

SECTION 00 0101
PROJECT TITLE PAGE

TOWN OF ROCKVILLE COMMUNITY CENTER AND REC HALL EECBG
AUGUST 9TH 2010

END OF PROJECT TITLE PAGE

SECTION 00 0110

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SECTION 00 1113

INVITATION TO BID

PART 1 GENERAL

1.01 Introduction

- A. The Town of Rockville invites bids for renovations to the Recreation Hall and Main Hall in the form of Energy Efficient upgrades, including a new heating system, blown in cellulose in empty wall, floor and roof cavities and new windows in the attached living quarters.
- B. The project is located at 43 East Main Street, Rockville, UT 84763.

1.02 Notice of EECBG Requirements

- A. Bids shall be divided according to separate activities, including Profit and Overhead, with a grand total of all activities.
- B. This project is funded in whole or in part by the Department of Energy (DOE) through the Energy Efficiency and Conservation Block Grant (EECBG), administered by the Department of Natural Resources, Utah State Energy Program (USEP). Contractors must comply with the Davis-Bacon Act. Specific details of the Act can be found at: <http://www.dol.gov/compliance/laws/comp-dbra.htm> . Contractors who cannot pay laborers and mechanics on a WEEKLY basis should NOT respond to this request for bid.
- C. Contractors must comply with the Buy American Provision of ARRA. Specific details may be found at: <http://www.gpo.gov/fdsys/pkg/PLAW-111publ5/html/PLAW-111publ5.htm>. Contractors will be required to provide product cut sheets and manufacturer's certifications stating Buy American ARRA qualifications.
- D. The contractor will be expected to create a Waste Stream Management Plan that includes a proposal for storage and disposal of each item.
- E. The following forms will be used by the contractor to assist in grant reporting:
 - 1. Buy American Form, including cut sheets of products listed.
 - 2. Waste Stream Form, including a Waste Stream Management Plan.
 - 3. Weekly Payroll Form, as provided by the EECBG or an approved alternative.
 - 4. E-Verify Online Form (Immigration status of employees)
- F. The low bidding General Contractor and each subcontractor will be required to provide a DUNS# within 3 working days of bid award.
- G. The low bidding General Contractor will be required to provide specification sheets and proof of Buy American compliance withing 3 working days of bid award.
- H. Sample Forms may be found in the Addenda listed on the Stempel Form PC Website, www.stempelform.com.

1.03 Document Availability

- A. Bidding Documents will be available September 10th, 2010. The drawings and specifications, as well as any subsequent Q&A or announcements, may be viewed and downloaded at www.stempelform.com, Follow the link for "Rockville EECBG Bid Documents".
- B. The Documents will be available for viewing and purchase at the following location:
 - 1. Steamroller Copies, 690 West State Street, Hurricane, UT 84737

1.04 Questions

- A. All questions regarding the documents shall be submitted in writing to the project manager, Will McLoughlin, at Stempel Form PC Architects, PO Box 790206, Virgin, UT 84779
- B. Questions may be emailed to info@stempelform.com, include "Rockville EECBG" in the subject line.
- C. Questions may be faxed to (435) 635-1661.
- D. Question must be received on or before November 1st, 2010. Answers to questions will be posted at www.stempelform.com. No verbal questions will be accepted. All questions shall be in writing.

1.05 Pre-Bid Building Tours

- A. Two site tours will be given for interested contractors and subcontractors at 2:00pm at 43 East Main Street, Rockville, UT 84763 on:
 - 1. Friday, August 13, 2010
 - 2. Friday, August 20, 2010
- B. Attendance at, at least, one site tour will be mandatory for all bidding general contractors.

1.06 Bids

- A. Bids shall include Itemized Prices as requested in the included form.
- B. Bid forms provided in this document shall be included with the contractor's bid.

1.07 Deadline and Opening

- A. Sealed bids with a signature across the closure are due before 10:15 AM (Rockville Town Post Office is only open from 8:15AM to 10:15AM) Wednesday November 3rd, 2010.
- B. Bids will be received by mail at P.O. Box 630206, Rockville, UT 84763.
- C. Hand delivered, Fed Ex and UPS bids will be accepted at the home of the town clerk at 188 West Main Street, Rockville, UT 84763 between the hours of 9:00 am and 4:00 pm.
- D. Bids will be publicly opened and read at 6:00 pm the same day in the Main Hall located at 43 East Main Street, Rockville, UT 84763.

1.08 Collection and Evaluation of Bids

- A. Bids will be reviewed for completeness.
- B. The Lowest Responsible Bidder will be selected.

1.09 Award

- A. Project Award will be announced on or before Wednesday, November 10th, 2010.

1.10 Completion

- A. Construction completion shall be before January 31st, 2011, unless unforeseen delays occur.
- B. The lowest bidder shall provide a schedule of project outlining logistics and timing of different activities within 10 working days of bid award. Specification submittals and Buy American letters will be included.

1.11 Equal Opportunity

- A. Town of Rockville is an Equal Employment Opportunity Employer.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

END OF SECTION

SECTION 00 4100

BID FORM

THE PROJECT AND THE PARTIES

1.01 TO:

- A. The Town of Rockville (Owner)

1.02 FOR:

- A. Rockville Community Center EECBG Renovation

1.03 DATE: _____ (Bidder to enter date)

1.04 SUBMITTED BY: (Bidder to enter name and address)

- A. Bidder's Full Name _____
 - 1. Address _____
 - 2. City, State, Zip _____

1.05 OFFER

- A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by the Architect for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Price of:
- B. _____ dollars
(\$ _____), in lawful money of the United States of America.
- C. We have included the required security deposit as required by the Instruction to Bidders.
- D. All applicable federal taxes are included and State of Utah taxes are included in the Bid Price.
- E. All Cash and Contingency Allowances described in Section 01 2100 are included in the Bid Price.

1.06 ACCEPTANCE

- A. This offer shall be open to acceptance and is irrevocable for thirty days from the bid closing date.
- B. If this bid is accepted by Owner within the time period stated above, we will:
 - 1. Execute the Agreement within seven days of official approval from USEP.
 - 2. Commence work within seven days after execution of the Agreement.

1.07 CONTRACT TIME

- A. If this Bid is accepted, we will:
 - 1. Complete the work by the 31st day of January 2011

1.08 CHANGES TO THE WORK

- A. When Architect establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions, our percentage fee will be:
 - 1. _____ percent overhead and profit on the net cost of our own Work;
 - 2. _____ percent on the cost of work done by any Subcontractor.
- B. On work deleted from the Contract, our credit to Owner shall be Architect-approved net cost plus _____ of the overhead and profit percentage noted above.

1.09 ADDENDA

- A. In submitting this bid, the contractor acknowledges receipt of all updates posted on the www.stempelform.com website prior to bid submission.
- B. In addition to the above, the following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Price.
 - 1. Addendum # _____ Dated _____.
 - 2. Addendum # _____ Dated _____.

1.10 BID FORM SUPPLEMENTS

- A. The following Supplements are attached to this Bid Form and are considered an integral part of this Bid Form:
 - 1. Document 00 4327 - Separate Prices: Include a listing of separate prices as specifically requested in the Contract Documents.
 - 2. Document 00 4373 - Schedule of Values identifies the Bid Price segmented into portions as requested.
- B. We agree to conform to the Administrative Requirements set forth in Section 01 3000. _____

1.11 BID FORM SIGNATURE(S)

- A. _____
- B. (Bidder - print the full name of your firm)
- C. _____
- D. (Authorized signing officer, Title)
- E. _____
- F. (Authorized signing officer, Title)

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

END OF BID FORM

SECTION 00 4327

SEPARATE PRICES FORM

PARTICULARS

**THE FOLLOWING IS THE LIST OF SEPARATE PRICES REFERENCED IN THE BID SUBMITTED BY:
(BIDDER) _____**

TO OWNER: TOWN OF ROCKVILLE

DATED _____ AND WHICH IS AN INTEGRAL PART OF THE BID FORM.

ITEM DESCRIPTIONS

6.01 Item # 1:

A. Description: High Efficiency Oil Furnace

B. Value: \$ _____

6.02 Item # 2:

A. Description: Vinyl Window Package

B. Value: \$ _____

6.03 Item # 3:

A. Description: Drywall Texture and Paint in Main Hall Basement (This is required for administrative and accounting purposes)

B. Value: \$ _____

END OF FORM

SECTION 00 4373

PROPOSED SCHEDULE OF VALUES FORM

PARTICULARS

1.01 The following is a Cost Breakdown referenced in the bid submitted by:

1.02 (Bidder) _____

1.03 TO (Owner) Town of Rockville

1.04 Dated _____ and which is an integral part of the Bid Form.

ITEM DESCRIPTIONS

2.01 Item #1:

- A. Description: Rec Hall - Existing Oil Furnace and Duct Work Demolition; High Efficiency Oil Furnace; New Insulated Duct Work; Installation.
- B. Overhead Included.
- C. Value: \$ _____

2.02 Item #2:

- A. Description: Rec Hall – Blown in fiber glass Insulation in existing wall cavities; Installing batt insulation in attic, floor/ceiling; Sealing and weatherstripping at necessary; Plaster patching and re-texturing as necessary to restore to original finish.
- B. Overhead Included
- C. Value: \$ _____

2.03 Item #3:

- A. Description: Main Hall - Blown in fiber glass Insulation in existing Main Level wall cavities; Installing batt insulation in attic. Basement: 1.5" rigid extruded polystyrene insulation board as noted in drawings, furring strips and drywall; Sealing and weatherstripping of windows, electrical boxes, etc. as necessary; seal and fill evaporative cooler window opening; Plaster patching and re-texturing as necessary to restore to original finish.
- B. Overhead Included
- C. Value: \$ _____

2.04 Item #4:

- A. Description: Basement of Main Hall - Removal of existing 9 double pane vinyl frame windows; removal of evaporative cooler window opening; installation of 9 new windows.
- B. Overhead Included
- C. Value: \$ _____

2.05 The above outlined items should constitute the entirety of the construction to be performed.

END OF SUPPLEMENT E

SECTION 01 1000

SUMMARY

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: Rockville Community Center EECBG.
- B. Owner's Name: Town of Rockville.
- C. Architect's Name: Stempel Form PC.
- D. The Project consists of the alteration of The Rockville Recreation (Rec) Hall and the Main Hall.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price.

1.03 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is shown on drawings and specified in Section 02 4100.
- B. Scope of alterations work is shown on drawings.
- C. Renovate the following areas, complete including operational mechanical and electrical work and finishes:
 - 1. Insulate Rec Hall walls, attic and floor.
 - 2. Remove and Replace Rec Hall Oil Furnace and Ducting per drawings.
 - 3. Insulate Main Hall walls, attic and floor/ceiling space.
 - 4. Install furring and expanded polystyrene insulation on interior wall of Main Hall Basement Living Quarters. Install drywall to taping.
 - 5. Remove and Replace Main Hall Basement windows with double pane vinyl windows.
- D. Refinish all surface areas of the following, as specified:
 - 1. Patch plaster in Rec Hall removed or damaged during installation of insulation to match existing surface.
 - 2. Repair and or Refinish Rec Hall wood floor if any damage occurs during installation of supply grills.
 - 3. Patch plaster in Main Hall removed or damaged during installation of insulation to match existing surface.
 - 4. Repair any damages caused by the removal of the furnace or the windows.
- E. HVAC: Replace existing system with new construction.
- F. Electrical Power and Lighting: Restore existing system and equipment to operational condition. Maintain access to electrical power and switch plates in Main Hall Basement after installation of furring, insulation and drywall.
- G. Owner will remove the following items before start of work:
 - 1. Antiques.
 - 2. Wall hangings.
 - 3. Some Furniture.
- H. Contractor shall remove and store the following prior to start of work, for later re-installation by Contractor:
 - 1. Trim and Casing that needs to be removed for alterations.
 - 2. Lighting or Plumbing fixtures that need to be removed for alterations.

1.04 OWNER OCCUPANCY

- A. Cooperate with Owner to minimize conflict and to facilitate Owner's use of at least one of the two major public spaces during construction. Basement will not be occupied for duration of construction.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Arrange use of site and premises to allow:
 - 1. Owner occupancy.
 - 2. Use of site and premises by the public.
- B. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- C. Time Restrictions:
 - 1. Limit conduct of especially noisy work to the hours of 8:00 am and 5:00 pm.

END OF SECTION

SECTION 01 3000

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Site mobilization meeting.
- C. Progress meetings.
- D. Construction progress schedule.
- E. Progress photographs.
- F. Coordination drawings.
- G. Submittals for review, information, and project closeout.
- H. Submittal procedures.

1.02 PROJECT COORDINATION

- A. Project Coordinator: Councilor Megan Honer-Orton.
- B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, access, traffic, and parking facilities.
- C. During construction, coordinate use of site and facilities through the Project Coordinator.
- D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities.
- E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
- F. Make the following types of submittals to Architect and Owner through the Project Coordinator:
 - 1. Requests for interpretation.
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Manufacturer's instructions and field reports.
 - 6. Applications for payment and change order requests.
 - 7. Progress schedules.
 - 8. Coordination drawings.
 - 9. Closeout submittals.

PART 3 EXECUTION

2.01 PRECONSTRUCTION MEETING

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.
 - 2. Architect.
 - 3. Contractor.
 - 4. HVAC Subcontractor.

- C. Agenda:
 - 1. Distribution of Contract Documents.
 - 2. Review submissions of list of Subcontractors and required information, list of Products/specification sheets, Buy American letters, schedule of values, and progress schedule.
 - 3. Designation of personnel representing the parties to Contract, the Town of Rockville and Architect.
 - 4. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 5. Scheduling.
- D. Contractor to record minutes and distribute copies within two days after meeting to participants, with electronic copies to Architect, Owner, participants, and those affected by decisions made.

2.02 SITE MOBILIZATION MEETING

- A. Owner will schedule a meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
 - 1. Contractor.
 - 2. Owner.
 - 3. Architect.
 - 4. Contractor's Superintendent.
 - 5. Major Subcontractors.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Use of premises by Owner and Contractor.
 - 3. Owner's requirements and partial occupancy prior to completion.
 - 4. Temporary utilities provided by Owner.
 - 5. Security and housekeeping procedures.
 - 6. Schedules.
 - 7. Application for payment procedures.
 - 8. Procedures for maintaining record documents.
 - 9. Requirements for start-up of equipment.
 - 10. Inspection and acceptance of equipment put into service during construction period.
- D. Contractor to record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

2.03 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum bi-monthly intervals.
- B. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting.
- C. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems that impede, or will impede, planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Maintenance of progress schedule.
 - 7. Corrective measures to regain projected schedules.
 - 8. Planned progress during succeeding work period.
 - 9. Maintenance of quality and work standards.
 - 10. Effect of proposed changes on progress schedule and coordination.

11. Other business relating to Work.

- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

2.04 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 days after date of the Agreement, submit schedule for completion of work.
- B. If schedule requires revision after review, submit revised schedule within 10 days.
- C. Submit updated schedule with each Application for Payment.

2.05 PROGRESS PHOTOGRAPHS

- A. Submit new photographs at least once a month.
- B. Photography Type: Digital; electronic files.
- C. In addition to periodic, recurring views, take photographs of each of the following events:
 - 1. Existing furnace demolition and removal.
 - 2. Structural framing in progress and upon completion.
 - 3. Insulation, each type/each building, in progress and upon completion.
 - 4. Plaster patching in progress and upon completion.
- D. Take photographs as evidence of existing project conditions as follows:
 - 1. Interior views: Existing condition of plaster, moulding, trim, windows, floors, ceiling.
- E. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
 - 1. Delivery Medium: Via email.
 - 2. File Naming: Include project identification, date and time of view, and view identification.

2.06 DAVIS BACON COMPLIANCE

- A. Submit weekly copies of payroll for each person working on project as required by Davis Bacon wage rules.
- B. Wages shall be based on current Davis Bacon Wage Decision for Washington County, Utah.

2.07 ARRA BUY AMERICAN COMPLIANCE

- A. The Contractor will supply a list of all product and manufacturing locations to the Project Coordinator.
- B. The Contractor will assure that all specified products are installed in the building. Any changes to product must be submitted with a description of item, quantity and manufacturer name and facility location.
- C. Refer to <http://www.gpo.gov/fdsys/pkg/PLAW-111publ5/html/PLAW-111publ5.htm>, for further information regarding the act.

2.08 WASTE STREAM MANAGEMENT

- A. Within 10 days of Notice of Award, the Contractor will submit a waste stream plan that outlines per activity, the refuse location of each item. This shall include a description of the item and a quantity.

2.09 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings of mechanical system.

3. Samples for selection.
 4. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed only for aesthetic, color, or finish selection.

2.10 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
1. Certificates.
 2. Test reports.
 3. Inspection reports.
 4. Manufacturer's instructions.
 5. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

2.11 SUBMITTALS FOR PROJECT CLOSEOUT

- A. When the following are specified in individual sections, submit them at project closeout:
1. Project record documents.
 2. Operation and maintenance data.
 3. Warranties.
 4. Other types as indicated.
- B. Submit for Owner's benefit during and after project completion.

2.12 NUMBER OF COPIES OF SUBMITTALS

- A. Documents for Review:
1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches (215 x 280 mm): Submit the number of copies that Contractor requires, plus one copy that will be retained by Architect.
- B. Documents for Information: Submit two copies.
- C. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.
- D. Samples: Submit sufficient samples for review by the architect and owner.

2.13 SUBMITTAL PROCEDURES

- A. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- B. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- C. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- D. Deliver submittals to Architect at business address.
- E. Schedule submittals to expedite the Project, and coordinate submission of related items.
- F. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.

- G. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- H. Provide space for Contractor and Architect review stamps.
- I. When revised for resubmission, identify all changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

END OF SECTION

SECTION 01 4100

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 Regulatory requirements applicable to this project are the following:

- A. This Project is funded (or partially funded) through a Energy Efficiency and Conservation Block Grant (EECBG) by the Department of Energy (DOE) through the Utah State Energy Program (USEP). The contractor will be required to comply with all federal labor standards and attendant laws, including the payment of the most current Davis-Bacon wages and compliance with Section 3 to provide employment opportunities for lower income persons. Local, minority and woman owned business owners are encouraged to bid. The lowest responsible bidder will be selected.
- B. 29 CFR 1910 - Occupational Safety and Health Standards; current edition; as a work place.
- C. ICC (IFC) - ICC International Fire Code, 2006.
- D. ICC (IBC) - ICC International Building Code, 2006.
- E. ICC (IPC) - ICC International Plumbing Code, 2006.
- F. ICC (IMC) - ICC International Mechanical Code, 2006.
- G. NFPA 70 - National Electrical Code, 2008.
- H. ICC (IECC) - ICC International Energy Conservation Code, 2006.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 7000

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Cutting and patching.
- D. Cleaning and protection.
- E. Starting of systems and equipment.
- F. Demonstration and instruction of Owner personnel.
- G. Closeout procedures, except payment procedures.

1.02 COORDINATION

- A. See Section 01 1000 for occupancy-related requirements.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of work of separate sections.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.04 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as shown.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - 1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
 - 2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- C. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish. Keep removal of historic plaster to a minimum.
- D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
- E. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.

- F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- G. Refinish existing surfaces as indicated:
 - 1. Cut openings in wall, roof and floor/ceiling surfaces only as needed for installation of insulation and mechanical supply/return. Refinish plaster to match historic texture; refinish patched drywall to match existing texture.
 - 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- H. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- I. Do not begin new construction in alterations areas before demolition is complete.

3.05 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Provide openings for penetration of mechanical, electrical, and other services.
 - 3. Match work that has been cut to adjacent work.
 - 4. Repair areas adjacent to cuts to required condition.
 - 5. Repair new work damaged by subsequent work.
 - 6. Remove and replace defective and non-conforming work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Restore work with new products in accordance with requirements of Contract Documents.
- F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- C. Prohibit traffic in spaces not needing renovations, and those in which renovation work is complete.

3.08 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.
- E. Execute start-up under supervision of applicable Contractor personnel in accordance with manufacturers' instructions.
- F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.09 DEMONSTRATION AND INSTRUCTION

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

3.10 ADJUSTING

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

3.11 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces of any construction debris.
- G. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Architect and Owner.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in Contractor's Notice of Substantial Completion.
- C. Notify Architect when work is considered ready for Substantial Completion.

- D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's review.
- E. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.
- F. Notify Architect when work is considered finally complete.
- G. Complete items of work determined by Architect's final inspection.

END OF SECTION

SECTION 02 4100

DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of building elements for alterations purposes.
- B. Abandonment and removal of existing utilities and utility structures.

1.02 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2004.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Site Diagram: Showing:
 - 1. Areas for temporary construction and field offices.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.
- D. Proposed method for removal of furnace.
- E. Waste management plan in accordance with Sections 01 4100 Regulatory Requirements and 01 7000 Execution and Closeout Requirements.

PART 3 EXECUTION

2.01 SCOPE

- A. Remove and store existing vinyl windows in Main Hall basement for salvage.
- B. Remove existing cast iron, oil furnace. No portion of the building may be altered for the removal of unit. Propose method for removal.
- C. Remove existing duct work for recycling.
- D. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

2.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 3. Provide, erect, and maintain temporary barriers and security devices.
 - 4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 5. Do not close or obstruct roadways or sidewalks without permit.

6. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Owner.
 - C. Protect existing structures and other elements that are not to be removed.
 1. Provide bracing and shoring.
 2. Prevent movement or settlement of adjacent structures.
 3. Stop work immediately if adjacent structures appear to be in danger.
 - D. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
 - E. Perform demolition in a manner that maximizes salvage and recycling of materials.
 1. Dismantle existing construction and separate materials.
 2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

2.03 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

2.04 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 1. Verify that construction and utility arrangements are as shown.
 2. Report discrepancies to Architect before disturbing existing installation.
 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

- C. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
- D. Services (Including but not limited to HVAC): Remove existing systems and equipment as indicated.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 - 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - 3. Verify that abandoned services serve only abandoned facilities before removal.
 - 4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- E. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
 - 4. Patch as specified for patching new work.

2.05 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 06 1000

ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-structural dimension lumber framing.
- B. Preservative treated wood materials.

1.02 REFERENCE STANDARDS

- A. AWPA U1 - Use Category System: User Specification for Treated Wood; American Wood-Protection Association; 2009.
- B. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. Species: Spruce-Pine-Fir, unless otherwise indicated.
 - 2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
- B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Stud Framing (2 by 2 through 2 by 6 (50 by 50 mm through 50 by 150 mm)):
 - 1. Species: Spruce-Pine-Fir.
 - 2. Grade: No. 2.
- D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.

2.03 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 - 2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

- B. Sill Gasket on Top of Foundation Wall (shall be used in any situation where new framing rests upon foundation): 1/4 inch (6 mm) thick, plate width, closed cell plastic foam from continuous rolls.

2.04 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

PART 3 EXECUTION

3.01 PREPARATION

- A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches (100 mm) and seal.
- B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.
- C. Treated lumber shall be used in any location where framing is in contact with masonry of any kind.

3.02 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA Wood Frame Construction Manual.
- D. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.04 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. Specifically, provide the following non-structural framing and blocking for items that occur in the existing condition unless otherwise directed by the Owner:
 - 1. Cabinets and shelf supports.
 - 2. Wall-mounted door stops.
 - 3. Other items not specified that will need to be removed and replaced during alterations.

3.05 TOLERANCES

- A. Framing Members: 1/4 inch (6 mm) from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet (2 mm/m) maximum, and 1/4 inch in 30 feet (7 mm in 10 m) maximum.

3.06 CLEANING

- A. Waste Disposal: Comply with the requirements of Section 01 7419.
 - 1. Comply with applicable regulations.
 - 2. Do not burn scrap on project site.
 - 3. Do not burn scraps that have been pressure treated.
 - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 07 2100

THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Board insulation at exterior wall behind drywall wall finish between furring strips.

1.02 REFERENCE STANDARDS

- A. ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2007.
- B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Insulation on Inside of Concrete and Masonry Exterior Walls: Extruded polystyrene.

2.02 FOAM BOARD INSULATION MATERIALS

- A. Extruded Polystyrene Board Insulation: ASTM C 578, Type X; Extruded polystyrene board with natural skin surfaces; with the following characteristics:
 - 1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E 84.
 - 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E 84.
 - 3. Board Thickness: 1-1/2 inches (37.5 mm).

2.03 ACCESSORIES

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

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation and adhesive.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT EXTERIOR WALLS

- A. Apply foam compatible construction adhesive to back of boards:
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- C. Tape insulation board joints.

3.03 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 07 2126

BLOWN INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Exterior Walls: Loose insulation pneumatically placed and poured into wall spaces through access holes.
- B. Ceiling: Loose insulation pneumatically placed, and poured into joist spaces through access holes.

1.02 RELATED REQUIREMENTS

- A. Section 07 2100 - Thermal Insulation.

1.03 REFERENCE STANDARDS

- A. ASTM C 739 - Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation; 2008.
- B. ASTM C 764 - Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation; 2007.
- C. ASTM C 1015 - Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation; 2006.

1.04 SYSTEM DESCRIPTION

- A. Materials of This Section: Provide continuity of thermal barrier at building enclosure elements, in conjunction with Section 07 2100.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, limitations.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Loose Fill Insulation: ASTM C 764, glass fiber type, nodulated for pour and bulk for pneumatic placement.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that light fixtures have thermal cut-out device to restrict over-heating in soffit or ceiling spaces.
- B. Verify spaces are unobstructed to allow placement of insulation.

3.02 INSTALLATION

- A. Install insulation in accordance with ASTM C 1015 and manufacturer's instructions.
- B. Drill 2 inch (50 mm) diameter insulation access ports in fascia boards to permit equipment access.
- C. Place insulation pneumatically to completely fill stud, joist, and rafter spaces.
- D. Do not impede natural attic ventilation to gable vents.
- E. Place against and behind mechanical and electrical services within the plane of insulation.

- F. Completely fill intended wall and floor/ceiling spaces. Leave no gaps or voids.
- G. Repair and reseal insulation access ports. Refinish to match disturbed work.

3.03 CLEANING

- A. Remove loose insulation residue.

END OF SECTION

SECTION 08 5313

VINYL WINDOWS

PART 1 GENERAL

1.01 GENERAL NOTE REGARDING SECTION

- A. Windows shall be sized to match current windows. Any deviation from current sizing is subject to approval by the project coordinator.

1.02 SECTION INCLUDES

- A. Factory fabricated tubular extruded plastic windows with operating sash.
- B. Factory glazed.
- C. Operating hardware.
- D. Insect screens.
- E. Perimeter sealant.

1.03 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors; American Architectural Manufacturers Association; 2008.
- B. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2009).
- C. FS L-S-125 - Screening, Insect, Nonmetallic; Federal Specifications and Standards; Revision B, 1972.

1.04 PERFORMANCE REQUIREMENTS

- A. Performance Requirements: As specified in PART 2, with the following additional requirements:
- B. Assembly: To accommodate, without damage to components or deterioration of seals, movement between window and perimeter framing, deflection of lintel.
- C. Vapor Seal: No vapor seal failure at interior static pressure of 1 inch (25 mm), 72 degrees F (22 degrees C), and 40 percent relative humidity.
- D. System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.
- E. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.
- F. Thermal Movement: Design sections to permit movement caused by thermal expansion and contraction of plastic to suit glass, infill, and perimeter opening construction.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, anchorage and fasteners, glass, internal drainage details.
- C. Shop Drawings: Indicate quantity of types, opening dimensions and installation requirements.

- D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Manufacturer and Installer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same. Include coverage for degradation of color finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Tubular Plastic Windows:
 - 1. Jones Paint and Glass: www.jonespg.com.
 - 2. Cascade Windows; Product Thermal Pro: www.cascadewindows.com.
 - 3. Substitutions: Upon pre-bid approval by Architect before August 20th, 2010.

2.02 COMPONENTS

- A. Windows: Extruded, hollow, tubular, ultra-violet resistant polyvinyl chloride (PVC) with integral color; factory fabricated; with vision glass, related flashings, anchorage and attachment devices.
 - 1. Performance Requirements: AAMA/WDMA/CSA 101/I.S.2/A440 R15.
 - 2. Configuration: Per A7.0 of Bid Drawings.
 - 3. Color: white.
 - 4. Glazing: Double Pane with low-e coating.
- B. Sills, brake formed prefinished 26ga aluminum to match windows, sloped for positive wash. Fit under sash and project beyond wall face; one full piece, full width of opening. Caulk as appropriate.
- C. Insect Screens: Woven fiberglass mesh; 14/18 mesh size.
 - 1. Color: Black.
- D. Operable Sash Weather Stripping: per manufacturer; permanently resilient, profiled to effect weather seal.
- E. Fasteners: Choose to:
 - 1. Avoid staining
 - 2. Avoid galvanic action (negative interaction of fastener with concrete or dissimilar metal).
 - 3. Maintain aesthetic integrity.

2.03 HARDWARE

- A. Horizontal Sliding Sash: Extruded PVC interfacing tracks, limit stops in head and sill track.
- B. Sash lock: Lever handle with cam lock.
- C. Finish For Exposed Hardware: white baked enamel.

2.04 FABRICATION

- A. Fabricate framing and sash members with fusion welded corners and joints, in a rigid jig. Supplement frame sections with internal reinforcement where required for structural rigidity.
- B. Form weather stop flange to perimeter of unit.

- C. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- D. Arrange fasteners to be concealed from view.
- E. Permit internal drainage weep holes and channels to migrate moisture to exterior. Provide internal drainage of glazing spaces to exterior through weep holes.
- F. Assemble insect screen frame, miter and reinforced frame corners. Fit mesh taut into frame and secure. Fit frame with four spring loaded steel pin retainers.
- G. Double weatherstrip operable units.
- H. Factory glaze window units.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify wall openings and adjoining air and vapor seal materials are ready to receive work of this Section.
- B. Size windows to schedule and to fit openings precisely.

3.02 INSTALLATION

- A. Install window units in accordance with manufacturers instructions.
- B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- D. Install operating hardware.
- E. Provide all waterproofing and flashing in accordance with manufacturer's warranty requirements.

3.03 TOLERANCES

- A. Maximum Variation from Level or Plumb: 0.06 inches every 3 ft (1.5 mm/m) non-cumulative or 0.5 inches per 100 ft (12 mm/30 m), whichever is less.

3.04 ADJUSTING

- A. Adjust hardware for smooth operation and secure weathertight closure.

3.05 CLEANING

- A. Remove protective material from pre-finished surfaces.
- B. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.

END OF SECTION

SECTION 09 2116

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Gypsum wallboard.
- C. Joint treatment and accessories.
- D. Textured finish system.

1.02 REFERENCE STANDARDS

- A. ASTM C 475/C 475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).
- B. ASTM C 557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003.
- C. ASTM C 840 - Standard Specification for Application and Finishing of Gypsum Board; 2007.
- D. ASTM C 1396/C 1396M - Standard Specification for Gypsum Board; 2006a.
- E. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2007.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on gypsum board, accessories, and joint finishing system.

PART 2 PRODUCTS

2.01 BOARD MATERIALS

- A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces, unless otherwise indicated.
 - 2. Limitation: Gypsum board shall be domestically produced.
 - 3. Thickness:
 - a. Vertical Surfaces: 1/2 inch (13 mm).

2.02 ACCESSORIES

- A. Joint Materials: ASTM C 475 and as recommended by gypsum board manufacturer for project conditions.
- B. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.
- C. Adhesive for Attachment to Wood: ASTM C 557.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

- A. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches (100 mm) from floor and ceiling lines and abutting walls.
 - 1. Furring shall be fastened to a pressure treated sill, where furring contacts concrete directly.
- B. Blocking: Install wood blocking for support of:
 - 1. Framed openings.

3.03 BOARD INSTALLATION

- A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
- B. Corner Beads: Install at external corners, using longest practical lengths.

3.05 JOINT TREATMENT

- A. Finish gypsum board in accordance with levels defined in ASTM C 840, as follows:
 - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
- B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).

3.06 TEXTURE FINISH

- A. Apply finish texture coating by means of trowel, roller or spray in accordance with manufacturer's instructions.
- B. Texture Required: light orange peel.

3.07 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet (3 mm in 3 m) in any direction.

END OF SECTION

SECTION 09 2613

GYPSUM VENEER PLASTERING

PART 1 GENERAL

1.01 NOTE REGARDING PLASTER REPAIR

- A. The Town of Rockville is concerned that any repairs and patching required for the insulation project are as compatible as possible with the existing historic plaster in the buildings. "Gypsum Veneer Plaster" is used as a reference section within the specifications for these repairs.
- B. Alternate plaster materials more compatible with the historical integrity of the structures will be considered, the contractor shall submit any proposed alternatives prior to August 20th for approval.

1.02 SECTION INCLUDES

- A. Repair of Gypsum Veneer Plaster on existing plaster and other substrates.

1.03 REFERENCE STANDARDS

- A. ASTM C 587 - Standard Specification for Gypsum Veneer Plaster; 2004.
- B. ASTM C 843 - Standard Specification for Application of Gypsum Veneer Plaster; 1999 (Reapproved 2006).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittals procedures.
- B. Product Data: Provide data on veneer plaster products.
- C. Samples: Submit two sample panels, 12 x 12 inch (30x30 mm) in size illustrating veneer finish and texture to match existing plaster for each type of finish to be patched.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years of experience; installer shall have documented experience of patching plaster in historic structures.

1.06 FIELD CONDITIONS

- A. Do not apply veneer plaster when substrate or ambient air temperature is less than 50 degrees F (10 degrees C) nor more than 80 degrees F (27 degrees C); for 24 hours prior to, during operations and after, until building heating system can maintain the above minimum temperature.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Gypsum Veneer Plaster:
 - 1. Plaster material suited to the task and finish with suitable durability.

2.02 MATERIALS

- A. Gypsum Veneer Plaster: ASTM C 587, mixed in accordance with manufacturer's instructions.
- B. Wood Lath or other substratesuitable for structural integrity of plaster.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrates are ready to receive work.
- B. Verify gypsum plaster base is flat, smooth and surface is ready to receive work. Verify joint and surface perimeter accessories are in place.

3.02 PREPARATION

- A. Clean surfaces of dust or loose matter.
- B. Remove projections greater than 1/8 inch (3 mm) and fill depressions greater than 1/4 inch (6 mm) with mortar or other filler.

3.03 INSTALLATION- VENEER PLASTER

- A. Install gypsum veneer plaster in accordance with ASTM C 843 and manufacturer's instructions.
- B. Dampen masonry or other absorbtive surfaces without leaving visible water on surface, to minimize suction from veneer plaster materials. Install veneer plaster immediately after dampening.
- C. Finish surface to match existing plaster finish.

3.04 PROTECTION

- A. Do not permit traffic near unprotected finished surfaces.

END OF SECTION

SECTION 09 9000

PAINTING AND COATING

PART 2 PRODUCTS

1.01 MANUFACTURERS

- A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
- B. Paints:
 - 1. Base Manufacturer: See Section 09 9100.
- C. Substitutions: See Section 01 6000 - Product Requirements.

1.02 PAINTS AND COATINGS - GENERAL

- A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
 - 1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Supply each coating material in quantity required to complete entire project's work from a single production run.
 - 3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Volatile Organic Compound (VOC) Content:
 - 1. Provide coatings that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

1.03 PAINT SYSTEMS - SEE SECTION 09 9100

PART 3 EXECUTION

2.01 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to coating application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

2.02 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.

- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance.
- D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

END OF SECTION

SECTION 09 9100

PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Opaque paint systems for field application.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Base Manufacturer:
 - 1. Match Colors to existing conditions.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

2.02 INTERIOR PAINT SYSTEMS

- A. Paint included in this contract will only be to match existing conditions in areas that need patching. Restore to surrounding wall condition and color.

END OF SECTION

SECTION 23 0100

DESIGN BUILD HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Outline Specification for Design Build of new high efficiency HVAC system.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittal procedures, project meetings, progress schedules and documentation, reports, coordination.
- B. Section 01 4100 Regulatory Requirements.
- C. Section 01 7000 Execution and Closeout Requirements.

1.03 SUBMITTALS

- A. Any proposed deviation from layout indicated in drawings shall be approved by Architect.
- B. Proposed floor registers shall be submitted for approval by Owner prior to proceeding with construction: Contractor shall submit register for pre-approval by Architect and Owner.
- C. Contractor shall provide tear sheets, instructions, and other documentation in accordance with Sections 01 4100 and 01 7000.
- D. Design Layout drawings at 1/8"=1'-0" minimum scale shall be provided for the proposed system.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of equipment with size, location and installation of service utilities.
- B. Pre-installation Meeting: Conduct a pre-installation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- C. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner, and that outages are minimized. Coordinate all outages with Project Coordinator.

1.05 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in The State of Utah.
- B. Fuel Oil Piping, boiler piping, control system and other specialties shall be included in the design ` referenced above.
- C. All installations, Plumbing, Electrical, and Mechanical shall be performed by or under the direct supervision of persons licensed in those specialties.

PART 2 PRODUCTS

2.01 HVAC SYSTEM

- A. DESCRIPTION
 - 1. Demolition.
 - a. Remove existing oil-fired furnace system and all associated components and electrical supply.
 - b. Remove 10" combustion flue up to and into the brick chimney.
 - c. Demolish and cap selected ductwork as shown on the drawings.
 - 2. New Construction: Provide High Efficiency Oil Fired HVAC System, consisting of:
 - a. Oil Fired Boiler system, with in-line pump, storage tank, expansion tank, PRV, air separator, etc., feeding 30% water-propylene glycol to Air Handler.
 - b. Air Handler with hot water heating coil, provision for a future cooling coil, supply air fan and return/relief air fan, sized to suit building occupancy of 200 persons in the Hall and 20 on the Stage.
 - c. New Supply Ducts, running through new soffit in Hallway, turning as shown on drawing A1.1, and running under floor through an existing crawl space.
 - d. Associated supply air grilles.

- e. Re-use the existing supply ducting and existing grilles as a return air system. Make modifications as necessary to connect to new air handling unit.
- f. Programmable thermostat and CO2 sensor located as shown on the drawings.
- g. Through-the-wall horizontal PVC combustion flue system
- h. All provisions to re-appropriate existing chimney.
- i. Professionally clean the interior of all re-used existing duct systems.
- j. Necessary mechanical components to provide fresh air for the indicated occupancy, and an automated control system to reduce air intake when space is partially occupied or unoccupied, based on the CO2 sensor reading.
- k. Air handler shall be capable of providing varying outside air and relief air based on item "j".
- l. Hot water supply and return stubs (1") from boiler, appropriate to supply possible future hot Water Heater or supplemental Air Handler.

B. SPECIFICATIONS

230500 - BASIC MECHANICAL REQUIREMENTS

- 1. Coordinate the location of all new wall openings and the location of all new and equipment with the existing structure and architectural plans prior to any installation.
- 2. Provide 4" concrete housekeeping pads under all floor mounted equipment.
- 3. Comply with all requirements of the International Energy Conservation Code, International Mechanical Code, International Plumbing Code and the International Building Code as currently in force in the state of Utah.
- 4. All equipment shall provide the listed performance at the site altitude of 3,750ft.
- 5. Core cut all pipe penetration of existing masonry or concrete walls and floors. Seal all penetrations through the crawl space wall water tight with silicone sealant.
- 6. Seal all exposed piping and ducts through walls air tight in a neat manner.
- 7. **Electrical starters, conduit and wiring for mechanical systems must be included.**

230523 – VALVES

- 1. All valves shall be by one manufacturer.

230548 - VIBRATION ISOLATION, SOUND ISOLATION & SEISMIC BRACING

- 1. All mechanical equipment shall be vibration isolated and seismically braced for the site specific seismic design category and seismic use group, in accordance with the latest adopted editions of the IBC, ASHRAE, and SMACNA. Provide seismic products by Amber-Booth or Mason Industries.
- 2. In general, provide spring mounts to attenuate low frequency sound and vibration and neoprene pads to attenuate high frequency sound and vibration. Seismic bracing/mounting can be combined with vibration isolation as applicable.
- 3. Contractor manufactured seismic bracing/restraint methods are not acceptable. Provide a signed and stamped letter from a professional engineer certifying that the supplied products are correct for the application and that the installation is in compliance with all applicable codes.

230700 – INSULATION

- 1. Pipe insulation to be 1" thick snap-on glass fiber type with vapor jacket. Seal all ends and joints to provide a completely sealed system. Alternatively, use 1" thick flexible unicellular ASTM 534 Type 1 insulation.
- 2. All supply air ductwork shall be internally lined. See section 233113.
- 3. No return air duct insulation is required.

232113 - HYDRONIC PIPING

- 1. Hydronic piping shall be copper suitable for the water use and for the pressure used in the system. Piping shall be soldered with 95-5 tin-antimony solder.
- 2. Provide manual air vents at all piping high points in the system.
- 3. Install pipe hangers with the following minimum rod sizes and maximum spacing. Upon completion of hanger installation, all adjustments having the possibility of turning shall be locked securely in place by double nutting the hanger rod attachment to the structure, and at the pipe hanger.

<u>NOM. PIPE SIZE-INCHES</u>	<u>MAX SPAN-FT</u>	<u>MIN ROD SIZE-INCHES</u>
3/4"	6	3/8
1	7	3/8
1-1/4	9	3/8

232123 - HVAC PUMPS AND ACCESSORIES FOR PIPING SYSTEM

1. Manufacturers:
 - a. Bell & Gossett
 - b. Taco
 - c. Armstrong
 - d. Grundfos
2. Pumps and circulators shall be factory assembled and factory tested. Pump motors shall conform to NEMA standard MG-1. Select motors that are nonoverloading within the full range of the pump performance curve.
3. In-line pump:
 - a. Provide an in-line pump, sized for:
 - (i) 40°F water temperature drop through the air handling unit heating coil.
 - (ii) Flow rate: 11 gpm.
 - (iii) System main pipe size: 1-1/4"
 - (iv) System pressure loss: 35 ft max.
 - b. Centrifugal, close coupled, single stage, bronze fitted, with mechanical seals, and rated for 125 psig working pressure and 225°F continuous water temperature.
 - c. Pump casing: cast iron.
 - d. Impeller: statically and dynamically balanced, closed, overhung, single suction.
 - e. Motor: factory fitted resiliently mounted.
4. Provide in suction piping at pump:
 - a. Suction strainer
 - b. Shutoff valve
 - c. Pressure gauge
5. Provide a triple duty valve (circuit setter balancing valve with memory stop and shut off) in the discharge piping at the pump.
6. Install a 3/4" cold water fill connection with valve and hose thread, for connection to the contractor's system fill pump. Install in the line to the air separator.
7. Provide an air separator with automatic air vent and a bladder type expansion tank. Pipe air vent to the existing floor sump.

235216 – CONDENSING HEATING HOT WATER BOILERS

1. Packaged, oil (diesel) fired, heating hot water boiler.
 - a. Constructed in accordance with ASME requirements for low pressure heating boilers and bearing ASME markings and label including National Board register number.
 - b. Maximum heating capacity: 220,000 Btu/hr at 40°F water temperature rise; 140°F to 180°F.
 - c. Automatic boiler water supply temperature control, based on a linear reset schedule:
 - (i) Outside air temperature 15°F or lower: 180°F water.
 - (ii) Outside air temperature 60°F or higher: 140°F water.
 - d. 85% (min.) AFUE efficiency.
 - e. 20% minimum turndown.
 - f. Fully condensing; sealed combustion.
 - g. Oil burner. If necessary, boiler may be fitted with a Riello oil burner.
 - h. 30% propylene glycol-water mixture.
 - i. Variable speed combustion air fan.
 - j. Allowable minimum flow rate to be less than 20% of maximum.
 - k. Horizontal direct vent system.
 - l. Low NOX burner (10ppm or better).
2. Manufacturers:
 - a. Peerless
 - b. Weil-McLain
 - c. Lochinvar
 - d. Laars

- e. Aerco
 - f. Approved equal
3. Boilers shall be piped for primary/secondary pumping. Provide an insulated return water buffer storage tank in the primary boiler loop, with a minimum storage capacity of 50gpm.
 4. Run condensate line to existing floor sump.
 5. Apply and sign a certification label to the boiler, stating that it has been adjusted or modified per manufacturer's requirements for operation at the project altitude and with the BTU-content of the available oil.

237313 – AIR HANDLING UNITS

1. Units shall be factory assembled and tested and consisting of:
 - a. Supply air fan, sized for 3,300 cfm at 0.5" external static pressure.
 - b. Return/relief fan, sized for 3,300 cfm at 0.5" external static pressure.
 - c. Heating coil, sized for:
 - (i) 40°F water temperature drop; 180°F to 140°F.
 - (ii) 30% propylene glycol-water mixture.
 - (iii) 220,000 Btu/hr.
 - (iv) 8 ft maximum pressure drop.
 - d. Provide heating coil with shutoff valves separate from the boiler system.
 - e. Provide a separate empty cooling coil section, for future installation of a cooling coil.
 - f. Filter section in the mixed air plenum, fitted with 2" thick MERV 8 pleated filters, similar to Flanders Pre-Pleat 40. Provide clean filters at beneficial occupation.
 - g. Outside air and relief air dampers, with electric operators connected to the control system.
2. Manufacturers:
 - a. Carrier
 - b. Trane
 - c. York
 - d. Approved equal
3. Provide factory installed and wired smoke detector in the common return air duct (code-required for all units of 2,000 cfm and larger capacity). Unit shall shut down automatically upon detection of smoke.
4. Install a duct mounted CO2 sensor in the air-handling system in the common return air duct. The outside air and relief air dampers shall modulate in response to this sensor.
5. Provide flexible connector at duct and piping connections to unit, per Section 233300.
6. Mount unit on vibration mounts per Section 230548.

233113 - METAL DUCTWORK

1. All ductwork shall be constructed, erected, and tested in accordance with the most restrictive of local regulations and procedures detailed in the ASHRAE Handbook of Fundamentals, and the applicable standards adopted by the Sheet Metal and Air Conditioning Contractor's National Association, (SMACNA).
2. Transition all new ductwork to connect to other ductwork and equipment, as required.
3. Re-use the existing supply ducting and existing grilles as a return air system. The existing return duct in the mechanical room shall be demolished up to (and including) the flexible connection. Make a new connection to the new air handling unit.
4. All branch ducts shall be high-efficiency type; fitted with balancing dampers where indicated on the drawings.
5. Ductwork shall be galvanized steel throughout, fabricated and installed so that no vibration or noise results. It shall be made from the best grade of galvanized milled steel sheets of U.S. standard gauge and be free from blisters, slivers, and pits. All seams shall be airtight, the construction of all ductwork, including gauges of metal, bracing layout, etc., shall be in accordance with SMACNA.
6. Seal ductwork according to the standard SMACNA duct sealing class for low pressure ductwork less than 2" wg pressure.
7. Hangers for ducts up to 18" in width or diameter shall be placed on not more than 8 foot centers. Ducts 19" and over in width or diameter shall be supported on not more than 4 foot centers. Duct hangers shall be constructed of galvanized band iron 1-1/8" for ducts up to 36" in width or diameter. Hangers shall extend down sides and a minimum of 1" under rectangular ducts, and wrap completely around round ducts. All ducts shall be rigidly supported.
8. Protect all ducts and openings during construction by closing them in order to prevent dust and other pollutants from accumulation.

9. All ductwork shall be cleaned prior to the installation of ceilings, diffusers and grilles. Operate fans to blow out ductwork.
10. Professionally clean the interior of all re-used existing duct systems, using vacuum cleaning and dust and dirt removal systems intended for this purpose, per ASHRAE standards.
11. Rectangular low-pressure supply air ductwork shall be lined with 1" faced fiberglass insulation securely buttoned or lapped and sealed. Insulation shall be 1-1/2 pound density.
12. Duct dimensions shown on drawings are inside clear area and shall be increased to accommodate insulation. Duct liner to be by Knauf GMBH, Johns-Manville or Schuller International.

233300 - DUCTWORK ACCESSORIES

1. Flexible ductwork: The final 3 ft connection to plenums below floor mounted grilles may be made with flexible duct; Flexmaster type 5M. Ends shall be sealed.
2. Square/rectangular elbows shall be provided with turning vanes.
3. All duct branches and take-offs shall be high-efficiency types, with duct mounted balancing dampers where indicated on drawings.
4. Provide flexible connections not less than 4" wide constructed of heavy, waterproof, woven plastic coated glass fabric at supply and return connections to air handling units. Corners shall be sewn tight. Connections shall be 20 ounce Ventfabrics or equal.
5. Duct mounted balancing dampers shall be used to control supply air to each grille. An operating head shall be placed on the side of the duct with a positive locking quadrant.

233713 – GRILLES AND LOUVERS

1. All grilles and louvers shall be complete with frames and rubber gaskets. Finish for all registers, diffusers, and grilles shall be brown for floor use – final color as selected by the architect.
2. Manufacturers and types:
 - a. Hall floor grilles: Price Linear Bar Grilles, type LBP, with frame style 15A (1/4" bar spacing and 0-degree deflection). Size 30" x 6". Finish shall be brown to match or complement the surrounding wood floor color – final color selected by the architect
 - b. Stage floor grilles: Price double deflection grilles, type 520, horizontal front blades. Size 24" x 12". Finish shall be brown to match or complement the surrounding wood floor color – final color selected by the architect
 - c. Louvers shall have 60% minimum free area and maximum 0.1" wg. pressure drop. Louver shall have frame and sills compatible with adjacent substrate and fit accurately for weatherproof installation. Louvers shall be complete with 1" mesh anodized aluminum bird screen. Manufacturer: Airolite K6776.
 - d. Other grille manufacturers, subject to submittal approval:
 - (i) Krueger
 - (ii) Titus
 - (iii) Nailor
 - (iv) Metal-Aire
 - (v) Carnes
 - (vi) Tuttle & Bailey
 - e. Other louver manufacturers, subject to submittal approval:
 - (i) American Warming
 - (ii) Louvers & Dampers
 - (iii) Ruskin
 - (iv) Greenheck
 - (v) United
 - (vi) Daniel
3. Coordinate the locations of all grilles and louvers with the architect prior to installation.

239900 - AUTOMATIC TEMPERATURE CONTROL SYSTEM

1. Furnish and install a complete electronic automatic temperature control system. Provide the following functions:
2. Air handling systems with modulating return/relief dampers: Provide control panels (in the mechanical room) and all control components necessary to provide a control sequence such that:
 - a. Upon a call for heating by the wall-mounted thermostat, the boiler system will turn on and the air handling unit's fans shall run.

- b. The outside air intake damper (normally closed) shall modulate to the minimum outside air position based on the return air CO2 sensor setting for maximum allowable CO2 concentration (1,200 ppm, adjustable).
 - c. During system operation, the outside air intake damper shall modulate to a position to maintain the maximum allowable CO2 concentration. This position shall be capable of modulation between 0% and 100% open.
 - (i) The outside air damper shall be opened in 5-minute intervals of 20% movement, until such time as the signal from the CO2 sensor falls back to 1100 ppm for 10 minutes.
 - (ii) The reverse sequence shall start to occur after the 1100 ppm CO2 level has been maintained for 20 minutes.
 - d. The relief air damper shall modulate in unison with the outside air intake damper.
 - (i) The relief air damper's flow rate shall be set at 10% below the outside air intake damper's flow rate.
 - (ii) The relief air damper starting-opening position shall be set by the TAB contractor to be at the 10% level above.
 - e. Provide an outside air temperature sensor, located near the outside air intake louver on the north side of the building, to provide automatic boiler water temperature control based on a linear reset schedule:
 - (i) Outside air temperature 15°F or lower: 180°F boiler water.
 - (ii) Outside air temperature 60°F or higher: 140°F boiler water.
3. The control system configuration shall be subject to submittal approval. Submit drawings and data form the control system manufacturer to clearly describe the components and sequences.
 4. The wall-mounted thermostat shall be single stage heating, and have night setback and weekly setting capability. Provide a locking cover.
 5. Upon detection of smoke by the return duct mounted smoke detector, the boiler system and air handling unit shall switch off. Provide necessary interlock wiring.
 6. Provide a low temperature detector in the mixed air stream. This detector shall de-energize the supply and return/relief fans in the air handling unit when mixed air temperatures below 40°F (adjustable) are sensed for more than two minutes. All dampers and valves shall position to their normal position after the fans shall be de-energized, and the boiler heating system shall switch off.

239993 - TESTING, ADJUSTING, AND BALANCING

1. Obtain the services of an independent testing and balancing agency to balance and adjust the system. This shall be done by persons fully familiar with systems of this type.
2. Balancing shall be done in accordance to AABC or NEBB standards.
3. All TAB data shall be recorded and a report submitted to the engineer prior to job close out.

C. PERFORMANCE

1. Any changes that impact the exterior appearance of the building must receive approval from the project coordinator prior to implementation.
2. Any significant changes should be proposed by the contractor prior to beginning construction.

PART 3 EXECUTION

3.01 INSTALLERS

- A. Installer shall be certified by manufacturer of proposed equipment, and shall have at least five (5) years of experience as an installer.

3.02 EXAMINATION AND PREPARATION

- A. Verification of Conditions: Verify that all conditions are suitable for the installation of the selected system prior to proceeding.
- B. Prepare and execute work in accordance with section 01 7000 closeout requirements.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.04 PROTECTION

- A. Protect installed work from subsequent construction operations.

END OF SECTION