

PROJECT MANUAL

Dunn Elementary Kitchen Upgrades 2019

May 10, 2019



POUDRE SCHOOL DISTRICT

Owner:

Poudre School District
2445 LaPorte Avenue
Fort Collins,
Colorado 80521

Architect:

KALERT | Consulting Group, LLC
2429 Stonecrest Drive
Fort Collins, CO 80521

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SECTION 011100 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Project Description
- B. Work by Owner
- C. Owner Furnished Products
- D. General Contractor use of site (and premises)

A. PROJECT DESCRIPTION – Dunn Kitchen Upgrades 2019

Projects consist of, but not limited to:

- Selective demolition of indicated building elements.
- Removal of existing stainless steel dish return and garbage disposal
- Selective floor demolition and preparation and installation of new ceramic tile flooring as indicated
- Installation of new dish return table and new garbage disposal.
- Installation of new “Hot Food Well” table.
- Modify existing plumbing as indicated to support installation and function of new scheduled dish return and disposal.
- Install new electrical as indicated in the electrical drawings.
- Replace existing fluorescent lighting fixtures and reinstallation of new LED lighting fixtures utilizing existing electrical power and switching.
- Touch up painting in areas disturbed by execution of the work.

B. Project will be completed in a single phase in the Summer of 2019.

C. Contract: Perform Work under a General Construction contract, including labor, equipment, materials, and services required for the completion of the project.

1.2 WORK SEQUENCE

- A. Coordinate construction schedule and operations with Owner and Architect.
- B. Contractor shall take into account the various portions of the Work and the time schedule when preparing and submitting shop drawings and other required submittals. The Contractor shall provide sufficient manpower and equipment during each portion of the Work to meet the various completion deadlines.
- C. The Work shall commence with the Notice to Proceed and shall be Substantially Complete per the Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011100

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SECTION 024119 - SELECTIVE DEMOLITION AND REMOVALS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removal of selected site and building elements.
 - 2. Salvage of existing items to be reused or recycled, as indicated on the drawings, and including but not limited to:
 - a. Wood and hollow metal doors.
 - b. Lockers.
 - c. Ceiling-mounted electrical devices.
 - d. As indicated.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.
- E. Demolish: Remove.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.4 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- E. Predemolition Photographs or Video: Submit before Work begins.
- F. 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. Include name and address of technician and date refrigerant was recovered.
- G. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.6 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.7 QUALITY ASSURANCE

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

1.8 COORDINATION

- A. Coordinate removals and new construction of architectural, structural, mechanical, plumbing and electrical systems prior to initiating construction. Establish a schedule for removals, noting duration between service interruptions and new systems being operational.

1.9 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Hazardous Materials: Hazardous materials are present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Building Services: Maintain all existing building systems and services, except those specifically identified for removal. Where required, protect building systems and services against damage during selective demolition operations.

1.10 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs and preconstruction video recordings.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
 - 2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
 - 1. Comply with requirements for existing services/systems interruptions specified in Section 011000 "Summary."
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.

3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.
- C. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
- B. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area off-site designated by Owner.
 5. Protect items from damage during transport and storage.
- C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition, cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.
- F. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight. See Section 075216, "SBS Membrane Roofing" for new roofing requirements.
 - 1. Remove existing roofing system down to substrate.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Porcelain tile and epoxy grout

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.4 PROJECT CONDITIONS

- A. 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

2.1 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.

2.2 TILE PRODUCTS

- A. Tile Type: Porcelain floor tile.
 - 1. Manufacturers: Subject to compliance with requirements, provide the following:
 - a. Crossville, Inc., Cross Colors – Mingle: EC-001
 - b. Standard Non-Slip Cross Tread”
 - 2. Composition: Porcelain.
 - 3. Module Size: 8 by 8 inch (645 by 645 mm).
 - 4. Thickness: 5/16 inch (7.9375 mm).
 - 5. Surface: Unglazed “Cross Sheen”
 - 6. Tile Color: Storm

7. Grout Color: Black
8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide bullnose and base cove shapes.

B. Base Type: Porcelain base

1. Manufacturers: Subject to compliance with requirements, provide the following:
2. Crossville, Inc., Cross Colors – Mingle: EC-001
3. Composition: Porcelain.
4. Module Size 4" x 8"
5. Thickness: 5/16 inch.
6. Surface: Unglazed "Cross Sheen".
7. Tile Color: Storm
8. Grout Color: Black
9. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide bullnose and base cove shapes.

2.3 SETTING MATERIALS

- A. Latex-Portland Cement Mortar (Dry Set): ANSI A118.4.

2.4 GROUT MATERIALS

- A. Water-Cleanable Epoxy Grout: ANSI A118.3.

1. 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:
 - a. C-Cure.
 - b. MAPEI Corporation.
 - c. Or approved Equal

2.5 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints and that does not change color or appearance of grout.

2.6 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. 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.
 - 1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors installed with thin-set mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 - 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Following demolition and removal of existing ceramic floor tile prepare floor for new tile installation as follows:
 - 1. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

3.3 TILE INSTALLATION

- A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - 1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
 - a. Tile floors in wet areas.
 - b. Tile floors composed of tiles 8 by 8 inches or larger.
- B. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 - 2. Grout joint width shall not exceed 3/8 inch for 8 inch tiles.
 - 3. Do not interrupt tile pattern through openings.

4. Sound tile after setting. Replace hollow sounding units. Owner will employ chain to sound.
5. Grout tile joints. Fill joints full to eliminate tile edges that can act as a "squeegee" during floor cleaning. Joints shall be shallow concave shape.
6. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.
7. Apply grout sealer after set time recommended by manufacturer, but in no case less than days after placement of grout.

3.4 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
- B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

END OF SECTION 093000

SECTION 11 4000
FOOD SERVICE EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes food service equipment indicated on Drawings and Schedules.
- B. Owner Furnished Equipment: Where indicated, Owner shall furnish equipment items. Purveyor Furnished Equipment: Where indicated, Purveyor shall furnish equipment items. General Contractor Furnished Equipment: Where indicated, General Contractor will furnish equipment items.

1.02 DEFINITIONS

- A. Terminology Standard: Refer to NSF 7, "Food Equipment" or other applicable NSF standards for definitions of food service equipment and installation terms not otherwise defined in this Section or in other referenced standards.

1.03 SUBMITTALS

- A. Product Data Brochure: Before proceeding with the purchase of manufactured equipment, submit brochures in a PDF format. Brochures shall consist of:
 - 1. Title page
 - 2. Index of all items with columns for: Item Numbers, Quantity, Description and Status
 - 3. Provide for each manufacturer item a printed lead sheet showing: Optional Finishes, Equipment and Accessories, Plumbing, Electrical, Refrigeration and / or Ventilation Requirements, Special Notes and any Verification required.
- B. Shop Drawings: For food service equipment not manufactured as standard production and catalog items by manufacturers. Include plans, elevations, sections, rough-in dimensions, fabrication details, service requirements and attachments to other work or items.
 - 1. Plumbing and electrical rough-ins shall be on separate drawings.
 - 2. Rough-ins shall be stubbed out of walls and gas piping shall be concealed inside the walls.
 - 3. Use of existing electrical / plumbing services only with prior consent.
 - 4. Scale shall be $\frac{1}{4}'' = 1'-0''$
 - 5. Shop drawings shall include dimensioned plans, elevations and vertical sections for all fabricated-equipment. The drawings shall show all details of construction, installation and relationship to adjoining equipment and related areas where cutting and/or close fitting may be required. The drawings shall detail all reinforcements, anchorage and other work required to complete the installation.
 - 6. Scale shall be $\frac{3}{4}'' = 1'-0''$ for plans and elevations and $1 \frac{1}{2}'' = 1'-0''$ for vertical sections.
 - 7. Wiring Diagrams: Details of wiring for power, signal and control systems and differentiating between manufacture-installed and field-installed wiring.
 - 8. Piping Diagrams: Details of piping systems and differentiating between manufacturer-installed and field-installed piping.
- C. Coordination Drawings: For locations of food service equipment and service utilities, Key equipment with item numbers and descriptions indicated in Contract Documents. Include plans and elevations of equipment, access- and maintenance-clearance requirements, details of concrete or masonry bases and floor depressions and service-utility characteristics. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for exposed products with color finishes.
- D. Samples for Verification: Only samples specifically requested by Owner, Architect or Consultant shall be provided. If requested, of each type of exposed finish required, minimum 4-inch (100-mm) square or 6-inch (150-mm) long sections of linear shapes and of same thickness and material indicated for work. Where finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.

- E. Product Certificates: As required, signed by manufacturers of refrigeration systems or their authorized agents certifying that systems furnished comply with requirements and will maintain operating temperatures indicated in the areas or equipment that they will serve.
- F. Maintenance Data: Operation, maintenance, and parts data for food service equipment to include in the maintenance manuals. Include a product schedule as follows:
 - 1. Product Schedule: For each food service equipment item, include item number and description indicated in Contract Documents, manufacturer's name and model number, and authorized service agencies' addresses and telephone numbers.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing food service equipment, who has completed installations similar in design and extent to that indicated for this Project, and who has a record of successful in-service performance.
- B. Fabricator Qualifications: Engage a firm experienced in manufacturing food service equipment, similar to that indicated for this Project and with a record of successful in-service performance.
- C. Source Limitations: Obtain food service equipment through one supplier and or source.
- D. Regulatory Requirements: Comply with the following National Fire Protection Association (NFPA) codes:
 - 1. NFPA 17, "Dry Chemical Extinguishing Systems."
 - 2. NFPA 17A, "Wet Chemical Extinguishing Systems."
 - 3. NFPA 54, "National Fuel Gas Code."
 - 4. NFPA 70, "National Electrical Code."
 - 5. NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations."
- E. Listing and Labeling: Provide electrically operated equipment or components specified in this Section that are listed and labeled.
- F. AGA Certification: Provide gas-burning appliances certified by the American Gas Association (AGA).
- G. ASME Compliance: Fabricate and label steam-generating and closed steam-heating equipment to comply with ASME Boiler and Pressure Vessel Code.
- H. ASHRAE Compliance: Provide mechanical refrigeration systems complying with the American Society of Heating, Refrigerating and Air-Conditioning Engineers' ASHRAE 15, "Safety Code for Mechanical Refrigeration."
- I. NSF Standards: Comply with applicable NSF International (NSF) standards and criteria and provide NSF Certification Mark on each equipment item, unless otherwise indicated.
- J. ANSI Standards: Comply with applicable ANSI standards for electric-powered and gas-burning appliances; for piping to compressed-gas cylinders; and for plumbing fittings, including vacuum breakers and air gaps, to prevent siphonage in water piping.
- K. Seismic Restraints: Provide seismic restraints for food service equipment according to the Sheet Metal and Air Conditioning Contractors National Association's (SMACNA) "Kitchen Equipment Fabrication Guidelines," appendix 1, "Guidelines for Seismic Restraints of Kitchen Equipment," unless otherwise indicated
- L. All gas fired equipment to be factory calibrated for high altitude operation. No retrofit or dealer added altitude adjustment will be accepted.
- M. Pre-installation Conference: Conduct conference at Project site and review methods and procedures related to food service equipment including, but not limited to, the following:
 - 1. Review access requirements for equipment delivery.
 - 2. Review equipment storage and security requirements.
 - 3. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
 - 4. Review structural loading limitations.

5. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver food service equipment as factory-assembled units with protective crating and covering.
- B. Store food service equipment in original protective crating and covering and in a dry location.

1.06 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions of food service equipment installation areas by field measurements before equipment fabrication and indicate measurements on Shop Drawings and Coordination Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 1. Established Dimensions: Where field measurements cannot be made without delaying the work, establish required dimensions and proceed with fabricating equipment without field measurements. Coordinate construction to ensure actual dimensions correspond to established dimensions.

1.07 COORDINATION

- A. Coordinate equipment layout and installation with other work, including light fixtures, HVAC equipment, and fire-suppression system components.
- B. Coordinate location and requirements of service-utility connections.
- C. Coordinate size, location, and requirements of concrete bases, positive slopes to drains, floor depressions, and insulated floors. Concrete, reinforcement, and formwork requirements.
- D. Coordinate installation of roof curbs, equipment supports, and roof penetrations.

1.08 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Refrigeration Compressor Warranty: Submit a written warranty signed by manufacturer agreeing to repair or replace compressors that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:
 1. Breakage.
 2. Faulty operation.
- C. Warranty Period:
 1. Compressors: 5 years from date of Substantial Completion.
 2. Other: 1 year parts and labor from date of Owner acceptance, unless otherwise specified.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Stainless-Steel Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 304, stretcher leveled, and in finish specified in "Stainless-Steel Finishes" Article. In accordance with good stewardship, stainless steel with a high recycled content is preferred.
- B. Stainless-Steel Tube: ASTM A 554, Grade MT-304, and in finish specified in "Stainless-Steel Finishes" Article.
- C. Zinc-Coated Steel Sheet: ASTM A 653, G115 (ASTM A 653M, Z350) coating designation; commercial quality; cold rolled; stretcher leveled; and chemically treated.
- D. Zinc-Coated Steel Shapes: ASTM A 36 (ASTM A 36M), zinc-coated according to ASTM A 123 requirements.
- E. Plastic Laminate: Complying with NEMA LD 3 and NSF 35 requirements; NSF certified for end-use application indicated; 0.050 inch (1.27 mm) thick for horizontal and vertical surfaces and 0.042 inch (1.07 mm) thick for post-formed surfaces; smooth texture; and easily cleanable.
 1. Color: As selected by Architect from manufacturer's full range of colors.

- F. Sealant: ASTM C 920; Type S, Grade NS, Class 25, Use NT. Provide elastomeric sealant NSF certified for end-use application indicated. Provide sealant that, when cured and washed, meets requirements of Food and Drug Administration's 21 CFR, Section 177.2600 for use in food contact areas.
 - 1. Color: Clear and Silver, as required by the application.
 - 2. Backer Rod: Closed-cell polyethylene, in diameter larger than joint width.
- G. Tempered Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated surfaces), Type I (transparent), Class 1 (clear), Quality q3 (glazing select). Provide products complying with ANSI Z97.1, manufactured by horizontal (roller-hearth) process, and 6 mm thick, unless otherwise indicated. Provide exposed safety edges, if any, seamed before tempering.
- H. Plastic: Except for plastic laminate, provide plastic materials and components complying with NSF 51.
- I. Sound Dampening: Underside of tabletops, shelves, sinks, and drain boards shall be sound deadened in accordance with N.S.F.
- J. Gaskets: NSF certified for end-use application indicated; of resilient rubber, neoprene, or PVC that is nontoxic, stable, odorless, nonabsorbent, and unaffected by exposure to foods and cleaning compounds.

2.02 ACCESSORIES

- A. Cabinet Hardware: Provide NSF-certified, stainless steel hardware for equipment items as indicated. Provide lock where indicated.
- B. Casters: NSF-certified, standard-duty, stainless-steel, swivel stem casters with 5-inch (125-mm) diameter wheels, polyurethane tires with 1-inch (25-mm) tread width, and 200-lb (90-kg) load capacity per caster. Provide brakes on 2 casters per unit.

2.03 FABRICATION, GENERAL

- A. Fabricate food service equipment according to NSF/ANSI 2 requirements. Factory assembled equipment to greatest extent possible.
- B. Welding: Use welding rod of same composition as metal being welded. Use methods that minimize distortion and develop strength and corrosion resistance of base metal. Provide ductile welds free of mechanical imperfections such as gas holes, pits, or cracks.
 - 1. Welded Butt Joints: Provide full-penetration welds for full-joint length. Make joints flat, continuous, and homogenous with sheet metal without relying on straps under seams, filling in with solder, or spot welding.
 - 2. Grind exposed welded joints flush with adjoining material and polish to match adjoining surfaces.
 - 3. Where fasteners are welded to underside of equipment, finish reverse side of weld smooth and undepressed.
 - 4. Coat unexposed stainless-steel welded joints with suitable metallic-based paint to prevent corrosion.
 - 5. After zinc-coated steel is welded, clean welds and abraded areas and apply SSPC-Paint 20, high-zinc-dust-content, galvanizing repair paint to comply with ASTM A 780.
- C. Fabricate field-assembled equipment prepared for field-joining methods indicated. For metal butt joints, comply with referenced SMACNA standard, unless otherwise indicated.
- D. Where stainless steel is joined to a dissimilar metal, use stainless-steel welding material or fastening devices.
- E. Form metal with break bends that are not flaky, scaly, or cracked in appearance; where breaks mar uniform surface appearance of material, remove marks by grinding, polishing, and finishing.
- F. Sheared Metal Edges: Finish free of burrs, fins, and irregular projections.
- G. Provide surfaces in food zone, as defined in NSF 2, free from exposed fasteners.
- H. Cap exposed fastener threads, including those inside cabinets, with stainless-steel lock washers and stainless-steel cap (acorn) nuts.

- I. Provide pipe slots on equipment with turned-up edges and sized to accommodate service and utility lines and mechanical connections.
- J. Provide enclosures, including panels, housings, and skirts, to conceal service lines, operating components, and mechanical and electrical devices including those inside cabinets, unless otherwise indicated.

2.04 STAINLESS STEEL EQUIPMENT

- A. Edges and Backsplashes: Provide equipment edges and backsplashes indicated complying with referenced SMACNA standard, unless otherwise indicated.
- B. Apply sound dampening to underside of metal work surfaces, including sinks and similar units. Provide coating with smooth surface and hold coating 1 inch (25 mm) back from open edges for cleaning.
- C. Tables: Fabricate with reinforced tops, legs, and reinforced under shelves or cross bracing to comply with referenced SMACNA standard, unless otherwise indicated, and as follows:
 - 1. Tops: Minimum 14-Ga 0.0781-inch (1.984-mm) thick stainless steel, unless otherwise indicated.
 - 2. Legs: 1-5/8 inch (41.3 mm) OD, minimum 16-Ga 0.0625-inch (1.588-mm-) thick stainless steel with stainless-steel gusset and adjustable insert bullet-type feet with minimum adjustment of 1 inch (25 mm) up or down without exposing threads, unless otherwise indicated.
 - 3. Under Shelves: Minimum 16-Ga 0.625-inch (1.588-mm) thick stainless steel, unless otherwise indicated.
 - 4. Top and Under Shelf Reinforcement: Provide minimum 14-Ga 0.0781-inch (1.984-mm) thick, stainless-steel reinforcing, unless otherwise indicated.
 - 5. Cross Bracing: 1-1/4 inch (31.75 mm) OD, minimum 14-Ga 0.0781-inch (1.588-mm) thick stainless steel, unless otherwise indicated.
- D. Sinks: Fabricate of minimum 14 Ga 0.0781-inch (1.984-mm) thick stainless steel with fully welded, 1-piece construction. Construct 2 sides and bottom of sink compartment from 1 stainless-steel sheet with ends welded integral and without overlapping joints or open spaces between compartments. Provide double-wall partitions between compartments with 1/2-inch (13-mm) radius rounded tops that are welded integral with sink body. Cove horizontal, vertical, and interior corners with 3/4-inch (19-mm) radius. Pitch and crease sinks to waste for drainage without pooling. Seat wastes in die-stamped depressions without solder, rivets, or welding. Unless otherwise indicated.
 - 1. Wastes:
 - a. 2-inch (50-mm) nickel-plated bronze, rotary-handle waste assembly with stainless-steel strainer plate and nickel-plated brass, connected overflow.
 - b. 1- 1/2 inch nickel plated basket strainer drain with connected overflow.
 - c. 1- inch nickel plated open drain.
 - d. 1-inch copper indirect drain – extended to nearest floor sink or drain. Drain shall be wrapped with insulating tape to prevent sweating, concealed wherever possible and pitched to ensure adequate drainage.
 - 2. Drain Boards: Minimum 14 Ga 0.0781-inch- (1.984-mm-) thick stainless steel, pitched to sink at 1/8inch/12 inches (3 mm/300 mm) of length. Reinforce drain boards with minimum 0.0781-inch- (1.984-mm-) thick stainless steel, unless otherwise indicated.
 - 3. Legs: 1-5/8 inch (41.3 mm) OD, minimum 16-Ga 0.0625-inch (1.588-mm) thick stainless steel with stainless-steel gusset welded to 0.1094-inch (2.779-mm) thick, stainless-steel support plate. Provide adjustable insert bullet-type feet with minimum adjustment of 1 inch (25 mm) up or down without exposing threads, unless otherwise indicated.
 - 4. Drainboard Braces: 1 inch (25 mm) OD, minimum 16 Ga 0.0625-inch (1.588-mm) thick stainless steel, unless otherwise indicated.
 - 5. Cross Bracing: 1-1/4 inch (31.75 mm) OD, minimum 14 Ga 0.0625-inch (1.588-mm) thick stainless steel, unless otherwise indicated.

- D. Wall Shelves and Over Shelves: Fabricate to comply with referenced SMACNA standard, unless otherwise indicated, and with minimum 16-Ga 0.0625-inch (1.588-mm) thick, stainless-steel shelf tops.
- F. Drawers: Provide lift-out type, 1-piece, die-stamped drawer pan fabricated from 18-Ga 0.050-inch (1.27-mm) thick stainless steel with inside corners radiused. Support drawer pan with 0.0625-inch (1.588-mm) thick, stainless steel channel frame welded to drawer front. Provide 1-inch- (25-mm) thick, double-wall front fabricated from 16-Ga 0.0625-inch (1.588-mm) thick stainless steel and with integral recessed pull. Fill void in drawer front with semi-rigid fiberglass sound dampening. Mount drawers on NSF-certified, full-extension, stainless-steel drawer slides that have minimum 100-lb (45-kg) load capacity per pair, ball-bearing rollers, and positive stop. Mount drawer slides for self-closing on drawer housing as indicated.
- G. Wall Brackets: 14 Ga 0.0781-inch- (1.984-mm-) thick stainless steel.
- H. Wall Flashing: 20 Ga 0.0375-inch (.953-mm-) thick stainless steel

2.05 EXHAUST HOOD FABRICATION

- A. General Hood Fabrication: See itemized specifications.

2.06 STAINLESS STEEL FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.
 - 1. Remove or blend tool and die marks and stretch lines into finish
 - 2. Grind and polish surfaces to produce uniform, directional textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.
- B. Concealed Surfaces: No. 2B finish (bright, cold-rolled, unpolished finish).
- C. Exposed Surfaces: No. 4 finish (bright, directional polish).
- D. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
- E. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipment.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances, service-utility connections, and other conditions affecting installation and performance of food service equipment. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Examine roughing-in for piping, mechanical, and electrical systems to verify actual locations of connections before installation.

3.02 INSTALLATION, GENERAL

- A. Install food service equipment level and plumb, according to manufacturer's written instructions, original design, and referenced standards.
- B. Complete equipment field assembly, where required, using methods indicated.
 - 1. Provide closed butt and contact joints that do not require a filler.
 - 2. Grind field welds on stainless-steel equipment smooth, and polish to match adjacent finish. Comply with welding requirements in "Fabrication, General" Article
- C. Install equipment with access and maintenance clearances according to manufacturer's written instructions and requirements of authorities having jurisdiction.
- D. Provide cutouts in equipment, neatly formed, where required to run service lines through equipment to make final connections.
- E. Except for mobile and adjustable-leg equipment, securely anchor and attach items and accessories to walls, floors, or bases with stainless-steel fasteners, unless otherwise indicated.
- F. Install cabinets and similar equipment on concrete or masonry bases in a bed of sealant

- G. Install hoods to comply with NFPA 96 requirements and to remain free from vibration when operating.
- H. Install seismic restraints according to referenced SMACNA standard.
- I. Install trim strips and similar items requiring fasteners in a bed of sealant. Fasten with stainless-steel fasteners at 48 inches (1200 mm) o.c. maximum.
- J. Install sealant in joints between equipment and abutting surfaces with continuous joint backing, unless otherwise indicated. Provide airtight, watertight, vermin-proof, sanitary joints.

3.03 PROTECTING

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer, that ensure food service equipment is without damage or deterioration at the time of Substantial Completion.

3.04 COMMISSIONING

- A. Startup Services: Engage factory-authorized service representatives to perform startup services and to demonstrate and train Owner's maintenance personnel as specified below.
 - 1. Coordinate food service equipment startup with service-utility testing, balancing, and adjustments. Do not operate steam lines before they have been cleaned and sanitized.
 - 2. Remove protective coverings and clean and sanitize equipment, both inside and out, and re-lamp equipment with integral lighting. Where applicable, comply with manufacturer's written cleaning instructions.
 - 3. Test each equipment item for proper operation. Repair or replace equipment that is defective in operation, including units that operate below required capacity or that operate with excessive noise or vibration.
 - 4. Test refrigeration equipment's ability to maintain specified operating temperature under heavy-use conditions. Repair or replace equipment that does not maintain specified operating temperature
 - 5. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 6. Test motors and rotating equipment for proper rotation and lubricate moving parts according to manufacturer's written instructions.
 - 7. Test water, drain, gas, steam, oil, refrigerant, and liquid-carrying components for leaks. Repair or replace leaking components.
 - 8. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance for each food service equipment item.
 - 9. Review data in the operation and maintenance manuals. Refer to Division 1 Section "Contract Closeout."
 - 10. Review data in the operation and maintenance manuals. Refer to Division 1 Section "Operation and Maintenance Data."
 - 11. Schedule training with Owner, through Architect, with at least 7 days' advance notice.

3.05 FOOD SERVICE EQUIPMENT SCHEDULE

- A. All equipment and items shall be furnished complete as per manufacturer's standard specifications, except where noted otherwise. Provide long life warm white fluorescent or LED lamps (as per specification), with safety covers where required for all standard manufactured items.
- B. All custom equipment shall be fabricated as per contract documents. Each item shall include all integral components shown or specified and shall provide for all related items.
- C. All items included in these specifications shall be installed, started up, checked and demonstrated by Contractor unless noted otherwise. Equipment demonstration shall be scheduled by the Contractor at a time convenient to the operations stall and conducted by a factory representative. Architect shall be notified in writing that such demonstration has taken place by each manufacturer.
- D. All items with doors shall be hinged per plans and details

- E. Remote refrigeration systems shall be furnished by one contractor.
- F. Equipment shall be complete with connection terminals as standardized by equipment manufacturers, unless otherwise specified, ready for connection by other contractors.
- G. All refrigeration equipment shall not contain HCFC's.

END OF SECTION

Legend: **SA** **See Architectural drawings**
 GC: **General Contractor**
 KEC: **Kitchen Equipment Contractor**
 OWNER: **Supplied by the operator and or their supplier or vendor**
 S/S: **Stainless Steel**

ITEM #1 DISH TABLE, CLEAN

Quantity: Existing
Mfg: Existing
Model #: Existing
Options: Existing

ITEM #2 BOOSTER HEATER, GAS FIRED

Quantity: Existing
Mfg: Existing
Model #: Existing
Options: Existing

ITEM #3 DISH MACHINE

Quantity: Existing
Mfg: Existing
Model #: Existing
Options: Existing

ITEM #4 CONDENSATE HOOD

Quantity: Existing
Mfg: Existing
Model #: Existing
Options: Existing

ITEM #5 DISH TABLE, SOILED

Quantity: 1ea
Mfg: Nationwide Fabrication
Model #: Custom as per plan
Options: 14 gauge stainless steel top with tray drop window, rolled edges
 as per plan, stainless steel legs and under shelf. Top constructed
 w/ integral slope to dish machine. Disposal switch bracket.
 Scrap trough, knock outs for siphon breaker 4" OC and spray
 rinse 8" OC. 9" tall backsplash. Cone welded and polished
 integral to top. Verify all dimensions at job site.
 Accommodations for tray drop coiling door and coordination by KEC.

ITEM #6 DISPOSAL

Quantity: 1ea
Mfg: In Sink Erator
Model #: SS-200
Options: 18" cone w/ strainer, baffle, man. reversing switch, swirl sprays, syphon breaker,
 KALERT 3 Control to make a complete unit.

ITEM #7 PRE RINSE SPRAYER

Quantity: 1ea
Mfg: T&S Brass
Model #: B-0133-B
Options: Splash mounted w/ wall bracket and water conserving sprayer

ITEM #8 WALL FLASHING, STAINLESS STEEL

Quantity: 1lot
Mfg: Nationwide Fabrication
Model #: 20 gauge S/S 18/8 mill finish, w/ no exposed screws, hug edge at top.
Options: Chrome joiner strips between vertical panels joints.
 Shall extend 24" above the backsplash and 8" beyond left end of item #5,
 wrap the column to match flashing.

ITEM #9 COLUMN WRAP, 3 SIDES

Quantity: 1ea
Mfg: Nationwide Fabrication
Model #: 16 gauge SS 18/8 mill finish, 8'x8"x8" hug edges
Options: Shall extend from floor to 48" AFF

ITEM #10 SPARE NUMBER

Quantity: N/A
Mfg: N/A
Model #: N/A
Options: N/A

ITEM #11 SERVING COUNTER W/ TRAY SLIDE

Quantity: 1ea
Mfg: Nationwide Fabrication
Model #: Custom as per plan
Options: See Sheet FS-501

ITEM #12 HOT WELLS, 4 PAN, DROP IN

Quantity: 1ea
Mfg: Randell
Model #: 9560-4
Options: Manifold drain and valve w/ single hose bib connection

ITEM #13 BREATH GUARD, GLASS

Quantity: 1ea
Mfg: Nationwide Fabrication
Model #: Custom as per plan
Options: Standard

END OF ITEMS



JVA, Incorporated
213 Linden Street
Suite 200
Fort Collins, CO 80524
970.225.9099
info@jvajva.com

March 26th, 2019

Poudre School District
2445 LaPorte Avenue
Fort Collins, CO., 80521

www.jvajva.com

Attn: Brad Knutson, Construction Project Coordinator

Regarding: Dunn Elementary School – Existing Kitchen Lintel Analysis
JVA, Incorporated Project Number: 19688

Dear Mr. Knutson,

As per your request, we have reviewed the existing Dunn Elementary School Kitchen lintel to determine if there is enough load capacity for this lintel to clear span, allowing removal of the existing intermediate column. We made the following assumptions:

- A. Masonry load = 125 PSF.
- B. Lintel span = +/- 13.25.'
- C. IEBC 2015 is the governing Code.
- D. $F_y = 20$ ksi (per the 1947 AISC Steel Manual 5th edition).
- E. The lintel, L-11, is an American Standard Beam 7x3 5/8 @ 15.3plf with a 1'-8"x 1/4" plate per the existing lintel schedule, attached.

Based on these assumptions and our subsequent calculations (attached – Appendix A), we believe the existing intermediate column can be removed provided these two items are field verified;

- 1. The lintel is a continuous span Wide Flange beam as indicated in the original lintel schedule (attached – Appendix A).
- 2. A minimum of 4" bearing on solid masonry is present at both ends of the beam

Please contact us if you have questions pertaining to this letter or if we may be of further service regarding this matter.

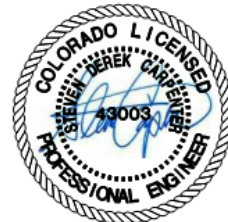
Sincerely,

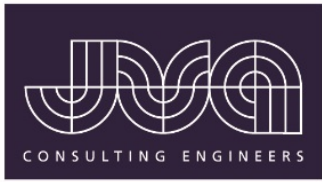
JVA, INCORPORATED

A handwritten signature in blue ink, appearing to read "Steve Carpenter".

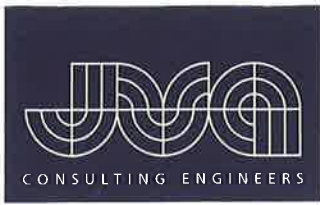
By:

Steve Carpenter, PE, LEED AP BD+C
Principal





APPENDIX A



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- Winter Park, CO 970.722.7677
- Glenwood Springs, CO 970.404.3100
- Denver, CO 303.444.1951

Date: 3/20/19 Page: _____ of _____
 By: ALK Chkd By: _____
 Job No: 19688
 Project: Dunn
 Client: _____

Preliminary

Final

Dunn Elementary School Kitchen Renovation

- Check beam capacity if mid-span support column is removed

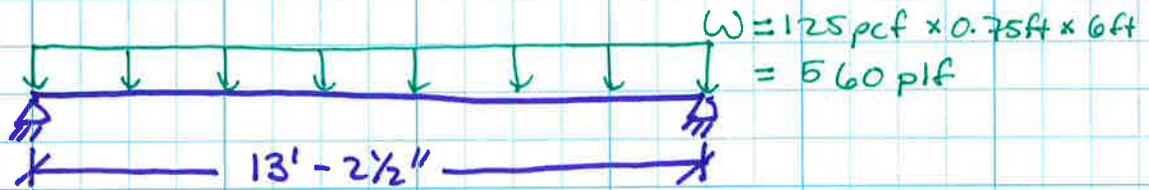
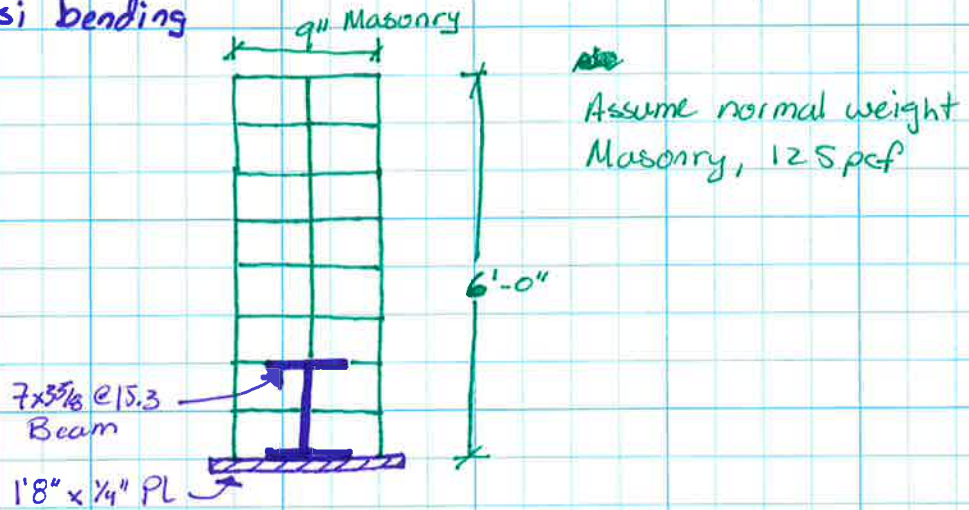
Lintel: L-11 SEE (E) schedule attached.

7" x 3 5/8" @ 15.3 plf American Standard Beam



$F_y = 20 \text{ ksi}$ bending

↳ see 5th Edition AISC Manual, 1947



↳ ~~Analysis~~ Analysis (SEE attached) → OK ✓

∴ Can remove mid-span support Column.



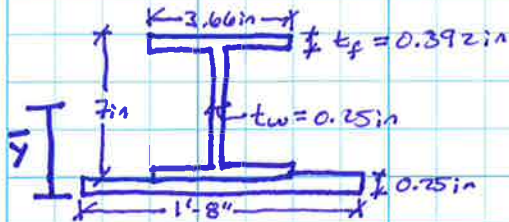
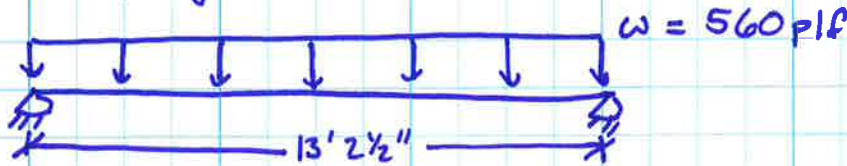
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Date: 3/21/19 Page: ___ of ___
 By: ALU Chkd By: _____
 Job No: 19688
 Project: _____
 Client: _____

Preliminary Final

Beam Analysis



$$F_y = 20 \text{ ksi}, t_f = 0.392 \text{ in}, t_w = 0.25 \text{ in}$$

$$d = 7 \text{ in}, b = 3.66 \text{ in}, A = 4.43 \text{ in}^2, I = 36.4 \text{ in}^4$$

$$A_{pl} = 5 \text{ in}^2$$

Applied Moment:

$$M_a = \frac{wL^2}{8} = \frac{560 (13.25)^2}{8} = 12290 \text{ lb-ft}$$

$$= 147 \text{ k-in}$$

Check Beam Capacity:

- Compact or slender?

$$\frac{b_f}{t} = \frac{3.66/2}{0.392} = 4.67 < \lambda_p = 0.38 \sqrt{\frac{29000}{20}} = 14.5$$

∴ Compact → $M_n = M_p = F_y Z_x$

- Calculate plastic section modulus

$$Z_x = b t_f (d - t_f) + 0.25 t_w (d - 2t_f)^2$$

$$= 3.66 (0.392) (7 - 0.392) + 0.25 [0.25 (7 - 2(0.392))^2]$$

$$= 11.896 \text{ in}^3$$

- Calculate $M_p = M_n$

$$M_n = M_p = F_y Z_x = 20 \text{ ksi} (11.896 \text{ in}^3) = 238 \text{ k-in}$$

$$\frac{M_n}{\sqrt{L}} = \frac{238 \text{ k-in}}{1.67} = 142.5 \text{ k-in} \approx 147 \text{ k-in}$$

- Calculate Z_x including Plate:

$$\bar{y} = \frac{3.75 (4.43) + 0.125 (5)}{4.43 + 5} = 1.83 \text{ in}$$

$$\bar{Z}_x = 11.896 + 4.43 (3.75 - 1.83)^2 + \frac{20(0.25)^2}{4} + 5 (1.83 - 0.125)^2$$

$$= 43 \text{ in}^3$$

- Calculate $M_n = M_p$:

$$M_p = F_y Z_x = 20 \text{ ksi} (43 \text{ in}^3) = 861 \text{ k-in} \Rightarrow \frac{861}{1.67} = 516 \text{ k-in} > 147 \text{ k-in}$$



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Date: 3/21/19 Page: _____ of _____
 By: ALH Chkd By: _____
 Job No: 19688
 Project: _____
 Client: _____

Preliminary Final

• Check deflection:

$$\Delta = \frac{5 w l^4}{384 EI} = \frac{5 (560 \text{ plf}) (13.25 \text{ ft})^4 (12 \text{ in/ft})^3}{384 (29,000,000 \text{ psi}) (36.2 \text{ in}^4)} = 0.369 \text{ in}$$

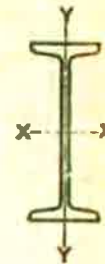
$$\Delta_{\text{LIMIT}} = \frac{L}{420} = \frac{13.25(12)}{420} = 0.378 \text{ in} > 0.369 \text{ in} \checkmark \text{ OK}$$

∴ Can remove mid-span support Column.

ROLLED STEEL SHAPES



AMERICAN STANDARD BEAMS



PROPERTIES FOR DESIGNING

Nominal Size	Weight per Foot	Area	Depth	Flange			Web Thick- ness	AXIS X-X			AXIS Y-Y		
				Width	Thick- ness	I		S	r	I	S	r	
													In.
24 x 7 $\frac{1}{8}$	120.0 105.9	35.13 30.98	24.00 24.00	8.048 7.875	1.102 1.102	.798 .625	3010.8 2811.5	250.9 234.3	9.26 9.53	84.9 78.9	21.1 20.0	1.56 1.60	
24 x 7	100.0 90.0 79.9	29.25 26.30 23.33	24.00 24.00 24.00	7.247 7.124 7.000	.871 .871 .871	.747 .624 .500	2371.8 2230.1 2087.2	197.6 185.8 173.9	9.05 9.21 9.46	48.4 45.5 42.9	13.4 12.8 12.2	1.29 1.32 1.36	
20 x 7	95.0 85.0	27.74 24.80	20.00 20.00	7.200 7.053	.916 .916	.800 .653	1599.7 1501.7	160.0 150.2	7.59 7.78	50.5 47.0	14.0 13.3	1.35 1.38	
20 x 6 $\frac{1}{4}$	75.0 65.4	21.90 19.08	20.00 20.00	6.391 6.250	.789 .789	.641 .500	1263.5 1169.5	126.3 116.9	7.60 7.83	30.1 27.9	9.4 8.9	1.17 1.21	
18 x 6	70.0 54.7	20.46 15.94	18.00 18.00	6.251 6.000	.691 .691	.711 .460	917.5 795.5	101.9 88.4	6.70 7.07	24.5 21.2	7.8 7.1	1.09 1.15	
15 x 5 $\frac{1}{2}$	50.0 42.9	14.59 12.49	15.00 15.00	5.640 5.500	.622 .622	.550 .410	481.1 441.8	64.2 58.9	5.74 5.95	16.0 14.6	5.7 5.3	1.05 1.08	
12 x 5 $\frac{1}{4}$	50.0 40.8	14.57 11.84	12.00 12.00	5.477 5.250	.659 .659	.687 .460	301.6 268.9	50.3 44.8	4.55 4.77	16.0 13.8	5.8 5.3	1.05 1.08	
12 x 5	35.0 31.8	10.20 9.26	12.00 12.00	5.078 5.000	.544 .544	.428 .350	227.0 215.8	37.8 36.0	4.72 4.83	10.0 9.5	3.9 3.8	.99 1.01	
10 x 4 $\frac{5}{8}$	35.0 25.4	10.22 7.38	10.00 10.00	4.944 4.660	.491 .491	.594 .310	145.8 122.1	29.2 24.4	3.78 4.07	8.5 6.9	3.4 3.0	.91 .97	
8 x 4	23.0 18.4	6.71 5.34	8.00 8.00	4.171 4.000	.425 .425	.441 .270	64.2 56.9	16.0 14.2	3.09 3.26	4.4 3.8	2.1 1.9	.81 .84	
7 x 3$\frac{5}{8}$	20.0 15.3	5.83 4.43	7.00 7.00	3.860 3.660	.392 .392	.450 .250	41.9 36.2	12.0 10.4	2.68 2.86	3.1 2.7	1.6 1.5	.74 .78	
6 x 3 $\frac{3}{8}$	17.25 12.5	5.02 3.61	6.00 6.00	3.565 3.330	.359 .359	.465 .230	26.0 21.8	8.7 7.3	2.28 2.46	2.3 1.8	1.3 1.1	.68 .72	
5 x 3	14.75 10.0	4.29 2.87	5.00 5.00	3.284 3.000	.326 .326	.494 .210	15.0 12.1	6.0 4.8	1.87 2.05	1.7 1.2	1.0 .82	.63 .65	
4 x 2 $\frac{5}{8}$	9.5 7.7	2.76 2.21	4.00 4.00	2.796 2.660	.293 .293	.326 .190	6.7 6.0	3.3 3.0	1.56 1.64	.91 .77	.65 .58	.58 .59	
3 x 2 $\frac{3}{8}$	7.5 5.7	2.17 1.64	3.00 3.00	2.509 2.330	.260 .260	.349 .170	2.9 2.5	1.9 1.7	1.15 1.23	.59 .46	.47 .40	.52 .53	

See page 10 for method of designation.

LINTEL SCHEDULE

MARK	NO.	OPENING	SECTION	REMARKS
L-1	8	3'-0	3- 3 $\frac{1}{2}$ x 3 $\frac{1}{2}$ x $\frac{1}{4}$ Ls	
L-2	22	3'-4	3- 3 $\frac{1}{2}$ x 3 $\frac{1}{2}$ x $\frac{1}{4}$ Ls	
L-3	1	5'-6	3- 4 x 3 x $\frac{5}{16}$ " Ls	
L-4	1	7'-4	6 x 3 $\frac{3}{8}$ I @ 12.5 # 1- 12 x $\frac{1}{4}$ R.	EXTEND 12 x $\frac{1}{4}$ R FOR BEARING PL.
L-5	1	10'-0	6 x 3 $\frac{3}{8}$ I @ 12.5 # 1- 8 x $\frac{1}{4}$ R.	EXTEND 8 x $\frac{1}{4}$ R FOR BEARING PL.
L-6	11	10'-1	7 x 3 $\frac{3}{4}$ I @ 15.3 # 1- 12 x $\frac{1}{4}$ R.	EXTEND 12 x $\frac{1}{4}$ R FOR BEARING PL.
L-7	1	10'-0	6 x 2 C @ 8.2	
L-8	4	7'-1	5 x 3 I @ 10.0 # 1- 12 x $\frac{1}{4}$ R.	EXTEND 12 x $\frac{1}{4}$ R FOR BEARING PL.
L-9	1	9'-11	8 x 4 I @ 18.4 # 1- 12 x $\frac{1}{4}$ R.	EXTEND 12 x $\frac{1}{4}$ R FOR BEARING PL.
L-10	1	14'-5	8 x 4 I @ 18.4 # 1- 12 x $\frac{1}{4}$ R.	EXTEND 12 x $\frac{1}{4}$ R FOR BEARING PL.
L-11	1	13'-2 $\frac{1}{2}$	7 x 3 $\frac{3}{4}$ I @ 15.3 # 1- 8 x $\frac{1}{4}$ R.	EXTEND 8 x $\frac{1}{4}$ R FOR BEARING PL.
L-12	4	3'-0	2- 3 $\frac{1}{2}$ x 3 $\frac{1}{2}$ x $\frac{1}{4}$ Ls	
L-13	3	3'-4	2- 3 $\frac{1}{2}$ x 3 $\frac{1}{2}$ x $\frac{1}{4}$ Ls	
L-14	6	2'-6	3- 4 x 3 x $\frac{1}{4}$ Ls	
L-15	1	10'-9	5 x 3 I @ 14.5 # 1- 12 x $\frac{1}{4}$ R.	EXTEND 12 x $\frac{1}{4}$ R FOR BEARING PL.
L-16	1	6'-4	3- 4 x 4 x $\frac{1}{4}$ Ls	
L-17	13	3'-0	1- 4 x 4 x $\frac{1}{4}$ L + 8" x 12" conc.	SEE FOUNDATION PLAN
L-18	1	3'-0	2- 6 x 4 x 3 $\frac{3}{8}$ Ls	SEE FOUNDATION PLAN
L-19	1	3'-4"	3- 4 x 3 x $\frac{1}{4}$ Ls	
L-20	1	3'-0"	3- 4 x 4 x $\frac{1}{4}$ Ls	