, and finishes are indicated in the schedules.

Provide finish coats that are compatible with primers used.

The number of coats and the film thickness required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce a smooth even surface according to the manufacturer's directions.

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Apply additional coats if undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.

The term exposed surfaces includes areas visible when permanent or built-in fixtures, convactor covers, covers for finned tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.

Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces.

Sand lightly between each succeeding enamel coat.

Omit primer on metal surfaces that have been shop-primed and touch-up painted.

Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

Allow sufficient time between successive coats 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 where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to the manufacturer's directions.

Brushes: Use brushes best suited for the material applied.

Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.

Minimum Coating Thickness: Apply materials no thinner than the manufacturers recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to previously field painted items exposed in mechanical equipment rooms and in occupied spaces.

Electrical items to be painted include, but are not limited to, the following:

Raceway, conduit and fittings.

Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime-coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks, or other surface imperfections.

Pigmented (Opaque) Finishes: Completely cover to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with specified requirements.

Apply stains and transparent finishes according to manufacturer's written instructions.

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Apply stains and transparent finishes to produce surface films without color irregularity, cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other imperfections. Use multiple coats to produce a smooth surface film of even luster.

CLEANING

Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

The disposal of hazardous waste shall conform to applicable federal, state and local regulations.

FIELD QUALITY CONTROL

Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during the period when paint is being applied:

Owner may direct Contractor to stop painting if test results show material being used does not comply with specified requirements. Contractor shall remove noncomplying paint from Project site, pay for testing, and repaint surfaces previously coated with the noncomplying paint. If necessary, Contractor may be required to remove noncomplying paint from previously painted surfaces if, on repainting with specified paint, the two coatings are incompatible.

PROTECTION

Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

SECTION 099000 – PAINTING

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INTERIOR PAINT SCHEDULE

General: Provide the following paint systems for the various substrates, as indicated.

Provide additional coats as required to achieve full coverage.

GYPSUM BOARD WALLS (EGGSHELL):

Low Luster (Eggshell) Latex Vinyl Acrylic Finish: Two (2) finish coats over primer.

Primer: Interior latex primer.

S-W: Promar 200 Zero VOC Interior Latex Primer: Applied at a dry film thickness of not less than 1.0 mils.

First and Second Finish Coats: Interior low-luster (eggshell):

S-W: ProMar 200 Zero VOC Interior Latex Egg-Shell Enamel B24W2600 Series: Applied at a dry film thickness of not less than 1.6 mils.

GYPSUM BOARD CEILINGS (FLAT):

Flat Latex Vinyl Acrylic Finish: Two (2) finish coats over primer.

Primer: Interior latex primer.

S-W: Promar 200 Zero VOC Interior Latex Primer: Applied at a dry film thickness of not less than 1.0 mils.

First and Second Finish Coats: Flat latex finish.

S-W: ProMar 200 Zero VOC Interior Latex Flat B30W2600 Series: Applied at a dry film thickness of not less than 1.3 mils.

SHOP PRIMED FERROUS METAL:

Waterbased Acrylic-Alkyd Semi-Gloss: Two (2) finish coats over shop applied primer.

First and Second Finish Coats: Interior waterbased semi-gloss acrylic-alkyd.

S-W: ProMar 200 Interior Waterbased Acrylic-Alkyd Semi-Gloss B34-8200 Series: Applied at a dry film thickness of not less than 1.4 mils per coat.

WOOD CEILING ELEMENTS

Interior Oil Stain.

Finish Coats: Interior oil stain.

S-W: Wood Classics Interior Oil Stain A49 Series: Applied at a wet film thickness of not less than 3.0 - 3.5 mils per coat.

CONCRETE FLOORS

Water-based Clear Gloss 100% Acrylic Concrete Sealer:

First and Second Finish Coats: Water-based clear concrete sealer

S-W: H&C Clarishield Water Based Wet Look Concrete Sealer.

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EXTERIOR PAINT SCHEDULE

General: Provide the following paint systems for the various substrates, as indicated.

Provide additional coats as required to achieve full coverage.

WOOD

Exterior Polyurethane Semi-Transparent Stain. Two (2) finish coats self-priming.

First and Second Finish Coats: Exterior polyurethane semi-transparent stain.

S-W: Sherwin-Williams; Woodscapes Exterior Polyurethane Semi-Transparent Stain.

FERROUS METAL:

Gloss Finish, Medium Oil/Alkyd All-Purpose Enamel: Two (2) finish coats over shop primer or specified primer.

Primer: rust inhibiting, modified phenolic alkyd resin primer.

S-W Sherwin Williams; Kem Kromik Universal Metal Primer, B50 Series, 6.0 to 8.0 mils wet, 3.3 to 4.4 mils dry.

First and Second Finish Coats: Gloss finish, medium oil/alkyd all-purpose enamel.

S-W: Sherwin-Williams; Industrial Enamel Coating, B54 Series, at 1.9 to 3.9 mils dry, per coat.

END OF SECTION 099000

PART 1 - GENERAL**RELATED DOCUMENTS**

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following types of signs:

- Dimensional characters
- Interior panel signs.

SUBMITTALS

General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.

Product data for each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.

Shop drawings showing fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, layout, reinforcement, accessories, and installation details.

- Provide message list for each sign required, including large-scale details of wording and lettering layout.

- Templates: Furnish full-size spacing templates for individually mounted dimensional letters and numbers.

Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.

- Samples for initial selection of color, pattern, and texture:

- Plastic Sheet Material: Manufacturer's color charts consisting of actual sections of material including the full range of colors available for each material required.

- Samples for verification of color, pattern, and texture selected and compliance with requirements indicated:

- Panel Sign: Provide a sample panel to include a representative sample of the graphic image process required, showing graphic style, and colors and finishes of letters, numbers, and other graphic devices.

- Dimensional Characters: Full-size Samples of each type of dimensional character (letter and number) required. Show character style, material, finish, and method of attachment.

- Approved dimensional character samples will be returned for installation into Project.

QUALITY ASSURANCE

Sign Fabricator Qualifications: Firm experienced in producing signs similar to those indicated for this Project, with a record of successful in-service performance, and sufficient production capacity to produce sign units required without causing delay in the Work.

SECTION 101423 – SIGNS

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Single-Source Responsibility: For each separate sign type required, obtain signs from one source of a single manufacturer.

Regulatory Requirements: Regulatory Requirements: Comply with the following:

ANSI A117.1 "Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People."

ADA Accessibility Guidelines (ADAAG).

Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA), ICC A117.1 and with code provisions as adopted by authorities having jurisdiction.

Interior Code Signage: Provide signage as required by accessibility regulations and requirements of authorities having jurisdiction. These include, but are not limited to, the following:

Tactile Exit Signs

Signs for Accessible Spaces:

Design Concept: The Drawings indicate sizes, profiles, and dimensional requirements of signs and are based on the specific types and models indicated. Sign units by other manufacturers may be considered provided deviations in dimensions and profiles do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

PROJECT CONDITIONS

Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

PART 2 - PRODUCTS

PANEL SIGNS

Panel Signs: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.

Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.

Unframed Panel Signs: Fabricate signs with one piece sign face permanently laminated to an acrylic backplate with etched tactile lettering and Braille characters:

Edge Condition: Square cut.

Corner Condition: Square corners.

Material: Plastic.

Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.

Provide panel signage which comply with the Americans with Disabilities Act (ADA) and all local codes.

Include accurately translated Grade 2 Braille characters for all panel signs.

Raised Copy: Using manufacturer's photopolymer method produce a single piece sign face with precisely formed raised characters.

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Raised Copy Thickness: Not less than 1/32 inch.
Colors: As indicated.
Letter Height: As indicated.
Letter Style: As indicated.

Tactile and Braille Copy: Manufacturer's standard process for producing copy complying with ADA Accessibility Guidelines and ICC/ANSI A117.1. Text shall be accompanied by Grade 2 braille. Produce precisely formed characters with square cut edges free from burrs and cut marks.

DIMENSIONAL CHARACTERS

Basis-of-Design Product: Gemini Incorporated, Cast Metal Letters:

Aluminum Castings: Provide aluminum castings of alloy and temper recommended by sign manufacturer for casting process used and for type of use and finish indicated.

Cast Characters: Form individual letters and numbers by casting. Produce characters with smooth flat faces, sharp corners, and precisely formed lines and profiles, free from pits, scale, sand holes, and other defects. Cast lugs into back of characters and tap to receive threaded mounting studs. Comply with requirements indicated for finish, style, and size.

Material: Aluminum.

Letter Style: TrajanBold Prismatic

Size: First character of each word 12". All other characters 8". All numerals 12"

Finish: Dark bronze anodized

Mounting Methods: Use concealed fasteners fabricated from materials that are not corrosive to sign material and mounting surface.

Projected Spacer Mounting: 1/2" spacer.

PART 3 - EXECUTION

EXAMINATION

Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.

Proceed with installation only after unsatisfactory conditions have been corrected.

INSTALLATION

General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.

Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.

Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow

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approach within 3 inches of sign without encountering protruding objects or standing within swing of door.

Wall-Mounted Panel Signs: Attach panel signs to wall surfaces using methods indicated below:

Mechanical Fasteners: Attach panel signs to wall surfaces with a minimum of (4) four countersunk, tamperproof, stainless steel screws located in each corner of the sign. Holes in signage shall be predrilled by sign manufacturer. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.

Dimensional Characters: Mount characters using standard fastening methods recommended in writing by manufacturer for character form, type of mounting, wall construction, and condition of exposure indicated. Provide heavy paper template to establish character spacing and to locate holes for fasteners.

Projected Spacer Mounting: Studs set in adhesive cement. Pre-cut ½-inch spacers inserted between the cast metal letter and the letter mounting surface.

CLEANING AND PROTECTION

After installation, clean soiled sign surfaces according to the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION 101423

SECTION 102113 – TOILET PARTITIONS

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PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes phenolic-core units as follows:

Toilet Enclosures: Floor anchored.

Related Sections include the following:

Division 10 "Toilet and Bath Accessories" for toilet tissue dispensers, grab bars and similar accessories.

SUBMITTALS

Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

Samples for Initial Selection: For each type of unit indicated.

Samples for Verification: Of each type of color and finish required for units, prepared on 6-inch- (150-mm-) square Samples of same thickness and material indicated for Work.

QUALITY ASSURANCE

Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for toilet compartments designated as accessible.

PROJECT CONDITIONS

Field Measurements: Verify actual locations of walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication and indicate measurements on Shop Drawings.

Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating toilet compartments without field measurements. Coordinate wall, floor, ceilings, and other contiguous construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

PHENOLIC-CORE UNITS

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

Accurate Partitions Corporation.

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All American Metal Corp
American Sanitary Partition Corporation.
Bobrick Washroom Equipment, Inc.
Bradley Corporation; Mills Partitions.
Global Steel Products Corp.
Metpar Corp.

Door, Panel and Pilaster Construction: Solid phenolic-core panel material with melamine facing on both sides fused to substrate during panel manufacture (not separately laminated), and with eased and polished edges. Provide minimum 3/4-inch- (19-mm-) thick doors and pilasters and minimum 1/2-inch- (13-mm-) thick panels.

Facing Sheet Color: One color in each room as selected by Architect from manufacturer's full range of colors.

Core Color: Manufacturer's standard dark color.

Pilaster Shoes and Sleeves (Caps): Stainless steel, ASTM A 666, Type 302 or 304, not less than 0.0312 inch (0.8 mm) specified thickness and 3 inches (75 mm) high, finished to match hardware.

Brackets (Fittings):

Stirrup Type: Ear or U-brackets, stainless steel.

ACCESSORIES

Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.

Material: Stainless steel.

Anchorage and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match hardware, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use hot-dip galvanized or other rust-resistant, protective-coated steel.

FABRICATION

Floor-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies complete with threaded rods, lock washers, and leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.

Doors: Unless otherwise indicated, provide 24-inch- (610-mm-) wide in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide in-swinging doors with a minimum 34-inch- (813-mm-) wide clear opening for compartments indicated to be accessible to people with disabilities.

Hinges: Manufacturer's standard self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees.

Latch and Keeper: Manufacturer's standard surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with accessibility requirements of authorities having jurisdiction at compartments indicated to be accessible to people with disabilities.

Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent door from hitting compartment-mounted accessories.

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Door Pull: Manufacturer's standard unit. Provide units on both sides of doors at compartments indicated to be accessible to people with disabilities. Comply with accessibility standards.

PART 3 - EXECUTION

INSTALLATION

General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

Maximum Clearances:

Pilasters and Panels: 1/2 inch (13 mm).

Panels and Walls: 1 inch (25 mm).

Stirrup Brackets: Secure panels to walls and to pilasters with not less than three brackets attached at midpoint and near top and bottom of panel.

Locate wall brackets so holes for wall anchors occur in masonry or tile joints.

Align brackets at pilasters with brackets at walls.

Floor-Anchored Units: Set pilasters with anchors penetrating not less than 2 inches (50 mm) into structural floor, unless otherwise indicated in manufacturer's written instructions. Level, plumb, and tighten pilasters. Hang doors and adjust so tops of doors are level with tops of pilasters when doors are in closed position.

ADJUSTING

Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched.

END OF SECTION 102113

SECTION 102800 – RESTROOM ACCESSORIES

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

- Restroom accessories.
- Underlavatory guards.

SUBMITTALS

Product Data: Include construction details, material descriptions and thicknesses, dimensions, profiles, fastening and mounting methods, specified options, and finishes for each type of accessory specified.

QUALITY ASSURANCE

Product Options: Accessory requirements, including those for materials, finishes, dimensions, capacities, and performance, are established by the specific products indicated.

- Products of other manufacturers with equal characteristics, as judged solely by Architect, may be provided.

COORDINATION

Coordinate accessory locations with other work to prevent interference with clearances required for access by disabled persons, proper installation, adjustment, operation, cleaning, and servicing of accessories. Install solid blocking where necessary for secure installation.

Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

PRODUCTS

MANUFACTURERS

Basis-of-Design Product: The design for each metal roof panel specified is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product.

- American Specialties, Inc.

- Underlavatory Guards:
 - Brocar Products, Inc.
 - Truebro, Inc.

MATERIALS

Stainless Steel: ASTM A 666, Type 304, with No. 4 finish (satin).

Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

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Fasteners: Screws, bolts, and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.

FABRICATION

General: Names or labels are not permitted on exposed faces of accessories. On interior surface not exposed to view or on back surface of each accessory, provide printed, waterproof label or stamped nameplate indicating manufacturer's name and product model number.

Surface-Mounted Toilet Accessories: Unless otherwise indicated, fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with continuous stainless-steel hinge. Provide concealed anchorage where possible.

EXECUTION

INSTALLATION

Install accessories according to manufacturers' written instructions, using fasteners appropriate to solid blocking substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in solid blocking at locations and at heights indicated.

Install grab bars to withstand a downward load of at least 250 lbf (1112 N), when tested according to method in ASTM F 446. Install solid blocking.

ADJUSTING AND CLEANING

Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items.

Remove temporary labels and protective coatings.

Clean and polish exposed surfaces according to manufacturer's written recommendations.

Underlavatory Guard: Where this designation is indicated, provide underlavatory guard complying with the following:

Insulating Piping Coverings: White, antimicrobial, molded-vinyl covering for supply and drain piping assemblies intended for use at accessible lavatories to prevent direct contact with and burns from piping. Provide components as required for applications indicated with flip tops at valves that allow service access without removing coverings.

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RESTROOM ACCESSORY SCHEDULE

Toilet Tissue Dispenser: ASI #20300: Where this designation is indicated, provide soap dispenser complying with the following:

Surface Mounted Twin Hide-A-Roll Toilet Tissue Dispenser shall hold and dispense two (2) standard or two (2) 5-1/4" diameter 1800 sheets tissue rolls and shall have door, door frame, and dispensing mechanism fabricated of alloy 18-8 stainless steel, type 304, 18 gauge; cabinet body shall be same grade, 22 gauge. All exposed surface shall be No 4 satin finish and be protected during shipment with a PVC film easily removable after installation. Internal mechanism levers shall be fabricated of molded high-impact resistant plastic for smooth operation. Structural assembly of body and door components shall be of welded construction. Door hinge shall be of heavy-duty stainless steel 3/16" diameter (Ø4.8). Door shall be held closed with a tumbler lock keyed alike to other ASI washroom equipment. Cabinet shall include theft resistant and vandal resistant rollers that shall be of molded high-impact resistant plastic with integral molded-in stainless steel end pins and two (2) rollers shall be supplied.

Grab Bars: ASI #3800 Series: Where this designation is indicated, provide stainless-steel grab bar complying with the following:

Grab Bar with Snap-On Flange Covers for concealed mounting shall be type 304 stainless steel alloy 18-8. Tubing shall be 1-1/2" diameter x 18 gauge [0.048"]. Snap-on cover shall be 22 gauge [0.03"]. Flange shall be 1/8" thick and shall be Heliarc welded to tubing with a continuous concealed bead. End flanges shall have two (2) 3/8" diameter mounting holes. Center posts (if any) shall have (2) keyhole slots to ease installation access. All exposed surfaces shall have a satin finish and shall be protected during shipment with a plastic bag. Provide optional non-slip surface (peened).

Grab Bars shall be designed to meet and exceed ADA requirements as published in CABO/ANSI A117.1 and 2010 ADA Accessibility Standards. Provide manufacturer's recommended fasteners.

Paper Towel Dispensers and Soap Dispensers: Furnished and installed by others. Not in contract. Provide solid blocking at installation location indicated.

END OF SECTION 102800

SECTION 104416 – FIRE EXTINGUISHERS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes the following:

Portable fire extinguishers.

SUBMITTALS

Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection cabinets.

Fire Extinguishers: Include rating and classification.

Maintenance Data: For fire extinguishers to include in maintenance manuals.

QUALITY ASSURANCE

Source Limitations: Obtain fire extinguishers and fire-protection cabinets through one source from a single manufacturer.

NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

WARRANTY

Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable fire extinguishers that fail in materials or workmanship within specified warranty period.

Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

GENERAL USE PORTABLE FIRE EXTINGUISHERS AND BRACKETS

General: Provide fire extinguishers of type, size, and capacity indicated.

Valves: Manufacturer's standard aluminum.

Handles and Levers: Manufacturer's standard.

Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.

Multipurpose Dry-Chemical Type in Steel Container: UL-rated 4-A:80-B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

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Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.

Color: Red.

KITCHEN USE PORTABLE FIRE EXTINGUISHERS AND BRACKETS

Wet Chemical Type in Stainless Steel Container: UL-rated 2-A:K, 2.5 gallon nominal capacity, with potassium acetate-based wet chemical agent.

Stored Pressure Design

Polished Stainless Steel Cylinders -

All Stainless Steel Valve Construction

Crevice Free, Butt Welded Cylinder

Tested on Commercial Deep Fat Fryers to ANSI / UL 711 Test Protocol and Safe to Use on Energized Electrical Appliances

Class 2A Rated to Meet Fire Code Occupancy Hazard Requirements

Temperature Range +40°F to 120°F

Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.

PART 3 - EXECUTION

Examine fire extinguishers for proper charging and tagging.

Remove and replace damaged, defective, or undercharged units.

Proceed with installation only after unsatisfactory conditions have been corrected.

INSTALLATION

General: Install fire-protection specialties in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.

Mounting Brackets: 36 inches above finished floor to top of fire extinguisher.

Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated. Provide solid wall blocking at bracket locations.

END OF SECTION 104416

SECTION 114000 – FOODSERVICE EQUIPMENT

HWY 14 SENIOR/COMMUNITY CENTER
LOS CERRILLOS, NEW MEXICO

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Division 00-Bidding and Contracting Requirements and Division 01-General Requirements apply to this section as fully as if repeated herein.

1.2 WORK INCLUDED

- A. As part of this sections work:
 - 1. The sub-contractor and sub-contractors equipment supplier shall be a part of the overall construction team and will attend construction progress meetings and make progress inspections of their area of work, unless otherwise noted herein.
 - 2. They will provide a written report on their progress.
 - 3. They will be available to provide installation requirements, ensure that utility rough-ins are met and report any and all discrepancies in a timely manner.
 - 4. Source of foodservice equipment specified herein show in the "Provided By" column.
 - A. By GC = Equipment provided and installed by the General Contractor
 - B. By KEC = Equipment provided and installed by the Kitchen Equipment Contractor
 - C. By Owner = Owner furnished and installed equipment, unless otherwise noted
 - D. N.I.C. = Not in Contract, reference only
- B. Furnish and install all foodservice equipment as specified and as indicated on foodservice drawings. Including:
 - 1. Stands and supports for all equipment requiring them.
 - 2. All faucets and drains with tailpieces.
 - 3. Condensate drain lines from the evaporative coil(s) in walk-in box(es) to specified floor drain.
 - 4. Heat tape in walk-in freezer per manufacturer recommendations.
- C. Required cutting and patching of holes in equipment for pipes, drains, electric penetrations, outlet, etc., as required. Including providing and/or welding sleeves, collars, ferrules or escutcheons.
- D. All inter-wiring of equipment, where these items are part of the equipment furnished, from control switches, panels, cut-offs, etc.
- E. All other related materials or accessories not shown or specified that are necessary and reasonably implied from the drawings, or accepted methods of construction, will be included at no additional cost to the owner.
- F. Repair any damages that resulted from installation.

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- G. Immediately remove all debris resulting from installation, clean all equipment and make ready for operation and acceptance by the owner. If other construction activity is going on in the area the contractor will provide temporary protective cover.
- H. New equipment that is supplied by the owner and installed by the Kitchen Equipment Contractor (KEC) will be indicated in the specifications remarks column.
- I. Existing equipment that is to be removed and reinstalled by the general contractor, unless otherwise noted, will be indicated in the specifications remarks column.

1.3 RELATED WORK

- A. Division 22 – Plumbing & Division 23 – Heating Ventilation and Air Conditioning: Rough-in ducting, piping and final connection between rough-in and equipment; installation of mechanical and plumbing devices and fittings in utility lines; interconnecting field ducting and piping between food service equipment and components; exhaust ducts, exhaust fans, indirect waste lines, floor clean outs and floor sinks.
- B. Division 26 - Electrical: Rough in; conduit, conductors and final connection between rough-in and equipment; installation of electrical fittings and devices in utility lines; interconnecting field wiring between foodservice equipment and components; circuit breakers panels other than those integral with foodservice equipment; final disconnect means.
- C. In the event of conflict regarding the requirements for the referenced foodservice equipment between this section and any other section, the provisions of this section shall govern. The contractor must report any discrepancy immediately and not proceed with that portion of work without written clarification and/or corrective action. Failure to get clarification before proceeding will be at this contractor's expense.

1.4 CONTRACT DOCUMENTS

- A. Drawings shall govern for quantity and specifications for quality.
- B. If there is a discrepancy between the written specification and the model number listed the written specification supersedes.

1.5 SUBSTITUTIONS

- A. No substitutions without prior approval.
- B. Equipment shall be as specified by specific manufacturer, model number, size, utility requirements, capacity, options and accessories.
- C. All requests for prior approvals must be in the architect's office 10 days prior to bid opening date and must be approved prior to bid date.

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- D. The term “approved equal” or “approved alternate” means the manufacturers listed as alternates are approved for that specific piece of food service equipment.
1. The original equipment specification shall govern in matters of capacity, fuel consumption, voltage, phase, overall dimensions, materials, function and accessories.
 2. Categories of equipment of substantial quantity shall be of the same brand as to limit the responsibility of guarantee and warranty.
 3. Contractor shall be responsible for all costs associated with the acceptable alternate or approved alternate items.
 4. The contractor and the equipment sub-contractors are responsible to report all discrepancies between the specified piece of equipment and the alternate piece during equipment submittals.
 5. Contractor must note changes on the submittals.
 - a. If the item requires additional space or specific utilities that differ from specifications or drawings. The contractor shall be responsible for any retrofitting (building changes, utility changes and engineering changes).
 - b. If the item is found not to be equal then the KEC shall remove and replace with specified piece of equipment.
- E. For a request of substitution or prior approval, submit (1) electronic PDF file or (3) hard copies to the architect’s office including:
1. Item number that they are requesting a substitute or prior approval for.
 2. Product identification, including manufacturer’s name & address.
 3. Product spec-sheet.
 4. If applicable, a list of other installations using the alternate product.

1.6 LAWS AND ORDINANCES

- A. Check and confirm that drawings and specifications meet all Federal, State and Local Government bodies.
- B. Certify that all work and materials comply with Federal, State and Local laws, ordinances and regulations and is confirmed by the local inspector having jurisdiction.
- C. Work and materials must be in full accord and, when appropriate, shall be listed with the following agencies.
1. Local Health Department
 2. OSHS
 3. National Sanitation Foundation (NSF)
 4. Underwriters Laboratories (UL) or ETL equivalent
 5. AGA & NFPA
 6. National Fire for exhaust system (NFPA-96)
 7. National Fire Standards for wet chemical extinguishing systems (NFPA-17A)

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1.7 INSURANCE, GUARANTEE AND WARRANTY

- A. All equipment shall be fully guaranteed against defects in workmanship and material for one (1) year after owner's final acceptance. Guarantee period shall commence with the owners first usage of the equipment for the intended purpose after the final acceptance.
- B. All repairs and replacements shall be made without charge to the owner.
- C. The sub-contractor will provide bid bond and, if successful, will provide a performance bond.
- D. If malfunctions occur within the one year warranty period the food service equipment contractor shall make suitable arrangements with local approved service and repair agencies for the servicing and maintenance of the equipment.
- E. EQUIPMENT ACCESS
 - 1. Verify all building conditions and coordinate proper access of large equipment into the building.
 - 2. Any specific items needed for the movement of large, heavy or bulky equipment is the full responsibility of the contractor.
- F. QUALITY ASSURANCE AND QUALIFICATIONS (sub-contractor)
 - 1. Provide proof of license to the architect to perform the work included in this section, but not limited to; refrigeration license, mechanical license to hang and install kitchen exhaust hoods, kitchen fire suppression systems, build/erect walk-in cooler/freezer pre-fabricated boxes.
 - 2. Provide proof of insurance to the architect. Including workman's comp and performance bond.
 - 3. Provide a list of sub-contractors that you will be using on this project and their license numbers and type to the architect.
 - 4. Notify architect, during custom fabrication, in writing when the custom fabricated equipment will be approximately ninety percent completed in the fabricators shop.
 - a. Give notice 2 weeks in advance to allow for scheduling of an observation visit.
 - b. Correct any errors discovered during the observation visit, within the scope of the drawings and specifications, at no change in the sub-contract sum.
 - c. Failure to give this notice will be cause for rejection of the equipment or fixtures upon delivery to the job site.
 - 5. If required, attend progress meetings and inspect the site where the food service equipment will be installed, report on compliance and discrepancies.

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G. DESIGN CRITERIA

1. The work of this section shall comply with all current codes and standards including current editions, revisions and supplements.

H. SUBMITTALS

1. Submit (1) digital submittal in PDF format or (3) hard copy submittals.
2. Submit book of manufacturer's literature (spec sheets) indicating components of specified materials, installation requirements, specifications and maintenance requirements for materials specified.
3. Submittals will be supplied with a complete index equipment list stating the item number, quantity, item name including the current name, address and telephone number of the nearest authorized service representative.
4. Submit rough-in drawings indicating locations of utility requirements for all equipment, including any inter-connections.
5. All changes to electrical, mechanical, plumbing and ventilations from the foodservice or architectural drawings must be clouded on submittal documents.
6. Submit shop drawings indicating item number, dimensions, listing all materials and components, details of construction, installation. List all reinforcements, anchorage and related accessories.
 - a. Shop drawings shall be drawn to an indicated scale no less than $1/4" = 1'-0"$ for plans and elevations. Details of special interest, sections, anchorage and connections at no less the $1-1/2" = 1'-0"$.

I. START-UP AND DEMONSTRATION MANUALS

1. Using the companies that are authorized to service each piece of equipment the contractor will have the service company start-up, service and calibrate each piece of equipment.
2. Provide a factory-trained representative to do start-up and (2) demonstrations of the foodservice equipment.
 - a. Operation with the people who will be using the equipment daily.
 - b. Maintenance personnel who will be servicing and providing preventive maintenance on the equipment.
3. Provide final adjustments and calibration of equipment after two to three weeks once the facility has opened and is operational.
4. Submit operating and maintenance manuals of all food service equipment upon completion of this portion of work.
5. Prepare a list of service agencies authorized by the manufacturer to service the equipment including contact name and telephone number.
6. Refrigeration Lines (*if applicable*):

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- a. After final inter-connection to evaporators and refrigeration unit, all systems are to be evacuated to no less than 500 microns with vacuum pump.
- b. All systems shall be monitored for no less than 48 hours, during which time calibrations and other adjustment will be made to each system, as required. Refrigeration contractor shall come back (2) weeks after walk-ins are in full use and perform a complete test and calibration of systems under operational load.

PART 2 – PRODUCTS

2.1 MATERIALS

A. GENERAL REQUIREMENTS OF FABRICATION

1. Fabrication shall conform to general acceptance of the food service industry.
2. Fabrication shall meet or exceed National Sanitation Foundation standards including the latest editions and revisions.

B. Stainless Steel:

1. U.S. standard gauge 18-8 AISI type 300 and 304 with #4 polished finish on any exposed surface. Provide non-magnetic sheets, free of buckles, waves and surface imperfections. Provide with 430 stainless for exhaust hoods.

C. Galvanized Steel Sheet:

1. Provide U.S. standard gauges, mild cold-rolled low carbon sheets, zinc coated.

D. Laminated Plastic:

1. Shall be veneered with approved waterproof and heatproof cement. Rubber base adhesives are not acceptable.
2. Shall be applied directly over melamine, plywood or equal.
3. Exposed faces and edges shall be faced with 1/16" thick material. Corresponding backs shall be covered with approved backing and balancing sheet material.

E. Solid Surface Material:

1. Shall be installed over 3/4" plywood per manufacturer's instructions.

F. Sound Deadening:

1. Heavy-bodied resinous coating, filled with granulated cork or other resilient material, compounded for permanent, non-flaking adhesion to metal in 1/8" thick coating.
2. Apply to the underside of metal counter tops, drain boards and sinks.

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G. Sealants:

1. Provide sealant that when fully cured and washed meets requirements for the Food and Drug Administration Regulation for use in areas where it comes in contact with food.
 - a. Color to be selected by the architect from the manufacturer's standard colors.

H. Insulation:

1. For low-temperature applications, such as ice bins or cold pans use urethane, rigid board, foam or foamed-in-place, of not less than 2" (50mm) thick, except that vertical surfaces of cold pans and ice bins may be 1" (25.4 mm) thick. Insulation shall be bonded at joints to prevent condensation on the exterior.
2. For normal-temperature applications, such as fabricated under-the-counter refrigerators, use Styrofoam material two (2) inches thick, bonded at all joints.
3. For heated-type applications, such as plate warmers, use block-type wool, minimum one (1) inch thick. At counter tops, subject to heat from cooking equipment and/or refrigeration compressors, use one (1) inch thick Marinite or acceptable substitution to insulate the underside of the top.
4. Marinite material shall be added between freezer or refrigerator and 14-gauge stainless steel top.

I. Sinks:

1. Each sink shall be constructed of 14-gauge or 16-gauge stainless steel with each compartment to have back, bottom, front and ends formed of one sheet with vertical corners fully welded.
2. Faucet holes to be centered in single compartment sinks and centered over partitions in multi-compartment sinks.
3. All sinks with an indirect drain(s) to have lever waste drain handle(s) with stainless steel support bracket(s) and overflow(s).

2.2 WELDING AND SOLDERING

- A. Materials 18-gauge or heavier shall be welded.
- B. Seams and joints shall be shop welded or soldered as the nature of the material may require.
- C. Welds shall be ground smooth and polished to match the original finish.
- D. The weld shall be cleaned and touched up with high-grade aluminum paint if galvanizing has been burned off.

2.3 ELECTRICAL WORK

- A. Coordinate work with all related trades.

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- B. Verify electrical requirements for all existing owner supplied equipment and equipment being supplied by the owner thru a vendor.
- C. All components and assemblies shall bear Underwriters Laboratories, Inc. (UL) label.
- D. All outlets, cords and plugs shall conform to NEMA standards.
- E. Exposed electrical conduit used in kitchen wet area applications, except for flexible connections, shall be rigid galvanized steel. Thin wall conduit (EMT) will not be permitted for wet areas.
- F. Exposed outlet boxes shall be liquid tight with threaded hubs.
- G. Contractor shall be responsible for internal wiring of electrical devices, built into or forming an integral part of fabricated equipment items. Wiring to be in metal conduit to a pull-box tagged for intended use.
- H. Each standard item shipped in sections shall be properly connected internally and verified.
- I. If light fixtures are specified as part of a piece of equipment then lamps shall be provided unless otherwise specified. If fluorescent light fixtures are specified, all ballasts shall be included and to be provided with on/off controls.
- J. All electrical equipment underneath exhaust hoods to be wired to shunt trips breakers.

2.4 FABRICATED WORKMANSHIP

- A. The following will not be accepted for fasteners and joints:
 - 1. Exposed screw, bolt heads, rivets
 - 2. Butt joints made by riveting straps under seams and then filled with solder
- B. Rolled edges shall be as detailed, with corners bull nosed, ground and polished.
- C. All stainless steel food service equipment shall have ½ inch or larger radius coves in all horizontal and vertical corners and intersection per NSF standards.
- D. Tables with back splashes shall have a 2" return with a 45 degree angle with lip turned down and Z-clipped and secured to wall.

2.5 EXHAUST HOODS

- A. All stainless steel construction. See drawings for size and location of ducts.
- B. Provide stainless steel closure panels to finished ceiling and closure trim for adjacent walls and spaces between hoods.
- C. Bottom of hood to be mounted 6'-8" to 7'-0" above finished floor.

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2.6 FIRE PROTECTION SYSTEMS

- A. The fire protection system shall conform to NFPA 17A – Standard for Wet Chemical Extinguishing Systems.
- B. Provide all surface appliance, hood and duct protection nozzles.
- C. Piping to run unexposed whenever possible. Any exposed piping to be chrome plated or sleeved.
- D. Manual pull station to be placed on a path of egress.
- E. Assembly shall contain two sets of normally open/closed contact points.
- F. Provide mechanical fire-fuel gas shut off valve or electrical solenoid valve for equipment below hoods and verify size with mechanical engineer.
- G. Upon completion, the system must be tested in the presence of the enforcing agency.
- H. Contractor shall be licensed and provide all permits and testing is in this contractor's scope.

2.7 ENCLOSURES

- A. Provide and install enclosure panels for access, secured or removable, on any piece of equipment that houses movable parts.
- B. Cover and provide protection for any exposed steam line or condensate line that may be within reach of operation personnel.

PART 3 – EQUIPMENT SPECIFICATIONS

3.1 DISCREPANCIES

- A. All discrepancies will be reported and brought to the attention of the contractor and other trades to ensure that corrections are made in a timely manner. Failure to provide complete and accurate information will be at the expense of the supplier.
- B. Written specifications supersede model numbers.

3.2 FOODSERVICE EQUIPMENT

- A. The following is a list showing the foodservice equipment and related items to be installed as indicated on the drawings.

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1. Items that are related to the foodservice equipment but not in the proposed KEC's contract will be specified to be provided by the GC or the owner.
 2. For information and specifications on related items refer to the architect, mechanical and electrical sections of the drawings and specifications.
- B. Item numbers refers to the corresponding item number on foodservice drawings and the foodservice equipment schedule.

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
RECEIVING					
1		1	AIR CURTAIN Air-Pro® Air Door, 72" wide, stainless steel, (2) 1/3 hp two-speed motor with built-in high/low/off switch, (2) blower wheels, automatic door plunger switch 120/1, (2) 1/3 hp motors, cord & plug CURTRON: AP-4-72-2-SS	BY KEC	
2		1	MOP SINK, BASIN TYPE Direct drain	BY GC	SEE MECH
3		1	WALL COVERING (not shown) 18 ga. 304 stainless steel, 36" high on walls around mop sink, all edges hemmed under	BY GC	
4		1	UTILITY FAUCET With vacuum breaker for mop sink with check valve back flow preventer 1/2" hot & cold water connection	BY GC	SEE ARCH
5		1	MOP HANGER (not shown)	BY GC	SEE ARCH
6		1	SOAP DISPENSER (not shown) 1/2" cold water connection required	BY OWNER	VENDOR
7		1	MOP BUCKET	BY OWNER	
8			SPARE NUMBER		
9		1	WIRE SHELVING, FREESTANDING Shelving units, epoxy coated, (5) wire shelves, (4) 63" high post , see plans for sizes, with 5" diameter swivel casters, 2 locking, with donut bumpers (CA5SB) NEXEL: 18306N5	BY KEC	
10		3	WALL CAP GUARD End Wall Guard, 48" x 2" x width of wall x 2", 16 ga. stainless steel, Type 304, Satin #4 Finish CUSTOM FAB	BY KEC	
11		1	HAND SINK, WALL MOUNT 14"W x 10" front-to-back x 5" deep, 4" O.C. splash mount faucet holes, 1-7/8" drain, basket-with left side splash, drain included, all stainless steel construction, with left side splash, NSF, CSA 1/2" hot and cold, direct drain JOHN BOOS: PBHS-W-1410-P	BY KEC	
12		1	SOAP & TOWEL DISPENSER (not shown)	BY OWNER	

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
13			SPARE NUMBER		
14			SPARE NUMBER		
			DRY STORAGE		
15		1	CAN RACK Heavy Duty Mobile Can Storage Rack, full size, 25-1/2"W x 35"D x 82-1/4"H, front or rear loading, holds (162) #10 cans, (9) levels, open top, welded aluminum construction, 5" x 2" swivel plate casters with Zerk grease fittings, two with brakes, NSF, MADE IN USA CHANNEL: CSR-99M	BY KEC	
16		7	WIRE SHELVING, FREESTANDING Shelving units, epoxy coated, (5) wire shelves, (4) 63" high post , see plans for sizes, with 5" diameter swivel casters, 2 locking, with donut bumpers (CA5SB) NEXEL: 18486N5, 18366N5	BY KEC	
17			SPARE NUMBER		
18			SPARE NUMBER		
			PREP		
19		1	FREEZER, REACH-IN, 3-SECTION Extra-Wide Freezer, reach-in, 85-1/2" wide three-section, self-contained refrigeration, stainless steel exterior & interior, standard depth, full-height solid doors, electronic controller w/ digital display, electric condensate evaporator, 5" casters, 3/4 hp, cETLus, NSF, Made in USA 120/208/1, 3/4 hp, 12.1 amps, provide with cord and plug CONTINENTAL: 3FE-SS	BY KEC	
20		1	REFRIGERATOR, REACH-IN, 3-SECTION Extra-Wide Refrigerator, reach-in, 85-1/2" wide three-section, self-contained refrigeration, stainless steel exterior & interior, standard depth, full-height solid doors, electronic controller w/ digital display, electric condensate evaporator, 5" casters, 1/2 hp, cETLus, NSF, Made in USA 120/1, 1/2 hp, 13.1 amps, NEMA 5-15P CONTINENTAL: 3RE-SS	BY KEC	
21			SPARE NUMBER		
22			SPARE NUMBER		

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
23			SPARE NUMBER		
24		1	TABLE, WORK 14 ga 304 stainless steel top, 30" depth by length shown on plans, with 5"-6" riser backsplash, with 2" return to wall at a 45 degree angle, with lip turned down, with z-clips to secure table to wall, with countertop non-drip edge, with 16 ga. adjustable undershelf, s/s legs, adjustable bullet feet, NSF With (2) drawers, for 30"D work tables, 20" x 20" x 5" deep, stainless steel front & drawer pan, self closing, roller bearing slides, NSF (DR2020SC-S30) JOHN BOOS: ST4R5-3096SSK	BY KEC	
25		1	SHELF, WALL MOUNTED 18 ga. 304 stainless steel, wall mounted, 12" wide by length shown on plans, 1-1/2" turned up riser, with support brackets JOHN BOOS: BHS1296	BY KEC	
26		2	APPLIANCE, FUTURE 120/1, cord and plug	BY OWNER	FUTURE
27			SPARE NUMBER		
28		1	MIXER, 40 QT Planetary Mixer, floor model, 40 qt. 304 stainless steel bowl, #12 attachment hub, (3) fixed-speeds, digital controls with 60- minute timer & batch recall, permanently lubricated gear-driven transmission, removable stainless steel bowl guard with built-in ingredient chute, interlocking bowl lift, thermal overload protection, cast iron body with enamel gray paint, non-slip rubber feet, includes: stainless steel wire whip, aluminum spiral dough hook & flat beater, NSF With Adapter Kit, for SP40P mixer, includes; 20 quart stainless steel bowl, hook, whip, flat beater & adapter ring (XXACC20-40) With bowl trolley, heavy-duty with handle (XBTRUCK-40) 208/3, 2 hp, 7.0 amps, NEMA L15-20P GLOBE: SP40	BY KEC	
29		1	POT RACK, WALL MOUNTED Single bar, 24" L, 3/16" x 2" stainless steel flat bar, includes (3) stainless steel double hooks, NSF JOHN BOOS: PRW11A (modified)	BY KEC	
30			SPARE NUMBER		

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
31			SPARE NUMBER		
32			SPARE NUMBER		
33			SPARE NUMBER		
34		1	TABLE WITH SINK 14 ga 304 stainless steel top, 30" depth by length shown on plans, with 5"-6" riser backsplash, with 2" return to wall at a 45 degree angle, with lip turned down, with z-clips to secure table to wall, with countertop non-drip edge, with 16 ga. adjustable undershelf, with 3"x3" cutout for plumbing drain, s/s legs, adjustable bullet feet, NSF with a 2-compartment sink: 16" x 18" x 12" deep, twist lever waste drain and overflow (#PB-LWR-1OV), with punch for overflow and s/s bracket (PB-LWR) for drain handles Supply with Faucet, 10" c/c backsplash mount, with 8" swing spout, EZ- Install adapters, wrist handles (FISHER: 45489) With (1) drawer, for 30"D work tables, 20" x 20" x 5" deep, stainless steel front & drawer pan, self closing, roller bearing slides, NSF (DR2020SC-S30) 1/2" hot and cold water, in-direct drain JOHN BOOS: ST4R5-30120SSK	BY KEC	
35		1	SHELF, WALL MOUNTED 18 ga. 304 stainless steel, wall mounted, 12" wide by length shown on plans, 1-1/2" turned up riser, with support brackets JOHN BOOS: BHS12120	BY KEC	
36		1	FOOD CUTTER (TRS23NU) TRS Vegetable Cutter, heavy duty, designed for high volume dicing requirements, stainless steel hopper and lever, rear handle, removable cutting chamber & ejector plate, single speed (400 RPM) With Set of 7, stainless steel discs (#650179), includes: (1) C2S 5/64" (2mm) slicing disc, (1) C5S 3/16" (5mm) slicing disc, (1) J2X 5/64" (2mm) grating disc, (1) J7X 9/32" (7mm) grating disc, (1) AS4X 5/32" x 5/32" (4x4mm) shredding disc, (1) C10PS 3/8" (10mm) presser/slicer, (1) MT10T 3/8" x 3/8" (10x10mm) dicing grid (650179) 120/1, 2/3 hp, 500 watts, 7.1 amps, cord & plug ELECTROLUX: 603801	BY KEC	

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
37		1	<p>FOOD SLICER</p> <p>G-Series Food Slicer, automatic, medium duty, 12" diameter knife, extended rod, end weight & chute accommodate product up to 10.5" tall, pyramid-shaped end weight teeth, gripping teeth on underside of end weight, top mounted sharpener, ball bearing chute slide, attached knife ring guard, knob added to knife cover, knife cover interlock, 35° chute, metal bottom enclosure, removable chute, slice deflector, & knife sharpener, power indicator light, motor overload protection, on/off switch, sealed splash zones, anodized aluminum construction, cETLus, ETL-Sanitation</p> <p>120/1, 1/2 hp, 3.0 amps, NEMA 5-15P GLOBE: G12A</p>	BY KEC	
38		1	<p>PAN RACK</p> <p>Bun Pan Rack, mobile, 20-1/2"W x 26"D x 70-1/4"H, capacity (30) 18" x 26" bun pans, front load, open sides, 2" spacing, welded aluminum construction, 5" swivel plate casters, with corner hummers NSF MADE IN USA CHANNEL: 400A</p>	BY KEC	
39			SPARE NUMBER		
40			SPARE NUMBER		
41			SPARE NUMBER		
			COOK LINE		
42		1	<p>COMBI-OVEN, GAS</p> <p>(SCC 102NG) SelfCooking Center® Combi Oven/Steamer, natural gas, iCookingControl with 7 modes, HiDensityControl®, iLevelControl, Efficient CareControl, Combi-Steamer with 3 modes, (10) 18"x26" or (20) 12"x20" pan capacity, core temp probe with 6 point measurement, hand shower with automatic retracting system, ships with (5) grid shelves, ethernet interface, ENERGY STAR®</p> <p>UG II Mobile Oven Stand, 14 supporting rails, side panels and top closed, rear panel open, height 26-3/8", stainless steel construction</p> <p>With Water Filtration Single Cartridge System, for any single Combi model or Combi-Duo models XS/XS, 61/61 or 61/101, includes: (1) single head with pressure gauge, R95H filter & filter installation kit (1900/1154US)</p>	BY KEC	

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
			<p><i>COMBI-OVEN, GAS (continued)</i></p> <p>With Safety System Moveable Gas Connector Kit, 3/4" inside dia., 48" long, covered with stainless steel braid, coated with blue antimicrobial PVC, 1 SnapFast™ QD, 1 full port valve, (2) 90° elbows, coiled restraining cable with hardware (DORMONT: 1675KIT48)</p> <p>(2) 3/4" cold water from water filter, in-direct</p> <p>3/4" gas, 170 MBTUH</p> <p>208/1, 0.8 kw, 15.0 amps, NEMA 6-15P</p> <p>RATIONAL: B128206.19E (SCC 102NG)</p>		
43		1	<p>TABLE, LANDING</p> <p>14 ga 300 stainless steel top, 30" depth by length shown on plans, with lip turned down, with countertop non-drip edge, with 18 ga. adustable undershelf, s/s legs, with casters, 5", heavy duty, locking (CASO1-R) NSF</p> <p>JOHN BOOS: ST4-3024SSK</p>	BY KEC	
44		1	<p>RANGE, 4-BURNER, 36" GRIDDLE, GAS</p> <p>Restaurant Range, gas, 60", (4) open burners, (1) 36" griddle, (2) standard ovens, (2) chrome rack per oven, 3" grease trough, removable grease pan & crumb tray, stainless steel front, sides, backguard, shelf, landing ledge & kick plate, with thermostat controls, swivel casters, three with brakes, NSF</p> <p>With Safety System Moveable Gas Connector Kit, 3/4" inside dia., 48" long, covered with stainless steel braid, coated with blue antimicrobial PVC, 1 SnapFast™ QD, 1 full port valve, (2) 90° elbows, coiled restraining cable with hardware (DORMONT: 1675KIT48)</p> <p>3/4" gas, 258 MBTUH</p> <p>IMPERIAL: IR-4-G36</p>	BY KEC	
45		1	<p>HEAT SEAL MACHINE</p> <p>120/1, cord and plug</p>	BY OWNER	EXISTING
46			SPARE NUMBER		
47			SPARE NUMBER		
48			SPARE NUMBER		

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
49	A	1	<p>EXHAUST HOOD, COOKING</p> <p>Hood Dimensions: 141" x 54" (1 sections)</p> <p>Hood Finish: 18 guage #430 stainless steel</p> <p>Exhaust Hood, Type I, exhaust only wall canopy, with seperate external make-up air plenum system, exterior shall be constructed of a minimum of 18 guage #430 s/s, with integral 3 inch air space along wall for NFPA 96 clearance, all seams, joints and penetrations of the hood enclosure shall be welded and/or liquid tight, with remote fire system cabinet mounted on wall, with fire system pre-plumbed into hood, with remote control panel, with remote switches to be mounted in wall at 48" AFF, with filter housing constructed of the same material as the hood, with high efficiency aluminum filters</p> <p>EXHAUST HOOD (continued) (U.L. 1046 classified and NSF Certified), with drain to removable grease container, with U.L. listed incandescent light fixtures that are pre-wired to a junction box situated at the top of the hood for field connection, wiring shall conform to the requirements of the National Electric Code (NFPA#70) Built in accordance with an U.L. 710 listing, NFPA bulletin #96, IMC, UMC and NSF. See drawings for additional specifications & sizing information. KEC to provide complete shop drawings to coordinate installation with the general contractor and mechanical contractors.</p> <p>ACCUREX: XBEW</p>	BY KEC	
49	B	1	<p>RETURN AIR PLENUM</p> <p>eyebrow, canopy, running full length of hood, mounted to face of exhaust hood, constructed with 18 ga 430 s/s with perforated face, with damper mounted in collars. See drawing for additional specifications & size information</p> <p>ACCUREX</p>	BY KEC	
49	C	1	HOOD SWITCHES & CONTROLS, REMOTE	BY KEC	SEE ELEC.
50	A	1	EXHAUST FAN AND DUCT WORK (not shown)	BY GC	SEE MECH.
50	B	1	EXHAUST DUCT FIRE SHAFT (not shown)	BY GC	SEE MECH.
50	C	LOT	ROOF PENETRATION & CURB (not shown)	BY GC	SEE ARCH.
51		1	TEMPERED MAKE-UP AIR/SUPPLY FAN (not shown)	BY GC	SEE ARCH.
52		1	<p>FIRE SUPPRESSION SYSTEM WET CHEMICAL, REMOTE</p> <p>Part of fire system, remote, mounted on wall.</p>	BY KEC	
53	A	1	<p>GAS SHUT-OFF VALVE, REMOTE (not shown)</p> <p>Part of fire system (shipped loose), coordinate location</p>	BY KEC	INSTALLED BY GC

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
53	B	1	MANUAL PULL STATION, REMOTE (not shown) Part of fire system, coordinate with electrical contractor	BY KEC	INSTALLED BY GC
54	LOT		S/S WALL COVERING & TRIM 20 ga 304 stainless steel that is running the full length of hood and end wall, and from bottom of hood to top of cove base, to include trim to hood and interconnecting stainless steel trim ACCUREX	BY KEC	
55			SPARE NUMBER		
56			SPARE NUMBER		
57			SPARE NUMBER		
			SERVING		
58		1	TABLE, WORK 14 ga 304 stainless steel top, 30" depth by length shown on plans, with 5"-6" riser left and back splash, with 2" return to wall at a 45 degree angle, with lip turned down, with z-clips to secure table to wall, with countertop non-drip edge, with 16 ga. adjustable undershelf, s/s legs, adjustable bullet feet, NSF With (1) drawer, for 30"D work tables, 20" x 20" x 5" deep, stainless steel front & drawer pan, self closing, roller bearing slides, NSF (DR2020SC-S30) JOHN BOOS: ST4R5-3084SSK	BY KEC	
59		1	SHELF, WALL MOUNTED 18 ga. 304 stainless steel, wall mounted, 12" wide by length shown on plans, 1-1/2" turned up riser and left end splash, with support brackets JOHN BOOS: BHS1284	BY KEC	
60			SPARE NUMBER		

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
61	A	1	SERVING COUNTER, HOT, 4-WELL Hot Food Serving Counter, electric, (4) 12" x 20" hot food wells, 63-3/4"L x 35"H x 30-1/2"W, mobile modular, open base, stainless steel top, extruded aluminum frame, laminate front & end panels, 5" swivel casters, (2) with brakes With automatic water fill and Individual Drain with Valve, for each well with manifold to single valve, for mobile modular units, with rear extension 1/2" cold water, In-direct drain 208/1, 3.4 kw, 7.8 amps, NEMA 5-15P ATLAS: BLH-4	BY KEC	
61	B	1	SNEEZE GUARD WITH LIGHTS AND WARMER Protector Case, countertop installation with food warmer, for single service, with fixed laminated safety glass shield, (2) laminated safety glass end panels, square tubular stainless steel framework 120/1, 1.1kw, cord and plug, NEMA 5-15P ATLAS: PRHC-4	BY KEC	
62	A	1	SERVING COUNTER, COLD, 3-WELL Cold Food Serving Counter, refrigeration cold pan with 3" recessed top, self-contained, 3-pan size, 50"L x 35"H x 30-1/2"W, mobile modular, open cabinet base, stainless steel top, extruded aluminum frame, laminated front/end panels, 39-3/8" x 19-7/8" x 9" cold pan, 5" swivel casters, (2) with brakes, NSF 7 In-direct drain 120/1, 1/4 hp, 6.0 amps, NEMA 5-15P ATLAS: BLC-3-RM	BY KEC	
62	B	1	SNEEZE GUARD WITH LIGHTS Protector Case, countertop installation with lights, for single service, with fixed laminated safety glass shield, (2) laminated safety glass end panels, square tubular stainless steel framework 120/1, 1.0 amps, cord and plug, NEMA 5-15P ATLAS: PRCL-3	BY KEC	
63		1	TRAY SLIDE, S/S Tray Slide, fixed bracket, mounted over pony wall, solid stainless steel with (2) 1/8" die-formed rubbing tracks, 12" wide by length shown on plans. ATLAS: SLS-7/CUSTOM FAB	BY KEC	
64		1	ROLLER DOOR	BY GC	SEE ARCH.
65			SPARE NUMBER		

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
66		1	HAND SINK, WALL MOUNT Hand Sink, wall mount, 14"W x 10" front-to-back x 5" deep, 4" O.C. splash mount faucet holes, 1-7/8" drain, basket drain included, all stainless steel construction, NSF, CSA 1/2" hot and cold, direct drain JOHN BOOS: PBHS-W-1410-P	BY KEC	
67		1	SOAP & TOWEL DISPENSER (not shown)	BY OWNER	
68			SPARE NUMBER		
69			SPARE NUMBER WARE WASHING		
70		1	SOILED DISH TABLE Dishtable, straight design, 30"D x 34"H by size shown on plans, right-to-left operation, 16/300 series stainless steel top, 10"H back splash, 2-1/4"H rolled edge, stainless steel legs, adjustable stainless steel bracing & bullet feet, with 18" disposal cone welded-in, NSF JOHN BOOS: CDT6-S84SBK-R (modified)	BY KEC	
71		1	TRASH CAN	BY OWNER	
72			SPARE NUMBER		
73		1	PRE-RINSE ASSEMBLY Pre-Rinse Assembly, 8" c/c splash-mounted mixing valve, with spring action flexible gooseneck, with Ultra-Spray™/PLUS spray valve (1.15 gallons per minute @ 60 PSI), with wall bracket 1/2" hot and cold water FISHER: 13390	BY KEC	
74		1	DISPOSER, 3 HP Disposer, cone mounted, 3-HP motor, 6" throat opening, 2" waste outlet pipe, 8" dia. cutting table, cast aluminum housing, deluxe control panel, automatic reverse with stainless steel housing, vacuum breaker solenoid valve 1/2" cold water, direct drain 208/3, 3hp, 9.0 amps, direct connection BUSBOY: B3000-CM-BRS-S	BY KEC	

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
75		1	<p>DISH MACHINE, DOOR TYPE</p> <p>Pot & Pan Dishwasher, door type, 25-1/2"W x 25"D x 70"H, corner design, high temperature sanitizing, no booster (water supplied must be a minimum of 180°), (60) racks/hour, top mounted control box, split-door design provides 27"H dish clearance, built-in chemical resistant 7kW tank heater, automatic soil purging system, external Poly Pro™ scrap accumulator, auto start/stop, automatic tank fill, interchangeable wash arms with pull-pin design, field convertible, stainless steel construction, includes (1) open & (1) peg rack, 1 HP wash pump, NSF, UL, cULus, ENERGY STAR®</p> <p>3/4" hot, in-direct drain (connects to booster heater #76) 208/3, 24.0 amps, direct connection CMA: CMA-180TC</p>	BY KEC	
76		1	<p>BOOSTER HEATER</p> <p>Compact Booster Heater, electric, 6-gallon storage capacity, electric operation, 7-KW, stainless steel front, Castone tank, NSF, cUL, UL</p> <p>3/4" hot water, in-direct drain (connects to dish machine #75) 208/3, 29.1 amps, direct connection HATCO: C-7</p>	BY KEC	
77		1	<p>EXHAUST HOOD, CONDENSATE</p> <p>18 ga 304 s/s canopy with one exhaust collar, with rain gutter and removable rain baffle Size: 36" x by length shown on plans ACCUREX: XD1</p>	BY KEC	
78	A	1	EXHAUST FAN & DUCTWORK (not shown)	BY GC	SEE MECH.
78	B	1	ROOF PENATRATION AND CURB (not shown)	BY GC	SEE ARCH.
78	C	1	<p>CONTROLS FOR EXHAUST (not shown)</p> <p>Controls, on/off for exhaust, remote</p>	BY GC	SEE ELEC.
79		LOT	<p>S/S WALL COVERING & TRIM</p> <p>20 ga 304 stainless steel that is running the full length of hood and from bottom of hood to top of cove base, to include trim to hood and interconnecting s/s trim</p> <p>CUSTOM FAB</p>	BY KEC	

SECTION 114000 – FOODSERVICE EQUIPMENT

HWY 14 SENIOR/COMMUNITY CENTER
LOS CERRILLOS, NEW MEXICO

#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
80		1	CLEAN DISHTABLE Straight design, 48"W x 30"D x 34"H, right-to-left operation, 16/300 series stainless steel top, 10"H back splash, 2-1/4"H rolled edge, stainless steel legs, adjustable stainless steel bracing & bullet feet, NSF JOHN BOOS: CDT4-S48SBK-L	BY KEC	
81		1	SHELF, WALL MOUNTED 18 ga. 304 stainless steel, wall mounted, 12" wide by length shown on plans, 1-1/2" turned up riser, with support brackets JOHN BOOS: BHS1236	BY KEC	
82			SPARE NUMBER		
83			SPARE NUMBER		
84		1	WIRE SHELVING, FREESTANDING Shelving units, epoxy coated, (5) wire shelves, (4) 63" high post , see plans for sizes, with 5" diameter swivel casters, 2 locking, with donut bumpers (CA5SB) NEXEL: 18366N5	BY KEC	
85		1	THREE COMPARTMENT SINK 14 ga. 304 stainless, 30" deep by length shown on plans, (3) 18" x 24" x 14" deep sinks, with 24" right and left unitized drain boards, with 1 1/2" rolled edge, with 10" riser back splash and right end splash, 2" return to wall at 45 degree angle lip turned down to Z-clipped and sealed to wall, with s/s legs and adjustable feet, (3) twist lever waste drains with overflows (PB-LWR-1OV) built into sink, with s/s brackets (PB-LWB) for lever waste handles, NSF approved Supply with (2) Faucets, 8" backsplash mount, with 10" swing spout, EZ-Install adapters, wrist handles, stainless steel (FISHER: 60941) (2) 1/2" hot and cold, in-direct waste JOHN BOOS: 43PB18244-2D24	BY KEC	
86		1	POT RACK, WALL MOUNTED Pot Rack, wall mount, single bar, 96" L, 3/16" x 2" stainless steel flat bar, includes (8) stainless steel double hooks, NSF JOHN BOOS: PRW14	BY KEC	
87		1	SHELF, WALL MOUNTED 18 ga. 304 stainless steel, wall mounted, 12" wide by length shown on plans, 1-1/2" turned up riser, with support brackets JOHN BOOS: BHS1296	BY KEC	

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LOS CERRILLOS, NEW MEXICO

#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
88			SPARE NUMBER		
89			SPARE NUMBER		
			KITCHENETTE		
90		1	REFRIGERATOR, RESIDENTIAL French door refrigerator, 25 cu ft, 35.63" W x 35.5" D x 72.75" H (including hinges and handles), with full-width temperature controlled drawer, frameless glass shelves and gallon door bins 1/2" cold water 120/1, cord & plug, 15-20 amp dedicated circuit breaker WHIRLPOOL: WRF535SMHZ	BY KEC	
91	LOT		COUNTER TOP WITH CABINET BASE With cut-out for sink and for bus cart	BY GC	SEE ARCH.
92			SPARE NUMBER		
93		1	RANGE, ELEC., RESIDENTIAL Freestanding Electric Range, 6.7 cu ft capacity, double oven, 5 burner cooktop, radiant elements, self-clean, 2 oven racks, built-in timer, control lockout, digital display, indicator lights for heating element and hot surface 240 volt, 40 amps, cord & plug WHIRLPOOL: WGE745C0FS	BY KEC	
94		1	EXHAUST HOOD Convertible Range Hood, ducted or ductless, color to match range, 30" wide, washable aluminum filter, 220 CFM fan, adjustable speed, 12.6 lbs 120 volt, 75 watts, 2.5 amps, direct NUTONE: ACS30VWW	BY KEC	
95		1	BACKSPLASH, S/S	BY KEC	
96		1	SINK, DROP-IN Drop-In Sink, one compartment, 28"W x 20" front to back x 12" deep bowl, 4" OC deck mount faucet holes, 3-1/2" basket drain, 16/300 stainless steel, with faucet, 5" gooseneck spout, deck mounted, 4" centers (PBF-4DM-5GLF), NSF 1/2" hot and cold, in-direct drain JOHN BOOS: PB-DISINK282012	BY KEC	

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#	A/B	QTY	DESCRIPTION	PROVIDED BY:	REMARKS:
97		1	BUS CART	BY OWNER	
98		1	<p>ICE AND WATER DISPENSER</p> <p>Meridian™ Ice and Water Dispenser, H2 Nugget Ice, air cooled, production capacity up to 500 lb/24 hours at 70°/50° (365 lb AHRI certified at 90°/70°), 25 lb bin storage capacity, stainless exterior, external air filter, AglON™ antimicrobial protection, R-404a refrigerant, cULus</p> <p>with AquaPatrol™ Plus Water Filtration System, single system, designed for ice makers & beverage equipment, cubers up to 650 lb, flakers, nuggets & nugget dispensers up to 1200 lb, cULus, NSF</p> <p>1/2" cold water, in-direct drain 120/1, 9.0 amps, cord and plug SCOTSMAN: HID525A-1</p>	BY KEC	
99		1	<p>COFFEE BREWER, THERMAL, SINGLE</p> <p>Gourmet 1000™ Thermal Brewer, automatic, 25-1/2" H, 10" W x 17" D, ready-to-brew light, pour over option, single brewer, water valve with built in flow control (20-80 psi), hot water faucet, stainless steel construction, rugged base rails, NSF, UL</p> <p>1/2" cold water 120/1, 1.8 kw, 15.0 amps, NEMA 5-15P BLOOMFIELD: 8780TF</p>	BY OWNER	FUTURE
100			SPARE NUMBER		

PART 4 – EXECUTION

4.1 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Coordinate size of access openings and installation locations.
- B. Deliver materials to job site in a timely manner (not more than thirty days before scheduled installation) to ensure uninterrupted progress.
- C. All major pieces of equipment and pre-assembled components shall have a protective wrapping, such as, polyethylene or heavy craft paper to protect factory finish.
- D. Deliver equipment and store in a manner to protect against dirt, water, chemical or mechanical damage.
- E. Deliver all stainless steel with protective coating on exposed surfaces.
- F. Promptly remove any damaged materials from the job site and immediately make all necessary replacements, at contractors' expense, with approval from the architect.
- G. If applicable, do not deliver millwork fixtures until the area is enclosed and protected from large variations in temperature and humidity.

4.2 INSPECTION

- A. Rough-In Work:
 - 1. Examine the rough-ins of mechanical and electrical services that are by others.
 - 2. Verify the dimensions of the services and substrate of the installation of floors, walls, and ceilings that are by others before fabricating the work.
 - 3. Notify Contractor of unsatisfactory conditions for the proper installation of the food service equipment.
 - 4. Do not proceed with the fabrication and installation until unsatisfactory conditions and dimensions have been corrected in a manner acceptable to the installer.
- B. Cut all holes in fixtures necessary for piping, conduit, traps, and similar equipment; and locate valves, controls, and switches for convenient connection and operation.
- C. Delay the start-up of foodservice equipment until service lines have been tested, balanced and adjusted for pressure, voltage, and similar considerations; and until water lines have been cleaned and treated for sanitation.

4.3 INSTALLATION

- A. A competent superintendent, representing the contractor shall be present during progress of the work.

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- B. Protection of Work and Materials:
 - 1. Cover and protect work and materials from damage. Cover top surfaces with plywood or heavy tri-wall corrugated cardboard until final cleanup.
 - 2. Scratched, marred or deformed surfaces will not be accepted.
 - 3. Be responsible during the progress of the project o protect equipment against theft and/or damage until final acceptance by the owner.
 - 4. Prefabricated walk-in boxes, on site and installed in advance of the rest to the equipment, shall not be used for general storage by other trades and shall be locked before leaving the site. Damage and/or theft resulting from failure to secure boxes will be repaired and/or replaced at the contractor's expense.
- C. Complete shop fabricated equipment, set in place and level, ready for final mechanical and electrical connections.
- D. Provide removable panels for access to mechanical and electrical service connections, which are concealed behind or within the foodservice equipment; but only where access in not otherwise possible.
- E. Treat enclosed spaces (inaccessible after equipment is installed) by covering horizontal surfaces with powdered borax at a uniform rate of 4 ounces per square foot.
- F. Seal joints between equipment, walls, and floor with waterproof mildew resistant general electric silicone construction sealant of color selected, using primers, backing rods, etc., as recommended by the sealant manufacturer.
- G. Maintain work area clean, free of debris, crates, and papers.
- H. Repair damage to the building and to other equipment resulting from this work.

4.4 FIELD QUALITY CONTROL

- A. Lubricate equipment in accordance with the manufacturer's recommendations.
- B. Test each item of operational equipment o demonstrate that it is operating properly and that controls and safety devices are functioning. Run test in the presence of owner's operating personnel and extend test to fully instruct operators in the proper use and maintenance of each item of equipment.
- C. Repair or replace equipment that is found to be defective in its operation, including units that are below capacity or operating with excessive noise or vibration.
- D. Schedule testing and start-up as directed by contractor.

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4.5 TRIMMING, PAINTING AND SEALING EQUIPMENT

- A. Any space between units to walls, ceilings, floors and adjoining units, not portable, shall be completely sealed against entrance of food particles or vermin by means of trim strips, welding, soldering, or commercial joint material suitable to the nature of the equipment.
- B. Sealer, when not exposed to extreme heat, shall be silicone construction sealant in appropriate color.
- C. Ends of hollow sections shall be closed.
- D. Enclosed fixtures without legs mounted on masonry bases or floor shall be sealed watertight to base or floor.
- E. Paint all backstop frameworks per color schedule.

4.6 CUTTING AND FITTING

- A. Cutting and fitting required on the equipment by subcontractors to make their work fit.
- B. Should any repairs to food service equipment be required due to neglect of other contractors, all extra charges and all anticipated repairs shall be noted in writing before work is performed. In case this Contractor does not follow this procedure, the expense shall be borne by him.
- C. No cutting, notching, drilling, or altering of any kind shall be done to the building without first obtaining permission.

4.7 ADJUSTING AND CLEANING

- A. After completion of installation and completion of other major work in the food service area, but before scheduled testing and startup, remove protective coverings and clean the food service equipment internally and externally.
 - 1. Restore exposed and semi-exposed finishes to remove marks, abrasions, and other damage.
 - 2. Replace work, which cannot be acceptably restored.
- B. Final cleaning: After testing and startup, clean and sanitize the food service equipment and leave it in a condition ready for use in food service.

4.8 START-UP AND DEMONSTATION

- A. Using the companies that are authorized to service each piece of equipment the contractor will have the service company's start-up, service and calibrate each piece of equipment.

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- B. Provide a factory-trained representative to start-up and do two demonstrations, listed below, of the equipment.
 - 1. Operation with the people who will be using the equipment daily.
 - 2. Maintenance personnel who will be serving and providing preventive maintenance on the equipment.
- C. Provide final adjustments and calibration of equipment after two to three weeks after the facility has opened and operational.
- D. Submit operating and maintenance manuals of all food service equipment upon completion of this portion of work.
- E. Prepare list of service agencies authorized by the manufacturer to service the equipment including contact name and telephone number.
- F. Refrigeration Lines
 - 1. After final inter-connection to evaporators and refrigeration unit, all systems are to be evacuated to no less than 500 microns with vacuum pump.
 - 2. All systems shall be monitored for no less than 48 hours, during which time calibrations and other adjustment will be made to each system as required. Refrigeration contractor shall come back (2) weeks after walk-ins are in full use and perform a complete test and calibration of systems under operational load.

4.9 CLOSE OUT DOCUMENTS

- A. The following must be supplied to the Architect before final acceptance.
 - 1. Project records, documents, keys and manuals.
 - 2. Provide all warranties filled out and ready to be mailed to manufacturer.
 - 3. Provide list of all equipment supplied listing all serial numbers, model numbers with local authorized service agencies and phone numbers. A copy of this list will also be inserted I the front of the operation and maintenance manual binder.
 - 4. Operation and Maintenance Manuals (O&M) and keys will be supplied to the owner or owners' representative on all equipment supplied.

END OF SECTION 114000

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SECTION 122413 – ROLLER SHADES

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

SECTION INCLUDES

Electrically operated sunscreen roller shades.

RELATED SECTIONS

Section 061053 - Miscellaneous Carpentry: Wood blocking and grounds for mounting roller shades and accessories.

Section 092900 - Gypsum Board Assemblies: Coordination with gypsum board assemblies for installation of shade pockets, closures and related accessories.

Section 095100 - Acoustical Ceilings: Coordination with acoustical ceiling systems for installation of shade pockets, closures and related accessories.

Division 16 - Electrical: Electric service for motor controls.

REFERENCES

ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

NFPA 70 - National Electrical Code.

NFPA 701-99 - Fire Tests for Flame-Resistant Textiles and Films.

SUBMITTALS

Submit under provisions of Section 013300.

Product Data: Manufacturer's data sheets on each product to be used, including:

- Preparation instructions and recommendations.

- Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.

- Storage and handling requirements and recommendations.

- Mounting details and installation methods.

- Typical wiring diagrams including integration of motor controllers.

- Signed letter from the manufacturer stating the subcontractor is an authorized dealer and will be providing shades for this project.

Selection Samples: For each finish product specified, one set of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.

Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements. Shadecloth sample and aluminum finish sample as selected. Mark face of material to indicate interior faces.

Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.

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Installer must provide a signed letter from the manufacturer stating they are an authorized dealer and must provide a copy of their subcontractor's license proving they have been in the window covering business for fifteen years.

QUALITY ASSURANCE

Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years experience in manufacturing products comparable to those specified in this section.

Installer Qualifications: Installer trained and certified by the manufacturer with a minimum of fifteen years in the window covering business (based on the issue date of the subcontractor license) in the state of the project with a minimum of fifteen years experience in installing products comparable to those specified in this section. Installer must have completed a minimum of five comparable projects. Installer must provide a signed letter from the manufacturer stating they are an authorized dealer and must provide a copy of their subcontractor's license proving they have been in the window covering business for fifteen years.

Fire-Test-Response Characteristics: Passes NFPA 701-99 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.

Electrical Components: NFPA Article 100 listed and labeled by either UL or ETL or other testing agency acceptable to authorities having jurisdiction, marked for intended use, and tested as a system. Individual testing of components will not be acceptable in lieu of system testing.

DELIVERY, STORAGE, AND HANDLING

Deliver shades in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in the Window Treatment Schedule.

PROJECT CONDITIONS

Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

WARRANTY

Provide manufacturer's standard warranties, including the following: Roller Shade Hardware and Shadecloth: Manufacturer's standard non-depreciating twenty-five year limited warranty.

Roller Shade Motors and Motor Control Systems: Manufacturer's standard non-depreciating five-year warranty.

Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas.

PART 2 - PRODUCTS

MANUFACTURERS

Basis of Design Manufacturer: MechoShade Systems, Inc.; 42-03 35th Street, Long Island City, NY 11101.
Local representative: Kathleen Powers: T 480-231-7417, email: kathleenp@mechoshade.com

SECTION 122413 – ROLLER SHADES

HWY 14 SENIOR/COMMUNITY CENTER
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APPLICATIONS/SCOPE

Roller Shade Schedule:

Shade Type 1: Motorized interior solar roller shades in all exterior windows of rooms and spaces shown on Drawings, and related motor control systems.

SHADE CLOTH

Visually Transparent Single-Fabric Shadecloth: MechoShade Systems, Inc., ThermoVeil group, single thickness non-raveling 0.030-inch (0.762 mm) thick vinyl fabric, woven from 0.018-inch (0.457 mm) diameter extruded vinyl yarn comprising of 21 percent polyester and 79 percent reinforced vinyl, in colors selected from manufacturer's available range. Solar shadecloth containing fiberglass is not acceptable.

Dense Linear Weave: "1000 series", 2 - 3 percent open, dense linear-weave pattern.

Color: 1011 Porcelain.

SHADE BAND

Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.

Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.

Shade band and Shade Roller Attachment:

Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch (39.37 mm) in diameter for manual shades, and less than 2.55 inches (64.77 mm) for motorize shades are not acceptable.

Provide for positive mechanical engagement with drive / brake mechanism.

Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a "snap-on" snap-off" spline mounting, without having to remove shade roller from shade brackets.

Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.

Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets are not acceptable.

SHADE FABRICATION

Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.

Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8 inch (3.18 mm) in either direction per 8 feet (2438 mm) of shade height due to warp distortion or weave design. Fabricate hem as follows:

Concealed hemtube.

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Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.

COMPONENTS

Access and Material Requirements:

Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.

Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.

Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester will not be acceptable.

Motorized Shade Hardware and Shade Brackets:

Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel, or heavier, thicker, as required to support 150 percent of the full weight of each shade.

Provide shade hardware system that allows for field adjustment of motor or replacement of any operable hardware component without requiring removal of brackets, regardless of mounting position (inside, or outside mount).

Provide shade hardware system that allows for operation of multiple shade bands offset by a maximum of 8-45 degrees from the motor axis between shade bands (4-22.5 degrees) on each side of the radial line, by a single shade motor (multi-banded shade, subject to manufacturer's design criteria).

Provide shade hardware constructed of minimum 10GA (0.1345") thick plated steel, or heavier, thicker, as required to support 150 percent of the full weight of each shade. Plastic components without use of steel angle construction do not meet the intent of this specification and shall not be accepted.

Provide minimum rate of withstand loads of 250 Lb to system with two to four pins.

MOTOR AND MOTOR CONTROL SYSTEMS

Shade Motors:

Manufacturers standard quiet (44 – 46 db) motor system: Tubular, asynchronous (non-synchronous) motors, with built-in reversible capacitor operating at 110v AC (60hz), (230v/50 hz AC) single phase, temperature Class A, thermally protected, totally enclosed, maintenance free with line voltage power supply equipped with locking disconnect plug assembly furnished with each motor.

Conceal motors inside shade roller tube.

Maximum current draw for each shade motor of 2.3 amps @ 110 V (.9 amps @230 V AC).

Use motors rated at the same nominal speed for all shades in the same room.

Quiet operation of up to 46dBa within 3' feet, open air.

Wall Switches: Manufacturer's standard rocker switch with princess plate.

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SECTION 122413 – ROLLER SHADES

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Operation: Maintained control.

ACCESSORIES

Roller Shade Pocket for recessed mounting in drywall ceilings as indicated on the Drawings

Provide either extruded aluminum and or formed steel shade pocket, sized to accommodate roller shades, with exposed extruded aluminum closure mount, tile support and removable closure panel to provide access to shades.

PART 3 - EXECUTION

EXAMINATION

Do not begin installation until substrates have been properly prepared.

If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

PREPARATION

Clean surfaces thoroughly prior to installation.

Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

INSTALLATION

Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow proper clearances for window operation hardware.

Coordinate the following with the roller shade installer/dealer:

Main Contractor shall provide power panels and circuits of sufficient size to accommodate roller shade manufacturer's requirements, as indicated on the mechanical and electrical drawings.

Main Contractor shall coordinate with requirements of roller shade installer/dealer, before inaccessible areas are constructed.

Electrician shall run line voltage as dedicated home runs (of sufficient quantity, in sufficient capacity as required) terminating in junction boxes in locations designated by roller shade dealer. Electrician shall run low voltage as required.

Roller shade installer/dealer shall provide and run all line voltage (from the terminating points) to the motor controllers, wire all roller shade motors to the motor controllers, and provide and run low voltage control wiring from motor controllers to switch/ control locations designated by the Architect. All above-ceiling and concealed wiring shall be plenum-rated, or installed in conduit, as required by the electrical code having jurisdiction.

Main Contractor shall provide conduit with pull wire in all areas, which might not be accessible to roller shade contractor due to building design, equipment location or schedule.

Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

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Clean roller shade surfaces after installation, according to manufacturer's written instructions.

Engage Installer to train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.

PROTECTION

Protect installed products until completion of project.

Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 122413

SECTION 210500 – COMMON WORK RESULTS FOR FIRE SUPPRESSION

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1- GENERAL

SUMMARY

- A. Pipe, fittings, sleeves, escutcheons, seals, and connections for sprinkler systems.

1.02 REFERENCE STANDARDS

- A. ASME B36.10M - Welded and Seamless Wrought Steel Pipe.
- B. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- D. ASTM A135/A135M - Standard Specification for Electric-Resistance-Welded Steel Pipe.
- E. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- F. ASTM A795/A795M - Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use.
- G. ASTM B32 - Standard Specification for Solder Metal.
- H. ASTM B75/B75M - Standard Specification for Seamless Copper Tube.
- I. ASTM F442/F442M - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR).
- J. AWS D1.1/D1.1M - Structural Welding Code - Steel.
- K. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
- L. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings.
- M. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- N. AWWA C606 - Grooved and Shouldered Joints.
- O. ITS (DIR) - Directory of Listed Products.
- P. NFPA 13 - Standard for the Installation of Sprinkler Systems.
- Q. UL (DIR) - Online Certifications Directory.

1.03 SUBMITTALS

- A. Product Data: Provide manufacturers catalogue information. Indicate valve data and ratings.
- B. Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.
- C. Project Record Documents: Record actual locations of components and tag numbering.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified this section.

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1. Minimum three years experience.
2. Approved by manufacturer.
- C. Conform to FM (AG) and UL (DIR) requirements.
- D. Valves: Bear FM (AG) and UL (DIR) product listing label or marking. Provide manufacturer's name and pressure rating marked on valve body.
- E. Products Requiring Electrical Connection: Listed and classified as suitable for the purpose specified and indicated.
- F. Clean equipment, pipes, valves, and fittings of grease, metal cuttings, and sludge that may have accumulated from the installation and testing of the system.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store valves in shipping containers, with labeling in place.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

1.06 WARRANTY

- A. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 - PRODUCTS

2.01 FIRE PROTECTION SYSTEMS

- A. Sprinkler Systems: Conform to NFPA 13.
- B. Welding Materials and Procedures: Conform to ASME BPVC-IX.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and foreign material, from inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

- A. Install sprinkler system and service main piping, hangers, and supports in accordance with NFPA 13.
- B. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- C. Install piping to conserve building space, to not interfere with use of space and other work.
- D. Group piping whenever practical at common elevations.
- E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- F. Pipe Hangers and Supports:
 1. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
 2. Place hangers within 12 inches of each horizontal elbow.

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3. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 4. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
 5. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
- G. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.
- H. Prepare pipe, fittings, supports, and accessories for finish painting. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- I. Do not penetrate building structural members unless indicated.
- J. Provide sleeves when penetrating footings, floors, walls, and partitions. Seal pipe including sleeve penetrations to achieve fire resistance equivalent to fire separation required.
- K. Escutcheons:
1. Install and firmly attach escutcheons at piping penetrations into finished spaces.
 2. Provide escutcheons on both sides of partitions separating finished areas through which piping passes.
 3. Use chrome plated escutcheons in occupied spaces and to conceal openings in construction.
- L. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

3.03 CLEANING

- A. Upon completion of work, clean all parts of the installation.
- B. Clean equipment, pipes, valves, and fittings of grease, metal cuttings, and sludge that may have accumulated from the installation and testing of the system.

END OF SECTION 210500

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SECTION 211300 – FIRE-SUPPRESSION SPRINKLER SYSTEMS

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PART 1- GENERAL

1.01 SECTION INCLUDES

- A. Wet-pipe sprinkler system.
- B. System design, installation, and certification.
- C. Fire department connections.

1.02 REFERENCE STANDARDS

- A. FM (AG) - FM Approval Guide.
- B. NFPA 13 - Standard for the Installation of Sprinkler Systems.
- C. UL (DIR) - Online Certifications Directory.
- D. UL 405 - Fire Department Connection Devices.

1.03 SUBMITTALS

- A. See Section 210500 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on sprinklers, valves, and specialties, including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
- C. Shop Drawings:
 - 1. Submit preliminary layout of finished ceiling areas indicating only sprinkler locations coordinated with ceiling installation.
 - 2. Indicate hydraulic calculations, detailed pipe layout, hangers and supports, sprinklers, components and accessories. Indicate system controls.
 - 3. Submit shop drawings to Fire Marshall for approval. Submit proof of approval to Architect.
 - 4. See Section 210500 for additional information and PROJECT ENGINEERING PROCEDURE requirements.
- D. Manufacturer's Certificate: Certify that system has been tested and meets or exceeds specified requirements and code requirements.
- E. Operation and Maintenance Data: Include components of system, servicing requirements, record drawings, inspection data, replacement part numbers and availability, and location and numbers of service depot.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Division 1 for additional provisions.
 - 2. Extra Sprinklers: Type and size matching those installed, in quantity required by referenced NFPA design and installation standard.
 - 3. Sprinkler Wrenches: For each sprinkler type.

1.04 QUALITY ASSURANCE

- A. Maintain one copy of referenced design and installation standard on site.
- B. Conform to FM (AG) requirements.
- C. Designer Qualifications: Design system under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

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- D. Designer Qualifications: per requirements of Section 210500.
- E. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- F. Installer Qualifications: Company specializing in performing the work of this section with minimum three years experience and approved by manufacturer.
- G. Equipment and Components: Provide products that bear FM (AG) label or marking.
- H. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified and indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in shipping containers and maintain in place until installation. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Sprinklers, Valves, and Equipment:
 - 1. Tyco Fire Protection Products: www.tyco-fire.com.
 - 2. Viking Corporation: www.vikinggroupinc.com.
 - 3. Or equal performance.

2.02 SPRINKLER SYSTEM

- A. Sprinkler System: Provide coverage for entire building.
- B. Occupancy: Light hazard; comply with NFPA 13.
- C. Water Supply: Determine volume and pressure from water flow test data.
- D. Design System (in accordance with the current edition of) NFPA 13.
- E. Interface system with building fire and smoke alarm system.
- F. Provide fire department connections where indicated.
- G. Storage Cabinet for Spare Sprinklers and Tools: Steel, located adjacent to alarm valve.

2.03 SPRINKLERS

- A. Suspended Ceiling Type: Semi-recessed pendant type with matching push on escutcheon plate.
 - 1. Response Type: Quick.
 - 2. Coverage Type: Extended.
 - 3. Finish: Enamel, color as selected.
 - 4. Fusible Link: Glass bulb type temperature rated for specific area hazard.
- B. Exposed Area Type: Pendant type with guard.
 - 1. Response Type: Quick.
 - 2. Coverage Type: Extended.
 - 3. Fusible Link: Glass bulb type temperature rated for specific area hazard.
- C. Sidewall Type: Semi-recessed horizontal sidewall type with matching push on escutcheon plate.
 - 1. Response Type: Quick.
 - 2. Coverage Type: Standard.
 - 3. Finish: Brass.

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4. Escutcheon Plate Finish: Brass.
 5. Fusible Link: Fusible solder link type temperature rated for specific area hazard.
- D. Storage Sprinklers: Pendant type with guard.
1. Response Type: Standard.
 2. Coverage Type: Standard.
 3. Finish: Enamel, color as selected.
 4. Fusible Link: Glass bulb type temperature rated for specific area hazard.
- E. Guards: Finish to match sprinkler finish.

2.04 PIPING SPECIALTIES

- A. Wet Pipe Sprinkler Alarm Valve: Check type valve with divided seat ring, rubber faced clapper to automatically actuate water motor alarm, pressure retard chamber and variable pressure trim with the following additional capabilities and features:
1. Activate electric alarm.
 2. Test and drain valve.
 3. Replaceable internal components without removing valve from installed position.
- B. Backflow Preventer: Reduced pressure principle valve assembly backflow preventer with drain and OS & Y gate valve on each end.
- C. Test Connections:
- D. Fire Department Connections:
1. Type: Exposed, projected wall mount made of corrosion resistant metal complying with UL 405.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in accordance with referenced NFPA design and installation standard.
- B. Install equipment in accordance with manufacturer's instructions.
- C. Provide approved backflow preventer assembly at sprinkler system water source connection.
- D. Place pipe runs to minimize obstruction to other work.
- E. Place piping in concealed spaces above finished ceilings.
- F. Apply masking tape or paper cover to ensure concealed sprinklers, cover plates, and sprinkler escutcheons do not receive field paint finish. Remove after painting. Replace painted sprinklers.
- G. Flush entire piping system of foreign matter.
- H. Install guards on sprinklers in storage and janitor rooms..
- I. Hydrostatically test entire system.
- J. Require test be witnessed by Fire Marshal.

3.02 INTERFACE WITH OTHER PRODUCTS

- A. Ensure required devices are installed and connected as required to fire alarm system.

END OF SECTION 211300

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SECTION 220500 – BASIC PLUMBING MATERIALS AND METHODS

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PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Plumbing Basic Requirements specifically applicable to Divisions 21, 22, and 23 in addition to the requirements of Division 1 - General Requirements and the General Conditions of the Contract.
 - 2. Electric motors.
 - 3. Plumbing Identification.
 - 4. Sleeves
 - 5. Plumbing sleeve seals.
 - 6. Altitude rating.

1.02 RELATED SECTIONS

- A. Work described in this section is related to other work described in Divisions 21, 22, 23, 27, and 28 and may be related to work in other Divisions concerning structure or appearances. Review and become familiar with work required in other Sections in this Division and with work required in the other Divisions. Coordinate with other subcontractor(s) to assure that all issues arising between related Sections are resolved.
- B. Bring to the attention of the Engineer prior to the cutoff date for Addenda, any and all discrepancies in related work. Submission of a bid or proposal indicates that all costs for this work and related work are included in the bid for this work or within the bid or proposal for the related work.

1.03 SYSTEM DESCRIPTION

- A. Provide complete and fully operational systems with facilities and services to meet requirements indicated and in accordance with applicable codes and ordinances.

1.04 REGULATORY REQUIREMENTS

- A. All Plumbing work shall be performed in strict accordance with the New Mexico Building Codes, IBC, UPC, UMC, NFPA, National Gas Code, Model Energy Code, and all applicable provisions of the local authorities having jurisdiction. All materials and labor necessary to comply with rules, regulations, and ordinances shall be provided. Where the drawings and/or specifications indicate material or construction in excess of code requirements or visa-versa, the more stringent application shall govern.
- B. Permits necessary for the performance of the work under this contract shall be secured and paid for by the Contractor. Final inspection by the Engineer will not be made, or certificate of final payment issued, until certificates of satisfactory inspection from the inspection authorities are delivered.

1.05 SUBMITTALS

- A. Submit all data as a single package, as the Engineer will commence review only when all data has been received.
- B. Submittal form to identify project, contractor, sub-contractor, supplier, and pertinent contract document references.
- C. Apply Contractor's stamp, signed or initialed, certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and contract documents.

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- D. The Contractor shall determine and verify field measurements and field construction criteria for conformance with drawings and specifications and for conflicts with other items of construction, past or present. He shall coordinate each submittal with the requirements of the work and of the contract documents and notify the Engineer in writing, at the time of the submission, of any and all deviations in the submittals from requirements of the work and contract documents.
 - 1. No fabrication or work, which requires submittals, shall begin until submittals are returned with the Engineer's approval.
- E. Identify variations for contract documents and product or system limitations, which may be detrimental to successful performance of the completed work.
- F. Engineer's review does not constitute acceptance or responsibility for accuracy or dimensions, nor shall it relieve the Contractor from meeting any requirements of the work and contract documents, nor shall it constitute approval for any deviation from the contract documents, unless such deviations are specifically stated as such on the submittal and specifically allowed by the Engineer by specific written notification for each such variation. The Engineer's review will not relieve the Contractor from responsibility for errors or omissions in the shop drawings.
- G. Revise and resubmit submittals as required. Identify all changes made since previous submittal.
- H. The Engineer will review a submittal and, if necessary, a resubmittal of the same item. Subsequent resubmittals shall be accompanied by Contractor's purchase order to Engineer for Engineer's review time and costs at Engineer's standard hourly billing rates. These reviews will be performed at the convenience of the Engineer.
- I. Provide eight (8) copies of materials for submittal review. If Contractor intends to utilize electronic submittals, one (1) hard copy must still be delivered to Engineer, hard copy will be dated when received and will be the official copy. Engineer will return submittal electronically.

1.06 SUBSTITUTIONS

- A. Prior approval of materials and equipment will not be considered. Contract documents indicate specified equipment and acceptable alternatives. Any other equipment/material proposed must meet or exceed that specified. Equipment/material will be reviewed for compliance during submittal review process per Paragraph 1.5.
- B. Engineer will consider requests for substitutions only at submittal review. Clearly identify substitution.
- C. Document each request with complete data substantiating compliance of proposed substitution with contract documents.
- D. A request for substitution constitutes a representation that the Contractor:
 - 1. Has investigated the proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other work, which may be required for the work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extensions which may, subsequently, become apparent.

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5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities.

1.07 OPERATIONS AND MAINTENANCE DATA

- A. Submit three (3) sets prior to final inspection, in 8-1/2" x 11" text pages, bound in three (3) D-side ring binders with durable plastic covers. Provide one (1) set of original O&M Materials to Project Commissioning Authority no later than 30 days after submittals are approved. O&M package shall not be bound.
- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.
- C. Internally sub-divide the binder contents with permanent page dividers, logically organized with tab titling clearly printed under reinforced, laminated plastic tabs.
- D. Contents:
 1. Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Sub-contractors, and major equipment suppliers.
 2. Operation and maintenance instructions arranged by system.
 3. Project documents and certificates.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with the requirements of Division 1.

1.09 RECORD AS-BUILT DRAWINGS

- A. Maintain on site one set of record documents exclusively for the purpose of Record As-Built Drawings.
- B. Record into Record Drawings, Project Manual and Product Data, the actual "as-built" Work including all revisions. Include actual location of all work.
- C. Record information concurrent with the construction progress.
- D. Ensure entries are complete and accurate, enabling future references by Owner.
- E. Modify reproducible drawings and two (2) sets of the project manual, delineating recorded as-built conditions of the project or Record Documents compiled from the job records. The Contractor may obtain reproducible drawings from the office of the Architect or Engineer.
- F. Provide electronic (.DWG or .PDF) files of "as-built" conditions. Contractor may obtain electronic drawings from the office of the Architect or Engineer and must modify the electronic record documents. The Contractor shall submit the as-built drawings in electronic format and printed drawings on the medium specified. The Contractor may request Engineer to complete modifications to drawings. Such request must be accompanied by Contractor's purchase order to Engineer for drafting services.
- G. Completion of Record As-Built Drawings is a condition of final inspection and consideration of final payment.

1.10 CLOSEOUT PROCEDURES

- A. See Division 1 for additional closeout procedures.
- B. See Paragraph 3.7 for Substantial Completion and Final Inspection Requirements.

1.11 FINAL INSPECTIONS

- A. One final inspection for completion of project will be performed by the Engineer. Any and all additional inspections requested by the Contractor or required because of

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Contractor's failure to complete scope of work, shall be paid for by the Contractor.
Costs for additional inspections shall be assessed at the Engineer's hourly rates.

PART 2 - PRODUCTS

2.01 ELECTRIC MOTORS

- A. Motors shall be of sufficient size for the duty to be performed and shall not exceed their full-rated load when the driven equipment is operating at specified capacity under the most severe conditions likely to be encountered.
- B. Each motor shall be of the horsepower specified and suitable for operation at the elevation of the job site as scheduled on the drawings.
- C. Motors shall conform to NEMA standards, applicable to IEEE Standards and ASA C50 Standards, and shall be suitable for direct coupling mounting or V-belt mounting in accordance with the drawings.
- D. Motors controlled by variable frequency drives/adjustable frequency drives, "VFD/AFD", shall be rated for use on "VFD/AFD" controllers.

2.02 PLUMBING IDENTIFICATION

- A. Equipment Nameplates: Laminated three-layer plastic with engraved black letters on light background color.
- B. Valve Tags: Laminated three-layer plastic with engraved black letters on light background color, minimum 1-1/2 inches diameter.
- C. Piping:
 - 1. Conform to ASME A13.1.
 - 2. Minimum information indicating flow direction arrow and identification of fluid being conveyed.
 - 3. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener.
 - 4. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
 - 5. Plastic Underground Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.03 SLEEVES

- A. Sleeves for pipes through non-fire rated floors: 18 gage thick galvanized steel.
- B. Sleeves for pipes through non-fire rated beams, walls, footings, and potentially wet floors: steel pipe or 18 gage thick galvanized steel.
- C. Sleeves for round ductwork: galvanized steel.
- D. Sleeves for rectangular ductwork: galvanized steel or wood.
- E. Sealant: acrylic

2.04 PLUMBING SLEEVE SEALS

- A. Modular Plumbing type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

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2.05 ALTITUDE RATINGS

- A. Unless otherwise noted, all specified equipment capacities, air quantities, etc., are for the altitude of the job site, as scheduled on the drawings, and adjustments to manufacturer's ratings must be made accordingly.

PART 3 - EXECUTION

3.01 INSTALLATION - IDENTIFICATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Degrease and clean surfaces to receive adhesive for identification materials.
- C. Install plastic nameplates with adhesive.
- D. Install plastic tags with corrosion-resistant metal chain.
- E. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.
- F. Label piping at all changes in direction and at a minimum of every 20 feet of straight runs of pipe.
- G. Record actual location of valves on Project Record Documents.

3.02 INSTALLATION - CONDENSATE AND OVERFLOW DRAINS

- A. Install condensate and overflow drain piping from all mechanical equipment drain points. Extend and terminate per UPC/UMC.

3.03 INSTALLATION - SLEEVES

- A. Verify openings are ready to receive sleeves.
- B. Exterior watertight entries: Seal with Plumbing sleeve seals.
- C. Set sleeves in position in forms. Provide reinforcing around sleeves.
- D. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- E. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
- F. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- G. Install chrome plated steel or, if allowed by the authority having jurisdiction, plastic escutcheons at finished surfaces.

3.04 EXISTING SERVICES

- A. The Contractor shall carefully examine the drawings and specifications, visit the site of the work, be fully informed as to all existing conditions, dimensions, and limitations before starting work.
- B. If existing active or non-active services, which are not shown on plans, are encountered which require relocation or disconnection, the Contractor shall notify the Engineer for a decision on proper handling of these services. The Contractor shall not proceed with the work until so authorized.

3.05 EXCAVATION AND BACKFILL OF TRENCHES

- A. All excavation, trenching, and backfilling, as required for the Plumbing installation, shall be provided by the Contractor.

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- B. All piping laid in trenches shall be bedded evenly and firmly. The trench bed shall consist of undisturbed native soil or shall be compacted to an equally firm bedding. Recesses shall be formed below the trench bed to receive the flange or hub off each section of pipe or fitting.
- C. Where firm bedding is not obtainable, sand or gravel fill, compacted with water or low strength concrete fill around the bottom half of the pipe, shall be used.
- D. Backfill all trenches as soon as possible after inspection. Spread backfill in layers, not to exceed 8 inches, and compact each layer to ninety-five percent (95%) of maximum density based on Modified Proctor Density, in such areas as streets, driveways, alleys, or walks to prevent settling. Backfill shall be neither excessively wet or dry. Puddling or flooding shall not be used, except in sand or gravel-bearing soil, and as specifically approved. Street cuts shall be made 8 inches wider than required trenches and shall be repaired to match the finish surface of the street and be flush with existing grades.
- E. Use plastic underground pipe markers for all buried piping.

3.06 PAINTING

- A. Surfaces of all equipment and material shall be thoroughly cleaned and left ready for painting.
- B. Painting shall be performed by others, unless otherwise specified in the contract documents.

3.07 ELECTRICAL WIRING AND CONTROL EQUIPMENT

- A. All motor starters, disconnects overload protection equipment, and low voltage control equipment and wiring specified under this Division will be the responsibility of this Contractor. Installation of line voltage components and wiring specified under this Division will be the responsibility of the electrical contractor. Purchase and installation of low voltage components and wiring specified under this Division will be this Contractor's responsibility.
- B. The Plumbing contractor must coordinate with the electrical contractor on the division of responsibility pertaining to the purchase and installation of electrical control components. Any changes or additions required due to the specific nature of equipment furnished shall be the complete responsibility of the Contractor furnishing the equipment.
- C. All electrical work performed under this Division will be in compliance with the NEC and all applicable city and state ordinances. All controllers furnished with Plumbing equipment shall have overload protection on all phases.
- D. The Plumbing contractor must coordinate with the electrical contractor to ensure that all required components of control work are included and fully understood. No additional costs shall accrue to the Owner as a result of lack of such coordination.

3.08 SUBSTANTIAL COMPLETION AND FINAL INSPECTION REQUIREMENTS

- A. Before substantial completion can be granted, the following items must be completed and submitted to the Owner/Engineer:
 - 1. An approved Test and Balance Report.
 - 2. Operation test demonstrating proper operation of all equipment.
 - 3. Control diagrams, wiring diagrams, control sequences, and engineering data on components.

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- B. Prior to the final inspection or consideration of final payment, the Contractor shall:
 - 1. Provide copies of permits, operating permits, and/or inspection certificates.
 - 2. Provide a check-out report.
- C. Provide operating and maintenance manual(s).
 - 1. Provide record as-built drawings.
 - 2. Return keys to the Owner.
 - 3. Deliver all spare parts.
 - 4. Touch up any damaged finishes.
 - 5. Provide a copy of attendance roster for equipment training sessions.
 - 6. Provide all warrantee certificates and documentation.

END OF SECTION 220500

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SECTION 220513 – COMMON MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT

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PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. General construction and requirements.
- B. Applications.
- C. Single phase electric motors.

1.02 REFERENCE STANDARDS

- A. NEMA MG 1 - Motors and Generators.
- B. NFPA 70 - National Electrical Code.

1.03 SUBMITTALS

- A. See Section 230500 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.
- C. Manufacturer's Installation Instructions: Indicate setting, mechanical connections, lubrication, and wiring instructions.
- D. Operation Data: Include instructions for safe operating procedures.
- E. Maintenance Data: Include assembly drawings, bearing data including replacement sizes, and lubrication instructions.
- F. Maintain one copy of each document on site.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of this section with minimum three years documented experience.
- B. Conform to NFPA 70.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. For extended outdoor storage, remove motors from equipment and store separately.

1.06 WARRANTY

- A. See Section 230500 - Basic Mechanical Materials and Methods, for additional warranty requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Leeson Electric Corporation; ____: www.leeson.com.
- B. Regal-Beloit Corporation (Century); ____: www.centuryelectricmotor.com.
- C. Or equal performance.

2.02 GENERAL CONSTRUCTION AND REQUIREMENTS

- A. General:

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1. Motors shall be of sufficient size for the duty to be performed and shall not exceed their full-rated load when the driven equipment is operating at specified capacity under the most severe conditions likely to be encountered.
 2. Each motor shall be of the horsepower specified and suitable for operation at the elevation of the job site as scheduled on the drawings.
 3. Motors shall conform to NEMA standards, applicable to IEEE Standards and ASA C50 Standards, and shall be suitable for direct coupling mounting or V-belt mounting in accordance with the drawings.
 4. Motors controlled by variable frequency drives/adjustable frequency drives, "VFD/AFD", shall be rated for use on "VFD/AFD" controllers.
- B. Electrical Service:
1. Motors 1/2 HP and Smaller: 115 volts, single phase, 60 Hz.
- C. Construction:
1. Open drip-proof type except where specifically noted otherwise.
 2. Design for continuous operation in 104 degrees F environment.
 3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
- D. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.
- E. Wiring Terminations:
1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

2.03 APPLICATIONS

END OF SECTION 220513

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SECTION 220548 – VIBRATION AND SEISMIC CONTROLS FOR PLUMBING AND EQUIPMENT

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PART 1- GENERAL

1.01 SECTION INCLUDES

- A. Equipment support bases.
- B. Vibration isolators.
- C. Seismic snubber assemblies.
- D. Seismic restraints for suspended components and equipment.

1.02 REFERENCE STANDARDS

- A. ICC (IBC) 2012 - International Building Code;2012.
- B. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- C. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; International Accreditation Service, Inc.
- D. SMACNA (SRM) - Seismic Restraint Manual Guidelines for Mechanical Systems; Sheet Metal and Air Conditioning Contractors' National Association.

1.03 SUBMITTALS

- A. See Section 230500 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data:
 - 1. Provide manufacturer's product literature documenting compliance with PART 2 PRODUCTS.
 - 2. Include seismic rating documentation for each isolator and restraint component accounting for horizontal, vertical, and combined loads.
- C. Shop Drawings:
 - 1. Provide schedule of vibration isolator type with location and load on each.
 - 2. Include selections from prescriptive design tables that indicate compliance with the applicable building code and the vibration isolator manufacturer's requirements.
 - 3. Clearly indicate the load and capacity assumptions selected. Include copies of any calculations.
 - 4. Include the calculations that indicate compliance with the applicable building code for seismic controls and the vibration isolator manufacturer's requirements.
 - 5. Include the seal of the Professional Engineer registered in the State of New Mexico in which the Project is located, on the drawings and calculations which at a minimum include the following:
 - a. Seismic Restraint Details: Detailed drawings of seismic restraints and snubbers including anchorage details that indicate quantity, diameter, and depth of penetration, edge distance, and spacing of anchors.
 - b. Equipment Seismic Qualification Certification: Certification by the manufacturer or responsible party that each piece of equipment provided will withstand seismic force levels as specified in the applicable building code for seismic controls.

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- D. Manufacturer's Instructions: Indicate installation instructions with special procedures and setting dimensions.

1.04 QUALITY ASSURANCE

- A. Perform design and installation in accordance with applicable codes.
- B. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and registered and licensed in the State in which the Project is located.
- C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- D. Installer Qualifications: Company specializing in performing the work of this section with minimum three years of experience.
- E. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- F. Manufacturer's Certificate: Certify isolators meet or exceed specified requirements.
- G. Maintain one copy of each document on site.

1.05 QUALIFICATIONS

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience and with service facilities within 100 miles of project.
- B. Installer Qualifications: Company specializing in performing work of this section with minimum three years of documented experience approved by manufacturer.
- C. Design application of seismic snubbers under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project site.

1.06 WARRANTY

- A. Furnish five year manufacturer warranty for inertia bases.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Kinetics Noise Control, Inc: www.kineticsnoise.com.
- B. Mason Industries: www.mason-ind.com.
- C. Vibration Eliminator Company, Inc: www.veco-nyc.com.
- D. Or equal performance.

2.02 EQUIPMENT SUPPORT BASES

- A. Structural Bases:
 - 1. Construction: Engineered, structural steel frames with welded brackets for side mounting of the isolators.
 - 2. Frames: Square, rectangular or T-shaped.
 - 3. Design: Sufficiently rigid to prevent misalignment or undue stress on machine, and to transmit design loads to isolators and snubbers.
- B. Concrete Inertia Bases:

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1. Construction: Engineered, steel forms, with integrated isolator brackets and anchor bolts, welded or tied reinforcing bars running both ways in a single layer.
2. Size: 6 inches minimum depth and sized to accommodate elbow supports.
3. Mass: Minimum of 1.5 times weight of isolated equipment.
4. Connecting Point: Reinforced to connect isolators and snubbers to base including template and fastening devices for equipment.
5. Concrete: Filled on site with minimum 3000 psi concrete. See Section 033000 for additional requirements.

2.03 VIBRATION ISOLATORS

A. Non-Seismic Type:

1. All Elastomeric-Fiber Glass Pads:
 - a. Configuration: Flat or molded.
 - b. Thickness: 0.25 inch minimum.
 - c. Assembly: Single or multiple layers using bonded, galvanized sheet metal separation plate between each layer with load plate providing evenly distributed load over pad surface.
2. Elastomeric Mounts:
 - a. Material: Oil, ozone, and oxidant resistant compounds.
 - b. Assembly: Encapsulated load transfer plate bolted to equipment and base plate with anchor hole bolted to supporting structure.
3. Steel Springs:
 - a. Assembly: Freestanding, laterally stable without housing.
 - b. Leveling Device: Rigidly connected to equipment or frame.
4. Restrained Steel Springs:
 - a. Housing: Rigid blocking during rigging prevents equipment installed and operating height from changing during temporary weight reduction.
 - b. Equipment Wind Loading: Adequate means for fastening isolator top to equipment and isolator base plate to supporting structure.
5. Elastomeric Hangers:
 - a. Housing: Steel construction containing elastomeric isolation element to prevent rod contact with housing and short-circuiting of isolating function.
 - b. Incorporate steel load distribution plate sandwiching elastomeric element to housing.
6. Spring Hanger:
 - a. Housing: Steel construction containing stable steel spring and integral elastomeric element preventing metal to metal contact.
 - b. Bottom Opening: Sized to allow plus/minus 15 degrees rod misalignment.

B. Seismic Type:

1. Coil Springs Consisting of Single Elements:
 - a. Housing: Manufactured from cast iron material.
 - b. Ductile Material: Designed and rated for seismic applications.
 - c. Spring: Restrained by housing without significant degradation of vibration isolation capabilities during normal equipment operating conditions.
 - d. Resilient Snubbing Grommet System: Incorporated and designed with clearances of no more than 0.25 inch in any direction preventing direct

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- metal-to-metal contact between supported member and fixed restraint housing.
- e. Resilient Pad: Located in series with spring.
- f. Coil Springs: Color coded elements to have a lateral stiffness greater than 0.8 times the rated vertical stiffness with 50 percent overload capacity.
- g. Finish: Suitable for the application.
- 2. All Directional Elastomeric:
 - a. Material: Molded from oil, ozone, and oxidant resistant compounds.
 - b. Operating Parameters: Designed to operate within the isolator strain limits providing maximum performance and service life.
 - c. Attachment Method: Encapsulated load transfer plate bolted to equipment and base plate with anchor hole bolted to supporting structure.
 - d. Rating: Cast iron and aluminum housings rated for seismic restraint applications.
 - e. Minimum Operating Static Deflections: Deflections indicated in project documents are not to exceed published load capacities.

2.04 SEISMIC SNUBBER ASSEMBLIES

- A. Comply with:
 - 1. ASHRAE (HVACA) Handbook - HVAC Applications.
 - 2. FEMA 412.
 - 3. SMACNA (SRM).
- B. All Directional External:
 - 1. Application: Minimum three (3) snubbers are required for each equipment installation, oriented properly to restrain isolated equipment in all directions.
 - 2. Construction: Interlocking steel construction attached to the building structure and equipment in a manner consistent with anticipated design loads.
 - 3. Performance: Equipment movement at each snubber location limited to a maximum of 0.25 inches in any direction without significantly degrading the vibration isolation capability of the isolator during normal operating conditions.
 - 4. Resilient Pad: Minimum 0.25 inch thick cushions any impact and prevents metal-to-metal contact.
- C. Lateral External:
 - 1. Application: Minimum three (3) snubbers are required for each stable equipment installation, oriented properly to restrain isolated equipment in all lateral directions where uplift forces are zero or addressed by other restraints.
 - 2. Construction: Steel construction attached to the building structure and equipment in a manner consistent with anticipated design loads.
 - 3. Performance: Equipment movement at each snubber location limited to a maximum of 0.25 inches in any direction without significantly degrading the vibration isolation capability of the isolator during normal operating conditions.
 - 4. Resilient Pad: Minimum 0.25 inch thick cushions any impact and prevents metal-to-metal contact.
- D. Omni Directional External:
 - 1. Application: Minimum four (4) snubbers are required for each stable equipment installation, oriented properly to restrain isolated equipment in all lateral directions.

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2. Construction: Steel construction attached to the building structure and equipment in a manner consistent with anticipated design loads.
 3. Performance: Equipment movement at each snubber location limited to a maximum of 0.25 inches in any direction without significantly degrading the vibration isolation capability of the isolator during normal operating conditions.
 4. Resilient Pad: Minimum 0.25 inch thick cushions any impact and prevents metal-to-metal contact.
- E. Horizontal Single Axis External:
1. Application: Minimum four (4) snubbers are required for each stable equipment installation, oriented properly to restrain isolated equipment in all lateral directions where uplift forces are zero or addressed by other restraints.
 2. Construction: Steel construction attached to the building structure and equipment in a manner consistent with anticipated design loads.
 3. Performance: Equipment movement at each snubber location limited to a maximum of 0.25 inches in any direction without significantly degrading the vibration isolation capability of the isolator during normal operating conditions.
 4. Resilient Pad: Minimum 0.25 inch thick cushions any impact and prevents metal-to-metal contact.

2.05 SEISMIC RESTRAINTS FOR SUSPENDED COMPONENTS AND EQUIPMENT

- A. Comply with:
1. ASHRAE (HVACA) Handbook - HVAC Applications.
 2. FEMA 412.
- B. Cable Restraints:
1. Wire Rope: Steel wire strand cables sized to resist seismic loads in all lateral directions.
 2. Protective Thimbles: Eliminates potential for dynamic cable wear and strand breakage.
 3. Size: Based on the lesser of cable capacity or anchor load taking into account bracket geometry.
 4. Connections:
 - a. Use overlapping wire rope U clips, cable clamping bolts, swaged sleeves or seismically rated tool-less wedge insert lock connectors.
 - b. Internally brace clevis hanger bracket cross bolt to prevent deformation.
 5. Vertical Suspension Rods: Attach required bracing of sufficient strength to prevent rod buckling from vertical compression forces utilizing series of attachment clips.

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

- A. Install in accordance with manufacturer's instructions.
- B. Bases:
1. Set steel bases for one inch clearance between housekeeping pad and base.
 2. Set concrete inertia bases for 2 inches clearance between housekeeping pad and base.
 3. Adjust equipment level.

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- C. On closed spring isolators, adjust so side stabilizers are clear under normal operating conditions.
- D. Prior to making piping connections to equipment with operating weights substantially different from installed weights, block up equipment with temporary shims to final height. When full load is applied, adjust isolators to load to allow shim removal.
- E. Provide pairs of horizontal limit springs on fans with more than 6.0 inches WC static pressure, and on hanger supported, horizontally mounted axial fans.
- F. Support piping connections to equipment mounted on isolators using isolators or resilient hangers for scheduled distance.
 - 1. Up to 4 Inches Pipe Size: First three points of support.
 - 2. 5 to 8 Inches Pipe Size: First four points of support.
 - 3. 10 inches Pipe Size and Over: First six points of support.
 - 4. Select three hangers closest to vibration source for minimum 1.0 inch static deflection or static deflection of isolated equipment. Select remaining isolators for minimum 1.0 inch static deflection or 1/2 static deflection of isolated equipment.

3.02 INSTALLATION - SEISMIC

- A. Comply with:
 - 1. ASHRAE (HVACA) Handbook - HVAC Applications.
 - 2. FEMA 412.
- B. Floor and Base-Mounted Equipment, Vibration Isolated Equipment and associated Vibration and Seismic Controls for Connections:
 - 1. Install equipment anchorage items designed to resist seismic design force in any direction.
 - 2. Install vibration and seismic controls designed to include base and isolator requirements.
 - 3. Provide flexible connections between equipment and interconnected piping.
 - 4. Provide isolators and restraints designed for amplified code forces per ASCE 7 and with demonstrated ability to resist required forces including gravity, operational and seismic forces.
 - 5. Where equipment is not designed to be point loaded, provide base capable of transferring gravity and seismic demands from equipment to isolator base plate anchorage.
 - 6. Where concrete floor thickness is less than required for expansion anchor installation, install through bolt in lieu of expansion anchor.
 - 7. Where timber/wood floor or other substrate is inadequate for installation of lag bolts, screws or other mechanical fasteners, install supplemental framing or blocking to transfer loads to structural elements.
- C. Suspended Mechanical Equipment:
 - 1. Provide supports and bracing to resist seismic design force in any direction.
 - 2. Provide flexible connections between equipment and interconnected piping.
 - 3. Brace equipment hung from spring mounts using cable or other bracing that will not transmit vibration to the structure.

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4. Use of proprietary restraint systems with a certificate of compliance, verified and listed by an accredited inspection body is acceptable (pending shop drawing approval), as an alternative to project specific seismic bracing design.
- D. Wall mounted Mechanical Equipment:
 1. Provide support and bracing to resist seismic design force in any direction.
 2. Install backing plates or blocking as required to deliver load to primary wall framing members.
 3. Anchoring to gypsum wallboard, plaster or other wall finish that has not been engineered to resist imposed loads is not permitted.
- E. Piping:
 1. Provide seismic bracing in accordance ASCE 7.
 2. Provide supports, braces, and anchors to resist gravity and seismic design forces.
 3. Provide flexible connections between floor mounted equipment and suspended piping; between unbraced piping and restrained suspended items; as required for thermal movement; at building separations and seismic joints; and wherever relative differential movements could damage pipe in an earthquake.
 4. Brace resiliently supported pipe with cable bracing or alternate means designed to prevent transmission of vibrations and noise to the structure.
 5. Brace every run 5.0 feet or more in length with two transverse and one longitudinal bracing locations.
 6. Pipes and Connections Constructed of Ductile Materials (copper, ductile iron, steel or aluminum and brazed, welded or screwed connections):
 7. Pipes and Connections Constructed of Non Ductile Materials (cast iron, no-hub, plastic or non-UL listed grooved coupling pipe):
 8. Provide lateral restraint for risers at not more than 30 feet on center or as required for horizontal runs, whichever is less.
 9. Piping Explicitly Exempt from Seismic Bracing Requirements:
 - a. Provide flexible connections between piping and connected equipment, including in-line devices such as VAV boxes and reheat coils.
 - b. Install piping consistent with ASCE 7, such that swinging of the pipes will not cause damaging impact with adjacent components, finishes, or structural framing while maintaining clear horizontal distance of 67 percent of the hanger length between subject components.
 - c. Provide swing restraints as required to control potential impact due to limited space between subject components.
 10. Use of proprietary restraint systems with a certificate of compliance, verified and listed by an accredited inspection body is acceptable (pending shop drawing approval), as an alternative to project specific seismic bracing design.
 11. Re-use of Existing Hangers:
 - a. Re-using existing hangers at locations of seismic bracing are to be judged on a case-by-case basis by the registered project design professional.
 - b. Unless otherwise shown on the drawings, it is assumed all hangers supporting new piping, located at a seismic brace, will be new.
- F. Ductwork:
 1. Provide seismic bracing for ducts with cross sectional area greater than 6 sq ft (independent of duct contents).

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2. Provide seismic bracing for all ducts containing hazardous materials.
 3. Provide supports, braces, and anchors to resist gravity and seismic design forces.
 4. Install ducts and duct risers designed to accommodate interstory drift.
 5. Independently support in-line devices weighing more than 20 pounds.
 6. Independently support and brace all in-line devices weighing more than 75 pounds.
 7. Provide unbraced piping attached to braced in-line equipment with adequate flexibility to accommodate differential displacements.
 8. Positively attach dampers, louvers, diffusers and similar appurtenances to ductwork with mechanical fasteners.
 9. Install duct supports designed to resist not less than 150 percent of the duct weight.
 10. Use of proprietary restraint systems with a certificate of compliance, verified and listed by an IAS AC172 accredited inspection body or otherwise accepted by applicable codes is acceptable (pending shop drawing approval), as an alternative to project specific seismic bracing design.
- G. Tanks:
1. Install tank anchorage, tank legs and/or supporting structure designed to resist design force.
 2. Provide flexible connections between tank and interconnected piping.

3.03 FIELD QUALITY CONTROL

- A. Inspect isolated equipment after installation and submit report. Include static deflections.
- B. Perform testing and inspections of the installation in accordance with Section 014533.

END OF SECTION 220548

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PART 1 - GENERAL**1.01 SECTION INCLUDES**

- A. Pipe, pipe fittings, specialties, and connections for piping systems.
 - 1. Sanitary sewer.
 - 2. Domestic water.
 - 3. Flanges, unions, and couplings.
 - 4. Pipe hangers and supports.
 - 5. Valves.
 - 6. Water pressure reducing valves.

1.02 REFERENCE STANDARDS

- A. ASME B31.9 - Building Services Piping.
- B. ASSE 1003 - Performance Requirements for Water Pressure Reducing Valves for Domestic Water Distribution Systems.
- C. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
- D. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
- E. ASTM B32 - Standard Specification for Solder Metal.
- F. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes.
- G. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric).
- H. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube.
- I. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings.
- J. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
- K. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
- L. ASTM D2513 - Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings.
- M. ASTM D2609 - Standard Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe.
- N. ASTM D2661 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings.
- O. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.
- P. ASTM D2680 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Composite Sewer Piping.
- Q. ASTM D2855 - Standard Practice for the Two-Step (Primer & Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets.

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- R. ASTM F628 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe With a Cellular Core.
- S. ASTM F877 - Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems.
- T. ASTM F1281 - Standard Specification for Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe.
- U. ASTM F1282 - Standard Specification for Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe.
- V. ASTM F1960 - Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) Tubing.
- W. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding.
- X. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
- Y. AWWA C651 - Disinfecting Water Mains.
- Z. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm), for Water Service.
- AA. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.
- AB. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves.
- AC. NSF 61 - Drinking Water System Components - Health Effects.
- AD. NSF 372 - Drinking Water System Components - Lead Content.
- AE. PPI TR-4 - PPI Listing of Hydrostatic Design Basis (HDB), Hydrostatic Design Stress (HDS), Strength Design Basis (SDB), Pressure Design Basis (PDB), and Minimum Required Strength (MRS) Ratings For Thermoplastic Piping Materials or Pipe.

1.03 SUBMITTALS

- A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

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PART 2 - PRODUCTS**2.01 GENERAL REQUIREMENTS**

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 SANITARY SEWER PIPING, BURIED BEYOND 5 FEET OF BUILDING

- A. Cast Iron Pipe: ASTM A74 extra heavy weight.
 - 1. Fittings: Cast iron.
 - 2. Joint Seals: ASTM C564 neoprene gaskets, or lead and oakum.
- B. ABS Pipe: ASTM D2661.
 - 1. Fittings: ABS.
 - 2. Joints: Solvent welded with ASTM D2235 cement.
- C. PVC Pipe: ASTM D2665 or ASTM D3034.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.03 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Cast Iron Pipe: ASTM A74 extra heavy weight.
 - 1. Fittings: Cast iron.
 - 2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets or lead and oakum.
- B. ABS Pipe: ASTM D2661.
 - 1. Fittings: ABS.
 - 2. Joints: Solvent welded with ASTM D2235 cement.

2.04 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: ASTM A74, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joint Seals: ASTM C564 neoprene gaskets, or lead and oakum.
- B. ABS Pipe: ASTM D2661.
 - 1. Fittings: ABS.
 - 2. Joints: Solvent welded with ASTM D2235 cement.

2.05 DOMESTIC WATER PIPING, BURIED BEYOND 5 FEET OF BUILDING

- A. Copper Pipe: ASTM B42, hard drawn.
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
- B. Polyethylene/Aluminum Composite Pipe: ASTM F1281 or ASTM F1282, tested for potable water and residual chlorine use.
 - 1. Fittings and Joints: Brass compression type.

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2.06 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING

2.07 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).
- B. Polyethylene/Aluminum Composite Pipe: ASTM F1281 or ASTM F1282, tested for potable water and residual chlorine use.
 - 1. Fittings and Joints: Brass compression type.
- C. Cross-Linked Polyethylene (PEX) Pipe: ASTM F876 or ASTM F877.
 - 1. Manufacturers:
 - a. Uponor, Inc: www.uponorengineering.com/sle.
 - b. Viega LLC: www.viega.com.
 - c. Zurn Industries, LLC: www.zurn.com.
 - 2. PPI TR-4 Pressure Design Basis:
 - 3. Fittings: Brass and engineered polymer (EP) ASTM F1960.
 - 4. Joints: ASTM F1960 cold-expansion fittings.

2.08 NATURAL GAS PIPING, BURIED BEYOND 5 FEET OF BUILDING

- A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
 - 1. Fittings: ASTM A234/A234M, wrought steel welding type, with AWWA C105/A21.5 polyethylene jacket or double layer, half-lapped 10 mil polyethylene tape.
 - 2. Joints: ASME B31.1, welded.
- B. Polyethylene Pipe: ASTM D2513, SDR 11.
 - 1. Fittings: ASTM D2683 or ASTM D2513 socket type.
 - 2. Joints: Fusion welded.

2.09 NATURAL GAS PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
 - 1. Fittings: ASTM A234/A234M, wrought steel welding type.
 - 2. Joints: ASME B31.1, welded.
 - 3. Jacket: AWWA C105/A21.5 polyethylene jacket or double layer, half-lapped 10 mil polyethylene tape.

2.10 NATURAL GAS PIPING, ABOVE GRADE

- A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
 - 1. Fittings: ASME B16.3, malleable iron, or ASTM A234/A234M, wrought steel welding type.
 - 2. Joints: Threaded or welded to ASME B31.1.

2.11 FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 3 Inches and Under:
 - 1. Ferrous pipe: Class 150 malleable iron threaded unions.
 - 2. Copper tube and pipe: Class 150 bronze unions with soldered joints.
- B. Mechanical Couplings for Grooved and Shouldered Joints: Two or more curved housing segments with continuous key to engage pipe groove, circular C-profile gasket, and bolts to secure and compress gasket.

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1. Dimensions and Testing: In accordance with AWWA C606.
2. Housing Material: Provide ASTM A47/A47M malleable iron or ductile iron, galvanized.
3. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel.
4. When pipe is field grooved, provide coupling manufacturer's grooving tools.

2.12 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
 3. Trapeze Hangers: Welded steel channel frames attached to structure.
 4. Vertical Pipe Support: Steel riser clamp.
- B. Plumbing Piping - Drain, Waste, and Vent:
 1. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 2. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
 3. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
- C. Plumbing Piping - Water:
 1. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 2. Hangers for Cold Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
 3. Hangers for Hot Pipe Sizes 2 Inches to 4 Inches: Carbon steel, adjustable, clevis.
 4. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.

2.13 BALL VALVES

- A. Manufacturers:
 1. Grinnell Products, a Tyco Business: www.grinnell.com.
 2. Nibco, Inc: www.nibco.com.
 3. Uponor, Inc: www.uponorengineering.com/sle.

2.14 WATER PRESSURE REDUCING VALVES:

- A. Manufacturers:
 1. Amtrol Inc: www.amtrol.com.
 2. Cla-Val Company: www.cla-val.com.
 3. Watts Regulator Company: www.wattsregulator.com.
- B. Up to 2 Inches:
 1. ASSE 1003, bronze body, stainless steel, and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded single union ends.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

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3.02 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- G. Provide access where valves and fittings are not exposed.
- H. Establish elevations of buried piping outside the building to ensure not less than 3 ft of cover.
- I. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- J. Provide support for utility meters in accordance with requirements of utility companies.
- K. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
- L. Sleeve pipes passing through partitions, walls and floors.
- M. Inserts:
 - 1. Provide inserts for placement in concrete formwork.
 - 2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- N. Pipe Hangers and Supports:
 - 1. Install in accordance with ASME B31.9.
 - 2. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
 - 3. Place hangers within 12 inches of each horizontal elbow.
 - 4. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 - 5. Provide copper plated hangers and supports for copper piping.

3.04 APPLICATION

- A. Use grooved mechanical couplings and fasteners only in accessible locations.
- B. Install unions downstream of valves and at equipment or apparatus connections.
- C. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

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SECTION 221005 – PLUMBING PIPING

HWY 14 SENIOR/COMMUNITY CENTER
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- D. Install globe valves for throttling, bypass, or manual flow control services.
- E. Provide flow controls in water recirculating systems where indicated.

3.05 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Prior to starting work, verify system is complete, flushed and clean.
- B. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- C. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.
- D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- E. Maintain disinfectant in system for 24 hours.
- F. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
- G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
- H. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

3.06 SERVICE CONNECTIONS

- A. Provide new sanitary sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.
- B. Provide new water service complete with approved reduced pressure backflow preventer and water meter with by-pass valves, pressure reducing valve, and sand strainer.
 - 1. Provide sleeve in wall for service main and support at wall with reinforced concrete bridge. Calk enlarged sleeve and make watertight with pliable material. Anchor service main inside to concrete wall.

END OF SECTION 221005

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SECTION 223100 – WATER SOFTENER

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

.1 SUMMARY

- A. Section includes water softeners. **This section is intended to be used as a basis of design for a Water Softening System for the Hwy 14 Senior Center. See attached Culligan Water Analysis for site specific reference. Contractor can submit alternate designs as long as they meet and/or exceed requirements specified in the Water Report.**
- B. Related Sections:
 - 1. Work described in this section is related to other work described in Divisions 13, 15, and 16 **[21, 22, 23, 25, 26, 27 and 28]** and may be related to work in other Divisions concerning structure or appearances. Review and become familiar with work required in other Sections in this Division and with work required in the other Divisions. Coordinate with other subcontractor(s) to assure that all issues arising between related Sections are resolved.
 - 2. Bring to the attention of the Engineer prior to the cutoff date for Addenda any and all discrepancies in related work. Submission of a bid or proposal indicates that all costs for this work and related work are included in the bid for this work or within the bid or proposal for the related work.

.2 SUBMITTALS

- A. Procedures for submittals: See Section 22 05 00.
- B. Product Data: Submit capacity, electrical characteristics and connection requirements. Indicate dimensions of tanks, tank lining methods, anchors, attachments, lifting points, taps, drains, controls, and operating sequence.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit operation, maintenance, and inspection data, replacement part numbers and availability. Submit recommended maintenance schedule.
- B. Project Record Documents: See Section 22 05 00.

.4 QUALITY ASSURANCE

- A. Maintain one copy of each document on site.

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SECTION 223100 – WATER SOFTENER

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.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

.6 DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

.7 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

.8 WARRANTY

- A. Furnish five year manufacturer warranty for water softener.

.9 MAINTENANCE SERVICE

- A. Furnish service and maintenance of water softener for five years from Date of Substantial Completion.
- B. Examine unit components bi-monthly. Clean, adjust, and lubricate equipment.
- C. Include systematic examination, adjustment, and lubrication of unit, and controls checkout and adjustments. Repair or replace parts in accordance with manufacturer's operating and maintenance data. Use parts produced by manufacturer of original equipment.
- D. Perform work without removing units from service during building normal occupied hours.
- E. Provide emergency call back service during working hours for this maintenance period.
- F. Maintain locally, near Place of the Work, adequate stock of parts for replacement or emergency purposes. Have personnel available to ensure fulfillment of this maintenance service, without unreasonable loss of time.
- G. Perform maintenance work using competent and qualified personnel under supervision [and in direct employ] of manufacturer or original installer.

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- H. Do not assign or transfer maintenance service to agent or subcontractor without prior written consent of Owner.

.10 MAINTENANCE MATERIALS

- A. Furnish [two] [] [50] [] pound bags of water softener salt.

PART 2 - PRODUCTS

.11 WATER SOFTENERS

- A. Manufacturers:
 - 1. Culligan.
 - 2. Rainsoft Water Conditioning Co.
 - 3. Or equal performance
- B. Softening Capacity: See
- C. Service Flow: See plans.
- D. Electrical Characteristics: See plans.
- E. Softener Tank: See plans.
- F. Brine Tank: See plans.
- G. Control: [[Brass] [Reinforced plastic] control valve cycled to regenerate from one to twelve day period] [Reinforced plastic control valve cycled to regenerate after adjustable metered quantity of water flow].

*****OR*****

.12 WATER SOFTENERS

- A. Description: Packaged, factory-assembled vertical pressure type water softener system complete with pressure vessel, softening resin, control valve, brine maker, and electronic controller. System to be fabricated by a manufacturer regularly engaged in production of water treatment equipment.
- B. Manufacturer:

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1. Culligan International Company:
2. Or equal performance.

C. The system specifications are based on Culligan International model CSM 210.2.

The purpose of the Culligan International Series CSM Single/Timeclock/Demand automatic water softener will be removed mineral hardness from a known water supply to a level not to exceed 17.1 mg/l. as determined by an accepted ASTM or EDTA test method, when the system is operated at 60.0 gpm and in accordance with the operating instruction. The system will be cable of supplying 2500.7 gallons of softened water between regenerations based on the influent water analysis listed in equipment specification.

The systems performance is rated at a design flow rate of the allowable with a rated pressure drop of 10.1 psi, and will be capable of a peak flow rate of 102.0 gpm for sustained periods of 90 minutes with a pressure drop of 25.0 psi.

There shall be a quantity of one (1) of the above described systems.

D. Performance and Design Data

1. Influent Water Analysis: See Plans.
Calcium, CA :
Magnesium Mg :
Total Hardness gpg :
Eff. Hardness, gpg @ 100% cap:
(Constituents above are expressed in mg/l as CaCO₃ or as otherwise specified)

Iron, Fe :
Manganese, Mn :
Total Dissolved Solids, TDS :
(Constituents abo are expressed in mg/l)
Turbidity, NTU :
Color :
PH :
2. Design Parameters
Normal System Flow & Pressure Drop :
Maximum System Flow & Pressure Drop:
Backwash/rinse Flow :
Backwash Volume :
Daily Water Usage :
Daily Hours of Water Demand :
Operating Temperature Range :
Operating Pressure Range (System) :

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Electrical Requirements :

System Dimension (L x W x H) :

3. Effluent Water Quality : Zero GPG Hardness (ASTM soap test method)

E. Equipment Specifications

1. Each system shall include one (1) tank(s).

a. Tank Construction

Tank(s) shall be electrical welded pressure vessel low carbon steel construction rated for 100.0 psi working pressure and a minimum design pressure of 1.2 times the working pressure amount. Additionally, the tanks shall be capable of withstanding testing with pressure fluctuations from 0 to 120 psi for a minimum of 30,000 cycles.

b. Access Openings

Each tank will be equipped with openings for mineral filling and periodic inspection.

c. Tank Finish - Exterior

Tank finish on the exterior shall be a high solids polyurethane monochromatic gloss enamel applied to a 1.25 to 1.50 mils DFT over 1.0 to 1.25 mil DFT prime coat.

d. Tank Finish - Interior

Tank interior shall have near white sandblast and be coated to 8 to 10 mil DFT with an epoxy phenolic designed specifically as a high chemical resistant, non toxic, odorless protective coating. The lining shall meet the requirements of the US Federal Register, Food and Drug Regulations, Title 21, Chapter 1, Paragraph 175.300.

e. Tank Supports

Tank supports shall be structural steel strap leg type welded to lower tank head.

2. Internal Distribution

- a. The upper distribution system shall be of the single point baffle type, constructed of Schedule 40 galvanized steel pipe fittings.

- b. The lower distribution system shall be the hub and radial arm type, constructed of PVC pipe and fittings with individual, fine slotted, non-clogging, polypropylene strainer arranged for even flow distribution through the resin bed.

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Slotted lateral arms shall not be utilized. This distribution system shall be embedded in a single layer subfill of washed inorganic material to support the resin bed.

3. Main Operating Valve.

The main operating valve shall be a fully automatic multiport diaphragm type. The multiport design shall incorporate all valves necessary for complete control of the softener service and regeneration steps.

The diaphragm valves shall be smooth opening and closing, free of water hammer. The diaphragm assembly shall be fully guided on its perimeter to assure a smooth reliable shut off without sticking. There shall be no dissimilar metals within the valve and no special tools shall be required to service the valve.

The main operating valve shall include a valve mounted automatic self adjusting brine injector to draw brine and control rise at a constant rate regardless of water pressure in the range of 30.0 and 100.0 psi.

The main operating valve shall be designed and manufactured by the same manufacturer as the water softener system and tested prior to shipment.

The valve shall have a soft water sampling cock.

The unit shall be supplied so that the valve will allow automatic bypass of untreated water during regeneration. The bypass shall be integral to the main operating valve body and be capable of being easily modified to prevent untreated water bypass.

4. Pipe and Fittings

The main operating valve and manifold piping shall be factory assembled and shipped attached to the resin tank for ease of installation and start up. Piping shall be Schedule 40 galvanized steel and galvanized fittings shall be standard Class 150 threaded malleable iron.

All system inlet, outlet and drain connections shall be less than 50.0 in. in distance from the softener support level to provide ease of installation and service.

5. Flow Control

The backwash flow controller shall be a pressure-compensating orifice capable of providing and maintaining proper backwash flows over the entire listed operating pressure range of the system. The backwash flow controller shall be easily serviced

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without special tools and design so that service to the flow controller can be performed without disassembly of the valve body or the sequencing controller and without disconnecting existing inlet and outlet piping connections.

6. Controls

A fully integrated programmable microprocessor driven electronic controller shall be provided to automatically cycle the main operating valve through the regeneration sequence. The electronic controller shall be designed and manufactured by the same manufacturer as the water treatment equipment.

The controller shall be capable of initiating a regeneration by accepting an internal signal from the controller time keeping device; an external Hall-Effect flow sensor, A Culligan Aqua-Sensor®¹ an external device such as a remote start push-button or any combination of these methods. The controller shall sequence all steps of an automatic regeneration and automatically return the softener to a service or stand-by mode. The initiating time and/or volume set points shall automatically reset upon completion of the regeneration sequence.

An audible alarm beeper capable of emitting a tone of ~70 dbA shall be available but capable of being disabled if so desired.

The controller shall allow for a manual initiation of the automatic regeneration sequence by utilizing a regeneration button on the face of the controller.

The controller shall operate on a low voltage electrical system. The system shall include a UL/CUL listed transformer. The entire electronic control package and its associated inputs/outputs shall require not more than 24 VAC @ 50VA.

The multiported pilot control assembly shall include a dial for visual indication of the system status; the pilot control valve shall also allow manual operation in the event of a power failure.

The controller shall utilize EEPROM to save pertinent programmed data and statistical functions. The controller must retain all functionality for power interruptions of less than 12 hours. A battery backup shall be available as an add-on option capable of maintaining the time of day for a minimum of 4 weeks.

a. System Control Options

An operator selected program of a time-initiated regeneration for single units shall be available. The controller shall be capable of being entirely

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programmed in the field without additional interface devices. The operator shall be able to select regeneration to occur after a specified number of hours or days or specific day of the week. The electronic controller shall indicate various data that includes number of regenerations in the last 124 days, days since last regeneration, total number of regenerations for the life of the unit, current day of the week, time of day and unit in regeneration.

- b. In addition the following functions shall be provided as part of the system controller:

Regeneration sequence timers: The controller shall allow control customization of individual regeneration cycle times, each programmable from 1 - 99 minutes. The regeneration cycle and time cycle remaining shall be displayed with in regeneration.

Lockout function; the controller shall include a lockout to prevent unauthorized personnel from altering program data.

Regeneration override: the controller shall include a function to direct pre-programmed regeneration after a user determined period of time (hours or 24 hour intervals) without an input signal from another regeneration initiation device.

Alarm status indicator: The controller shall monitor operation of internal functions. If a fault is identified, the need for operator intervention will be signaled visually within the controller display.

Two Auxiliary Outputs: Two Auxiliary Outputs shall be integral to the controller circuit board. Each Output shall be capable of being programmed to provide power to a "Normally Open" or "Normally Closed" contact (user choice) these 24 VAC outputs shall be used only for the purpose of energizing a relay coil

7. Exchange Resin

The ion exchange resin shall be virgin high capacity "standard mesh" of sulfonated polystyrene type stable over the entire pH range with good resistance to bead fracture from attrition or osmotic shock. Each cubic foot of resin will be capable of removing 30000.0 grains of hardness as calcium carbonate with regenerated with 15.0 lbs of salt. The resin shall be solid, of the proper particle size of 20-50 mesh, U.S. standard screen and will contain no agglomerates, shells, plates or other shapes that might interfere with the normal function of the water softener. The resin shall be manufactured to comply with the food additive regulation 21 CFR 173.25 as set forth by the USDA.

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The system shall include 7.0 ft.³ of exchange resin per vessel and a total of 7.0 ft.³ of resin for the system.

8. Brine System

Provide a complete brine system consisting of plastic tank, salt platform, brine well, an automatic brine valve and all necessary fittings for operation with the water softening system. The system shall consist of a combined brine measuring and salt storage tank with salt platform. The tank will be sized 24.0 in x 48.0 in.; the system will include a total of one (1) brine tank(s).

9. Brine Reclaim

To comply with the brine reclaim requirement, the softening system shall be provided with the necessary diaphragm and solenoid valves. These valves shall be operated by the system controller. The use of a separate controller to perform the steps of brine reclaim is not permitted.

To perform the brine reclaim function, the system controller shall be programmed so as to permit the proper amount of brine of subsequent regenerations to be diverted back to the brine system. The entire brine reclaim process shall be fully automatic and require no adjustment from one regeneration to the next.

The brine tank will be equipped with a float operated non-corrosive field serviceable brine float valve for automatic control of brine withdrawal and brine reclaim water refill.

The brine valve will automatically open to admit brine to the resin tank during eduction and close automatically providing positive shut-off to prevent air from entering the system during the reclaim process. The brine valve shall work with the brine reclaim feature of the main operating valve controls to admit the correct volume of reclaimed water to the brine tank in accordance with the reclaim time setting in the control program.

The brine valve will include a float operated safety shut-off valve as a back up to the timed reclaim from the main operating valve control to prevent brine tank overflow.

F. Accessories

1. Water test kits for hardness tests will be supplied
2. Pressure Gauges for hard water inlet and soft water outlet.

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3. Sampling cocks for had water inlet.

G. Field Service

The services of a factory authorized service representative can be made available to supervise, inspect and provide operator training as required for initial start-up and system operation. Contact your local culligan dealer for service rates and scheduling.

H. Warranty

A single written warranty must be provided from the manufacturer of the water softener system covering workmanship and materials.

PART 3 - EXECUTION

.13 INSTALLATION

- A. Coordinate with plumbing piping and related and electrical Work to achieve operating system.
- B. Install the following piping accessories on water conditioning equipment domestic water piping connections.
 - 1. On inlet:
 - a. Thermometer.
 - b. Strainer.
 - c. Pressure gage.
 - d. Shut-off valve.
 - 2. On outlet:
 - a. Shut-off valve.
- C. Install drain piping from tanks to nearest floor drain.

END OF SECTION 017419

SEE ATTACHED CULLIGAN WATER REPORT IN FOLLOWING PAGES

20 OCTOBER 2017



9399 West Higgins Road Suite 1100
Rosemont, IL 60018

Phone: 847 430 1219
Fax: 847 430 2219

Report Date: 6/15/2017

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CERTIFICATE OF ANALYSIS

ANALYSIS NUMBER: 1708507

Culligan Water Conditioning of Albuquerque, New Mexico
7801 Menaul Blvd NE
Albuquerque, NM 87110-4657

Customer: **Senior Center/ Fire Station**

Control Number: 79483

Account Number: 30020

Collected By: Paul

Misc:

cc: pauld@southwesth2o.com

SAMPLE INFORMATION:

Analysis Type Requested:

Standard A Analysis

Sampled: 6/6/2017

Supply/Source:

Municipal Well

Condition:

Treated Water

Received: 6/12/2017

Sampling Point:

Application:

Commercial

ANALYSIS INFORMATION:

Turbidity (180.1 Rev. 2 1993):	0.28 NTU	Turbidity after filtration:	NM
Conductivity (120.1):	695.80 microS/cm	Est. TDS by Conductivity:	448.56
Color* (SM2120C, 21Ed):	<5.00 color	Color after Acidification*:	NM
pH* (150.1):	7.67	Tannins:	<2.00 mg/L

Concentrations reported as mg/L (PPM) unless otherwise indicated

CATIONS (Method 200.7 Rev 4.4)

ANIONS (Method 300.0)

	As Element	As CaCO3		As Element	As CaCO3
Calcium* (Ca)	98.03	245.08	Chloride* (Cl)	26.06	36.74
Magnesium* (Mg)	17.38	71.61	Nitrate As N* (NO3)	2.79	9.96
Sodium* (Na)	54.14	118.03	Nitrite As N* (NO2)	0.25	0.89
Potassium* (K)	3.29	4.21	Sulfate* (SO4)	80.58	83.80
Strontium (Sr)	1.08		Bicarbonate*	331.70	271.99
Barium* (Ba)	0.14		Carbonate*	NM	NM
Iron* (Fe)	<0.05		Fluoride* (F)	0.64	1.64
Manganese* (Mn)	<0.02		Silica* (SiO2)	31.08	
Copper* (Cu)	0.062				
Zinc* (Zn)	<0.05				

	Mg/L	GPG		Mg/L	GPG		Mg/L	GPG
Cations (CaCO3)	438.93	25.67	Anions (CaCO3)	405.02	23.69	Hardness* (CaCO3)	316.69	18.52

Additional Tests

Aluminum by ICP* 62.17 ug/L

Arsenic by ICP (Screen) ND ug/L

Lead by ICP (Screen) ND ug/L

NA = Not Analyzed

NM = Not Measured

ND = Not Detected

* = NELAP accredited parameter

This report can only be reproduced in its entirety. The results reported here are representative of the sample as received in the laboratory. Unless noted holding times and temperature requirements for method 300 are not followed. pH results are out of hold time.

NELAP Certifications: IL-100213; PA-68-04623; NY-11756; TX-TX269-2007A

Maria Mozden

State Certifications: IL-IDPH-17598; CA-2958; MT-CERT0091; IA-369;

Analytical Lab Manager

VT-02199; WI-105-10119; CO-IL100213; MI-9988; MO-1060

Consumer:

FEDERAL SAFE DRINKING WATER ACT

All tested parameters exceeding the maximum concentration levels (MCL) established under the "Federal Safe Drinking Water Act"

<u>Parameter</u>	<u>Found</u>	<u>MCL</u>
------------------	--------------	------------

* MCL for Turbidity varies as follows:

- | | |
|--------------------------------|---------|
| 1. Municipal Direct Filtration | 0.5 NTU |
| 2. Municipal Sand Filtration | 1.0 NTU |
| 3. Unfiltered Water Supply | 5.0 NTU |

TYPICAL POST RO DRINKING WATER UNITS

(Concentrations reported as mg/L (PPM) as the element)

Calcium (Ca)	1.96	Sulfate (SO4)	1.61
Iron (Fe)	0.00	Magnesium (Mg)	0.35
Manganese (Mn)	0.00	Sodium (Na)	1.08
Zinc (Zn)	0.00	Potassium (K)	0.10
Copper (Cu)	0.00	Chloride (Cl)	1.30
Nitrate As N (NO3)	0.67	Fluoride (F)	0.03
Nitrite As N (NO3)	0.06		

These values are typical of new modules on water with a pH of 7-9 at 70-74 F with 500-3000 mg/L total salts operating with 40-70 PSI pressure across the module. Local conditions may yield different results.

DI CALCULATION FACTORS

			GPG	mg/L
Sodium	26.89%	Weak Base Fact X	7.05	120.54
Alkalinity	67.15%	Carbonic Acid	17.50	299.19
Chloride	30.48%	Cation Fact Y	25.67	438.93
Carbonic Acid	63.87%	Silica	25.78	531.47
Monovalent Ions	10.44%	Carbon Dioxide	0.80	13.60
Silica	6.95%	Strong Base Fact Z	26.15	447.17

Method	Date	Method	Date
120.1	6/15/2017	150.1	6/15/2017
180.1 Rev. 2 1993	6/15/2017	200.7 R4.4	6/15/2017
200.7 Rev. 4.4	6/15/2017	300.0 R2.1	6/15/2017
SM 5550	6/15/2017	SM2120C, 21Ed	6/15/2017
SM2120C,21Ed	6/15/2017	SM2320B, 18Ed	6/15/2017

pH - the acid strength of water on a scale of 0 to 14 (neutral = pH 7.0). Values from 7→0 are increasingly more acidic; values from 7→14 are increasingly more alkaline. The recommended range for drinking water under the U.S. regulations is 6.5 to 8.5.

Conductivity - the relative ability of water to carry an electrical current, used to estimate the total concentration of dissolved ions.

Turbidity - cloudiness in water caused by the dispersion of light by extremely tiny particles. Measured on an arbitrary scale of Nephelometric Turbidity Units (NTUs). The mandatory maximum under U.S. regulations is 0.5 NTU. Turbidity Filtered is measured through 11 micron filter paper.

Color - the amount of brownish-yellow color from dissolved tannins from vegetation (like tea) and metals (like rust) and their combinations, measured on an arbitrary scale. The recommended maximum under U.S. regulations is 15 CU.

Silica, SiO_2 - a naturally occurring dissolved mineral, which produces a glassy scale in high temperature equipment but is more important in predicting the life of certain water treatment media.

Hydrogen Sulfide, H_2S - a toxic, noxious, corrosive gas that smells like rotten eggs. Bacteria acting on sulfate or organic sulfur-containing materials in the absence of oxygen produce it. Only "special" water analyses can determine hydrogen sulfide levels.

Total Hardness - the sum of all metal ions which react with soap to inhibit sudsing and form "scum" or "bathtub ring" - mostly Calcium and Magnesium. When heated or evaporated, hard water can cause lime scale that can deposit on sink and shower fixtures and walls and result in loss in efficiency or fuel waste in water heaters, boilers, and cooling systems.

Total Alkalinity - the sum of hydroxide (OH^-), carbonate (CO_3^{2-}), and bicarbonate (HCO_3^-) ions, which can combine with both acids and bases, which act to buffer water and prevent sudden uncontrolled changes in pH.

Cations - ions (atoms or molecules with an electrical charge) with a positive (+) electrical charge, so named because they go toward the cathode in an electric field. Besides the hardness ions, the main cations in water are sodium, Na^+ , and potassium, K^+ .

Anions - ions (atoms or molecules with an electrical charge) with a negative (-) electrical charge, so named because they go toward the anode in an electric field. The main anions in water are hydroxide (OH^-), carbonate (CO_3^{2-}), bicarbonate (HCO_3^-) (which together comprise "alkalinity"), sulfate (SO_4^{2-}), nitrate (NO_3^-) and chloride (Cl^-).

Nitrate/Nitrite, $\text{NO}_3^-/\text{NO}_2^-$ - important because of toxicity to infants, nitrate comes from fertilizers and animal wastes. Water supplies with high nitrate levels should also be screened for agricultural pesticides and bacterial contamination. The mandatory limit under U.S. regulations is 10 mg/L.

Sulfate, SO_4^{2-} - a common mineral component, only rarely occurring at excessive levels, which can cause a temporary diarrhea in visitors who have not become acclimated to it. Recommended U.S. limit, 250 mg/L.

Fluoride, F^- - often added to water to inhibit tooth decay. Mandatory U.S. limits range from 4.0 mg/L in northern regions to 1.4 mg/L in southern regions (where more water is consumed).

Chloride, Cl^- - a common mineral component, can be found in elevated levels near seawater and other salt supplies, which can cause taste problems and can contribute to corrosion. Recommended U.S. limit, 250 mg/L.

Iron, Fe - cause of metallic taste, rust stains on laundry and porcelain fixtures, and clogging/fouling of equipment. The recommended U.S. limit is 0.3 mg/L.

Manganese, Mn - cause of metallic taste and black stains on laundry and porcelain. Often occurs in combination with iron. The recommended U.S. limit is 0.05 mg/L Mn or a total of 0.3 mg/L of Fe + Mn.

Copper, Cu - cause of green stains on porcelain and fittings, seldom naturally-occurring, usually due to corrosion. The mandatory U.S. "action level" of 1.3 mg/L is tied to the regulation for lead contamination due to corrosion of plumbing materials.

Zinc, Zn - cause of metallic taste and upset stomach. Due to corrosion of galvanized plumbing materials. Recommended U.S. limit, 5.0 mg/L.

Units of Concentration used in this Report

gpg-abbreviation for "grains per gallon" calculated in terms of calcium carbonate equivalents. Multiply by 17.12 to convert gpg into either ppm or mg/L.

ppm-abbreviation for "parts per million." Interchangeable with mg/L.

mg/L-abbreviation for "milligrams per liter." Interchangeable with ppm. (There are one million milligrams in a liter of pure water).

ppb-abbreviation for "parts per billion." Interchangeable with $\mu\text{g/L}$ or micrograms per liter.

$\mu\text{g/L}$ -abbreviation for "micrograms per liter." Interchangeable with ppb. (There are a billion micrograms in a liter).

1000 ppb = 1 ppm; 1000 $\mu\text{g/L}$ = 1 mg/L

THIS ANALYSIS WILL NOT DETERMINE WHETHER A WATER IS SAFE FOR HUMAN CONSUMPTION

CONTAMINANT	PRODUCT RECOMMENDATION
Alkalinity	Softener
Aluminum	Softener
Ammonia	Deionization, Filtration
Antimony	Ultra Filtration, Reverse Osmosis
Arsenic	Arsenic Filter
Arsenic +3	Arsenic Filter
Arsenic +5	Arsenic Filter
Barium	Softener
Beryllium	Reverse Osmosis, UF, Softener
Bromate	Activated Carbon
Cadmium	Reverse Osmosis, UF, Ion Exchange
Calcium	Softener
Chloride	Ion Exchange
Chromium	Reverse Osmosis
Color	Activated Carbon
Conductivity	Deionization
Copper	Reverse Osmosis, Softener
Fluoride	Reverse Osmosis
Hydrogen Sulfide	Aeration, Chemical Filtration
Iron	Aeration, Filtration
Iron Bacteria	Chlorine, UV, Ultrafiltration
Lead	Carbon Block, Faucet Filter, AquaClear with RO
Magnesium	Softener
Manganese	Softener
Mercury	Carbon Block
Mod Susp Solids	Depth Filter, Particle Filter
Nitrate/Nitrite	Reverse Osmosis
pH	Calcite
Potassium	Softener
Selenium	Reverse Osmosis
Silica	Reverse Osmosis
Silver	Reverse Osmosis, Ion Exchange, Activated Carbon
Slime Forming Bacteria	Chlorine, UV, Ultrafiltration
Sodium	Reverse Osmosis
Solids (TDS, TSS, TS) each	Reverse Osmosis, Deionization
Strontium	No Reliable Treatment
Sulfate	Ion Exchange, Reverse Osmosis
Sulfate Bacteria	Chlorine, UV, Ultrafiltration
Tannins (if color is present)	Carbon Filter
Thallium	Reverse Osmosis, Cation Exchange
TOC	Carbon Filter
Total Coliform	Chlorine, UV, Ultrafiltration
Total Hardness	Softener
Total Phosphate	Particle Filter, Depth Filter, Reverse Osmosis
Uranium	Ion Exchange
Volatile Organic Compound	Carbon Filter
Zinc	Reverse Osmosis, Cation Exchange
Note: Not all product recommendation may be used in all states	



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Report Date: 6/15/2017

Page 1 of 3

CERTIFICATE OF ANALYSIS

Analysis Number: 1708507

Culligan Water Conditioning of Albuquerque, New Mexico
7801 Menaul Blvd NE

Customer: Senior Center/ Fire Station

Control Number: 79483
Account Number: 30020
Collected By: Paul

Misc:
cc: pauld@southwesth2o.com

SAMPLE INFORMATION:

Analysis Type Requested: Standard A Analysis

Sampled: 6/6/2017	Supply/Source: Municipal Well	Condition: Treated Water
Received: 6/12/2017	Sampling Point:	Application: Commercial

This Certificate of Analysis compares the actual test result to national standards as defined in the EPA's Primary and Secondary Drinking Water Regulations.

Primary Standards: Are expressed as the maximum contaminant level (MCL) which is the highest level of contaminant that is allowed in drinking water. MCLs are enforceable standards.

Secondary Standards: Are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. Some states may choose to adopt that as enforceable standards.

ug/L (ppb): Unless otherwise indicated, results and standards are expressed as an amount in micrograms per liter or parts per billion.

mg/L (ppm): Unless otherwise indicated, results and standards are expressed as an amount in milligrams per liter or parts per million.

Minimum Detection Level (MDL): The lowest concentration level that the laboratory can detect a contaminant.

ND: The contaminant was not detected above the minimum detection level.

NA: The contaminant was not analyzed.

***** : NELAP accredited parameter.

Status
































The contaminant was not detected in the sample above the minimum detection level.



The contaminant was detected below National Standard limit.



The contaminant was detected above National Standard limit.

Status	Contaminant	Results	MDL	Units	Method	National Standards	
						EPA Limit	Primary/ Secondary
	Bicarbonate*	331.70		mg/L	SM2320B, 18Ed		
	Carbonate*	NM		mg/L	SM2320B, 18Ed		
	Aluminum by ICP*	62.17	50.00	ug/L	200.7 R4.4	200.00	Secondary
	Arsenic by ICP (Screen)	<10.00	10.00	ug/L	200.7 R4.4	10.00	Primary
	Barium*	144.56	10.00	ug/L	200.7 R4.4	2,000.00	Primary
	Calcium*	98.03	0.10	mg/L	200.7 R4.4		
	Chloride*	26.06	0.50	mg/L	300.0 R2.1	250.00	Secondary
	Color*	<5.00	5.00	color	SM2120C, 21Ed	15.00	Secondary
	Color after Acidification	<5.00	5.00	color	SM2120C,21Ed		
	Conductivity	695.80		microS/cm	120.1		
	Copper (Cu)*	0.062	0.015	mg/L	200.7 R4.4	1.00	Secondary
	Fluoride*	0.64	0.20	mg/L	300.0 R2.1	4.00	Primary
	Hardness (CaCO3)*	316.69 18.52		mg/L GPG	200.7 R4.4		
	Iron (Fe)*	<0.05	0.05	mg/L	200.7 R4.4	0.30	Secondary
	Lead by ICP (Screen)	<15.00	15.00	ug/L	200.7 R4.4	15.00	Primary
	Magnesium*	17.38	0.10	mg/L	200.7 R4.4		
	Manganese (Mn)*	<0.02	0.02	mg/L	200.7 R4.4	0.05	Secondary
	Nitrate as N*	2.79	0.20	mg/L	300.0 R2.1	10.00	Primary
	Nitrite as N*	0.25	0.10	mg/L	300.0 R2.1	1.00	Primary
	pH*	7.67	0.00		150.1	8.50	Secondary
	Potassium	3.29	0.10	mg/L	200.7 Rev. 4.4		
	Silica*	31.08	0.01	mg/L	200.7 R4.4		
	Sodium*	54.14	0.10	mg/L	200.7 R4.4		
	Strontium (Sr)	1.08	0.05	mg/L	200.7 Rev. 4.4		
	Sulfate*	80.58	3.00	mg/L	300.0 R2.1	250.00	Secondary
	Tannins	<2.00	2.00	mg/L	SM 5550		
	Est TDS By Conductivity	448.56	0.00	mg/L		500.00	Secondary
	Turbidity	0.28	0.10	NTU	180.1 Rev. 2 1993	0.50	Primary
	Turbidity Filtered	<0.10	0.10	NTU	180.1 Rev. 2 1993	0.50	Primary
	Zinc (Zn)*	<0.05	0.05	mg/L	200.7 R4.4	5.00	Secondary

This report can only be reproduced in its entirety. The results reported here are representative of the sample as received in the laboratory. Unless noted holding times and temperature requirements for method 300 are not followed. pH results are out of hold time.

This analysis will not determine whether a water is safe for human consumption.

NELAP Certifications: IL-100213; PA-68-04623; NY-11756; TX-TX269-2007A
State Certifications: IL-IDPH-17598; CA-2958; MT-CERT0091; IA-369;
VT-02199; WI-105-10119; CO-IL100213; MI-9988; MO-1060

Maria Mozdzen
Analytical Lab Manager



The softener system selected is : HE 1.5 PF 120

The HE 1.5 PF 120 will provide (Each Unit) :

Continuous Flow, gpm	: 23.3 @ 15 psi loss
Peak Flow, gpm	: 31.8 @ 25 psi loss
Min. Recommended Flow, gpm	: 2
Resin Quantity, ft³	: 4
Maximum Capacity, kgr	: 120 @ 60 lbs Salt
Minimum Capacity, kgr	: 80 @ 24 lbs Salt
Tank Size, in.	: 16 x 65
Tank Area, ft²	: 1.4
Freeboard, in.	: 30.5



The HE 1.5 PF 120 System Requirements :

Operating Press., psi	: 20 - 125	Voltage	: 24 Volts 50 / 60 Hz 1 Phase
Operating Temp., °F	: 33 - 120	Full Load Amps	: 0.32
Pipe Conn, in NPT...			
Inlet	: 1.5		
Outlet	: 1.5		
Drain	: 0.5		
Weight, lbs...			
Shipping	: 415		
Operating	: 1380		
Overall Dimensions, in			
Width x Height x Depth	: 46 x 74.7 x 20		



Markets Served:

Clinics
Educational Facilities
Energy/Power
Food/Beverage Production
Food Service/Restaurants
Grocery
Healthcare/Hospitals/Bio-Pharmaceutical
Hospitality/Lodging
Manufacturing
Municipal Drinking Water
Oil/Gas

The Culligan® High Efficiency (HE) Series WATER SOFTENER SYSTEM

Reduce Operating Costs and Improve Efficiency
with a Smart Choice

The High Efficiency (HE) softener with patented technology delivers improved efficiency to reduce operating costs. The HE softener reduces hard water contaminants*, reducing scale build-up that affect equipment performance. With the Culligan Smart Controller, available on the HE, the softener adjusts to influent water conditions and regenerates based on need. Customers can also monitor their water treatment system performance, consumable usage, and maintenance needs, at a single site or across multiple ones 24 hours a day.

The HE softener is part of the Culligan Matrix Solutions® that combine durable and efficient equipment, systems experience, and technical experts who understand your unique requirements. From planning your system to installing your water treatment equipment, Culligan Matrix Solutions offer options that help deliver the quality of water to meet your needs. Contact Culligan today to learn more about the HE softener system.

CULLIGAN MATRIX SOLUTIONS ADVANTAGES:

- Simple System Integration
- Global Product Platform
- Flexible Configurations
- Quick Delivery/Easy Installation
- Exclusive Culligan Advanced Electronics
 - Historical Operating Data
 - Alarm Recognitions
 - US Standard and Metric Readings
 - Remote Monitoring Options
 - Telemetry Options

*Contaminants may not necessarily be in your water.



PRE-TREATMENT SOLUTIONS.

SYSTEM SPECIFICATIONS

Examples of Softener Applications

- RO/DI Pretreatment
- Apartment buildings, assisted living facilities and hotels — Quality water for laundry, dishwashers, boilers
- Office buildings — For heating plant pretreatment, tenant convenience, general housekeeping
- Restaurants — For dishwashing, cleaning material savings, scale reduction
- Car washes — Quality results, detergent and water heating savings, scale reduction
- Grocery/Retail — Quality water for aesthetics and help extend equipment life

- Light industry — For process and make-up water, boiler and cooling system pretreatment, general housekeeping

Warranty

Culligan's HE water softeners are backed by a limited 1-year warranty against defects in materials, workmanship, and corrosion. The plastic conditioner tank has a 5-year warranty. See printed warranty for details.¹

Some localities have corrosive water. A softener cannot correct this condition, so its printed warranty disclaims liability for corrosion of plumbing lines, fixtures, or water-using equipment. If you suspect corrosion, your independently operated Culligan dealer has equipment to help control the problem.

¹ See printed warranty for details. Culligan will provide a copy of the warranty upon request.

Standard Features

- Single or Multiple Tank Configurations — Hardness removal capacities up to 235,000 grains per tank
- Culligan's Smart Controller — More control over your equipment with programming and monitoring capabilities typically found in more expensive PLC controls a variety of add-on options for advanced instrumentation and communication let you easily customize the system to help meet your needs
- Regeneration initiation by choice or combination of time clock, flow meter or Aqua-Sensor
- Telemetric Capability
- Corrosion Resistant Positive Motor-Driven Regeneration Valve — Motor driven piston is reliable under server water conditions, resists dirt, iron and turbidity
- Corrosion Resistant Tanks — Made from fiberglass reinforced polyester
- Under-drain design enhances softening capacity and reduces pressure loss
- Multi-Poppet Design — Allows for easy service and increases durability and valve life
- Flow Meter

- Electronic By-Pass - The softener can be by-passed electronically either from the unit or from the remote monitor and automatically goes back into service after a pre-set time.
- Internally blocked Progressive Flow Systems
- Tested and certified by WQA against NSF/ANSI 372, CSA B483.1 and NSF/ANSI Standard 61 for material requirements
- The Control Enclosure complies with UL 50/50E and UL 746C standards for a NEMA 3R Enclosure Rating

Optional Features & Accessories

- Dubl-Safe™ Brine System for softeners — Positive overflow protection Automatic refill control is backed up by shutoff float valve to reduce chance of overflow
- Patented Aqua-Sensor® Control — Initiates regeneration only when needed based upon water hardness. Automatically adjusts to changes in raw water hardness and water consumption
- Smart Brine Tank Probe - monitors salt usage and communicates how much salt is left.
- Skid Mounted System
- Remote Display
- RS232, RS485, Modbus PLC Output

System Specifications

Specification	US	Metric
Pipe Size, All Units	1.5"	
Maximum Operating Pressure	20–125 psig	135–860 kPa
Power Voltage Frequency Phase	24 50/60 Hz ¹	
Feed Water Temperature	33–120° F	0–48° C
Power Consumption	22 Watts	
Vacuum	None ²	
Turbidity	5 NTU, max. ³	
Chlorine	1 mg/L, max. ³	
Iron	5 mg/L	

¹ 120 Volt/24 Volt CUL/UL listed Transformer Included.

² Tank warranty is void if subject to vacuum.

³ See media specification for details.

⁴ Influent Hardness upflow systems — limit 30 gpg

HE Water Softener System

Model			Resin Qty. (ft ³ /L)	Flow Rates (gpm/lpm)		Tank Size**** (in./mm)	
Upflow	Downflow	Progressive Flow		Continuous*	Peak**	Softener	Brine****
HE 1.5 UF 060	HE-060	HE 1.5 PF 060	2	25.1	31.5	14 x 47	18 x 38
			56.6	95.0	119.2	356 x 1,194	457 x 965
HE 1.5 UF 090	HE-090	HE 1.5 PF 090	3	26.6	35.2	16 x 53	24 x 40
			85	100.7	133.2	406 x 1,346	610 x 1,016
HE 1.5 UF 120	HE-120	HE 1.5 PF 120	4	23.3	31.8	16 x 65	24 x 40
			113.3	88.2	120.4	406 x 1,651	610 x 1,016
HE 1.5 UF 150	HE-150	HE 1.5 PF 150	5	27.2	35.8	18 x 65	24 x 50
			141.6	103.0	135.5	457 x 1,651	610 x 1,270
HE 1.5 UF 210	HE-210	HE 1.5 PF 210	7	28	37.4	21 x 62	24 x 50
			198.2	106.0	141.6	533 x 1,575	610 x 1,270

*Flow rate at a 15 psi pressure loss.

**Flow rate at a 25 psi pressure loss.

***Dimensions are diameter by tank height.

****Brine systems are optional.

Flow rates shown are per tank.

Low flow channeling (flow rates less than 0.5 gallons per minute per cubic foot of resin) may cause hardness leakage into effluent.



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For over 75 years, Culligan has made better water. Our global network, comprised of 800+ dealers and international licensees in over 90 countries, is dedicated to addressing your water-related problems. As a worldwide leader in water treatment, our sales representatives and service technicians are familiar with the local water conditions in your area. Being global and local position us to deliver customized solutions to commercial and industrial water issues that affect your business and your bottom line.

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Culligan reserves the right to change the specifications referred to in this literature at any time, without prior notice.

SECTION 230500 – BASIC MECHANICAL MATERIALS AND METHODS

HWY 14 SENIOR/COMMUNITY CENTER
LOS CERRILLOS, NEW MEXICO

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Mechanical Basic Requirements specifically applicable to Divisions 21, 22, and 23 in addition to the requirements of Division 1 - General Requirements and the General Conditions of the Contract.
2. Electric motors.
3. Mechanical Identification.
4. Sleeves
5. Mechanical sleeve seals.
6. Altitude rating.

1.02 RELATED SECTIONS

- A. Work described in this section is related to other work described in Divisions 21, 22, 23, 27, and 28 and may be related to work in other Divisions concerning structure or appearances. Review and become familiar with work required in other Sections in this Division and with work required in the other Divisions. Coordinate with other subcontractor(s) to assure that all issues arising between related Sections are resolved.
- B. Bring to the attention of the Engineer prior to the cutoff date for Addenda, any and all discrepancies in related work. Submission of a bid or proposal indicates that all costs for this work and related work are included in the bid for this work or within the bid or proposal for the related work.

1.03 SYSTEM DESCRIPTION

- A. Provide complete and fully operational systems with facilities and services to meet requirements indicated and in accordance with applicable codes and ordinances.

1.04 REGULATORY REQUIREMENTS

- A. All mechanical work shall be performed in strict accordance with the New Mexico Building Codes, IBC, UPC, UMC, NFPA, National Gas Code, Model Energy Code, and all applicable provisions of the local authorities having jurisdiction. All materials and labor necessary to comply with rules, regulations, and ordinances shall be provided. Where the drawings and/or specifications indicate material or construction in excess of code requirements or visa-versa, the more stringent application shall govern.
- B. Permits necessary for the performance of the work under this contract shall be secured and paid for by the Contractor. Final inspection by the Engineer will not be made, or certificate of final payment issued, until certificates of satisfactory inspection from the inspection authorities are delivered.

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SECTION 230500 – BASIC MECHANICAL MATERIALS AND METHODS

HWY 14 SENIOR/COMMUNITY CENTER
LOS CERRILLOS, NEW MEXICO

1.05 SUBMITTALS

- A. Submit all data as a single package, as the Engineer will commence review only when all data has been received.
- B. Submittal form to identify project, contractor, sub-contractor, supplier, and pertinent contract document references.
- C. Apply Contractor's stamp, signed or initialed, certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and contract documents.
- D. The Contractor shall determine and verify field measurements and field construction criteria for conformance with drawings and specifications and for conflicts with other items of construction, past or present. He shall coordinate each submittal with the requirements of the work and of the contract documents and notify the Engineer in writing, at the time of the submission, of any and all deviations in the submittals from requirements of the work and contract documents.
 - 1. No fabrication or work, which requires submittals, shall begin until submittals are returned with the Engineer's approval.
- E. Identify variations for contract documents and product or system limitations, which may be detrimental to successful performance of the completed work.
- F. Engineer's review does not constitute acceptance or responsibility for accuracy or dimensions, nor shall it relieve the Contractor from meeting any requirements of the work and contract documents, nor shall it constitute approval for any deviation from the contract documents, unless such deviations are specifically stated as such on the submittal and specifically allowed by the Engineer by specific written notification for each such variation. The Engineer's review will not relieve the Contractor from responsibility for errors or omissions in the shop drawings.
- G. Revise and resubmit submittals as required. Identify all changes made since previous submittal.
- H. The Engineer will review a submittal and, if necessary, a resubmittal of the same item. Subsequent resubmittals shall be accompanied by Contractor's purchase order to Engineer for Engineer's review time and costs at Engineer's standard hourly billing rates. These reviews will be performed at the convenience of the Engineer.
- I. Provide eight (8) copies of materials for submittal review. If Contractor intends to utilize electronic submittals, one (1) hard copy must still be delivered to Engineer, hard copy will be dated when received and will be the official copy. Engineer will return submittal electronically.

1.06 SUBSTITUTIONS

- A. Prior approval of materials and equipment will not be considered. Contract documents indicate specified equipment and acceptable alternatives. Any other equipment/material proposed must meet or exceed that specified. Equipment/material will be reviewed for compliance during submittal review process per Paragraph 1.5.
- B. Engineer will consider requests for substitutions only at submittal review. Clearly identify substitution.

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SECTION 230500 – BASIC MECHANICAL MATERIALS AND METHODS

HWY 14 SENIOR/COMMUNITY CENTER
LOS CERRILLOS, NEW MEXICO

- C. Document each request with complete data substantiating compliance of proposed substitution with contract documents.
- D. A request for substitution constitutes a representation that the Contractor:
 - 1. Has investigated the proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other work, which may be required for the work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extensions which may, subsequently, become apparent.
 - 5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities.

1.07 OPERATIONS AND MAINTENANCE DATA

- A. Submit three (3) sets prior to final inspection, in 8-1/2" x 11" text pages, bound in three (3) D-side ring binders with durable plastic covers. Provide one (1) set of original O&M Materials to Project Commissioning Authority no later than 30 days after submittals are approved. O&M package shall not be bound.
- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.
- C. Internally sub-divide the binder contents with permanent page dividers, logically organized with tab titling clearly printed under reinforced, laminated plastic tabs.
- D. Contents:
 - 1. Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Sub-contractors, and major equipment suppliers.
 - 2. Operation and maintenance instructions arranged by system.
 - 3. Project documents and certificates.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with the requirements of Division 1.

1.09 RECORD AS-BUILT DRAWINGS

- A. Maintain on site one set of record documents exclusively for the purpose of Record As-Built Drawings.
- B. Record into Record Drawings, Project Manual and Product Data, the actual "as-built" Work including all revisions. Include actual location of all work.
- C. Record information concurrent with the construction progress.
- D. Ensure entries are complete and accurate, enabling future references by Owner.

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SECTION 230500 – BASIC MECHANICAL MATERIALS AND METHODS

HWY 14 SENIOR/COMMUNITY CENTER
LOS CERRILLOS, NEW MEXICO

- E. Modify reproducible drawings and two (2) sets of the project manual, delineating recorded as-built conditions of the project or Record Documents compiled from the job records. The Contractor may obtain reproducible drawings from the office of the Architect or Engineer.
- F. Provide electronic (.DWG or .PDF) files of "as-built" conditions. Contractor may obtain electronic drawings from the office of the Architect or Engineer and must modify the electronic record documents. The Contractor shall submit the as-built drawings in electronic format and printed drawings on the medium specified. The Contractor may request Engineer to complete modifications to drawings. Such request must be accompanied by Contractor's purchase order to Engineer for drafting services.
- G. Completion of Record As-Built Drawings is a condition of final inspection and consideration of final payment.

1.10 CLOSEOUT PROCEDURES

- A. See Division 1 for additional closeout procedures.
- B. See Paragraph 3.7 for Substantial Completion and Final Inspection Requirements.

1.11 FINAL INSPECTIONS

- A. One final inspection for completion of project will be performed by the Engineer. Any and all additional inspections requested by the Contractor or required because of Contractor's failure to complete scope of work, shall be paid for by the Contractor. Costs for additional inspections shall be assessed at the Engineer's hourly rates.

PART 2 - PRODUCTS

2.01 ELECTRIC MOTORS

- A. Motors shall be of sufficient size for the duty to be performed and shall not exceed their full-rated load when the driven equipment is operating at specified capacity under the most severe conditions likely to be encountered.
- B. Each motor shall be of the horsepower specified and suitable for operation at the elevation of the job site as scheduled on the drawings.
- C. Motors shall conform to NEMA standards, applicable to IEEE Standards and ASA C50 Standards, and shall be suitable for direct coupling mounting or V-belt mounting in accordance with the drawings.
- D. Motors controlled by variable frequency drives/adjustable frequency drives, "VFD/AFD", shall be rated for use on "VFD/AFD" controllers.

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2.02 MECHANICAL IDENTIFICATION

- A. Equipment Nameplates: Laminated three-layer plastic with engraved black letters on light background color.
- B. Valve Tags: Laminated three-layer plastic with engraved black letters on light background color, minimum 1-1/2 inches diameter.
- C. Piping:
 - 1. Conform to ASME A13.1.
 - 2. Minimum information indicating flow direction arrow and identification of fluid being conveyed.
 - 3. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener.
 - 4. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
 - 5. Plastic Underground Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.03 SLEEVES

- A. Sleeves for pipes through non-fire rated floors: 18 gage thick galvanized steel.
- B. Sleeves for pipes through non-fire rated beams, walls, footings, and potentially wet floors: steel pipe or 18 gage thick galvanized steel.
- C. Sleeves for round ductwork: galvanized steel.
- D. Sleeves for rectangular ductwork: galvanized steel or wood.
- E. Sealant: acrylic

2.04 MECHANICAL SLEEVE SEALS

- A. Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.05 ALTITUDE RATINGS

- A. Unless otherwise noted, all specified equipment capacities, air quantities, etc., are for the altitude of the job site, as scheduled on the drawings, and adjustments to manufacturer's ratings must be made accordingly.

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PART 3 - EXECUTION

3.01 INSTALLATION - IDENTIFICATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Degrease and clean surfaces to receive adhesive for identification materials.
- C. Install plastic nameplates with adhesive.
- D. Install plastic tags with corrosion-resistant metal chain.
- E. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.
- F. Label piping at all changes in direction and at a minimum of every 20 feet of straight runs of pipe.
- G. Record actual location of valves on Project Record Documents.

3.02 INSTALLATION - CONDENSATE AND OVERFLOW DRAINS

- A. Install condensate and overflow drain piping from all mechanical equipment drain points. Extend and terminate per UPC/UMC.

3.03 INSTALLATION - SLEEVES

- A. Verify openings are ready to receive sleeves.
- B. Exterior watertight entries: Seal with mechanical sleeve seals.
- C. Set sleeves in position in forms. Provide reinforcing around sleeves.
- D. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- E. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
- F. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- G. Install chrome plated steel or, if allowed by the authority having jurisdiction, plastic escutcheons at finished surfaces.

3.04 EXISTING SERVICES

- A. The Contractor shall carefully examine the drawings and specifications, visit the site of the work, be fully informed as to all existing conditions, dimensions, and limitations before starting work.

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- B. If existing active or non-active services, which are not shown on plans, are encountered which require relocation or disconnection, the Contractor shall notify the Engineer for a decision on proper handling of these services. The Contractor shall not proceed with the work until so authorized.

3.05 EXCAVATION AND BACKFILL OF TRENCHES

- A. All excavation, trenching, and backfilling, as required for the mechanical installation, shall be provided by the Contractor.
- B. All piping laid in trenches shall be bedded evenly and firmly. The trench bed shall consist of undisturbed native soil or shall be compacted to an equally firm bedding. Recesses shall be formed below the trench bed to receive the flange or hub off each section of pipe or fitting.
- C. Where firm bedding is not obtainable, sand or gravel fill, compacted with water or low strength concrete fill around the bottom half of the pipe, shall be used.
- D. Backfill all trenches as soon as possible after inspection. Spread backfill in layers, not to exceed 8 inches, and compact each layer to ninety-five percent (95%) of maximum density based on Modified Proctor Density, in such areas as streets, driveways, alleys, or walks to prevent settling. Backfill shall be neither excessively wet or dry. Puddling or flooding shall not be used, except in sand or gravel-bearing soil, and as specifically approved. Street cuts shall be made 8 inches wider than required trenches and shall be repaired to match the finish surface of the street and be flush with existing grades.
- E. Use plastic underground pipe markers for all buried piping.

3.06 PAINTING

- A. Surfaces of all equipment and material shall be thoroughly cleaned and left ready for painting.
- B. Painting shall be performed by others, unless otherwise specified in the contract documents.

3.07 ELECTRICAL WIRING AND CONTROL EQUIPMENT

- A. All motor starters, disconnects overload protection equipment, and low voltage control equipment and wiring specified under this Division will be the responsibility of this Contractor. Installation of line voltage components and wiring specified under this Division will be the responsibility of the electrical contractor. Purchase and installation of low voltage components and wiring specified under this Division will be this Contractor's responsibility.
- B. The mechanical contractor must coordinate with the electrical contractor on the division of responsibility pertaining to the purchase and installation of electrical control components. Any changes or additions required due to the specific nature of equipment furnished shall be the complete responsibility of the Contractor furnishing the equipment.
- C. All electrical work performed under this Division will be in compliance with the NEC and all applicable city and state ordinances. All controllers furnished with mechanical equipment shall have overload protection on all phases.

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- D. The mechanical contractor must coordinate with the electrical contractor to ensure that all required components of control work are included and fully understood. No additional costs shall accrue to the Owner as a result of lack of such coordination.

3.08 SUBSTANTIAL COMPLETION AND FINAL INSPECTION REQUIREMENTS

- A. Before substantial completion can be granted, the following items must be completed and submitted to the Owner/Engineer:
 - 1. An approved Test and Balance Report.
 - 2. Operation test demonstrating proper operation of all equipment.
 - 3. Control diagrams, wiring diagrams, control sequences, and engineering data on components.
- B. Prior to the final inspection or consideration of final payment, the Contractor shall:
 - 1. Provide copies of permits, operating permits, and/or inspection certificates.
 - 2. Provide a check-out report.
- C. Provide operating and maintenance manual(s).
 - 1. Provide record as-built drawings.
 - 2. Return keys to the Owner.
 - 3. Deliver all spare parts.
 - 4. Touch up any damaged finishes.
 - 5. Provide a copy of attendance roster for equipment training sessions.
 - 6. Provide all warrantee certificates and documentation.

END OF SECTION 230500

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SECTION 230513 – COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. General construction and requirements.
- B. Applications.
- C. Single phase electric motors.
- D. Three phase electric motors.

1.02 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code.

1.03 SUBMITTALS

- A. See Section 230500 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.
- C. Test Reports: Indicate test results verifying nominal efficiency and power factor for three phase motors larger than 1/2 horsepower.
- D. Manufacturer's Installation Instructions: Indicate setting, mechanical connections, lubrication, and wiring instructions.
- E. Operation Data: Include instructions for safe operating procedures.
- F. Maintenance Data: Include assembly drawings, bearing data including replacement sizes, and lubrication instructions.
- G. Maintain one copy of each document on site.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of this section with minimum three years documented experience.
- B. Conform to NFPA 70.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. For extended outdoor storage, remove motors from equipment and store separately.

1.06 WARRANTY

- A. See Section 230500 - Basic Mechanical Material and Methods, for additional warranty requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Leeson Electric Corporation; _____: www.leeson.com.
- B. Regal-Beloit Corporation (Century); _____: www.centuryelectricmotor.com.
- C. Or approved substitution.

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2.02 GENERAL CONSTRUCTION AND REQUIREMENTS

- A. General:
 - 1. Motors shall be of sufficient size for the duty to be performed and shall not exceed their full-rated load when the driven equipment is operating at specified capacity under the most severe conditions likely to be encountered.
 - 2. Each motor shall be of the horsepower specified and suitable for operation at the elevation of the job site as scheduled on the drawings.
 - 3. Motors shall conform to NEMA standards, applicable to IEEE Standards and ASA C50 Standards, and shall be suitable for direct coupling mounting or V-belt mounting in accordance with the drawings.
 - 4. Motors controlled by variable frequency drives/adjustable frequency drives, "VFD/AFD", shall be rated for use on "VFD/AFD" controllers.
- B. Electrical Service: Refer to Section 262717 for required electrical characteristics.
- C. Construction:
 - 1. Open drip-proof type except where specifically noted otherwise.
 - 2. Design for continuous operation in 104 degrees F environment.
 - 3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
- D. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.
- E. Wiring Terminations:
 - 1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
 - 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

2.03 APPLICATIONS

- A. Exception: Motors less than 250 watts, for intermittent service may be the equipment manufacturer's standard and need not conform to these specifications.
- B. Single phase motors for shaft mounted fans, oil burners, and centrifugal pumps: Split phase type.
- C. Single phase motors for shaft mounted fans or blowers: Permanent split capacitor type.
- D. Single phase motors for fans, pumps, blowers, and air compressors: Capacitor start type.
- E. Single phase motors for fans, blowers, and pumps: Capacitor start, capacitor run type.
- F. Motors located in exterior locations, wet air streams downstream of sprayed coil dehumidifiers, draw through cooling towers, air cooled condensers, humidifiers, direct drive axial fans, roll filters, explosion proof environments, and dust collection systems: Totally enclosed type.
- G. Motors located in outdoors, in wet air streams downstream of sprayed coil dehumidifiers, in draw through cooling towers, and in humidifiers: Totally enclosed weatherproof epoxy-treated type.

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- H. Motors located outdoors and in draw through cooling towers: Totally enclosed weatherproof epoxy-sealed type.

2.04 SINGLE PHASE POWER - SPLIT PHASE MOTORS

- A. Starting Torque: Less than 150 percent of full load torque.
- B. Starting Current: Up to seven times full load current.
- C. Breakdown Torque: Approximately 200 percent of full load torque.

2.05 SINGLE PHASE POWER - PERMANENT-SPLIT CAPACITOR MOTORS

- A. Starting Torque: Exceeding one fourth of full load torque.
- B. Starting Current: Up to six times full load current.
- C. Multiple Speed: Through tapped windings.
- D. Open Drip-proof or Enclosed Air Over Enclosure: Class A (50 degrees C temperature rise) insulation, minimum 1.0 Service Factor, prelubricated sleeve or ball bearings, automatic reset overload protector.

2.06 SINGLE PHASE POWER - CAPACITOR START MOTORS

- A. Starting Torque: Three times full load torque.
- B. Starting Current: Less than five times full load current.
- C. Pull-up Torque: Up to 350 percent of full load torque.
- D. Breakdown Torque: Approximately 250 percent of full load torque.

2.07 THREE PHASE POWER - SQUIRREL CAGE MOTORS

- A. Starting Torque: Between 1 and 1-1/2 times full load torque.
- B. Starting Current: Six times full load current.
- C. Power Output, Locked Rotor Torque, Breakdown or Pull Out Torque: NEMA Design B characteristics.
- D. Design, Construction, Testing, and Performance: Conform to NEMA MG 1 for Design B motors.
- E. Insulation System: NEMA Class B or better.
- F. Testing Procedure: In accordance with IEEE 112. Load test motors to determine free from electrical or mechanical defects in compliance with performance data.
- G. Motor Frames: NEMA Standard T-Frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.
- H. Thermistor System (Motor Frame Sizes 254T and Larger): Three PTC thermistors embedded in motor windings and epoxy encapsulated solid state control relay for wiring into motor starter; refer to Section 262913.
- I. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum ABMA STD 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.
- J. Sound Power Levels: To NEMA MG 1.

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- K. Part Winding Start Where Indicated: Use part of winding to reduce locked rotor starting current to approximately 60 percent of full winding locked rotor current while providing approximately 50 percent of full winding locked rotor torque.
- L. Weatherproof Epoxy Sealed Motors: Epoxy seal windings using vacuum and pressure with rotor and starter surfaces protected with epoxy enamel; bearings double shielded with waterproof non-washing grease.
- M. Nominal Efficiency: As indicated at full load and rated voltage when tested in accordance with IEEE 112.
- N. Nominal Power Factor: As indicated at full load and rated voltage when tested in accordance with IEEE 112.

END OF SECTION 230513

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SECTION 230548 VIBRATION AND SEISMIC CONTROLS FOR HVAC PIPING AND EQUIPMENT

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Equipment support bases.
- B. Vibration isolators.
- C. Seismic snubber assemblies.
- D. Seismic restraints for suspended components and equipment.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

- A. Product Data:
 - 1. Provide manufacturer's product literature documenting compliance with PART 2 PRODUCTS.
 - 2. Include seismic rating documentation for each isolator and restraint component accounting for horizontal, vertical, and combined loads.
- B. Shop Drawings:
 - 1. Provide schedule of vibration isolator type with location and load on each.
 - 2. Include selections from prescriptive design tables that indicate compliance with the applicable building code and the vibration isolator manufacturer's requirements.
 - 3. Clearly indicate the load and capacity assumptions selected. Include copies of any calculations.
 - 4. Include the calculations that indicate compliance with the applicable building code for seismic controls and the vibration isolator manufacturer's requirements.
 - 5. Include the seal of the Professional Structural Engineer experience in this field, registered in the State of New Mexico in which the Project is located, on the drawings and calculations which at a minimum include the following:
 - a. Seismic Restraint Details: Detailed drawings of seismic restraints and snubbers including anchorage details that indicate quantity, diameter, and depth of penetration, edge distance, and spacing of anchors.
 - b. Equipment Seismic Qualification Certification: Certification by the manufacturer or responsible party that each piece of equipment provided will withstand seismic force levels as specified in the applicable building code for seismic controls.
- C. See Section 230500 - Basic Mechanical Materials and Methods, for submittal procedures.
- D. Manufacturer's Instructions: Indicate installation instructions with special procedures and setting dimensions.

1.04 QUALITY ASSURANCE

- A. Perform design and installation in accordance with applicable codes.
- B. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and registered and licensed in the State in which the Project is located.
- C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- D. Installer Qualifications: Company specializing in performing the work of this section with minimum three years of experience.
- E. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

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F. Manufacturer's Certificate: Certify isolators meet or exceed specified requirements.

G. Maintain one copy of each document on site.

1.05 QUALIFICATIONS

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience and with service facilities within 150 miles of project.

B. Installer Qualifications: Company specializing in performing work of this section with minimum three years of documented experience approved by manufacturer.

C. Design application of seismic snubbers under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project site.

1.06 WARRANTY

A. Furnish five year manufacturer warranty for inertia bases.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Kinetics Noise Control, Inc: www.kineticsnoise.com.

B. Mason Industries: www.mason-ind.com.

C. Vibration Eliminator Company, Inc: www.veco-nyc.com.

D. Or approved substitution.

2.02 EQUIPMENT SUPPORT BASES

A. Structural Bases:

1. Construction: Engineered, structural steel frames with welded brackets for side mounting of the isolators.
2. Frames: Square, rectangular or T-shaped.
3. Design: Sufficiently rigid to prevent misalignment or undue stress on machine, and to transmit design loads to isolators and snubbers.

B. Concrete Inertia Bases:

1. Construction: Engineered, steel forms, with integrated isolator brackets and anchor bolts, welded or tied reinforcing bars running both ways in a single layer.
2. Size: 6 inches minimum depth and sized to accommodate elbow supports.
3. Mass: Minimum of 1.5 times weight of isolated equipment.
4. Connecting Point: Reinforced to connect isolators and snubbers to base including template and fastening devices for equipment.
5. Concrete: Filled on site with minimum 3000 psi concrete. See Section 033000 for additional requirements.

2.03 VIBRATION ISOLATORS

A. Non-Seismic Type:

1. All Elastomeric-Fiber Glass Pads:
 - a. Configuration: Flat or molded.
 - b. Thickness: 0.25 inch minimum.
 - c. Assembly: Single or multiple layers using bonded, galvanized sheet metal separation plate between each layer with load plate providing evenly distributed load over pad surface.

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2. Elastomeric Mounts:
 - a. Material: Oil, ozone, and oxidant resistant compounds.
 - b. Assembly: Encapsulated load transfer plate bolted to equipment and base plate with anchor hole bolted to supporting structure.
 3. Steel Springs:
 - a. Assembly: Freestanding, laterally stable without housing.
 - b. Leveling Device: Rigidly connected to equipment or frame.
 4. Restrained Steel Springs:
 - a. Housing: Rigid blocking during rigging prevents equipment installed and operating height from changing during temporary weight reduction.
 - b. Equipment Wind Loading: Adequate means for fastening isolator top to equipment and isolator base plate to supporting structure.
 5. Elastomeric Hangers:
 - a. Housing: Steel construction containing elastomeric isolation element to prevent rod contact with housing and short-circuiting of isolating function.
 - b. Incorporate steel load distribution plate sandwiching elastomeric element to housing.
 6. Spring Hanger:
 - a. Housing: Steel construction containing stable steel spring and integral elastomeric element preventing metal to metal contact.
 - b. Bottom Opening: Sized to allow plus/minus 15 degrees rod misalignment.
- B. Seismic Type:
1. Coil Springs Consisting of Single Elements:
 - a. Housing: Manufactured from steel material.
 - b. Ductile Material: Designed and rated for seismic applications.
 - c. Spring: Restrained by housing without significant degradation of vibration isolation capabilities during normal equipment operating conditions.
 - d. Resilient Snubbing Grommet System: Incorporated and designed with clearances of no more than 0.25 inch in any direction preventing direct metal-to-metal contact between supported member and fixed restraint housing.
 - e. Resilient Pad: Located in series with spring.
 - f. Coil Springs: Color coded elements to have a lateral stiffness greater than 1.2 times the rated vertical stiffness with 50 percent overload capacity.
 - g. Finish: Suitable for the application.
 2. All Directional Elastomeric:
 - a. Material: Molded from oil, ozone, and oxidant resistant compounds.
 - b. Operating Parameters: Designed to operate within the isolator strain limits providing maximum performance and service life.
 - c. Attachment Method: Encapsulated load transfer plate bolted to equipment and base plate with anchor hole bolted to supporting structure.
 - d. Rating: Cast iron and aluminum housings rated for seismic restraint applications.
 - e. Minimum Operating Static Deflections: Deflections indicated in project documents are not to exceed published load capacities.

2.04 SEISMIC SNUBBER ASSEMBLIES

- A. Comply with:
1. ASHRAE (HVACA) Handbook - HVAC Applications.
 2. FEMA 412.

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3. SMACNA (SRM).
- B. All Directional External:
 1. Application: Minimum three (3) snubbers are required for each equipment installation, oriented properly to restrain isolated equipment in all directions.
 2. Construction: Interlocking steel construction attached to the building structure and equipment in a manner consistent with anticipated design loads.
 3. Performance: Equipment movement at each snubber location limited to a maximum of 0.25 inches in any direction without significantly degrading the vibration isolation capability of the isolator during normal operating conditions.
 4. Resilient Pad: Minimum 0.25 inch thick cushions any impact and prevents metal-to-metal contact.
- C. Lateral External:
 1. Application: Minimum three (3) snubbers are required for each stable equipment installation, oriented properly to restrain isolated equipment in all lateral directions where uplift forces are zero or addressed by other restraints.
 2. Construction: Steel construction attached to the building structure and equipment in a manner consistent with anticipated design loads.
 3. Performance: Equipment movement at each snubber location limited to a maximum of 0.25 inches in any direction without significantly degrading the vibration isolation capability of the isolator during normal operating conditions.
 4. Resilient Pad: Minimum 0.25 inch thick cushions any impact and prevents metal-to-metal contact.
- D. Omni Directional External:
 1. Application: Minimum four (4) snubbers are required for each stable equipment installation, oriented properly to restrain isolated equipment in all lateral directions.
 2. Construction: Steel construction attached to the building structure and equipment in a manner consistent with anticipated design loads.
 3. Performance: Equipment movement at each snubber location limited to a maximum of 0.25 inches in any direction without significantly degrading the vibration isolation capability of the isolator during normal operating conditions.
 4. Resilient Pad: Minimum 0.25 inch thick cushions any impact and prevents metal-to-metal contact.
- E. Horizontal Single Axis External:
 1. Application: Minimum four (4) snubbers are required for each stable equipment installation, oriented properly to restrain isolated equipment in all lateral directions where uplift forces are zero or addressed by other restraints.
 2. Construction: Steel construction attached to the building structure and equipment in a manner consistent with anticipated design loads.
 3. Performance: Equipment movement at each snubber location limited to a maximum of 0.25 inches in any direction without significantly degrading the vibration isolation capability of the isolator during normal operating conditions.
 4. Resilient Pad: Minimum 0.25 inch thick cushions any impact and prevents metal-to-metal contact.

2.05 SEISMIC RESTRAINTS FOR SUSPENDED COMPONENTS AND EQUIPMENT

- A. Comply with:

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1. ASHRAE (HVACA) Handbook - HVAC Applications.
2. FEMA 412.
- B. Cable Restraints:
 1. Wire Rope: Steel wire strand cables sized to resist seismic loads in all lateral directions.
 2. Protective Thimbles: Eliminates potential for dynamic cable wear and strand breakage.
 3. Size: Based on the lesser of cable capacity or anchor load taking into account bracket geometry.
 4. Connections:
 - a. Use overlapping wire rope U clips, cable clamping bolts, swaged sleeves or seismically rated tool-less wedge insert lock connectors.
 - b. Internally brace clevis hanger bracket cross bolt to prevent deformation.
 5. Vertical Suspension Rods: Attach required bracing of sufficient strength to prevent rod buckling from vertical compression forces utilizing series of attachment clips.

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

- A. Install in accordance with manufacturer's instructions.
- B. Bases:
 1. Set steel bases for one inch clearance between housekeeping pad and base.
 2. Set concrete inertia bases for 2 inches clearance between housekeeping pad and base.
 3. Adjust equipment level.
- C. On closed spring isolators, adjust so side stabilizers are clear under normal operating conditions.
- D. Prior to making piping connections to equipment with operating weights substantially different from installed weights, block up equipment with temporary shims to final height. When full load is applied, adjust isolators to load to allow shim removal.
- E. Provide pairs of horizontal limit springs on fans with more than 6.0 inches WC static pressure, and on hanger supported, horizontally mounted axial fans.
- F. Support piping connections to equipment mounted on isolators using isolators or resilient hangers to nearest flexible pipe connector.
 1. Up to 4 Inches Pipe Size: First three points of support.
 2. 5 to 8 Inches Pipe Size: First four points of support.
 3. 10 inches Pipe Size and Over: First six points of support.
 4. Select three hangers closest to vibration source for minimum 1.0 inch static deflection or static deflection of isolated equipment. Select remaining isolators for minimum 1.0 inch static deflection or 1/2 static deflection of isolated equipment.

3.02 INSTALLATION - SEISMIC

- A. Comply with:
 1. ASHRAE (HVACA) Handbook - HVAC Applications.
 2. FEMA 412.
- B. Floor and Base-Mounted Equipment, Vibration Isolated Equipment and associated Vibration and Seismic Controls for Connections:
 1. Install equipment anchorage items designed to resist seismic design force in any direction.
 2. Install vibration and seismic controls designed to include base and isolator requirements.
 3. Provide flexible connections between equipment and interconnected piping.

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4. Provide isolators and restraints designed for amplified code forces per ASCE 7 and with demonstrated ability to resist required forces including gravity, operational and seismic forces.
 5. Where equipment is not designed to be point loaded, provide base capable of transferring gravity and seismic demands from equipment to isolator base plate anchorage.
 6. Where concrete floor thickness is less than required for expansion anchor installation, install through bolt in lieu of expansion anchor.
 7. Where timber/wood floor or other substrate is inadequate for installation of lag bolts, screws or other mechanical fasteners, install supplemental framing or blocking to transfer loads to structural elements.
- C. Suspended Mechanical Equipment:
1. Provide supports and bracing to resist seismic design force in any direction.
 2. Provide flexible connections between equipment and interconnected piping.
 3. Brace equipment hung from spring mounts using cable or other bracing that will not transmit vibration to the structure.
 4. Use of proprietary restraint systems with a certificate of compliance, verified and listed by an accredited inspection body is acceptable (pending shop drawing approval), as an alternative to project specific seismic bracing design.
- D. Wall mounted Mechanical Equipment:
1. Provide support and bracing to resist seismic design force in any direction.
 2. Install backing plates or blocking as required to deliver load to primary wall framing members.
 3. Anchoring to gypsum wallboard, plaster or other wall finish that has not been engineered to resist imposed loads is not permitted.
- E. Piping:
1. Provide seismic bracing in accordance ASCE 7.
 2. Provide supports, braces, and anchors to resist gravity and seismic design forces.
 3. Provide flexible connections between floor mounted equipment and suspended piping; between unbraced piping and restrained suspended items; as required for thermal movement; at building separations and seismic joints; and wherever relative differential movements could damage pipe in an earthquake.
 4. Brace resiliently supported pipe with cable bracing or alternate means designed to prevent transmission of vibrations and noise to the structure.
 5. Brace every run 5.0 feet or more in length with two transverse and one longitudinal bracing locations.
 6. Pipes and Connections Constructed of Ductile Materials (copper, ductile iron, steel or aluminum and brazed, welded or screwed connections):
 - a. Provide transverse bracing at spacing not more than 40.0 feet on center.
 - b. Provide longitudinal bracing at spacing not more than 80.0 feet on center.
 7. Pipes and Connections Constructed of Non Ductile Materials (cast iron, no-hub, plastic or non-UL listed grooved coupling pipe):
 - a. Provide transverse bracing at spacing not more than 20.0 feet on center.
 - b. Provide longitudinal bracing at spacing not more than 40.0 feet on center.
 8. Provide lateral restraint for risers at not more than 30 feet on center or as required for horizontal runs, whichever is less.
 9. Piping Explicitly Exempt from Seismic Bracing Requirements:
 - a. Provide flexible connections between piping and connected equipment, including in-line devices such as VAV boxes and reheat coils.

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- b. Install piping consistent with ASCE 7, such that swinging of the pipes will not cause damaging impact with adjacent components, finishes, or structural framing while maintaining clear horizontal distance of 67 percent of the hanger length between subject components.
 - c. Provide swing restraints as required to control potential impact due to limited space between subject components.
 - 10. Use of proprietary restraint systems with a certificate of compliance, verified and listed by an accredited inspection body is acceptable (pending shop drawing approval), as an alternative to project specific seismic bracing design.
 - 11. Re-use of Existing Hangers:
 - a. Re-using existing hangers at locations of seismic bracing are to be judged on a case-by-case basis by the registered project design professional.
 - b. Unless otherwise shown on the drawings, it is assumed all hangers supporting new piping, located at a seismic brace, will be new.
 - F. Ductwork:
 - 1. Provide seismic bracing for ducts with cross sectional area greater than 6 sq ft (independent of duct contents).
 - 2. Provide seismic bracing for all ducts containing hazardous materials.
 - 3. Provide supports, braces, and anchors to resist gravity and seismic design forces.
 - 4. Install ducts and duct risers designed to accommodate interstory drift.
 - 5. Independently support in-line devices weighing more than 20 pounds.
 - 6. Independently support and brace all in-line devices weighing more than 75 pounds.
 - 7. Provide unbraced piping attached to braced in-line equipment with adequate flexibility to accommodate differential displacements.
 - 8. Positively attach dampers, louvers, diffusers and similar appurtenances to ductwork with mechanical fasteners.
 - 9. Install duct supports designed to resist not less than 150 percent of the duct weight.
 - 10. Use of proprietary restraint systems with a certificate of compliance, verified and listed by an IAS AC172 accredited inspection body or otherwise accepted by applicable codes is acceptable (pending shop drawing approval), as an alternative to project specific seismic bracing design.
 - G. Tanks:
 - 1. Install tank anchorage, tank legs and/or supporting structure designed to resist design force.
 - 2. Provide flexible connections between tank and interconnected piping.
- 3.03 FIELD QUALITY CONTROL
- A. Inspect isolated equipment after installation and submit report. Include static deflections.
 - B. Perform testing and inspections of the installation in accordance with Section 014533.

END OF SECTION 230548

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SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

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PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Testing, adjustment, and balancing of air systems.
- B. Measurement of final operating condition of HVAC systems.

1.02 REFERENCE STANDARDS

- A. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems.
- B. NEBB (TAB) - Procedural Standards for Testing Adjusting and Balancing of Environmental Systems.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Perform total system balance in accordance with one of the following:
 - 1. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
 - 2. NEBB Procedural Standards for Testing Adjusting Balancing of Environmental Systems.
- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. TAB Agency Qualifications:
 - 1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
 - 2. Having minimum of three years documented experience.

3.02 EXAMINATION

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
 - 1. Systems are started and operating in a safe and normal condition.
 - 2. Temperature control systems are installed complete and operable.
 - 3. Proper thermal overload protection is in place for electrical equipment.
 - 4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
 - 5. Duct systems are clean of debris.
 - 6. Fans are rotating correctly.
 - 7. Fire and volume dampers are in place and open.
 - 8. Air coil fins are cleaned and combed.
 - 9. Access doors are closed and duct end caps are in place.
 - 10. Air outlets are installed and connected.
- B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.
- C. Beginning of work means acceptance of existing conditions.

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SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

HWY 14 SENIOR/COMMUNITY
CENTER CERRILLOS, NEW MEXICO

3.03 PREPARATION

- A. Hold a pre-balancing meeting at least one week prior to starting TAB work.
 - 1. Require attendance by all installers whose work will be tested, adjusted, or balanced.
- B. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to Architect to facilitate spot checks during testing.

3.04 ADJUSTMENT TOLERANCES

- A. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.
- B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.05 AIR SYSTEM PROCEDURE

- A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.
- B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
- E. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.
- F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.
- G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.
- H. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.
- I. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.

END OF SECTION 230593

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SECTION 231126 – FACILITY LIQUEFIED-PETROLEUM GAS PIPING

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe, pipe fittings, valves, and connections for propane gas piping systems.

1.02 REFERENCE STANDARDS

- A. ANSI Z21.18/CSA 6.3 - Gas Appliance Pressure Regulators.
- B. ANSI Z21.80/CSA 6.22 - Line Pressure Regulators.
- C. ANSI Z223.1 - National Fuel Gas Code.
- D. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300.
- E. ASME B31.1 - Power Piping.
- F. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings.
- G. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- H. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
- I. ASTM D2513 - Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings.
- J. ASTM D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing.
- K. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
- L. AWWA C606 - Grooved and Shouldered Joints.
- M. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.
- N. NFPA 58 - Liquefied Petroleum Gas Code.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.04 FIELD CONDITIONS

- A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 PROPANE GAS PIPING, BURIED BEYOND 5 FEET OF BUILDING

- A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
 - 1. Fittings: ASTM A234/A234M, wrought steel welding type, with AWWA C105/A21.5 polyethylene jacket or double layer, half-lapped 10 mil polyethylene tape.
 - 2. Joints: ASME B31.1, welded.
- B. Polyethylene Pipe: ASTM D2513, SDR 11.

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SECTION 231126 – FACILITY LIQUEFIED-PETROLEUM GAS PIPING

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1. Fittings: ASTM D2683 or ASTM D2513 socket type.
2. Joints: Fusion welded.

2.02 PROPANE GAS PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
 1. Fittings: ASTM A234/A234M, wrought steel welding type, with AWWA C105/A21.5 polyethylene jacket or double layer, half-lapped 10 mil polyethylene tape.
 2. Joints: ASME B31.1, welded.

2.03 PROPANE GAS PIPING, ABOVE GRADE

- A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
 1. Fittings: ASME B16.3, malleable iron, or ASTM A234/A234M, wrought steel welding type.
 2. Joints: NFPA 58, threaded or welded to ASME B31.1.

2.04 FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 3 Inches and Under:
 1. Ferrous pipe: Class 150 malleable iron threaded unions.
- B. Flanges for Pipe Size Over 1 Inch:
 1. Ferrous Pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
- C. Mechanical Couplings for Grooved and Shouldered Joints: Two or more curved housing segments with continuous key to engage pipe groove, circular C-profile gasket, and bolts to secure and compress gasket.
 1. Dimensions and Testing: In accordance with AWWA C606.
 2. Housing Material: Provide ASTM A47/A47M malleable iron, ductile iron, galvanized.
 3. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel.
 4. When pipe is field grooved, provide coupling manufacturer's grooving tools.

2.05 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
 3. Trapeze Hangers: Welded steel channel frames attached to structure.
 4. Vertical Pipe Support: Steel riser clamp.

2.06 LINE PRESSURE REGULATORS AND APPLIANCE REGULATORS INDICATORS

- A. Compliance Requirements:
 1. Appliance Regulator: ANSI Z21.18/CSA 6.3.
 2. Line Pressure Regulator: ANSI Z21.80/CSA 6.22.
- B. Materials in Contact With Gas:
 1. Housing: Aluminum, steel (free of non-ferrous metals).
 2. Seals and Diaphragms: NBR-based rubber.
- C. Maximum Inlet Operating Pressure: 10 psi.
 1. Appliance Regulator: 10 psi.
 2. Line Pressure Regulator: 10 psi.
- D. Maximum Body Pressure: 10 psi.

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PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. Refer to Section 220516.
- G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- H. Provide access where valves and fittings are not exposed.

3.04 APPLICATION

- A. Install unions downstream of valves and at equipment or apparatus connections.
- B. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- C. Provide plug valves in propane gas systems for shut-off service.

3.05 SERVICE CONNECTIONS

- A. Provide new gas service complete with gas meter and regulators in accordance with Section 335216. Gas service distribution piping to have initial minimum pressure of 7 inch wg. Provide regulators on each line serving gravity type appliances, sized in accordance with equipment.

END OF SECTION 231126

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SECTION 233100 – HVAC DUCTS AND CASING

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal ductwork.
- B. Kitchen hood ductwork.
- C. Duct cleaning.

1.02 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- C. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.
- D. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems.
- E. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.
- F. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible.
- G. SMACNA (KVS) - Kitchen Ventilation Systems and Food Service Equipment Fabrication and Installation Guidelines.
- H. SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual.
- I. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors.
- J. UL 1978 - Grease Ducts.
- K. UL 2221 - Tests of Fire Resistive Grease Duct Enclosure Assemblies.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience, and approved by manufacturer.
- B. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum three years of documented experience.

1.04 FIELD CONDITIONS

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.
- B. Maintain temperatures within acceptable range during and after installation of duct sealants.

PART 2 PRODUCTS

2.01 DUCT ASSEMBLIES

- A. Regulatory Requirements: Construct ductwork to NFPA 90A standards.
- B. Ducts: Galvanized steel, unless otherwise indicated.
- C. Low Pressure Supply (Heating Systems): 1/2 inch w.g. pressure class, galvanized steel.
- D. Low Pressure Supply (System with Cooling Coils): 1/2 inch w.g. pressure class, galvanized steel.

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SECTION 233100 – HVAC DUCTS AND CASING

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- E. Kitchen Cooking Hood Exhaust: 1/2 inch w.g. pressure class, galvanized steel.
 - 1. Construct of 16 gage, 0.0598 inch sheet steel using continuous external welded joints in rectangular sections.
- F. Dishwasher Exhaust: 1/2 inch w.g. pressure class, galvanized steel.
 - 1. Construct of 16 gage, 0.0598 inch sheet steel using continuous external welded joints in rectangular sections.
- G. Grease Exhaust: 1/2 inch w.g. pressure class, stainless steel.
 - 1. Construction:
 - a. Liquid tight with continuous external weld for all seams and joints.
 - b. Where ducts are not self-draining back to equipment, provide low point drain pocket with copper drain pipe to sanitary sewer.
 - 2. Access Doors:
 - a. Provide for duct cleaning inside horizontal duct at drain pockets, every 20 feet and at each change of direction.
 - b. Use same material and thickness as duct with gaskets and sealants rated 1500 degrees F for grease tight construction.

2.02 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.
- B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- D. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).

2.03 MANUFACTURED DUCTWORK AND FITTINGS

- A. Flexible Ducts: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helically wound spring steel wire.
 - 1. Pressure Rating: 10 inches WG positive and 1.0 inches WG negative.
 - 2. Maximum Velocity: 4000 fpm.
 - 3. Temperature Range: Minus 20 degrees F to 210 degrees F.
- B. Kitchen Cooking Hood and Grease Exhaust: Nominal 3 inches thick ceramic fiber insulation between 20 gage, 0.0375 inch, Type 304 stainless steel liner and 24 gage, 0.0239 inch aluminized steel sheet outer jacket.
 - 1. Tested and UL listed for use with commercial cooking equipment in accordance with NFPA 96.
 - 2. Certified for zero clearance to combustible material in accordance with:
 - 3. Materials and construction of the modular sections and accessories to be in accordance with the terms of the following listings:
 - 4. Manufacturers:
- C. Dishwasher Exhaust: Minimum 21 gage, 0.0344 inch thick, single wall, Type 304 stainless steel.
 - 1. Single wall, factory built chimney liner system.
 - 2. Designed, fabricated, and installed to be liquid tight preventing exhaust leakage into the building.

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3. Joints to be sealed during installation with factory supplied overlapping V-bands and sealant.
4. Manufacturers:

2.04 KITCHEN HOOD EXHAUST DUCTWORK

- A. Fabricate in accordance with ductwork manufacturer's installation instructions, SMACNA (DCS), SMACNA (KVS), and NFPA 96.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Install in accordance with manufacturer's instructions.
- C. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- D. Kitchen Hood Exhaust: Provide residue traps at base of vertical risers with provisions for clean out.
- E. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
- F. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- G. Use crimp joints with or without bead for joining round duct sizes 8 inch and smaller with crimp in direction of air flow.
- H. Connect diffusers or light troffer boots to low pressure ducts directly or with 5 feet maximum length of flexible duct held in place with strap or clamp.

3.02 CLEANING

- A. Clean duct systems with high power vacuum machines. Protect equipment that could be harmed by excessive dirt with filters, or bypass during cleaning. Provide adequate access into ductwork for cleaning purposes.

END OF SECTION 233100

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SECTION 233300 – AIR DUCT ACCESSORIES

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Air turning devices/extractors.
- B. Backdraft dampers - metal.
- C. Backdraft dampers - fabric.
- D. Combination fire and smoke dampers.
- E. Duct access doors.
- F. Flexible duct connections.
- G. Volume control dampers.

1.02 REFERENCE STANDARDS

- A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.
- B. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.
- C. UL 33 - Safety Heat Responsive Links for Fire-Protection Service.
- D. UL 555 - Standard for Fire Dampers.
- E. UL 555S - Standard for Smoke Dampers.

1.03 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing Work of this section with minimum three years documented experience.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Protect dampers from damage to operating linkages and blades.

PART 2 PRODUCTS

2.01 BACKDRAFT DAMPERS - METAL

- A. Manufacturers:
 - 1. Louvers & Dampers, Inc.: www.louvers-dampers.com.
 - 2. Nailor Industries Inc.: www.nailor.com.
 - 3. Ruskin Company: www.ruskin.com.
 - 4. Or equal performance.
- B. Gravity Backdraft Dampers, Size 18 by 18 inches or Smaller, Furnished with Air Moving Equipment: Air moving equipment manufacturer's standard construction.

2.02 BACKDRAFT DAMPERS - FABRIC

- A. Fabric Backdraft Dampers: Factory-fabricated.
 - 1. Blades: Neoprene coated fabric material.
 - 2. Birdscreen: 1/2 inch nominal mesh of galvanized steel or aluminum.
 - 3. Maximum Velocity: 1000 fpm (5 m/sec) face velocity.

2.03 DUCT ACCESS DOORS

- A. Manufacturers:
 - 1. Acudor Products Inc.: www.acudor.com.
 - 2. Elgen Manufacturing: www.elgenmfg.com.
 - 3. Lloyd Industries, Inc.: www.firedamper.com.
 - 4. Nailor Industries Inc.: www.nailor.com.

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5. Ruskin Company: www.ruskin.com.
6. Or equal performance.

2.04 FLEXIBLE DUCT CONNECTIONS

- A. Manufacturers:
 1. Carlisle HVAC Products; Dynair Connector Plus G90 Steel Offset Seam Neoprene Fabric: www.carlislehvac.com/sle.
 2. Elgen Manufacturing: www.elgenmfg.com.
 3. Or equal performance.
- B. Fabricate in accordance with SMACNA (DCS) and as indicated.
- C. Flexible Duct Connections: Fabric crimped into metal edging strip.

2.05 VOLUME CONTROL DAMPERS

- A. Manufacturers:
 1. Louvers & Dampers, Inc.: www.louvers-dampers.com.
 2. Nailor Industries Inc.: www.nailor.com.
 3. Ruskin Company: www.ruskin.com.
 4. Or equal performance.
- B. Single Blade Dampers: Fabricate for duct sizes up to 6 by 30 inch.
 1. Fabricate for duct sizes up to 6 by 30 inch.
 2. Blade: 24 gage, 0.0239 inch, minimum.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). Refer to Section 233100 for duct construction and pressure class.
- B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.
- C. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, combination fire and smoke dampers, and elsewhere as indicated. Provide for cleaning kitchen exhaust ducts in accordance with NFPA 96. Provide minimum 8 by 8 inch size for hand access, size for shoulder access, and as indicated. Provide 4 by 4 inch for balancing dampers only. Review locations prior to fabrication.
- D. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.
- E. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

END OF SECTION 233300

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SECTION 233700 – AIR OUTLETS AND INLETS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Diffusers.
- B. Registers/grilles.

1.02 RELATED REQUIREMENTS

- A. Section 230500 - Basic Mechanical Materials and Methods.
- B. Section 099123 - Interior Painting: Painting of ducts visible behind outlets and inlets.

1.03 REFERENCE STANDARDS

- A. ASHRAE Std 70 - Method of Testing the Performance of Air Outlets and Inlets.

1.04 SUBMITTALS

- A. See Section 230500 - Basic Mechanical Materials and Methods, for submittal procedures.
- B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.
- C. Project Record Documents: Record actual locations of air outlets and inlets.
- D. Maintain one copy of each document on site.

1.05 QUALITY ASSURANCE

- A. Test and rate air outlet and inlet performance in accordance with ASHRAE Std 70.
- B. Test and rate louver performance in accordance with AMCA 500-L.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. American Louver Company; ALC Grilles and Registers: www.americanlouver.com.
- B. Carnes, a division of Carnes Company Inc.;: www.carnes.com.
- C. Hart & Cooley, Inc.: www.hartandcooley.com.
- D. Krueger; : www.krueger-hvac.com.
- E. Titus;: www.titus-hvac.com.
- F. Or approved substitution.

2.02 RECTANGULAR CEILING DIFFUSERS

- A. Type: Provide square, stamped, multi-core diffuser to discharge air in 360 degree pattern with sectorizing baffles where indicated.
- B. Connections: Round.

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- C. Frame: Provide surface mount and snap-in type. In plaster ceilings, provide plaster frame and ceiling frame.
- D. Fabrication: Steel with baked enamel finish.
- E. Color: As selected by Architect from manufacturer's standard range.
- F. Accessories: Provide radial opposed blade volume control damper; removable core and sectorizing baffle with damper adjustable from diffuser face.

2.03 PERFORATED FACE CEILING DIFFUSERS

- A. Type: Perforated face with fully adjustable pattern and removable face.
- B. Frame: Surface mount type. In plaster ceilings, provide plaster frame and ceiling frame.
- C. Fabrication: Steel with steel frame and baked enamel finish.
- D. Color: As selected by Architect from manufacturer's standard range.
- E. Accessories: Radial opposed blade damper and multi-louvered equalizing grid with damper adjustable from diffuser face.

2.04 CEILING SLOT DIFFUSERS

- A. Type: Continuous 1/2 inch wide slot, 1 slots wide, with adjustable vanes for left, right, or vertical discharge; integral ceiling fire damper.
- B. Fabrication: Aluminum extrusions with factory clear lacquer finish.
- C. Color: To be selected by Architect from manufacturer's standard range.
- D. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket, mitered end border.
- E. Plenum: Integral, galvanized steel, insulated.

2.05 CEILING SUPPLY REGISTERS/GRILLES

- A. Type: Streamlined and individually adjustable curved blades to discharge air along face of grille, two-way deflection.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.
- C. Construction: Made of aluminum extrusions with factory enamel finish.
- D. Color: As selected by Architect from manufacturer's standard range.
- E. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

2.06 CEILING EXHAUST AND RETURN REGISTERS/GRILLES

- A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with blades set at 45 degrees, vertical face.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting.
- C. Fabrication: Steel with 20 gage, 0.0359 inch minimum frames and 22 gage, 0.0299 inch minimum blades, steel and aluminum with 20 gage, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.
- D. Color: To be selected by Architect from manufacturer's standard range.
- E. Gymnasiums: Provide front pivoted or welded in place blades, securely fastened to be immobile.

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SECTION 233700 – AIR OUTLETS AND INLETS

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

2.07 CEILING LINEAR EXHAUST AND RETURN GRILLES

- A. Type: Streamlined blades with 90 degree one-way deflection, 1/8 by 3/4 inch on 1/4 inch centers.
- B. Frame: 1-1/4 inch margin, extra heavy for floor mounting, with countersunk screw mounting.
- C. Fabrication: Steel with 20 gage, 0.0359 inch minimum frames and 22 gage, 0.0299 inch minimum blades, steel and aluminum with 20 gage, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.
- D. Color: To be selected by Architect from manufacturer's standard range.

2.08 CEILING EGG CRATE EXHAUST AND RETURN GRILLES

- A. Type: Egg crate style face consisting of 1/2 by 1/2 by 1/2 inch grid core.
- B. Fabrication: Grid core consists of aluminum with mill aluminum finish.
- C. Color: To be selected by Architect from manufacturer's standard range.
- D. Frame: 1-1/4 inch margin with countersunk screw mounting.
- E. Frame: Channel lay-in frame for suspended grid ceilings.

2.09 WALL SUPPLY REGISTERS/GRILLES

- A. Type: Streamlined and individually adjustable blades, 3/4 inch minimum depth, 3/4 inch maximum spacing with spring or other device to set blades, vertical face, single deflection.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.
- C. Fabrication: Steel with 20 gage, 0.0359 inch minimum frames and 22 gage, 0.0299 inch minimum blades, steel and aluminum with 20 gage, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.
- D. Color: To be selected by Architect from manufacturer's standard range.
- E. Damper: Integral, gang-operated opposed blade type with removable key operator, operable from face.
- F. Gymnasiums: Provide front pivoted or welded in place blades, securely fastened to be immobile.

2.10 WALL SUPPLY REGISTERS/GRILLES

- A. Type: Streamlined and individually adjustable curved blades to discharge air along face of grille with one-way deflection.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.
- C. Fabrication: Aluminum extrusions with factory clear lacquer finish.
- D. Color: To be selected by Architect from manufacturer's standard range.
- E. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

2.11 WALL EXHAUST AND RETURN REGISTERS/GRILLES

- A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with spring or other device to set blades, vertical face.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting.
- C. Fabrication: Steel frames and blades, with factory baked enamel finish.

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- D. Color: To be selected by Architect from manufacturer's standard range.
- E. Gymnasiums: Provide front pivoted or welded in place blades, securely fastened to be immobile.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.
- C. Install diffusers to ductwork with air tight connection.
- D. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.
- E. Paint ductwork visible behind air outlets and inlets matte black. Refer to Section 099123.

END OF SECTION 0233700

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SECTION 260500 – BASIC ELECTRICAL MATERIALS AND METHODS

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PART 1- GENERAL

1.01 SUMMARY

- A. Section includes
 - 1. Electrical Basic Requirements specifically applicable to Division 26, 27, and 28 in addition to the requirements of Division 01 - General Requirements and the General Conditions of the Contract.
 - 2. Grounding electrodes and conductors.
 - 3. Bonding methods and materials.
 - 4. Conduit and equipment supports.
 - 5. Anchors and fasteners.
 - 6. Nameplates and wire markers.

1.02 RELATED SECTIONS

- A. Work described in this section is related to other work described in Divisions 21, 22, 23, 26, 27, and 28 and may be related to work in other Divisions concerning structure or appearances. Review and become familiar with work required in other Sections in this Division and with work required in the other Divisions. Coordinate with other subcontractor(s) to assure that all issues arising between related Sections are resolved.
- B. Bring to the attention of the Engineer prior to the cutoff date for Addenda any and all discrepancies in related work. Submission of a bid or proposal indicates that all costs for this work and related work are included in the bid for this work or within the bid or proposal for the related work.

1.03 SYSTEM DESCRIPTION

- A. Grounding systems use metal underground pipe and driven ground rod as grounding electrodes. Grounding system connections use exothermic welds.
- B. Select materials, sizes, and types of anchors, fasteners, and supports to carry loads of equipment and raceway, including weight of wire and cable in raceway. Anchor and fasten electrical products to building elements
- C. Identify Electrical components as follows:
 - 1. Nameplate for each electrical distribution and control equipment enclosure.
 - 2. Wire marker for each conductor at panelboard gutters, pull boxes, and outlet and junction boxes.

1.04 REGULATORY REQUIREMENTS

- A. All electrical work shall be performed in strict accordance with the New Mexico Building codes, IBC, ANSI, NEC, NFPA, Model Energy Code, and all applicable provisions of the local authorities having jurisdiction. All materials and labor necessary to comply with rules, regulations, and ordinances shall be provided. Where the drawings and/or specifications indicate material or construction in excess of code requirements or visa-versa, the more stringent application shall govern.
- B. Permits necessary for the performance of the work under this contract shall be secured and paid for by the Contractor. Final inspection by the Engineer will not be made, or certificate of final payment issued, until certificates of satisfactory inspection from the inspection authorities are delivered.

1.05 SUBMITTALS

- A. Submit all data as a single package, as the Engineer will commence review only when all data has been received.

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- B. Submittal form to identify project, contractor, sub-contractor, supplier, and pertinent contract document references.
- C. Apply Contractor's stamp, signed or initialed, certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and contract documents.
- D. The Contractor shall determine and verify field measurements and field construction criteria for conformance with drawings and specifications and for conflicts with other items of construction, past or present. Contractor shall coordinate each submittal with the requirements of the work and of the contract documents and notify the Engineer in writing, at the time of the submission, of any and all deviations in the submittals from requirements of the work and contract documents.
 - 1. No fabrication or work which requires submittals shall begin until submittals are returned with the Engineer's approval.
- E. Identify variations for contract documents and product or system limitations which may be detrimental to successful performance of the completed work.
- F. Engineer's review does not constitute acceptance or responsibility for accuracy or dimensions, nor shall it relieve the Contractor from meeting any requirements of the work and contract documents, nor shall it constitute approval for any deviation from the contract documents, unless such deviations are specifically stated as such on the submittal and specifically allowed by the Engineer by specific written notification for each such variation. The Engineer's review will not relieve the Contractor from responsibility for errors or omissions in the shop drawings.
- G. Revise and resubmit submittals as required. Identify all changes made since previous submittal.
- H. The Engineer will review a submittal and, if necessary, a resubmittal of the same item. Subsequent resubmittals shall be accompanied by Contractor's purchase order to Engineer for all Engineer's review time and costs at Engineer's standard hourly billing rates. These reviews will be performed at the convenience of the Engineer.

1.06 SUBSTITUTIONS

- A. Prior approval of materials and equipment will not be considered. Contract documents indicate specified equipment and acceptable alternatives. Any other equipment/material proposed must meet or exceed that specified. Equipment/material will be reviewed for compliance during submittal review process per Paragraph 1.5.
- B. Engineer will consider requests for substitutions only at submittal review. Clearly identify substitution.
- C. Document each request with complete data, substantiating compliance of proposed substitution with contract documents.
- D. A request for substitution constitutes a representation that the Contractor:
 - 1. Has investigated the proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other work, which may be required for the work to be complete with no additional cost to Owner.

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4. Waives claims for additional costs or time extension which may, subsequently, become apparent.
5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities.

1.07 PROJECT CONDITIONS

- A. Existing project conditions indicated on Drawings are based on casual field observation and existing record documents.
- B. Verify field measurements and circuiting arrangements are as shown on Drawings.
- C. Verify removal of existing electric work.
- D. Report discrepancies to Architect/Engineer before disturbing existing installation.

1.08 COORDINATION

- A. Obtain and review shop drawings, product data, and manufacturer's instructions for equipment furnished under other Sections to determine connection locations and requirements.
- B. Sequence rough-in of electrical connections to coordinate with installation and start-up of equipment furnished under other Sections.

1.09 RECORD AS-BUILT DRAWINGS

- A. Maintain on site one set of record documents exclusively for the purpose of Record As-Built drawings.
- B. Record into Record Drawings, Project Manual and Product Data, the actual "as-built" Work including all revisions. Include actual location of all work.
- C. Record information concurrent with the construction progress.
- D. Ensure entries are complete and accurate, enabling future references by Owner.
- E. Completion of record as-built drawings is a condition of final inspection and consideration of final payment.

1.10 CLOSEOUT PROCEDURES

- A. See Paragraph 3.2 for Substantial Completion and Final Inspection Requirements.

PART 2 - PRODUCTS

2.01 ROD ELECTRODES

- A. Product Description: Copper or copper-clad steel, 5/8 inch diameter rod electrode, 10 feet in length.

2.02 WIRE MARKERS

- A. Product Description: Cloth tape, split sleeve, or tubing type wire markers with circuit or control wire number permanently stamped or printed.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install rod electrodes at locations indicated. Install additional rod electrodes as required to meet Regulatory Requirements.
- C. Provide grounding electrode conductor and connect to reinforcing steel in foundation footing where indicated. Bond steel together.

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- D. Provide bonding to meet Regulatory Requirements.
- E. Make electrical connections to utilization equipment in accordance with equipment manufacturer's instructions.
 - 1. Verify that wiring and outlet rough-in work is complete and that utilization equipment is ready for electrical connection, wiring, and energization.
 - 2. Make wiring connections in control panel or in wiring compartment of pre-wired equipment. Provide interconnecting wiring where indicated.
 - 3. Install and connect disconnect switches, controllers, control stations, and control devices as indicated.
 - 4. Make conduit connections to equipment, using flexible conduit. Use liquid-tight flexible conduit in damp or wet locations.
 - 5. Install pre-fabricated cord set where connection with attachment plug is indicated or specified, or use attachment plug with suitable strain-relief clamps.
 - 6. Provide suitable strain-relief clamps for cord connections to outlet boxes and equipment connection boxes.
- F. Install support systems sized and fastened to accommodate weight of equipment and conduit, including wiring, which they carry.
 - 1. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors.
 - 2. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.
 - 3. Do not fasten supports to piping, ceiling support wires, ductwork, mechanical equipment, or conduit.
 - 4. Do not use powder-actuated anchors.
 - 5. Do not drill structural steel members.
 - 6. Fabricate supports from structural steel or formed steel members.
 - 7. Install free-standing electrical equipment on concrete pads.
 - 8. Install surface-mounted cabinets and panelboards with minimum of four (4) anchors.
 - 9. Install steel channel supports to stand cabinets 1 inch off wall in wet locations.
 - 10. Install sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- G. Identify electrical distribution and control equipment and loads served to meet regulatory requirements.
 - 1. Degrease and clean surfaces to receive nameplates and tape labels.
 - 2. Install nameplate parallel to equipment lines. Secure nameplate to equipment front using screws or rivets. Secure nameplate to inside face of recessed panelboard doors in finished locations.
- H. Install wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connections.
 - 1. Use branch circuit or feeder number to identify power and lighting circuits.
 - 2. Use control wire number as indicated on schematic and interconnection diagrams to identify control wiring.

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3.02 SUBSTANTIAL COMPLETION AND FINAL INSPECTION REQUIREMENTS

- A. Before substantial completion can be granted, the following items must be completed and/or submitted to the Owner/Engineer.
 - 1. Test, adjust, and calibrate all systems.
 - 2. Provide typed panel directories installed in each panelboard.
 - 3. Label all electrical equipment properly.
- B. Prior to the final inspection or consideration of final payment, the Contractor shall:
 - 1. Provide copies of permits and/or inspection certificates.
 - 2. Provide Record As-built Drawings.
 - 3. Deliver all spare parts.
 - 4. Touch up any damaged finishes.

END OF SECTION 260500

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PART 1- GENERAL**1.01 SUMMARY**

- A. Section includes:
 - 1. Building wire and cable.
 - 2. Conduit and tubing.
 - 3. Surface raceway.
 - 4. Boxes.
 - 5. Wiring devices
 - 6. Wiring connectors.
 - 7. Connections.

1.02 RELATED SECTIONS

- A. See Section 260500 - Basic Electrical Materials and Methods.

1.03 SYSTEM DESCRIPTION

- A. Wiring Products:
 - 1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
 - 2. Stranded conductors for control circuits.
 - 3. Conductor not smaller than 12 AWG for power and lighting circuits.
 - 4. Conductor not smaller than 16 AWG for control circuits.
 - 5. 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
- B. Wiring Methods only where permitted by NEC:
 - 1. Concealed Dry Interior Locations: Building wire, Type THW THHN/THWN insulation, in raceway. Nonmetallic-sheathed cable. Armored cable. Metal clad cable.
 - 2. Exposed Dry Interior Locations: Building wire, Type THW THHN/THWN insulation, in raceway. Nonmetallic-sheathed cable. Armored cable. Metal clad cable.
 - 3. Above Accessible Ceilings: Building wire, Type THW THHN/THWN insulation, in raceway. Nonmetallic-sheathed cable. Armored cable. Metal clad cable.
 - 4. Wet or Damp Interior Locations: Building wire, Type THW THHN/THWN insulation, in raceway. Direct burial cable. Armored cable with jacket. Metal clad cable.
 - 5. Exterior Locations: Building wire, Type THW THHN/THWN insulation, in raceway. Direct burial cable. Armored cable with jacket. Metal clad cable. Service-entrance cable.
 - 6. Underground Locations: Building wire, Type THW THHN/THWN insulation, in raceway. Direct burial cable. Armored cable with jacket. Metal clad cable. Service-entrance cable.
 - 7. Conductor sizes are based on copper unless indicated as aluminum or "AL". When aluminum conductor is substituted for copper conductor, size to match circuit requirements for conductor ampacity and voltage drop.
 - 8. Raceway and boxes are located as indicated on Drawings, and at other locations where required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements.
 - 9. Color Coding: Color coding shall be A-black, B-red, N-white, for 120/240 volts, with green for all ground conductors.
 - 10. Type NM, NMC and UF cables shall be permitted in all concealed areas, and where permitted by NEC
 - 11. For Copper Conductors No. 6 and Smaller: 3M Scotch-Lok or T & B Sta-Kon compression or indent type connectors with integral or separate insulating caps.

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12. For Copper Conductors Larger than No. 6: Solderless, indent, hex screw or bolt type pressure conductors, properly taped or insulated.
- C. Raceway Products:
 1. Underground More than 5 Feet outside Foundation Wall: Use rigid steel conduit and thickwall nonmetallic conduit. Use cast metal boxes or nonmetallic handhole.
 2. Underground Within 5 Feet outside Foundation Wall: Use rigid steel conduit and thickwall nonmetallic conduit. Use cast metal boxes.
 3. In or Under Slab on Grade: Use rigid steel conduit and thickwall nonmetallic conduit. Use cast metal boxes.
 4. Outdoor Locations, Above Grade: Use rigid steel conduit and electrical metallic tubing. Use cast metal outlet, pull, and junction boxes.
 5. In Slab Above Grade: Use rigid steel conduit and thickwall nonmetallic conduit. Use cast sheet metal boxes.
 6. Wet and Damp Locations: Use rigid steel conduit, electrical metallic tubing, thickwall nonmetallic conduit and, nonmetallic tubing. Use cast metal or nonmetallic outlet, junction, and pull boxes. Use flush mounting outlet box in finished areas.
 7. Concealed Dry Locations: Use rigid steel and aluminum conduit, electrical metallic tubing, thickwall nonmetallic conduit and nonmetallic tubing. Use sheet-metal boxes. Use flush mounting outlet box in finished areas. Use hinged enclosure for large pull boxes.
 8. Exposed Dry Locations: Use rigid steel and aluminum conduit, electrical metallic tubing and thickwall nonmetallic conduit. Use sheet-metal boxes. Use flush mounting outlet box in finished areas. Use hinged enclosure for large pull boxes.
 9. Minimum Raceway Size: 1/2 3/4 inch unless otherwise specified.

1.04 CLOSEOUT SUBMITTALS

- A. Accurately record routing of conduits larger than 2 inches.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with NECA Standard of Installation.

1.06 REGULATORY REQUIREMENTS

- A. Conform to requirement of NFPA 70.
- B. Furnish products listed by Underwriters Laboratories, Inc. or other testing firm acceptable to authority having jurisdiction.

PART 2 - PRODUCTS

2.01 CONDUIT AND FITTINGS

- A. Conduit:
 1. Metal conduit and tubing: Galvanized steel.
 2. Flexible conduit: Steel jacket only.
 3. Liquid-tight flexible conduit: Flexible conduit with PCV jacket.
 4. Plastic conduit and tubing: NEMA TC 2; PVC. Use Schedule 40 conduit.
 5. RGS or IMC, 90 degree bends. PVC is not acceptable.
- B. Conduit fittings:
 1. Metal fittings and conduit bodies: NEMA FB 1.
 2. Plastic fittings and conduit bodies: NEMA TC 3.

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2.02 SURFACE METAL RACEWAY

- A. Product Description: Sheet metal channel with fitted cover, suitable for use as surface metal raceway, with manufacturer's standard enamel finish. Furnish manufacturer's standard accessories; match finish on raceway.

2.03 SURFACE NONMETALLIC RACEWAY

- A. Description: Plastic Fiberglass channel with fitted cover, suitable for use as surface raceway, with manufacturer's standard finish. Furnish manufacturer's standard accessories, finish to match raceway.

2.04 ELECTRICAL BOXES

- A. Boxes:
 - 1. Sheet Metal: NEMA OS 1; Galvanized steel.
 - 2. Cast Metal: Aluminum, deep type, gasket cover, threaded hubs.
 - 3. Non-metallic: NEMA OS 2.
- B. Floor boxes for installation in poured concrete floors: Fully adjustable formed steel.
- C. Hinged Cover Enclosures: NEMA 250; Type 1, steel enclosure with manufacturer's standard enamel finish and continuous hinge cover, held closed by flush latch operable by screwdriver.
- D. Large Cast Metal Boxes:
 - 1. Surface-Mounted Type: NEMA 250; Type 4 and Type 6, flat-flanged, surface-mounted junction box, galvanized cast iron or cast aluminum box and cover with ground flange, neoprene gasket, and stainless steel cover screws.
 - 2. Underground Type: NEMA 250; Type 4, outside flanged, recessed cover box for flush mounting, cast aluminum box and plain cover with neoprene gasket and stainless steel cover screws.

2.05 WIREWAY

- A. Product Description: General purpose raintight type wireway with hinged screw cover and manufacturer's standard enamel finish.

2.06 WALL SWITCHES

- A. Unless otherwise specified, each snap switch (flush tumbler-toggle) shall be of the A.C. General use type for mounting in a single gang spacing, fully rated 20 amperes minimum at 120/277 volts. Ivory color handles unless otherwise indicated on the drawings. Silver or silver alloy contacts.
- B. Color: Ivory .

2.07 WALL DIMMERS

- A. Product Description: Fully compatible with lighting fixtures installed.
- B. Body and Handle: Ivory plastic with linear slide.
- C. Voltage: 120 volts.

2.08 RECEPTACLES

- A. General: Fire resistant, non-absorptive, hot welded, phenolic composition or equal bodies and bases with metal plaster ears (integral with the supporting member). Ivory color unless otherwise noted on the drawings. Double grip contacts for each prong.
- B. Grounding Type: All receptacles shall be grounding type with a green colored hexagonal equipment ground screw of adequate size to accommodate an insulated grounding jumper

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- C. Receptacles shall be rated as ACFI or GFCI where required to be installed by NEC
- D. Color: Ivory.

2.09 WALL PLATES

- A. Manufacturers: To match device.
- B. Cover Plate: Nylon. Finish selection to match device.
- C. Jumbo Cover Plate: Ivory smooth plastic nylon.
- D. Weatherproof Cover Plate: Gasketed cast metal stainless steel plate with hinged threaded and gasketed device cover.

2.10 MULTI-OUTLET ASSEMBLY

- A. multi-outlet Assembly: Sheet metal channel with fitted cover, with pre-wired receptacles, suitable for use as multi-outlet assembly. Furnish manufacturer's standard enamel finish.
- B. Receptacles: NEMA WD 6, type 5-15R, single receptacle.
- C. Receptacle Spacing: 6 inches 9 inches 12 inches 18 inches on center.
- D. Fittings: Furnish manufacturer's standard couplings, elbows, outlet and device boxes, and connectors.

2.11 SERVICE FITTINGS

- A. Receptacle service fitting:
 - 1. Walker S125R.
 - 2. Housing: Zinc die cast material.
 - 3. Device plate: Polycarbonate.
 - 4. Configuration: One duplex.
- B. Communication outlet service fitting:
 - 1. Walker S126R.
 - 2. Housing: Zinc die cast material.
 - 3. Device plate: Polycarbonate.
 - 4. Configuration: Telephone/data combination.
- C. Combination fitting:
 - 1. Walker S265.
 - 2. Housing: Zinc die cast material
 - 3. Device plate: Polycarbonate.
 - 4. Configuration: One duplex receptacle, telephone/data combination.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Verify that supporting surfaces are ready to receive work.
- B. Verify that interior of building is physically protected from weather.
- C. Verify that mechanical work, which is likely to injure conductors, has been completed.
- D. Completely and thoroughly swab raceway system before installing conductors.
- E. Electrical boxes are shown on drawings in approximate locations unless dimensioned.
 - 1. Obtain verification from Architect and/or Owner of floor box locations, and locations of outlets in offices and work areas prior to rough-in.

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2. Elevator system: Determine location of outlets for lights, cab circuits, machines, and equipment installed in elevator pit, shaft, and machine rooms with elevator system installer prior to rough-in.

3.02 INSTALLATION

- A. Route raceway and cable to meet Project conditions.
- B. Set wall mounted boxes at elevations to accommodate mounting heights indicated.
- C. Adjust box location up to 10 feet prior to rough-in when required to accommodate intended purpose.
- D. Arrange conduit to maintain headroom and to present neat appearance.
 1. Route exposed raceway parallel and perpendicular to walls and adjacent piping.
 2. Maintain minimum 6 inch clearance to piping and 12 inch clearance to heat surfaces, such as flues, steam pipes, and heating appliances.
 3. Maintain required fire, acoustic, and vapor barrier rating when penetrating walls, floors, and ceilings.
 4. Route conduit through roof openings for piping and ductwork where possible. Otherwise, route through roof jack with pitch pocket.
 5. Group in parallel runs where practical. Use rack constructed of steel channel. Maintain spacing between raceways or derate circuit ampacities to NFPA 70 requirements.
 6. Use conduit hangers and clamps. Do not fasten with wire or perforated pipe straps.
 7. Use conduit bodies to make sharp changes in direction.
 8. Terminate conduit stubs with insulated bushings.
 9. Use suitable caps to protect installed raceway against entrance of dirt and moisture.
 10. Provide No. 12 AWG insulated conductor or suitable pull string in empty raceways, except sleeves and nipples.
 11. Install expansion joints where raceway crosses building expansion joints.
 12. Install plastic conduit and tubing in accordance with manufacturer's instructions.
- E. Install surface metal raceway and multi-outlet assemblies in accordance with manufacturer's instructions.
 1. Use flat-head screws or clips and straps suitable for the purpose to fasten channel to surfaces. Mount plumb and level.
 2. Use suitable insulated bushings and inserts at connections to outlets and corner fittings in metal raceway.
 3. Use fittings and accessories designed for use with raceway system.
- F. Install auxiliary gutter and wireway in accordance with manufacturer's instructions.
- G. Install electrical boxes as shown on the drawings and as required for splices, taps, wire pulling, equipment connections, and regulatory requirements.
 1. Use cast outlet box in exterior locations exposed to weather and wet locations.
 2. Use hinged cover enclosure for interior pull and junction box larger than 12 inches in any dimension.
 3. Locate and install electrical boxes to allow access. Provide access panels if required.
 4. Locate and install electrical boxes to maintain headroom and to present neat mechanical appearance.

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5. Install pull boxes and junction boxes above accessible ceilings or in unfinished areas.
6. Provide knockout closures for unused openings.
7. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.
8. Coordinate mounting heights and locations of outlets above counters, benches, and backsplashes.
9. Install lighting outlets to locate luminaries as shown on reflected ceiling plan.
- H. Use recessed outlet boxes in finished areas and where indicated.
 1. Secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness.
 2. Use stamped steel stud bridges for flush outlets in hollow stud wall and adjustable steel channel fasteners for flush ceiling outlet boxes.
 3. Locate boxes in masonry walls to require cutting corner only. Coordinate masonry cutting to achieve neat openings for boxes.
 4. Do not install boxes back-to-back in walls; install boxes with minimum 24 inches separation.
 5. Do not damage insulation.
- I. Install floor boxes in accordance with manufacturer's instructions.
 1. Set boxes level and flush with finish flooring material.
 2. Use cast floor boxes for installations in slab on grade.
- J. Install service fittings in accordance with manufacturer's instructions.
- K. Drill floor opening and install poke-through fittings in accordance with manufacturer's instructions.
- L. Interface outlet box, service fitting, and floor box installation with furniture locations.
- M. Neatly train and secure wiring inside boxes, equipment, and panel boards.
- N. Use wire-pulling lubricant for pulling 4 AWG and larger wires.
- O. Support cables above accessible ceilings to keep them from resting on ceiling tiles.
- P. Make splices, taps, and terminations to carry full ampacity of conductors without perceptible temperature rise.
- Q. Terminate spare conductors with electrical tape.
- R. Install wiring devices in accordance with manufacturer's instructions.
 1. Install wall switches 48 inches above floor, "OFF" position down.
 2. Install wall dimmers 48 inches above floor. Derate ganged dimmers as instructed by manufacturer. Do not use common neutral.
 3. Install convenience receptacles 18 inches above floor, 4 inches above counters, backsplash, grounding pole on bottom.
 4. Install specific purpose receptacles at heights shown on drawings.
 5. Install cord and attachment plug caps on equipment. Size cord for connected load and rating of branch circuit overcurrent protection.
- S. Install wall plates flush and level.
 1. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
 2. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets.

END OF SECTION 260510

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SECTION 260526 – GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

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PART - GENERAL

1.01 SECTION INCLUDES

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.
- D. Ground rod electrodes.

1.02 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 - PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

- A. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- D. Grounding Electrode System:
 - 1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
 - a. Provide continuous grounding electrode conductors without splice or joint.
 - b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
 - 2. Ground Rod Electrode(s):
 - a. Provide single electrode unless otherwise indicated or required.
 - b. Space electrodes not less than 10 feet from each other and any other ground electrode.
 - c. Where location is not indicated, locate electrode(s) at least 5 feet outside building perimeter foundation as near as possible to electrical service entrance; where possible, locate in softscape (uncovered) area.
 - 3. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.
- E. Bonding and Equipment Grounding:
 - 1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
 - 2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
 - 3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.

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4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
 5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
 6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
- F. Isolated Ground System:
1. Where isolated ground receptacles or other isolated ground connections are indicated, provide separate isolated/insulated equipment grounding conductors.
 2. Connect isolated/insulated equipment grounding conductors only to separate isolated/insulated equipment ground busses.
 3. Connect the isolated/insulated equipment grounding conductors to the solidly bonded equipment ground bus only at the service disconnect or separately derived system disconnect. Do not make any other connections between isolated ground system and normal equipment ground system on the load side of this connection.
- G. Communications Systems Grounding and Bonding:
1. Provide intersystem bonding termination at service equipment or metering equipment enclosure and at disconnecting means for any additional buildings or structures in accordance with NFPA 70.

2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
1. Provide products listed, classified, and labeled as suitable for the purpose intended.
 2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 260526:
1. Use insulated copper conductors unless otherwise indicated.
 - a. Exceptions:
 - 1) Use bare copper conductors where installed underground in direct contact with earth.
 - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
- C. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
 2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
 3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
- D. Ground Rod Electrodes:
1. Comply with NEMA GR 1.
 2. Material: Copper-bonded (copper-clad) steel.
 3. Size: 3/4 inch diameter by 10 feet length, unless otherwise indicated.

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PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install grounding and bonding system components in a neat and workmanlike manner in accordance with NECA 1.
- C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.
 - 1. Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches below finished grade.
- D. Make grounding and bonding connections using specified connectors.
 - 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
 - 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
 - 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
 - 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 - 5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- E. Identify grounding and bonding system components in accordance with Section 260553.

END OF SECTION 260526

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PART 1 - GENERAL

1. Includes additional requirements for fittings for grounding and bonding.

1.01 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.
- B. Shop Drawings:
 1. Indicate proposed arrangement for conduits to be installed within structural concrete slabs, where permitted.
 2. Include proposed locations of roof penetrations and proposed methods for sealing.
- C. See Section 260500 - Basic Electrical Materials and Methods for submittal procedures.
- D. Maintain one copy of each document on site.

1.02 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 - PRODUCTS**2.01 CONDUIT APPLICATIONS**

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.
- C. Underground:
 1. Under Slab on Grade: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), PVC-coated galvanized steel rigid metal conduit, or rigid PVC conduit.
 2. Exterior, Direct-Buried: Use galvanized steel rigid metal conduit, intermediate metallic conduit (IMC), PVC-coated galvanized steel rigid metal conduit, or rigid PVC conduit.
 3. Where steel conduit is installed in direct contact with earth where soil has a resistivity of less than 2000 ohm-centimeters or is characterized as severely corrosive based on soils report or local experience, use corrosion protection tape to provide supplementary corrosion protection or use PVC-coated galvanized steel rigid metal conduit.
- D. Concealed Within Masonry Walls: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
- E. Concealed Within Hollow Stud Walls: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
- F. Concealed Above Accessible Ceilings: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
- G. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).
- H. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).

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- I. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).
 - 1. Locations subject to physical damage include, but are not limited to:
 - a. Where exposed below 8 feet, except within electrical and communication rooms or closets.
- J. Exposed, Exterior: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or PVC-coated galvanized steel rigid metal conduit.
- K. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).
- L. Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit.
 - 1. Maximum Length: 6 feet.
- M. Connections to Vibrating Equipment:
 - 1. Dry Locations: Use flexible metal conduit.
 - 2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit.
 - 3. Maximum Length: 6 feet unless otherwise indicated.
 - 4. Vibrating equipment includes, but is not limited to:
 - a. Transformers.
 - b. Motors.

2.02 CONDUIT REQUIREMENTS

- A. Fittings for Grounding and Bonding: Also comply with Section 260526.
- B. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Minimum Conduit Size, Unless Otherwise Indicated:
 - 1. Branch Circuits: 1/2 inch (16 mm) trade size.
 - 2. Branch Circuit Homeruns: 3/4 inch (21 mm) trade size.
 - 3. Control Circuits: 1/2 inch (16 mm) trade size.
 - 4. Flexible Connections to Luminaires: 3/8 inch (12 mm) trade size.
- E. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- B. Fittings:
 - 1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
 - 3. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.04 INTERMEDIATE METAL CONDUIT (IMC)

- A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.
- B. Fittings:
 - 1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.

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2. Material: Use steel or malleable iron.
3. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.05 FLEXIBLE METAL CONDUIT (FMC)

- A. Description: NFPA 70, Type FMC standard wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems to be used.
- B. Fittings:
 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 2. Material: Use steel or malleable iron.

2.06 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.
- B. Fittings:
 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 2. Material: Use steel or malleable iron.

2.07 ELECTRICAL METALLIC TUBING (EMT)

- A. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- B. Fittings:
 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 2. Material: Use steel or malleable iron.
 3. Connectors and Couplings: Use compression (gland) or set-screw type.
 - a. Do not use indenter type connectors and couplings.
 4. Or equal performance.

2.08 ACCESSORIES

- A. Corrosion Protection Tape: PVC-based, minimum thickness of 20 mil.
- B. Conduit Joint Compound: Corrosion-resistant, electrically conductive; suitable for use with the conduit to be installed.
- C. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install conduit in a neat and workmanlike manner in accordance with NECA 1.
- C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
- D. Install intermediate metal conduit (IMC) in accordance with NECA 101.
- E. Install PVC-coated galvanized steel rigid metal conduit (RMC) using only tools approved by the manufacturer.
- F. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.

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G. Conduit Routing:

1. Unless dimensioned, conduit routing indicated is diagrammatic.
2. When conduit destination is indicated and routing is not shown, determine exact routing required.
3. Conceal all conduits unless specifically indicated to be exposed.
4. Conduits in the following areas may be exposed, unless otherwise indicated:
 - a. Electrical rooms.
 - b. Mechanical equipment rooms.
5. Unless otherwise approved, do not route conduits exposed:
 - a. Across floors.
 - b. Across roofs.
 - c. Across top of parapet walls.
 - d. Across building exterior surfaces.
6. Conduits installed underground or embedded in concrete may be routed in the shortest possible manner unless otherwise indicated. Route all other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
7. Arrange conduit to maintain adequate headroom, clearances, and access.
8. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.
9. Arrange conduit to provide no more than 150 feet between pull points.
10. Route conduits above water and drain piping where possible.
11. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
12. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
13. Maintain minimum clearance of 12 inches between conduits and hot surfaces. This includes, but is not limited to:
 - a. Heaters.
 - b. Hot water piping.
 - c. Flues.
14. Group parallel conduits in the same area together on a common rack.

H. Conduit Support:

1. Secure and support conduits in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
4. Use metal channel (strut) with accessory conduit clamps to support multiple parallel surface-mounted conduits.
5. Use conduit clamp to support single conduit from beam clamp or threaded rod.
6. Use trapeze hangers assembled from threaded rods and metal channel (strut) with accessory conduit clamps to support multiple parallel suspended conduits.
7. Use non-penetrating rooftop supports to support conduits routed across rooftops (only where approved).
8. Use of spring steel conduit clips for support of conduits is not permitted.
9. Use of wire for support of conduits is not permitted.

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10. Where conduit support intervals specified in NFPA 70 and NECA standards differ, comply with the most stringent requirements.
- I. Connections and Terminations:
 1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 3. Use suitable adapters where required to transition from one type of conduit to another.
 4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
 5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 6. Where spare conduits stub up through concrete floors and are not terminated in a box or enclosure, provide threaded couplings equipped with threaded plugs set flush with finished floor.
 7. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 8. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- J. Penetrations:
 1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 4. Conceal bends for conduit risers emerging above ground.
 5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
 6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
 8. Provide metal escutcheon plates for conduit penetrations exposed to public view.
 9. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- K. Underground Installation:
 1. Minimum Cover, Unless Otherwise Indicated or Required:
 - a. Underground, Exterior: 24 inches.
 - b. Under Slab on Grade: 12 inches to bottom of slab.
 2. Provide underground warning tape in accordance with Section 260553 along entire conduit length for service entrance where not concrete-encased.
- L. Concrete Encasement: Where conduits not otherwise embedded within concrete are indicated to be concrete-encased, provide concrete in accordance with Section

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033000 with minimum concrete cover of 3 inches on all sides unless otherwise indicated.

- M. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
 - 1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
 - 2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
 - 3. Where conduits are subject to earth movement by settlement or frost.
- N. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
 - 1. Where conduits pass from outdoors into conditioned interior spaces.
 - 2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
 - 3. Where conduits penetrate coolers or freezers.

3.02 CLEANING

- A. Clean interior of conduits to remove moisture and foreign matter.

END OF SECTION 260534

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PART 1 - GENERAL**1.01 QUALITY ASSURANCE**

- A. Conform to requirements of NFPA 70.

PART 2 - PRODUCTS**2.01 BOXES**

- A. General Requirements:
1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
 3. Provide products listed, classified, and labeled as suitable for the purpose intended.
 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
 3. Use cast iron boxes or cast aluminum boxes where exposed galvanized steel rigid metal conduit or exposed intermediate metal conduit (IMC) is used.
 4. Use cast aluminum boxes where aluminum rigid metal conduit is used.
 5. Use suitable concrete type boxes where flush-mounted in concrete.
 6. Use suitable masonry type boxes where flush-mounted in masonry walls.
 7. Use raised covers suitable for the type of wall construction and device configuration where required.
 8. Use shallow boxes where required by the type of wall construction.
 9. Do not use "through-wall" boxes designed for access from both sides of wall.
 10. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
 11. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
 12. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
 13. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes.
 14. Minimum Box Size, Unless Otherwise Indicated:
 - a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 1-1/2 inch deep (100 by 38 mm) trade size.
 - b. Ceiling Outlets: 4 inch octagonal or square by 1-1/2 inch deep (100 by 38 mm) trade size.
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:

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1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
 2. Junction and Pull Boxes Larger Than 100 cubic inches:
 - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
- D. Or equal performance.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide separate boxes for emergency power and normal power systems.
- E. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.
- F. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.
- G. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.
- H. Box Locations:
 1. Locate boxes to be accessible. Provide access panels in accordance with Section 083100 as required where approved by the Architect.
 2. Unless dimensioned, box locations indicated are approximate.
 3. Locate boxes as required for devices installed under other sections or by others.
 - a. Switches, Receptacles, and Other Wiring Devices: Comply with Section 262726.
 - b. Communications Systems Outlets: Comply with Section 271005.
 4. Locate boxes so that wall plates do not span different building finishes.
 5. Locate boxes so that wall plates do not cross masonry joints.
 6. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
 7. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches horizontal separation unless otherwise indicated.
 8. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
 - a. Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches separation where wall is constructed with individual noncommunicating stud cavities or protect both boxes with listed putty pads.
 9. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 260534.
 10. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:
 - a. Concealed above accessible suspended ceilings.

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- b. Within joists in areas with no ceiling.
- c. Electrical rooms.
- d. Mechanical equipment rooms.
- I. Box Supports:
 - 1. Secure and support boxes in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
 - 2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
 - 3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
- J. Install boxes plumb and level.
- K. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.

END OF SECTION 260537

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SECTION 260553 – IDENTIFICATION FOR ELECTRICAL SYSTEMS

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PART 1 - GENERAL

1.01 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 - PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

- A. Identification for Equipment:
 - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
 - a. Switchboards:
 - 1) Identify ampere rating.
 - 2) Identify voltage and phase.
 - 3) Identify power source and circuit number. Include location when not within sight of equipment.
 - 4) Use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
 - b. Panelboards:
 - 1) Identify ampere rating.
 - 2) Identify voltage and phase.
 - 3) Identify power source and circuit number. Include location when not within sight of equipment.
 - 4) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
 - 5) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
 - c. Enclosed switches, circuit breakers, and motor controllers:
 - 1) Identify voltage and phase.
 - 2) Identify power source and circuit number. Include location when not within sight of equipment.
 - 2. Service Equipment:
 - a. Use identification nameplate to identify each service disconnecting means.
 - 3. Use voltage marker to identify highest voltage present for each piece of electrical equipment.
 - 4. Use identification nameplate to identify equipment utilizing series ratings, where permitted, in accordance with NFPA 70.
 - 5. Use identification nameplate to identify disconnect location for equipment with remote disconnecting means.
 - 6. Use identification label or handwritten text using indelible marker on inside of door at each fused switch to identify required NEMA fuse class and size.
 - 7. Use identification label to identify overcurrent protective devices for branch circuits serving fire alarm circuits. Identify with text "FIRE ALARM CIRCUIT".
 - 8. Use field-painted floor markings, floor marking tape, or warning labels to identify required equipment working clearances where indicated or where required by the authority having jurisdiction.
 - a. Field-Painted Floor Markings: Alternating black and white stripes, 3 inches wide, painted in accordance with Section 099123 and 099113.

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9. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70, including but not limited to the following.
 - a. Service equipment.
 - b. Industrial control panels.
 - c. Motor control centers.
 - d. Elevator control panels.
 - e. Industrial machinery.
- B. Identification for Conductors and Cables:
 1. Color Coding for Power Conductors 600 V and Less: Comply with Section 260519.
 2. Identification for Communications Conductors and Cables: Comply with Section 271005.
 3. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.
 4. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
 - a. At each source and load connection.
 - b. Within boxes when more than one circuit is present.
 5. Use wire and cable markers to identify connected grounding electrode system components for grounding electrode conductors.
 6. Use underground warning tape to identify direct buried cables.
- C. Identification for Devices:
 1. Use identification label to identify fire alarm system devices.
 - a. For devices concealed above suspended ceilings, provide additional identification on ceiling tile below device location.
 2. Use identification label or engraved wallplate to identify load controlled for wall-mounted control devices controlling loads that are not visible from the control location and for multiple wall-mounted control devices installed at one location.
- D. Identification for Luminaires:
 1. Use permanent red dot on luminaire frame to identify luminaires connected to emergency power system.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
 1. Materials:
 - a. Indoor Clean, Dry Locations: Use plastic nameplates.
 - b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.
 2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
 - a. Exception: Provide minimum thickness of 1/8 inch when any dimension is greater than 4 inches.
 3. Stainless Steel Nameplates: Minimum thickness of 1/32 inch; engraved or laser-etched text.

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4. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch; engraved or laser-etched text.
5. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.
- B. Identification Labels:
 1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 - a. Use only for indoor locations.
 2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
- C. Format for Equipment Identification:
 1. Minimum Size: 1 inch by 2.5 inches.
 2. Legend:
 - a. System designation where applicable:
 - 1) Emergency Power System: Identify with text "EMERGENCY".
 - 2) Fire Alarm System: Identify with text "FIRE ALARM".
 - b. Equipment designation or other approved description.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height:
 - a. System Designation: 1 inch.
 - b. Equipment Designation: 1/2 inch.
 - c. Exception: Provide minimum text height of 1 inch for equipment located more than 10 feet above floor or working platform.
 5. Color:
 - a. Normal Power System: White text on black background.
 - b. Emergency Power System: White text on red background.
 - c. Fire Alarm System: White text on red background.

2.03 WIRE AND CABLE MARKERS

- A. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.
- B. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.
- C. Legend: Power source and circuit number or other designation indicated.
- D. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
- E. Minimum Text Height: 1/8 inch.
- F. Color: Black text on white background unless otherwise indicated.

2.04 UNDERGROUND WARNING TAPE

- A. Materials: Use non-detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.
 1. Exception: Use foil-backed detectable type tape where required by serving utility or where directed by Owner.
- B. Non-detectable Type Tape: 6 inches wide, with minimum thickness of 4 mil.

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- C. Foil-backed Detectable Type Tape: 3 inches wide, with minimum thickness of 5 mil, unless otherwise required for proper detection.
- D. Legend: Type of service, continuously repeated over full length of tape.

2.05 WARNING SIGNS AND LABELS

- A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
- B. Warning Signs:
 - 1. Materials:
 - 2. Minimum Size: 7 by 10 inches unless otherwise indicated.
- C. Warning Labels:
 - 1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
 - a. Do not use labels designed to be completed using handwritten text.
 - 2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
 - 3. Minimum Size: 2 by 4 inches unless otherwise indicated.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
- C. Install underground warning tape above buried lines with one tape per trench at 3 inches below finished grade.

END OF SECTION 260553

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SECTION 260923 – LIGHTING CONTROL DEVICES- LUTRON

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PART 1 - GENERAL

1.01 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Include ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.

1.02 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications:
 - 1. Company with not less than ten years of experience manufacturing lighting controls, including products using wireless communication between devices.
 - 2. Registered to ISO 9001, including in-house engineering for product design activities.
 - 3. Provides factory direct technical support hotline available 24 hours per day, 7 days per week.
 - 4. Qualified to supply specified products and to honor claims against product presented in accordance with warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design Manufacturer: Lutron Electronics Company, Inc; www.lutron.com/sle.

2.02 LIGHTING CONTROL DEVICES - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled by Underwriters Laboratories Inc. (UL) as suitable for the purpose indicated.
- B. Unless specifically indicated to be excluded, provide all required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, programming, etc. as necessary for a complete operating system that provides the control intent indicated.
- C. Design lighting control equipment for 10 year operational life while operating continually at any temperature in an ambient temperature range of 32 degrees F to 104 degrees F and 90 percent non-condensing relative humidity.
- D. Electrostatic Discharge Tolerance: Design and test equipment to withstand electrostatic discharges without impairment when tested according to IEC 61000-4-2.
- E. Power Failure Recovery: When power is interrupted for periods up to 10 years and subsequently restored, lights to automatically return to same levels (dimmed setting, full on, or full off) as prior to power interruption.
- F. Wireless Devices:
 - 1. Capable of diagnosing system communications.
 - 2. Capable of having addresses automatically assigned to them.
 - 3. Receives signals from other wireless devices and provides feedback to user.
 - 4. Capable of determining which devices have been addressed.
 - 5. RF Frequency: 434 MHz; operate in FCC governed frequency spectrum for periodic operation; continuous transmission spectrum is not permitted.
 - 6. RF Range: 60 feet line-of-sight or 30 feet through typical construction materials between RF transmitting devices and compatible RF receiving devices.
 - 7. Electromagnetic Interference/Radio Frequency Interference (EMI/RFI) Limits: Comply with FCC requirements of 47 CFR 15, for Class B application.

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G. Device Finishes:

1. Standard Colors: Comply with NEMA WD 1 where applicable.
2. Color Variation in Same Product Family: Maximum delta E of 1, CIE L*a*b color units per ASTM E308.
3. Visible Parts: Exhibit ultraviolet color stability when tested with multiple actinic light sources as defined in ASTM D4674. Provide proof of testing upon request.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, except for mounting heights specified in those standards.
- B. Coordinate locations of outlet boxes provided under Section 260537 as required for installation of devices provided under this section.
- C. Where multiple devices are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
- D. Install products in accordance with manufacturer's instructions.
- E. Install permanent barrier between ganged devices when voltage between adjacent devices exceeds 300 V.
- F. Install wall dimmers to achieve full rating specified after derating for ganging as instructed by manufacturer.
- G. Lamp Burn-In: Operate lamps at full output for prescribed period per manufacturer's recommendations prior to use with any dimming controls. Replace lamps that fail prematurely due to improper lamp burn-in.
- H. Identify devices in accordance with Section 260553.

END OF SECTION 260923

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SECTION 262100 – LOW-VOLTAGE ELECTRICAL SERVICE ENTRANCE

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PART 1 - GENERAL

1.01 DEFINITIONS

- A. Service Point: The point of connection between the facilities of the serving utility and the premises wiring as defined in NFPA 70, and as designated by the Utility Company.

1.02 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Utility Company letter of availability for providing electrical service to project.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product. Include ratings, configurations, standard wiring diagrams, outline and support point dimensions, finishes, weights, service condition requirements, and installed features.

1.03 QUALITY ASSURANCE

- A. Comply with the following:
 - 1. IEEE C2 (National Electrical Safety Code).
 - 2. NFPA 70 (National Electrical Code).
 - 3. The requirements of the Utility Company.

PART 2 - PRODUCTS

2.01 ELECTRICAL SERVICE REQUIREMENTS

- A. Provide new electrical service consisting of all required conduits, conductors, equipment, metering provisions, supports, accessories, etc. as necessary for connection between Utility Company point of supply and service entrance equipment.
- B. Electrical Service Characteristics: As indicated on drawings.
- C. Division of Responsibility:
 - 1. Pad-Mounted Utility Transformers:
 - a. Transformer Vaults and Pads: Furnished and installed by Contractor per Utility Company requirements.
 - b. Transformers: Furnished and installed by Utility Company.
 - c. Transformer Grounding Provisions: Furnished and installed by Contractor per Utility Company requirements.
 - d. Primary:
 - 1) Trenching and Backfilling: Provided by Contractor.
 - 2) Conduits: Furnished and installed by Contractor.
 - 3) Conductors: Furnished and installed by Utility Company.
 - e. Secondary:
 - 1) Trenching and Backfilling: Provided by Contractor.
 - 2) Conduits: Furnished and installed by Contractor.
 - 3) Conductors: Furnished and installed by Contractor (Service Point at transformer).
 - 2. Terminations at Service Point: Provided by Utility Company.
 - 3. Metering Provisions:
 - a. Meter Bases: Furnished and installed by Contractor per Utility Company requirements.
 - b. Metering Transformer Cabinets: Furnished and installed by Contractor per Utility Company requirements.

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- c. Wiring Between Metering Transformers and Meters: Furnished and installed by Utility Company.
- D. Products Furnished by Contractor: Comply with Utility Company requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions and Utility Company requirements.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Arrange equipment to provide minimum clearances and required maintenance access.
- D. Provide required support and attachment components in accordance with Section 260529.
- E. Provide grounding and bonding for service entrance equipment in accordance with Section 260526.
- F. Identify service entrance equipment, including main service disconnect(s) in accordance with Section 260553.

END OF SECTION 262100

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SECTION 262416 – PANELBOARDS

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

1.01 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.

1.02 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 - PRODUCTS

2.01 PANELBOARDS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Short Circuit Current Rating:
 - 1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
- C. Panelboards Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.
- D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- E. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 - 1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
 - 2. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- F. Conductor Terminations: Suitable for use with the conductors to be installed.
- G. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - 2. Boxes: Galvanized steel unless otherwise indicated.
 - a. Provide wiring gutters sized to accommodate the conductors to be installed.
- H. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.
- I. Multi-Section Panelboards: Provide enclosures of the same height, with feed-through lugs or sub-feed lugs and feeders as indicated or as required to interconnect sections.
- J. Load centers are not acceptable.
- K. Provide the following features and accessories where indicated or where required to complete installation:
 - 1. Feed-through lugs.

2.02 POWER DISTRIBUTION PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Conductor Terminations:

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1. Main and Neutral Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
2. Main and Neutral Lug Type: Mechanical.
- C. Bussing:
 1. Phase and Neutral Bus Material: Aluminum.
 2. Ground Bus Material: Aluminum.
- D. Circuit Breakers:
 1. Provide bolt-on type or plug-in type secured with locking mechanical restraints.
- E. Enclosures:
 1. Provide surface-mounted enclosures unless otherwise indicated.
 2. Fronts: Provide lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
 3. Provide clear plastic circuit directory holder mounted on inside of door.

2.03 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers:
 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
 2. Interrupting Capacity:
 - a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
 - 1) 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
 3. Conductor Terminations:
 - a. Provide mechanical lugs unless otherwise indicated.
 - b. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
 4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
 5. Electronic Trip Circuit Breakers: Furnish solid state, microprocessor-based, true rms sensing trip units.
 6. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
 7. Provide the following circuit breaker types where indicated:
 - a. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.
 - b. Ground Fault Equipment Protection Circuit Breakers: Designed to trip at 30 mA for protection of equipment.
 - c. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Combination type listed as complying with UL 1699.
 8. Provide listed switching duty rated circuit breakers with SWD marking for all branch circuits serving fluorescent lighting.
 9. Provide listed high intensity discharge lighting rated circuit breakers with HID marking for all branch circuits serving HID lighting.
 10. Do not use tandem circuit breakers.
 11. Do not use handle ties in lieu of multi-pole circuit breakers.

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12. Provide multi-pole circuit breakers for multi-wire branch circuits as required by NFPA 70.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install panelboards securely, in a neat and workmanlike manner in accordance with NECA 1 (general workmanship), NECA 407 (panelboards), and NEMA PB 1.1.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required supports in accordance with Section 260529.
- E. Install panelboards plumb.
- F. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.
- G. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches above the floor or working platform.
- H. Provide minimum of six spare 1 inch trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling and below floor.
- I. Provide grounding and bonding in accordance with Section 260526.
 1. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on isolated/insulated ground bus.
- J. Install all field-installed branch devices, components, and accessories.
- K. Provide filler plates to cover unused spaces in panelboards.
- L. Provide circuit breaker lock-on devices to prevent unauthorized personnel from de-energizing essential loads where indicated. Also provide for the following:
 1. Emergency and night lighting circuits.
 2. Fire detection and alarm circuits.
 3. Communications equipment circuits.
 4. Intrusion detection and access control system circuits.

END OF SECTION 262416

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PART 1 - GENERAL**1.01 SECTION INCLUDES**

- A. Electrical connections to equipment.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables.
- B. Section 260500 - Basic Electrical Materials and Methods.
- C. Section 260534 - Conduit.
- D. Section 260537 - Boxes.
- E. Section 262726 - Wiring Devices.
- F. Section 262816.16 - Enclosed Switches.

1.03 REFERENCE STANDARDS

- A. NEMA WD 1 - General Color Requirements for Wiring Devices.
- B. NEMA WD 6 - Wiring Devices - Dimensional Specifications.
- C. NFPA 70 - National Electrical Code.

1.04 SUBMITTALS

- A. See Section 260500 - Basic Electrical Materials and Methods, for submittal procedures.
- B. Maintain one copy of each document on site.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
 - 1. Colors: Conform to NEMA WD 1.
 - 2. Cord Construction: NFPA 70, Type SJO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
 - 3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.
 - 4. Or equal performance.
- B. Disconnect Switches: As specified in Section 262816.16 and in individual equipment sections.
- C. Wiring Devices: As specified in Section 262726.
- D. Flexible Conduit: As specified in Section 260534.
- E. Wire and Cable: As specified in Section 260519.
- F. Boxes: As specified in Section 260537.

PART 3 - EXECUTION**3.01 ELECTRICAL CONNECTIONS**

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION 262717

PART 1 - GENERAL**1.01 QUALITY ASSURANCE**

- A. Conform to requirements of NFPA 70.
- B. Products: Listed, classified, and labeled as suitable for the purpose intended.

PART 2 - PRODUCTS**2.01 WIRING DEVICE APPLICATIONS**

- A. Provide wiring devices suitable for intended use and with ratings adequate for load served.
- B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.
- C. Provide weather resistant GFCI receptacles with specified weatherproof covers for receptacles installed outdoors or in damp or wet locations.
- D. Provide tamper resistant receptacles for receptacles installed in dwelling units.
- E. Provide GFCI protection for receptacles installed within 6 feet of sinks.
- F. Provide GFCI protection for receptacles installed in kitchens.
- G. Provide isolated ground receptacles for receptacles serving computers and electronic cash registers.
- H. For flush floor service fittings, use tile rings for installations in tile floors.

2.02 WIRING DEVICE FINISHES

- A. Provide wiring device finishes as described below unless otherwise indicated.
- B. Wiring Devices Installed in Unfinished Spaces: Gray with galvanized steel wall plate.

2.03 WALL SWITCHES

- A. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.
- B. Standard Wall Switches: Industrial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.
- C. Locking Wall Switches: Industrial specification grade, 20 A, 120/277 V with lever type keyed switch actuator and maintained contacts; switches keyed alike; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.

2.04 WALL DIMMERS

- A. Wall Dimmers - General Requirements: Solid-state with continuous full-range even control following square law dimming curve, integral radio frequency interference filtering, power failure preset memory, air gap switch accessible without removing wall plate, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 1472; types and ratings suitable for load controlled as indicated on the drawings.
- B. Control: Slide control type with separate on/off switch.

SECTION 262726 – WIRING DEVICES

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2.05 RECEPTACLES

- A. Manufacturers:
- B. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
 - 2. NEMA configurations specified are according to NEMA WD 6.
- C. GFCI Receptacles:
 - 1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.
 - 2. Standard GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style.
 - 3. Weather Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations.
 - 4. Tamper Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as tamper resistant type.
 - 5. Tamper Resistant and Weather Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as tamper resistant type and as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations.

2.06 WALL PLATES

- A. Manufacturers:
 - 1. Source Limitations: Where wall controls are furnished as part of lighting control system, provide accessory matching receptacles and wallplates by the same manufacturer in locations indicated.
- B. Wall Plates: Comply with UL 514D.
 - 1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
 - 2. Screws: Metal with slotted heads finished to match wall plate finish.
- C. Nylon Wall Plates: Smooth finish, high-impact thermoplastic.
- D. Galvanized Steel Wall Plates: Rounded corners and edges, with corrosion resistant screws.
- E. Weatherproof Covers for Damp Locations: Gasketed, cast aluminum, with self-closing hinged cover and corrosion-resistant screws; listed as suitable for use in wet locations with cover closed.
- F. Weatherproof Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected and identified as extra-duty type.

2.07 FLOOR BOX SERVICE FITTINGS

- A. Description: Service fittings compatible with floor boxes provided under Section 260537 with components, adapters, and trims required for complete installation.

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- B. Flush Floor Service Fittings:
 - 1. Single Service Flush Convenience Receptacles:
 - a. Cover: Rectangular.
 - b. Configuration: One standard convenience duplex receptacle(s) with duplex flap opening(s).
 - 2. Single Service Flush Communications Outlets:
 - a. Cover: Rectangular.
 - 3. Dual Service Flush Combination Outlets:
 - a. Cover: Rectangular.
 - b. Configuration:
 - 1) Power: One standard convenience duplex receptacle(s) with duplex flap opening(s).
 - 4. Accessories:
 - a. Tile Rings: Finish to match covers; configuration as required to accommodate specified covers.
 - b. Carpet Flanges: Finish to match covers; configuration as required to accommodate specified covers.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 260537 as required for installation of wiring devices provided under this section.
 - 1. Mounting Heights: Unless otherwise indicated, as follows:
 - a. Wall Switches: 48 inches above finished floor.
 - b. Wall Dimmers: 48 inches above finished floor.
 - c. Receptacles: 18 inches above finished floor or 6 inches above counter.
- C. Install wiring devices in accordance with manufacturer's instructions.
- D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- E. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.
- F. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- G. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.
- H. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- I. Install wall switches with OFF position down.
- J. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.
- K. Do not share neutral conductor on branch circuits utilizing wall dimmers.

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SECTION 262726 – WIRING DEVICES

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- L. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
- M. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- N. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

END OF SECTION 262726

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SECTION 262813 – FUSES

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PART 1 - GENERAL

1.01 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 - PRODUCTS

2.01 FUSES

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless specifically indicated to be excluded, provide fuses for all fusible equipment as required for a complete operating system.
- C. Provide fuses of the same type, rating, and manufacturer within the same switch.
- D. Comply with UL 248-1.
- E. Unless otherwise indicated, provide cartridge type fuses complying with NEMA FU 1, Class and ratings as indicated.
- F. Voltage Rating: Suitable for circuit voltage.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Do not install fuses until circuits are ready to be energized.
- B. Install fuses with label oriented such that manufacturer, type, and size are easily read.

END OF SECTION 262813

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SECTION 262818 – ENCLOSED SWITCHES

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

1.01 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.

1.02 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 - PRODUCTS

2.01 ENCLOSED SAFETY SWITCHES

- A. Description: Quick-make, quick-break enclosed safety switches listed and labeled as complying with UL 98; heavy duty; ratings, configurations, and features as indicated on the drawings.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet.
 - 2. Ambient Temperature: Between -22 degrees F and 104 degrees F.
- D. Horsepower Rating: Suitable for connected load.
- E. Voltage Rating: Suitable for circuit voltage.
- F. Short Circuit Current Rating:
 - 1. Provide enclosed safety switches, when protected by the fuses or supply side overcurrent protective devices to be installed, with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
- G. Enclosed Safety Switches Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.
- H. Provide with switch blade contact position that is visible when the cover is open.
- I. Conductor Terminations: Suitable for use with the conductors to be installed.
- J. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.
- K. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
- L. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.
- M. Heavy Duty Switches:
 - 1. Comply with NEMA KS 1.
 - 2. Conductor Terminations:
 - a. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
 - 3. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.

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SECTION 262818 – ENCLOSED SWITCHES

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PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required supports in accordance with Section 260529.
- E. Install enclosed switches plumb.
- F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.
- G. Provide grounding and bonding in accordance with Section 260526.

END OF SECTION 262818

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PART 2 PRODUCTS

2.01 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- G. Recessed Luminaires:
 - 1. Ceiling Compatibility: Comply with NEMA LE 4.
- H. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

2.02 EMERGENCY LIGHTING UNITS

- A. Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
- B. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
- C. Battery:
 - 1. Size battery to supply all connected lamps, including emergency remote heads where indicated.
- D. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
- E. Provide low-voltage disconnect to prevent battery damage from deep discharge.

2.03 EXIT SIGNS

- A. Description: Internally illuminated exit signs with LEDs unless otherwise indicated; complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
 - 1. Number of Faces: Single or double as indicated or as required for the installed location.
 - 2. Directional Arrows: As indicated or as required for the installed location.

2.04 BALLASTS AND DRIVERS

- A. Ballasts/Drivers - General Requirements:

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1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.
- B. Dimmable LED Drivers:
 1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
 2. Control Compatibility: Fully compatible with the dimming controls to be installed.

2.05 LAMPS

- A. Lamps - General Requirements:
 1. Unless explicitly excluded, provide new, compatible, operable lamps in each luminaire.
 2. Verify compatibility of specified lamps with luminaires to be installed. Where lamps are not specified, provide lamps per luminaire manufacturer's recommendations.
 3. Minimum Efficiency: Provide lamps complying with all current applicable federal and state lamp efficiency standards.
 4. Color Temperature Consistency: Unless otherwise indicated, for each type of lamp furnish products which are consistent in perceived color temperature. Replace lamps that are determined by the Engineer to be inconsistent in perceived color temperature.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 260537 as required for installation of luminaires provided under this section.
- B. Install products according to manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship), NECA 500 (commercial lighting), and NECA 502 (industrial lighting).
- D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- E. Suspended Ceiling Mounted Luminaires:
 1. Do not use ceiling tiles to bear weight of luminaires.
 2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
 3. Secure surface-mounted and recessed luminaires to ceiling support channels or framing members or to building structure.
 4. Secure pendant-mounted luminaires to building structure.
 5. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
 6. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
- F. Suspended Luminaires:
 1. Unless otherwise indicated, specified mounting heights are to bottom of luminaire.
 2. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
 3. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet nominal length, with no more than 4 feet between supports.

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- G. Install accessories furnished with each luminaire.
- H. Bond products and metal accessories to branch circuit equipment grounding conductor.
- I. Emergency Lighting Units:
 - 1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
- J. Exit Signs:
 - 1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
- K. Identify luminaires connected to emergency power system in accordance with Section 260553.
- L. Install lamps in each luminaire.
- M. Lamp Burn-In: Operate lamps at full output for prescribed period per manufacturer's recommendations prior to use with any dimming controls. Replace lamps that fail prematurely due to improper lamp burn-in.

END OF SECTION 265100

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SECTION 265150 – GENERAL LIGHTING

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Interior luminaires.
 - 2. Lamps.
 - 3. Ballasts
 - 4. Accessories.

1.02 RELATED SECTIONS

- A. See Section 260500 - Basic Electrical Materials and Methods.

1.03 SUBMITTALS

- A. Product Data: Submit dimensions, ratings, and performance data for each luminaire and lighting unit.

1.04 CLOSEOUT SUBMITTALS

- A. Project Record Documents: See Section 260500
 - 1. Record actual location of fixtures.

1.05 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed by Underwriters Laboratories, Inc. or other testing firm acceptable to authority having jurisdiction.
- C. Conform to applicable code for exit and exitway lighting equipment. Certify inspection and approval from authority having jurisdiction.

PART 2 - PRODUCTS

2.01 LUMINAIRES

- A. Product Description: Complete luminaire assemblies, with features, options, and accessories as indicated on Drawings.
- B. Accessories: Provide for mounting and operation of each luminaire.
- C. Thermal Protection: Provide thermal protection devices to meet NFPA 70 requirements.

2.02 FLUORESCENT BALLASTS

- A. Product Description: Electronic ballast, suitable for lamps specified, with voltage to match luminaire voltage.

2.03 INCANDESCENT LAMPS

- A. Manufacturers:
 - 1. General Electric Corp.
 - 2. Philips Electronic North America
 - 3. Sylvania-Osram

2.04 FLUORESCENT LAMPS

- A. Manufacturers:
 - 1. General Electric Corp.
 - 2. Philips Electronic North America
 - 3. Sylvania-Osram

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2.05 FIXTURES

- A. All fixtures, ballasts, and supports shall be quiet in operation. Louvers, shields, reflectors and all sections of the fixture shall be securely attached in position.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install suspended luminaires using pendants supported from swivel hangers.
- B. Locate recessed ceiling luminaires as indicated on Drawings.
- C. Install surface mounted ceiling luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.
- D. Install lamps in luminaires and lampholders.
- E. Support luminaires directly from building structure. Provide auxiliary support from structural members. T-grid ceilings shall not be used for support of fixtures.
- F. Install recessed luminaires to permit removal from below. Use plaster frames or grid clips.

3.02 ADJUSTING AND CLEANING

- A. Aim and align luminaires and lampholders as indicated or directed.
- B. Clean lenses and diffusers at completion of work.
- C. Clean paint splatters, dirt, and debris from installed luminaires.
- D. Touch up luminaire and pole finish at completion of work.
- E. Relamp luminaires, lighting units, and exit signs with failed lamps at Substantial Completion.

END OF SECTION 265150

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SECTION 312311 – EARTHWORK FOR BUILDING CONSTRUCTION

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

WORK INCLUDED

The work covered by this Section consists of furnishing all plant, labor, equipment, appurtenances and material in performing all operations, hauling, placing, spreading, watering, processing, compacting and shaping earth sections, within the building limits, complete in place in accordance with the Project Manual and Drawings.

RELATED WORK ELSEWHERE

Clearing - Section 31 10 00

Under-Slab Vapor Retarder – Section 07 26 00

General foundation notes on Drawings. In case of conflict or omission, the general foundation notes shall govern.

SUBSURFACE SOIL DATA

Subsurface soil investigations have been made and the results are available for examination by the Contractor. This is not a warranty of conditions, the Contractor is expected to examine the site and determine for himself the character of materials to be encountered.

No additional allowance will be made for rock removal, site clearing and grading, filling, compaction, disposal, or removal of any unclassified materials.

REFERENCES

ASTM International

- | | | |
|----|----------------|--|
| 1. | ASTM D 1556-07 | Standard Test Method for Density of Soil in Place by the Sand-Cone Method |
| 2. | ASTM D 1557-09 | Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ³ (2,700 kN-m/m ³)) |
| 3. | ASTM D 4318-10 | Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils |

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- | | | |
|----|----------------|---|
| 4. | ASTM D 6938-10 | Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth) |
|----|----------------|---|

1.1 SUBMITTALS

- A. Submit copies of materials certificates and test results for materials in accordance with type of tests, frequencies and remarks as outlined in the sampling and testing schedule.

1.2 TESTING AND INSPECTION

- A. General: The Owner shall employ the services of a registered, licensed Geotechnical Engineer to observe all controlled earthwork soil testing. The testing laboratory shall provide continuous on-site observation by experienced personnel during construction of fill material. The Contractor shall notify the testing laboratory at least two working days in advance of any field operations of controlled earthwork, or of any resumption of operations after stoppages.
- B. Report of Field Density Tests
1. The Geotechnical Engineer shall submit, daily, the results of field density tests required by these specifications.
- C. Costs of Tests and Inspection
1. The cost of testing, inspecting and engineering, as specified in this section of the specifications, shall be borne by the Owner.
- D. Lines and Grades: Alignment and grade of all elements shall be made on true tangents and curves. Grades shall conform to the elevations indicated on Drawings, with minor adjustments, to provide a smooth approach at building lines, at connections to existing paving and to provide proper drainage. Correct irregularities at no cost to the Owner.

1.3 WEATHER LIMITATIONS

- A. Controlled fill shall not be constructed when the atmospheric temperature is below 35 degrees F. When the temperature falls below 35 degrees, it shall be the responsibility of the Contractor to protect all areas of completed work against any detrimental effects of ground freezing by methods approved by the testing laboratory. Any areas that are damaged by freezing shall be reconditioned, reshaped, and compacted by the Contractor in conformance with the requirements of this specification without additional cost to the Owner.

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PART 1 - PRODUCTS

2.1 STRUCTURAL FILL MATERIAL

- A. Material shall consist of soils that conform to the following physical characteristics:

Sieve Size	Percent Passing
Sq. Openings	By Weight
6 inch	100
3 inch	90 - 100
No. 4	50 - 100
No. 200	10 - 50

- B. The plasticity index of the material to be used for fill or backfill, as determined in accordance with ASTM D 4318 shall not exceed 10.

PART 2 - EXECUTION

3.1 PREPARATION

- A. Clearing and Grubbing: Prior to placing structural fill all borrow areas and areas to receive structural fill shall be stripped of vegetation and deleterious materials. Strippings shall be hauled offsite or stockpiled for subsequent use in landscaped areas or non-structural fill areas as designated by the Owner or his representative and approved by the Geotechnical Engineer.

3.2 CONSTRUCTION AREA TREATMENT

- A. Site Preparation - Fill Areas: Prior to placing structural fill the areas to be filled shall be scarified to a depth of eight inches and moisture conditioned as described below. The area to be filled shall then be compacted to a minimum of 95 percent of maximum density as determined in accordance with ASTM D 1557. Any soft or "spongy" areas shall be removed as directed by the Geotechnical Engineer and replaced with structural fill as described herein.
- B. Site Preparation - Cut Areas: Following excavation to rough grade all building and pavement areas shall be scarified to a depth of eight inches and moisture conditioned as described below. All building and paved areas shall be compacted to a minimum of 95 percent of maximum density as determined by ASTM D 1557.

3.3 EQUIPMENT AND METHODS

- A. In areas not accessible to heavy equipment, distribute by and compact with hand operated vibratory compactors.

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3.4 BORROW

- A. The Contractor shall provide sufficient material for fill to the lines, elevations and cross sections as shown on the contract drawings from borrow areas.
- B. The Contractor shall obtain from the Owners of said borrow areas the right to excavate material, shall pay all royalties and other charges involved, and shall pay all expenses in developing the source including the cost of right-of-way required for hauling the material.

3.5 COMPACTION

- A. Fill shall be spread in layers not exceeding 8 inches, watered as necessary, and compacted. Moisture content at time of compaction shall plus/minus 2 percent of optimum moisture. A density of not less than 95 percent of maximum dry density shall be obtained within the building pads.
- B. Optimum moisture content and maximum dry density for each soil type used shall be determined in accordance with ASTM D 1557.
- C. Compaction of the fill shall be by mechanical means only. Where vibratory compaction equipment is used, it shall be the Contractor's responsibility to ensure that the vibrations do not damage nearby buildings or other adjacent property. Where vibratory compaction is not possible, pneumatic rolling equipment shall be used.

MATERIAL	MINIMUM PERCENT COMPACTION	
Structural & granular fill in construction area	95	
Subgrade below structural fill	95	
Structural fill under exterior walls		95
Miscellaneous backfill	90	

3.6 MOISTURE CONTROL

- A. The material, while being compacted, shall be within the moisture range of 2 percent below to 2 percent above optimum, well distributed throughout the layer.

3.7 DENSITY REQUIREMENTS

- A. Density of undisturbed soils, in-place fill and backfill shall be determined in accordance with the procedures of ASTM D 1556 or ASTM D 6938. If tests indicate that the density of in-place soil is less than required, the material shall be scarified, moistened or dried as necessary to obtain proper moisture content and recompacted as necessary to achieve the proper densities. Sufficient density tests shall be made and reports submitted by the Testing Laboratory indicating all cut and fill areas were compacted and graded in accordance with the requirements.

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3.8 SLOPE PROTECTION & DRAINAGE

- A. Berming and grading shall be done as may be necessary to prevent surface water from flowing into and out of the construction area. Any water accumulating therein shall be removed by pumping or by other methods.

3.9 SOIL EROSION PROTECTION

- A. The Contractor shall ensure that no soil erodes or blows from the site into public right-of-way or onto private property.
- B. The Contractor shall promptly clean up any material which erodes or blows into the public right-of-way or onto private property.

3.10 PRESERVATION OF PROPERTY

- A. Provide temporary fences, barricades, coverings, or other protections to preserve existing items indicated to remain and to prevent injury or damage to persons or property. Apply protections to adjacent properties as required.
- B. Restore damaged work to condition existing prior to start of work, unless otherwise directed.

3.11 EXISTING UTILITIES

- A. The Contractor shall verify the location of any utility lines, pipelines, or underground utility lines in or near the area of the work in advance of and during Earthwork. The Contractor is fully responsible for any and all damage caused by failure to locate, identify and preserve any and all existing utilities, pipelines and underground utility lines. Repair damaged utilities to the satisfaction of the utility owner at no expense to the Owner.
- B. Should uncharted or incorrectly charted piping or other utilities be encountered during grading, consult the Architect immediately for directions as to procedures.
- C. Cooperate with the Owner and public or private utility companies in keeping service and facilities in operation.

3.12 WASTE

- A. Dispose of all waste off Owner's property.
- B. Burning of waste will not be permitted.

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3.13 AIR POLLUTION

- A. Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt air pollution. Comply with governing regulations pertaining to environmental protection.

SAMPLING AND TESTING SCHEDULE FOR EARTHWORK			
FIELD QUALITY CONTROL			
MATERIAL	TEST FOR	FREQUENCY	REMARKS
NATURAL GROUND	Compaction in accordance with ASTM D 1556 or ASTM D 6938	1 per 500 square yards of surface	Conduct a minimum of 2 tests on each section.
EMBANKMENT AND/OR SUBGRADE	Soil Conditions Moisture-Density in accordance with ASTM D 1557	Test 1 per soil classification	
	Compaction control in accordance with ASTM D 1556 or ASTM D 6938	1 per each lift every 300 square yards of surface	Immediately after placing, Conduct a minimum of 2 tests per section
		1 per each lift for each 100 cubic yards of fill	

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SECTION 329113 – SOIL PREPARATION

HWY 14 SENIOR/COMMUNITY CENTER
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PART 1 - GENERAL

SUMMARY

Work to be done includes all labor, materials, transportation, equipment and services required to complete the soil preparation. Execute labor to achieve soil preparation, complete, as shown and as specified planting as indicated on the construction drawings, and as specified herein. Work includes, but is not necessarily limited to the following items: soil amendments, and mulches.

RELATED WORK

The following items of related work are specified and included in other sections of the specifications:

- A. Division 32, Section 329300: Native Grass Seeding
- B. Division 32, Section 329400: Planting

REFERENCES

The following standards will apply to the work of this Section:

- A. MSA: Methods of Soil Analysis
- B. ASTM: American Society for Testing and Materials

SUBMITTALS

At least thirty (30) days prior to ordering any materials, the Contractor shall submit three (3) sets of the items specified below to the Owner for review and approval. No material shall be ordered, delivered or any work preceded in the field until the required submittals have been reviewed in its entirety and stamped approved. Provide samples and information for the following.

- B. Testing Results:
 - 1. Imported Soils
 - 2. Soil amendments
- C. Certifications:
 - 1. Certify strict compliance with accepted soil mixes and amendments, including rate of application.

QUALITY ASSURANCE

- A. Testing Agency: Approved by the Owner and paid for by the Contractor.
- B. General: Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in air or that clods will not break readily. Apply water, if necessary, to bring soil to an optimum moisture content for tilling and planting.
- C. The work of this Section shall be performed by a Contracting firm that has successfully installed work of a similar quality, schedule requirement, and construction detailing with a minimum of five (5) years experience.
- D. The Contractor shall examine all areas of work and surfaces before proceeding with any work of this section. Any defects such as incorrect grading and inadequate drainage shall be reported to the Owner and Landscape Architect prior to beginning work.

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- E. The Contractor shall secure Blue Stakes permit number for the project to certify notification of all utilities. The Contractor shall not commence work until Blue Stakes has responded.
- F. It is the intent of this specification that all material herein specified and shown on the construction documents shall be of the highest quality available and meeting the requirements specified.
- G. All work shall be performed in accordance with the best standards of practice relating to the trade.
- H. The Contractor shall comply with all rules, licensing, regulations, laws and ordinance of the City, County and State, and other authorities having jurisdiction over this project site.

DEFINITIONS

- A. Existing soil: Area of undisturbed native soil where no rough grading is to be done. No soil is to be placed. Only surface cultivation and soil amending are included in this Section. Stockpile 2"-4" native topsoil for re-application in non-turf areas. See Drawings.
- B. Subgrade: Soil level resulting from the rough grading work under another Section. Cultivation of subgrade areas prior to amending is included in this section.
- C. Imported Topsoil: Imported soil stockpiled for spreading over prepared subgrade. Soil imported and stockpiled under this Section, shall be spread and amended as work under this Section.
- D. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.

SUBMITTALS

- A. Soils Test Analysis Reports: Provide soils tests analysis of imported soils to be used in planting areas. Soil amendments and additives shall be adjusted to the results of the soils test as directed by the Owner.

PART 2 - PRODUCTS

MATERIALS

- A. Imported Topsoil: Soil that is transported to Project site for use.
 - 1. Quantity: The approximate quantity of imported soil will not be known until demolition and rough grading have been completed under earthwork.
 - 2. Composition: Fertile, friable, well-drained soil, of uniform quality, free of stones over 1 in. diameter, sticks, oils, chemicals, plaster, concrete and any other materials deleterious to healthy plant growth.
 - 3. Analysis: Obtain an agricultural suitability analysis of the proposed soil from an accepted, accredited Testing Agency at Contractor's cost.

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4. Test Results: Request Testing Agency to send one (1) copy of test results direct to the Owner and one (1) copy to the Contractor. Imported soil shall be amended per soils analysis report.

COMPOST MATERIAL

1. Screened compost. Apply even 4" depth layer of compost and till into top 12" of existing soil.
2. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:
 - i. Feedstock: Limited to leaves waste.
 - ii. Reaction: pH of 5.5 to 7
 - iii. Soluble-Salt Concentration: Less than 4 dS/m.
 - iv. Moisture Content: 35 to 55 percent by weight.
 - v. Organic-Matter Content: 50 to 60 percent of dry weight.
 - vi. Particle Size: Minimum of 98 percent passing through a 1-inch (25-mm) sieve.

PART 3 - EXECUTION

SOIL MOISTURE CONTENT

- A. Range: Maintain within 2 percent above or below optimum moisture content during the work.

CLEAR AND CULTIVATION

- A. Cultivation of Subgrade:
 1. Verification:
 - a. Verify that subgrades for installation of soil have been established under rough grading. Do not spread soil prior to acceptance of subgrade work.
 - b. Depth: Verify that subgrades are within required subgrades.
 2. Cultivation: rip or cultivate subgrade in planting areas to a depth of six (6) inches immediately prior to spreading imported amended soils.

SPREADING OF IMPORTED TOPSOIL

- A. General: spread amended imported soil over accepted subgrade prior to incorporating amendments.

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SECTION 329113 – SOIL PREPARATION

HWY 14 SENIOR/COMMUNITY CENTER
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- B. Restrictions: do not commence spreading of imported topsoil prior to acceptance of subsoil cultivation above. Do not place soil under muddy or frozen conditions.
- C. Soil depth: refer to finish grade and planting details per the drawings.

SOIL AMENDMENT

- A. Amending of Soil: Follow recommendations of soil tests
 - 1. Preparation: Do not commence amending of imported soil prior to acceptance of final subgrades. Do not work soils under muddy or frozen conditions.
 - 2. Soil Amendments: Incorporate by tilling four inches (4) of compost into the top twelve (12) inches of soil in all planting areas.

FIELD QUALITY CONTROL

- A. Tests: Right is reserved to take samples of soil mixes prepared soil for testing for conformity to Specifications.
- B. Rejected Materials: Remove off site at Contractor's cost. Pay cost of testing of materials, not meeting Specifications

END OF SECTION 329113

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SECTION 329300 – NATIVE SEEDING

HWY 14 SENIOR/COMMUNITY CENTER
CERRILLOS, NEW MEXICO

PART 1 - GENERAL

RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

SUMMARY

- A. Prepare all areas indicated on the Drawings for grass seeding according to the specifications and drawings contained in the Contract Documents, including: furnishing and installing all seed, organic soil amendments and related maintenance.
- B. Related Work Specified Elsewhere:
 - 1. Division 32, Section 329113: Soil Preparation
 - 2. Division 32, Section 329400: Planting

QUALITY ASSURANCE

- A. Contractor Qualifications: All work specified herein shall be performed by a licensed landscape contractor experienced with the type and scale of work required and having equipment and personnel adequate to perform the work satisfactorily.

APPLICABLE STANDARDS

- A. All grass seed shall be certified by state of origin.

SUBMITTALS

- A. Product Data:
 - 1. Proposed source of all native grass seed, which shall indicate the location from which the seed was harvested, prior to ordering seed.
 - 2. Submit type and source of soil amendment and fertilizer for approval prior to ordering soil amendment.
- B. Seed Tags: Seed bag tags and weights per bag and copies of invoices identified by project name.

PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Keep seeds in dry storage away from contaminant.

JOB CONDITIONS

- A. Sequencing, Scheduling: Schedule to seed after installation and approval of the complete irrigation system and soil preparation in the area.

WARRANTY

- A. Warranty seeded areas through specified construction period.
- B. Where native grass is installed in areas without an irrigation system, no warranty shall be required after the date of final acceptance of all the contract work.

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SECTION 329300 – NATIVE SEEDING

HWY 14 SENIOR/COMMUNITY CENTER
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PART 2 - MATERIALS

SEED MIX

- A. Contractor shall furnish certification, showing origin of all seed and pure live seed (P.L.S.) content as determined by a certified authority. Pure live seed shall be the product of percent purity times percent germination. Each bag of seed shall be tagged and sealed by the seed dealer in accordance with the State Department of Agriculture or other local certification authority within the state of origin. The tag or label shall indicate analysis of seed and date of analysis, which shall not be more than 9 months prior to delivery date. Seed may be premixed by the seed dealer and appropriate data indicated on the bag label for each variety.
- B. Seed Mixes: Where specified on plans, the seed mixes shall be as follows:

Native Grass Blend Seeding:
Custom Mix from Curtis & Curtis
TBD
Rate: TBD

PART 3 - EXECUTION

PREPARATION

- A. Preparation of Subgrade: Clear existing soil free of roots, plants, sod, stones, clay lumps and other extraneous materials harmful or toxic to plant growth.
- B. Preparation for Seeding Areas:
 - 1. The extent of seed bed preparation shall not exceed the area on which the entire seeding/plugging operation can be accomplished to such prepared bed within a 24 hour period, unless otherwise directed by the Landscape Architect.

OBSERVATION AND ACCEPTANCE

- A. When work is completed, including maintenance, the Landscape Architect will, upon request, make an observation to determine acceptability.
- B. When observed work does not comply with requirements, re-seed rejected work and continue specified maintenance until re-observed by Landscape Architect and found to be acceptable.

END OF SECTION 329300

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PART 1 - GENERAL

RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specifications sections, apply to work of this section.

SUMMARY

- A. The work of this section includes furnishing all trees, shrubs and other materials necessary to complete the landscape planting in accordance with the specifications and drawings contained in the Contract Documents. This shall include all labor, equipment and performance of operations including planting, mulching, fertilizing, watering, cleanup of planting areas and other related work as specified herein.
- B. Related Work Specified Elsewhere:
 - 1. Division 32, Section 329300 – Native Grass Seeding

REFERENCE STANDARDS

- A. American Standards for Nursery Stock (ANSI A 300,) American Association of Nurserymen, Washington, D.C.
- B. ANSI A 300, ANSI Z 133.1 and ANSI Z60.1 - 2004
- C. Hortus III, L.H. Bailey Hortorium and Staff, MacMillan Co., New York, 1976.
- D. Manual of Woody Landscape Plants, M.A. Dirr, Stipes Publishing Co., Champaign, Illinois, 1995, Standardized Plant Names, Second Edition
- E. MSMT603 New Mexico Standard Method of Tests (SHA).

QUALITY ASSURANCE

- A. Contractor Qualifications: All work specified herein shall be performed by a landscape contractor with a minimum of five (5) years of experienced with the type and scale of work required and having equipment and personnel adequate to perform the work satisfactorily.
- B. Source Quality Control:
 - 1. Compliance with Laws. All plant materials shall comply with State and Federal Laws, with respect to inspection for disease infestation.
 - 2. Plant Quality Standards: All plant material shall have been grown or dug and burlapped meet to standards set by American Association of Nurserymen and ANSI A 300.
 - 3. Tagging of Trees. The Contractor shall submit to the Landscape Architect, at least one week in advance of tagging date, an itemized list of trees along with a notice as to where and when the nursery inspection of trees shall may be made. The accepted trees will be tagged by the Landscape Architect and Owner for delivery to the site.
 - 4. Plant Inspection: Inspection of all plant materials will be made for size, vigor, representativeness of species and variety, injury, condition of ball and roots,

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or latent defects. Inspection at delivery does not preclude the possibility of rejection of material after installation.

5. Substitutions. Substitutions of any plant materials requires the written approval of the Landscape Architect prior to ordering plants. Requests for substitutions must be submitted with any cost or quantity adjustments for approval.
6. Analysis and Standards: All packaged standard products shall have manufacturer's certified analysis. For other materials, provide analysis if required in these specification. Analysis is to be by recognized laboratory and made in accordance with methods established by the Association of Official Agricultural Chemists.
7. Tagging or Labeling of Plant Materials. All plant materials shall be true to species, variety and legibly tagged with origin, name and size of material. These tags shall be durable labels marked in weather resistant ink and securely attached to each plant of a single species, variety and size identification. They will remain on plants through final inspection.

SUBMITTALS

- A. Qualifications of Landscape Contractor. Submit Contractor's qualifications showing experience, quality, and capabilities as noted in Quality Assurance.
- B. Plant Sources. Submit for approval by the Landscape Architect the nursery or sources for the plant materials to be used in the project
- C. Plant Photos. Submit photographic samples of representative trees from the plant sources. Photos shall include a scaled ruler or yardstick in the photo. The photos shall demonstrate the quality, size, and health of trees to be used in the project.
- D. Samples. Submit one (1) cubic foot sample of each type of mulch specified on the Drawings to the Landscape Architect for approval.
- E. Product Data/Sources: Submit two copies of product names, literature and application rates for fertilizer, anti-dessicant and amendments.
- F. Maintenance Materials: Submit two copies of typewritten instructions bound in three-ring binder of recommended landscape maintenance procedures to be followed by the Owner for one full year. Submit prior to expiration of required maintenance periods

PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery/ Storage of Materials
 1. Delivery of Shipment to Site. The Contractor shall promptly notify the Landscape Architect in advance of the time and manner of delivery of plant materials. The Contractor shall furnish, at the time of notice, an itemized list, in duplicate, of the actual quantities of plant materials in each delivery, in order to expedite the required inspection at the point of delivery. Plants rejected at this inspection any time prior to planting shall be removed immediately from the planting area. When shipment is made, all plant materials shall be packed to provide made in a closed vehicle or plants shall be completely covered to prevent drying or other wind damage. Particular care should be exercised in digging, wrapping and binding of plants to insure safe loading and shipment. Mushroomed or cracked rootballs shall be unacceptable for planting.

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2. Packaged Materials: Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery, and while stored at site.
- B. Handling Materials:
 1. Trunks, branches, and root balls shall not be damaged during lifting and planting operations.
 2. Handle container-grown stock only in containers.

JOB CONDITIONS

- A. Existing Conditions:
 1. General: Proceed with and complete landscape work as rapidly as portions of site become available.
 2. Determine the acceptability of each planting site and subgrade prior to the start of planting work.
 3. Utilities: Locate all existing underground utilities in the construction area as accurately as is possible. Perform work in a manner, which will avoid damage to underground utilities. Hand excavate as required. Any damage to the utilities shall be repaired by the Contractor at his own expense to the satisfaction of the Owner.
 4. Grade Stakes: Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.
 5. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions or obstructions, notify the Landscape Architect before planting.
- B. Protection/ Sequencing/ Scheduling:
 1. Protect all existing items to remain.
 2. Ensure proper timing of each phase of work in relationship to the normal planting season for each type of planting work.
 3. Coordinate planting with the required maintenance period.
 4. Coordination with seeding and/or sodding: Plant trees and shrubs after final grades are established and prior to seeding and/or sodding, unless otherwise accepted by the Landscape Architect. If planting of trees and shrubs occurs after seeding and/or sodding work, protect such areas and promptly repair damage resulting from planting operations.

GUARANTEE/WARRANTY

- A. Warranty trees, shrubs and ground covers through maintenance period and until final acceptance.
- B. Replace dead or unhealthy trees and shrubs at the end of warranty period.
- C. Only one replacement per plant will be required during the warranty period, except for losses of original or replacement material due to failure to comply with the specification requirements.

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PART 2 - PRODUCTS**PLANT MATERIALS**

- A. Plant Materials. All plants shall be as specified on the Planting Plans and shall be healthy, vigorous and representative of the species and variety. They shall have normal, well developed branch and root systems. All plants shall be free of mechanical injury, free of sun or frost damage, free from insects, insect eggs and without disfiguring knots or other objectionable defects. All plant materials shall be selected for quality of the specimen. Plant material shall be nursery-grown.
- B. Growing Conditions. Trees shall have been grown under climatic conditions similar to project locality for at least two (2) years.
- C. Pruning. Plants shall not be pruned prior to or after delivery unless authorized by the Owner and must be done under the supervision of a qualified arborist or horticulturist.
- D. Size. All plants shall equal or exceed minimum measurements specified on the plans. Grading of plant material shall be in accordance with the codes and standards of AAN. Any undergrade plants shall be removed and replaced prior to provisional acceptance.
- E. Measurement. Caliper measurements shall be taken six (6) inches above natural ground line on the trunk.
- F. Tree Orientation Marking. All trees prior to digging in the field shall be marked to indicate the north side of tree trunk. Mark is to be temporary and done in manner not deleterious to the long term health and growth of the tree.
- G. Nomenclature. Nomenclature shall conform with Standardized Plant Names, Second Edition. Names not present in this listing shall conform to accepted botanical nomenclature in the nursery trade.

TREES

- A. Deciduous Trees: All deciduous trees, except aspen, shall have been container or nursery grown (not collected or plantation grown) from an approved nursery. Trees not showing developed root flare at top of rootball shall not be accepted. Any root bound material shall not be accepted. Boxed or containerized trees shall be handled by container only. All trees shall be first-class representatives of their species; well-shaped and full. Tree trunks shall be straight and plumb unless otherwise specified. Single-trunked trees shall be delivered with temporary mark on trunk showing north orientation of tree. The Landscape Architect reserves the right to reject any trees not meeting these criteria. Balled and burlapped material will be rejected if wrapped with plastic burlap or plastic twine. All balled and burlapped material shall have been properly root pruned.
- B. Evergreen Trees. Evergreen trees shall be straight, evenly canopied, full and shapely for the species, unless specified as a character tree. Balled and burlapped material shall be tightly and neatly wrapped around the rootball. Field dug material shall have rootballs one size larger than that required for nursery grown stock of the same size.

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AAN standards shall be used for ball sizes. Nursery grown material shall have been root pruned prior to digging.

SHRUBS, PERENNIALS, GRASSES AND GROUND COVERS

- A. Container Stock: Plants designated as "Container" grown in various sizes and type containers in the plant list shall be of a size and stage of development normal in the nursery industry for the size container in which they are specified. They shall have been grown in their containers long enough to have developed good, round root systems capable of holding the soil intact after removal from the container, but not so long as to have become root bound. Any root-bound material will not be accepted.
- B. Ground Cover: Provide well rooted, established ground cover in removable containers or integral peat pots, with not less than the minimum number and length of runners required by ANSI Z60.1 for the pot size specified.

SOIL AMENDMENTS

- A. Fertilizer. Shall be Gro-Power Plant Tablets, 12-8-8 formulation or approved equal. Apply 3 per 1 gal. 7 per 5 gal. and 12 per caliper inch of tree. Submit substitutions prior to bid.
- B. Soil Additives/ Plant Stimulants. Soil additives such as Ironite and Super Phosphate shall be applied if needed as a result of the soils test analysis. The plant stimulant, Superthrive, shall be applied to all plants at five (5) times the rate recommended by the manufacturer.
- C. Compost applied according to manufacturer's specifications. Utilize screened compost material. Submit chosen compost information with bid.

MISCELLANEOUS

- A. Mulches as noted on the plans.
 - 1. Crusher Fines mulch shall be, tan in color. No substitutions accepted.
 - 2. Gravel mulch shall be $\frac{3}{4}$ ", tumbled, tan in color.
- B. Anti-Desiccant: Emulsion-type, film-forming agent designed to permit transpiration but retard excessive loss of moisture from plants. Deliver in manufacturer's containers and mix in accordance with manufacturer's instructions. Acceptable Product: "Wilt-Pruf."

WATER

- A. Water for maintaining plants shall be clean and free from pollutants that may harm plant growth or contaminate the environment.

PART 3 - EXECUTION

PREPARATION

- A. Plant Material Locations: Tree and shrub locations as shown on the planting plan are approximate only. Contractor is to stake all plant material locations as shown on the planting plan, and under the direction of the Landscape Architect adjust the position

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and orientation of plants as required. Final positions of all plant material are subject to the approval of the Landscape Architect.

- B. Preparation Ground Surface: Areas to be planted or mulched are to be free of rock/stones greater than one inch across, trash and other debris prior to beginning planting or mulching. Subgrades for planted and mulched areas are to be approved by the Landscape Architect prior to beginning planting or mulching.

INSTALLATION

- A. Planting General.
1. Soil amendments shall be as noted in Section 329400 – Soil Amendments.
 2. Plants shall not be planted deeper than the original ground line.
- B. Trees/ Individual Locations: Excavate tree pits so that top of rootball will be level with the adjacent soil grade.
1. Tree pit excavations shall be three times as wide as the rootball in diameter and shall be no deeper than the maximum depth of the rootball.
 2. Prior to setting the tree flood the tree pit and allow all water to percolate in to soil.
 3. Set rootball plumb in center of pit, set rootball such that root flare is placed slightly higher than finish soil grade. Orient tree north marking to face site north.
 4. Remove burlap and wire from the entire root ball. Slice sides of remaining burlap at least three times, once tree is set firmly in planting hole and prior to backfill.
 5. Unless otherwise directed on the Drawings, backfill with excavated soil in 6" tamped layers. Do not add compost to tree backfill.
 6. Apply fertilizer tablets and other soil additives evenly around the perimeter of each tree root ball at a depth half way between the top and middle of the root ball.
 7. Flood with water after two-thirds backfilled. After water is absorbed, continue backfilling and tamping to grade, leaving no voids or air pockets. Water again after placing final layer of backfill.
 8. Form water well around each tree if noted on the Drawings for tree location and type. Fill the watering well with mulch as specified.
 9. Trees shall only be staked or wrapped if directed by the Landscape Architect or specifically required in the drawings.
- C. Shrub planting/ Individual Locations:
1. Shrub pit excavation shall be three times larger than width of rootball and shall only be as deep as the maximum depth of the rootball.
 2. Prior to setting the plant, flood the pit and allow all water to percolate in to soil.
 3. Set shrub rootball plumb in center of pit.
 4. Backfill with two (2) parts native soil and one (1) part compost, unless otherwise noted in Section 329400 - Soil Preparation.
 5. Apply fertilizer tablets and other soil additives when shrub pit is two-thirds backfilled.

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6. Continue backfilling to finish grade, create watering well, and thoroughly water.
- D. Planting Beds/ Mass Planting Areas:
 1. Grade existing soil to proper depth to meet finish grades for area. Grading shall allow for compost, soil additives, and mulch depths.
 2. Spread compost at depth and rates as noted in Section 329400.
 3. Till compost to a minimum depth of twelve inches (12) throughout the planting bed. Till in two directions each at right angles to each other.
 4. Spread soil additives and fertilizer as noted on the plans or specifications, and till 6" into compost amended soils. Till in two directions each at right angles to each other.
 5. Rake and remove all rocks over 1 inch size, trash, debris or other deleterious material from the top three inches of the prepared bed.
 6. Soak the amended area with water. Let the area dry. Fill any large depressions or settlement.
 7. Set out plant materials designated for the planting area. If a formal arrangement is shown on the plan, align and measure plants in a uniform triangular pattern; or as shown on the Drawings; or as directed by the Landscape Architect.
 8. Excavate pits large enough to set each plant. Backfill with excavated planter soil.
 9. Water area thoroughly after planting. Fill depressions and level high spots. Fine rake bed.
- E. Apply anti-desiccant to leafed out deciduous trees and shrubs, and broadleaf evergreens.
- F. Mulch: Spread a uniform layer of specified mulch as noted on the Drawings. Planted areas shall be approved by the Landscape Architect prior to mulch installation.

FIELD QUALITY CONTROL

1. Pruning: Pruning shall only be done under direct supervision of the Landscape Architect and in accordance with ANSI Z 133.1 and ANSI Z60.1 - 2004. Remove dead and broken branches. Prune deciduous trees and shrubs as approved by the Landscape Architect. Retain typical growth habit of individual plants. Make cuts with sharp instruments to branch collar. Do not pole or remove the leader from the trees. Remove trimmings from site.

PROTECTION AND CLEANING

- A. During the installation and maintenance periods, protect planted areas against erosion and trespass. Any damaged planting shall be replaced by the Contractor at no cost to the Owner.
- B. All walks and pavements shall be swept or washed clean upon completion of work in each section. Upon completion of all planting work, clean the portion of the project site used for storing planting materials and equipment of all debris, extra materials and equipment. All such materials and equipment shall be entirely removed from the project site.

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MAINTENANCE PERIOD

- A. Begin maintenance of all plants immediately after planting.
- B. Maintain trees, shrubs and other plants until final acceptance of all contract work.
- C. Maintenance Activities: Maintenance shall include measures necessary to establish and maintain plants in vigorous and healthy growing condition:
 - 1. Plants shall be watered, fertilized, and maintained by the Contractor until physical completion of all the contract work.
 - 2. Water shall be applied to all plants by hand until the underground irrigation system is in place and operational.
 - 3. Cultivate and weed beds every week during maintenance period. If herbicides are used for weed control, apply in accordance with the manufacturer's instructions. Remedy any damage resulting from use of herbicides.
 - 4. Pruning including removal of dead or broken branches and treatment of prune wounds.
 - 5. Maintain all trees in vertically plumb position
 - 6. Disease and insect control.
 - 7. Maintenance of turn buckles and stakes.
 - 8. Maintain watering wells.
 - 9. Replace dead or dying plant material with plants of the same kind and size as specified in the plant list.
- D. The Landscape Architect shall inspect maintenance work to verify that maintenance work has been satisfactorily undertaken and continued. The Contractor shall make all corrective measures, as directed by the Landscape Architect, prior to release of maintenance responsibilities. All maintenance work as outlined herein is incidental to each planting item, and no additional payment will be made for maintenance operations.
- E. Maintenance Manual Submittal: Prior to Final Inspection, the Contractor shall submit a plant maintenance manual that is acceptable to the Landscape Architect.

END OF SECTION 329400

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