



SEPTEMBER 21, 2016
REQUEST FOR PROPOSALS

New Boiler and Heating System Changes

At

**Former Talon Headquarters Building
Crawford County Government
Meadville, PA**

Notice to Bidders: Crawford County, Pennsylvania seeks proposals from qualified entities to provide equipment and installation for a new boiler at the former Talon Headquarters Building, 628 Arch Street, Meadville, PA. In this document the terms, “bidder” or “contractor” will refer to the HVAC Contractor and the terms, “Owner” or “County” will refer to the Crawford County, PA Government.

Project Description: The project scope generally includes installing a new hot water boiler and connecting basement radiators to the existing hot water system. There are two add/deduct alternate scopes to bid to provide the best value to the County. The base bid demos an existing steam boiler and installs one new 620 MBTU net hot water boiler in the same general location. The first alternate installs one new 620 MBTU net hot water boiler in a new location requiring new air intake and flue stack and abandons the existing steam boiler in place. The second alternate installs 2 new hot water boilers (275 MBTU net and 375 MBTU net) in either location to provide more efficient operation. It is likely that there is some asbestos insulation on some of the piping systems however the County will be responsible for any required abatement of asbestos. The selected contractor is to provide a complete and functioning system that meets all applicable codes within the City of Meadville.

See ATTACHMENT – B, County Project Requirements, for details of project.

Instructions: Bids are to include the total installed project cost including materials, and installation. Submit two (2) paper copies and one (1) electronic copy of the Proposal in a sealed envelope marked “Crawford County Talon Building Heating System” to Crawford County Commissioners, 903 Diamond Park, Meadville, PA 16335. Along with the proposal include Attachment A – Bid Form, and bid bond. **Proposals should be submitted no later than October 20, 2016 at 9:45 AM.** Submissions that are incomplete or in any other form or received after the deadline may be rejected. Bidder is responsible for all costs associated with developing and submitting a proposal.

Requests for Information (RFIs): All questions concerning bidding procedures, clarifications of information provided, or project scope and specifications should be submitted in writing and delivered by email to, twilson@wilsonengineeringservices.com. RFIs and responses to RFIs will be posted on Wilson Engineering Services web site at www.wilsonengineeringservices.com under the link Crawford County Talon Building Heating System. Deadline for submitting RFI's is 1:00 PM, October 13, 2016. All responses will be posted by 5:00 PM October 17, 2016

Addendums: Any addendums issued concerning the project specifications or bidding procedures will be posted on Wilson Engineering Services web site at www.wilsonengineeringservices.com under the link Crawford County Talon Building Heating System. No new addendum will be posted after October 11, 2016

Site Visit and Walk Through: A non-mandatory site visit will be held on October 10, 2016, 9:00AM at the Project Site, 628 Arch Street, Meadville, PA.

Proposal Opening: Proposals will be publically opened on October 20th, 2016 at 10:00 AM in the Commissioner's office, 903 Diamond Park, Meadville, PA

Award: A notice of intent to award will be executed within 7 calendar days of the bid opening. Crawford County reserves the right to reject any and all bids. Crawford County will conduct negotiations with the provider and is not obligated to accept the lowest bid, but the bid that it deems in the County's best interest.

Time of Completion and Liquidated Damages: Bidders shall begin the Work on receipt of the Notice to Proceed and shall complete the Work before November 30, 2016. If the Work is not completed by November 30, 2016, the successful bidder will pay liquidated damages of \$100.00 per day.

Permits and Fees: The Contractor is responsible for securing, scheduling, and cost of all required permits and inspections to complete the project.

Proposal Prices: Proposal prices are to remain firm and in effect for a period of 30 days from the opening of the bids and cannot be withdrawn after bid opening. All bids are to be submitted on Appendix – A, Bid Price Form. All costs required to develop a proposal are the responsibility of the contractor. No payments will be made for proposal development costs.

Performance Clause: The bidder is to provide a bid bond and performance bond. The bid bond required is for 10% of the bid amount. It may be secured with a certified bank check which will be held until the award of the contract and then returned to the bidder. A completion bond will not be required.

Insurance: The contractor and any subcontractor employed on the project must provide proof of the insurances listed below, that are to remain in effect at all times during the life of the contract. The insurance documents must name Crawford County, PA as co-insured and proof of insurance must be provided prior to signing of contract. The following insurances are required:

- **Workers Compensation Insurance:** Contractor shall carry Worker's Compensation Insurance as required by the State of Pennsylvania.

- **Commercial General Liability Insurance:** Contractor shall maintain a broad form comprehensive insurance general liability insurance policy in an amount of not less than \$1,000,000 per occurrence, \$1,000,000 aggregate.
- **Motor Vehicle Insurance:** The Contractor shall carry motor vehicle insurance to apply to “any auto” and include bodily injury, property damage, uninsured motorist, and employer’s non-ownership coverage in an amount of no less than \$1,000,000 combined single limit per occurrence with \$1 million aggregate.
- **Employer’s Liability:** \$100,000 per accident, \$500,000 disease policy limit, \$100,000 disease each employee.

Bidder Qualifications: Bidders must demonstrate their qualifications to perform the work as outlined and be able to obtain insurance and bonds required for the work.

Warranties: Contractor is to provide a 1 year material and labor warranty in the base bid for all equipment, material, and workmanship to begin upon project final completion and Owner acceptance. The boiler heat exchanger warranty is to be for a period of 10 years.

Included with this RFP are the following Attachments:

1. Attachment A – Bid Form
2. Attachment B – County Project Requirements
3. Attachment C – Drawings



SEPTEMBER 21, 2016
REQUEST FOR PROPOSALS – ATTACHMENT A

Bid Form

New Boiler and Heating System Changes

At

**Former Talon Headquarters Building
Crawford County Government
Meadville, PA**

DOCUMENT 004113 - BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

- A. Bidder: _____.
- B. Project Name: New Boiler and Heating System Improvements for Former Talon Headquarters Building
- C. Project Location: 628 Arch Street, Meadville, PA 16335
- D. Owner: Crawford County, Pennsylvania

1.2 CERTIFICATIONS AND BASE BID

- A. Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the RFP, attachments, and all subsequent Addenda as prepared by Crawford County, Pennsylvania, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:
 - 1. Base Bid: _____ Dollars \$_____).
 - 2. Alternate 1, (new location) add/deduct
_____ Dollars \$_____).
 - 3. Alternate 2, (2 boilers): add/deduct
_____ Dollars \$_____).

1.3 BID GUARANTEE

- A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within **10** days after a written Notice of Award, and on failure to do so agrees to forfeit to Owner the attached bid bond, as liquidated damages for such failure, in the following amount constituting ten percent (10%) of the Base Bid amount above:
 - 1. _____ Dollars (\$_____).
- B. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.4 TIME OF COMPLETION

- A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed, and shall fully complete the Work **by November 30, 2016.**

1.5 ACKNOWLEDGEMENT OF ADDENDA

- A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

- 1. Addendum No. 1, dated _____.
- 2. Addendum No. 2, dated _____.
- 3. Addendum No. 3, dated _____.
- 4. Addendum No. 4, dated _____.

DOCUMENT CONTINUES

1.6 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 2016.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized
Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

Witness By: _____
(Handwritten signature)

Attest: _____
(Handwritten signature)

By: _____
(Type or print name)

Title: _____
(Corporate Secretary or Assistant Secretary)

Street Address: _____

City, State, Zip _____

Phone: _____

Federal ID No.: _____

END OF DOCUMENT 004113



SEPTEMBER 21, 2016
REQUEST FOR PROPOSALS – ATTACHMENT B

County Project Requirements
New Boiler and Heating System Changes

At

Former Talon Headquarters Building
Crawford County Government
Meadville, PA

Attachment B includes specific contractor requirements for the New Boiler and Heating System Improvements for Former Talon Headquarters Building. The system is currently a hybrid system, generating steam that serves basement radiators and a steam to hot water heat exchanger for a hydronic system that serves the balance of the building. The work generally includes installation of a new hot water boiler or boilers and connecting basement radiators to the existing hot water system. The hot water boiler will connect directly to the hydronic system. To heat the basement the hot water supply and return piping loop that circles the basement will connect to selected radiators that were part of the steam system. The selected Contractor is to provide a complete and functioning system that meets all applicable codes within the City of Meadville.

1.1 FORCED-DRAFT, CAST IRON BOILER BASE BID

Contractor shall demo existing steam boiler and furnish and install in the same general location, a Model 680 Weil McClain Cast Iron Hot Water Boiler with ASME rating of 50 psig for water, with Natural Gas burner having an I=B=R approved gross output of 634 MBH and a net hot water rating of 551 MBH with an I=B=R burner capacity of 787 MBH (Gas) or its equivalent. Contractor is to repair or modify existing stack and air intake to meet all manufacturer's recommendations and code requirements.

Other manufacturer(s) or other Weil-McLain boiler(s) must comply with specifying engineer's requirements, including:

- a) Full intent of these specifications, and provide complete submittal including literature, wiring diagrams, fuel piping diagrams, and a list of similar installations.
- b) Submittal to be presented to specifying engineer at least seven working days for approval before bid opening. Substitutions are not permitted after contract is awarded.
- c) Burner(s) and Energy Management Control System(s) must be tested and approved for installation with specified boiler by boiler manufacturer.

1.1.1 FORCED-DRAFT, CAST IRON BOILER ADD/DEDUCT ALTERNATE 1

Contractor shall furnish and install, where indicated on the drawings, a Model 680 Weil McClain Cast Iron Hot Water Boiler with ASME rating of 50 psig for water, with Natural Gas burner having an I=B=R approved gross output of 634 MBH and a net hot water rating of 551 MBH with an I=B=R burner capacity of 787 MBH (Gas) or its equivalent. This location requires new exhaust stack and combustion air intake.

Other manufacturer(s) or other Weil-McLain boiler(s) must comply with specifying engineer's requirements, including:

- d) Full intent of these specifications, and provide complete submittal including literature, wiring diagrams, fuel piping diagrams, and a list of similar installations.
- e) Submittal to be presented to specifying engineer at least seven working days for approval before bid opening. Substitutions are not permitted after contract is awarded.
- f) Burner(s) and Energy Management Control System(s) must be tested and approved for installation with specified boiler by boiler manufacturer.

1.1.2 FORCED-DRAFT, TWO (2), CAST IRON BOILERS ADD/DEDUCT ALTERNATE 2

Contractor shall furnish and install, at either base bid location or Alternate 1 location, one (1) Model 380 and one (1) model 480 Weil McClain Cast Iron Hot Water Boilers with ASME rating of 50 psig for water, with Natural Gas burners having I=B=R approved net hot water output ratings of 242 MBH and 344 MBH or their equivalent. Contractor is to provide a fully functioning system that meets all manufacturer and applicable code requirements and is capable of staging the firing of the boilers to provide the most efficient operation.

Other manufacturer(s) or other Weil-McLain boiler(s) must comply with specifying engineer's requirements, including:

- g) Full intent of these specifications, and provide complete submittal including literature, wiring diagrams, fuel piping diagrams, and a list of similar installations.
- h) Submittal to be presented to specifying engineer at least seven working days for approval before bid opening. Substitutions are not permitted after contract is awarded.
- i) Burner(s) and Energy Management Control System(s) must be tested and approved for installation with specified boiler by boiler manufacturer.

If bidder chooses to submit a bid for this Alternate, bidder is to supply boiler control sequence and piping schematic for this Alternate with bid package. If contract is awarded for this Alternate, specifying engineer will review and approve prior to construction.

1.2 SPECIFICATIONS OF HOT WATER BOILERS

A. Description: Hot water boiler Factory-fabricated, -assembled, and -tested, cast iron boiler. Furnish and install low pressure, wet base, cast iron sectional boiler(s), with natural gas power burner(s) that pressurizes the firebox and operates under forced draft, built on a steel base, including insulated jacket; flue-gas vent; combustion-air intake connections (fully sealed combustion); water supply, and return connections; and controls.

B. Mounting Base: For securing boiler to concrete base.

C. Burner: Natural gas, forced draft.

1. Low, High, Low or Modulating operating control

D. Blower: Centrifugal fan to operate during each burner firing sequence and to pre-purge and Post-purge the combustion chamber.

1. Motors: Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors

2. Motor Sizes: Minimum size as indicated; if not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.

E. Gas Train: FM and ASME CSD-1 compliant; with manual shut-off, manual reset low and high pressure safety switches, dual motorized gas valves, pressure regulator, pressure test ports, and manual leak checking gas valve.

1. The boiler shall be capable of operating with entering gas pressures as low as 5.0" w.c. and as high as 14.0" w.c. at the entering side of the gas train.

F. Ignition: Spark ignition with 100 percent main-valve shutoff with electronic flame supervision.

G. Casing:

1. Jacket: Sheet metal, with snap-in or interlocking closures.

2. Control Compartment Enclosures: NEMA 250, Type 1A.

3. Finish: Protective paint or powder coat finish.

4. Insulation: Minimum 1 inch thick, mineral-fiber or polyurethane-foam insulation surrounding the heat exchanger.

5. Combustion-Air Connections: Inlet and vent duct collars.

1.3 TRIM

A. Include devices sized to comply with ASME B31.9.

B. Water boiler(s) standard controls furnished:

- a. Combination low temperature limit (operating) and high temperature limit control.
- b. Low temperature limit set according to system design. High temperature limit set at least 20°F higher than the low limit (220F is the maximum allowable water temperature).
- c. Combination pressure-temperature gauge with dial clearly marked and easy to read.
- d. ASME certified pressure relief valve, set to relieve at 30 PSIG, Side outlet discharge type; contractor to pipe outlet to floor drain or near floor, avoiding any area where freezing could occur. Aquastat Controllers: Operating, firing rate, and high limit.

C. Boiler Air Vent: Manual.

D. Boiler Drain Valve: Minimum NPS 3/4 hose-end ball valve.

1.4 CONTROLS

A. Boiler operating controls shall include the following devices and features:

1. Control transformer.
2. Set-Point Adjust: Set points shall be adjustable.

B. Burner Operating Controls: To maintain safe operating conditions, burner safety controls limit burner operation.

1. High Cutoff: Manual reset stops burner if operating conditions rise above maximum boiler design temperature.
2. Low-Water Cutoff Switch: Electronic probe shall prevent burner operation on low water. Cutoff switch shall be manual-reset type.
3. Blocked Inlet Safety Switch: Manual-reset pressure switch field mounted on boiler combustion-air inlet.

C. System supply water setpoint mode adjustment capabilities shall be included and the setpoint mode shall be field adjustable at the user interface.

1.5 ELECTRICAL POWER

A. Single-Point Field Power Connection: Factory-installed and -wired switches, motor controllers, transformers, and other electrical devices necessary shall provide a single-point field power connection to boiler.

1. House in NEMA 250, Type 1 enclosure.
2. Wiring shall be numbered and color coded to match wiring diagram.
3. Install factory wiring outside of an enclosure in a raceway.
4. Field power interface shall be to nonfused disconnect switch.
5. Provide branch power circuit to each motor and to controls with a circuit breaker.
6. Provide each motor with overload protection.

1.6 VENTING AND COMBUSTION AIR INTAKE

A. Provide a complete combustion air and venting system that meets all requirements and recommendations of the boiler manufacturer and complies with applicable building and mechanical codes

B. Exhaust gas venting should comply with Category III positive pressure appliance guidelines and meet all requirements for vertical venting including a rain cap and screen protection at vent outlet and drip leg for removal of moisture. Contractor is to follow manufacturer's recommendations for support and fastening of exhaust vent

1.7 SOURCE QUALITY CONTROL TESTING

A. Burner and Hydrostatic Test: Factory adjust burner to eliminate excess oxygen, carbon dioxide, oxides of nitrogen emissions, and carbon monoxide in flue gas and to achieve combustion efficiency; perform hydrostatic test.

B. Test and inspect factory-assembled boilers, before shipping, according to 2010 ASME Boiler and Pressure Vessel Code.

PART 2 - EXECUTION

2.1 EXAMINATION

A. Examine roughing-in for concrete equipment bases, anchor-bolt sizes and locations, and piping and electrical connections to verify actual locations, sizes, and other conditions affecting performance of the Work.

1. Final boiler locations indicated on Drawings are approximate. Determine exact locations before roughing-in for piping and electrical connections.

B. Examine mechanical spaces for suitable conditions where boilers will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

2.2 BOILER INSTALLATION

A. Install boilers level and plumb, according to manufacturer's written instructions and referenced standards.

B. Equipment Mounting: Install boilers on cast-in-place concrete equipment base(s). Base shall be a 4-inch-thick concrete base, 4 inches larger on each side than base of unit. Dowel base to floor on 18-inch centers along perimeter of base. Cast anchor-bolt inserts through base into floor.

C. Install gas-fired boiler according to NFPA 54, ANSI Z223.1.

D. Assemble and install boiler trim.

E. Install electrical devices and sensors furnished with boiler but not specified to be factory mounted.

F. Install control wiring to field-mounted electrical devices.

G. Protect boiler fireside and waterside from corrosion.

1. Before boiler is filled with water, protect by dry storage method recommended by boiler manufacturer.

2. After boiler is filled with water, and left not fired for more than 10 days, protect by wet storage method recommended by boiler manufacturer.

2.3 CONNECTIONS

A. Piping installation requirements as indicated in general arrangement of piping, fittings, and specialties.

B. Connect gas piping to boiler gas-train inlet with union. Piping shall be at least full size of gas train connection. Provide a reducer if required.

C. Install piping adjacent to boiler to allow service and maintenance.

D. Install piping from equipment drain connection to nearest floor drain. Piping shall be at least full size of connection. Provide an isolation valve.

E. Install piping from safety relief valves to nearest floor drain.

F. Connect hot-water piping to supply- and return-boiler tapplings with shutoff valve and union or flange at each connection. Inlet connections shall be provided with a strainer.

G. Boiler Venting and Combustion Air: Install flue venting system and combustion-air intake

ductwork /piping. All aspects of the installation shall meet with ICC building code requirements within the City of Meadville, PA and the requirements and recommendations of the boiler manufacturer.

H. Electrical: Comply with applicable NEC 2008 Code requirements for electrical wiring including grounding and bonding of equipment

2.4 CLEANING

A. Once all ASME code work is completed, Contractor shall do a boil-out of the boilers using any commercially available product for this purpose. The boil-out shall include "OVER-THE-TOP" wasting of water. A temporary 2" pipe shall be run from the relief valve tapping to a floor drain to assure that grease and oils are floated to the top and out of the unit. Minimum time for the procedure shall be three (3) hours of constant water discharge alternating between bottom and top blowdown. At least two (2) complete bottom blowdown and complete refills shall be done.

B. After completing boiler installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finishes including chips, scratches, and abrasions with manufacturer's stainless steel polish.

2.5 FIELD QUALITY CONTROL

A. Installation Supervisory Field Service: Engage a factory-authorized service representative to supervise the field assembly of components and installation of boilers, including piping and electrical connections. Report results in writing.

1. Perform installation checks according to manufacturer's written instructions.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment. Boiler shall be commissioned by factory-authorized technician. Contact local representative for factory authorized technician information.
3. Verify that installation is as indicated and specified.
4. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements. Do not proceed with boiler startup until wiring installation is acceptable to equipment Installer.
5. Leak Test: Hydrostatic test. Repair leaks and retest until no leaks exist.

B. Start-Up Field Service: Manufacturer's representative shall supply a factory authorized service technician to start up the boilers.

1. Documentation verifying proper installation and operation shall be provided to the Owner following completion of startup and commissioning services.
2. Start-up shall be performed only after complete boiler room operation is field verified to offer a substantial load, and complete system circulation.
3. Complete manufacturer's startup checklist and verify the following:
 - a. Boiler is level on concrete base.
 - b. Flue is installed without visible damage.
 - c. No damage is visible to boiler jacket or combustion chamber.
 - d. Pressure-reducing valves are checked for correct operation and specified relief pressure. Adjust as required.
 - e. Clearances have been provided and piping is flanged for easy removal and servicing.
 - f. Heating circuit pipes have been connected to correct ports.
 - g. Labels are clearly visible.
 - h. Boiler, burner, and flue are clean and free of construction debris.
 - i. Pressure and temperature gages are installed.
 - j. Control installations are completed.
4. Ensure pumps operate properly.
5. Check operation of gas pressure regulator device on gas train, including venting.
6. Check that fluid-level, flow-switch, and high-temperature interlocks are in place.

7. Start pumps and boilers, and adjust burners to maximum operating efficiency.
8. Confirm proper fan motor rotation.
9. Adjust air-fuel ratio.
10. Fill out startup checklist and attach copy with Contractor Startup Report.
11. Check and record performance of factory-provided boiler protection devices and firing sequences.
12. Check and record performance of boiler fluid-level, flow-switch, and high-temperature interlocks.

C. Combustion Testing: Perform the following tests for maximum and minimum firing rates for modulating burner. Provide analysis equipment required to determine performance. Adjust boiler combustion efficiency at maximum and minimum modulation rates. Perform combustion flue gas test at minimum and maximum modulation rate. Report results. Provide temporary equipment and system modifications necessary to dissipate the heat produced during tests if building systems are inadequate. Measure and record the following:

1. Combustion-air temperature at inlet to burner.
2. Flue-gas temperature at boiler discharge.
3. Flue-gas carbon dioxide, oxygen, and carbon monoxide concentration.
4. Flue gas NO_x emissions.
5. Differential Pressure.
6. Measure and record the water temperature rise through each boiler.
7. Document test results in a report and submit to Owner.

D. Repeat tests until results comply with requirements indicated.

E. Boiler will be considered defective if it does not pass start up and combustion tests and inspections.

F. Document test results in a report and submit to Owner.

2.6 DEMONSTRATION AND TRAINING

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain boilers.

1. Operate boiler, including accessories and controls, to demonstrate compliance with requirements.
2. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
3. Review data in the maintenance manuals.
4. Schedule training with Owner with at least 7 days' advance notice.

3.1 CONNECTION OF BASEMENT RADIATORS TO HYDRONIC SYSTEM

A. Cut in to the supply and return loops of the designated basement radiators identified in Drawing C.1 Basement Layout in Appendix C

B. install ½" diameter type L copper piping and fittings between radiators and supply and return loops with isolation ball valves on supply and return

C. Install a Danfoss RA 2000 thermostatic control valve with valve mount dial and sensor on supply side of all radiators to be connected to the hydronic system.

3.2 INSULATION OF NEW PIPES INSTALLED

Install Glass Mineral-Fiber Insulation 1" thick on all new HVAC piping with approved cover



SEPTEMBER 21, 2016
REQUEST FOR PROPOSALS – ATTACHMENT C

Drawings

New Boiler and Heating System Changes

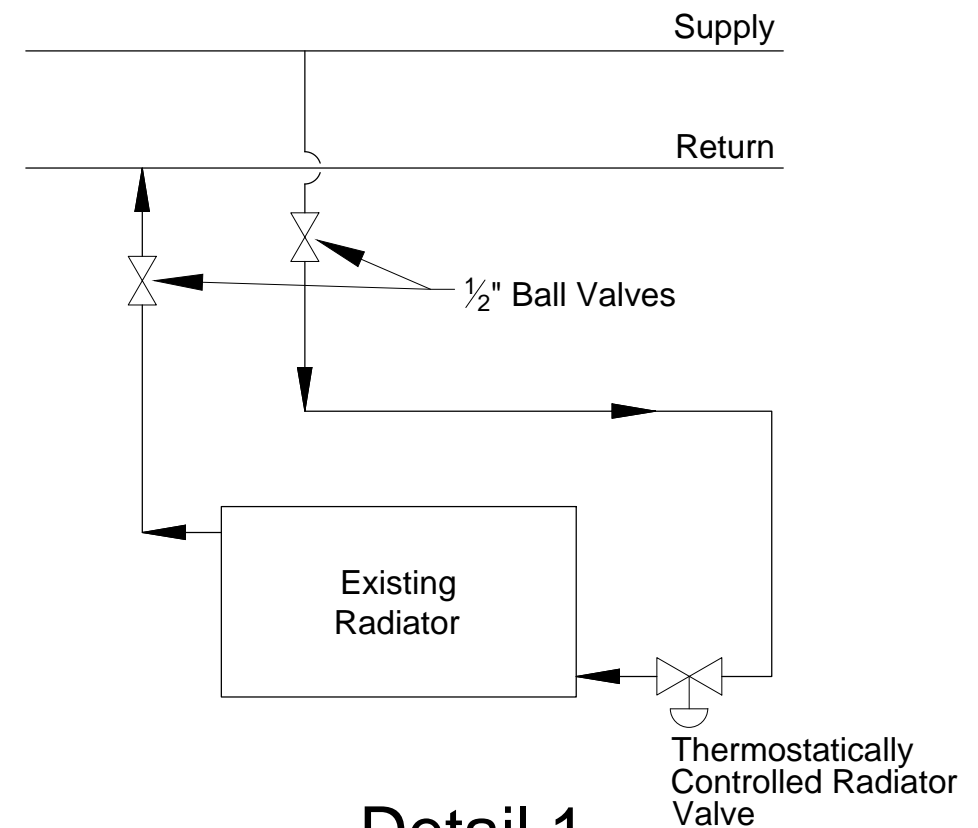
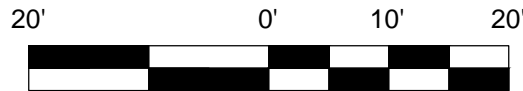
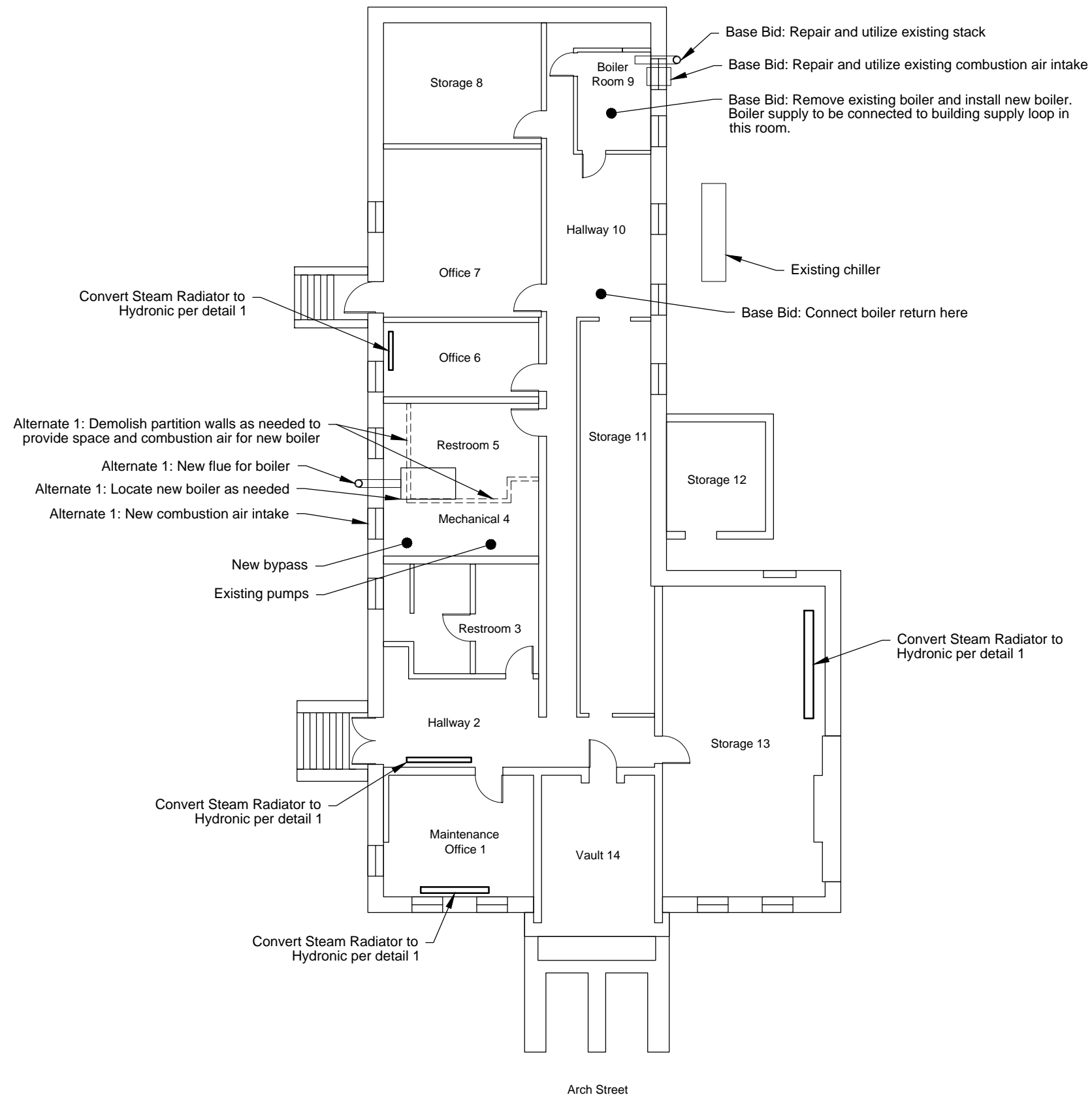
At

**Former Talon Headquarters Building
Crawford County Government
Meadville, PA**

C.1 Basement Layout drawing

C.2 Hydronic System Schematic

C.3 Alternate 1 Schematic



Notes:

1. Attach supply and return piping to ensure that water travels through all radiator cavities.
2. Supply and return pipes to radiator to be 1/2" Type-L copper.
3. Thermostatic radiator valve to be placed to permit free airflow over valve actuator.

Designed PFO 8/26/16
 Drawn dHb 9/21/16
 Checked

Approved _____
 Title _____

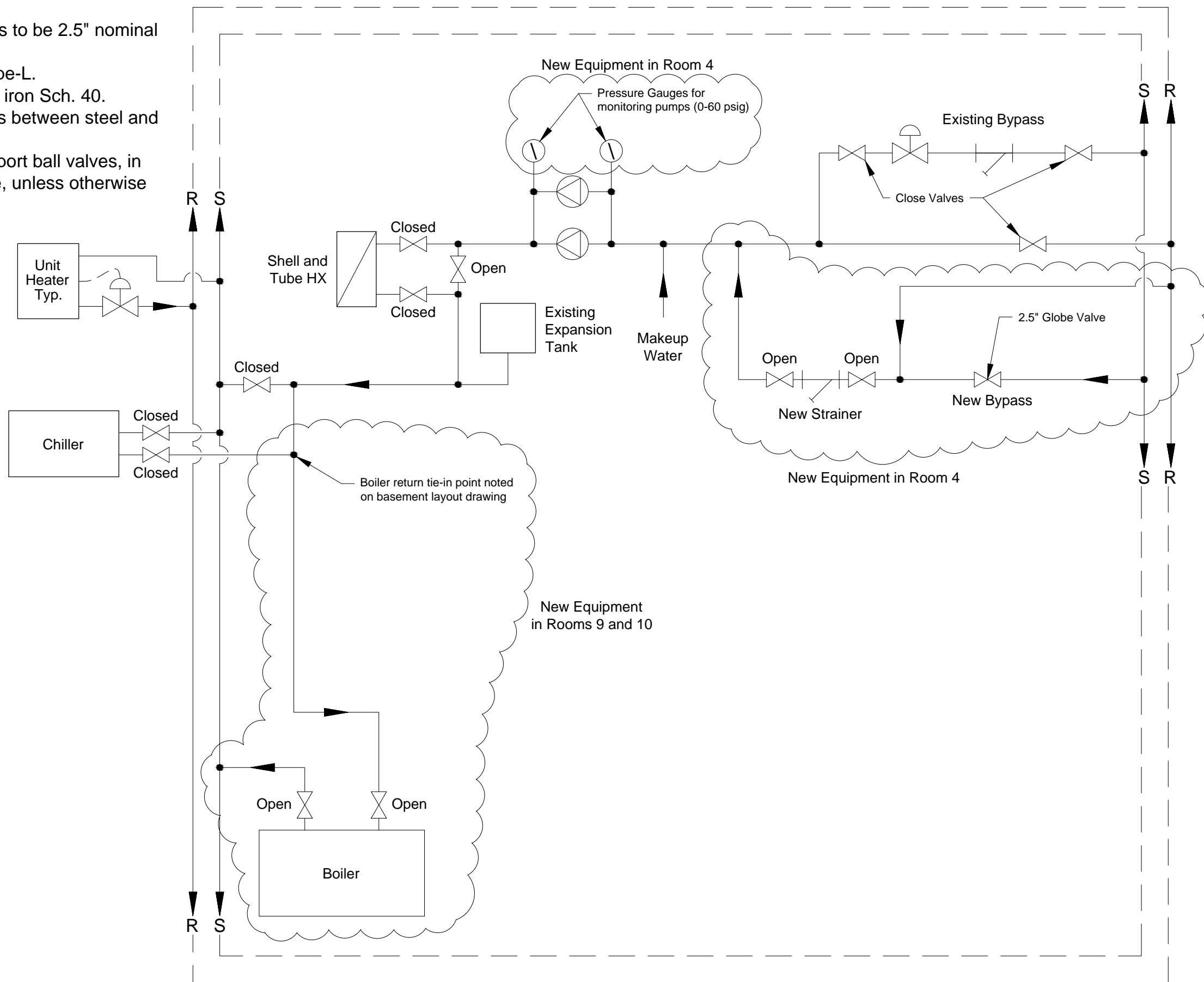
Talon
 Meadville, PA
Basement Layout

WES
 Wilson Engineering Services, PC
 www.wilsonengineering.com
 902 Market St. Meadville, PA 16335

REVISIONS		Approved
Date	Description	

Notes:

1. New piping and fittings to be 2.5" nominal diameter.
2. Copper pipe to be Type-L.
3. Steel pipe to be black iron Sch. 40.
4. Install dielectric fittings between steel and copper pipes.
5. New valves to be full port ball valves, in the same size as pipe, unless otherwise noted.



Base Bid: Hydronic System Schematic

Designed	PFO	8/26/16
Drawn	dhb	9/21/16
Checked		

Approved		Date
Title		Job Class

Talon
Meadville, PA

Base Bid Hydronic System Schematic

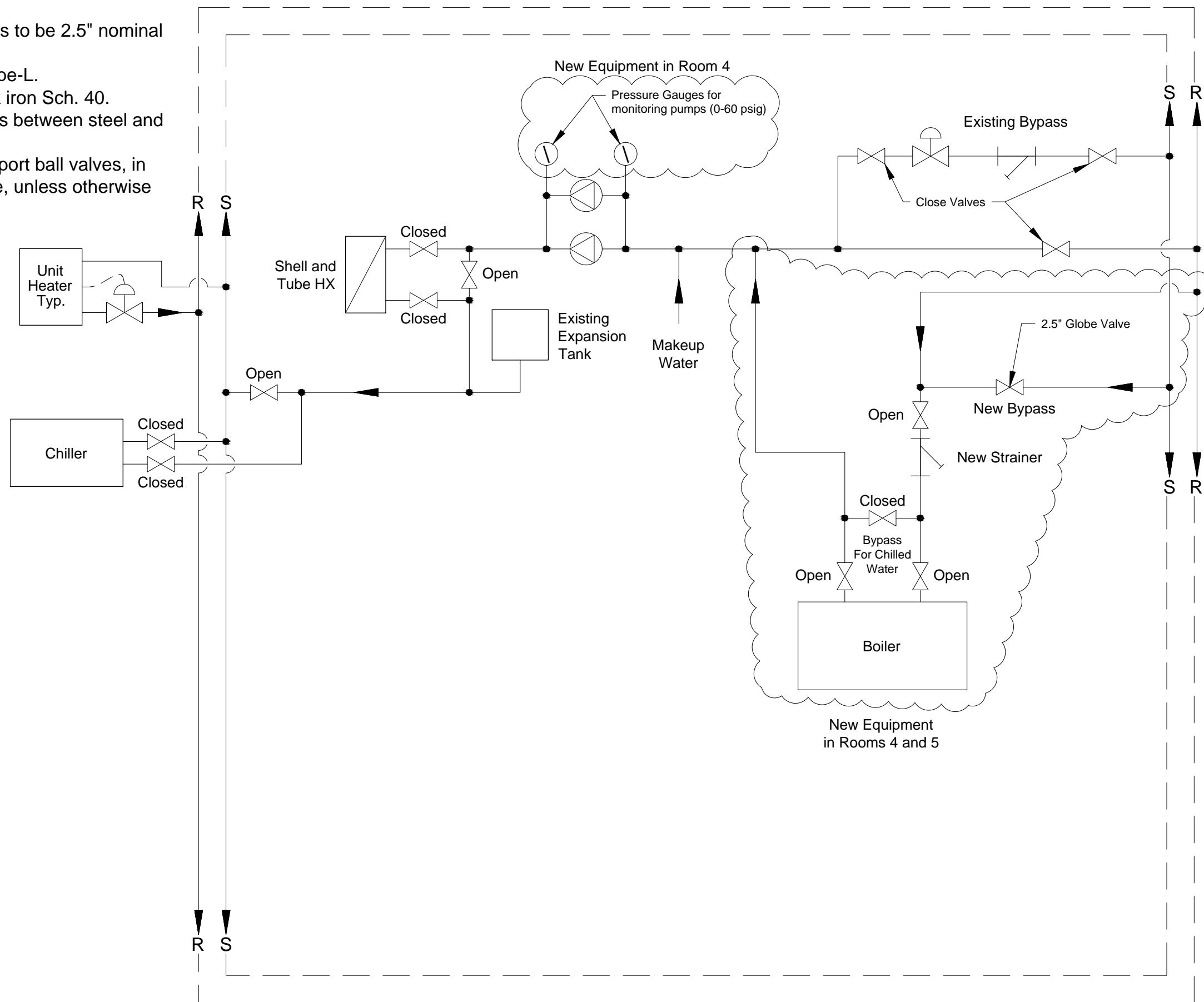
WES

Wilson Engineering Services, PC
www.wilsonengineering.com
902 Market St. Meadville, PA 16335

REVISIONS		Approved
Date	Description	

Notes:

1. New piping and fittings to be 2.5" nominal diameter.
2. Copper pipe to be Type-L.
3. Steel pipe to be black iron Sch. 40.
4. Install dielectric fittings between steel and copper pipes.
5. New valves to be full port ball valves, in the same size as pipe, unless otherwise noted.



Alternate 1: Hydronic System Schematic

Designed	PFO	8/26/16	Drawn	dhh	9/21/16	Checked	
Approved							Date
Title							Job Class
Talon Meadville, PA							
Alternate 1 Hydronic System Schematic							
WES Wilson Engineering Services, PC www.wilsonengineering.com 902 Market St. Meadville, PA 16335							
REVISIONS	Description	Date	Approved				
C.3							