

ADDENDUM NO. 2

For

Owner: University of Colorado at Boulder

Project Name: PR003039 ECCH – HVAC Mechanical Upgrades, Phase 1 of 2

CRA#: 2007-213

Date: March 5, 2009

ENGINEER:

Cator, Ruma & Associates, Co.

896 Tabor St.

Lakewood, CO 80401

(303) 232-6200

(303) 233-3701 (fax)

General Information:

- 2.1 On sheet M1.01 note #1 under general notes & and procedures requires the contractor to obtain a hot works permit from the University of Colorado. Are the guidelines for hot works permit posted on line? **Response: Hot work permit procedures are specified in Specification Section 01060, Paragraph 1.06.**
- 2.2 On Sheet M2.05 in lower left corner there is a roof fan to be removed. Is the fan to be discarded or returned to owner? **Response: If the fan is a mushroom type then it is to be removed, if it is a strobic type then it is to be returned to the owner.**
- 2.3 Is the fan curb to be abandoned in place with a curb cap? **Response: Yes and sealed water tight.**
- 2.4 Please provide roofing details for new roof penetration shown on M2.05. **Response: See attached detail on sketches MX-4 and 5.**
- 2.5 Is the roof under warranty? If not under warranty is there a preferred roofing contractor? **Response: The roof is not currently under warranty. The current CU Standing Order Roofing Contractors are B&M Roofing (Scott Kawulok, 303-443-5843), Alpine Roofing (Steve Pohl, 303-295-7769), and WeatherSure Systems (Tim Hubka, 303-524-3789)**
- 2.6 There is a steam coil and filter bank noted for installation on sheet M2.05. There is no schedule provided for the steam coil. Please provide a schedule for coil showing sizes, capacity etc. **Response: The steam coil shall be an Armstrong Hunt, sized at 57"x132"for 20,000 cfm at -20°F EAT and 50°F LAT. The existing 4" steam headers have been sized to accommodate this coil and shall be extended as required to connect to the new coil. The new coil shall be mounted on the existing coil structure. The filter bank shall be comprised of a 25% pre-filter Farr 20/20 and a 65% final filter Farr Hi-Flo to match the existing. The added filter bank shall be 144"x48" to provide maximum filter area upstream of the heating coil. Contractor to provide holding clips for filters and coordinate relocation of support braces and electrical on both sides of heating coil bank.**
- 2.7 There is no piping shown for connecting new steam coil to existing piping. Please provide piping sizes and details. **Response: See answer above.**
- 2.8 MD2.04, key notes #1 & #2; is there a detail for sealing the grill in the wood door and above the door in the wood transom? **Response: See "Wall Infill Detail" on sheet M1.02 and see new Door Infill detail on attached sketch MX-3.**

- 2.9 MD2.04, key note #5; is the condensing unit on a curb on the roof and if so what do you wish to do with the curb? **Response: If it is a curb then it shall be covered with a curb cap and sealed water tight. If it is a concrete slab then it shall be removed and any damage to the roof shall be repaired.**
- 2.10 M2.05; Will the duct work on the roof need to be painted? Do you have a painting spec or is it the typical CU standards? **Response: Yes, refer to the attached UCB Standard painting specifications.**
- 2.11 On sheet M2.03 there are two terminal boxes tagged IB-14 one is base bid and located near gridlines J&2. The other is alternate #1 and located near gridlines QR&6. One of these is not shown on the schedule. Please clarify. **Response: The terminal box in room 1B68 near gridline QR-6 shall be change to DD-1B-23, see attached schedule for information, MX-1.**
- 2.12 On sheet M2.04 in the upper right corner of the building (room ST 190) is an exhaust terminal untagged. Please provide tag and schedule. **Response: The terminal shall be designated as HX-1-06, see attached schedule for information, MX-2.**
- 2.13 On sheet M2.04 terminal boxes 1-09 and 1-10, which box is alternate #2 or are both? **Response: Both units are to be part of Alternate #2.**
- 2.14 Notes 13 on pages M2.03 and M2.04 states that the contractor is responsible for moving expenses for Communication raceways, conduits, and cables. Since none are designated on the drawings and the walk thru did not define which areas would need this, or who the schools contractor is for this type of work, is an allowance going to be given for this type of work or is this requirement going to be waved? **Response: Include with allowance on protection of laboratory equipment.**
- 2.15 On page M2.04 (the east end of RM 141) an HX 1-01 and GX 1-1 are shown but no designation for Base Bid, Alt 1 or Alt 2 is given for this work. Can this be clarified in the addendum? **Response: All exhaust work shall be part of the base bid.**
- 2.16 Specifications: I cannot find specification sections 2, 7 and 9 in the document package. **Response: Division 2, 7, and 9 should be labeled "Not Used" in the Table of Contents. Refer to the attached UCB Standards for painting and any patch and repair work at finished walls.**
- 2.17 Ad for Bids: "**Project Description**" states "This project will require strict phasing requirements" where are these listed in the documents? **Response: Scheduling requirements can be found throughout Specification Section 01010. Refer to Specification Section 01010, Paragraph 1.10. After Paragraph 1.10.A, Insert Paragraph Header 1.11 WORK SCHEDULE AND PHASING. Previous Paragraphs 1.10.B, 1.10.C, and 1.10D shall be relabeled Paragraph 1.11.A, 1.11.B, and 1.11C.**
- 2.18 Drawing M2.04: RM 141 Laboratory Exhaust Terminal Schedule (M1.01) call for (2) GX/1-01 -- I cannot find second unit on plans. **Response: Units are in parallel with each other; see existing GB-1B-13 in Room 1B68 as an example.**
- 2.19 Drawing M2.03: Architectural note # 2 calls out to "PAINT ALL EXPOSED DUCTWORK". There is a lot of unpainted existing ductwork in the space, do we paint existing ductwork or only new ductwork that is installed in this project? **Response: Only new ductwork that is installed in this project gets painted.**
- a. Do PHOENIX valves get painted? The existing ones I could see were not painted. **Response: The Phoenix Valves do not get painted.**

b. Do conduits and boxes for control wiring get painted? **Response: Yes.**

c. Do terminal (supply) boxes get painted? **Response: Yes.**

2.20 Drawing M2.03 Architectural Notes: I cannot find notes C, D, E, F, or G on the drawing. **Response: Notes are not used.**

2.21 Drawing M2.04 Architectural Notes: I cannot find notes C, E, or F, on the drawing. **Response: Notes are not used.**

Specifications

Section 09260

2.22 ADD the attached UCB Standard Specification Section 09260 Gypsum Board Systems to the project.

Section 09900

2.23 ADD the attached UCB Standard Specification Section 09900 Painting to the project.

Mechanical Drawings

Sheet M1.01

2.24 See attached sketches, MX-1 and MX-2, for revised Terminal Box Schedule and Laboratory Exhaust Terminal Schedule.

Sheet M1.02

2.25 See attached sketches, MX-3, MX-4 and MX-5, for required details.

The preceding addendum shall be made a portion of the contract documents, and each bidder shall acknowledge receipt of the same in submitting bids. All other conditions and requirements of the Contract Documents will remain unchanged.

END OF ADDENDUM NO. 2

Attachment: UCB Sections 09260 and 09900, Sketches MX-1 thru MX-5.

**SECTION 09260
GYPSUM BOARD SYSTEMS**

PART 1 - GENERAL

1.1 SUMMARY:

USE OF GYPSUM BOARD WINDOW
SILLS IS UNACCEPTABLE.

A. Section Includes:

1. Metal framing required for gypsum board.
2. Gypsum board.
3. Acoustical insulation.
4. Acoustical sealant.
5. Ceramic tile substrate.
6. Shaft wall systems.

B. Related Sections:

1. Section 06100 - Rough Carpentry: Wood furring and blocking.
2. Section 05400 - Cold Formed Metal Framing.
3. Section 07210 - Building Insulation: Thermal insulation.
4. Section 08100 - Metal Doors and Frames: Hollow metal frames.
5. Section 09300 - Ceramic Tile.
6. Section 09900 - Painting.

1.2 SUBMITTALS:

A. Manufacturer's Data:

1. Certification Requirements:
 - a. Certify that products furnished for this project are asbestos free.
 - b. Certify that products meet or exceed specification requirements.
2. Indicate compliance with specified fire or sound ratings.
3. Indicate stud height limitations.
4. LEED MRc4: Recycled Content
Provide a statement from the manufacturer including recycled content percentage, by weight, and whether the recycled content is post-consumer or post-industrial.

1.3 QUALITY ASSURANCE:

- A. Industry Standard:** Comply with applicable requirements of ASTM C840, "Application and Finishing of Gypsum Board" by the Gypsum Association, except where more detailed or more stringent requirements are indicated, including the recommendations of the manufacturer.

- B. Allowable Tolerances: 1/16" offset between planes of board faces and 1/4" in 8'-0" for plumb, level, warp, and bow.
- C. Manufacturer: Obtain each type of gypsum board and related joint treatment materials from a single manufacturer.
- A. Comply with applicable requirements of Mountain States Bureau of Lath, Plaster and Drywall, Inc.

OPTIONAL
 AT ARCHITECT'S AND OWNER'S JOINT AGREEMENT, THIS MAY BE INCLUDED.
 NOTE: THIS REQUIRES SPECIAL INSPECTION, INCLUSION IN PRECONSTRUCTION MEETING, AND SPECIAL FEES BY CONTRACTOR TO MOUNTAIN STATES BUREAU.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include the following:
 - 1. Metal Support Materials:
 - a. Dale Industries, Inc.
 - b. Dietrich Industries, Inc.
 - c. Gold Bond Building Products Div., National Gypsum Co.
 - d. USG Interiors, Inc.
 - 2. Direct Suspension Systems:
 - a. Domtar Gypsum.
 - b. Donn Corporation.
 - c. National Rolling Mills Co.
 - d. USG Interiors, Inc.
 - 3. Gypsum Board and Related Products:
 - a. Domtar Gypsum.
 - b. Georgia-Pacific Corp.
 - c. Gold Bond Building Products Div., National Gypsum Co.
 - d. United States Gypsum Co.
- B. All catalog numbers and trade names used in this Section are those of United States Gypsum, unless otherwise noted, and are to establish continuity and a standard of quality.

2.2 MATERIALS:

A. Gypsum Board:

1. 5/8" regular, tapered edge Type X gypsum board complying with ASTM C36.
2. 5/8" Type X gypsum sheathing board, square edges complying with ASTM C79.
3. 5/8" water resistant Type X, tapered edge gypsum backing board complying with ASTM C630.
4. 5/8" water resistant, tapered edge, exterior gypsum soffit board complying with ASTM C931.
5. Fire-Rated Shaft Enclosures:
 - a. Fire-tested and rated assembly of "C-H" or "I" studs at 24" o.c.
 - b. Provide assembly having 2-hour fire rating or rating required by Applicable Code, whichever is greater.

USE IN LARGEST POSSIBLE DIMENSIONS--MINIMIZE JOINTS: ARCHITECT TO LIST UL ASSEMBLY NUMBERS AS NEEDED FOR CODE REVIEW.

RATING OF SHAFT TO BE DETERMINED BY ARCHITECT'S CODE REVIEW.

6. LEED MRc4: Recycled Content
Include recycled content in material.

A. Partitions:

1. Studs: ASTM C645; 25 gage x 3.625" deep, except as otherwise indicated, or required by height. Maintain deflection of L/240 or less without gypsum board applied.
 - a. Use 20 gage or heavier studs at tile backing and at door jambs. Use double studs at door jambs.
2. Space all studs 16" o.c. maximum, unless specifically approved otherwise.
3. Double studs to structure at doors and as needed at corners to stiffen and support.

B. Ceilings:

1. ASTM C754. Use 1.5" steel channels, 0.475 lb. per ft., cold-rolled.

C. Furring Members: ASTM C645; 25 gage, hat-shaped or z-shaped as required.

D. Acoustical Sealant: Non-shrinking, non-drying, non-migrating and non-staining type formulated for acoustical use.

LEED EQc4: Low-Emitting Materials.

Sealant shall meet or exceed the VOC limits of South Coast Air Quality Management District rule #1168 and sealants used as fillers must meet the requirements of the Bay Area Air Quality Management District, Regulation 8, Rule 51.

Use one of the following:

1. Pecora BA-98.
 2. Tremco Acoustical Sealant.
 3. U.S. Gypsum Acoustical Sealant.
 4. Approved substitute.
- E. Sound Attenuation Blankets: ASTM C665, Type I, semi-rigid mineral or glass fiber blanket without membrane, Class 25 flame-spread. Provide 1.5" mineral fiber 3.0 lb. density or full thickness of 1.0 density glass fiber.
- F. Ceramic Tile Substrate:
1. 7/16" thick glass mesh reinforced cementitious board, "Wonderboard" as manufactured by Modulars, Inc. or "Durock" by USG Industries, Inc.
 2. Install cementitious board substrate instead of gypsum board at ceramic tile wall locations.
- G. Joint Treatment: Durabond 90 by U.S. Gypsum Co. or approved substitute.
- D. Accessories: ASTM C840 as follows:
1. Provide corner beads at all external corners, CB-118 x 118.
 2. LC-58 at all termination edges exposed to view.
 3. L-58 at all termination edges abutting another material.
 4. Expansion/control joints as recommended by manufacturer to be located by Architect approved substitute to No. 093 by U.S. Gypsum.

CAUTION: SOFFITS AND FRAMING ALLOWING MOVEMENT SHOULD WORK CONSISTENTLY OFF FLOOR OF SUSPENSION FROM STRUCTURE ABOVE. DO NOT MIX SYSTEMS.

PART 3 - EXECUTION

3.1 ACOUSTICAL SEALANT:

- A. Explain clearly where sealant is to be used.
- B. Provide sealant at all joints between drywall system and adjoining

ADD DECORATIVE REVEALS AS REQUIRED. SHOW ALL LOCATIONS CLEARLY ON THE DRAWINGS.

materials.

3.2

- A. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C 840, for locations indicated:
1. Level 1: Embed tape at joints in ceiling plenum areas, concealed areas, and where indicated for fire-resistance-rated assemblies and sound-rated assemblies.
 2. Level 2: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges where panels are substrate for thin set ceramic tile, acoustical tile, and where indicated.
 3. Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim flanges. Level 3 is suitable for surfaces receiving medium or heavy textured finishes before painting of wall covering in conditions where lighting conditions are not critical.
 4. Level 4: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges. Level 4 is suitable for surfaces receiving light-textures finish, wall coverings, and flat paints. It is generally the standard exposed finish.
 5. Level 5: Embed tape and apply separated first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound over entire surface. Level 5 is suitable for surfaces receiving gloss enamels and surfaces subject to severe lighting. It is considered a high quality gypsum board finish reserved for only special applications.

ACCESSORIES:

- A. Explain clearly where gypsum drywall and accessories must allow for sealant joints.

END OF SECTION 09260

**SECTION 09900
PAINTING**

PART 1 - GENERAL

1.1 SUMMARY:

A. Section Includes:

1. Complete painting of all surfaces throughout the interior and exterior of the buildings, except as otherwise specified or indicated in the finish schedule.
2. Field painting of exposed bare and covered pipes, conduits, hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under the mechanical and electrical work. Coordinate with Division 15 and 16 Installers and UCB staff for color coding.
3. Mechanical grilles, registers, louvers (except aluminum), panel covers and frames for electrical work.
4. Paint exterior roof, wall-mounted or ground mounted equipment including aluminum and factory finished items with color approved by UCB.

Work Not Included:

1. Shop priming of ferrous metal items and fabricated components included under their respective sections.
2. Pre-finished items.
3. Integrally colored CMU or face brick.
4. Metal toilet partitions.
5. Acoustic materials.
6. Anodized aluminum.
7. Stainless steel.
8. Bronze.
9. Do not paint over any:
 - a. Moving parts of operating units.
 - b. Equipment identification.
 - c. Performance rating data.
 - d. Name or nomenclature plates.
 - e. Code-required labels.

C. Related Sections:

1. Section 02580 - Pavement Marking.
2. Section 07180 - Water Repellents: Moisture resistant coatings for masonry.
3. Section 08210 - Wood Doors:
Factory finish on doors.
4. Section 15190 - Mechanical
Identification: Identification and
stenciled painting of mechanical

**DELETE SECTION 08210 IF DOORS
ARE FIELD FINISHED.**

- products specified under Division 15.
5. 15856 packaged rooftop heating/cooling units, 15855 air handling units with coils, and 15575 breechings, chimneys, stacks and flues.
 6. Section 16195 - Electrical
Identification: Identification of electrical products specified under Division 16.
 7. Sections 16370 medium voltage transformers (liquid filled), 16321 medium voltage transformers (dry type), 16345 medium voltage switch gears, 16620 standby power generation systems

1.2 SUBMITTALS:

- A. Submit 3 sets of samples with scheduled color product type, color formula and texture to simulate actual conditions on 12" x 12" hardboard for Architect and UCB Project Manager review.
- B. Resubmit samples, if requested, until required sheen, color and texture is achieved.
- C. On actual wood surfaces, provide 4" x 8" samples of each natural and stained wood finish.
- D. On actual wall surfaces and other building components, duplicate painted finishes of acceptable samples, as directed by UCB Staff.
- E. At beginning of project, provide a complete summary list of specific manufacturer's products, color identification numbers, manufacturer technical data sheets and MSDS Sheets that will be applied in this project. List shall compare each color number with each specified or selected color number. A copy of this list shall be given to the appropriate UCB Project Manager, and Structural Analyst in Work Management Group.
- F. LEED EQc4: Low-Emitting Materials
Provide documentation from the manufacturer identifying the VOC and chemical component limits for all indoor paints and finishes.

1.3 QUALITY ASSURANCE:

- A. Conform to Painting and Decorating Contractors of America "Architectural Specification Manual".
- B. All materials shall be applied free from runs, sags, wrinkles, streaks, shiners and brush marks.

All materials shall be applied uniformly. If any reduction of the coating's viscosity is necessary, it shall be done in accordance with the manufacturer's label directions.

New plaster and other masonry surfaces shall not be primed until it has been determined these substrates have dried sufficiently to safely accept paint. Unacceptable moisture content should be reported to the architect or the project manager.

No exterior painting shall be undertaken if air or surface temperature is below 50° F nor immediately following rain or until frost, dew or condensation has evaporated.

A minimum interior temperature of 65° F shall be maintained during the actual application and drying of the paint, and until occupancy of the building occurs. Adequate ventilation shall be maintained at all time to control excessive humidity which will adversely affect the curing of coatings. The Contractor is solely responsible for maintaining suitable temperature and ventilation.

Before painting begins, all other crafts shall have completed their work, and shall have removed all dirt and debris resulting therefrom. The rooms or areas are to be left in broom clean condition.

Enamel and varnish undercoats are to be sanded smooth prior to the recoating. Tops and bottoms of doors are to be finished in the same manner as door facing, after the carpenters complete fitting of them.

1.4 MAINTENANCE :

A. Extra Materials:

1. Leave on premises, where directed by the UCB Project Manager, not less than 1 gallon of each standard color and 1 gallon of each accent color.
2. All material shall be in 1 gallon containers, tightly sealed and clearly marked with manufactures name, color number or formula, base number and sheen.

B. Removal

1. Remove all trash, empty cans, solvents and all painting related materials.

PART 2 - PRODUCTS

2.1 MANUFACTURES:

- A. Benjamin Moore & Company
- B. Diamond Vogel
- C. The Glidden Company
- D. Kelly Moore
- E. KWAL-Howells, Inc.
- F. PPG Industries

LISTED MANUFACTURERS ARE FOR TRADITIONAL PAINT PRODUCTS. DEVELOP SEPARATE LIST FOR EPOXY AND URETHANE COATINGS AND FOR MULTI-COLORED SPRAYED COATINGS.

G. Sherwin-Williams Company

H. ICI

I. Substitutions must be pre-approved by UCB project manager and UCB paint shop. Any proposed substitution must be available in the Boulder Metro area.

2.2 MATERIALS:

Materials submitted for approval may be asked to match CU's standard off white color sample for testing. Testing shall include, but is not limited to, accurate color match, hiding capabilities, touch-up capabilities, sheen match and other performance characteristics. Materials submitted for approval by UCB staff of exterior finishes shall be weather resistant with colors approved by UCB staff.

A. Quality:

1. Provide the **best quality Contractor grade or better** of the various types of coatings as regularly manufactured by acceptable paint material manufacturers.
2. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.
3. If project is asking for LEED Certification, materials must comply with the Green Seal Standard, for paints, GS-11, requirements for voc and chemical component limits. www.greenseal.org/standards/paints.html

Type	VOC (g/l = grams/liter)
Interior Non-Flat	150 g/l
Exterior Non-Flat	200 g/l
Interior Flat	50 g/l
Exterior Flat	100 g/l
All types	Contain not more than 1.0% by wt. of the sum total of Aromatic Compounds.

4. Waterborne or latex acrylic coatings shall be used unless prior approval for substitution is obtained.
5. Material Safety data sheets and technical product data sheets must be included with O&M Manuals for all products used.

2.3 VOLUME SOLID CONTENTS

When applied at a rate of 400SF per gallon-obtaining a MIL thickness when dry of a minimum of 1.3 MILS, the minimum acceptable Volume Solid Content must be A (see list below) minimum and angular specular sheen should be B (see list below).

	A	B	
-For Flat finish	38%	0-5 @ 60°	85% SHEEN MEASUREMENT IS NOT ACCEPTABLE
-For Eggshell or Satin finish	36%	16-32 @ 60°	
-For Semi-Gloss finish	34%	30-60 @ 60°	
-For Gloss finish	34%	60-80 @ 60°	

These could apply to both interior and exterior products, with the possible "satin" or "pearl" addition.

PART 3 - EXECUTION

3.1 SCHEDULE:

A. Areas requiring specific paint finish are as follows:

1. Elevator, Mechanical and Electrical Room Painting:
 - a. Walls and Ceilings: Off white acrylic latex semi-gloss.
 - b. Floors (Elevator and Electrical Rooms Only): Light grey waterborne floor finish
2. Baseboard Radiation Covers:
 - a. Area Inside Metal Covers: Paint flat black or appropriate color to match.
3. Access Flooring:
 - a. Space Beneath Floor Surface: Paint flat black or appropriate color to match.
4. Wall and Ceiling Return Air Grilles:
 - a. Space Behind Grilles: Paint flat black for a distance of 24" from face of grille or appropriate color to match.
5. Non-Galvanized Iron Pipes:
Color to match background.
6. Roof, Wall, or Ground Mounted Equipment:
Color approved by UCB Staff.

CONTACT UCB FACILITIES PLANNING
FOR CAMPUS STANDARD COLORS.

B. For all paint finishes:

1. New surfaces shall have 1 primer coat and 2 finish coats.
2. Existing surfaces shall have minimum 2 finish coats.
3. If sprayed, all walls except mechanical rooms, storage areas, closets and ceilings, must be backed rolled on final coat.
4. All walls must be painted with a paint that meets CU's sheen standards for the 16-32 measurement at 60°, and volume solid's ratings.

5. All trim is to be painted with semi-gloss paint that meets CU's sheen and volume solids ratings.
6. Patch Painting will not be acceptable, total affected area shall be painted. Terminate painting only at corners or joints.

END OR SECTION 09900

TERMINAL BOX SCHEDULE

DESIG.	MFR.	MODEL (HIGH RANGE)	COLD INLET DIA. (IN.)	HOT INLET DIA. (IN.)	MAX. COLD CFM AT 5280'	MAX. HOT CFM AT 5280'	MIN. PRIMARY CFM AT 5280'	MIN. INLET S.P. IN W.C. AT S.L.	DISCH. N.C. AT 1.0" S.P. (NOTE 1)	RADIATED N.C. AT AT 1.0" S.P. (NOTE 1)	CONTROL	REMAR
DD 1B-21	PRICE	DDS5000	8	6	350	100	150	.25	--	--	SEE SPEC 15975	
DD 1B-22	PRICE	DDS5000	8	6	400	100	300	.25	--	--	SEE SPEC 15975	
DD 1B-23	PRICE	DDS5000	8	6	520	100	350	.25	--	--	SEE SPEC 15975	
DD 1-01	PRICE	DDS5000	12	8	1370	300	0	.32	24	28	SEE SPEC 15975	
DD 1-02	PRICE	DDS5000	10	6	1140	220	0	.32	24	28	SEE SPEC 15975	
DD 1-03	PRICE	DDS5000	8	6	560	110	0	.55	--	23	SEE SPEC 15975	



UNIVERSITY OF COLORADO AT BOULDER - ECCH CHEMICAL ENGINEERING WING HVAC UPGRADES - ADDENDUM #2		DATE	03/06/09
		REF. DWG	M1.01
CATOR, RUMA AND ASSOCIATES CO. 896 TABOR STREET, LAKEWOOD, COLORADO 80401		JOB NO.	2007-213
		SHT.	MX-1

LABORATORY EXHAUST TERMINAL SCHEDULE

DESIG.	ROOM SERVED	MFR.	MODEL	UNIT SIZE	DOWNSTREAM DUCT SIZE	MAX. CFM MIN. AT 5800'	CFM AT 5800'	INLET S.P. IN W.G. AT S.L.	DEVICE SOUND POWER LEVELS	CONTROL	RE
HX1-03	167	PHOENIX	EXV	8"	16/16	350	60	1.5	NOTE 3	SEE SPEC 15975	
HX1-04	198	PHOENIX	EXV	8"	16/16	350	60	1.5	NOTE 3	SEE SPEC 15975	
HX1-05	141	PHOENIX	EXV	10"	12"Ø	570	100	1.5	NOTE 3	SEE SPEC 15975	
HX1-06	190	PHOENIX	EXV	10"	12"Ø	440	100	1.5	NOTE 3	SEE SPEC 15975	

NOTES:

1. ALL FUME HOOD EXHAUST TERMINAL BOXES ARE DESIGNATED BY "HX" PREFIX SHALL BE ALUMINUM WITH HERESITE COATING. GENERAL EXHAUST TERMINAL BOXES ARE DESIGNATED BY "GX" PREFIX.
2. CONTRACTOR IS RESPONSIBLE FOR ALL TRANSITIONS UPSTREAM AND DOWNSTREAM OF BOXES.
3. SEE MAXIMUM POWER SOUND LEVEL SCHEDULE.



UNIVERSITY OF COLORADO AT BOULDER - ECCH CHEMICAL ENGINEERING WING HVAC UPGRADES - ADDENDUM #2

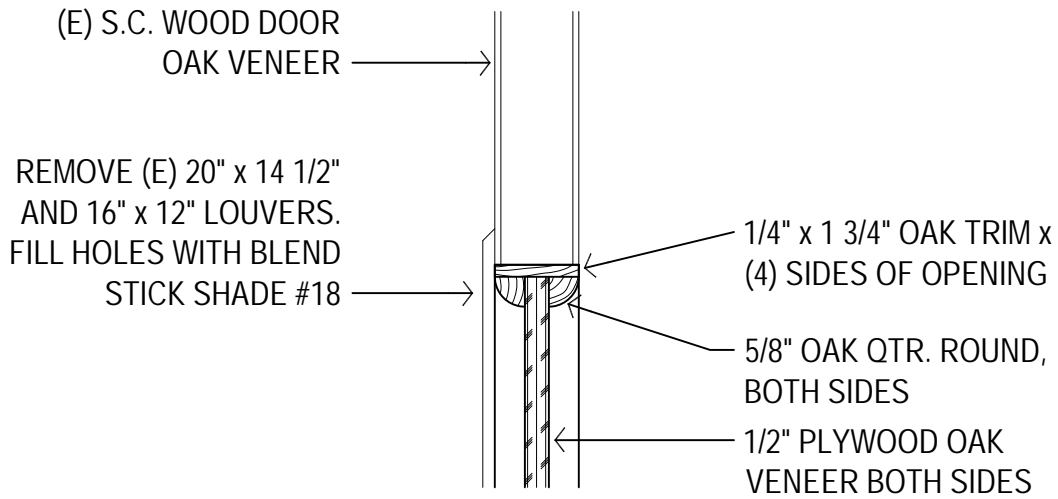
CATOR, RUMA AND ASSOCIATES CO.
896 TABOR STREET, LAKEWOOD, COLORADO 80401

DATE 03/06/09

REF. DWG M1.01 BY: MWJ

JOB NO. 2007-213

SHT. **MX-2**



FINISH ALL NEW MATERIALS AND ANY UNFINISHED (E) MATERIALS WITH CLEAR SEALER

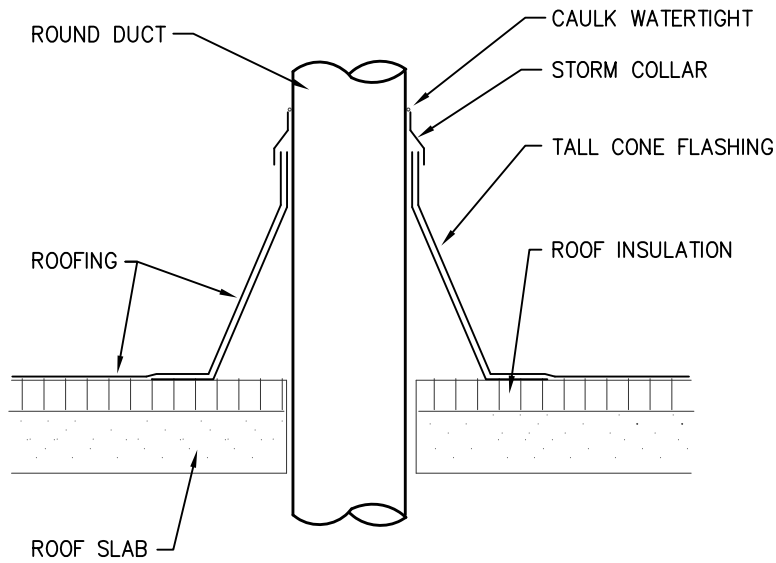
DOOR INFILL DETAIL

SCALE: NONE

UNIVERSITY OF COLORADO AT BOULDER - ECCH CHEMICAL ENGINEERING WING HVAC UPGRADES - ADDENDUM #2	DATE	03/06/09
	REF. DWG	BY:
CATOR, RUMA AND ASSOCIATES CO. 896 TABOR STREET, LAKEWOOD, COLORADO 80401	M1.02	MWJ
	JOB NO.	2007-213
	SHT.	MX-3

P:\CU\BOULDER\2007-213 CHEMICAL ENGINEERING WING HVAC UPGRADES PHASE 1 OF II\CAD\MECH\P-MD.DWG -- MX-3-5

1



ROUND DUCT ROOF PENETRATION DETAIL

SCALE: NONE

891-2

UNIVERSITY OF COLORADO AT BOULDER - ECCH CHEMICAL
ENGINEERING WING HVAC UPGRADES - ADDENDUM #2

DATE 03/06/09

REF. DWG M1.02 BY: MWJ

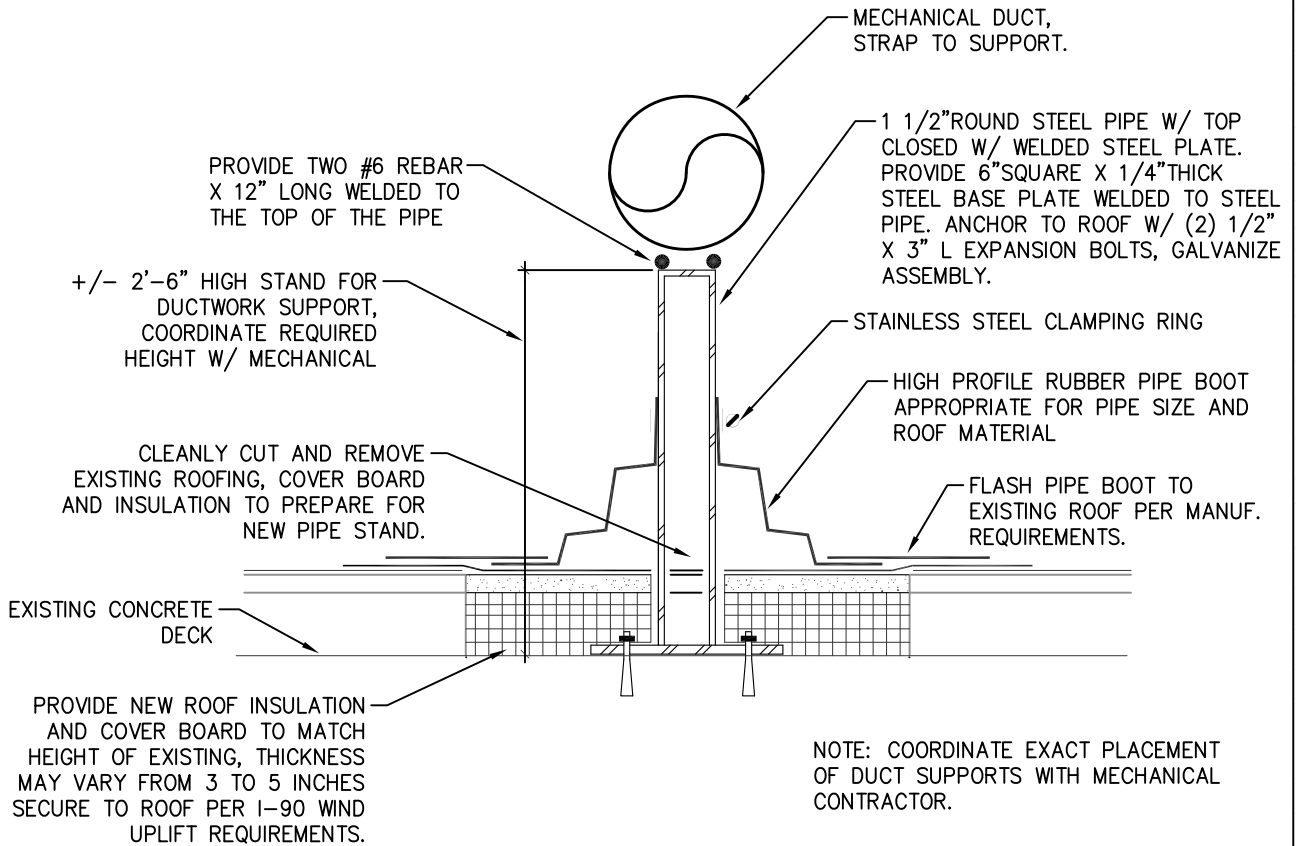
CATOR, RUMA AND ASSOCIATES CO.
896 TABOR STREET, LAKEWOOD, COLORADO 80401

JOB NO. 2007-213

SHT. MX-4

P:\CU\BOULDER\2007-213 CHEMICAL ENGINEERING WING HVAC UPGRADES PHASE 1 OF II\CAD\MECH\P-MD.DWG - MX-3-5

1



DUCT SUPPORT DETAIL

SCALE: NONE

UNIVERSITY OF COLORADO AT BOULDER - ECCH CHEMICAL
ENGINEERING WING HVAC UPGRADES - ADDENDUM #2

CATOR, RUMA AND ASSOCIATES CO.
896 TABOR STREET, LAKEWOOD, COLORADO 80401

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