

purchasing@bouldercounty.org

INVITATION TO BID COVER PAGE

BID Number:	7204-21
BID Title:	Boulder County Courthouse Third Floor Remodel Mechanical HVAC and Plumbing
Optional Site Visit:	Please email Keith Emrick at kemrick@bouldercounty.org by end of day February 12, 2021 to schedule a site visit.
BID Questions Due:	February 16, 2021 – 2:00 p.m.
Submittal Due Date:	February 26, 2021 – 2:00 p.m.
Email Address:	purchasing@bouldercounty.org
Documents included in this package:	Bid Instructions

Terms and Conditions

Plans and specifications

Insurance and W-9 Requirements

Specifications

Bid Tab Section Submittal Checklist Signature Page Sample Contract



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INSTRUCTIONS

1. Purpose/Background

Boulder County Building Services is seeking proposals to provide Mechanical HVAC and Plumbing work for the Boulder County Courthouse Third Floor Remodel located at 1325 Pearl Street in Boulder.

2. Optional Site Visit

The county will accept and schedule requests for site visits. All site visits must be scheduled by the end of the day **February 12, 2021**. Please email Keith Emrick at kemrick@bouldercounty.org.

During onsite visits the guidelines are as follows:

Nothing can change hands. No documents, business cards, sign in sheets, etc.

All participants are required to wear face coverings at all times.

All participants are required to maintain at least 6 feet of physical distancing at all times.

Group sizes must stay within recommended guidelines as issued by the state and local authorities.

Participants will be allowed to take photos or videos of the site in order to review with subs.

In order to keep a level playing field, and in the interest of transparency, no discussion is allowed during onsite visits. ANYTHING that is discussed during the course of visits must be submitted in writing to the bid.

3. Written Inquiries

All inquiries regarding this BID will be submitted via email to the Boulder County Purchasing Office at purchasing@bouldercounty.org on or before 2:00 p.m. **February 16, 2021.** A response from the county to all inquiries will be posted and sent via email no later than **February 19, 2021.**

Please do not contact any other county department or personnel with questions or for information regarding this solicitation.

4. Submittal Instructions

BIDs are due at the email box <u>only</u>, listed below, for time and date recording on or before **2:00 p.m. Mountain Time on February 26, 2021**. A bid opening will be conducted at 3:00 p.m. via email by sending a copy of the bid tab to all who have submitted a bid.

Please note that email responses to this solicitation are limited to a maximum of 50MB capacity. NO ZIP FILES OR LINKS TO EXTERNAL SITES ALLOWED. Electronic submittals must be received in the email box listed below. Submittals sent to any other box will NOT be forwarded or accepted. This email box is only accessed on the due date of your questions or proposals. Please use the Delivery Receipt option to verify receipt of your email. It is the sole responsibility of the proposer to ensure their documents are received before the deadline specified above. Boulder County does not accept responsibility under any circumstance for delayed or failed email or mailed submittals.

Email purchasing@bouldercounty.org; identified as **BID** # **7204-21** in the subject line.

All BIDs must be received and time and date recorded by authorized county staff by the above due date and time. Sole responsibility rests with the bidder to see that their BID response is received on time at the stated location(s). Any BIDs received after due date and time will be returned to the bidder.

The Board of County Commissioners reserves the right to reject any and all BIDs, to waive any informalities or irregularities therein, and to accept the proposal that, in the opinion of the Board, is in the best interest of the Board and of the County of Boulder, State of Colorado.

<u>Americans with Disabilities Act (ADA)</u>: If you need special services provided for under the Americans with Disabilities Act, contact the ADA Coordinator or the Human Resources office at (303) 441-3525 at least 48 hours before the scheduled event.



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TERMS AND CONDITIONS

- 1. Bidders are expected to examine the drawing, specifications, schedule of delivery, and all instructions. Failure to do so will be at the bidder's risk.
- 2. Each bidder will furnish the information required in the Invitation to Bid.
- The Contract/Purchase Order will be awarded to that responsible bidder whose submittal, conforming to the Invitation to Bid, will be most advantageous to the County of Boulder, based on best value not only price.
- 4. The County of Boulder reserves the right to reject any or all bids and to waive informalities and minor irregularities in bids received, and to accept any portion of or all items proposed if deemed in the best interest of the County of Boulder to do so.
- 5. No submittal will be withdrawn for a period of thirty (30) days subsequent to the opening of bids without the consent of the County Purchasing Agent or delegated representative.
- 6. A signed purchase order or contract furnished to the successful bidder results in a binding contract without further action by either party.
- 7. Late or unsigned bids will not be accepted or considered. It is the responsibility of bidders to ensure that the bid arrives at the Administrative Services Information Desk prior to the time indicated in the "Invitation to Bid."
- 8. The proposed price will be exclusive of any Federal or State taxes from which the County of Boulder is exempt by law.
- Any interpretation, correction or change of the bid documents will be made by Addendum. Interpretations, corrections and changes of the bid documents made in any other manner will not be binding, and bidder will not rely upon such interpretations, corrections and changes. The County's Representative will not be responsible for oral

clarification.

10. Confidential/Proprietary Information: Bids submitted in response to this "Invitation to Bid" and any resulting contract are subject to the provisions of the Colorado Public (Open) Records Act, 24-72-201 et.seq., C.R.S., as amended. Any restrictions on the use or inspection of material contained within the bid and any resulting contract will be clearly stated in the bid itself. Confidential/proprietary information must be readily identified, marked and separated/packaged from the rest of the bid. Co-mingling of confidential/proprietary and other information is NOT acceptable. Neither a bid, in its entirety, nor bid price information will be considered confidential/proprietary. Any information that will be included in any resulting contract cannot be considered confidential.

The Boulder County Attorney's Office retains sole authority for determining whether the Colorado Open Records Act requires or permits Boulder County to disclose proposal or bid documents, or any information contained therein, pursuant to an open records request.

- 11. Boulder County promotes the purchase/leasing of energy efficient, materials efficient and reduced toxic level products where availability, quality and budget constraints allow. Bidders are expected whenever possible to provide products that earn the ENERGY STAR and meet the ENERGY STAR specifications for energy efficiency with power management features enabled. Bidders are encouraged to offer products and equipment with post-consumer recycled-content materials. Products should be packaged and delivered with a minimum amount of recycled packaging that adequately protects the product, but is not excessive.
- 12. Pursuant to Colorado law (House Bill 1292), in any bidding process for public works in which a bid is received from a non-resident bidder who is from a state that provides a percentage bidding preference, a comparable percentage disadvantage will be applied to the bid of that bidder. Bidders may obtain additional information from the Department of Personnel's website: http://www.colorado.gov/dpa/.



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SPECIFICATIONS

Please reference the plans and specifications in Attachment A.

Note:

Boulder County will act as the temperature controls subcontractor, please exclude pricing for this scope from your bid.



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INSURANCE AND W-9 REQUIREMENTS

PAYMENT & PERFORMANCE BONDS

Both a payment and a performance bond are required for this project and must each equal 100% of the proposed cost. Please include the cost of this bonding into the total proposed cost.

INSURANCE REQUIREMENTS

Commercial General Liability

This coverage should be provided on an Occurrence Form, ISO CG001 or equivalent, with Minimum limits of \$1,000,000 Each Occurrence, \$2,000,000 General Aggregate and \$2,000,000 Products Completed Operations Aggregate.

Automobile Liability

Bodily Injury and Property Damage for any owned, hired, and non-owned vehicles used in the performance of the Contract. Minimum limits \$1,000,000 Each Accident.

Workers' Compensation and Employer's Liability

Workers' Compensation must be maintained with the statutory limits. Employer's Liability is required for minimum limits of \$100,000 Each Accident/\$500,000 Disease- Policy Limit/\$100,000 Disease-Each Employee.

Umbrella / Excess Insurance

Umbrella/Excess Liability insurance in the amount \$1,000,000.00, following form.

<u>Boulder County as Additional Insured</u>: Boulder County shall be named as an additional insured for General Liability, Umbrella/Excess Liability, and Pollution Liability, as designated in this Contract. Additional insured shall be endorsed to the policy.

THE ADDITIONAL INSURED WORDING SHOULD BE AS FOLLOWS: County of Boulder, State of Colorado, a body corporate and politic, is named as Additional Insureds.

In regards to General Liability, Umbrella/Excess Liability, and Pollution Liability: If any or all of these coverages are required above, additional insured status will be required prior to beginning any and all tasks or work.

Note that the above insurance amounts are the minimum required for this project. Proof of current insurance must be provided with your proposal in the form of a sample certificate. You are NOT required to include additional insured status until the time a contract is executed.

If you require a waiver of insurance requirements you may request one in your response with an explanation.

W-9 REQUIREMENT

Provide a copy of your business's W-9 with your proposal.



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SUBMITTAL SECTION

The bidder's attention is especially called to the items listed below, which must be submitted in full as part of the BID. Failure to submit any of the documents listed below as a part of your BID, or failure to acknowledge any addendum in writing with your BID, or submitting a bid on any condition, limitation or provision not officially invited in this Invitation to Bid (BID) may be cause for rejection of the BID.

THIS CHECKLIST MUST BE SUBMITTED AS PART OF YOUR BID PACKAGE: Bidder will check each box indicating compliance:

INCLUDED	ITEM
	Name and Address of the Partners and Subcontractors if applicable
	A detailed project schedule with an all-inclusive total cost
	Information on the relevant experience of key personnel
	State your compliance with the Terms and Conditions in the Sample Contract contained in this BID. Specifically list any deviations and provide justification for each deviation.
	Submit three references for similar projects your company has completed within the last three years and contact information
	Insurance Certificate
	W-9
	Signature Page
	Addendum Acknowledgement(s) (If Applicable)



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BID TAB

Provide a price for one and/or each item as listed below. Work shall be awarded based on the most responsible Bid that best satisfies the requirements of the project, not necessarily on the lowest price. Boulder County reserves the right to make the award on the basis of the Bid deemed most favorable to the County, to waive any informalities, or to reject any or all Bids. All work described in the Drawings, Specifications and Addenda for this project: ITEM #1: Mechanical HVAC - Work consists of all labor and materials required for mechanical HVAC work including hydronic heat piping requirements. **Excluding temperature** controls _____dollars (\$_____) Duration _____ Working Days ITEM #2: Plumbing - Work consists of all labor and materials required for Plumbing work including all fixtures and domestic hot and cold piping requirements. dollars (\$ Duration_____ Working Days Item #3 -Combine Mechanical HVAC and Plumbing are awarded to same contractor.

Alternates: Provide a separate page for any proposed alternates, with description of alternate and impact to cost or timing of work.

dollars



Contact Information

Company Name including DBA

Boulder County Purchasing 1325 Pearl Street Boulder, CO 80302

purchasing@bouldercounty.org

SIGNATURE PAGE

Response

Signature of Person Authorized to Bid on Company's Behalf	Date
By signing below I certify that: I am authorized to bid on my company' I am not currently an employee of Boul None of my employees or agents is curr I am not related to any Boulder County (Sole Proprietorships Only) I am not a P	der County. rently an employee of Boulder County.
Company Website	
Company Phone Number	
Company Address	
Name, Title, and Email Address of Person Authorized to Contract with Boulder County	
List Type of Organization (Corporation, Partnership, etc.)	

Note: If you cannot certify the above statements, please explain in a statement of explanation.

BOULDER COUNTY SAMPLE CONTRACT

THIS CONTRACT ("Contract") is entered into by and between the County of Boulder, State of Colorado, a body corporate and politic, acting by and through its Board of County Commissioners for the benefit of the [Department] ("County") and [Supplier] ("Contractor"). County and Contractor are each a "Party," and collectively the "Parties."

In consideration of the mutual covenants contained in this Contract, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

- 1. <u>Incorporation into Contract</u>: The **Details Summary** is incorporated into this Contract. The **Contract Documents** are incorporated into this Contract by reference, except to the extent that the Proposal, if any is incorporated, contains any obligations placed upon County and not otherwise contained in this Contract.
- 2. <u>Work to be Performed</u>: Contractor will provide all labor and equipment and do all tasks necessary and incidental to performing the work as described in the **Details Summary** and **Contract Documents** (the "Work"). Contractor will perform the Work (i) in a good and workmanlike manner, (ii) at its own cost and expense, (iii) in accordance with recognized industry standards of care, skill and diligence for the type of work being performed, and (iv) in strict accordance with the Contract. County and its representatives shall have access to the Work at all times.
- a. Contractor shall supervise and direct the Work and shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.
- b. Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, transportation, and other facilities and services necessary for the proper execution and completion of the Work. Contractor warrants that all materials incorporated into the Work will be new unless otherwise specified.
- c. Contractor shall at all times enforce good order among its employees and shall not employ on the Work any unfit person or anyone not skilled in the task assigned to such person. Contractor shall initiate, maintain, and supervise all safety precautions and programs in connection with the Work to ensure safe conditions on the premises at all times. Contractor shall comply with all laws, regulations, ordinances, rules, and orders of any public authority bearing on the safety of persons and property. In the event that County notifies Contractor of any unsafe conditions or practices, Contractor shall immediately take all actions required to remediate them at no expense to County. County reserves the right to immediately suspend the Work in the event of imminent hazard, as determined by County.
- d. At all times, Contractor shall keep the premises free from accumulation of waste materials or rubbish caused by Contractor's operations. Upon completion of the Work, Contractor shall remove all of its waste materials and rubbish from the premises, as well as its tools, construction equipment, machinery and surplus materials.
- e. Contractor shall confine operations on the premises to areas permitted by law, ordinances, permits, this Contract, and as directed by County, including storage of any materials or equipment.
- f. Any claim for an increase in the **Contract Amount** shall be made and generally described by Contractor in writing and delivered to County promptly, in no event later than thirty (30) days after the occurrence of the event giving rise to the claim. Notice of the amount of the claim with supporting data shall be delivered to County within sixty (60) days after such occurrence and shall be accompanied by Contractor's written statement that the amount claimed covers all known amounts to which Contractor is

entitled as a result of the occurrence of said event. All claims for increase in the **Contract Amount** shall be determined by County if the Parties are unable to otherwise reach agreement on the claim.

- g. Before ordering any materials or doing any Work, Contractor shall verify all measurements for the Work and shall be responsible for the correctness of same.
- 3. <u>Term of Contract</u>: The Contract Term begins on the Start Date and expires on the Expiration Date, unless terminated sooner. All the Work must be performed during the Contract Term.
- 4. <u>Payment for Work Performed:</u> In consideration of the Work performed by Contractor, and subject to conditions contained in this Contract, County will pay an amount not to exceed the Contract Amount to Contractor in accordance with the Contract Documents.
- 5. Invoicing: Contractor will promptly provide a copy of its Form W-9 and invoice template to County upon request. Contractor must submit an invoice to the County by the fifteenth (15th) day of the month following completion of the Work. All invoices submitted require the following components: Contractor's name and address (submitted W-9 address must match remit address), detailed description of services, dates of services, itemization of labor and materials costs, "Bill to: Boulder County" language, payment remittance address, payer, name and address, date of invoice, unique invoice number, and total amount due. Contractor must send all completed invoices to the **Invoice Contact** in the **Details Summary**. Email delivery is preferred by the County; County may require delivery of invoices by email. Failure to submit invoices in a timely manner and in accordance with the terms of this Contract may cause a delay in payment. County may recoup any damages incurred because of Contractor's failure to submit invoices pursuant to the terms of this paragraph. County's acceptance or payment of an invoice will not constitute acceptance of any Work performed under this Contract.
- 6. <u>Extra Time to Complete the Work</u>: Upon mutual agreement of the Parties, this Contract may be extended until the **Final End Date**. During any extended **Contract Term**, the terms of this Contract will remain in full force and effect, unless otherwise amended in writing by the Parties. Where the Contractor will provide additional services for additional compensation beyond the initial **Contract Amount**, the Parties must execute a written amendment before the then-current **Expiration Date**. If necessary, the written amendment will incorporate an updated Scope of Work and updated Fee Schedule as exhibits. Contractor must provide a current Certificate of Insurance to the County that complies with the **Insurance Requirements** of this Contract, if any, prior to any extended **Contract Term**.
- 7. <u>Extension of Contract Term (Additional Work)</u>: Upon mutual agreement of the Parties, this Contract may be extended until the **Final End Date**. During any extended **Contract Term**, the terms of this Contract will remain in full force and effect, unless otherwise amended in writing by the Parties. Where the Contractor will provide additional services for additional compensation beyond the initial **Contract Amount**, the Parties must execute a written amendment before the then-current **Expiration Date**. If necessary, the written amendment will incorporate an updated Scope of Work and updated Fee Schedule as exhibits. Contractor must provide a current Certificate of Insurance to the County that complies with the **Insurance Requirements** of this Contract, if any, prior to any extended **Contract Term**.
- 8. <u>Schedule of Work:</u> County may designate the hours (on a daily or weekly basis) during which Contractor can perform the Work, strictly for the purposes of minimizing inconvenience to the County and interference with County operations. Contractor will otherwise set its own work schedule. Contractor shall promptly notify County of any aspect of the Work that will not be delivered or accomplished according to the initial schedule.
- 9. <u>Indemnity:</u> Contractor will be liable for any damages to persons or property caused by or arising out of the actions, obligations, or omissions of Contractor, its employees, agents, representatives or other persons acting under Contractor's direction or control in performing or failing to perform the Work under this Contract. Contractor will indemnify and hold harmless County, its elected and appointed officials, and its employees, agents and representatives (the "indemnified parties"), from any and all liability, claims, demands, actions, damages, losses, judgments, costs or expenses, including attorneys' fees, which may be made or brought or which may result against any of the indemnified parties as a result or on account of the actions or omissions of Contractor, its employees, agents or representatives, or other persons acting under Contractor's direction or control. This indemnification obligation will extend to claims based on Contractor's

unauthorized use or disclosure of confidential information and intellectual property infringement. County will not be obligated to indemnify or defend Contractor under any circumstances. Contractor's obligations under this provision shall survive expiration or termination of this Contract.

- 10. <u>Nondiscrimination</u>: Contractor will comply with the letter and spirit of the Colorado Anti-Discrimination Act, C.R.S. § 24-34-401, <u>et seq.</u>, as amended, and all applicable local, State and Federal laws concerning discrimination and unfair employment practices. County prohibits unlawful discrimination on the basis of race, color, religion, gender, gender identity, national origin, age 40 and over, disability, socio-economic status, sexual orientation, genetic information, or any other status protected by applicable Federal, State or local law. Contractor must require that its subcontractors, if any, similarly comply with all applicable laws concerning discrimination and unfair employment practices.
- 11. <u>Information and Reports</u>: Contractor will provide to authorized County, State, and Federal government representatives all information and reports that may be required for any purpose authorized by law. Contractor will permit access to such representatives to Contractor's facilities, books, records, accounts, and any other relevant sources of information. Where information required by a representative is in the exclusive possession of a person or entity other than Contractor, Contractor must so certify to the County and explain what efforts it has made to obtain the information.
- 12. <u>Independent Contractor</u>: Contractor is an independent contractor for all purposes in performing the Work. Contractor is not an employee of the County for any purpose, including the Federal Insurance Contribution Act, the Social Security Act, the Federal Unemployment Tax Act, the provisions of the Internal Revenue Code, the Colorado Workers' Compensation Act, the Colorado Unemployment Insurance Act, and the Public Employees Retirement Association. Accordingly, County will not withhold or pay any income tax, payroll tax, or retirement contribution of any kind on behalf of Contractor or Contractor's employees. As an independent contractor, Contractor is responsible for employing and directing such personnel and agents as it requires to perform the Work. Contractor will exercise complete authority over its personnel and agents and will be fully responsible for their actions.
- 13. <u>Termination for Non-Appropriation</u>: The other provisions of this Contract notwithstanding, the County is prohibited by law from making commitments beyond the current fiscal year. Payment to Contractor beyond the current fiscal year is contingent on the appropriation and continuing availability of funding in any subsequent year. County has reason to believe that sufficient funds will be available for the full **Contract Term**. Where, however, funds are not allocated for any fiscal period beyond the current fiscal year, County may terminate this Contract without penalty by providing seven (7) days' written notice to Contractor.
- 14. <u>Termination for Breach</u>: Either Party's failure to perform any of its material obligations under this Contract, in whole or in part or in a timely or satisfactory manner, will be a breach. The institution of proceedings under any bankruptcy, insolvency, reorganization or similar law, by or against Contractor, or the appointment of a receiver or similar officer for Contractor or any of its property, which is not vacated or fully stayed within thirty (30) days after the institution of such proceeding, will also constitute a breach. In the event of a breach, the non-breaching Party may provide written notice of the breach to the other Party. If the notified Party does not cure the breach, at its sole expense, within thirty (30) days after delivery of notice, the non-breaching Party may exercise any of its remedies provided under this Contract or at law, including immediate termination of this Contract.
- 15. <u>Termination for Convenience</u>: County may terminate this Contract, in whole or in part, for any reason, upon seven (7) days' advance written notice to Contractor.
- 16. Remedies for Non-Performance: If Contractor fails to perform any of its obligations under this Contract, County may, at its sole discretion, exercise one or more of the following remedies, which shall survive expiration or termination of this Contract:
- a. <u>Suspend Performance</u>: County may require that Contractor suspend performance of all or any portion of the Work pending necessary corrective action specified by the County and without entitling Contractor to an increase in compensation or extension of the performance schedule. Contractor must promptly stop performance and incurring costs upon delivery of a notice of suspension by the County.

- b. <u>Withhold Payment Pending Corrections</u>: County may permit Contractor to correct any rejected Work at the County 's discretion. Upon County 's request, Contractor must correct rejected work at Contractor's sole expense within the time frame established by the County. Upon completion of the corrections satisfactory to the County, County will remit payment to Contractor.
- c. <u>Deny Payment</u>: County may deny payment for any Work that does not comply with the requirements of the Contract or that Contractor otherwise fails to provide or complete, as determined by the County in its sole discretion. Upon County request, Contractor will promptly refund any amounts prepaid by the County with respect to such non-compliant Work.
- d. <u>Removal</u>: Upon County 's request, Contractor will remove any of its employees or agents from performance of the Work, if County, in its sole discretion, deems any such person to be incompetent, careless, unsuitable, or otherwise unacceptable.
- 17. <u>Binding Arbitration Prohibited</u>: County does not agree to binding arbitration by any extra-judicial body or person.
- 18. <u>Conflicts of Interest</u>: Contractor must not engage in any business or personal activities or practices or maintain any relationships that conflict in any way with the full performance of Contractor's obligations.
- 19. <u>Notices</u>: All notices provided under this Contract must be in writing and sent by Certified U.S. Mail (Return Receipt Requested), electronic mail, or hand-delivery to the other Party's **Contact** at the address specified in the **Details Summary**. For certified mailings, notice periods will begin to run on the day after the postmarked date of mailing. For electronic mail or hand-delivery, notice periods will begin to run on the date of delivery.
- 20. <u>Statutory Requirements</u>: This Contract is subject to all statutory requirements that are or may become applicable to counties or political subdivisions of the State of Colorado generally, including but not limited to: C.R.S. § 38-26-107, which requires withholding funds where the County receives a claim for payment from a supplier or subcontractor of Contractor upon notice of final settlement (required for public works contracts that exceed \$150,000); C.R.S. § 8-17-101 <u>et seq.</u>; C.R.S. § 18-8-301, <u>et seq.</u>; and C.R.S. § 18-8-401, et seq.
- 21. Public Contracts for Services (C.R.S. §§ 8-17.5-101, et seq.): Contractor hereby certifies, warrants, and agrees that it does not knowingly employ or contract with an illegal alien who will perform work under this Contract and further certifies that it will confirm the employment eligibility of all employees who are newly hired for employment to perform work under this Contract by participating in the E-Verify Program established under Pub. L. 104-28 or the department verification program established under C.R.S. § 8-17.5-102(5)(c). Contractor (i) shall not knowingly employ or contract with an illegal alien to perform work under this Contract; (ii) shall not enter into a contract with a subcontractor that fails to certify to the contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this Contract; (iii) has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under this Contract through participation in the E-Verify program or department program; (iv) is prohibited from using either the E-Verify program or department program procedures to undertake preemployment screening of job applicants while this Contract is being performed; and (v) shall comply with any reasonable request by the department made in the course of an investigation that the Colorado Department of Labor and Employment is undertaking pursuant to the authority established in C.R.S. § 8-17.5-102(5). If Contractor obtains actual knowledge that a subcontractor performing work under this Contract knowingly employs or contracts with an illegal alien, Contractor shall (a) notify the subcontractor and County within three (3) days that Contractor has actual knowledge that subcontractor is employing or contracting with an illegal alien; and (b) terminate the subcontract if, within three (3) days of receiving notice hereunder, subcontractor does not stop employing or contracting with the illegal alien; except that Contractor shall not terminate the contract with the subcontractor if during such three (3) days the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien. Contractor's violation of this provision will constitute a material breach of this Contract, entitling the County to terminate the contract for breach. If this Contract is so terminated, Contractor shall be liable for actual and consequential damages to the County.

- 22. <u>Entire Agreement/Binding Effect/Amendments</u>: This Contract represents the complete agreement between the Parties and is fully binding upon them and their successors, heirs, and assigns, if any. This Contract terminates any prior agreements, whether written or oral in whole or in part, between the Parties relating to the Work. This Contract may be amended only by a written agreement signed by both Parties.
- 23. <u>Assignment/Subcontractors</u>: This Contract may not be assigned or subcontracted by Contractor without the prior written consent of the County. If Contractor subcontracts any of its obligations under this Contract, Contractor will remain liable to the County for those obligations and will also be responsible for subcontractor's performance under, and compliance with, this Contract.
- 24. <u>Governing Law/Venue</u>: The laws of the State of Colorado govern the construction, interpretation, performance, and enforcement of this Contract. Any claim relating to this Contract or breach thereof may only be brought exclusively in the Courts of the 20th Judicial District of the State of Colorado and the applicable Colorado Appellate Courts.
- 25. <u>Breach</u>: The failure of either Party to exercise any of its rights under this Contract will not be deemed to be a waiver of such rights or a waiver of any breach of the Contract. All remedies available to a Party in this Contract are cumulative and in addition to every other remedy provided by law.
- 26. <u>Severability</u>: If any provision of this Contract becomes inoperable for any reason but the fundamental terms and conditions continue to be legal and enforceable, then the remainder of the Contract will continue to be operative and binding on the Parties.
- 27. <u>Third-Party Beneficiary</u>: Enforcement of the terms and conditions and all rights and obligations of this Contract are reserved to the Parties. Any other person receiving services or benefits under this Contract is an incidental beneficiary only and has no rights under this Contract. Notwithstanding, where the beneficiary **Department** is led by an Elected Official, such Elected Official shall be considered a third-party beneficiary.
- 28. <u>Colorado Open Records Act</u>: County may disclose any records that are subject to public release under the Colorado Open Records Act, C.R.S. § 24-72-101, et seq.
- 29. <u>Conflict of Provisions</u>: If there is any conflict between the terms of the main body of this Contract and the terms of any of the **Contract Documents**, the terms of the main body of the Contract will control.
- 30. <u>Governmental Immunity</u>: Nothing in this Contract shall be construed in any way to be a waiver of the County's immunity protection under the Colorado Governmental Immunity Act, C.R.S. § 24-10-101, <u>et seq.</u>, as amended.
- 31. Representations and Warranties: Contractor represents and warrants the following:
 - a. Execution of this Contract and performance thereof is within Contractor's duly authorized powers;
 - b. The individual executing this Contract is authorized to do so by Contractor;
 - c. Contractor is authorized to do business in the State of Colorado and is properly licensed by all necessary governmental and public and quasi-public authorities having jurisdiction over the Work and the Contractor; and
 - d. Contractor and its subcontractors, if any, are financially solvent, able to pay all debts as they mature, and have sufficient working capital to complete the Work and perform all obligations under the Contract.
- 32. <u>Legal Compliance</u>: Contractor assumes full responsibility for obtaining and maintaining any permits and licenses required to perform the Work. Contractor's performance under this Contract and the Work itself will comply with all Federal, State, and local laws, regulations, ordinances and codes.
- 33. <u>Litigation Reporting</u>: Contractor is not currently involved in any action before a court or other administrative decision-making body that could affect Contractor's ability to perform the Work. Contractor will promptly notify the County if Contractor is served with a pleading or other document in connection with any such action.

- 34. <u>Tax Exemption</u>: County is exempt from payment of Federal, State, and local government taxes. Contractor shall collect no tax from the County, and the County shall not be liable to pay any taxes imposed on Contractor. County shall provide its tax exemption status information to Contractor upon request.
- 35. <u>Delegation of Authority</u>: The Parties acknowledge that the Board of County Commissioners has delegated authority to the Department Head or Elected Official that leads the beneficiary **Department** and their designees to act on behalf of the County under the terms of this Contract, including but not limited to the authority to terminate this Contract.
- 36. Ownership of Work Product: All work product, property, data, documentation, information or materials conceived, discovered, developed or created by Contractor pursuant to this Contract ("Work Product") will be owned exclusively by the County. To the extent possible, any Work Product will be deemed to be a work made for hire. Contractor unconditionally and irrevocably transfers and assigns to the County all right, title and interest in and to any Work Product.
- 37. <u>Publicity Releases</u>: Contractor will not refer to this Contract or the County in commercial advertising without prior written consent of the County. This provision shall survive expiration or termination of this Contract.
- 38. Execution by Counterparts; Electronic Signatures: This Contract may be executed in multiple counterparts, each of which will be deemed an original, but all of which will constitute one agreement. The Parties approve the use of electronic signatures, governed by the Uniform Electronic Transactions Act, C.R.S. §§ 24 71.3 101 to 121. The Parties will not deny the legal effect or enforceability of this Contract solely because it is in electronic form or because an electronic record was used in its creation. The Parties will not object to the admissibility of this Contract in the form of electronic record, or paper copy of an electronic document, or paper copy of a document bearing an electronic signature, because it is not in its original form or is not an original.
- 39. <u>Limitation on Public Statements and Lobbying Activity</u>. During the term of this Contract, Contractor may receive from the County its confidential data, work product, or other privileged or confidential information that is protected by law. To maintain the fact and appearance of absolute objectively, Contractor shall not, without the prior written consent of the County, which shall not be unreasonably withheld, do any of the following: (a) disclose information obtained because of this contractual relationship to any third party; (b) lobby any State or Federal agency on any pending matter while this Contract is effective; or (c) make any public statements or appear at any time to give testimony at any public meeting on the subject matters regarding which Contractor is or was retained by the County. County may set reasonable conditions on any disclosure authorized by the County under this provision. Notwithstanding, Contractor may make disclosures as required by law, and to law enforcement officials in connection with any criminal justice investigation.
- 40. <u>Sustainability</u>: County encourages Contractor to consider the procurement and use of environmentally preferable products and services while performing services under this Contract. "Environmentally preferable purchasing" means making purchasing choices for products and services that have a lesser or reduced adverse effect on human health and the environment when compared with competing products and services that serve the same purpose. Environmentally preferable purchasing is consistent with the County's commitment to protecting our air, water, soil, and climate for current and future generations. County encourages Contractor to incorporate the following actions into Contractor's performance of the Work: environmentally preferable supplies and services; conservation of water; efficient energy use; waste prevention; reuse and recycle construction and de-construction materials in a manner that maximizes reuse of materials; sustainable transportation choices, including consideration to business communication software such as Skype alternative to air travel and public transit or carpooling for in-person meetings; pollution prevention; low toxicity for public health & safety; and reduced emissions to address climate change.
- 41. <u>Limitation of Liability</u>: COUNTY SHALL NOT BE LIABLE TO CONTRACTOR FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, PUNITIVE, OR INDIRECT DAMAGES ARISING FROM OR RELATING TO THIS CONTRACT, REGARDLESS OF ANY NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. COUNTY'S AGGREGATE LIABILITY, IF ANY, ARISING FROM OR RELATED TO THIS CONTRACT, WHETHER IN CONTRACT, OR IN TORT, OR OTHERWISE, IS LIMITED TO, AND SHALL NOT EXCEED,

THE AMOUNTS PAID OR PAYABLE HEREUNDER BY COUNTY TO CONTRACTOR. ANY CONTRACTUAL LANGUAGE LIMITING CONTRACTOR'S LIABILITY SHALL BE VOID.

- 42. <u>County Opportunity to Review</u>: Contractor shall provide County with the opportunity to review and approve or take other appropriate action upon the Contractor's submittals, such as Shop Drawings, Product Data, and Samples, but only for conformance with the design concept of the Work and with the information given in the Contract Documents.
- 43. <u>Notice to Proceed</u>: The Parties agree that time is of the essence and work shall after a "Notice to Proceed" has been issued by the County and in accordance with the terms therein.
- Retainage: County may retain partial payment pending completion and County acceptance of the Work as satisfactory and complete. For contracts that exceed \$150,000, the retention rate shall not exceed five percent (5%). C.R.S. § 24-91-103. Contractor is responsible for submitting a final invoice for any retainage held by County. If It becomes necessary for County to take over completion of the Work, all of the amounts owing to Contractor, including the withheld percentage, shall be applied: First, towards completion of the Work; second, towards performance of the withholding requirement set forth in C.R.S. § 38-26-107; third, to the surety furnishing bonds for the Work, to the extent such surety has incurred liability or expense in competing the Work or made payments pursuant to C.R.S. § 38-26-106; then, to Contractor. Such retained percentage as may be due to Contractor shall be due and payable as provided by C.R.S. § 38-26-107.
- 45. <u>Bonds</u>: Upon County's request, Contractor shall obtain and deliver to County payment and performance bonds each equal to 100% of the total Contract. Bonds shall be executed by a qualified corporate surety and must be acceptable to County. County reserves the right to accept other acceptable forms of surety in lieu of a bond, and to reduce the bond requirements set forth herein consistent with C.R.S. § 38-26-106.
- 46. <u>Change Orders</u>: If unforeseen modifications or changes are required, Contractor may submit a Change Order request to County, which must include a complete description, timeline, and fee schedule for the proposed work. Change Orders are not effective until approved by County in writing.
- 47. <u>No Suspension or Debarment</u>: Contractor certifies, and warrants for the duration of this Contract, that neither it nor its principals nor any of its subcontractors are debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this Contract by any Federal or State department or agency. Contractor shall comply, and shall require its subcontractors to comply, with subpart C of 2 C.F.R. § 180.
- 48. Permits/Licenses/Code Compliance: Prior to starting the Work, Contractor will identify and obtain, and maintain during this Contract, all permits and licenses necessary to perform the Work. Contractor shall comply with all State and local codes. Contractor is responsible for locating all public utilities, as necessary. Contractor shall require its subcontractors to comply with this provision. HVAC, roofing, and general contractors must be licensed through Boulder County Land Use. Electricians and plumbers must be licensed through the State and registered with Boulder County Land Use Building Safety and Inspection Division. Architects, Professional Engineers and Professional Land Surveyors must be fully-licensed through the State. All required permits and licenses must be provided to County prior to Contractor beginning the Work.
- 49. <u>Stormwater Quality Protection Requirements</u>: Contractor will take all measures necessary to prevent pollutants from entering storm drains and watercourses. To eliminate stormwater pollution, Contractor shall implement effective Best Management Practices (BMPs). BMPs include general good housekeeping practices, appropriate scheduling of activities, operational practices, maintenance procedures and other measures to prevent the discharge of pollutants directly or indirectly to the storm drain system. These BMPs shall be maintained for the duration of this Contract. Contractor shall also be responsible for proper disposal of all waste materials, including wastes generated by the implementation of BMPs. Contractor shall otherwise comply with the Federal Clean Water Act, Colorado Water Quality Control Act, and Boulder County's local Clean Water Act, Illegal Discharge Ordinance (No. 2012-4). For work performed

in urbanized areas, Contractor must comply with the requirements of MS4 permit (COR090000), which is available through the Colorado Department of Public Health and Environment.

- 50. <u>Guaranties and Warranties</u>: Upon completion of the Work, Contractor will provide County with a written guaranty covering all labor, materials and workmanship incorporated into the Work for one (1) year, or within any such longer period of time as may be prescribed by law, the specifications, or any other applicable special warranty required by the **Contract Documents**. Final payment upon completion of the Work will not relieve Contractor of responsibility for faulty material or workmanship, which County may require Contractor to fix at Contractor's sole expense, in addition to County's other remedies. This provision shall apply to Work completed by Contractor's employees and subcontractors.
- 51. <u>Substantial Completion</u>: Substantial completion shall be achieved where the Work has progressed to the point where, in the opinion of County, it is sufficiently complete, in accordance with the **Contract Documents**, so that the Work (or specified part) can be utilized for the purposes for which it was intended.
- a. When Contractor considers the entire Work ready for its intended use, Contractor shall notify County in writing that the entire Work is substantially complete (except for items that may be listed by Contractor as incomplete).
- b. Within a reasonable time thereafter, County and Contractor shall make an inspection of the Work to determine the status of completion.
- c. If County does not consider the Work substantially complete, County will notify Contractor in writing giving the reasons therefore. If County considers the Work substantially complete, County will provide notice to Contractor of the date of Substantial Completion. Notice of substantial completion may include a list of items to be completed or corrected before final payment; unless Contractor objects in writing and so informs County within seven (7) days, County's recommendations of Work to be completed and corrected shall be binding on Contractor until final payment.
- 52. <u>Final Payment</u>: A final inspection of the Work shall be conducted by County. If a list of deficiencies results from such final inspection, Contractor shall promptly rectify all items appearing thereon before final payment will be made. When County indicates acceptance of the Work, Contractor may request final payment from County, including any retained amounts. Final payment shall be subject to C.R.S. § 38-26-107.
- 53. <u>Notice of Final Settlement</u>: Prior to remitting final payment to Contractor, County shall publish a Notice of Final Settlement in accordance with C.R.S. § 38-26-107. Final payment will be rendered in accordance with the statute and the other terms of this Contract. Final payment will not be rendered until County, in its sole discretion, determines satisfactory completion of the Work.
- 54. <u>Geographic Information System (GIS) Data</u>: Contractors agree that the following, specified data formats, shall be used and/or adhered to when submitting required data to the County:
- a. All GIS data must be ArcGIS 10.x compatible. Shapefiles may be accepted with written, pre-approval, from the County.
- b. All GIS data must have complete metadata, following Boulder County GIS Metadata Standards located at: https://assets.bouldercounty.org/wpcontent/uploads/2018/03/metadata-standards-contractors.pdf
- c. All Computer Aided Design (CAD) files must have an assigned real world coordinate system to ensure compatible conversion into the County's GIS system, if necessary.
- d. All spatial or georeferenced data will be provided to the county in the following coordinate system: i. Name:

NAD 1983 HARN State Plane Colorado North FIPS 0501 Feet

ii. Unit: Foot US

iii. Projection: Lambert Conformal Conic iv. Horizontal Datum: North American Datum 1983 HARN

v. Vertical Datum: North American Vertical Datum 1988

vi. Spheroid: GRS 1980

- e. Contractors are responsible for capturing section corners or quarter corners for specific projects to be added into the Public Land Survey System (PLSS) project for updating the section corners, Contractors shall provide high-accuracy PLSS monument coordinates for each corner section or quarter corner section monument used as control points or that occur within the project area ("putting it on the cap") as is reasonable, depending on the difficulty to access the point. All positions to be collected shall be required to use (at a minimum) the Real-Time Kinematic (RTK) method.
- 55. <u>State Specifications</u>: The Standard Specifications for Road and Bridge Construction 2017, either in whole or as set forth in the Bid Documents, are expressly incorporated into this Contract by reference.
- 56. <u>Determination of Unit Prices</u>: County will determine the actual quantities and classifications of Unit Price Work performed by Contractor. The Parties will review the County's preliminary determinations before County renders a written decision thereon (by recommendation of an Application for Payment or otherwise), which shall be final and binding upon Contractor. The value of any Unit Price Work covered by a Change Order or claim for an increase or decrease in the Contract Amount shall be determined by applying the unit prices to the quantities of items.
- a. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, the Parties agree that the Contract Amount includes the total cost of Unit Price Work, determined by multiplying the quantity of each item by its unit price. Initial quantity determinations are estimates, which must be adjusted to reflect actual quantities. Contractor shall make a claim in writing to County for any additional amounts owed where actual quantities exceed estimated quantities. Contractor shall provide such written claim within twenty (20) days of providing the items and shall be accompanied by supporting documentation. The written claim shall include a statement that the claimed amount covers all known amounts (direct, indirect and consequential) to which Contractor is owed. County shall only pay Contractor for actual quantities of items provided hereunder.
- b. The Parties agree that each unit price adequately covers Contractor's overhead and profit for each item.
- 57. Records Retention/Access/Audits: Contractor shall maintain all records and documents pertaining to this Contract in accordance with the requirements prescribed by County. Such records shall be maintained for a period of five (5) calendar years after the date of Contractor's final payment from County under this Contract. Contractor agrees that County or their designated representative shall have the right to review and to copy any records and supporting documentation pertaining to the performance of this Contract as necessary and upon request, throughout the term of this Contract, and for five (5) calendar years after the date of the final payment hereunder. Contractor agrees to allow the auditor(s) access to such records during normal business hours and to allow interviews of any employees who might reasonably have information related to such records. County and Contractor acknowledge that protected information is exempt from this requirement without proper client release.
- 58. <u>Insurance Requirements:</u> Prior to commencing the Work, Contractor will provide a Certificate of Insurance to the County demonstrating adequate insurance coverage as required by this paragraph. All policies evidencing coverage required by the Contract will be issued by insurance companies satisfactory to the County. Contractor will forward Certificates of Insurance directly to the **County Department** and **Contact** listed in the **Details Summary**.
- a. For the entire duration of this Contract including any extended or renewed terms, and longer as may be required by this Contract, Contractor shall procure and maintain at its own expense, and without cost to the County, the following kinds and minimum amounts of insurance to insure the liability risks that Contractor has assumed under this Contract:

i. Commercial General Liability

Non-Construction contracts use the following language:

This coverage should be provided on an Occurrence Form, ISO CG001 or equivalent, with Minimum limits of \$1,000,000 Each Occurrence, \$2,000,000 General Aggregate and \$2,000,000 Products Completed Operations Aggregate.

Construction Contracts only – include the following paragraph:

Coverage should be provided on an Occurrence form, ISO CG0001 or equivalent. The policy shall be endorsed to include Additional Insured Owners, Lessees or Contractors endorsements CG 2038 (or equivalent), Designated Construction Project(s) General Aggregate Endorsement CG2503 (or equivalent) and Additional Insured Completed Operations for Owners, Lessees or Contractors CG 2037 (or equivalent). Minimum limits required of \$1,000,000 Each Occurrence, \$2,000,000 General Aggregate and \$2,000,000 Products/Completed Operations Aggregate. The County requires the Products/Completed Operations coverage to be provided 3 years after completion of construction. An endorsement must be included with the certificate.

ii. Automobile Liability

Bodily Injury and Property Damage for any owned, hired, and non-owned vehicles used in the performance of the Contract. Minimum limits \$1,000,000 Each Accident.

This coverage may not be required if Contractor is not using a vehicle as part of its performance under the contract. Contact Risk Management with any questions.

iii. Workers' Compensation and Employer's Liability

Workers' Compensation must be maintained with the statutory limits. Employer's Liability is required for minimum limits of \$100,000 Each Accident/\$500,000 Disease-Policy Limit/\$100,000 Disease-Each Employee.

This coverage may not be required if contractor is not mandated under State law to maintain this coverage. A waiver is available on the contracts routing website.

iv. Umbrella / Excess Insurance

Umbrella/Excess Liability insurance in the amount \$[X],000,000.00, following form.

This insurance is a broad, high-limit policy, which acts more than the underlying primary insurance policy. This coverage is designed to provide additional liability limits beyond the primary insurance limits and is triggered upon the underlying limits becoming exhausted. Umbrella / Excess insurance is most commonly required when an exposure to the County could potentially create liabilities in excess of the basic insurance limits. The most common limits for these policies range from \$2,000,000 to \$5,000,000.

Please consult with Risk Management if you feel this coverage should be required.

IN ADDITION TO THE ABOVE, ONE OR MORE OF THE FOLLOWING FOUR (4) INSURANCE COVERAGES MAY BE REQUIRED. CONTACT RISK MANAGEMENT IF YOU HAVE QUESTIONS ABOUT WHICH INSURANCE COVERAGE TO INCLUDE. DELETE THIS INSTRUCTION (AND ANY INAPPLICABLE INSURANCE PARAGRAPHS) WHEN FINALIZING THE CONTRACT:

v. Professional Liability (Errors and Omissions)

All contractors required to be professionally certified by the State of Colorado (i.e., architects, engineers, doctors, nurses, etc.) and/or any consultants whose errors in

judgment, planning, design, etc. could result in economic loss to the County must provide proof of professional liability coverage. This also applies to anyone managing or overseeing construction.

Professional liability coverage with minimum limits of \$1,000,000 Per Loss and \$1,000,000 Aggregate. Professional Liability provisions indemnifying for loss and expense resulting from errors, omission, mistakes or malpractice is acceptable and may be written on a claims-made basis. The contractor warrants that any retroactive date under the policy shall precede the effective date of this Contract; and that either continuous coverage will be maintained or an extended discovery period will be exercised for a period of two (2) years beginning at the time work under this Contract is completed.

vi. **Pollution Liability**

This coverage is required whenever work under the contract involves pollution risk to the environment or losses caused by pollution conditions (including asbestos) that may arise from the operations of the Contractor described in the Contractor's scope of services.

Coverage pay for those sums the Contractor becomes legally obligated to pay as damages because of Bodily Injury, Property Damage or environmental Damage arising out of a pollution incident caused by the Contractor's work including Completed Operations. Coverage shall include emergency response expenses, pollution liability during transportation (if applicable) and at Non-Owned Waste Disposal Site (if applicable). The Minimum limits required are \$1,000,000 Per Occurrence/Loss and \$1,000,000 Policy Aggregate. If the coverage is written on a claims-made basis, the Contractor warrants that any retroactive date applicable to coverage under the policy precedes the effective date of this Contract; and that continuous coverage will be maintained or an extended discovery period will be exercised for a period of three (3) years beginning from the time that work under this contract is completed. County shall be named as an additional insured for ongoing operations and completed operations.

vii. Third Party Commercial Crime Insurance / Third Party Fidelity Bond

Crime / Third Party Fidelity covers the contractor and the contractor's employees when engaged in work for a client on behalf of the County. This coverage is for employee dishonesty, theft, embezzlement, forgery and alteration. Coverage is required when the contractor will be handling money or collecting fees on behalf of the County or when the contractor has access to client's personal property and/or documentation

The Crime limit shall be \$1,000,000 Per Loss and include an endorsement for "Employee Theft of Client Property". In order to provide coverage to County during the course of this contract, Commercial Crime policies must be endorsed to cover Third Party Fidelity. Third party fidelity covers the vendor's employees when engaged in work for a client. In addition, the County will be listed as loss payee on the commercial crime coverage. This third-party coverage can also be provided by obtaining a third-party fidelity bond.

viii. Privacy / Cyber Liability Insurance

As a provider of a service which *may* require the knowledge and retention of personal identifiable information <u>including but not limited to, names, dates of birth, social security numbers, usernames, and passwords, and/or HIPAA sensitive personal information of clients served, the following minimum insurance limits are required:</u>

Contractors with 10 or fewer County clients: \$50,000
Contractors with 11 – 15 County clients: \$500,000
Contractors with more than 25 County clients: \$1,000,000

If the scope does not pertain to clients directly, contact Risk Management for appropriate language.

ix. Sexual Abuse and Molestation Coverage

As a provider of a service which has contact with individuals that are part of a sensitive population and are in a position of trust the following minimum insurance limits are required:

Contractors with 5 or fewer County clients: \$100.000

Contractors with 6-10 County clients: \$250,000 Contractors with 11-15 County clients: \$500,000

Contractors with 16 or more County clients: \$1,000,000

If the number of clients increases during the contract period, the required coverage limit will increase to correspond accordingly.

If the scope does not pertain to clients directly, contact Risk Management for appropriate language.

THE STATED INSURANCE LIMITS FOR ALL COVERAGES ARE <u>MINIMUM</u> AMOUNTS; DEPENDING ON THE CONTRACT, HIGHER LIMITS MAY BE REQUIRED OR ADVISABLE. CONTACT RISK MANAGEMENT IF YOU HAVE ANY QUESTIONS ABOUT MINIMUM LIMITS. DELETE THIS PARAGRAPH WHEN FINALIZING THE CONTRACT.

b. <u>Boulder County as Additional Insured</u>: Boulder County shall be named as an additional insured for General Liability, Umbrella/Excess Liability, and Pollution Liability, as designated in this Contract. Additional insured shall be endorsed to the policy.

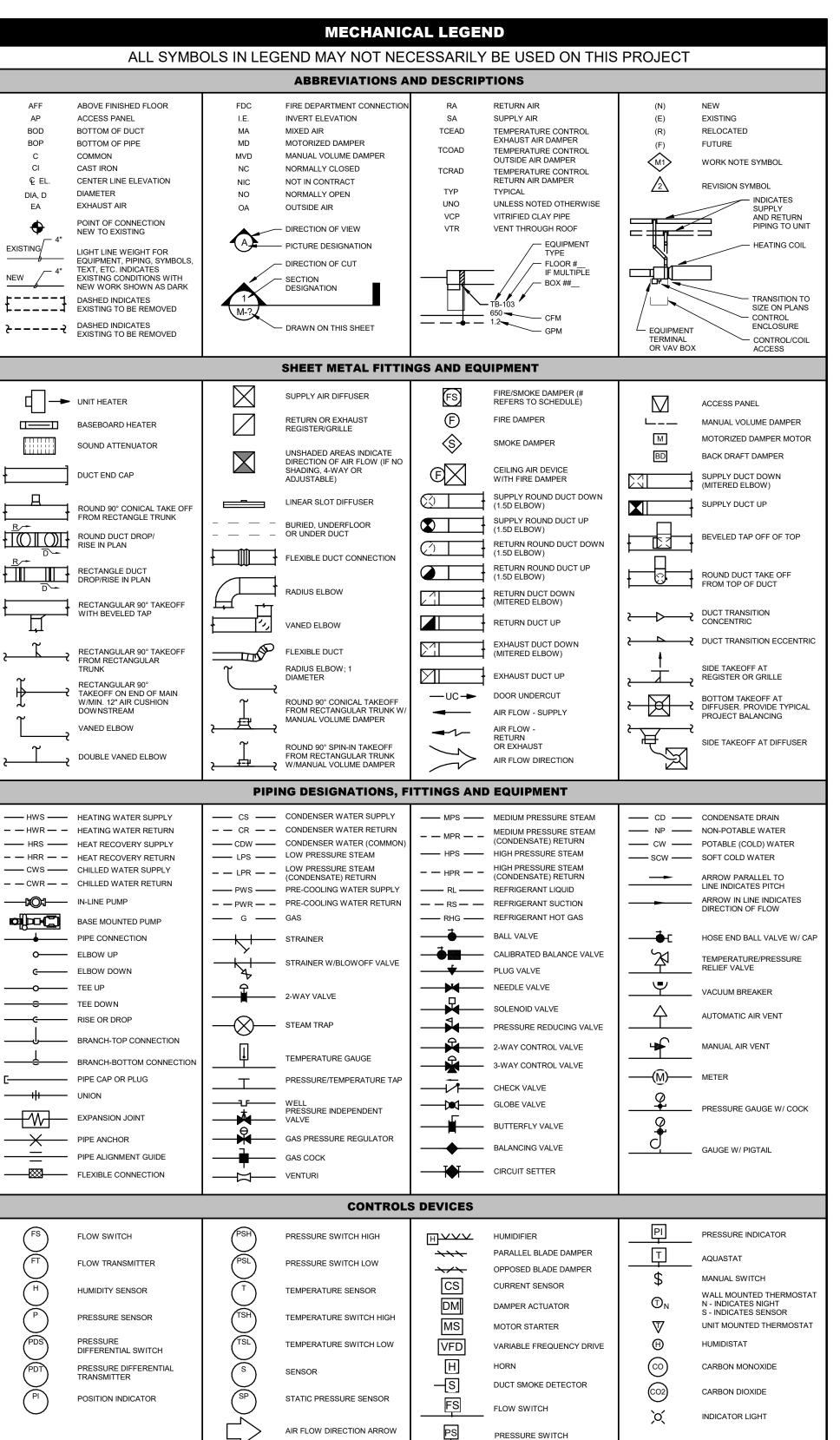
THE ADDITIONAL INSURED WORDING SHOULD BE AS FOLLOWS: County of Boulder, State of Colorado, a body corporate and politic, is named as Additional Insured.

- c. <u>Notice of Cancellation</u>: Each insurance policy required by this Contract shall provide the required coverage and shall not be suspended, voided or canceled except after thirty (30) days' prior written notice has been given to the County except when cancellation is for non-payment of premium, then ten (10) days' prior notice may be given. If any insurance company refuses to provide the required notice, Contractor or its insurance broker shall notify the County any cancellation, suspension, or nonrenewal of any insurance policy within seven (7) days of receipt of insurers' notification to that effect.
- d. <u>Insurance Obligations of County</u>: County is not required to maintain or procure any insurance coverage beyond the coverage maintained by the County in its standard course of business. Any insurance obligations placed on the County in any of the **Contract Documents** shall be null and void.
- e. <u>Deductible</u>: Any and all deductibles contained in any insurance policy shall be assumed by and at the sole risk of Contractor.
- f. <u>Primacy of Coverage</u>: Coverage required of Contractor and its subcontractors, if any, shall be primary over any insurance or self-insurance program carried by the County.
- g. <u>Subrogation Waiver</u>: All insurance policies in any way related to this Contract secured or maintained by Contractor as required herein shall include clauses stating that each carrier shall waive all rights of recovery, under subrogation or otherwise, against County, its organizations, officers, agents, employees, and volunteers.

[Signature Page to Follow]

IN WITNESS WHEREOF, the Parties have executed and entered into this Contract as of the latter day and year indicated below.

SIGNED for and on behalf of Boulder Co	ounty	SIGNED for and on behalf of Contractor
Signature:		Signature:
Name:		Name:
Title:		Title:
Date:		Date:
↓↓For Board-signed documents only↓↓		
V		
Attest:	Initials	
Attestor Name:		
Attestor Title:		



COMPLIANCE FOR ASHRAE STANDARD 183 BOULDER, CO; 5280 FT. ELEVATION, LOCATION: 40.02 DEGREES LATITUDE, 105.28 DEGREES LONGITUDE. SUMMER = (95) DEGREES F / 60 DEGREES (MEAN OUTDOOR CONDITIONS: COINCIDENT W.B.) WINTER = (-10) DEGREES F INDOOR CONDITIONS: COOLING = (75) DEGREES F HEATING = (70) DEGREES F ENVELOPE CHARACTERISTICS: GLASS SHADING COEF. = (0.33)GLASS "U" FACTOR = (0.45)GLASS LOW-E = (Y)(N)GLASS INTERIOR SHADING = (Y) (N)WALL INSULATION "R" = (13.0)ROOF INSULATION "R" = (19.0)PERIMETER FOUNDATION WALL INSULATION "R" = (NA) LOAD CALCULATION METHOD: COOLING = TETD/TA HEATING = UATD

DUCT LINER / INSULATION SCHEDULE											
SYSTEM	INSULATION OR LINER	PHYSICAL DUCT DIMENSIONS LISTED ON DRAWINGS	REMARKS								
SUPPLY AIR FROM FAN DISCHARGE TO TERMINAL BOX	EXTERNALLY INSULATED										
SUPPLY AIR DOWNSTREAM OF TERMINAL BOX	INTERNALLY LINED	DUCT SIZES LISTED ARE ACTUAL SHEET METAL SIZE AND INCLUDE THICKNESS OF LINER.									
REFER TO SPECIFICA INSULATION FOR EACH		NESS OF DUCT LINER AND EXTERI	OR								

ADOPTED/ENFORCED CODES REQUIRED

2018 INTERNATIONAL BUILDING CODE
2018 INTERNATIONAL MECHANICAL CODE
2018 INTERNATIONAL PLUMBING CODE
2018 INTERNATIONAL FUEL GAS CODE
2018 INTERNATIONAL ENERGY CONSERVATION CODE
2018 INTERNATIONAL FIRE CODE

2018 NATIONAL ELECTRICAL CODE

MECHANICAL CONTROLS

MECHANICAL DETAILS

2020 CITY OF BOULDER ENERGY CONSERVATION CODE (COBECC)

	DRAWING LIST - MECHANICAL
M001	MECHANICAL GENERAL INFORMATION
M002	MECHANICAL SPECIFICATION
M003	MECHANICAL SPECIFICATION
M004	MECHANICAL SPECIFICATION
M005	MECHANICAL SPECIFICATION
M006	MECHANICAL SPECIFICATION
M007	MECHANICAL SCHEDULES
M008	MECHANICAL SCHEDULES
M009	MECHANICAL ENERGY COMPLIANCE
M010	MECHANICAL ENERGY COMPLIANCE
MD203	BOCC THIRD FLOOR MECHANICAL DEMOLITION PLAN
MD303	BOCC THIRD FLOOR MECHANICAL PIPING DEMOLITION PLAN
M203	BOCC THIRD FLOOR MECHANICAL PLAN
M303	BOCC THIRD FLOOR MECHANICAL PIPING PLAN

MECHANICAL GENERAL NOTES

DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY. WHATEVER IS CALLED FOR IN EITHER IS BINDING AS THOUGH CALLED FOR IN BOTH.

THIS PROJECT HAS BEEN COMPLETED IN REVIT. THIS CONTRACTOR SHALL REVIEW THE MODEL CREATED BY THE ARCHITECT / ENGINEER THAT ILLUSTRATES THE DESIGN INTENT OF THE PROJECT. THIS MODEL IS NOT INTENDED TO BE USED AS A SHOP DRAWING, BUT IS A TOOL TO ENABLE THE CONTRACTOR TO BE ABLE TO CREATE FABRICATION DRAWINGS AND COORDINATE THE INSTALLATION OF THE WORK DESCRIBED IN THESE DOCUMENTS.

DUCT AND PIPE SIZE DIMENSIONS ARE IN INCHES UNLESS NOTED OTHERWISE.

THE EQUIPMENT SPECIFIED ON THE DRAWINGS HAVE BEEN SELECTED AS THE BASIS OF DESIGN. THE USE OF REVIEWED OR SPECIFIED EQUALS SHALL BE COORDINATED BY THE CONTRACTOR AS TO SPACE REQUIREMENTS, EQUIPMENT DIMENSIONS AND PERFORMANCE. ANY ADDITIONAL COSTS EITHER DIRECTLY OR INDIRECTLY CAUSED BY EQUALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

COORDINATE ALL DIFFUSER AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLAN, FIRE PROTECTION, AND ELECTRICAL DRAWINGS.

DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL DESIGN INTENT,
ARRANGEMENT AND EXTENT OF SYSTEMS. DO NOT SCALE DRAWINGS NOR USE AS
SHOP DRAWINGS. WHERE ALTERNATE ROUTING, OFFSETS AND TRANSITIONS ARE
REQUIRED FOR FIELD COORDINATION OF ALL TRADES, THIS CONTRACTOR SHALL
MAKE CHANGES WITHOUT ADDITIONAL COSTS.

CONTRACTOR SHALL NOT SHUT-OFF/PUT OUT OF SERVICE ANY SYSTEMS/SERVICES WITHOUT FIRST COORDINATING ALL DOWNTIME WITH OWNER'S PERSONNEL. CONTRACTOR SHALL PROVIDE A DETAILED M.O.P. AS REQUIRED. DO NOT BEGIN WORK WITHOUT WRITTEN APPROVAL.

ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY DIRECTED OTHERWISE.

CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND INSTALLING SLEEVES, INSERTS AND SUPPORTS AS REQUIRED FOR THIS SCOPE OF WORK AND/OR CORE DRILL REQUIREMENTS. COORDINATE WITH GENERAL CONTRACTOR AND STRUCTURA ENGINEER.

CONTRACTOR SHALL CLOSELY COORDINATE NEW MECHANICAL WITH ALL NEW AND EXISTING MECHANICAL, PLUMBING, ELECTRICAL, FIRE PROTECTION, ARCHITECTURAL AND STRUCTURAL MEMBERS. REFER TO DIVISION 23 SPECIFICATIONS FOR CEILING SPACE ALLOCATION PRIORITIES.

CONTRACTOR SHALL FIELD VERIFY ALL MECHANICAL ITEMS PRIOR TO (COMMENCING NEW WORK)(SUBMITTING A BID). NO ADDITIONAL COST WILL BE ALLOWED FOR CONTRACTOR'S FAILURE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS.

2. ALL MECHANICAL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE CODES LISTED ON THIS SHEET AND THE ARCHITECTURAL CODE PLAN.

CONTRACTOR SHALL PROVIDE SUBMITTALS ON ITEMS LISTED IN THE MECHANICAL SCHEDULES AND AS REQUIRED IN EACH SECTION OF SPECIFICATION TO THE ENGINEER/OWNER FOR REVIEW PRIOR TO THE ORDER, PURCHASE OR INSTALLATION OF THESE SAME ITEMS.

ALL EXISTING EQUIPMENT TO BE REMOVED SHALL HAVE ALL RELATED PIPING, CONTROLS, GAUGES, ELECTRICAL SERVICE, HANGERS, SUPPORTS AND ANY MISCELLANEOUS RELATED SERVICE OR PARTS REMOVED COMPLETELY.

5. PROVIDE MANUAL AIR VENTS ON CLOSED SYSTEM WATER PIPING AT ALL CHANGES IN ELEVATION DOWNWARD IN DIRECTION OF WATER FLOW.

16. CONTRACTOR SHALL CONSTRUCT AND INSTALL DUCTWORK ACCORDING TO SMACNA STANDARDS AS A MINIMUM REQUIREMENT. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

ALL DUCT DIMENSIONS ARE OUTSIDE DIMENSIONS. WHERE DUCT LINER IS USED, THE THICKNESS OF THE LINER TO MAINTAIN THE CLEAR INSIDE DIMENSION HAS BEEN INCLUDED. REFER TO DUCT INSULATION / LINER SCHEDULE AND/OR DIVISION 23 OF THE SPECIFICATIONS.

SPIN-IN FITTINGS TO VAV BOXES AND DIFFUSERS SHALL BE CONICAL TYPE (EXCEPT LOCATIONS WHERE LISTED DUCT HEIGHT DOES NOT ACCOMMODATE). SPIN-IN FITTINGS TO DIFFUSERS SHALL INCLUDE AN INTEGRAL MANUAL VOLUME DAMPER.

RIGID INLET DUCTS TO VAV BOXES SHALL BE THE SAME SIZE AS THE VAV BOX INLET CONNECTION UNLESS NOTED OTHERWISE FOR A MINIMUM OF THREE DIAMETERS OF STRAIGHT DUCT.

MOUNT THERMOSTAT AT 42" ON CENTER ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED (ADA REQUIREMENT). ALIGN WITH OTHER ADJACENT DEVICES ON WALL.

PROVIDE REDLINE MARK-UPS FOR ANY FIELD CHANGES OR MODIFICATIONS ON THE CONSTRUCTION DOCUMENTS. REDLINE DRAWINGS SHALL BE PROVIDED WHETHER COORDINATION DRAWINGS ARE REQUIRED OR NOT.

COORDINATION DRAWINGS ARE REQUIRED OR NOT.

EXISTING EQUIPMENT AS NOTED ON THE DRAWINGS SHALL BE RETURNED TO THE OWNER AT THEIR DESIGNATED LOCATION.

PRIOR TO BALANCING MECHANICAL CONTRACTOR SHALL PROVIDE A CLEAN SET OF FILTERS FOR AIR HANDLING UNITS. THIS CONTRACTOR SHALL PROVIDE A MEANS TO SIMULATE 50% LOADED FILTERS. SYSTEM SHALL BE BALANCED IN THIS MODE.

CONVENTIONS USED IN THE PRESENTATION OF THE CONTRACT DOCUMENTS:

CFM IS AT ALTITUDE OF PROJECT.

STATIC PRESSURES AND AIR PRESSURE DROPS ARE PROJECT ALTITUDE.
HEATING AND COOLING CAPACITIES ARE AT ALTITUDE OF PROJECT.

PROJECT NARRATIVE

PROJECT IS THE HVAC REMODEL OF THE 3RD FLOOR OF THE BOULDER COUNTY COURT HOUSE. EXISTING HVAC DUCTWORK, VAV BOXES, AIR DEVICES, HEATING HOT WATER PIPING, AND BASEBOARD RADIATION TO BE REMOVED AND REPLACED WITH NEW HVAC DUCTWORK, VAV BOXES, AIR DEVICES, HEATING HOT WATER PIPING, AND BASEBOARD RADIATION TO SERVE NEW ARCHITRECTURAL LAYOUT.

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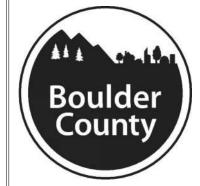
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1325 PEARL STREET COURTHOUSE 3RD FLOOR REMODE

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION

1325 PEARL STREET
BOULDER, COLORADO
80302

SHEET

INFORMATION

FILE NAME

72620022-BoulderCountyCourthouse

3rdFloorRemodel-Mech-R20.rvt

MECHANICAL GENERAL

ACC'T <u>100103</u>
DATE: <u>12/23/2020</u>
DRAWN BY:<u>SBN</u>
CHECKED BY:<u>BEB</u>

REVISIONS

-



ENGINEERING | TECHNOLOGY | LIFE SAFETY BCER PROJECT 72620022

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SHALL REMAIN THE PROPERTY OF BCER ENGINEERING. BCER ENGINEERING SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS

SECTION 230000 - BASIC MECHANICAL REQUIREMENTS

1.1 SUMMARY

COORDINATE ALL SERVICES SHUTDOWN WITH THE OWNER

PROJECT CONDITIONS 1.2

BE RESPONSIBLE FOR ALL DAMAGE TO THE PROPERTY OF THE OWNER OR TO THE WORK OF OTHER CONTRACTORS DURING THE CONSTRUCTION AND GUARANTEE PERIOD. REPAIR OR REPLACE ANY PART OF THE WORK WHICH MAY SHOW DEFECT DURING ONE (1) YEAR FROM THE FINAL ACCEPTANCE OF ALL WORK. PROVIDED SUCH DEFECT IS. IN THE OPINION OF THE ARCHITECT, DUE TO IMPERFECT MATERIAL OR WORKMANSHIP AND NOT DUE TO THE OWNER'S CARELESSNESS OR IMPROPER USE.

1.3 ACCESSIBILITY

- INSTALL EQUIPMENT AND MATERIALS TO PROVIDE REQUIRED ACCESS FOR SERVICING AND MAINTENANCE. COORDINATE THE FINAL LOCATION OF CONCEALED EQUIPMENT AND DEVICES REQUIRING ACCESS WITH FINAL LOCATION OF REQUIRED ACCESS PANELS AND DOORS. ALLOW AMPLE SPACE FOR REMOVAL OF ALL PARTS THAT REQUIRE REPLACEMENT OR SERVICING.
- FURNISH HINGED STEEL ACCESS DOORS WITH CONCEALED LATCH, WHETHER SHOWN ON DRAWINGS OR NOT, IN ALL WALLS AND CEILINGS FOR ACCESS TO ALL CONCEALED VALVES, SHOCK ABSORBERS, AIR VENTS, MOTORS, FANS, BALANCING COCKS, AND OTHER OPERATING DEVICES REQUIRING ADJUSTMENT OR SERVICING. REFER TO DIVISION 1 FOR ACCESS DOOR SPECIFICATION AND DIVISION 23 FOR DUCT ACCESS DOOR REQUIREMENTS.
- THE MINIMUM SIZE OF ANY ACCESS DOOR SHALL NOT BE LESS THAN THE SIZE OF THE EQUIPMENT TO BE REMOVED OR 24-INCH X 24-INCH IF USED FOR SERVICE ONLY, UNLESS SIZE IS INDICATED ON DRAWINGS.
- ACCESS DOORS IN FIRE-RATED WALLS AND CEILINGS SHALL HAVE EQUIVALENT UL LABEL AND FIRE RATING.

- VERIFY FINAL LOCATIONS FOR ROUGH-INS WITH FIELD MEASUREMENTS AND WITH THE REQUIREMENTS OF THE ACTUAL EQUIPMENT TO BE CONNECTED.
- REFER TO EQUIPMENT SHOP DRAWINGS AND MANUFACTURER'S REQUIREMENTS FOR ACTUAL PROVIDED EQUIPMENT FOR ROUGH-IN REQUIREMENTS.
- EXECUTE AND INSPECT ALL WORK IN ACCORDANCE WITH ALL UNDERWRITERS, LOCAL AND STATE CODES, RULES AND REGULATIONS APPLICABLE TO THE TRADE AFFECTED AS A MINIMUM, BUT IF THE PLANS AND/OR SPECIFICATIONS CALL FOR REQUIREMENTS THAT EXCEED THESE RULES AND REGULATIONS, THE GREATER REQUIREMENT SHALL BE FOLLOWED. FOLLOW RECOMMENDATIONS OF NFPA, EPA, OSHA AND ASHRAE.

PERMITS AND FEES

TRADES.

CONTRACTOR SHALL ARRANGE FOR AND PAY FOR ALL PERMITS, INSPECTIONS, LICENSES AND CERTIFICATES REQUIRED IN CONNECTION WITH THE WORK.

OFFSET, VALVE, FITTING, ETC.

- MECHANICAL INSTALLATIONS
- DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY. WHATEVER IS CALLED FOR IN EITHER IS BINDING AS

DRAWINGS ARE DIAGRAMMATIC IN CHARACTER AND DO NOT NECESSARILY INDICATE EVERY REQUIRED

- DRAWINGS SHALL NOT BE SCALED FOR ROUGH-IN MEASUREMENTS OR USED AS SHOP DRAWINGS. WHERE DRAWINGS ARE REQUIRED FOR THESE PURPOSES OR HAVE TO BE MADE FROM FIELD MEASUREMENT, TAKE
- THE NECESSARY MEASUREMENTS AND PREPARE THE DRAWINGS. BEFORE ANY WORK IS INSTALLED, DETERMINE THAT EQUIPMENT WILL PROPERLY FIT THE SPACE; THAT REQUIRED PIPING GRADES CAN BE MAINTAINED AND THAT DUCTWORK CAN BE RUN AS CONTEMPLATED

WITHOUT INTERFERENCES BETWEEN SYSTEMS, WITH STRUCTURAL ELEMENTS OR WITH THE WORK OF OTHER

- EXECUTE AND INSPECT ALL WORK IN ACCORDANCE WITH ALL UNDERWRITERS, LOCAL AND STATE CODES, RULES AND REGULATIONS APPLICABLE TO THE TRADE AFFECTED AS A MINIMUM, BUT IF THE PLANS AND/OR SPECIFICATIONS CALL FOR REQUIREMENTS THAT EXCEED THESE RULES AND REGULATIONS, THE GREATER REQUIREMENT SHALL BE FOLLOWED. FOLLOW RECOMMENDATIONS OF NFPA, SMACNA, EPA, OSHA AND
- DELIVERY, STORAGE, AND HANDLING: HANDLE MECHANICAL EQUIPMENT AND COMPONENTS CAREFULLY TO PREVENT DAMAGE, BREAKING, DENTING AND SCORING. DO NOT INSTALL DAMAGED EQUIPMENT; REPLACE WITH NEW. STORE MECHANICAL EQUIPMENT AND COMPONENTS IN CLEAN DRY PLACE. PROTECT FROM WEATHER, DIRT, FUMES, WATER, CONSTRUCTION DEBRIS, AND PHYSICAL DAMAGE.
- INSTALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALL EQUIPMENT PLUMB AND LEVEL FIRMLY ANCHORED IN INDICATED LOCATION AND MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES. EQUIPMENT SHALL NOT BE INSTALLED UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. VERIFY STRUCTURE, MOUNTING SUPPORTS, AND MEMBRANE INSTALLATIONS ARE COMPLETED TO THE PROPER POINT TO ALLOW FOR INSTALLATION OF ROOF MOUNTED EQUIPMENT. COORDINATE INSTALLATION OF ROOF MOUNTING CURBS WITH ROOF STRUCTURE. COORDINATE ROOF OPENING LOCATIONS AND OPENINGS FOR ELECTRICAL AND MECHANICAL CONNECTIONS. PROVIDE ACCESS SPACE AROUND EQUIPMENT FOR SERVICE AS INDICATED, BUT IN NO CASE LESS THAN THAT RECOMMENDED BY
- COORDINATE THE INSTALLATION OF MECHANICAL MATERIALS AND EQUIPMENT ABOVE AND BELOW CEILINGS WITH SUSPENSION SYSTEM, LIGHT FIXTURES, AND OTHER BUILDING COMPONENTS.
- FLUSH AND CLEAN ANY HYDRONIC SYSTEM AND/OR SYSTEM EQUIPMENT AND ACCESSORIES UPON COMPLETION OF INSTALLATION.
- REFER TO ELECTRICAL SPECIFICATION SECTIONS FOR THE FOLLOWING WORK: POWER SUPPLY WIRING FROM POWER SOURCE TO POWER CONNECTION ON MECHANICAL EQUIPMENT. INCLUDE STARTERS, DISCONNECTS, AND REQUIRED ELECTRICAL DEVICES, EXCEPT WHERE SPECIFIED AS FURNISHED, OR FACTORY-INSTALLED, BY MANUFACTURER.
- 2. INTERLOCK WIRING BETWEEN ELECTRICALLY OPERATED EQUIPMENT UNITS AND BETWEEN EQUIPMENT AND FIELD-INSTALLED CONTROL DEVICES.
- INTERLOCK WIRING SPECIFIED AS FACTORY-INSTALLED IS WORK OF THIS SECTION. INSTALL ELECTRICAL DEVICES FURNISHED BY MANUFACTURER BUT NOT SPECIFIED TO BE FACTORY-MOUNTED. FURNISH COPY OF MANUFACTURER'S WIRING DIAGRAM SUBMITTAL TO ELECTRICAL INSTALLER. VERIFY THAT ELECTRICAL WIRING INSTALLATION IS IN ACCORDANCE WITH MANUFACTURER'S SUBMITTAL AND INSTALLATION REQUIREMENTS OF ELECTRICAL SPECIFICATION SECTIONS. DO NOT PROCEED WITH EQUIPMENT START-UP UNTIL WIRING INSTALLATION IS ACCEPTABLE TO EQUIPMENT INSTALLER.
- INSTALL ELECTRICAL DEVICES FURNISHED BY MANUFACTURER BUT NOT SPECIFIED TO BE FACTORY-MOUNTED. FURNISH COPY OF MANUFACTURER'S WIRING DIAGRAM SUBMITTAL TO ELECTRICAL INSTALLER. VERIFY THAT ELECTRICAL WIRING INSTALLATION IS IN ACCORDANCE WITH MANUFACTURER'S SUBMITTAL AND INSTALLATION REQUIREMENTS OF DIVISION 26 SECTIONS. ENSURE THAT ROTATION IS IN DIRECTION INDICATED AND INTENDED FOR PROPER PERFORMANCE. DO NOT PROCEED WITH CENTRIFUGAL FAN START-UP UNTIL WIRING INSTALLATION IS ACCEPTABLE TO CENTRIFUGAL FAN
 - TEMPERATURE CONTROL WIRING AND INTERLOCK WIRING ARE SPECIFIED IN DIVISION 23. GROUNDING: CONNECT UNIT COMPONENTS TO GROUND IN ACCORDANCE WITH THE NATIONAL

1.7 EXTRA STOCK

ELECTRICAL CODE.

PROVIDE ONE (1) COMPLETE EXTRA SET OF FILTERS FOR ALL NEW MECHANICAL EQUIPMENT. INSTALL NEW FILTERS AT COMPLETION OF AIR HANDLING SYSTEM WORK, AND PRIOR TO TESTING, ADJUSTING, AND BALANCING WORK, OBTAIN RECEIPT FROM OWNER THAT NEW FILTERS HAVE BEEN INSTALLED, PROVIDE ONE (1) SPARE SET OF BELTS FOR EACH BELT-DRIVEN FAN, OBTAIN RECEIPT FROM OWNER THAT BELTS HAVE BÉEN RECEIVED. STORE EXTRA SETS AT OWNER'S DESIGNATED LOCATION.

- PROTECT THE STRUCTURE, FURNISHINGS, FINISHES, AND ADJACENT MATERIALS NOT INDICATED OR SCHEDULED TO BE REMOVED.
- TEMPORARY FACILITIES
- USE OF PERMANENT BUILDING EQUIPMENT FOR TEMPORARY HEATING OR COOLING: PERMANENT BUILDING EQUIPMENT SHALL NOT BE USED WITHOUT WRITTEN PERMISSION FROM THE OWNER.

PRODUCT OPTIONS AND SUBSTITUTIONS

MATERIALS AND EQUIPMENT OF EQUIVALENT QUALITY MAY BE SUBSTITUTED FOR THOSE SCHEDULED OF IDENTIFIED BY NAME ON THE DRAWINGS IF SO. REVIEWED BY THE ARCHITECT AND OWNER PRIOR TO BIDDING THIS MAY BE DONE BY SUBMITTING TO THE ARCHITECT, AT LEAST SEVEN (7) WORKING DAYS PRIOR TO THE BID DATE. THIS SUBMITTAL SHALL INCLUDE ALL DATA NECESSARY FOR COMPLETE EVALUATION OF THE SUBSTITUTION AND PUBLICATION IN WRITTEN ADDENDA.

MECHANICAL SUBMITTALS

- THE CONTRACTOR IS TO PREPARE A SUBMITTAL SCHEDULE THAT COINCIDES WITH THE OVERALL CONSTRUCTION SCHEDULE. THIS SUBMITTAL SCHEDULE SHOULD INCLUDE A LIST OF INDIVIDUAL PRODUCTS TO BE SUBMITTED UNDER EACH SPECIFICATION SECTION. THIS SUBMITTAL SCHEDULE SHALL ALSO INCLUDE DATES FOR ANTICIPATED REVIEW, SHIPMENT AND ON-SITE DELIVERY TIMES OF THE SUBMITTED PRODUCT.
- SUBMIT SHOP DRAWINGS DETAILING DIMENSIONS, REQUIRED CLEARANCES, METHODS OF ASSEMBLY OF COMPONENTS, AND MOUNTING AND CONNECTION DETAILS. PROVIDE EQUIPMENT AND ACCESSORIES OF SIZES AND HAVING CAPACITIES AND PERFORMANCE CHARACTERISTICS AS SPECIFIED ON THE DRAWINGS. SUBMIT MANUFACTURER'S TECHNICAL PRODUCT DATA, SHOWING RATED CAPACITIES OF SELECTED MODEL CLEARLY INDICATED, WEIGHTS (SHIPPING, INSTALLED, AND OPERATING), DIMENSIONS, CAPACITIES, RATINGS, PERFORMANCE CHARACTERISTICS, GAUGES AND FINISHES OF MATERIALS, FURNISHED SPECIALTIES AND ACCESSORIES, AND INSTALLATION AND START-UP INSTRUCTIONS.
- C. THE ENGINEER SHALL BE GIVEN A SUBMITTAL REVIEW TIME OF TEN (10) WORKING DAYS UPON RECEIPT OF SUBMITTAL. PREVIOUS SUBMITTAL REJECTION OR REVISION SHALL NOT COMPRESS THIS REVIEW TIME. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THESE REVIEW AND/OR RE-REVIEW TIMES ARE INCORPORATED INTO THE SUBMITTAL SCHEDULE WITH ENOUGH LEAD TIME AS NOT TO AFFECT OVERALL CONSTRUCTION SCHEDULE.
- THE MANUFACTURER'S MATERIAL OR EQUIPMENT LISTED IN THE SCHEDULE OR IDENTIFIED BY NAME ON THE DRAWINGS ARE THE TYPES TO BE PROVIDED FOR THE ESTABLISHMENT OF SIZE, CAPACITY, GRADE AND QUALITY. IF ALTERNATES ARE USED IN LIEU OF THE SCHEDULED NAMES, THE COST OF ANY CHANGES IN CONSTRUCTION REQUIRED BY THEIR USE SHALL BE BORNE BY CONTRACTOR.
- ALL EQUIPMENT SHALL CONFORM TO THE STATE AND/OR LOCAL ENERGY CONSERVATION STANDARDS.
- SUBMITTAL OF SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES WILL BE ACCEPTED ONLY WHEN SUBMITTED BY AND STAMPED BY THE CONTRACTOR. DATA SUBMITTED FROM SUBCONTRACTORS AND MATERIAL SUPPLIERS DIRECTLY TO THE ARCHITECT WILL NOT BE PROCESSED UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED BY THE CONTRACTOR.
- G. IF MORE THAN ONE (1) RE-SUBMITTALS (EITHER FOR SHOP DRAWINGS OR FOR AS-BUILT DRAWINGS) ARE MADE BY THE CONTRACTOR, THE OWNER RESERVES THE RIGHT TO CHARGE THE CONTRACTOR FOR SUBSEQUENT REVIEWS BY THEIR CONSULTANTS. SUCH EXTRA FEES SHALL BE DEDUCTED FROM PAYMENTS BY THE OWNER TO THE CONTRACTOR.

REQUESTS FOR INFORMATION

- ALL "REQUESTS FOR INFORMATION" SUBMITTED BY THE CONTRACTOR SHALL INCLUDE A PROPOSED SOLUTION AND AN ESTIMATED COST/SCHEDULE IMPACT. ANY RFI'S THAT DO NOT CONTAIN THIS REQUIRED INFORMATION WILL BE SENT BACK TO THE CONTRACTOR UNANSWERED.
- SCHEDULE THE WORK TO PROVIDE THE ENGINEER A MINIMUM REVIEW TIME OF FIVE (5) BUSINESS DAYS UPON RECEIPT OF RFI'S TO PROVIDE A RESPONSE.

MECHANICAL COORDINATION DRAWINGS

REVIEW IN DETAIL ALL FLOOR PLANS, REFLECTED CEILING PLANS, ELEVATIONS, SECTIONS, AND DETAILS TO CONCLUSIVELY COORDINATE WITH ALL TRADES AND INTEGRATE ALL INSTALLATIONS. INDICATE LOCATIONS WHERE SPACE IS LIMITED, AND WHERE SEQUENCING AND COORDINATION OF INSTALLATIONS ARE OF IMPORTANCE TO THE EFFICIENT FLOW OF THE WORK.

1.14 RECORD DRAWINGS

AT PROJECT CLOSEOUT, SUBMIT RECORD DRAWINGS OF INSTALLED SYSTEMS.

1.15 DEMONSTRATION

UPON COMPLETION OF INSTALLATION OF MECHANICAL EQUIPMENT, START-UP AND OPERATE EQUIPMENT TO DEMONSTRATE CAPABILITY AND COMPLIANCE WITH REQUIREMENTS. FIELD CORRECT MALFUNCTIONING UNITS, THEN RETEST TO DEMONSTRATE COMPLIANCE. PROVIDE THE SERVICES OF A FACTORY AUTHORIZED SERVICE REPRESENTATIVE TO PROVIDE START-UP SERVICE AND TO DEMONSTRATE AND TRAIN THE OWNER'S MAINTENANCE PERSONNEL.

1.16 OPERATION AND MAINTENANCE DATA

- IN ADDITION TO THE INFORMATION REQUIRED BY DIVISION 1 FOR MAINTENANCE DATA, INCLUDE THE FOLLOWING INFORMATION:
- THE TESTING AND BALANCING REPORT SHALL BE SUBMITTED AND RECEIVED BY THE ENGINEER AT LEAST FIVE (5) CALENDAR DAYS PRIOR TO THE CONTRACTOR'S REQUEST FOR FINAL OBSERVATION TIME FRAME REQUIREMENTS. FINAL OBSERVATION(S) WILL NOT PROCEED WITHOUT T&B REPORT. INCLUDE IN THE O&M MANUAL AFTER REVIEW WITH "REVIEW" OR "MAKE CORRECTIONS NOTED" HAS BEEN ACCOMPLISHED.

C. ALSO INCLUDE THE FOLLOWING INFORMATION:

- DESCRIPTION OF MECHANICAL EQUIPMENT, FUNCTION, NORMAL OPERATING CHARACTERISTICS AND LIMITATIONS, PERFORMANCE CURVES, ENGINEERING DATA AND TESTS, AND COMPLETE NOMENCLATURE AND COMMERCIAL NUMBERS OF ALL REPLACEABLE PARTS. MANUFACTURER'S PRINTED OPERATING PROCEDURES TO INCLUDE START-UP, BREAK-IN, ROUTINE AND
- NORMAL OPERATING INSTRUCTIONS; REGULATION, CONTROL, STOPPING, SHUTDOWN, AND EMERGENCY INSTRUCTIONS; AND SUMMER AND WINTER OPERATING INSTRUCTIONS. MAINTENANCE PROCEDURES FOR ROUTINE PREVENTATIVE MAINTENANCE AND TROUBLESHOOTING:
- SERVICING INSTRUCTIONS AND LUBRICATION CHARTS AND SCHEDULES. MANUFACTURER'S SERVICE MANUALS FOR ALL MECHANICAL EQUIPMENT PROVIDED UNDER THIS

DISASSEMBLY, REPAIR, AND REASSEMBLY; ALIGNING AND ADJUSTING INSTRUCTIONS.

- CONTRACT. INCLUDE THE VALVE TAG LIST.
- NAME, ADDRESS AND TELEPHONE NUMBER OF PARTY TO BE CONTACTED FOR TWENTY-FOUR (24) HOUR SERVICE FOR EACH ITEM OF EQUIPMENT.
- STARTING, STOPPING, LUBRICATION, EQUIPMENT IDENTIFICATION NUMBERS AND ADJUSTMENT CLEARLY INDICATED FOR EACH PIECE OF EQUIPMENT.
- COMPLETE PARTS LIST. MECHANICAL WARRANTIES.
- THIS CONTRACT WILL NOT BE CONSIDERED COMPLETED, NOR WILL FINAL PAYMENT BE MADE, UNTIL ALL SPECIFIED MATERIAL, INCLUDING TESTING AND BALANCING REPORT, IS RECEIVED IN THIS OPERATING AND MAINTENANCE REPORT.

DEMOLITION

- DURING THE DEMOLITION PHASE OF THIS CONTRACT, IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO CAREFULLY REMOVE EXISTING EQUIPMENT, PIPING, FIXTURES AND RELATED ITEMS EITHER AS SHOWN ON THE DEMOLITION DRAWINGS AS BEING REMOVED, OR AS REQUIRED FOR THE WORK. THESE ITEMS SHALL BE REMOVED FROM THE PREMISES.
- THE LOCATION OF EXISTING EQUIPMENT, PIPES, AND OTHER COMPONENTS SHOWN ON THE DRAWINGS HAS BEEN TAKEN FROM EXISTING DRAWINGS AND IS, THEREFORE, ONLY AS ACCURATE AS THAT INFORMATION. ALL EXISTING CONDITIONS SHALL BE VERIFIED FROM FIELD MEASUREMENTS WITH NECESSARY ADJUSTMENT BEING MADE TO THE DRAWING INFORMATION.

1.18 WARRANTIES

- THE ENTIRE MECHANICAL SYSTEM SHALL BE WARRANTED NO LESS THAN ONE (1) YEAR FROM THE TIME OF ACCEPTANCE BY THE OWNER.
- PROVIDE COMPLETE WARRANTY INFORMATION FOR EACH ITEM TO INCLUDE PRODUCT OR EQUIPMENT TO INCLUDE DATE OR BEGINNING OF WARRANTY OR BOND; DURATION OF WARRANTY OR BOND; AND NAMES, ADDRESSES, AND TELEPHONE NUMBERS AND PROCEDURES FOR FILING A CLAIM AND OBTAINING WARRANTY

END OF SECTION 230000

SECTION 230100 - M&E COORDINATION

SUMMARY

- CAREFULLY COORDINATE THE INTERFACE BETWEEN DIVISION 23 (MECHANICAL) AND DIVISION 26 (ELECTRICAL) BEFORE SUBMITTING ANY EQUIPMENT FOR REVIEW OR COMMENCING INSTALLATION.
- RESPONSIBILITY: UNLESS OTHERWISE INDICATED, ALL MOTOR AND CONTROLS FOR DIVISION 23 EQUIPMENT SHALL BE FURNISHED, SET IN PLACE AND WIRED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

COORDINATION	ON SCHEDULE			
ITEM	FURNISHED UNDER	SET IN PLACE UNDER	POWER WIRING UNDER	CONTROL WIRING UNDER
CONTROL RELAYS (NOTE 2)	23	23	26	23
CONTROL TRANSFORMERS	23	23	26	23
CONTROL CIRCUIT OUTLETS	26	26	26	
THERMOSTATS (NOTE 2)	23	23		23
THERMOSTAT AND CONTROLS INTEGRAL WITH EQUIPMENT OR DIRECTLY ATTACHED TO DUCTS, PIPES, ETC. (NOTE 2)	23	23	26	23
EQUIPMENT IN TEMPERATURE CONTROL PANELS (NOTE 2)	23	23	26	23
STANDALONE CONTROL PANELS (NOTE 2)	23	23	26	23
VALVE MOTORS DAMPER MOTORS, SOLENOID VALVES, ETC. (NOTE 2)	23	23		23

- (1) IF FURNISHED AS PART OF FACTORY WIRED EQUIPMENT, FURNISH AND SET IN PLACE UNDER DIVISION 23, WIRING AND CONNECTIONS UNDER DIVISION 26.
- (2) IF FLOAT SWITCHES, LINE THERMOSTATS, P.E. SWITCHES, TIME SWITCHES, OR OTHER CONTROLS CARRY THE FULL LOAD CURRENT TO ANY MOTOR, THEY SHALL BE FURNISHED AND SET IN PLACE UNDER DIVISION 23, BUT THEY SHALL BE CONNECTED UNDER DIVISION 26. IF THEY DO NOT CARRY THE FULL LOAD CURRENT TO ANY MOTOR, THEY SHALL BE FURNISHED, SET IN PLACE AND WIRED
- (3) WIRING FROM ALARM CONTACTS TO ALARM SYSTEM BY DIVISION 26; ALL CONTROL FUNCTION WIRING BY DIVISION 23. DIVISION 23 TO COORDINATE LOCATIONS WITH DIVISION 26.
- C. FULLY COORDINATE THE REQUIREMENTS OF EACH DIVISION WITH REGARD TO SUPPLYING A COMPLETE DDC CONTROL SYSTEM. J-BOXES AND CONTROL TRANSFORMER CONNECTIONS SHALL BE PROVIDED UNDER DIVISION 26. THE TRANSFORMERS SHALL BE FURNISHED AND SET IN PLACE UNDER DIV. 23.
- VOLTAGE AND PHASE OF MOTORS AS SCHEDULED ON THE ELECTRICAL DRAWINGS SHALL TAKE PRECEDENCE IN THE CASE OF A CONFLICT BETWEEN THE MECHANICAL AND ELECTRICAL DRAWINGS OR GENERAL CONDITIONS 2.1 A., ABOVE.

END OF SECTION 230100

SECTION 230500 - COMMON WORK RESULTS FOR HVAC

1.1 PIPE ESCUTCHEONS

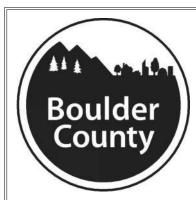
- APPROVED MANUFACTURERS: CHICAGO SPECIALTY MFG, PRODUCERS SPECIALTY & MFG., SANITARY-DASH
- PROVIDE PIPE ESCUTCHEONS AS SPECIFIED HEREIN WITH INSIDE DIAMETER CLOSELY FITTING PIPE OUTSIDE DIAMETER, OR OUTSIDE OF PIPE INSULATION WHERE PIPE IS INSULATED. SELECT OUTSIDE DIAMETER OF ESCUTCHEON TO COMPLETELY COVER PIPE PENETRATION HOLE IN FLOORS, WALLS, OR CEILINGS; AND PIPE SLEEVE EXTENSION, IF ANY. FURNISH PIPE ESCUTCHEONS WITH NICKEL OR CHROME FINISH FOR OCCUPIED AREAS, PRIME PAINT FINISH FOR UNOCCUPIED AREAS.
- INSTALL PIPE ESCUTCHEONS ON EACH PIPE PENETRATION THROUGH FLOORS, WALLS, PARTITIONS, AND CEILINGS WHERE PENETRATION IS EXPOSED TO VIEW, AND ON EXTERIOR OF BUILDING. SECURE ESCUTCHEON TO PIPE OR INSULATION SO ESCUTCHEON COVERS PENETRATION HOLE AND IS FLUSH WITH ADJOINING SURFACE.
- D. FLASH AND COUNTER-FLASH WHERE MECHANICAL EQUIPMENT PASSES THROUGH WEATHER OR WATER-PROOFED WALLS, FLOORS, AND ROOFS PER ROOF MANUFACTURER'S INSTRUCTIONS.

1.2 DIELECTRIC FITTINGS

PROVIDE DIELECTRIC CONNECTIONS TO ISOLATE DISSIMILAR METALS, PREVENT GALVANIC ACTION, AND PREVENT CORROSION. WATERWAY FITTING SHALL BE: ASTM-A53 ZINC ELECTROPLATED STEEL PIPE CASING WITH INERT, NON-CORROSIVE THERMOPLASTIC LINING (NSF/FDA LISTED) AND LISTED BY IAPMO/UPC AND SBCC PST AND ESI. DIELECTRIC UNIONS ARE NOT AN APPROVED SUBSTITUTE FOR DIELECTRIC WATERWAY FITTINGS. FOR A FLANGED CONNECTION, PROVIDE A DIELECTRIC GASKET AND BOLT KIT.

FIRE AND SMOKE BARRIER PENETRATION SEALS

A. APPROVED MANUFACTURERS: 3M, DOW CORNING, FLAME STOP, METACAULK, HILTI, HOLDRITE



BUILDING SERVICES DIVISION

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\mathbf{m} OUR.

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION 1325 PEARL STREET BOULDER, COLORADO 80302 **SHEET**

> FILE NAME 72620022-BoulderCountyCourthouse

MECHANICAL SPECIFICATION

3rdFloorRemodel-Mech-R20.rvt

ACC'T 100103 DATE: <u>12/23/2020</u> DRAWN BY:SBN CHECKED BY:BEB

REVISIONS



SHEET

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B. PROVIDE UL LISTED FIRESTOPPING SYSTEMS COMPOSED OF COMPONENTS THAT ARE COMPATIBLE WITH EACH OTHER, THE SUBSTRATES FORMING OPENINGS, AND THE ITEMS, IF ANY, PENETRATING THE FIRESTOPPING UNDER CONDITIONS OF SERVICE AND APPLICATION, AS DEMONSTRATED BY THE FIRESTOPPING MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE. INSTALL WHERE PIPE PENETRATION OCCURS IN FIRE OR FIRE/SMOKE RATED WALLS, PROVIDE A COMPLETE LISTED PROTECTION ASSEMBLY EQUAL TO THE RATING OF THE WALL/FLOOR.

1.2 PIPE SLEEVES

- A. PROVIDE PIPE SLEEVES OF ONE OF THE FOLLOWING:
 - SHEET METAL: AT INTERIOR PARTITIONS AND CEILINGS OTHER THAN SUSPENDED CEILINGS FABRICATE FROM GALVANIZED SHEET METAL; ROUND TUBE CLOSED WITH SNAP LOCK JOINT, WELDED SPIRAL SEAMS, OR WELDED LONGITUDINAL JOINT. FABRICATE FROM THE FOLLOWING GAUGES: 3-INCH AND SMALLER, 20 GAUGE; 4-INCH TO 6-INCH, 16 GAUGE; OVER 6-INCH, 14 GAUGE.
- 2. IRON PIPE: AT EXTERIOR PENETRATIONS; BOTH ABOVE AND BELOW GRADE, FABRICATE FROM CAST IRON OR DUCTILE IRON PIPE; REMOVE BURRS.
- STEEL PIPE: AT ALL OTHER LOCATIONS, FABRICATE FROM SCHEDULE 40 GALVANIZED STEEL PIPE; REMOVE BURRS.
- 4. WHERE PIPE PENETRATIONS OCCUR IN NON-FIRE RATED FLOORS, ROOF SLABS, OR WALLS, THE SPACE BETWEEN PIPE INSERT AND THE SLEEVE SHALL BE PACKED ON EACH END WITH MINERAL WOOL OR OTHER NON-COMBUSTIBLE MATERIAL, POSITIVELY FASTENED IN PLACE. USE PLENUM RATED CAULK TO SEAL PACKING AROUND PIPE.
- 5. INSTALL PIPE SLEEVES OF TYPES INDICATED WHERE PIPING PASSES THROUGH WALLS, FLOORS, CEILINGS, AND ROOFS. DO NOT INSTALL SLEEVES THROUGH STRUCTURAL MEMBERS OF WORK, EXCEPT AS DETAILED ON DRAWINGS, OR AS REVIEWED BY ARCHITECT. INSTALL SLEEVES ACCURATELY CENTERED ON PIPE RUNS. SIZE SLEEVES SO THAT PIPING AND INSERT WILL HAVE FREE MOVEMENT IN SLEEVE, INCLUDING ALLOWANCE FOR THERMAL EXPANSION; BUT NOT LESS THAN TWO (2) PIPE SIZES LARGER THAN PIPING RUN. INSTALL LENGTH OF SLEEVE EQUAL TO THICKNESS OF CONSTRUCTION
- PENETRATED, AND FINISH FLUSH TO SURFACE, EXCEPT FLOOR SLEEVES.

 6. EXTEND FLOOR SLEEVES IN ALL LOCATIONS 3/4-INCH ABOVE FLOOR FINISH SLOPED TO DRAIN AND 4-INCH ABOVE FINISHED FLOOR IN ALL MECHANICAL EQUIPMENT ROOMS AND PIPE CHASES.

END OF SECTION 230500

SECTION 230529 - SUPPORTS AND ANCHORS

1.1 PIPE HANGERS AND SUPPORTS

- A. APPROVED MANUFACTURERS: B-LINE, CARPENTER AND PATTERSON, FEE & MASON, PHD MANUFACTURING, ELCEN METAL PRODUCTS COMPANY, ERICO/CADDY, UNISTRUT, HILTI, ANVIL.
- B. HANGERS AND SUPPORT COMPONENTS SHALL BE FACTORY FABRICATED OF MATERIALS, DESIGN, AND MANUFACTURER. COMPONENTS SHALL HAVE GALVANIZED COATINGS WHERE INSTALLED FOR PIPING AND EQUIPMENT THAT WILL NOT HAVE FIELD-APPLIED FINISH. PIPE ATTACHMENTS SHALL HAVE NONMETALLIC COATING FOR ELECTROLYTIC PROTECTION WHERE ATTACHMENTS ARE IN DIRECT CONTACT WITH COPPER TURING
- C. PROVIDE FACTORY-FABRICATED GUIDES, OF CAST SEMI-STEEL OR HEAVY FABRICATED STEEL, CONSISTING OF BOLTED TWO-SECTION OUTER CYLINDER AND BASE WITH TWO-SECTION GUIDING SPIDER BOLTED TIGHT TO PIPE. SIZE GUIDE AND SPIDERS TO CLEAR PIPE AND INSULATION (IF ANY), AND CYLINDER. PROVIDE GUIDES OF LENGTH RECOMMENDED BY MANUFACTURER TO ALLOW INDICATED TRAVEL.
- D. FIELD ASSEMBLED EXPANSION ANCHORS REQUIRE SUBMITTED SHOP DRAWINGS FOR REVIEW BY MECHANICAL AND STRUCTURAL ENGINEERS.
- E. PRIOR TO INSTALLATION OF HANGERS, SUPPORTS, ANCHORS AND ASSOCIATED WORK, INSTALLER SHALL MEET AT PROJECT SITE WITH CONTRACTOR, INSTALLER OF EACH COMPONENT OF ASSOCIATED WORK, INSPECTION AND TESTING AGENCY REPRESENTATIVES (IF ANY), INSTALLERS OF OTHER WORK REQUIRING COORDINATION WITH WORK OF THIS SECTION AND ARCHITECT FOR PURPOSE OF REVIEWING MATERIAL SELECTIONS AND PROCEDURES TO BE FOLLOWED IN PERFORMING THE WORK IN COMPLIANCE WITH REQUIREMENTS SPECIFIED. PROVIDE SHOP DRAWING SHOWING METHOD AND SUPPORT LOCATIONS FROM STRUCTURE.
- F. INSTALL BUILDING ATTACHMENTS WITHIN CONCRETE OR ON STRUCTURAL STEEL. SPACE ATTACHMENTS WITHIN MAXIMUM PIPING SPAN LENGTH INDICATED IN MSS SP-69 AND TABLES THIS SECTION. INSTALL ADDITIONAL ATTACHMENTS AT CONCENTRATED LOADS, INCLUDING VALVES, FLANGES, GUIDES, STRAINERS, EXPANSION JOINTS, AND WITHIN ONE FOOT OF CHANGES IN DIRECTION OF PIPING. INSTALL ANCHORS AND FASTENERS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- G. INSTALL HANGERS, SUPPORTS, CLAMPS AND ATTACHMENTS TO SUPPORT PIPING PROPERLY FROM BUILDING STRUCTURE. ARRANGE FOR GROUPING OF PARALLEL RUNS OF HORIZONTAL PIPING TO BE SUPPORTED TOGETHER ON FIELD FABRICATED, HEAVY-DUTY TRAPEZE HANGERS WHERE POSSIBLE.
- H. INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED MOVEMENT OF PIPING SYSTEMS, TO PERMIT FREEDOM OF MOVEMENT BETWEEN PIPE ANCHORS, TO FACILITATE ACTION OF EXPANSION JOINTS, EXPANSION LOOPS, EXPANSION BENDS AND SIMILAR UNITS AND WITHIN ONE FOOT OF EACH HORIZONTAL ELBOW.
- I. INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED MOVEMENT OF PIPING SYSTEMS, TO PERMIT FREEDOM OF MOVEMENT BETWEEN PIPE ANCHORS, TO FACILITATE ACTION OF EXPANSION JOINTS, EXPANSION LOOPS, EXPANSION BENDS AND SIMILAR UNITS AND WITHIN ONE FOOT OF EACH HORIZONTAL ELBOW.
- J. INSTALL PIPING WITH THE MINIMUM ROD SIZED AND MAXIMUM SPACING AS INDICATED IN THE DETAIL ON THE DRAWINGS.
- K. SUPPORT STEAM SUPPLY AND CONDENSATE RETURN PIPE RUNS ON STEEL YOKE AND PIPE ROLL HANGERS WITH PROTECTION SADDLES.
- L. HANG ALL INSULATED PIPE AT THE POINT OF SUPPORT IN THE FOLLOWING MANNER:
 1. ALL INSULATED PIPES (≥ 2-INCH) SHALL HAVE THERMAL SHIELD INSERT AT ALL SUPPORT POINTS. ALL PIPING SHALL HAVE THERMAL SHIELD INSERTS AT EACH PENETRATION THROUGH WALL, FLOOR AND
- ROOF.
 2. CLEVIS HANGERS: INSTALL 180-DEGREE WATERPROOF, ASBESTOS FREE, CALCIUM SILICATE THERMAL
- SHIELD INSERT WITH 180-DEGREE GALVANIZED STEEL PROTECTION SHIELD.

 3. STEEL YOKE AND PIPE ROLL HANGERS: PROVIDE STEEL PROTECTION SADDLE WELDED TO THE PIPE.
- FILL THE VOIDS WITH FIBERGLASS INSULATION.

.2 SADDLES AND THERMAL SHIELD INSERTS AND PROTECTIVE SHIELDS

- A. APPROVED MANUFACTURERS: B-LINE, PIPE SHIELDS, INSULATION PIPE SUPPORTS MANUFACTURING, INSULATED SADDLE SHIELD INSERT PRODUCT, ERICO/CADDY, COMPONENT PRODUCTS CO., VALUE ENGINEERED PRODUCTS, MECHANICAL PIPE SHIELDS, ANVIL.
- B. PROVIDE SADDLES AND THERMAL SHIELD INSERTS UNDER ALL INSULATED PIPING HANGERS. PROVIDE THERMAL SHIELD INSERTS ON ALL PIPING THROUGH FLOORS, WALL, AND ROOF CONSTRUCTION PENETRATIONS. SIZE SADDLES AND THERMAL SHIELD INSERTS FOR EXACT FIT TO MATE WITH PIPE INSULATION.
- C. FILL INTERIOR VOIDS AT PROTECTION SADDLES WITH SEGMENTS OF INSULATION MATCHING ADJOINING INSULATION. FOR USE WITH ROLLER HANGERS.

- PROVIDE 100-PSI AVERAGE COMPRESSIVE STRENGTH THERMAL SHIELD INSERTS, WATERPROOF, ASBESTOS FREE CALCIUM SILICATE, ENCASED WITH A SHEET METAL ENCLOSURE OR OTHER LISTED SYSTEM MANUFACTURERS. INSERT AND SHIELD SHALL COVER THE ENTIRE CIRCUMFERENCE ON VERTICAL PIPES, OR THE BOTTOM HALF CIRCUMFERENCE OF THE PIPE ON HORIZONTAL MOUNTING SUPPORTS, AND SHALL BE OF LENGTH RECOMMENDED BY THE MANUFACTURER FOR PIPE SIZE AND THICKNESS OF INSULATION OR THE THICKNESS OF THE WALL, ROOF OR FLOOR CONSTRUCTION.
- E. THERMAL MECHANICAL PIPE SHIELDS: SELF-LOCKING INSULATED PIPE SUPPORTS/SHIELDS SHALL BE PROVIDED AT HANGER, SUPPORT, AND GUIDE LOCATIONS ON PIPE REQUIRING INSULATION. THE INSERT SHALL CONSIST OF EITHER HYDROUS CALCIUM SILICATE OR POLYISOCYANURATE FOAM INSULATION (URETHANE) ENCIRCLING THE ENTIRE CIRCUMFERENCE OF THE PIPE. PROVIDE WITH A 360-DEGREE PVC OR GALVANIZED STEEL JACKET WHICH COMPLIES WITH THE INTERNATIONAL MECHANICAL CODE FOR INSTALLATION IN PLENUM CEILINGS WHERE APPLICABLE. THE LENGTH OF THE JACKET SHALL BE SIZED FOR PIPE EXPANSION.

1.3 PIPE EXPANSION CONTROL ANCHORS

- A. INSTALL ANCHORS AT PROPER LOCATIONS TO PREVENT STRESSES FROM EXCEEDING THOSE PERMITTED BY ANSI B31.9, AND TO PREVENT TRANSFER OF LOADING AND STRESSES TO CONNECTED EQUIPMENT.
- B. FABRICATE AND INSTALL ANCHOR BY WELDING STEEL SHAPES, PLATES AND BARS TO PIPING AND TO STRUCTURE. COMPLY WITH ANSI B31.9 AND WITH AWS STANDARDS D1.1.
- C. WHERE EXPANSION COMPENSATORS ARE INDICATED, INSTALL ANCHORS IN ACCORDANCE WITH EXPANSION UNIT MANUFACTURER'S WRITTEN INSTRUCTIONS, TO CONTROL MOVEMENT TO COMPENSATORS.
- D. ANCHOR SPACINGS: WHERE NOT OTHERWISE INDICATED, INSTALL ANCHORS AT ENDS OF PRINCIPAL PIPE-RUNS, AT INTERMEDIATE POINTS IN PIPE-RUNS BETWEEN EXPANSION LOOPS AND BENDS. MAKE PROVISIONS FOR PRESET OF ANCHORS AS REQUIRED TO ACCOMMODATE BOTH EXPANSION AND CONTRACTION OF

1.4 SHEET METAL DUCT HANGERS AND SUPPORTS

- A. PROVIDE SUPPORT OF MINIMUM SIZES AND MAXIMUM SPACING PER THE TABLE ON THE DRAWING DETAILS, OR PER SMACNA (LATEST EDITION) WHICHEVER IS MORE STRINGENT.
- PROVIDE SWAY BRACING ON ALL DUCTWORK IN ACCORDANCE WITH LOCAL CODES AND REGULATIONS.

C. ADDITIONAL HANGER REQUIREMENTS:

- 2 TO 24-INCH FROM FLEXIBLE CONNECTIONS OF FANS.
 2 TO 24-INCH FROM THE OUTLETS OR FLEXIBLE CONNECTIONS OF VAV CONTROL UNITS OR MIXING
- 3. 12 TO 36-INCH FROM THE MAIN DUCT TO THE FIRST HANGER OF LONG BRANCH DUCTS.
- 4. 2 TO 12-INCH FROM THE ENDS OF ALL BRANCH DUCTS AND LINEAR DIFFUSER PLENUMS.
- 2 TO 24-INCH FROM FIRE OR FIRE/SMOKE DAMPER BREAK-AWAY JOINTS.
 HANGERS AT THROAT AND HEAL OF ROUND OR SQUARE ELBOWS 48-INCHES OR GREATER IN WIDTH

5 PREFABRICATED ROOFTOP EQUIPMENT SUPPORTS

- A. EQUIPMENT BASES
 - EQUIPMENT BASE SHALL BE SOLID TOP EQUIPMENT BASE AND STEPPED CANT TO MATCH ROOF INSULATION. BASE SHALL PITCH TO MATCH ROOF PITCH AND PROVIDE LEVEL UNIT INSTALLATION.
 BASE SHALL BE CONSTRUCTED OF REINFORCED 18-GAUGE GALVANIZED STEEL WITH ALL WELDED COMPONENTS, FULL MITERED CORNERS, FACTORY INSTALLED 1-1/2-INCH-THICK RIGID FIBERGLASS INSULATION, WOOD NAILER, AND GALVANIZED STEEL COUNTER-FLASHING. BASE SHALL BE SHIPPED AS ONE (1) PIECE
- B. ALL SUPPORTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

1.6 EQUIPMENT SUPPORTS

- A. FABRICATE STRUCTURAL STEEL STANDS TO SUSPEND EQUIPMENT FROM STRUCTURE ABOVE OR SUPPORT EQUIPMENT ABOVE FLOOR.
- B. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SIZE AND LOCATION OF ALL BASES AND SHALL FURNISH ALL REQUIRED ANCHOR BOLTS AND SLEEVES. IF BASES ARE PROVIDED BY THE GENERAL CONTRACTOR, FURNISH THEM WITH TEMPLATES SHOWING THE BOLT LOCATIONS.
- C. EQUIPMENT SHALL BE SECURED TO THE BASES WITH ANCHOR BOLTS OF AMPLE SIZE. BOLTS SHALL HAVE BOTTOM PLATES AND PIPE SLEEVES AND SHALL BE SECURELY IMBEDDED IN THE CONCRETE. ALL MACHINERY SHALL BE GROUTED UNDER THE ENTIRE BEARING SURFACE. AFTER GROUT HAS SET, ALL WEDGES, SHIMS AND JACK BOLTS SHALL BE REMOVED, AND THE SPACE FILLED WITH NON-SHRINKING GROUT. THIS CONTRACTOR SHALL PROVIDE WASHERS AT ALL EQUIPMENT ANCHOR BOLTS.
- D. CONSTRUCT EQUIPMENT SUPPORTS MOUNTED ABOVE FLOOR OF STRUCTURAL STEEL MEMBERS OR STEEL PIPE AND FITTINGS. BRACE AND FASTEN WITH FLANGES BOLTED TO STRUCTURE.

END OF SECTION 230529

SECTION 230553 - MECHANICAL IDENTIFICATION

- A. ACCEPTABLE MANUFACTURERS: ALLEN SYSTEMS, BRADY, BRIMAR INDUSTRIES, INDUSTRIAL SAFETY SUPPLY, SETON.
- B. IDENTIFICATION SHALL COMPLY WITH:
- EXISTING BUILDING STANDARDS: COMPLY WITH THE EXISTING LETTERING SIZE, LENGTH OF COLOR FIELD, COLORS AND IDENTIFICATION METHOD AS PRESENTLY EXISTS IN THE EXISTING BUILDING UNLESS OTHERWISE INDICATED.
- C. PIPE MARKERS SHALL BE:
- SNAP-ON TYPE: PROVIDE MANUFACTURER'S STANDARD PRE-PRINTED, SEMI-RIGID SNAP-ON, COLOR-CODED PIPE MARKERS, COMPLYING WITH ANSI A13.1.
- 2. TAPED TO PIPE (OR INSULATION) WITH COLOR-CODED, 3-MIL THICK, PLASTIC ADHESIVE TAPE, NOT LESS THAN 3/4-INCH WIDE; FULL CIRCLE AT BOTH ENDS OF PIPE MARKER, TAPE LAPPED 1-1/2-INCH.
- INCLUDE ARROWS IN THE DIRECTION OF FLOW.

 LOCATE PIPE MARKERS WHEREVER PIPING IS EXPOSED TO VIEW IN OCCUPIED SPACES, MACHINE

 ROOMS ACCESSIBLE MAINTENANCE SPACES (SLAFES TURNELS DUENUMS) AND EXTERIOR NON
- ROOMS, ACCESSIBLE MAINTENANCE SPACES (SHAFTS, TUNNELS, PLENUMS) AND EXTERIOR NON-CONCEALED LOCATIONS.
- 5. LOCATE PIPE MARKERS NEAR EACH VALVE AND CONTROL DEVICE, NEAR EACH BRANCH, EXCLUDING SHORT TAKE-OFFS FOR FIXTURES.
- LOCATE PIPE MARKERS AT EACH PIPE BRANCH, WHERE THERE COULD BE QUESTION OF FLOW PATTERN, NEAR LOCATIONS WHERE PIPES PASS THROUGH WALLS OR FLOORS/CEILINGS, OR ENTER NON-ACCESSIBLE ENCLOSURES, AT ACCESS DOORS, MANHOLES AND SIMILAR ACCESS POINTS WHICH PERMIT VIEW OF CONCEALED PIPING.
- 7. LOCATE PIPE MARKERS NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGINATION AND TERMINATION F
- PIPE MARKERS SHALL BE SPACED INTERMEDIATELY AT MAXIMUM SPACING OF 25-FOOT ALONG EACH PIPING RUN, EXCEPT REDUCE SPACING TO 15-FOOT IN CONGESTED AREAS OF PIPING AND EQUIPMENT, ON PIPING ABOVE REMOVABLE ACOUSTICAL CEILINGS.
- D. BRASS VALVE TAGS: PROVIDE 19-GAUGE POLISHED BRASS VALVE TAGS WITH STAMP-ENGRAVED PIPING SYSTEM ABBREVIATION IN 1/4-INCH HIGH LETTERS AND SEQUENCED VALVE NUMBERS 1/2-INCH HIGH, VALVE NORMAL POSITION 1/4-INCH HIGH LETTERS, AND WITH 5/32-INCH HOLE FOR FASTENER.
 1. PROVIDE 1-1/2-INCH DIAMETER TAGS, EXCEPT AS OTHERWISE INDICATED.
 - FILL TAG ENGRAVING WITH BLACK ENAMEL.
 PROVIDE VALVE TAG ON VALVES IN EACH PIPING SYSTEM.

- E. ACCESS PANEL MARKERS: PROVIDE MANUFACTURER'S STANDARD 1/16-INCH THICK ENGRAVED PLASTIC LAMINATE ACCESS PANEL MARKERS, WITH ABBREVIATIONS AND NUMBERS CORRESPONDING TO CONCEALED VALVE. INCLUDE 1/8-INCH CENTER HOLE TO ALLOW ATTACHMENT.
- F. ENGRAVED PLASTIC-LAMINATE SIGNS: PROVIDE ENGRAVING STOCK MELAMINE PLASTIC LAMINATE, COMPLYING WITH FS L-P-387, BLACK WITH WHITE CORE (LETTER COLOR) EXCEPT AS OTHERWISE INDICATED, PUNCHED FOR MECHANICAL FASTENING EXCEPT WHERE ADHESIVE MOUNTING IS NECESSARY BECAUSE OF SUBSTRATE. TAG THICKNESS SHALL BE 1/8-INCH, EXCEPT AS OTHERWISE INDICATED. FASTENERS SHALL BE SELF-TAPPING STAINLESS-STEEL SCREWS, EXCEPT CONTACT-TYPE PERMANENT ADHESIVE WHERE SCREWS CANNOT OR SHOULD NOT PENETRATE THE SUBSTRATE.

1. INSTALL MINIMUM 2-INCH X 4-INCH ENGRAVED PLASTIC LAMINATE EQUIPMENT MARKER ON EACH INDIVIDUAL ITEM OF MECHANICAL EQUIPMENT.

- DUCTWORK IDENTIFICATION: PROVIDE MANUFACTURER'S STANDARD LAMINATED PLASTIC, DUCT MARKERS. INCLUDE THE FOLLOWING: DIRECTION OF AIR FLOW, DUCT SERVICE (SUPPLY, RETURN, EXHAUST, ETC.), DUCT ORIGIN (FROM), DUCT DESTINATION (TO), AND DESIGN CFM.
 LOCATE DUCT MARKERS IN EACH SPACE WHERE DUCTWORK IS EXPOSED, OR CONCEALED ONLY BY
 - REMOVABLE CEILING SYSTEM,
 2. LOCATE DUCT MARKERS NEAR POINTS WHERE DUCTWORK ORIGINATES OR CONTINUES INTO
- CONCEALED ENCLOSURES (SHAFT, UNDERGROUND OR SIMILAR CONCEALMENT).

 3. LOCATE DUCT MARKERS AT 50-FOOT MAXIMUM SPACING ALONG EXPOSED RUNS.
- H. TERMINAL EQUIPMENT: IDENTIFICATION ON CEILING GRID SHALL BE PROVIDED DIRECTLY BELOW EQUIPMENT USING PLASTIC LAMINATE TAG WITH PLAN CODE ONLY.

END OF SECTION 230553

SECTION 230593 - TESTING, ADJUSTING & BALANCING

- .1 DESCRIPTION OF WORK
- A. THIS SECTION COVERS TESTING AND BALANCING OF ENVIRONMENTAL SYSTEMS INCLUDING BUT NOT LIMITED TO AIR DISTRIBUTION SYSTEMS, HYDRONIC DISTRIBUTION SYSTEMS, AND THE EQUIPMENT AND APPARATUS CONNECTED THERETO. THE TESTING AND BALANCING OF ALL ENVIRONMENTAL SYSTEMS SHALL BE THE RESPONSIBILITY OF ONE (1) TESTING, BALANCING AND ADJUSTING FIRM.

 1. TEST, ADJUST, AND BALANCE ALL OF THE FOLLOWING MECHANICAL SYSTEMS: SUPPLY AIR SYSTEMS, RETURN AIR SYSTEMS, EXHAUST AIR SYSTEMS, HYDRONIC SYSTEMS, PUMPS, TEMPERATURE CONTROL
 - 2. REPORT ANY SYSTEMS FOR EXCESSIVE SOUND AND VIBRATION LEVELS.

1.2 QUALIFICATIONS OF CONTRACTOR AND QUALIFICATIONS REVIEW

- A. PROCURE THE SERVICES OF AN INDEPENDENT NEBB OR TABB CERTIFIED TESTING AND BALANCING AGENCY. TESTING AND BALANCING WORK SHALL BE DIRECTLY SUPERVISED BY A NEBB CERTIFIED SUPERVISOR OR PROFESSIONAL ENGINEER ON THE TESTING AND BALANCING AGENCY'S STAFF. THE SUPERVISOR SHALL REPRESENT THE TESTING AND BALANCING AGENCY IN PROGRESS MEETINGS AS REQUESTED AND SHALL BE AVAILABLE FOR INTERPRETING ALL MATERIAL FOUND IN THE BALANCE REPORT.
- B. ACCEPTABLE TAB AGENCIES ARE TO BE APPROVED BY CLIENT.
- C. UPON AWARD OF THE CONTRACT, THE CONTRACTOR SHALL SUBMIT THE NAME OF THE TEST AND BALANCE AGENCY WHO WILL BE PERFORMING THE WORK. THE SUBMITTAL SHALL INCLUDE A COMPLETE LIST OF ALL TECHNICIANS WHO WILL BE PERFORMING THE FIELD WORK AND INCLUDE A PHOTOCOPY OF THEIR CURRENT CERTIFICATION BY EITHER NEBB OR TABB CERTIFICATION AGENCIES.

PROJECT CONDITIONS

A. AIR AND WATER TESTING AND BALANCING SHALL NOT BEGIN UNTIL THE SYSTEM HAS BEEN COMPLETED AND IS IN FULL WORKING ORDER.

1.4 REQUIREMENTS OF WORK

- A. PROVIDE ALL NECESSARY FAN BELTS AND SHEAVES TO BALANCE ALL FANS TO THE SPECIFIED AIR DELIVERY FOR THE ACTUAL FIELD CONDITIONS. TEST AND BALANCE AGENCY SHALL PROVIDE MOTOR SHEAVE REPLACEMENT AND FAN BELT AND SHEAVE REPLACEMENT NECESSARY FOR FINAL BALANCE CONDITION FOR SPECIFIED AIR QUANTITY WHEN THE VFD IS OPERATING AT DESIGN CONDITIONS. MOTOR SHEAVES SHALL BE REPLACED SO MOTORS OPERATE AT RATED RPM AT 60HZ, THEN FAN SHEAVES SHALL BE REPLACED TO MEET DESIGN REQUIREMENTS AT 60HZ, WITHOUT PLACING THE MOTOR OVER ITS NAMEPLATE AMP RATING.
- B. BALANCE ALL AIR AND WATER FLOWS AT TERMINALS WITHIN +5 PERCENT TO -5 PERCENT OF DESIGN FLOW QUANTITIES FOR INDIVIDUAL TERMINALS. AND +10 PERCENT TO -5 PERCENT OF INDIVIDUAL AIR OUTLETS OR INLETS. MEASURE AND RECORD THE FOLLOWING DATA:

C. AIR BALANCE 1. AIR SUI

- AIR SUPPLY, RETURN, AND EXHAUST SYSTEMS WITH AIR QUANTITIES FOR EACH AIR DEVICE; AIR HANDLING UNITS INCLUDING SUPPLY, RETURN, MIXED, AND OUTSIDE TEMPERATURES AND FAN DATA INCLUDING CFM, STATIC PRESSURE, FAN RPM, VOLTAGE, RATED MOTOR AMPERAGE, MOTOR RUNNING AMPERAGE BEFORE AND AFTER FINAL BALANCE, LISTED MOTOR POWER FACTOR AND MOTOR RUNNING POWER FACTOR READING. AIR DIFFUSION PATTERNS SHALL BE SET TO MINIMIZE OBJECTIONABLE DRAFTS, NOISE, AND LOCAL SMOKE DETECTION DEVICE RATINGS.
- THE SUPPLY, RETURN, AND EXHAUST FAN STATIC PRESSURE SHALL BE SET BY THE BALANCING FIRM AND THE CONTROL CONTRACTOR IF THE SYSTEMS HAVE FAN VOLUME CONTROL. THE DUCT STATIC SHALL BE CONFIRMED BOTH THROUGH THE INSTRUMENTATION INSTALLED ON THE JOB AND BY THE BALANCING AGENCY. THE FAN SPEED RESULTING IN SATISFACTORY SYSTEM PERFORMANCE SHALL BE DETERMINED AT FULL DESIGN DELIVERY, INLET OR OUTLET FAN. VOLUME CONTROL DAMPERS SHALL BE IN THE WIDE-OPEN POSITION AND VARIABLE FREQUENCY DRIVE IS AT 100 PERCENT OF DESIGN RPM AND ONE (1) PATH PRESENTING THE GREATEST RESISTANCE TO FLOW SHALL BE FULLY OPEN AND UNOBSTRUCTED.
- 3. PROVIDE FULL PITOT TRAVERSE AND CFM MEASUREMENTS AT EACH FAN IN ADDITION TO TERMINAL DEVICE MEASUREMENTS.

 4. MEASURE ADJUST SET BALANCE AND RECORD OUTSIDE ALB DETURN ALB AND EXHAUST/BELIEF ALB.
- 4. MEASURE, ADJUST, SET, BALANCE AND RECORD OUTSIDE AIR, RETURN AIR AND EXHAUST/RELIEF AIR QUANTITIES FOR ALL AIR HANDLING SYSTEMS AND SUPPLY FANS.

D. FINAL ADJUSTMENTS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

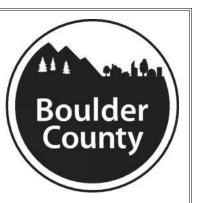
- 1. BELT DRIVE FAN: INCLUDE SHEAVE AND BELT EXCHANGE TO DELIVER AIR FLOW WITHIN LIMITS OF INSTALLED MOTOR HORSEPOWER AND MECHANICAL STRESS LIMITS OF THE FAN. DETERMINE THE LIMITING FAN TIP SPEED BEFORE INCREASING RPM. FINAL FAN SPEED SETTING SHALL ALLOW FOR PREDICTED FILTER LOADING AND SHALL ESTABLISH PROPER DUCT PRESSURES FOR OPERATION OF ZONE CFM REGULATORS.
- DIRECT DRIVE FAN WITH SPEED TAPS: SET FAN SPEED ON TAP WHICH MOST CLOSELY APPROACHES DESIGN CFM. REPORT TAP SETTING ON EQUIPMENT DATA SHEET AS HIGH, MEDIUM OR LOW.
- 3. DIRECT DRIVE FAN WITH SPEED CONTROL RHEOSTAT: SET OUTPUT OF FAN AT DESIGN CFM BY ADJUSTING THE SCR. AFTER ADJUSTMENT, CHECK FANS ABILITY TO RE-START AFTER POWERING
- DOWN. INCREASE SETTING IF REQUIRED FOR PROPER STARTING.
 TERMINAL BOXES WITH REHEAT: SET REGULATORS TO PROVIDE DESIGN MAXIMUM, MINIMUM, HEATING
- AIR DEVICES: ALL DIFFUSERS AND REGISTERS SHALL BE MEASURED AND BALANCED.
 VARIABLE FREQUENCY DRIVES: TEST, MEASURE AND RECORD TRUE RMS AMPERAGE, THD FOR VOLTAGE AND AMPERAGE FOR EACH VARIABLE FREQUENCY DRIVE AT BOTH THE INPUT POWER TO THE DRIVE AND THE OUTPUT POWER TO THE MOTOR IN BOTH THE DRIVE MODE AND THROUGH THE ACROSS THE LINE BY-PASS MODE.

E. HYDRONIC BALANCE:

- CONVERTOR INLET AND OUTLET WATER TEMPERATURES AND PRESSURES WITH CORRESPONDING
- SYSTEM STEAM PRESSURE OR HEATING WATER TEMPERATURES AND PRESSURES.

 INLET AND OUTLET WATER TEMPERATURES AND PRESSURES (OR SYSTEM STEAM PRESSURE) OF ALL
 AIR HANDLING UNIT COILS, REHEAT COILS, UNIT HEATERS, CONVECTORS, FINNED TUBE RADIATION,
 AND OTHER HEAT TRANSFER EQUIPMENT, AS WELL AS THE CORRESPONDING MEDIA FLOWS, AND AIR
- TEMPERATURE RISE OR DROPS.

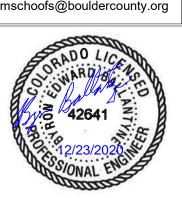
 3. CIRCULATING PUMP FLOW RATES, PRESSURES, RUNNING AMPERAGE, AND FULL LOAD AMPERAGE AT DESIGN FLOW AND SHUTOFF CONDITIONS.



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1325 PEARL STREET
THOUSE 3RD FLOOR REMODEL

PROJECT 3RD FLOOR BOCC REMODEL

<u>LOCATION</u> 1325 PEARL STREET BOULDER, COLORADO 80302

SHEET

MECHANICAL SPECIFICATION

3rdFloorRemodel-Mech-R20.rvt

FILE NAME
72620022-BoulderCountyCourthouse

ACC'T <u>100103</u> DATE: <u>12/23/2020</u> DRAWN BY:<u>SBN</u>

CHECKED BY:<u>BEB</u>

REVISIONS



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- THE HYDRONIC SYSTEM SHALL BE PROPORTIONALLY BALANCED BEING CERTAIN THAT THE PATH TO ONE (1) TERMINAL IS FULLY OPEN. TOTAL SYSTEM FLOW SHALL BE ADJUSTED AT THE PUMP BY RESTRICTING THE DISCHARGE BALANCING VALVE. IF THE PUMP MUST BE SEVERELY RESTRICTED, THE IMPELLER MAY HAVE TO BE TERMINED. THIS DECISION WILL BE THE RESPONSIBILITY OF THE
- CONTRACTOR, SUPPLIER, AND THE MECHANICAL ENGINEER.

 5. BALANCING VALVES AND ASSOCIATED BALANCING SHALL NOT BE REQUIRED ON DEVICES WHERE PRESSURE INDEPENDENT CONTROL VALVES ARE INSTALLED. BALANCING VALVES AND BALANCING ARE REQUIRED IF SELF-CONTAINED PRESSURE INDEPENDENT CONTROL VALVES ARE NOT INSTALLED.
- F. WHEN NECESSARY AS DETERMINED BY THE MECHANICAL ENGINEER, THE TEST AND BALANCE AGENCY SHALL PROVIDE ADDITIONAL TESTING AND MEASUREMENTS AS REQUIRED BY THE MECHANICAL ENGINEER
 - INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

 1. STATIC PRESSURE GRADIENT PROFILES THROUGHOUT DUCTWORK AND/OR PIPING SYSTEMS.

EXPEDIENT SCHEDULE AT NO ADDITIONAL COST TO ANY OTHER PARTY.

MISCELLANEOUS ELECTRICAL MEASUREMENTS.
 ROOM PRESSURE RELATIONSHIPS.
 THIS WORK SHALL BE DONE IMMEDIATELY UPON REQUEST WITH COMPLETE COOPERATION AND IN AN

SCHEDULE 1 - REPORT OF WORK

- E. THE TESTING AND BALANCING AGENCY SHALL SUBMIT THE FINAL TESTING AND BALANCING REPORT AT LEAST FIVE (5) CALENDAR DAYS PRIOR TO THE CONTRACTOR'S REQUEST FOR FINAL INSPECTION. ALL DATA SHALL BE RECORDED ON APPLICABLE REPORTING FORMS. INCLUDE A LIST OF ALL EQUIPMENT USED IN THE TESTING AND BALANCING WORK. THE FINAL REPORT SHALL BE SIGNED BY THE SUPERVISING REGISTERED PROFESSIONAL ENGINEER AND AFFIXED WITH THEIR REGISTRATION STAMP, SIGNED AND DATED IN ACCORDANCE WITH STATE LAW. FINAL ACCEPTANCE OF THIS PROJECT WILL NOT TAKE PLACE UNTIL A SATISFACTORY REPORT IS RECEIVED.
- F. WHEN ALL AIR BALANCING IS DONE AND ALL DAMPERS ARE SET, ALL TEST HOLES SHALL BE PLUGGED AND ALL DAMPERS SHALL BE MARKED.
- G. WHEN ALL HYDRONIC BALANCING IS DONE, ALL VALVES SHALL BE MARKED OR THE LOCKING RINGS SET. CONTROL VALVE BYPASS LOOPS SHALL BE SET WITH THE BALANCING VALVE TO PROVIDE EQUAL FLOW IN EITHER MODE. CONFIRM IN WRITING THIS WORK HAS BEEN COMPLETED.
- H. AFTER ALL BALANCING IS COMPLETE AND ALL COORDINATION WITH THE CONTRACTOR AND THE ENGINEER IS COMPLETE, THE BALANCING FIRM SHALL FURNISH THE REPORT WHICH SHALL CONTAIN THE FOLLOWING
- INFORMATION:
 1. RPM, DRIVE SHEAVE INFORMATION (AS INSTALLED AND AS CHANGED), FAN NAMEPLATE INFORMATION, MOTOR NAMEPLATE INFORMATION, MOTOR AMPERAGE, MOTOR VOLTAGE AND POWER FACTOR TO ALL MOTORS (IN ALL OPERATING MODES).
- STATIC PRESSURE ACROSS ALL COMPONENTS OF THE SYSTEM.
 REQUIRED AND FINAL BALANCED CFM AT EACH SYSTEM TERMINAL. INCLUDE THE TERMINAL SIZE,
- READING ORIFICE SIZE, AND VELOCITIES READ TO ATTAIN THE CFM.

 4. INDICATE ON WHICH TERMINAL (ON EACH SYSTEM) HAS BEEN BALANCED100% OPEN AS REQUIRED IN
- THE PREVIOUS SECTIONS FOR BOTH AIR AND HYDRONIC BALANCING.
 5. PUMP AND MOTOR NAMEPLATE INFORMATION, AMPERAGE AND VOLTAGE TO ALL MOTORS, PRESSURE
- DROP ACROSS ALL SYSTEM TERMINALS, PRESSURE RISE ACROSS THE PUMP IN PSI AND FEET OF HEAD.

 THERMAL PROTECTION FOR ALL MOTORS SHALL BE RECORDED; ALSO POWER FACTOR FOR ALL MOTORS DRAWING 1,000 WATTS OR MORE. STARTER BRAND, MODEL, ENCLOSURE TYPE, INSTALLED THERMAL HEATERS AND THE RATING OF THE HEATERS, REQUIRED THERMAL HEATERS AND THE RATING OF THE HEATERS IF DIFFERENT THAN INSTALLED SHALL BE RECORDED. STARTER HEATERS SHALL BE CHANGED TO THE CORRECT SIZE AND SO NOTED IN THE REPORT. IF THE STARTERS WERE FURNISHED BY THE DIVISION 26, THE CORRECT HEATER SIZES SHALL BE NOTED IN THE REPORT AND
- THE CONTRACTOR SHALL BE ADVISED.

 7. THE REPORT SHALL INCLUDE A SHEET WHICH SHALL REPORT THE METHOD OF BALANCE, PROJECT ALTITUDE AND ANY CORRECTION FACTORS
- ALTITUDE, AND ANY CORRECTION FACTORS.

 8. A COMPLETE SET OF THE MECHANICAL CONTRACT DRAWINGS WHICH SHALL BE INCLUDED IN THE REPORT WITH ALL EQUIPMENT, FLOW MEASURING DEVICES, TERMINALS (VAV BOXES, OUTLETS, INLETS, COILS, UNIT HEATERS, FINTUBE LOOPS, RADIANT PANEL LOOPS, SCHEDULES, ETC.) CLEARLY MARKED AND ALL EQUIPMENT DESIGNATED.
- 9. INCLUDE IN THE REPORT ALL VARIABLE FREQUENCY DRIVE ELECTRICAL PERFORMANCE TEST CHARACTERISTICS FOR EACH MOTOR AS DESCRIBED IN THIS SPECIFICATION SECTION. INCLUDE PHOTOCOPIES OF ALL METER CHART RECORDED <MEASURED DATA> AND/OR COMPUTER PRINTED OUTPUT.
- I. THE TESTING AND BALANCING AGENCY SHALL RESPOND AND CORRECT ALL DEFICIENCIES WITHIN SEVEN (7) DAYS OF RECEIVING THE ENGINEER'S WRITTEN REVIEW OF THE BALANCING REPORT. FAILURE TO COMPLY WILL RESULT IN HOLDING RETAINAGE OF THE FINAL PAYMENT UNTIL ALL ITEMS HAVE BEEN CORRECTED TO THE SATISFACTION OF THE ENGINEER.

END OF SECTION 230593

SECTION 230700 - MECHANICAL INSULATION

- 1.1 PIPING INSULATION
- 1.2 FIBERGLASS PIPING INSULATION
- A. APPROVED MANUFACTURERS: KNAUF FIBER GLASS, JOHNS-MANVILLE, MANSON INSULATION, OWENS-CORNING.
- B. ASTM C 547, TYPE 1, RIGID MOLDED, NONCOMBUSTIBLE, 0.23 "K" VALUE AT 75-DEGREE F MEAN TEMPERATURE, MAXIMUM SERVICE TEMPERATURE 850-DEGREE F, MOISTURE SORPTION LESS THAN 0.2% BY VOLUME. COMPOSITE 25/50-FLAME SPREAD/SMOKE DEVELOPED RATING (ASTM E 84, UL 723, AND NFPA 255).
- C. VAPOR RETARDER JACKET: ASTM C 1136, 45LBS/IN TENSILE STRENGTH (ASTM D 828), OR BEACH PUNCTURE 50 OZ IN/IN TEAR MINIMUM (ASTM D 781). WHITE KRAFT PAPER REINFORCED WITH GLASS FIBER YARN AND BONDED TO ALUMINUM FOIL, SECURED WITH SELF-SEALING LONGITUDINAL LAPS AND BUTT STRIPS.
- D. CONNECT WITH PRESSURE SENSITIVE COLOR MATCHING VINYL TAPE.
- 1.3 FIELD APPLIED PIPING FITTINGS AND JACKETS:
- A. APPROVED MANUFACTURERS: CHILDERS, FOSTER, CEEL-CO., JOHNS-MANVILLE, KNAUF, 3M, DESIGN POLYMETRICS, PIC PLASTICS.
- B. PVC PLASTIC: ONE-PIECE, GLOSS WHITE, MOLDED FITTING COVERS WITH FACTORY INSTALLED FIBERGLASS INSULATION INSERTS. 20 MIL (30 MIL FOR EXTERIOR APPLICATIONS) CUT AND CURLED GLOSS WHITE JACKETING MATERIAL. COMPOSITE 25/50 FLAME SPREAD/SMOKE DEVELOPED RATING (ASTM E84). CONNECT WITH TACKS AND PRESSURE SENSITIVE COLOR MATCHING VINYL TAPE.

- C. INSTALL INSULATION PRODUCTS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS, BUILDING CODES, AND RECOGNIZED INDUSTRY STANDARDS.
- INSULATE EACH CONTINUOUS RUN OF PIPING WITH FULL-LENGTH UNITS OF INSULATION, WITH SINGLE CUT PIECE TO COMPLETE RUN. DO NOT USE SCRAPS.
- APPLY INSULATION TO PIPING WITH ALL JOINTS TIGHTLY FITTED TO ELIMINATE VOIDS.
 APPLY INSULATION ON COLD SURFACES WITH A CONTINUOUS, UNBROKEN VAPOR SEAL. HANGERS, SUPPORTS, AND ANCHORS THAT ARE SECURED DIRECTLY TO COLD SURFACES MUST BE ADEQUATELY INSULATED AND VAPOR SEALED TO PREVENT CONDENSATION. SEAL PIPE TERMINATIONS IN CHILLED
- WATER OR GLYCOL SYSTEMS EVERY FOUR (4) PIPE SECTIONS WITH VAPOR BARRIER COATING.
 PROTECT VAPOR-BARRIER JACKETS ON PIPE INSULATION FROM PUNCTURE OR OTHER DAMAGE. AVOID THE USE OF STAPLES ON VAPOR BARRIER JACKETS. SEAL VAPOR BARRIER PENETRATIONS WITH
- COVER VALVES, FITTINGS AND SIMILAR ITEMS WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN. INSTALL FACTORY MOLDED OR JOB FABRICATED COVERS (AT INSTALLER'S OPTION). COAT ALL BELOW AMBIENT VALVES, FITTINGS AND SIMILAR ITEMS WITH VAPOR BARRIER COATING AND REINFORCING MESH BEFORE APPLICATION OF PVC COVERS.
 EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PIPING
- PENETRATIONS, EXCEPT WHERE FIRE-STOPPING MATERIALS ARE REQUIRED.
 7. PROVIDE THERMAL SHIELD INSERTS ON ALL PIPE (REFER TO 230529). FOR PIPING BELOW AMBIENT TEMPERATURE, APPLY VAPOR BARRIER LAP CEMENT ON BUTT JOINTS AND SEAL WITH 3-INCH WIDE
 - A. MINIMUM INSULATION INSERT LENGTHS:
 - 1) 1-1/2 2-1/2-INCH PIPE: 10-INCHES 2) 3 – 6-INCH PIPE: 12-INCHES 3) 8 – 10-INCH PIPE: 16-INCHES
 - 3) 8 10-INCH PIPE: 16-INCHES 4) 12-INCH AND LARGER PIPE: 22-INCHES
- 4) 12-INCH AND LARGER PIPE: 22-INCHES

 8. APPLY GALVANIZED METAL SHIELDS BETWEEN HANGERS OR SUPPORTS AND PIPE INSULATION. FORM SHIELDS TO FIT THE INSULATION AND EXTEND UP TO THE CENTERLINE OF THE PIPE. THE SHIELD LENGTH SHALL BE 4-INCHES LESS THAN THE ASSOCIATED INSULATION HANGER INSERT TO ALLOW FOR
- VAPOR RETARDING BUTT JOINTS ON EACH SIDE OF THE SHIELDS.

 9. APPLY ADHESIVES, MASTICS AND COATINGS AT MANUFACTURER'S RECOMMENDED MINIMUM
- COVERAGE PER GALLON.

 10. REPLACE ALL DAMAGED INSULATION IN WHOLE; REPAIR OF DAMAGED INSULATION WILL NOT BE ACCEPTED.
- PIPING APPLICATIONS:

 1. HOT PIPING (105 TO 140-DEGREE F): FIBERGLASS: 1-INCH THICKNESS UP TO 1-1/2-INCH PIPE SIZE, 1 1/2-INCH THICKNESS FOR ALL OTHER PIPE SIZES. APPLICATIONS: SNOW MELT, HEAT RECOVERY SUPPLY AND RETURN, HOT GAS, HOT GAS BYPASS.
- .6 DUCTWORK INSULATION
- A. ACCEPTABLE MANUFACTURERS: ARMAFLEX, JOHNS-MANVILLE, KNAUF FIBER GLASS, MANSON INSULATION, OWENS-CORNING: ARMSTRONG.
- B. FLEXIBLE FIBERGLASS BLANKET: ASTM C 553, TYPE II, 3/4 LB/CU FT DENSITY, 2-INCH THICKNESS, 0.25 "K" VALUE AT 75-DEGREE F MEAN TEMPERATURE AT COMPRESSED THICKNESS, MAXIMUM SERVICE TEMPERATURE 250-DEGREE F, MOISTURE SORPTION LESS THAN 0.2% BY VOLUME, ALUMINUM FOIL FACING REINFORCED WITH FIBERGLASS SCRIM LAMINATED TO UL RATED KRAFT PAPER. COMPOSITE 25/50-FLAME SPREAD/SMOKE DEVELOPED RATING (ASTM E 84, UL 40, AND NFPA 90A).
 SECURE WITH UL LISTED PRESSURE SENSITIVE TAPE AND/OR OUTWARD CLINCHED EXPANDED STAPLES AND VAPOR BARRIER MASTIC AS NEEDED.
- C. FLEXIBLE ELASTOMERIC FOAM: ASTM C 534, TYPE I, FLEXIBLE, CELLULAR ELASTOMERIC, MOLDED, 0.27 "K" VALUE AT 75-DEGREE F MEAN TEMPERATURE, MAXIMUM SERVICE TEMPERATURE 220-DEGREE F, WATER VAPOR PERMEABILITY OF 0.10 PERM-INCH, 25/50-FLAME SPREAD/SMOKE DEVELOPED RATING (ASTM E 84, UL 723, AND NFPA 255).
- D. DUCTWORK INSULATION ACCESSORIES: PROVIDE STAPLES, BANDS, WIRES, TAPE, ANCHORS, CORNER ANGLES AND SIMILAR ACCESSORIES AS RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED.
- E. ROUND DUCTS AND CONCEALED RECTANGULAR DUCTS: ADHERE FLEXIBLE INSULATION TO DUCTWORK WITH ADHESIVE APPLIED IN 6-INCH WIDE STRIPS ON 16-INCH CENTERS. BUTT INSULATION AND SEAL JOINTS AND BREAKS WITH 2-INCH LAP OF FOIL ADHERED OVER JOINT.
- F. INSTALL INSULATION PRODUCTS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS, BUILDING CODES, AND RECOGNIZED INDUSTRY STANDARDS.
 - APPLY INSULATION TO DUCTWORK WITH ALL JOINTS TIGHTLY FITTED TO ELIMINATE VOIDS
 SEAL ALL VAPOR RETARDANT JACKET SEAMS AND PENETRATIONS WITH UL LISTED TAPES OR VAPOR RETARDANT ADHESIVE AS RECOMMENDED BY THE MANUFACTURER. COAT ALL SEAMS, BREAKS, TAPE
- PATCHES AND PENETRATIONS WITH VAPOR BARRIER COATING.

 3. SECURE INSULATION TO THE UNDERSIDE OF DUCT 24-INCHES OR GREATER WITH MECHANICAL FASTENERS OR SPEED CLIPS SPACED 18-INCHES ON CENTER. CUT OFF PROTRUDING ENDS OF FASTENERS AFTER SPEED CLIPS ARE INSTALLED AND SEAL PENETRATION OF VAPOR BARRIER.
- EXTEND DUCTWORK INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PENETRATIONS, EXCEPT WHERE FIRE-STOPPING MATERIALS ARE REQUIRED.
 ADHERE FLEXIBLE ELASTOMERIC SHEETS TO DUCTWORK BY COMPRESSION FIT AND FULL COVERAGE OF ADHESIVE. SEAL BUTT JOINTS WITH SAME ADHESIVE. APPLY THE SAME SHEET THICKNESS ON
- . APPLICATIONS:
 - FLEXIBLE FIBERGLASS BLANKET:
 - A. CONCEALED SUPPLY DUCTWORK WITHOUT LINER: 1-1/2-INCH THICKNESS. (IECC R5 MIN)
 B. RETURN DUCTWORK IN UNCONDITIONED SPACES WITHOUT LINER: 1-1/2-INCH THICKNESS.
 - (IECC R5 MIN)

 C. EXHAUST DUCTWORK WITHIN 10-FEET OF EXTERIOR OPENING WITHOUT LINER: 1-1/2-INCH
 - THICKNESS.

 D. UNIT HOUSINGS THAT ARE NOT FACTORY INSULATED: 1-1/2-INCH THICKNESS.
- RIGID FIBERGLASS BOARD:
 A. OUTSIDE AIR DUCTWORK AND PLENUMS: 1-1/2-INCH THICKNESS.
 - B. COMBUSTION AIR DUCTWORK AND PLENUMS: 1-1/2-INCH THICKNESS.

STANDING METAL DUCT SEAMS AS INSTALLED ON THE DUCT SURFACE.

- C. MIXED AIR DUCTWORK AND PLENUMS: 1-1/2-INCH THICKNESS.
 D. SUPPLY AND RETURN DUCTS EXPOSED TO THE OUTDOORS: 2-INCH THICKNESS. (2006 INTERNATIONAL ENERGY CODE ⇒ R:8: 2-INCH RIGID = R:8.7)
- E. EXHAUST DUCTS BETWEEN THE AIR-HANDLING UNIT AND THE EXTERIOR OPENING: 1-1/2-INCH THICKNESS.

END OF SECTION 230700

SECTION 232113 - HYDRONIC PIPING

- 1.1 PIPING AND FITTINGS
- A. WORKING PRESSURE AND TEMPERATURE MAXIMUMS, 125 PSI AND 250-DEGREES F; WATER SERVICE.
- B. COPPER PIPE (FOR PIPE 2-INCHES AND SMALLER): ASTM B88, HARD-DRAWN COPPER TUBE, TYPE L WITH WROUGHT COPPER FITTINGS AND SOLDER JOINTS FOR ABOVE GROUND LINES.
- 1. WROUGHT COPPER SOLDER JOINT FITTINGS SHALL MEET ASME B16.22. BRONZE PIPE FLANGES/FITTINGS SHALL BE ANSI B16.24 (CLASS 150 AND 300). PROVIDE MECHANICAL PRESSURE-SEAL FITTINGS AS MANUFACTURED BY VIEGA OR NIBCO. PROVIDE GROOVED END WROUGHT COPPER OR BRONZE CASTING (ASME B16.18) WITH COPPER TUBE DIMENSIONED GROOVED.
- 2. SOLDER SHALL BE ASTM B32 95-5 TIN-ANTIMONY GRADE3 95TA, ASTM B32 SILVER TIN-COPPER ALLOY.
- PROVIDE ANGLE-BOLT PATTERN DESIGNED FOR GROOVED MECHANICAL COUPLINGS.

 3. UNIONS SHALL BE ASME B16.22-95 AND JOINED WITH WROUGHT COPPER SOLDER JOINT, GROUND SEAT.

- C. STEEL PIPE (FOR PIPE 2-1/2-INCHES AND LARGER): ASTM A53, SCHEDULE 40, BLACK STEEL PIPE. (GRADE B, TYPE E, ELECTRIC RESISTANCE WELDED).
- 3. THREADED FITTINGS SHALL BE ASME B16.11, CLASS 125, CAST IRON. STANDARD PATTERN FOR THREADED JOINTS. THREADS SHALL CONFORM TO ASME B1.20.1-83. FLANGED FITTINGS SHALL BE ASME B16.5, CLASS 150, CAST IRON, RAISED GROUND FACE, BOLT HOLES SPOT FACED. GASKETS SHALL BE ANSI B16.21, FULL FACED FOR CAST IRON FLANGES, RAISED FACE FOR STEEL FLANGES. WELDS SHALL BE ASTM B16.9, STANDARD WEIGHT, SEAMLESS BLACK STEEL, BUTT WELD. GROOVED PIPE SHALL BE ASTM A536 DUCTILE IRON, OR ASTM A53 STEEL, GROOVED ENDS WITH GROOVED MECHANICAL COUPLINGS. UNIONS SHALL BE ASME B16.39-86, MALLEABLE-IRON, CLASS 150, HEXAGONAL STOCK, WITH BALL-AND-SOCKET JOINTS, METAL-TO-METAL BRONZE SEATING SURFACES; FEMALE THREADED

D. GROOVED PIPING PRODUCTS:

GROOVED PIPING PRODUCTS:
 APPROVED MANUFACTURERS: VICTAULIC, GRUVLOK, GRINNELL

- 4. COUPLING HOUSINGS: GROOVED MECHANICAL TYPE, WHICH ENGAGES GROOVED OR SHOULDERED PIPE ENDS, ENCASING AN ELASTOMERIC GASKET WHICH BRIDGES PIPE ENDS TO CREATE SEAL. CAST IN TWO (2), SECURE TOGETHER DURING ASSEMBLY WITH NUTS AND BOLTS. ROLLED GROOVES MUST BE USED ON ALL PIPE EXCEPT FOR DUCTILE IRON WHICH MUST BE CUT GROOVED. RIGID ANGLE-PATTERN BOLT PAD COUPLING MUST BE USED ON ALL JOINTS EXCEPT: EQUIPMENT CONNECTIONS, VIBRATION ATTENUATION JOINTS, EXPANSIONS OR CONTRACTION JOINTS, OR FOR DEFLECTION CAPABILITIES; ALL
- OF WHICH MUST USE FLEXIBLE COUPLINGS.

 RIGID COUPLINGS HOUSINGS: CAST IN TWO PARTS WITH OFFSETTING, ANGLE-PATTERN BOLT PADS TO PROVIDE SYSTEM RIGIDITY AND SUPPORT AND HANGING IN ACCORDANCE WITH ASME B31.1 AND B31.9 AND SECURED TOGETHER DURING ASSEMBLY WITH NUTS AND BOLTS.

 A. 2 THROUGH 8-INCH SIZES: GASKET SHALL BE GRADE 'EPH' EPDM SUITABLE FOR HOT WATER UP
- B. 10 AND 12-INCH SIZES: STANDARD RIGID COUPLING WITH GRADE 'E' EPDM GASKET SUITABLE FOR HOT WATER UP TO 230 DEGREE F.
- C. 14 THROUGH 60-INCH SIZES: AGS GROOVE, WIDE KEY HOUSING PROFILE WITH FLAT BOLT PADS FOR METAL-TO-METAL CONTACT. WIDE-WIDTH, PRESSURE RESPONSIVE, SYNTHETIC RUBBER GASKET, GRADE 'E' EPDM OF A FLUSH SEAL DESIGN, SUITABLE FOR HOT WATER UP TO 230
- GASKETS: MECHANICAL GROOVED COUPLING DESIGN, PRESSURE RESPONSIVE SO THAT INTERNAL PRESSURE SERVES TO INCREASE SEAL TIGHTNESS, CONSTRUCTED OF ELASTOMERS HAVING PROPERTIES AS DESIGNATED BY ASTM D2000. FOR WATER SERVICES: EDPM GRADE E, WITH GREEN COLOR CODE IDENTIFICATION, OR EPDM GRADE EHP. FOR OTHER SERVICES THE GASKET MATERIAL SHALL BE AS RECOMMENDED BY MANUFACTURER.
- E. COPPER PRESSURE-SEAL-JOINT FITTINGS:
- APPROVED MANUFACTURERS: VIEGA PROPRESS, NIBCO PRESS SYSTEM, PARKER ZOOMLOCK.
 FITTINGS FOR 2-INCH AND SMALLER: WROUGHT-COPPER FITTING WITH EPDM-RUBBER, O-RING SEAL IN
- 5. FITTINGS FOR 2-1/2-INCH TO 4-INCH: CAST BRONZE OR WROUGHT-COPPER FITTING WITH EPDM-RUBBER, O-RING SEAL IN EACH END.
- F. INSTALLATION:
 - ARRANGE PIPING IN HORIZONTAL GROUPS, EACH GROUP TO BE IN ONE PLANE. MAINTAIN INDICATED SLOPE. CONCEAL PIPE INSTALLATIONS IN WALLS, PIPE CHASES, UTILITY SPACES, ABOVE CEILINGS, BELOW GRADE OR FLOORS. INSTALL PIPING TIGHT TO SLABS, BEAMS, JOISTS, COLUMNS, WALLS, AND OTHER PERMANENT ELEMENTS OF THE BUILDING. INSTALL PIPING PARALLEL TO PERMANENT ELEMENTS OF BUILDING. PROVIDE SPACE TO PERMIT INSULATION APPLICATIONS, WITH 1-INCH CLEARANCE OUTSIDE INSULATION. PROVIDE 2-INCH SPACE ABOVE REMOVABLE CEILING PANELS TO
 - ALLOW FOR PANEL REMOVAL.

 4. FIRE AND SMOKE WALL PENETRATIONS: MAINTAIN THE FIRE AND SMOKE RATED INTEGRITY WHERE
 PLOSS BASS THROUGH FIRE AND SMOKE RATED WALLS BARTITIONS CELLINGS AND ELOOPS.
- PIPES PASS THROUGH FIRE AND SMOKE RATED WALLS, PARTITIONS, CEILINGS, AND FLOORS.

 INSTALL PIPING TRUE TO LINE AND GRADE, AND FREE OF TRAPS AND AIR POCKETS. KEEP OPENINGS IN PIPING CLOSED DURING CONSTRUCTION TO PREVENT ENTRANCE OF FOREIGN MATTER. INSTALL PIPING LEVEL EXCEPT FOR GRAVITY FLOW SYSTEMS SUCH AS CONDENSATE DRAIN PIPING. CONNECT BRANCH PIPING TO BOTTOM OF MAINS, EXCEPT FOR UP-FEED RISERS, WHICH SHALL HAVE TAKE-OFF ON TOP OF MAIN. INSTALL MANUAL AIR VENTS AT HIGH POINTS IN HYDRONIC PIPING SYSTEMS AND AT ALL COILS. PROVIDE 1/4-INCH COPPER, 180-DEGREE BEND PIPE TO DISCHARGE VENTED WATER INTO CAN. INSTALL AUTOMATIC AIR VENT ON AIR SEPARATOR AND WHERE SHOWN. PROVIDE VALVED INLET AND ROUTE DISCHARGE PIPE TO FLOOR DRAIN. INSTALL DRAIN VALVES WITH HOSE ADAPTERS AT LOW POINTS IN MAINS, RISERS, AND BRANCH LINES. DRAIN CONSISTS OF A TEE FITTING, 3/4-INCH BALL VALVE, AND SHORT 3/4-INCH THREADED NIPPLE AND CAP. DO NOT RUN PIPING THROUGH TRANSFORMER VAULTS AND OTHER ELECTRICAL SPACES.
- PROVIDE STANDARD MANUFACTURED FITTINGS. FIELD FABRICATED FITTINGS AND BUSHINGS ARE PROHIBITED ON ALL PIPING. MAKE REDUCTIONS IN PIPE SIZES USING ECCENTRIC REDUCER FITTING
- INSTALLED WITH THE LEVEL SIDE UP. INSTALL UNIONS IN PIPES 2-INCH AND SMALLER, ADJACENT TO EACH VALVE, AT FINAL CONNECTIONS
- OF EACH PIECE OF EQUIPMENT AND ELSEWHERE TO PERMIT ALTERATIONS AND REPAIRS.

 8. INSTALL FLANGES ON VALVES AND EQUIPMENT HAVING 2-1/2-INCH AND LARGER CONNECTIONS.

 9. INSTALL FLEXIBLE CONNECTORS OR GROOVED FLEXIBLE COUPLINGS AT INLET AND DISCHARGE CONNECTIONS TO BASE-MOUNTED PUMPS AND OTHER VIBRATION PRODUCING EQUIPMENT. JOIN COPPER TUBE AND PRESSURE-SEAL FITTINGS WITH TOOLS RECOMMENDED BY FITTING
- MANUFACTURER.

 10. DO NOT RUN PIPING THROUGH TRANSFORMER VAULTS AND OTHER ELECTRICAL OR ELECTRONIC EQUIPMENT SPACES AND ENCLOSURES. ONLY PIPING SERVING THIS TYPE OF EQUIPMENT SPACE SHALL BE ALLOWED.

1.2 VALVES

- WHERE INSULATION IS INDICATED OR SPECIFIED, PROVIDE EXTENDED STEMS TO ALLOW FULL OPERATION OF THE VALVE WITHOUT INTERFERENCE BY THE INSULATION.
- D. END CONNECTIONS: AS SPECIFIED IN THE INDIVIDUAL VALVES SPECIFICATIONS.
- THREADS: COMPLY WITH ANSI B2.1.
 FLANGES: COMPLY WITH ANSI B16.1 FOR CAST IRON, ANSI B16.5 FOR STEEL, AND ANSI B16.24 FOR
- 5. SOLDER-JOINT: COMPLY WITH ANSI B16.18. WHERE SOLDERED END CONNECTIONS ARE USED, USE SOLDER HAVING A MELTING POINT BELOW 840-DEGREE F FOR GATE, GLOBE, AND CHECK VALVES AND BELOW 421-DEGREE F FOR BALL VALVES.
- E. BALL VALVES:3. APPROV
 - APPROVED MANUFACTURERS: NIBCO, MILWAUKEE, WATTS, GRINNELL, VICTAULIC.
 APPLICATION: HYDRONIC ISOLATION; 2-INCH AND SMALLER
- 5. 3-INCH AND SMALLER: MSS-SP-110, 150 PSI SWP, 600 PSI WOG, TWO-PIECE ASTM B584 CAST BRONZE BODY, FULL PORT, CHROME PLATED BRASS/BRONZE BALL, TFE SEATS, ANTI-BLOWOUT STEM SEPARATE PACKNUT WITH ADJUSTABLE STEM PACKING, EXTENDED STEM, AND VINYL COVERED STEEL HANDLE. THREADED OR SOLDERED END CONNECTIONS. NIBCO T/S 585-70-EL.

F. CHECK VALVES:

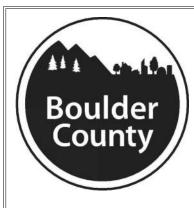
- APPROVED MANUFACTURERS: NIBCO, MILWAUKEE, STOCKHAM, HAMMOND, GRINNELL.
 INSTALL CHECK VALVES FOR PROPER DIRECTION OF FLOW AS FOLLOWS: HORIZONTAL POSITION SWING CHECK VALVE WITH HINGE PIN LEVEL, OR A WAFER CHECK VALVE (IN EITHER HORIZONTAL OR
- VERTICAL POSITION) BETWEEN FLANGES.

 3. SWING CHECK VALVE: USE FOR HYDRONIC PUMP DISCHARGE CHECK VALVES; 2-INCH AND SMALLER

 A. 2-1/2-INCH AND SMALLER: MSS SP-80; CLASS 150 SWP, ASTM B62 BRONZE BODY AND BONNET,
 - HORIZONTAL SWING DESIGN, Y-PATTERN, WITH TFE SEAT DISC. THREADED OR SOLDERED END CONNECTIONS. NIBCO T/S 433-Y

 B. 3-INCH AND LARGER: MSS SP-71; CLASS 125, ASTM A126 CLASS B CAST IRON BODY WITH BRONZE TRIM, NON-ASBESTOS GASKET, HORIZONTAL SWING, AND FLANGED ENDS NIBCO F918-B.
- G. DRAIN VALVE: BALL VALVE WITH THREADED HOSE END AND CAP WITH CHAIN. NIBCO MODEL T/S-585-70-HC-EL
- INSTALLATION:
- FIELD CHECK VALVES FOR PACKING AND LUBRICANT. REPLACE LEAKING PACKING. SERVICE VALVES WITH LUBRICANT FOR SMOOTH AND PROPER OPERATION BEFORE PLACING IN SERVICE. INSTALL VALVES ACCESSIBLE FROM FLOOR LEVEL, LOCATED FOR EASY ACCESS. INSTALL VALVES IN HORIZONTAL PIPING WITH STEM AT OR ABOVE CENTER OF PIPE. INSTALL VALVES IN POSITION TO ALLOW FULL STEM MOVEMENT. PROVIDE OPERATING HANDLES FOR VALVES AND COCKS WITHOUT INTEGRAL OPERATORS. PROVIDE EXTENDED VALVE STEMS WHERE INSULATION IS SPECIFIED. PROVIDE SEPARATE SUPPORT WHERE NECESSARY. WHERE SOLDERED END CONNECTIONS ARE USED FOR VALVES, USE SOLDER HAVING A MELTING POINT BELOW 840-DEGREES F FOR GATE, GLOBE, AND CHECK VALVES; BELOW 421-DEGREES F FOR BALL VALVES. PROVIDE DRAIN VALVES AND HOSE ADAPTERS AT STRAINERS FOR BLOWOFF; SAME SIZE AS STRAINER BLOWOFF CONNECTION. PROVIDE MECHANICAL ACTUATORS WITH CHAIN OPERATORS WHERE VALVES 2-1/2-INCHES AND LARGER ARE MOUNTED MORE THAN 6-FEET ABOVE THE FLOOR. EXTEND CHAINS TO ELEVATION OF 5-FEET ABOVE FLOOR.
 VALVE END SELECTION: SELECT VALVES WITH THE FOLLOWING ENDS OR TYPES OF PIPE/TUBE
- CONNECTIONS:
 A. COPPER TUBE SIZE 2-INCH AND SMALLER: SOLDER ENDS.
- B. STEEL PIPE SIZES 2-INCH AND SMALLER: THREADED OR GROOVED-END.
- C. STEEL PIPE SIZES 2-1/2-INCH AND LARGER: FLANGED OR GROOVED END.
 D. AT ALL PIPING HOT TAPS PROVIDE A GATE VALVE WITH THE HOT TAP AND A BUTTERFLY VALVE FOR SHUTOFF SERVICE. HOT TAPS SHALL BE PROVIDED ONLY WHERE APPROVED BY THE ENGINEER.

1.3 PIPING ACCESSORIES



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BOULDER COUNTY
1325 PEARL STREET
OURTHOUSE 3RD FLOOR REMODE!

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION
1325 PEARL STREET
BOULDER, COLORADO
80302
SHEET

FILE NAME
72620022-BoulderCountyCourthouse

MECHANICAL SPECIFICATION

3rdFloorRemodel-Mech-R20.rvt

ACC'T <u>100103</u> DATE: <u>12/23/2020</u> DRAWN BY:<u>SBN</u>

CHECKED BY:<u>BEB</u>

REVISIONS



BCER PROJECT 72620022

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- C. MANUAL AIR VENT:
 - APPROVED MANUFACTURERS: ARMSTRONG, BELL & GOSSETT, HOFFMAN, SPIRAX SARCO.
 BRONZE BODY AND NONFERROUS INTERNAL PARTS; 150 PSIG WORKING PRESSURE, 212-DEGREE F OPERATING TEMPERATURE; MANUALLY COIN OPERATED AND HAVING DISCHARGE OUTLET CONNECTION AND 1/8-INCH NPT MALE CONNECTION.
- 3. PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS AND DROPS IN THE DIRECTION OF FLOW, OF ALL MAINS AND RISERS OF THE HYDRONIC SYSTEMS, AT HEAT TRANSFER COILS, RADIATION AND ELSEWHERE SHOWN AND AS REQUIRED FOR SYSTEM AIR VENTING.
 A. PROVIDE ENLARGED AIR COLLECTION STANDPIPE WHERE LARGE AIR QUANTITIES CAN ACCUMULATE. PROVIDE A 1/2-INCH BALL VALVE, REDUCER AND PIPE NIPPLE INSTALLED BETWEEN
- ACCUMULATE. PROVIDE A 1/2-INCH BALL VALVE, REDUCER AND PIPE NIPPLE INSTALLED BETWE HYDRONIC SYSTEM PIPE AND MANUAL AIR VENT.

 4. PROVIDE 1/4-INCH DISCHARGE PIPE FROM MANUAL AIR VENT DISCHARGE CONNECTION TO NEAREST
- D. AUTOMATIC AIR VENT:

FLOOR DRAIN OR AS INDICATED.

- APPROVED MANUFACTURERS: ARMSTRONG, BELL & GOSSETT, HOFFMAN, SPIRAX SARCO.
 FLOAT TYPE VENT DESIGNED TO VENT AUTOMATICALLY; BRONZE BODY AND NONFERROUS INTERNAL PARTS. 150 PSIG WORKING PRESSURE, 240-DEGREE F OPERATING TEMPERATURE. 1/4-INCH DISCHARGE CONNECTION AND 1/2-INCH INLET CONNECTION.
- E. STRAINERS:
- 3. APPROVED MANUFACTURERS: ARMSTRONG, HOFFMAN, METRAFLEX, R P&C VALVE, SPIRAX SARCO,
- 4. INSTALL STRAINERS FULL SIZE OF PIPELINE, IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL PIPE NIPPLE AND SHUTOFF FULL PORT BALL VALVE WITH 3/4-INCH HOSE END AND BRASS CAP WITH HOSE "WASHER" AND CHAIN IN STRAINER BLOWDOWN CONNECTION. WHERE INDICATED, PROVIDE DRAIN LINE FROM SHUTOFF VALVE TO PLUMBING DRAIN, FULL SIZE OF
- BLOWDOWN CONNECTION.

 5. PROVIDE STRAINERS IN SUPPLY LINE AHEAD OF THE FOLLOWING EQUIPMENT, AND ELSEWHERE AS INDICATED: PUMPS, CONTROL VALVES, PRESSURE REDUCING VALVES, TEMPERATURE OR PRESSURE REGULATING VALVES, AND SOLENOID VALVES.
- 1.4 EQUIPMENT PIPING
- C. PROVIDE COMBINATION BALANCING AND SHUTOFF VALVES TO REGULATE WATER FLOW THROUGH PIPING, COILS, AND AT OTHER EQUIPMENT AND PIPING WHERE SHOWN OR REQUIRED FOR PROPORTIONING FLOW.
- D. INSTALL AUTOMATIC FILL VALVE IN COLD WATER MAKE-UP TO BOILERS AND CHILLERS. INSTALL THREE-VALVE BYPASS WITH GLOBE VALVE AROUND AUTOMATIC FILL VALVE FOR QUICK FILLING SYSTEM. INSTALL BACKFLOW PREVENTER UPSTREAM OF FILL VALVE AND BYPASS.
- 1.5 TESTING
- C. PROVIDE TEMPORARY EQUIPMENT FOR TESTING INCLUDING PUMP AND GAUGES. TEST BEFORE INSULATION IS INSTALLED. TEST PIPING TO BE CONCEALED PRIOR TO PERMANENT ENCLOSURE.
- D. TEST PIPING SYSTEMS USING AMBIENT TEMPERATURE WATER, EXCEPT WHERE THERE IS RISK OF DAMAGE DUE TO FREEZING. ENGINEER APPROVAL IS REQUIRED PRIOR TO TESTING IF OTHER THAN HYDROSTATIC TESTS ARE USED.
- E. SYSTEM TESTS
- HYDROSTATIC TEST: PRESSURIZE THE SYSTEM TO 100 PSIG OR 1.5 TIMES THE DESIGN PRESSURE, WHICHEVER IS GREATER. MAINTAIN PRESSURE UNTIL THE ENTIRE SYSTEM HAS BEEN INSPECTED FOR LEAKS, BUT IN NO CASE FOR A TIME PERIOD OF LESS THAN FOUR (4) HOURS.
- MAINTAIN TEST PRESSURE UNTIL THE ENTIRE SYSTEM HAS BEEN INSPECTED FOR LEAKS, BUT IN NO CASE LESS THAN FOUR HOURS. EXAMINE ALL PIPING, JOINTS, AND CONNECTIONS FOR LEAKAGE.
- 1.6 ADJUSTING AND CLEANING
- C. FLUSH SYSTEM WITH CLEAN WATER. REMOVE, CLEAN, AND REPLACE STRAINER SCREENS WITHIN SCOPE OF WORK. AFTER CLEANING AND FLUSHING BUT BEFORE BALANCING, REMOVE DISPOSABLE FINE MESH STRAINERS IN PUMP SUCTION DIFFUSERS.
- 1.7 CLOSEOUT SUBMITTALS
- C. SUBMIT THE FOLLOWING INFORMATION:
- VALVE SCHEDULE FOR ALL VALVES. FOR EACH VALVE, LIST VALVE DESIGNATION NUMBER, VALVE TYPE, SIZE, LOCATION, AND FUNCTION.
- WRITTEN REPORT CERTIFYING LEAK TESTING.

END OF SPECIFICATION 232113

- TEST PIPING SYSTEMS USING AMBIENT TEMPERATURE WATER, EXCEPT WHERE THERE IS RISK OF DAMAGE DUE TO FREEZING. ENGINEER APPROVAL IS REQUIRED PRIOR TO TESTING IF OTHER THAN HYDROSTATIC TESTS ARE USED.
- E. SYSTEM TESTS:
 - 1. HYDROSTATIC TEST: PRESSURIZE THE SYSTEM TO 100 PSIG OR 1.5 TIMES THE DESIGN PRESSURE, WHICHEVER IS GREATER. MAINTAIN PRESSURE UNTIL THE ENTIRE SYSTEM HAS BEEN INSPECTED FOR LEAKS, BUT IN NO CASE FOR A TIME PERIOD OF LESS THAN FOUR (4) HOURS.
 - 2. MAINTAIN TEST PRESSURE UNTIL THE ENTIRE SYSTEM HAS BEEN INSPECTED FOR LEAKS, BUT IN NO CASE LESS THAN FOUR HOURS. EXAMINE ALL PIPING, JOINTS, AND CONNECTIONS FOR LEAKAGE.
- 1.6 ADJUSTING AND CLEANING
- C. FLUSH SYSTEM WITH CLEAN WATER. REMOVE, CLEAN, AND REPLACE STRAINER SCREENS WITHIN SCOPE OF WORK. AFTER CLEANING AND FLUSHING BUT BEFORE BALANCING, REMOVE DISPOSABLE FINE MESH STRAINERS IN PUMP SUCTION DIFFUSERS.
- 1.7 CLOSEOUT SUBMITTALS
- C. SUBMIT THE FOLLOWING INFORMATION:
 - VALVE SCHEDULE FOR ALL VALVES. FOR EACH VALVE, LIST VALVE DESIGNATION NUMBER, VALVE TYPE, SIZE, LOCATION, AND FUNCTION.
- 2. WRITTEN REPORT CERTIFYING LEAK TESTING.

END OF SPECIFICATION 232113

SECTION 233113 - METAL DUCTWORK

.1 DESCRIPTION OF WORK

A. EXTENT OF METAL DUCTWORK IS INDICATED ON THE DRAWINGS, SCHEDULES, AND BY REQUIREMENTS OF

	DUCTWORK CONSTRUCTION	ON TABLE		
SERVICE	TYPE	PRESSURE CLASS	INSULATION	SEAL CLASS
		(IN. W.C.)		
SUPPLY AIR BETWEEN AIR HANDLING UNIT AND TERMINAL AIR	GALVANIZED STEEL, ROUND	+3	WRAPPED	В
SUPPLY AIR BETWEEN TERMINAL AIR BOX AND AIR DEVICES (CONCEALED)	GALVANIZED STEEL, RECTANGULAR	+2	1-INCH LINED	С
RETURN AIR	GALVANIZED STEEL, ROUND OR RECTANGULAR	-3	1-INCH LINED	В
GENERAL BUILDING EXHAUST	GALVANIZED STEEL ROUND OR RECTANGULAR	-3	NONE	В
TRANSFER DUCT	RECTANGULAR GALVANIZED STEEL	+1	1-INCH LINED	С

1.2 DUCTWORK MATERIALS

- A. REFERENCES TO SMACNA, ASHRAE AND NFPA ARE MINIMUM REQUIREMENTS, THE CONTRACTOR SHALL FABRICATE, CONSTRUCT, INSTALL, SEAL ALL DUCTWORK AS DESCRIBED IN THIS SPECIFICATION AND AS SHOWN ON THE DRAWINGS, IN ADDITION TO THESE MINIMUM STANDARD REFERENCES: SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE", SMACNA "HVAC AIR DUCT LEAKAGE TEST MANUAL", SMACNA INDUSTRIAL CONSTRUCTION STANDARDS, ASHRAE "SYSTEMS AND EQUIPMENT HANDBOOK", CHAPTER 16, DUCT CONSTRUCTION, NFPA 90A "STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS".
- B. EXPOSED DUCTWORK: WHERE DUCTWORK IS EXPOSED TO VIEW IN OCCUPIED SPACES, PROVIDE MILL PHOSPHATIZED FINISH THAT IS FREE FROM VISUAL IMPERFECTIONS, INCLUDING PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DENTS, DISCOLORATIONS, AND OTHER IMPERFECTIONS, INCLUDING THOSE THAT WOULD IMPAIR PAINTING.
- 1.3 MISCELLANEOUS DUCTWORK MATERIALS
- A. FITTINGS: PROVIDE RADIUS TYPE FITTINGS FABRICATED OF MULTIPLE SECTIONS WITH MAXIMUM 15-DEGREE CHANGE OF DIRECTION PER SECTION. UNLESS SPECIFICALLY DETAILED OTHERWISE, USE 45-DEGREE LATERALS AND 45-DEGREE ELBOWS FOR BRANCH TAKEOFF CONNECTIONS. WHERE 90-DEGREE BRANCHES ARE INDICATED, PROVIDE CONICAL TYPE TEES.
- B. RECTANGULAR DUCT LINER: ASTM C1071 FIBERGLASS DUCT LINER WITH UL APPROVED 25/50 FLAME/ SMOKE DEVELOPMENT. FACTORY APPLIED EDGE AND AIR SURFACE COATING OF ACRYLIC TREATED WITH EPA REGISTERED ASTM G21 AND G22 ANTI-MICROBIAL AGENT.
 - LINER SHALL HAVE A K VALUE MEETING ASTM C 518, 0.25 AT 75-DEGREE F MEAN TEMPERATURE, A NOISE REDUCTION COEFFICIENT MEETING ASTM C 423, 0.70 BASED ON TYPE A MOUNTING, 5000 FPM MAXIMUM VELOCITY, ADHESIVE MEETING ASTM C919, DUCT LINER GALVANIZED STEEL FASTENER PINS (WELDED OR MECHANICALLY FASTENED).
 - APPROVED MANUFACTURERS: CERTAINTEED CORP., JOHNS-MANVILLE PRODUCTS CORP., KNAUF FIBERGLASS, MANSON, OWENS-CORNING FIBERGLAS CORP.
- C. DUCT SEALANT: UL 181 LISTED, CLASS 1, FLAME SPREAD 0, FUEL CONTRIBUTED 0, SMOKE DEVELOPED 0, WATER-BASED SEALANT, NON-TOXIC, NON-COMBUSTIBLE, AND NON-FLAMMABLE. NON-HARDENING, NON-MIGRATING MASTIC OR LIQUID ELASTIC SEALANT, TYPE APPLICABLE FOR FABRICATION/INSTALLATION DETAIL AS COMPOUNDED AND RECOMMENDED BY MANUFACTURER SPECIFICALLY FOR SEALING JOINTS AND SEAMS IN DICTWORK
 - DUCT SEALANT SHALL HAVE A SERVICE TEMPERATURE -20°F TO 200°F, BE MOLD AND MILDEW RESISTANT, HAVE A VOC MAXIMUM OF 50G/L (LESS WATER AND EXEMPT SOLVENTS).

APPROVED MANUFACTURERS: DUCT MATE PRO SEAL, FOSTER 32-19/32-17, CHILDERS CP-146/CP-148

- ADHESIVES: WATER BASED; SUITABLE FOR BONDING FIBROUS DUCT WRAP AND DUCT LINER INSULATION TO GALVANIZED DUCT WORK. INSTALL EVENLY AND SECURE WITH MECHANICAL FASTENERS IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARD FOR METAL AND FLEXIBLE DUCT.

 APPROVED MANUFACTURERS: FOSTER 85-60, DURODYNE SSG, MCGILL AIR SEAL UNI GRAB, CHILDERS
- 2. ADHESIVES SHALL BE NON-OXIDIZING, MEET FDA, USDA AND EPA STANDARDS, MEET THE REQUIREMENTS OF UL 723, ASTM E-84 NFPA 90A & 90B AND ASTM C-916 TYPE II, AND COMPLY WITH ASTM C916 TYPE II
- E. DUCTWORK SUPPORT MATERIALS: EXCEPT AS OTHERWISE INDICATED, PROVIDE HOT-DIPPED GALVANIZED STEEL FASTENERS, ANCHORS, RODS, STRAPS, TRIM AND ANGLES FOR SUPPORT OF DUCTWORK.

 1. FOR EXPOSED STAINLESS-STEEL DUCTWORK, PROVIDE MATCHING STAINLESS-STEEL SUPPORT
 - MATERIALS.

 2. FOR ALUMINUM DUCTWORK, PROVIDE ALUMINUM SUPPORT MATERIALS EXCEPT WHERE MATERIALS ARE ELECTROLYTICALLY SEPARATED FROM DUCTWORK.
- F. FLEXIBLE DUCTS: FLEXIBLE AIR DUCTS SHALL BE LISTED UNDER UL-181 STANDARDS AS CLASS I AIR DUCT MATERIAL AND SHALL COMPLY WITH NFPA STANDARDS 90A AND 90B. MINIMUM OPERATING PRESSURE RATING SHALL BE 6-INCH W.C. THROUGH A TEMPERATURE RANGE OF -20-DEGREE TO 150-DEGREE F; MAXIMUM WORKING VELOCITY RATING SHALL BE 4,000 FPM. CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR SUPPLYING MATERIAL APPROVED BY THE AUTHORITY HAVING JURISDICTION.
- APPROVED MANUFACTURERS: FLEXMASTER, THERMAFLEX, OMINAIR, JP LAMBORN CO.
 ALL INSULATED FLEXIBLE DUCTS SHALL BE CONSTRUCTED ON AN ALL METAL, CPE, OR ALUMINUM LAMINATE INNER CORE, FIBERGLASS INSULATION WITH MINIMUM R-VALVE OF 4.0 OR GREATER AND AN OUTER JACKET MADE EXCLUSIVELY OF FIRE-RETARDANT REINFORCED MATERIAL. NON-INSULATED FLEXIBLE DUCTS SHALL BE CONSTRUCTED FROM DEAD SOFT ALUMINUM SHEET, SPIRAL CORRUGATED, OR ALLIMINUM CONSTRUCTION OVER A STEEL SPING HELD.
- OR ALUMINUM CONSTRUCTION OVER A STEEL SPRING HELIX.

 3. INSTALL IN ACCORDANCE WITH CHAPTER 3 OF SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE". DO NOT EXCEED 6-FEET FOR ANY FLEXIBLE DUCT RUN.

- G. SPIN-IN FITTINGS: PROVIDE SPIN-IN FITTINGS BETWEEN FLEXIBLE AND ROUND SHEET METAL DUCT TAKEOFFS AND AIR DEVICES FROM MAIN DUCTS. SPIN-IN FITTINGS SHALL INCLUDE BELL MOUTH AND BUTTERFLY TYPE MANUAL VOLUME DAMPER WITH REGULATOR AND LOCKING DEVICE.
 1. APPROVED MANUFACTURERS: FLEXMASTER, THERMAFLEX, OMINAIR, HERCULES INDUSTRIES
- H. RECTANGULAR-TO-ROUND TAPS: WHERE THE ROUND BRANCH TAKE-OFF WILL NOT PERMIT A SPIN-IN FITTING, PROVIDE A RECTANGULAR TO ROUND TAP. INCLUDE MANUAL VOLUME DAMPER WITH LOCKING DEVICES.

1.4 FABRICATION

- A. FABRICATE DUCTWORK OF GAUGES AND REINFORCEMENT COMPLYING WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" AND ASHRAE "SYSTEMS AND EQUIPMENT HANDBOOK", DUCT CONSTRUCTION.
- B. RECTANGULAR ELBOWS: FOR LOW PRESSURE SYSTEMS USE 1.0 RADIUS SMOOTH ELBOWS. (FROM FOCAL POINT TO CENTERLINE OF DUCT). FOR MEDIUM PRESSURE SYSTEMS USE 1.5 RADIUS SMOOTH ELBOWS. (FROM FOCAL POINT TO CENTERLINE OF DUCT). IF RADIUS ELBOWS CANNOT FIT, USE MITERED ELBOWS WITH
- C. LIMIT ANGULAR TAPERS TO 30-DEGREE FOR CONTRACTING TAPERS AND 20-DEGREE FOR EXPANDING
- 5 INSTALLATION OF METAL DUCTWORK
- A. ASSEMBLE AND INSTALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES (SMACNA, IMC, ASHRAE) THAT WILL ACHIEVE AIRTIGHT AND NOISELESS (NO OBJECTIONABLE NOISE) SYSTEMS. INSTALL EACH RUN WITH MINIMUM NUMBER OF JOINTS. ALIGN DUCTWORK ACCURATELY AT CONNECTIONS, WITHIN 1/8-INCH MISALIGNMENT TOLERANCE AND WITH INTERNAL SURFACES SMOOTH. SUPPORT DUCTS RIGIDLY WITH SUITABLE TIES, BRACES, HANGERS, AND ANCHORS OF TYPE THAT WILL HOLD DUCTS TRUE-TO-SHAPE AND PREVENT BUCKLING, POPPING OR COMPRESSING.
- B. LOCATE DUCTWORK RUNS VERTICALLY AND HORIZONTALLY AND AVOID DIAGONAL RUNS WHEREVER POSSIBLE. LOCATE RUNS AS INDICATED BY DRAWINGS, DETAILS AND NOTATIONS OR, IF NOT OTHERWISE INDICATED, RUN DUCTWORK IN SHORTEST ROUTE WHICH DOES NOT OBSTRUCT USEABLE SPACE OR BLOCK ACCESS FOR SERVICING BUILDING AND ITS EQUIPMENT. COORDINATE LAYOUT WITH SUSPENDED CEILING AND LIGHTING LAYOUTS AND SIMILAR FINISHED WORK. DO NOT ROUTE DUCTWORK THROUGH TRANSFORMER VAULTS AND ELECTRICAL EQUIPMENT SPACES AND ENCLOSURES.
- C. PENETRATIONS: WHERE DUCTS PASS THROUGH INTERIOR PARTITIONS AND EXTERIOR WALLS, AND ARE EXPOSED TO VIEW, CONCEAL SPACE BETWEEN CONSTRUCTION OPENING AND DUCT OR DUCT INSULATION WITH SHEET METAL FLANGES OF SAME GAUGE AS DUCT. OVERLAP OPENING ON ALL FOUR (4) SIDES BY AT LEAST 1-1/2-INCH. FASTEN TO DUCT ONLY.
- D. TEMPORARY CLOSURE: AT ENDS OF DUCTS THAT ARE NOT CONNECTED TO EQUIPMENT OR AIR DISTRIBUTION DEVICES AT TIME OF DUCTWORK INSTALLATION, PROVIDE TEMPORARY CLOSURE OF POLYETHYLENE FILM OR OTHER COVERING THAT WILL PREVENT ENTRANCE OF DUST AND DEBRIS UNTIL TIME CONNECTIONS ARE TO BE COMPLETED.
- 1.6 INSTALLATION OF DUCT LINER
- A. INSTALL DUCT LINER IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS. ADHERE INSULATION TO SHEET METAL WITH FULL COVERAGE OF ADHESIVE. MECHANICAL FASTENERS SHOULD BE OF LENGTH SUFFICIENT TO LIMIT COMPRESSION OF LINER. ALL EXPOSED EDGES OF THE LINER MUST BE FACTORY OR FIELD COATED. REPAIR LINER SURFACE PENETRATIONS WITH ADHESIVE.
- 1.7 ADJUSTING AND CLEANING
- A. CLEAN DUCTWORK INTERNALLY, UNIT BY UNIT AS IT IS INSTALLED, OF DUST AND DEBRIS. CLEAN EXTERNAL SURFACES OF FOREIGN SUBSTANCES. WHERE DUCTWORK IS TO BE PAINTED, CLEAN AND PREPARE SURFACE FOR PAINTING. SEAL ANY LEAKS IN DUCTWORK THAT BECOME APPARENT IN BALANCING PROCESS.

END OF SECTION 233113

SECTION 233300 - DUCTWORK ACCESSORIES

1.1 DAMPERS

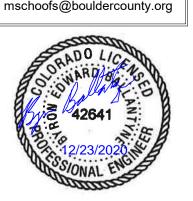
- A. APPROVED MANUFACTURERS: AMERICAN WARMING AND VENTILATING, AIR BALANCE, ARROW LOUVER & DAMPER, SAFEAIR DOWCO, CESCO-ADVANCED AIR, RUSKIN, VENT PRODUCTS, GREENHECK, POTTORFF, NCA INDUSTRIES, INC.
- B. LOW PRESSURE RECTANGULAR DAMPERS (LESS THAN 2,000 FPM AND UNDER 4-INCH W.C. S.P. DIFFERENTIAL):
 1. FOR 12-INCH IN HEIGHT OR LARGER, USE MULTIPLE OPPOSED BLADE TYPE AND CLOSE FITTED TO DUCTS. 16-GAUGE GALVANIZED STEEL FRAME AND BLADES WITH CARBON STEEL SHAFT MOUNTED WITH STAINLESS-STEEL BEARINGS, STAINLESS-STEEL JAMB SEALS AND BLADE EDGE SEALS. LINKAGE SHALL BE. MAXIMUM DAMPER PANEL WIDTH IS 48-INCH. PROVIDE JACK SHAFTING WHEN DUCT SIZE REQUIRED IS GREATER THAN 48-INCH WIDE. PROVIDE NOTCHED SHAFT END INDICATING DAMPER POSITION, LOCKING QUADRANT TO FIX DAMPER POSITION AND HANDLE. FOR FLAT OVAL AND ROUND DUCTWORK. PROVIDE TYPE C HOUSING.
- FOR DUCTS LESS THAN 12-INCH IN HEIGHT, USE 16-GAUGE FRAME AND 20-GAUGE BLADE GALVANIZED STEEL, STEEL AXLE WITH NYLON BEARINGS, LOCKING QUADRANT HANDLE AND NOTCHED SHAFT END INDICATING DAMPER POSITION.
- C. LOW PRESSURE ROUND DAMPERS (LESS THAN 1,500 FPM AND UNDER 1-INCH W.C. S.P. DIFFERENTIAL):
 1. FOR DAMPERS 4 THROUGH 18-INCH DIAMETER USE 18-GAUGE GALVANIZED STEEL FRAME AND THE FOLLOWING BLADE CONSTRUCTION:
 - 4 THRU 12-INCH DIAMETER 22-GAUGE GALVANIZED STEEL 13 THRU 18-INCH DIAMETER 20-GAUGE GALVANIZED STEEL
 - CARBON STEEL AXLE SHAFT WITH RETAINERS MOUNTED ON STAINLESS-STEEL BEARINGS WITH NOTCHED END SHAFT INDICATING DAMPER POSITION, LOCKING QUADRANT AND HANDLE.



BUILDING SERVICES DIVISION

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BOULDER COUNTY
1325 PEARL STREET
DURTHOUSE 3RD FLOOR REMODE

<u>PROJECT</u> 3RD FLOOR BOCC REMODEL

LOCATION 1325 PEARL STREET BOULDER, COLORADO 80302

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SHEET MOOS

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 FOR ISOLATION OR SHUTOFF SERVICE, DAMPERS SHALL BE PROVIDED WITH EPT EDGE SEALS WITH A LEAKAGE RATE NOT TO EXCEED 7 CFM/SQUARE FOOT AT 1-INCH W.C. S.P. DIFFERENTIAL (BASED ON 18-INCH DIAMETER).

SCHEDULE 1 - TURNING VANES

- A. APPROVED MANUFACTURERS: AERO DYNE CO., AIRSAN CORP., DURO DYNE CORP., SUBS. KOPPERS CO., INC., HART & COOLEY MFG. CO., HERCULES.
- PROVIDE 22-GAUGE, SINGLE BLADE OR 24-GAUGE DOUBLE BLADED, 4-1/2-INCH RADIUS, 3-1/4-INCH SPACING TURNING VANES AND TYPE 2, 4-1/2-INCH-WIDE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS". DO NOT USE TRAILING EDGE TURNING VANES.
- INSTALL TURNING VANES IN SQUARE OR RECTANGULAR 90-DEGREE ELBOWS IN SUPPLY, RETURN AND EXHAUST AIR SYSTEMS, AND ELSEWHERE AS INDICATED.

SCHEDULE 2 - DUCT HARDWARE

- A. APPROVED MANUFACTURERS: VENTFABRICS, INC., YOUNG REGULATOR CO.
- 3. QUADRANT LOCKS: PROVIDE FOR EACH MANUAL VOLUME DAMPER, QUADRANT LOCK DEVICE ON ONE END OF SHAFT; AND END BEARING PLATE ON OTHER END FOR DAMPER LENGTHS OVER 12-INCH. PROVIDE EXTENDED QUADRANT LOCKS AND END EXTENDED BEARING PLATES FOR EXTERNALLY INSULATED DUCTWORK.

SCHEDULE 3 - DUCT ACCESS DOORS

- A. APPROVED MANUFACTURERS: FLEXMASTER (INSPECTOR SERIES), CESCO-ADVANCED AIR, DURO DYNE CORP., VENTFABRICS, INC.
- CONSTRUCT OF SAME OR GREATER GAUGE AS DUCTWORK SERVED, PROVIDE INSULATED DOORS FOR INSULATED DUCTWORK. PROVIDE FLUSH FRAMES FOR UNINSULATED DUCTWORK, EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCT. ALL ACCESS DOORS SHALL HAVE GASKET AND WILL BE AIR TIGHT. PROVIDE ONE SIDE HINGED, OTHER SIDE WITH ONE HANDLE-TYPE LATCH FOR DOORS 12-INCH HIGH AND SMALLER, TWO HANDLE-TYPE LATCHES FOR LARGER DOORS. FOR SPIRAL DUCTWORK, USE UNITED MCGILL COMBINATION ACCESS SECTION TYPE ARF-SD FOR NON-INSULATED DUCT SYSTEMS AND TYPE ARF-ID DOUBLE WALL INSULATED DOOR FOR INSULATED DUCTED SYSTEMS (ALL SUPPLY DUCTWORK).
- C. PROVIDE DUCT ACCESS DOORS WHETHER SHOWN OR NOT FOR INSPECTION AND CLEANING BEFORE AND AFTER ALL FILTERS, COILS, FANS, AUTOMATIC DAMPERS, AT FIRE/SMOKE DAMPERS (MINIMUM 16 X 24-INCH IN DUCTS LARGER THAN 18-INCH), UPSTREAM OF DUCT SMOKE DETECTORS AND ELSEWHERE AS INDICATED. REVIEW LOCATIONS PRIOR TO FABRICATION.
- D. INSTALL ACCESS DOORS TO OPEN AGAINST SYSTEM AIR PRESSURE, WITH LATCHES OPERABLE FROM EITHER SIDE, EXCEPT OUTSIDE ONLY WHERE DUCT IS TOO SMALL FOR PERSON TO ENTER.

SCHEDULE 4 - FLEXIBLE CONNECTIONS

- A. APPROVED MANUFACTURERS: DURO DYNE CORP., VENTFABRICS, INC., GENERAL RUBBER CORP. (PROCESS
- B. PROVIDE FLEXIBLE DUCT CONNECTIONS WHEREVER DUCTWORK CONNECTS TO VIBRATION ISOLATED EQUIPMENT. CONSTRUCT FLEXIBLE CONNECTIONS OF NEOPRENE-COATED FLAMEPROOF FABRIC CRIMPED INTO DUCT FLANGES FOR ATTACHMENT TO DUCT AND EQUIPMENT. MAKE AIR-TIGHT JOINT. PROVIDE ADEQUATE JOINT FLEXIBILITY TO ALLOW FOR THERMAL, AXIAL, TRANSVERSE, AND TORSIONAL MOVEMENT, AND ALSO CAPABLE OF ABSORBING VIBRATIONS OF CONNECTED EQUIPMENT. SHELF LIFE SHALL BE VERIFIED TO NOT EXCEED SIX MONTHS. ANY SIGN OF CRACKING ON INTERIOR OR EXTERIOR SHALL BE CAUSE FOR REPLACEMENT IMMEDIATELY. PROVIDE MATCHING FLANGED BACKING FRAME WITH FLEXIBLE CONNECTOR WHERE FLANGED FAN CONNECTIONS ARE PROVIDED.
- USE THE FOLLOWING PRODUCT TYPES FOR EACH APPLICATION ACCORDINGLY:

 1. INDOOR EQUIPMENT NON-CORROSIVE AIR SYSTEMS: HEAVY GLASS FABRIC, DOUBLE-COATED WITH DUPONT'S NEOPRENE, NON-COMBUSTIBLE FABRIC, FIRE RETARDANT COATING WITH GOOD RESISTANCE TO ABRASION AND FLEXING. FABRIC SHALL BE 30 OUNCE PER SQUARE YARD, CAPABLE OF OPERATING AT –10-DEGREE F TO 200-DEGREE F, WATERPROOF, AIRTIGHT, 6-INCHES WIDE, COMPLIES WITH NFPA 90 AND UL STANDARD #214.

END OF SECTION 233300

- WHERE SMOKE DAMPERS ARE INSTALLED IN SMOKE RATED CONSTRUCTION, PROVIDE FIRESTOPPING
- BETWEEN FIRE AND SMOKE DAMPER SLEEVE AND SUBSTRATE.

 2. TEST EVERY SMOKE DAMPER FOR PROPER OPERATION, PROVIDE LETTER TO THE ARCHITECT/
 ENGINEER CERTIFYING THIS WORK IS COMPLETE AND ALL DAMPERS ARE FUNCTIONING PROPERLY.
- E. FURNISH EXTRA FUSIBLE LINKS TO OWNER, ONE LINK FOR EVERY 10 INSTALLED OF EACH TEMPERATURE RANGE; OBTAIN RECEIPT.
- . OPERATE INSTALLED DUCTWORK ACCESSORIES TO DEMONSTRATE COMPLIANCE WITH REQUIREMENTS. TEST FOR AIR LEAKAGE WHILE SYSTEM IS OPERATING. REPAIR OR REPLACE FAULTY ACCESSORIES, AS REQUIRED TO OBTAIN PROPER OPERATION AND LEAKPROOF PERFORMANCE.

SCHEDULE 4 - COMBINATION FIRE/SMOKE DAMPERS

- A. APPROVED MANUFACTURERS: AIR BALANCE, RUSKIN, GREENHECK, POTTORFF, NCA INDUSTRIES, INC.
- B. FIRE/SMOKE DAMPERS WITH AIRFOIL BLADES MEETING THE REQUIREMENTS OF UL STANDARD 555 6TH EDITION AND 555S 4TH EDITION WITH A UL 555 FIRE RESISTANCE RATING OF 1-1/2 HOURS. DAMPER SHALL MEET UL 555S WITH AN ELEVATED TEMPERATURE RATING OF 250-DEGREE F, UL 555S CLASS II LEAKAGE RATING, MINIMUM UL 555S DIFFERENTIAL PRESSURE RATING OF 4-INCH W.G, AND MINIMUM UL555S VELOCITY RATING OF 2000 FPM.
- C. CONSTRUCTION:

 1. FRAME: STRUCTURAL GALVANIZED STEEL HAT CHANNEL. TOP AND BOTTOM FRAME MEMBERS ON DAMPERS LESS THAN 7-INCH HIGH SHALL BE LOW PROFILE DESIGN TO MAXIMIZE THE FREE AREA OF THESE SMALLER DAMPERS. FOUR-PIECE CONSTRUCTION WITH 1-1/2-INCH MINIMUM INTEGRAL
 - OVERLAPPING GUSSET REINFORCEMENTS IN EACH CORNER TO ASSURE SQUARE CORNERS AND PROVIDE MAXIMUM RESISTANCE TO RACKING.

 2. BLADES: 16-GAUGE GALVANIZED STEEL WITH FULL-LENGTH STRUCTURAL REINFORCEMENT AND A DOUBLE SKIN AIRFOIL SHAPE. EACH BLADE SHALL BE SYMMETRICAL RELATIVE TO ITS AXLE PIVOT POINT, PRESENTING IDENTICAL PERFORMANCE CHARACTERISTICS WITH AIR FLOWING IN EITHER
 - TO COMPLETELY FILL THE DAMPER OPENING.

 BLADE STOPS: BLADE STOPS AT TOP AND BOTTOM OF DAMPER FRAME SHALL OCCUPY NO MORE THAN 1/2-INCH OF THE DAMPER OPENING AREA TO ALLOW FOR MAXIMUM FREE AREA AND TO MINIMIZE PRESSURE LOSS ACROSS THE DAMPER.

DIRECTION THROUGH THE DAMPER. PROVIDE SYMMETRICAL BLADES OF VARYING SIZE AS REQUIRED

- LINKAGE: CONCEALED IN JAMB.
 SEALS: EXTRUDED SILICONE RUBBER PERMANENTLY BONDED TO THE APPROPRIATE BLADE EDGES.
- 7. AXLES: MINIMUM 1/2-INCH DIAMETER PLATED STEEL.
 8. BEARINGS: STAINLESS-STEEL SLEEVE TYPE ROTATING IN POLISHED EXTRUDED HOLES IN THE DAMPER
- 8. BEARINGS: STAINLESS-STEEL SLEEVE TYPE ROTATING IN POLISHED EXTRUDED HOLES IN THE DAMPE FRAME.
 9. ACTUATOR:
- A. APPROVED MANUFACTURERS: BELIMO, OR EQUAL.
 B. NORMALLY CLOSED, 120V, 60 HZ ELECTRIC MOTOR MOUNTED OUTSIDE THE AIR STREAM THAT
 MEETS IBC 15-SECOND OPERATION REQUIREMENT AND IS TESTED FOR MINIMUM OF ONE YEAR
 OF HOLDING WITH NO EVIDENCE OF SPRING RETURN FAILURE. ACTUATORS SHALL RETURN TO
 FULLY OPEN (NORMAL) POSITION WHEN RESET.
- SLEEVE: FACTORY SUPPLIED AS A SINGLE ASSEMBLY WITH AN INTEGRAL FACTORY SLEEVE.
 RETAINING ANGLES: FACTORY SUPPLIED AND SIZED TO PROVIDE INSTALLATION OVERLAP IN ACCORDANCE WITH THE MANUFACTURER'S UL LISTING.

JAMB: FLEXIBLE STAINLESS-STEEL COMPRESSION TYPE.

- D. THE CONTRACTOR IS RESPONSIBLE FOR SELECTING AND INSTALLING THE APPROPRIATE DUCT TRANSITION. INSTALL COMBINATION FIRE/SMOKE DAMPERS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PROVIDE FIRE DAMPERS AND SMOKE DAMPERS AT LOCATIONS SHOWN, WHERE DUCTS AND OUTLETS PASS THROUGH FIRE RATED COMPONENTS, AND WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION.
- ALL FACTORY WIRING TO BE DONE IN ACCORDANCE WITH N.E.C. (NFPA 70).
 WHERE FIRE AND SMOKE DAMPERS ARE INSTALLED IN FIRE AND SMOKE RATED CONSTRUCTION, PROVIDE FIRESTOPPING BETWEEN FIRE AND FIRE SMOKE DAMPER SLEEVE AND SUBSTRATE.
- E. FURNISH EXTRA FUSIBLE LINKS TO OWNER, ONE LINK FOR EVERY 10 INSTALLED OF EACH TEMPERATURE RANGE; OBTAIN RECEIPT.
- OPERATE INSTALLED DUCTWORK ACCESSORIES TO DEMONSTRATE COMPLIANCE WITH REQUIREMENTS. TEST FOR AIR LEAKAGE WHILE SYSTEM IS OPERATING. REPAIR OR REPLACE FAULTY ACCESSORIES, AS REQUIRED TO OBTAIN PROPER OPERATION AND LEAKPROOF PERFORMANCE.

SCHEDULE 5 - TURNING VANES

- A. APPROVED MANUFACTURERS: AERO DYNE CO., AIRSAN CORP., DURO DYNE CORP., SUBS. KOPPERS CO., INC., HART & COOLEY MFG. CO., HERCULES.
- B. PROVIDE 22-GAUGE, SINGLE BLADE OR 24-GAUGE DOUBLE BLADED, 4-1/2-INCH RADIUS, 3-1/4-INCH SPACING TURNING VANES AND TYPE 2, 4-1/2-INCH-WIDE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS". DO NOT USE TRAILING EDGE TURNING VANES.
- C. INSTALL TURNING VANES IN SQUARE OR RECTANGULAR 90-DEGREE ELBOWS IN SUPPLY, RETURN AND EXHAUST AIR SYSTEMS. AND ELSEWHERE AS INDICATED.

SCHEDULE 6 - DUCT HARDWARE

- A. APPROVED MANUFACTURERS: VENTFABRICS, INC., YOUNG REGULATOR CO.
- B. QUADRANT LOCKS: PROVIDE FOR EACH MANUAL VOLUME DAMPER, QUADRANT LOCK DEVICE ON ONE END OF SHAFT; AND END BEARING PLATE ON OTHER END FOR DAMPER LENGTHS OVER 12-INCH. PROVIDE EXTENDED QUADRANT LOCKS AND END EXTENDED BEARING PLATES FOR EXTERNALLY INSULATED DUCTWORK.

SCHEDULE 7 - DUCT ACCESS DOORS

- A. APPROVED MANUFACTURERS: FLEXMASTER (INSPECTOR SERIES), CESCO-ADVANCED AIR, DURO DYNE CORP., VENTFABRICS, INC.
- B. CONSTRUCT OF SAME OR GREATER GAUGE AS DUCTWORK SERVED, PROVIDE INSULATED DOORS FOR INSULATED DUCTWORK. PROVIDE FLUSH FRAMES FOR UNINSULATED DUCTWORK, EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCT. ALL ACCESS DOORS SHALL HAVE GASKET AND WILL BE AIR TIGHT. PROVIDE ONE SIDE HINGED, OTHER SIDE WITH ONE HANDLE-TYPE LATCH FOR DOORS 12-INCH HIGH AND SMALLER, TWO HANDLE-TYPE LATCHES FOR LARGER DOORS. FOR SPIRAL DUCTWORK, USE UNITED MCGILL COMBINATION ACCESS SECTION TYPE ARF-SD FOR NON-INSULATED DUCT SYSTEMS AND TYPE ARF-ID DOUBLE WALL INSULATED DOOR FOR INSULATED DUCTED SYSTEMS (ALL SUPPLY DUCTWORK).
- C. PROVIDE DUCT ACCESS DOORS WHETHER SHOWN OR NOT FOR INSPECTION AND CLEANING BEFORE AND AFTER ALL FILTERS, COILS, FANS, AUTOMATIC DAMPERS, AT FIRE/SMOKE DAMPERS (MINIMUM 16 X 24-INCH IN DUCTS LARGER THAN 18-INCH), UPSTREAM OF DUCT SMOKE DETECTORS AND ELSEWHERE AS INDICATED. REVIEW LOCATIONS PRIOR TO FABRICATION.
- D. INSTALL ACCESS DOORS TO OPEN AGAINST SYSTEM AIR PRESSURE, WITH LATCHES OPERABLE FROM EITHER SIDE, EXCEPT OUTSIDE ONLY WHERE DUCT IS TOO SMALL FOR PERSON TO ENTER.

SCHEDULE 8 - FLEXIBLE CONNECTIONS

END OF SECTION 233300

- A. APPROVED MANUFACTURERS: DURO DYNE CORP., VENTFABRICS, INC., GENERAL RUBBER CORP. (PROCESS AND EXHAUST ONLY)
- B. PROVIDE FLEXIBLE DUCT CONNECTIONS WHEREVER DUCTWORK CONNECTS TO VIBRATION ISOLATED EQUIPMENT. CONSTRUCT FLEXIBLE CONNECTIONS OF NEOPRENE-COATED FLAMEPROOF FABRIC CRIMPED INTO DUCT FLANGES FOR ATTACHMENT TO DUCT AND EQUIPMENT. MAKE AIR-TIGHT JOINT. PROVIDE ADEQUATE JOINT FLEXIBILITY TO ALLOW FOR THERMAL, AXIAL, TRANSVERSE, AND TORSIONAL MOVEMENT, AND ALSO CAPABLE OF ABSORBING VIBRATIONS OF CONNECTED EQUIPMENT. SHELF LIFE SHALL BE VERIFIED TO NOT EXCEED SIX MONTHS. ANY SIGN OF CRACKING ON INTERIOR OR EXTERIOR SHALL BE CAUSE FOR REPLACEMENT IMMEDIATELY. PROVIDE MATCHING FLANGED BACKING FRAME WITH FLEXIBLE CONNECTOR WHERE FLANGED FAN CONNECTIONS ARE PROVIDED.
- USE THE FOLLOWING PRODUCT TYPES FOR EACH APPLICATION ACCORDINGLY:

 1. INDOOR EQUIPMENT NON-CORROSIVE AIR SYSTEMS: HEAVY GLASS FABRIC, DOUBLE-COATED WITH DUPONT'S NEOPRENE, NON-COMBUSTIBLE FABRIC, FIRE RETARDANT COATING WITH GOOD RESISTANCE TO ABRASION AND FLEXING. FABRIC SHALL BE 30 OUNCE PER SQUARE YARD, CAPABLE OF OPERATING AT -10-DEGREE F TO 200-DEGREE F, WATERPROOF, AIRTIGHT, 6-INCHES WIDE, COMPLIES WITH NFPA 90 AND UL STANDARD #214.

SECTION 233600 - AIR TERMINALS

SOUND ATTENUATOR, WHERE SCHEDULED.

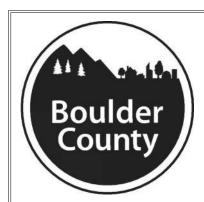
- 1.1 SUPPLY AIR TERMINALS
- A. APPROVED MANUFACTURERS: CARNES, TITUS, CARRIER, TRANE, METAL-AIRE, PRICE, NAILOR INDUSTRIES, ANEMOSTAT, JOHNSON CONTROLS, KRUEGER.
- B. AIR TERMINAL UNITS SHALL BE LOW PRESSURE DROP, SINGLE DUCT PRESSURE INDEPENDENT AND SUITABLE FOR USE IN MEDIUM PRESSURE VARIABLE VOLUME AIR DISTRIBUTION SYSTEMS.
- C. CASING SHALL BE 22-GAUGE GALVANIZED STEEL CONSTRUCTION WITH INTERNAL ACOUSTICAL COATED 1INCH THICK, 1-1/2 LB. DENSITY FIBERGLASS INSULATION, INLET AND OUTLET DUCT CONNECTION AND DISCHARGE
- D. INTERNAL DAMPER BLADE SHALL BE EXTRUDED ALUMINUM OR 18-GAUGE STEEL WITH KEYED FIT SHAFT AND NYLON BUSHING. DAMPER SHALL SEAL AGAINST GASKETED STOPS MAXIMUM 2 PERCENT LEAKAGE AT 3.0-INCH S.P. ALL MECHANICAL PARTS SHALL BE GALVANIZED OR NON-FERROUS.
- HOT WATER HEATING COILS SHALL BE DESIGNED FOR 200 PSIG MAXIMUM WORKING PRESSURE AND 200-DEGREE F MAXIMUM OPERATING TEMPERATURE. COIL SHALL BE SERPENTINE-TYPE, 2-ROW MINIMUM, CONSTRUCTED OF 1/2-INCH O.D. COPPER TUBES MECHANICALLY BONDED TO ALUMINUM FINS, GALVANIZED
- F. PROVIDE LABEL ON EACH AIR TERMINAL UNIT, INDICATING PLAN DESIGNATION, UNIT SIZE, CFM RANGE AND SETTINGS AND CALIBRATION CURVE.
- CONTROLS SHALL INCLUDE WALL MOUNTED THERMOSTAT, MODULATING DAMPER, DAMPER OPERATOR FURNISHED BY THE TEMPERATURE CONTROL CONTRACTOR, AND FACTORY INSTALLED BY THE EQUIPMENT MANUFACTURER, PRESSURE INDEPENDENT PNEUMATIC CROSS-SHAPED FLOW SENSOR WITH AMPLIFYING TOTAL PRESSURE PICKUP POINTS CONNECTED IN PARALLEL TO A CENTRAL AVERAGING CHAMBER (AN INLET VELOCITY SENSOR WITH PICKUP POINTS CONNECTED IN SERIES SHALL NOT BE ACCEPTED), FOR MEASURING INLET VOLUME.
- H. INSTALL AIR TERMINALS AS INDICATED, AND IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS
- INSTALL EACH UNIT LEVEL AND ACCURATELY IN POSITION INDICATED IN RELATION TO OTHER WORK; AND MAINTAIN SUFFICIENT CLEARANCE FOR NORMAL SERVICE AND MAINTENANCE, BUT IN NO CASE LESS THAN THAT RECOMMENDED BY MANUFACTURER.
- J. CONNECT DUCTWORK TO AIR TERMINALS IN ACCORDANCE WITH DIVISION 23 DUCTWORK SECTIONS.

END OF SECTION 233600

SECTION 233713 - AIR OUTLETS & INLETS

- .1 GENER
- A. INSTALL AIR OUTLETS AND INLETS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PRODUCTS SERVE INTENDED FUNCTIONS.
- B. COORDINATE WITH OTHER WORK, INCLUDING DUCTWORK AND DUCT ACCESSORIES, AS NECESSARY TO INTERFACE INSTALLATION OF AIR OUTLETS AND INLETS WITH OTHER WORK.
- C. LOCATE CEILING AIR DIFFUSERS, REGISTERS, AND GRILLES, AS INDICATED ON GENERAL CONSTRUCTION "REFLECTED CEILING PLANS". UNLESS OTHERWISE INDICATED, LOCATE UNITS IN CENTER OF ACOUSTICAL CEILING MODULES.
- D. FURNISH TO OWNER, WITH RECEIPT, THREE (3) OPERATING KEYS FOR EACH TYPE OF AIR OUTLET AND INLET THAT REQUIRE THEM.
- AIR DIFFUSERS
- A. APPROVED MANUFACTURERS: KRUEGER, TITUS, METAL-AIRE, PRICE.
- PERFORMANCE: PROVIDE AIR DIFFUSERS THAT HAVE, AS MINIMUM, TEMPERATURE AND VELOCITY TRAVERSES, THROW AND DROP, AND NOISE CRITERIA RATINGS FOR EACH SIZE DEVICE AS LISTED IN MANUFACTURER'S CURRENT DATA.
- DIFFUSERS THAT ARE NOT SUPPLIED FROM UPSTREAM DUCT THAT HAS A BALANCING DEVICE SHALL INCLUDE FACTORY FURNISHED BALANCING DAMPER.
- D. PROVIDE DIFFUSERS WITH BORDER STYLES THAT ARE COMPATIBLE WITH ADJACENT WALL OR CEILING SYSTEMS, AND THAT ARE SPECIFICALLY MANUFACTURED TO FIT INTO SURFACE WITH ACCURATE FIT AND ADEQUATE SUPPORT.
- 3 REGISTERS AND GRILLES
- A. APPROVED MANUFACTURERS: KRUEGER, TITUS, METAL-AIRE, PRICE.
- B. PROVIDE REGISTERS AND GRILLES THAT HAVE, AS MINIMUM, TEMPERATURE AND VELOCITY TRAVERSES, THROW AND DROP, AND NOISE CRITERIA RATINGS FOR EACH SIZE DEVICE AS LISTED IN MANUFACTURER'S CURRENT DATA.
- C. UNLESS OTHERWISE NOTED ON THE DRAWINGS; REGISTERS SHALL INCLUDE FACTORY FURNISHED BALANCING DAMPER, GRILLES DO NOT REQUIRE A FACTORY FURNISHED BALANCING DAMPER.
- D. PROVIDE REGISTERS AND GRILLES WITH BORDER STYLES THAT ARE COMPATIBLE WITH ADJACENT WALL OR CEILING SYSTEMS, AND THAT ARE SPECIFICALLY MANUFACTURED TO FIT INTO WALL CONSTRUCTION WITH ACCURATE FIT AND ADEQUATE SUPPORT.

END OF SECTION 233713



BUILDING SERVICES DIVISION

2020 13TH ST. BOULDER, CO 80302 P.O.BOX 471 BOULDER, CO

PHONE: 303. 441.3187



BOULDER COUNTY
1325 PEARL STREET
DURTHOUSE 3RD FLOOR REMODE

<u>PROJECT</u> 3RD FLOOR BOCC REMODEL

LOCATION

1325 PEARL STREET
BOULDER, COLORADO
80302

SHEET

FILE NAME
72620022-BoulderCountyCourthouse

3rdFloorRemodel-Mech-R20.rvt

MECHANICAL SPECIFICATION

ACC'T <u>100103</u> DATE: <u>12/23/2020</u> DRAWN BY:<u>SBN</u>

CHECKED BY:BEB

REVISIONS



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	FINNED-TUBE RADIATION SCHEDULE (HOT WATER)															
			INSTA	ALLED	BTUH/L.F.	GPM/L.F.		AVG.			ELEMENT		ENCLO	SURE	DAMPER	
PLAN CODE	MFR.	MODEL	MFR.	MODEL	ELEMENT	ELEMENT	NO. ROWS	WATER TEMP. (°F)	EAT	PIPE SIZE, MATERIAL	FIN SIZE, MATERIAL	FINS PER FOOT	HEIGHT (IN.)	DEPTH (IN.)	REQUIRED	NOTES
FT-1	MODINE	MODEL S			850	0.05	1	160	65	3/4" COPPER	4-1/4" x 4-1/4" ALUMINUM	42	12	5.25	NO	(1) (2) (3) (4) (5)
FT-2	MODINE	MODEL S			850	0.05	1	160	65	3/4" COPPER	4-1/4" x 4-1/4" ALUMINUM	42	12	5.25	NO	(1) (2) (3) (4) (5)
FT-3	MODINE	MODEL S			850	0.05	1	160	65	3/4" COPPER	4-1/4" x 4-1/4" ALUMINUM	42	12	5.25	NO	(1) (2) (3) (4) (6)

FINNED-TUBE RADIATION SCHEDULE PROJECT SPECIFIC NOTES

PROVIDE FULL BACK PLATE.

2. PROVIDE NEOPRENE CRADLE HANGERS.

4. REFER TO DRAWINGS FOR LENGTH OF ELEMENT.

5. PROVIDE FULL LENGTH COVER FOR FT-1 AND FT-2 (WALL TO WALL) AND INCLUDE ACCESS PANELS FOR VALVES AND AIR VENTS.

3. PROVIDE WITH CONTROL VALVE, AUTOMATIC AIR VENT, AND THERMOSTAT 6. PROVIDE COVER FOR ELEMENT LENGHT OF FT-3 AND INCLUDE ACCESS PANELS FOR VALVES AND VENTS.

			INST	ALLED		AIRFL	OW SETPO	DINTS			HEATING COIL DATA										
PLAN CODE	MFR.	MODEL	MFR.	MODEL	INLET SIZE	COOLING MAX (CFM)			PRESSURE DROP (IN. W.C.)	MAXIMUM DISCHARGE N.C.	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	COIL	GLYCOL %	GPM	ROWS	MAXIMUM WATER P.D. FT. W.C.	NOTES	
TB 3-1	PRICE	SDV			7	600	150	300	1.0	30	55	95	180	130	10.7	30	0.75	1	1.0	(1) (2) (3) (4) (5	
TB 3-2	PRICE	SDV			5	200	60	100	1.0	30	55	95	180	130	3.6	30	0.30	1	1.0	(1) (2) (3) (4) (
TB 3-3	PRICE	SDV			6	480	145	240	1.0	30	55	95	180	130	8.5	30	0.60	1	1.0	(1) (2) (3) (4) (
TB 3-4	PRICE	SDV			6	255	80	130	1.0	30	55	95	180	130	4.6	30	0.33	1	1.0	(1) (2) (3) (4) (
TB 3-5	PRICE	SDV			6	410	130	205	1.0	30	55	95	180	130	7.3	30	0.52	1	1.0	(1) (2) (3) (4) (
TB 3-6	PRICE	SDV			5	210	80	105	1.0	30	55	95	180	130	3.7	30	0.26	1	1.0	(1) (2) (3) (4) (
TB 3-7	PRICE	SDV			7	675	205	375	1.0	30	55	80	180	130	8.3	30	0.59	1	1.0	(1) (2) (3) (4) (
TB 3-8	PRICE	SDV			6	255	150	135	1.0	30	55	80	180	130	3.0	30	0.21	1	1.0	(1) (2) (3) (4) (
TB 3-9	PRICE	SDV			8	950	285	475	1.0	30	55	95	180	130	16.9	30	1.19	1	1.0	(1) (2) (3) (4) (
TB 3-10	PRICE	SDV			7	525	160	265	1.0	30	55	95	180	130	9.4	30	0.67	1	1.0	(1) (2) (3) (4)	
TB 3-11	PRICE	SDV			7	610	185	305	1.0	30	55	95	180	130	10.9	30	0.77	1	1.0	(1) (2) (3) (4)	
TB 3-12	PRICE	SDV			5	200	100	100	1.0	30	55	95	180	130	3.6	30	0.25	1	1.0	(1) (2) (3) (4) (
TB 3-13	PRICE	SDV			7	615	185	375	1.0	30	55	95	180	130	13.4	30	0.94	1	1.0	(1) (2) (3) (4) (
TB 3-14	PRICE	SDV			6	485	150	240	1.0	30	55	95	180	130	8.5	30	0.60	1	1.0	(1) (2) (3) (4) (
TB 3-15	PRICE	SDV			7	555	170	275	1.0	30	55	95	180	130	9.8	30	0.69	1	1.0	(1) (2) (3) (4) (
TB 3-16	PRICE	SDV			7	675	205	375	1.0	30	55	90	180	130	11.7	30	0.83	1	1.0	(1) (2) (3) (4) (
TB 3-17	PRICE	SDV			4	150	60	75	1.0	30	55	80	180	130	3.3	30	0.24	1	1.0	(1) (2) (3) (4) (
TB 3-18	PRICE	SDV			7	500	150	275	1.0	30	55	80	180	130	6.1	30	0.43	1	1.0	(1) (2) (3) (4) (
TB 3-19	PRICE	SDV			10	1450	435	725	1.0	30	55	95	180	130	25.8	30	1.82	1	1.0	(1) (2) (3) (4) (
TB 3-20	PRICE	SDV			6	485	150	240	1.0	30	55	95	180	130	8.5	30	0.60	1	1.0	(1) (2) (3) (4)	
TB 3-21	PRICE	SDV			7	625	190	310	1.0	30	55	95	180	130	11.0	30	0.78	1	1.0	(1) (2) (3) (4)	

TERMINAL BOX SCHEDULE GENERAL NOTES

- 1. PERFORMANCE DATA IS CALCULATED BASED ON THE MIN HEAT REQUIRED TO HEAT THE PRIMARY AIR AND SPACE. ACTUAL SUPPLY AIR TEMPERATURE, LEAVING AIR TEMPERATURE, AND GPM MUST NOT BE LESS THAN SHOWN.
- 2. THE HEATING COIL IS LOCATED AT THE DISCHARGE OF THE BOX. THE MIXED AIR TEMPERATURE IS A COMBINATION OF RETURN AIR AND PRIMARY AIR PRIOR TO ENTERING THE HEATING COIL.
- 3. PROVIDE EACH BOX WITH CONTROLS TO MATCH THE MAINTENANCE ACCESS LOCATION INDICATED ON THE DRAWING.
- 4. CONTRACTOR TO FIELD VERIFY LEFT OR RIGHT HAND COIL CONNECTION.
- 5. PROVIDE WITH 2-WAY CONTROL VALVE.

	GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE													
PLAN CODE	MFR.	TYPE	MODEL		ALLED	FRAME	MATERIAL	FINISH	DAMPER TYPE	LEGEND	NOTES			
				MFR.	MODEL				TTPE					
EG-1	CEILING PRICE PERFORATED EXHAUST		PDDR			REFER TO RCP	STEEL	OFF-WHITE	NONE	SEE PLANS FOR NECK SIZE	24"x24" FACE OR 24"x12". SEE PLANS FOR FACE SIZE			
RG-1	PRICE	CEILING PERFORATED FACE	PFRF			LAY-IN	STEEL	OFF-WHITE	NONE	SEE PLANS FOR NECK SIZE	24"x24" FACE OR 24"x12". SEE PLANS FOR FACE SIZE			
SD-1	PRICE	CEILING LOUVERED FACE	SCD			LAY-IN	STEEL	OFF-WHITE	NONE	6"	24"x24" FACE			
SD-2	PRICE	CEILING LOUVERED FACE	SCD			LAY-IN	STEEL	OFF-WHITE	NONE	8"	24"x24" FACE			
SD-3	PRICE	CEILING LOUVERED FACE	SCD			LAY-IN	STEEL	OFF-WHITE	NONE	10"	24"x24" FACE			
SD-4	PRICE	CEILING LOUVERED FACE	SCD			LAY-IN	STEEL	OFF-WHITE	NONE	12"	24"x24" FACE			
SD-5	PRICE	CEILING LOUVERED FACE	SCD			LAY-IN	STEEL	OFF-WHITE	NONE	8"	12"X12" FACE			
SG-1	PRICE	SIDEWALL GRILLE	510			SIDEWALL MOUNT	STEEL	OFF-WHITE	OBD	SEE PLANS FOR NECK SIZE				

							- //151	IING A	IR HANI	JEING (DMII 9	СПЕРО	7-7									
PLAN CODE				SUF	PPLY FAN D	DATA				CC	OOLING DA	TA						HE	EATING DA	TA		
	MFR.	MODEL	TYPE	CFM		E.S.P. IN.	ENTER	ING AIR	LEAVIN	LEAVING AIR		EWT	LWT	GPM	WPD	EAT	LAT	MBH	EWT	LWT	GPM	WP
				TOTAL @ ALT.		W.C. @ FALT.	°F DB	°F WB	°F DB	°F WB		°F DB	°F DB		FT	°F DB	°F DB		°F DB	°F DB		FT
AHU-1	YORK	YCM-140X108	DRAW-THRU	45,000	20%	2.0	80	60	53	53	525	45	55	110	15.5	55	85	545	180	160	55	6.5

ENGINEERING | TECHNOLOGY | LIFE SAFETY

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PROJECT 3RD FLOOR BOCC REMODEL

LOCATION 1325 PEARL STREET BOULDER, COLORADO 80302 SHEET MECHANICAL SCHEDULES

> FILE NAME 72620022-BoulderCountyCourthouse 3rdFloorRemodel-Mech-R20.rvt

REVISIONS

ACC'T <u>100103</u> DATE: 12/23/2020 DRAWN BY:<u>SBN</u> CHECKED BY:BEB

BCER PROJECT 72620022

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STREET LOOR REMODEL 1325 | COURTHOUSE \Box

BUILDING SERVICES

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BOULDER, CO 80302

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#NAME?

		SYSTEM LEVEL VALU	JES
LEED IEQc2 COMPLIANCE (30% INCREASED VENTILA	TION)	NO	
SYSTEM OCCUPANT POPULATION	Ps	85 PEOPLE	
SUM OF ZONE POPULATION	SUM Pz	126 PEOPLE	
SYSTEM PRIMARY AIRFLOW (∑VPz)	Vps	3,425 CFM	
UNCORRECTED SYSTEM OUTDOOR AIRFLOW	Vou	933 CFM	
SYSTEM OUTDOOR AIR FRACTION	Xs	0.272 FRACTION	
SYSTEM VENTILATION EFFICIENCY	Ev	0.412 FRACTION	
CORRECTED SYSTEM OUTDOOR AIRFLOW	Vot	2,262 CFM	
SYSTEM PERCENT OUTDOOR AIRFLOW	Ypd	0.207 FRACTION	

ZONE LEVEL VALUES

			ī		T		AREA BAS	ED OUTDO	OR AIRFLOW	PEO	PLE BASED O	UTDOOR AIRF	LOW		ZONE OUTDOOF	R AIRFLOW	T
ROOM NAME	VAV TAG	VAV BOX TYPE	CATEGORY	SUB-CATEGORY	MAX PRIMARY N	MIN PRIMARY AIR	ZONE AREA	AREA OU	TDOOR RATE	FROM PLANS (1)	FROM ASRHRAE (2)	PEOPLE OUT	DOOR RATE	BREATHING ZONE OUTDOOR AIRFLOW	ZONE DISTRIBUTION EFFECTIVENESS	ZONE OUTDOOR AIRFLOW	ZONE VENTILATION EFFICIENCY
					CFM	CFM	SF	CFM/SF	CFM	PEOPLE	PEOPLE	CFM/PERS	CFM	CFM	FRACTION	CFM	FRACTION
						Vpz	Az	Ra	Az*Ra	Pz	Pz	Rp	Pz*Rp	Vbz	Ez	Voz	Evz
306 CONFERENCE ROOM	TB 3-1	SINGLE DUCT	GENERAL	CONFERENCE/MEETING	600	150	257	0.06	15	10		5.0	50	65	0.8	82	0.727
304 TOILET	TB 3-2	SINGLE DUCT	GENERAL	CORRIDORS	200	60	225	0.06	14		0	0.0	0	14	0.8	17	0.991
307 COMMISSIONER	TB 3-3	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	480	145	345	0.06	21		2	5.0	10	31	0.8	38	1.008
302A FACE TO FACE	TB 3-4	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	255	80	221	0.06	13	3		5.0	15	28	0.8	35	0.831
308 COMMISSIONER	TB 3-5	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	410	130	334	0.06	20		2	5.0	10	30	0.8	38	0.984
309 OFFICE	TB 3-6	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	210	80	224	0.06	13		1	5.0	5	18	0.8	23	0.984
300 HEARING ROOM	TB 3-7	SINGLE DUCT	PUBLIC ASSEMBLY SPACES	COURTROOMS	675	205	479	0.06	29	18		5.0	90	119	0.8	148	0.549
302 OFFICE AREA	TB 3-8	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	255	150	1,080	0.06	65	4		5.0	20	85	0.8	106	0.566
300 HEARING ROOM	TB 3-9	SINGLE DUCT	PUBLIC ASSEMBLY SPACES	COURTROOMS	950	285	479	0.06	29	18		5.0	90	119	0.8	148	0.752
310 COMMISSIONER	TB 3-10	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	525	160	317	0.06	19		2	5.0	10	29	0.8	36	1.046
312 BREAKROOM	TB 3-11	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	610	185	435	0.06	26	4		5.0	20	46	0.8	58	0.961
303 TOILET	TB 3-12	SINGLE DUCT	GENERAL	CORRIDORS	200	100	228	0.06	14		0	0.0	0	14	0.8	17	1.101
314 CONFERENCE ROOM	TB 3-13	SINGLE DUCT	GENERAL	CONFERENCE/MEETING	615	185	961	0.06	58	12		5.0	60	118	0.8	147	0.477
316 OFFICE AREA	TB 3-14	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	485	150	198	0.06	12	2		5.0	10	22	0.8	27	1.090
316 OFFICE AREA	TB 3-15	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	555	170	338	0.06	20	4		5.0	20	40	0.8	50	0.976
300 HEARING ROOM	TB 3-16	SINGLE DUCT	PUBLIC ASSEMBLY SPACES	COURTROOMS	675	205	479	0.06	29	18		5.0	90	119	0.8	148	0.549
315 RECEPTION, 317 RECEPTION	TB 3-17	SINGLE DUCT	GENERAL	STORAGE ROOMS	150	60	344	0.12	41	1		0.0	0	41	0.8	52	0.412
318 AV OFFICE	TB 3-18	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	500	150	232	0.06	14		1	5.0	5	19	0.8	24	1.115
300 HEARING ROOM	TB 3-9	SINGLE DUCT	PUBLIC ASSEMBLY SPACES	COURTROOMS	1450	435	479	0.06	29	18		5.0	90	119	0.8	148	0.931
316 OFFICE AREA	TB 3-20	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	485	150	287	0.06	17	3		5.0	15	32	0.8	40	1.004
317 OFFICE AREA	TB 3-21	SINGLE DUCT	OFFICE BUILDINGS	OFFICE SPACE	625	190	240	0.06	14	3		5.0	15	29	0.8	37	1.079
TOTAL:		1			10,910	3,425	8,180		511	118	8	1	625	1,136		1,421	•

NOTES: 1. THIS C

1. THIS COLUMN REPRESENTS THE ACTUAL SPACE POPULATION THAT IS JUSTIFIED BY THE DOCUMENTED FLOOR PLAN CONFIGURATION. THIS IS USED WHEN THE ASHRAE STANDARD 62.1 DEFAULT OCCUPANCY DENSITY IS NOT APPROPRIATE FOR THE DESIGNED SPACE 2. THIS COLUMN IS THE DEFAULT ASHRAE OCCUPANCY DENSITY OBTAINED FROM TABLE 6-1 IN THE ASHRAE STANDARD 62.1

BOULDER COUNTY
1325 PEARL STREET
COURTHOUSE 3RD FLOOR REMODEL

BUILDING SERVICES DIVISION

2020 13TH ST. BOULDER, CO 80302

P.O.BOX 471 BOULDER, CO 80306

PHONE: 303. 441.3187 mschoofs@bouldercounty.org

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION

1325 PEARL STREET
BOULDER, COLORADO
80302

SHEET

MECHANICAL SCHEDULES

FILE NAME
72620022-BoulderCountyCourthouse
3rdFloorRemodel-Mech-R20.rvt

ACC'T <u>100103</u>
DATE: <u>12/23/2020</u>
DRAWN BY:<u>SBN</u>
CHECKED BY:<u>BEB</u>

REVISIONS

BCER PROJECT 72620022

SHEET **M008**

Code Section	Focus Area	Code Description	Plan Drawing or Reference if to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
C403.A.2.2	Automatic setback and shutskiwn	Automatic time clock or programmable controls shall be capable of starting and stopping the system for seven different daily schedules per week and retaining their programming and time setting during a loss of power for not fewer than 10 hours.	N/A	No equipment of this type on project.	
C403.A.2.3	Automatic start	Automatic start controls shall be provided for each HVAC system.	N/A	No equipment of this type on project	
C401.5.5	Economizer fault detection and diagnostics	Air-cooled unitary direct-expansion units listed in Tables C403.3.2(1) through C403.3.2(3) and variable refrigerant flow (VRF) units that are equipped with an economiser shall include a fault detection and diagnostics	N/A	No equipment of this type on project	
6403.7.1	Demand control ventilation	Demand control vertilation shall be provided for spaces larger than 500 square feet and with an average occupant load of 25 people or greater per 1,000 square feet of 8cor ania	M203		
C409-7-2	Enclosed parking garage ventilation controls	Enclosed parking garages shall employ contamination-seming devices and submetic controls configured to stage fans or modulate fan average airflow rates to SQ percent or less of design capacity, or intermittently operate fans less than 20 percent of the occupied time or as required to maintain acceptable contaminant levels	N/A	No speces of this type on project	
C403.7.8	Ventilation air heating control	Units that provide ventilation air to multiple zones and operate in conjunction with zone heating and cooling systems shall not use heating or heat recovery to warm supply air to a temperature greater than 60°F (16°C) when representative building loads or outdoor air temperatures indicate that the majority of zones require cooling.	N/A	No equipment of this type on project	
E403.7.A	Energy recovery ventilation systems	Where the supply airflow rate of a fan system exceeds the values specified in Table C493.7.4, the system shall include an energy recovery system.	N/A	No equipment of this type on project	
C405.7.5	Kitchen exhaust systems	Replacement air introduced directly into the exhaust hood cavity shall not be greater than 10 persons of the hood exhaust airflow rate	N/A	No equipment of this type on project	
C403.7.6	Automatic control of HVAC systems serving guestrooms	In Group R-1 buildings containing more than 50 guestrooms, each guestroom shall be provided with controls complying with the provisions of this Section	N/A	No spaces of this type on project	
C403.7.7	Shutoff dampers	Oundoor oir intake and exhaust openings and stainway and shaft vents shall be provided with Class I motorced dampers	N/A	No species of this type on project	
C403.8.1	Allowable fan horsepower	Each HVAC system having a total fan system motor nameplate borsepower exceeding 5 hp (3.7 kW) at fan system design conditions shall not exceed the allowable fan system motor nameplate hp (Option 1) or fan system bhp (Option 2) shown in Table C403.8.1(1)	N/A	No equipment of this type on project	
	1			Mark Bulling Park 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

Cade Section	Focus Area	Code Description	Plan Drawing or Reference if to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
C403.8.3	Fan efficiency	Fans shall have a fan efficiency grade (FEG) of not less than 67, as determined in accordance with AMCA 205 by an approved, independent testing laboratory and labeled by the manufacturer.	N/A	No equipment of this type on project.	1-2005-008-00-00-0
C403.8.4		Motors for fans that are not less than 1 /12 hp (0.062 kW) and less than 1 hp (0.746 kW) shall be electronically commutated motors or shall have a minimum motor efficiency of 70 percent.	N/A	No equipment of this type on project	
C403.10		Refrigerated werehouse coolers and refrigerated werehouse freezers shall coreply with this Section	N/A	No equipment of this type on project	
C403.11		Ducts, plenums, piping and other elements that are part of an HVAC system shall be constructed and insulated in accordance with Sections C403.11.1 through C403.31.3.1.	M002-M006		
C403.11.3		Piping serving as part of a heating or cooling system shall be thermally insulated in accordance with Table C403.11.3.	M002-M006		
C403.12		Mechanical systems providing heat outside of the thermal envelope of a building shall comply with Sections C408.12.1 through C403.12.3	M/A	No equipment of this type on project	
STEM COMM	ISSIDNING				
C408.1	Commissioning and Completion	Prior to the final mechanical and plumbing inspections, the registered design professional or approved agency shall provide evidence of mechanical systems commissioning and completion in accordance with the provisions of this section.			Building Condition: Commissioning

Commercial Mandatory Measures Checkist Page 4 of 4

Commercial

Prescriptive Measures Checklist

Applies to: New Buildings and Additions with a construction valuation of <\$500,000 and Level 1 & 2 Alterations

City of Boulder **Energy Conservation Code**

Project Address: 1325 Pearl Street, 11/18/2020 Bouder, CO 80302 DRECTIONS: Compliance with these measures is required if the project uses the Prescriptive Compliance Path. Please complete this checklist and include it on an "Energy Conservation Code" sheet within the plans being submitted for permit application. Projects complying prescriptively also must meet

Code Section	Focus Area		Code Description	Plan Drawing or Reference if to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
ATING VENT	ILATING, AND AIR C	ONDITIONING	EAV.	10	4	<u> </u>
C403.5	Economizer	Chilled water system Water-cooled Chilled-v		N/A	Main building air handling system is existing to remain.	
403.5.1	integrated economizer control		Economizer systems shall be integrated with the mechanical cooling system and be configured to provide partial cooling even where additional mechanical cooling is required to provide the remainder of the cooling load.	N/A	Main building air handling system is existing to remain.	
403.5.2	Economizer heating system impact		HVAC system design and economizer controls shall be such that economizer operation does not increase building heating energy use during normal operation.	N/A	Main building air handling system is existing to remain,	
		Design capacity	Air economizer systems shall be configured to modulate outdoor air and return air dampers to provide up to 100 percent of the design supply air quantity as outdoor air for cooling.	N/A	Main building air handling system is existing to romain.	
	12W C	Control signal	Economicer controls and dampers shall be configured to sequence the dampers with the mechanical sooking equipment and shall not be controlled by only mixed-air temperature	N/A	Main building air handling system is existing to remain.	
C403.5.3	Air economizers	High-limit shutoff	Air economizers shall be configured to automatically reduce outdoor air intake to the design minimum outdoor air quantity when outdoor air intake will not reduce cooling energy usage.	N/A	Main building air handling system is existing to remain.	
		Relief of excess outdoor air system	Systems shall be capable of releving excess outdoor air during air economizer operation to prevent over pressurizing the building. The relief air outlet shall be located to avoid recirculation into the building.	N/A	Main building air handling system is existing to remain.	
		Design capacity	Water economizer systems shall be configured to cool supply air by indirect evaporation and providing up to 100 percent of the expected system cooling load at outdoor air temperatures of not greater than 50°F (10°C) dry bulb/45°F (7°C) wat bulb.		Waterside economizers not part of existing building system.	
C403.5.4	Water-side economicers	Maximum pressure drop	Precooling coils and water-to-water heat exchangers used as part of a water economizer system shall either have a waterside pressure drop of less than 15 feet (45 kPa) of water or a secondary loop shall be created so that the coil or heat exchanger pressure drop is not seen by the circulating pumps when the system is in the normal cooling (noneconomizer) mode.	N/A	Waterside economizers not part of existing building system.	

Applies to: All New Buildings, Additions, Alterations and Repairs which require a permit from the City.



City of Boulder **Energy Conservation Code**

Project Address: 1325 Auarl Street, Boulder, CO 80302 DIRECTIONS: Compliance with these Mandatory Measures is required whether the project is demonstrating compliance through the Performance or Prescriptive Path. Please complete this checklist and include it on an "Energy Conservation Code" sheet within the plans being submitted for permit application.

Code Section	Focus Area	Code Description	Plan Drawing or Reference # to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
	1	New Construction < \$500,000	NA .	No new building construction	Mandatory and Prescriptive Compliance
		Name Construction >/= \$500,000	NA .	No new building construction	Mandatory and Performance Modeling
		Addition > 1,000d	NA.	0	Wandstory and Performance Modeling
	Check compliance gath	Addition < 1,000sF	NA.	ů l	Mandatory and Prescriptive Compliance
C401.2	applicable	Alteration Level I	NA .		Mandatory and Prescriptive Compliance
		Atteration Level 2	All drawing sheets		Mandatory and Prescriptive Compliance
		Alexandra straight	NA		Mandatory and Performance Modeling
		SERVICE CONTRACTOR OF THE SERVICE CONTRACTOR	NA		Mandatory and Performance Modeling
EATING, WINT	TLATING, AND AIR COND		Part .		
C403-2.1		HVAC systems serving somes that are over 25,000 square feet in floor area or that span more than one floor and are designed to operate or be occupied nonsimultaneously shall be divided into isolation areas.	N/A	Pla Jones aver 25,000xgft.	
0403.2.2	Ventilation	Ventilation, either natural or mechanical, shall be provided in accordance with Chapter 4 of the International Mechanical Codes.	M009		
C403.3	Heating and cooking equipment efficiencies	Heating and cooling equipment installed in mechanical systems shall be sized in accordance with Section C403.3.1	M008		
C409.1.1	Equipment string	The output capacity of heating and capaing equipment shall be not greater than that of the smallest available equipment size that exceeds the loads calculated in accordance with Section (403.1.1.	MOOS		
C403.3.2		Equipment shall meet the minimum efficiency requirements of Tables C803.3.2(1) through C403.3.2(9) when tested and rated in accordance with the applicable test procedure.	M/A	No equipment of this type provided	

Cade Section	Focus Area	Code Description	Plan Drawing or Reference if to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
C403.5.2.1	Water-cooled centrifugal chilling packages	Equipment not designed for operation at AHRI Scandard SSQ/S90 test conditions of ATF leaving chilled-water temperature and 2.4 gpm/ton exaporator fluid flow and SST entering condenser water temperature with 3 gpm/ton condenser water flow shall have maximum fulficad kW/ton and particular strings as identified in Section C403.3.2.1	M/A	No equipment of this type provided	
C403.3.2.2	Positive displacament (air- and scatercooled) chilling packages	Equipment with a leaving fluid temperature higher than 32°F and water-cooled positive displacement chilling packages with a condenser leaving fluid temperature below 135°F shall meet the requirements of Table C403.3-2(7)	M/A	No equipment of this type provided	
£403.4.1	Thermostatic controls	The supply of heating and cooling energy to each zone shall be controlled by individual thermostatic controls capable of responding to temperature within the zone.	M203/303		
C403.8.1.1	Heat pump supplementary heat	Heat pumps having supplementary electric resistance heat shall have controls that, except during defrost, prevent supplementary heat operation where the heat pump can provide the heating load.	N/A	No equipment of this type provided	
C403 A 1.2	Deadtend	Where used to control both heating and cooling, cone thermostatic controls shall be configured to provide a temperature range or deadband of not less than 5°F within which the supply of heating and cooling energy to the zone is shut off or reduced to a minimum.	MODIL		
C403.4.1.3	Setpoint overlap restriction	Where a zone has a separate heating and a separate cooling control located within the zone, a limit switch, mechanical stop or direct digital control system with software programming shall be configured to prevent the heating setpoint from exceeding the cooling setpoint and to maintain a deadband in accordance with Section C403.4.1.2.	M/A	No system of this type provided	
C403.A.1.4	Heated or cooled westibules	The feating system for heatest vestibules and six curtains with integral heating shall be provided with controls configured to shall off the source of heating when the outdoor air temperature is proster than 45°F.	N/A	No system of this type provided	
C403-4, 3-5	Hot water bailer outdoor temperature setback control	Not water boilers that supply heat to the building through one- or two-pips heating systems shall have an outdoor setback control that lowers the boiler water temperature based on the outdoor temperature	N/A	No equipment of this type provided	
C403.4.1.6	Mechanical system shutoff	Operable wall or roof openings, overhead doors, cargo doors, sliding doors, folding and accordion-style wall systems, and other loading dock-style doors that open to the outdoors shall be equipped with interlock controls that disable the heating, cooling and humidity control equipment that serves the area or core adjacent to the opening.	N/A	No equipment of this type on project	
C403.4.2	Off-hour controls	Each zone shall be provided with thermostatic setback controls that are controlled by either an automatic time clock or programmable control system.	M203/303		
C403.4.2.1	Thermostatic setback	Thermostatic settack controls shall be configured to set back or temporarily operate the system to meintain zone temperatures down to 55°F (13°C) or up to 85°F	N/A	No equipment of this type on project	

Commercial Mandatory Measures Checklist Page 2 of 4

STREET -OOR REMODEL TNOO

 \Box

BUILDING SERVICES DIVISION

2020 13TH ST. BOULDER, CO 80302

P.O.BOX 471 BOULDER, CO

PHONE: 303. 441.3187 mschoofs@bouldercounty.org

PROJECT 3RD FLOOR BOCC REMODEL

> **LOCATION** 1325 PEARL STREET BOULDER, COLORADO 80302 SHEET MECHANICAL ENERGY

> > FILE NAME 72620022-BoulderCountyCourthouse 3rdFloorRemodel-Mech-R20.rvt

COMPLIANCE

ACC'T <u>100103</u> DATE: <u>12/23/2020</u> DRAWN BY:<u>SBN</u> CHECKED BY:BEB

REVISIONS

ENGINEERING | TECHNOLOGY | LIFE SAFETY BCER PROJECT 72620022

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INCLUDING THE COPYRIGHT THERETO.



Mandatory Measures Checklist

Applies to: All New Buildings, Additions, Alterations and Repairs which require a permit from the City.

Date: 11/18/2020 Project Address: 1325 Pearl Street, Boulder, CO 80302 DIRECTIONS: Compliance with these Mandatory Measures is required whether the project is demonstrating compliance through the Performance or Prescriptive Path. Please complete this checklist and include it on an "Energy Conservation Code" sheet within the plans being submitted for permit application.

Code Section	Focus Area	Code Description	Plan Drawing or Reference # to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
		New Construction < \$500,000	NA	No new building construction	Mandatory and Prescriptive Compliance
		New Construction >/= \$500,000	NA	No new building construction	Mandatory and Performance Modeling
		Addition > 1,000sf	NA		Mandatory and Performance Modeling
C401.2	Check compliance path	Addition < 1,000sf	NA		Mandatory and Prescriptive Compliance
C401.2	applicable	Alteration Level 1	NA		Mandatory and Prescriptive Compliance
		Alteration Level 2	All drawing sheets		Mandatory and Prescriptive Compliance
			NA		Mandatory and Performance Modeling
		Alteration Level 4	NA		Mandatory and Performance Modeling
ATING, VENT	ILATING, AND AIR CONE	ITIONING			
C403.2.1	Zone isolation required	HVAC systems serving zones that are over 25,000 square feet in floor area or that span more than one floor and are designed to operate or be occupied nonsimultaneously shall be divided into isolation areas.	N/A	No zones over 25,000sqft.	
C403.2.2	Ventilation	Ventilation, either natural or mechanical, shall be provided in accordance with Chapter 4 of the International Mechanical Codes.	M009		
C403.3	Heating and cooling equipment efficiencies	Heating and cooling equipment installed in mechanical systems shall be sized in accordance with Section C403.3.1	M008		
C403.3.1	Equipment sizing	The output capacity of heating and cooling equipment shall be not greater than that of the smallest available equipment size that exceeds the loads calculated in accordance with Section C403.1.1.	M008		
C403.3.2	performance	Equipment shall meet the minimum efficiency requirements of Tables C403.3.2(1) through C403.3.2(9) when tested and rated in accordance with the applicable test procedure.	N/A	No equipment of this type provided	

<u> </u>			N. S. L.		
Code Section	Focus Area	Code Description	Plan Drawing or Reference # to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
C403.4.2.2	Automatic setback and shutdown	Automatic time clock or programmable controls shall be capable of starting and stopping the system for seven different daily schedules per week and retaining their programming and time setting during a loss of power for not fewer than 10 hours.	N/A	No equipment of this type on project	
C403.4.2.3	Automatic start	Automatic start controls shall be provided for each HVAC system.	N/A	No equipment of this type on project	
C403.5.5	Economizer fault detection and diagnostics	Air-cooled unitary direct-expansion units listed in Tables C403.3.2(1) through C403.3.2(3) and variable refrigerant flow (VRF) units that are equipped with an economizer shall include a fault detection and diagnostics	N/A	No equipment of this type on project	
C403.7.1	Demand control ventilation	Demand control ventilation shall be provided for spaces larger than 500 square feet and with an average occupant load of 25 people or greater per 1,000 square feet of floor area	M203		
C403.7.2	Enclosed parking garage ventilation controls	Enclosed parking garages shall employ contamination-sensing devices and automatic controls configured to stage fans or modulate fan average airflow rates to 50 percent or less of design capacity, or intermittently operate fans less than 20 percent of the occupied time or as required to maintain acceptable contaminant levels	N/A	No spaces of this type on project	
C403.7.3	Ventilation air heating control	Units that provide ventilation air to multiple zones and operate in conjunction with zone heating and cooling systems shall not use heating or heat recovery to warm supply air to a temperature greater than 60°F (16°C) when representative building loads or outdoor air temperatures indicate that the majority of zones require cooling.	N/A	No equipment of this type on project	
C403.7.4	Energy recovery ventilation systems	Where the supply airflow rate of a fan system exceeds the values specified in Table C403.7.4, the system shall include an energy recovery system.	N/A	No equipment of this type on project	
C403.7.5	Kitchen exhaust systems	Replacement air introduced directly into the exhaust hood cavity shall not be greater than 10 percent of the hood exhaust airflow rate	N/A	No equipment of this type on project	
C403.7.6	Automatic control of HVAC systems serving guestrooms	In Group R-1 buildings containing more than 50 guestrooms, each guestroom shall be provided with controls complying with the provisions of this Section	N/A	No spaces of this type on project	
C403.7.7	Shutoff dampers	Outdoor air intake and exhaust openings and stairway and shaft vents shall be provided with Class I motorized dampers	N/A	No spaces of this type on project	
C403.8.1	Allowable fan horsepower	Each HVAC system having a total fan system motor nameplate horsepower exceeding 5 hp (3.7 kW) at fan system design conditions shall not exceed the allowable fan system motor nameplate hp (Option 1) or fan system bhp (Option 2) shown in Table C403.8.1(1)	N/A	No equipment of this type on project	
C403.8.2	Motor nameplate horsepower	For each fan, the fan brake horsepower shall be indicated on the construction documents and the selected motor shall be not larger than the first available motor size greater than this Section allows.	N/A	No equipment of this type on project	

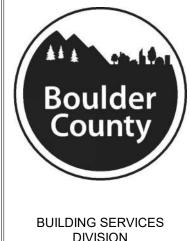
Commercial Mandatory Measures Checklist Page 3 of 4

Code Section	Focus Area	Code Description	Plan Drawing or Reference # to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
C403.3.2.1	Water-cooled centrifugal chilling packages	Equipment not designed for operation at AHRI Standard 550/590 test conditions of 44°F leaving chilled-water temperature and 2.4 gpm/ton evaporator fluid flow and 85°F entering condenser water temperature with 3 gpm/ton condenser water flow shall have maximum fullload kW/ton and part-load ratings as identified in Section C403.3.2.1	N/A	No equipment of this type provided	
C403.3.2.2		Equipment with a leaving fluid temperature higher than 32°F and water-cooled positive displacement chilling packages with a condenser leaving fluid temperature below 115°F shall meet the requirements of Table C403.3.2(7)	N/A	No equipment of this type provided	
C403.4.1	Thermostatic controls	The supply of heating and cooling energy to each zone shall be controlled by individual thermostatic controls capable of responding to temperature within the zone.	M203/303		
C403.4.1.1	Heat pump supplementary heat	Heat pumps having supplementary electric resistance heat shall have controls that, except during defrost, prevent supplementary heat operation where the heat pump can provide the heating load	N/A	No equipment of this type provided	
C403.4.1.2	Deadband	Where used to control both heating and cooling, zone thermostatic controls shall be configured to provide a temperature range or deadband of not less than 5°F within which the supply of heating and cooling energy to the zone is shut off or reduced to a minimum.	M001		
C403.4.1.3	Setpoint overlap restriction	Where a zone has a separate heating and a separate cooling control located within the zone, a limit switch, mechanical stop or direct digital control system with software programming shall be configured to prevent the heating setpoint from exceeding the cooling setpoint and to maintain a deadband in accordance with Section C403.4.1.2.	N/A	No system of this type provided	
C403.4.1.4	Heated or cooled vestibules	The heating system for heated vestibules and air curtains with integral heating shall be provided with controls configured to shut off the source of heating when the outdoor air temperature is greater than 45°F	N/A	No system of this type provided	
C403.4.1.5	Hot water boiler outdoor temperature setback control	Hot water boilers that supply heat to the building through one- or two-pipe heating systems shall have an outdoor setback control that lowers the boiler water temperature based on the outdoor temperature	N/A	No equipment of this type provided	
C403.4.1.6	Mechanical system shutoff	Operable wall or roof openings, overhead doors, cargo doors, sliding doors, folding and accordion-style wall systems, and other loading dock-style doors that open to the outdoors shall be equipped with interlock controls that disable the heating, cooling and humidity control equipment that serves the area or zone adjacent to the opening.	N/A	No equipment of this type on project	
C403.4.2	Off-hour controls	Each zone shall be provided with thermostatic setback controls that are controlled by either an automatic time clock or programmable control system.	M203/303		
C403.4.2.1	Thermostatic setback	Thermostatic setback controls shall be configured to set back or temporarily operate the system to maintain zone temperatures down to 55°F (13°C) or up to 85°F	N/A	No equipment of this type on project	

Commercial Mandatory Measures Checklist Page 2 of 4

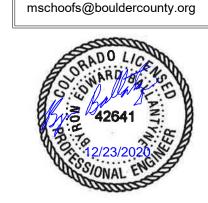
Code Section	Focus Area	Code Description	(N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
C403.8.3	Fan efficiency	Fans shall have a fan efficiency grade (FEG) of not less than 67, as determined in accordance with AMCA 205 by an approved, independent testing laboratory and labeled by the manufacturer.	Andrews.	No equipment of this type on project	
C403.8.4	Fractional np fan	Motors for fans that are not less than 1 /12 hp (0.062 kW) and less than 1 hp (0.746 kW) shall be electronically commutated motors or shall have a minimum motor efficiency of 70 percent	N/A	No equipment of this type on project	
C403.10		Refrigerated warehouse coolers and refrigerated warehouse freezers shall comply with this Section	N/A	No equipment of this type on project	
C403.11	construction of HVAC	Ducts, plenums, piping and other elements that are part of an HVAC system shall be constructed and insulated in accordance with Sections C403.11.1 through C403.11.3.1.	M002-M006		
C403.11.3	Piping insulation	Piping serving as part of a heating or cooling system shall be thermally insulated in accordance with Table C403.11.3.	M002-M006		
C403.12		Mechanical systems providing heat outside of the thermal envelope of a building shall comply with Sections C403.12.1 through C403.12.3	N/A	No equipment of this type on project	
STEM COMMI	SSIONING		0		
C408.1	Commissioning and Completion	Prior to the final mechanical and plumbing inspections, the registered design professional or approved agency shall provide evidence of mechanical systems commissioning and completion in accordance with the provisions of this section.			Building Condition: Commissioning

Commercial Mandatory Measures Checklist Page 4 of 4



DIVISION 2020 13TH ST. BOULDER, CO 80302

P.O.BOX 471 BOULDER, CO PHONE: 303. 441.3187



STREET -OOR REMODEL 1325 I COURTHOUSE BOUL

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION 1325 PEARL STREET BOULDER, COLORADO 80302 <u>SHEET</u> MECHANICAL ENERGY

COMPLIANCE FILE NAME

72620022-BoulderCountyCourthouse 3rdFloorRemodel-Mech-R20.rvt

ACC'T <u>100103</u> DATE: <u>12/23/2020</u> DRAWN BY:<u>SBN</u> CHECKED BY:<u>BEB</u>

REVISIONS



SHEET

DISCONNECT EXISTING DUCT AT THIS LOCATION.

EXISTING VAV BOX, ASSOCIATED DUCT, ASSOCIATED AIR DEVICES, AND ASSOCIATED CONTROLS TO BE REMOVED.

EXISTING AIR DEVICE TO BE REMOVED.

Boulder County

BUILDING SERVICES DIVISION

2020 13TH ST. BOULDER, CO 80302

P.O.BOX 471 BOULDER, CO

PHONE: 303. 441.3187 mschoofs@bouldercounty.org



STREET OOR REMODEL

1325 | COURTHOUSE

BOUL

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION 1325 PEARL STREET BOULDER, COLORADO 80302 <u>SHEET</u> BOCC THIRD FLOOR

MECHANICAL DEMOLITION PLAN FILE NAME 72620022-BoulderCountyCourthouse 3rdFloorRemodel-Mech-R20.rvt

ACC'T 100103 DATE: 12/23/2020 DRAWN BY:SBN CHECKED BY:BEB

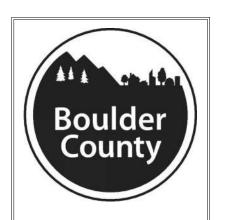
BCER

REVISIONS

SHEET MD203

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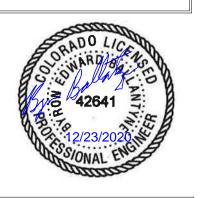
ENGINEERING | TECHNOLOGY | LIFE SAFETY BCER PROJECT 72620022



BUILDING SERVICES DIVISION

2020 13TH ST. BOULDER, CO 80302 P.O.BOX 471 BOULDER, CO

PHONE: 303. 441.3187 mschoofs@bouldercounty.org



1325 COURTHOUSE BOUL

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION 1325 PEARL STREET BOULDER, COLORADO 80302 <u>SHEET</u> BOCC THIRD FLOOR MECHANICAL PIPING

DEMOLITION PLAN FILE NAME

72620022-BoulderCountyCourthouse 3rdFloorRemodel-Mech-R20.rvt

ACC'T <u>100103</u>
DATE: <u>12/23/2020</u>
DRAWN BY:<u>SBN</u>
CHECKED BY:<u>BEB</u>

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WORK NOTES

BOCC THIRD FLOOR MECHANICAL PLAN

GENERAL NOTES

- CONTRACTOR SHALL PROVIDE PRECONSTRUCTION TAB READINGS AT ALL AIR DEVICES AS PART OF PROJECT. PROVIDE PRECONSTRUCTION TAB REPORT TO ARCHITECT/ENGINEER.
- PATCH, SEAL, AND INSULATE EXISITNG DUCT WHETRE DEMOLISHED DUCTS HAVE BEEN REMOVED.
- ALL AIR DEVICES SHALL BE PROVIDED WITH A MANUAL BALANCE DAMPER IN THE BRANCH DUCT UNLESS SCHEDULED TO BE PROVIDED WITH A MANUAL BALANCE
- FLEX DUCT SHALL BE LIMITED TO 5'-0" IN LENGTH OR LESS. NO FLEX DUCT ABOVE DRYWALL CEILINGS.

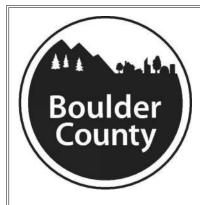
WORK NOTES

- NEW DUCT CONNECTED TO EXISTING DUCT.
- EXISTING EXHAUST DUCT UP TO EXHAUST FAN ON ROOF.
- REBALANCE EXISTING AIR DEVICE TO INDICATED AIRFLOW.
- 112 EXISTING PLENUM RETURN IN HEARING ROOM TO BE REUSED.
 - LOCATION OF PRE CONSTRUCTION TAB TO 2ND LEVEL.

PRE CONSTRUCTION TAB NOTES

CONTRACTOR SHALL PROVIDE PRE CONSTRUCTION TAB SERVICES TO MEASURE EXISTING AIRFLOWS AT 5TH LEVEL BRANCH SUPPLY DUCT UPSTREAM OF TERMINAL BOXES, 4TH LEVEL BRANCH SUPPLY DUCT UPSTREAM OF TERMINAL BOXES, AND MEDIUM PRESSURE SUPPLY DUCTS DOWN TO SECOND LEVEL. THESE FLOWS SHALL BE REPORTED TO ARCHITECT/ENGINEER PRIOR TO CONSTRUCTON WORK BEGINNING

- CONTRACTOR SHALL PROVIDE PRE CONSTRUCTION TAB SERVICES TO MEASURE THE SUPPLY AIRFLOW, RETURN AIRFLOW, AND OUTSIDE AIRFLOW OF THE EXISITNG AIR HANDLER AT FULL FLOW. THESE FLOWS SHALL BE REPORTED TO THE ARCHITECT/ENGINEER PRIOR TO CONSTRUCTION WORK BEGINNING.
- CONTRACTOR SHALL REBALANCE EXISITNG AIR HANDLER TO PROVIDE EXISITNG SUPPLY AIRFLOWS TO THE 5TH LEVEL, 4TH LEVEL AND 2ND LEVEL AFTER NEW WORK HAS BEEN BALANCED.

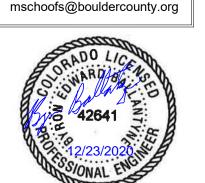


BUILDING SERVICES DIVISION

2020 13TH ST. BOULDER, CO 80302

P.O.BOX 471 BOULDER, CO

PHONE: 303. 441.3187



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1325 PEARL STREET COURTHOUSE 3RD FLOOR REMODEI

PROJECT 3RD FLOOR BOCC REMODEL

BOUL

LOCATION

1325 PEARL STREET
BOULDER, COLORADO
80302

SHEET

BOCC THIRD FLOOR

MECHANICAL PLAN

FILE NAME

72620022-BoulderCountyCourthouse

3rdFloorRemodel-Mech-R20.rvt

ACC'T 100103

DATE: 12/23/2020

DRAWN BY:SBN

CHECKED BY:BEB

REVISIONS

SHEET M203

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WORK NOTES CONNECT NEW HWS/R TO EXISTING. CONTRACTOR TO CONFIRM SIZE AND ROUTING OF EXISTING PIPING. RECONNECT NEW TERMINAL BOX TO EXISTING THERMOSTAT.

CONNECT NEW HWS/R TO EXISTING AT FLOOR LEVEL.

BUILDING SERVICES DIVISION

2020 13TH ST. BOULDER, CO 80302 P.O.BOX 471 BOULDER, CO 80306

PHONE: 303. 441.3187



STREET LOOR REMODEL

1325 I COURTHOUSE

NOO

BOUL

PROJECT 3RD FLOOR BOCC

REMODEL

LOCATION 1325 PEARL STREET BOULDER, COLORADO 80302 <u>SHEET</u> BOCC THIRD FLOOR

MECHANICAL PIPING PLAN FILE NAME 72620022-BoulderCountyCourthouse 3rdFloorRemodel-Mech-R20.rvt

ACC'T <u>100103</u>
DATE: <u>12/23/2020</u>
DRAWN BY:<u>SBN</u>
CHECKED BY:<u>BEB</u>

REVISIONS

SHEET M303

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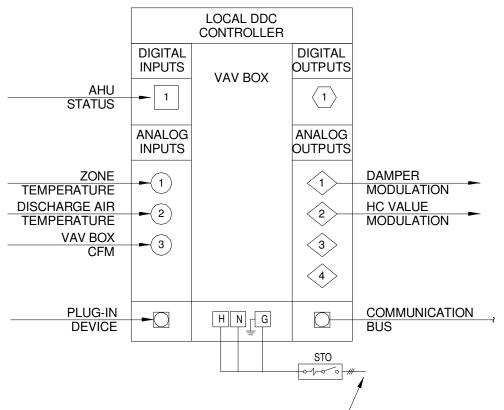
TERMINAL (VAV) BOX TB-1-1 CONTROL SCHEMATIC

THE EXISTING TERMINAL BOX SHALL BE REPLACED.

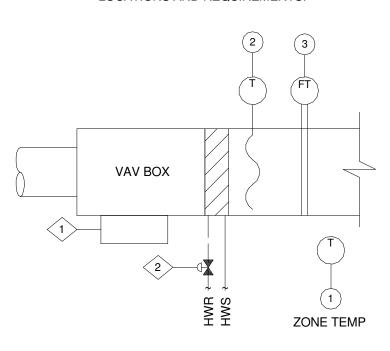
IN THE COOLING MODE, THE VAV BOX SHALL MODULATE FROM A MINIMUM CFM TO A MAXIMUM CFM TO MAINTAIN THE SPACE TEMPERATURE COOLING SETPOINT OF 73 °F (ADJ). THE REHEAT CONTROL VALVE SHALL BE CLOSED.

IN THE HEATING MODE, THE VAV BOX SHALL MODULATE TO THE MAX HEATING CFM. REFER TO THE MECHANICAL SCHEDULES FOR THE HEATING CFM.

MODULATE THE REHEAT VALVE TO MAINTAIN THE SPACE TEMPERATURE HEATING SETPOINT OF 70 °F (ADJ).



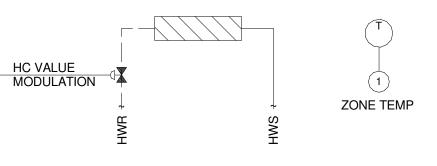
120 V POWER CONNECTION BY DIVISION 26. COORDINATE LOCATIONS AND REQUIREMENTS.



TERMINAL (VAV) BOX TB-1-1 CONTROL SCHEMATIC NOT TO SCALE

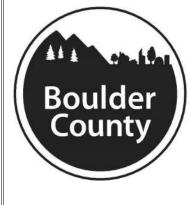
FINNED TUBE RADIATION SEQUENCE OF OPERATION

THE EXISTING FINNED TUBE BASEBOARD SHALL BE REPLACED. UPON A DROP IN SPACE TEMPERATURE SETPOINT 2-WAY VALVE SHALL MODULATE. MODULATE THE REHEAT VALVE TO MAINTAIN THE SPACE TEMPERATURE HEATING SETPOINT OF 70 °F (ADJ).





2 \ FINNED TUBE RADIATION CONTROL SCHEMATIC

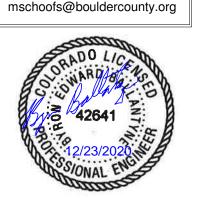


BUILDING SERVICES DIVISION

2020 13TH ST. BOULDER, CO 80302

P.O.BOX 471 BOULDER, CO

PHONE: 303. 441.3187



STREET FLOOR REMODEL EARL 3RD F 1325 I COURTHOUSE BOUL

LNNO

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION 1325 PEARL STREET BOULDER, COLORADO 80302 <u>SHEET</u>

> FILE NAME 72620022-BoulderCountyCourthouse 3rdFloorRemodel-Mech-R20.rvt

MECHANICAL CONTROLS

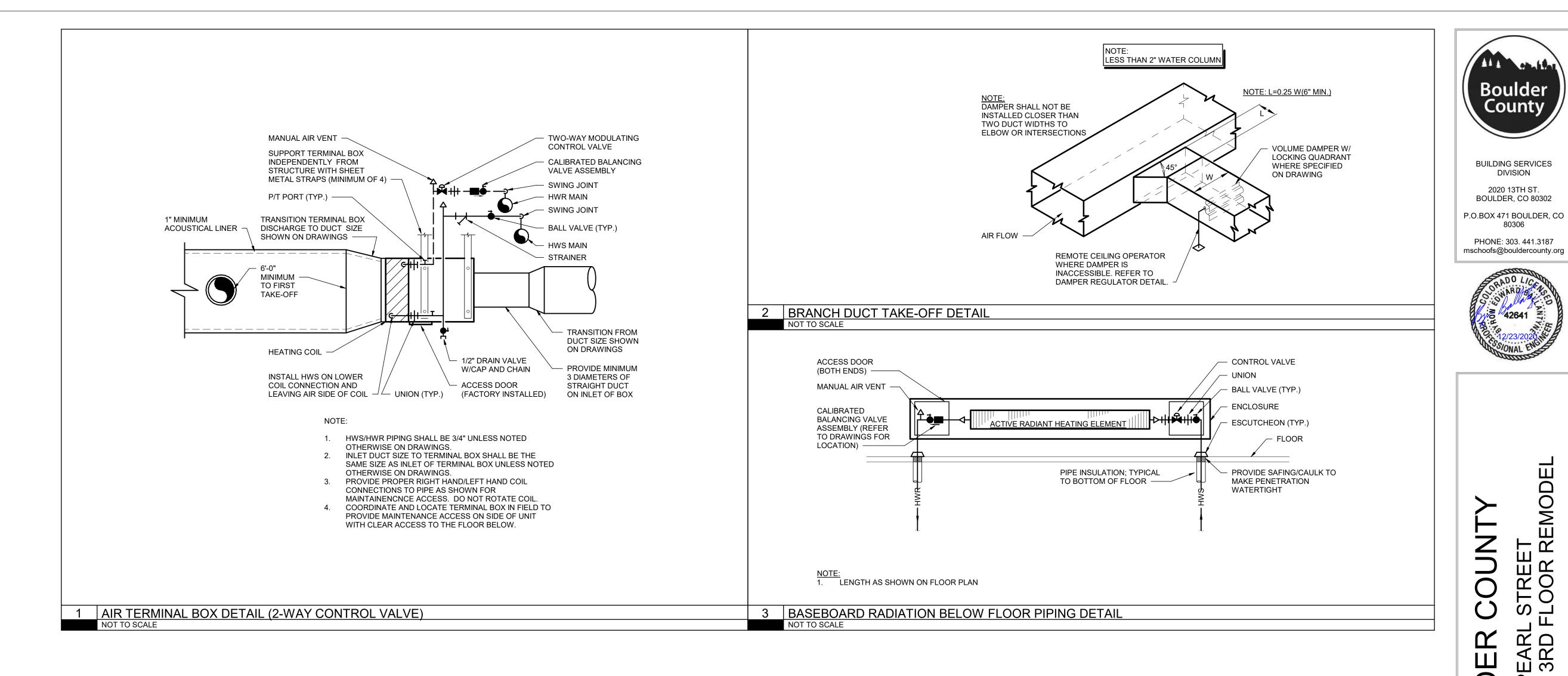
ACC'T 100103 DATE: 12/23/2020 DRAWN BY:SBN CHECKED BY:BEB

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DIVISION

2020 13TH ST.

3RD FLOOR BOCC REMODEL **LOCATION**

> BOULDER, COLORADO 80302 MECHANICAL DETAILS

1325 PEARL STREET

FILE NAME 72620022-BoulderCountyCourthouse 3rdFloorRemodel-Mech-R20.rvt

ACC'T <u>100103</u> DATE: 12/23/2020 DRAWN BY:SBN CHECKED BY:BEB

REVISIONS



SHEET

3RD FLOOR BOCC REMODEL

1325 PEARL STREET **BOULDER, COLORADO 80302**

Building Permit Submittal



VICINITY MAP

TYPICAL APPDEVIATIONS

TYPIC	AL ABBREVIATIONS		
A-	ASSEMBLY OCCUPANCY	MAN.	MANUFACTURER
AC	ACOUSTIC ONLY HERMAN MILLER	MAT.	MATERIAL
AC/GL	ACOUSTIC AND GLASS HERMAN MILLER	MAX.	MAXIMUM
ADA	AMERICAN DISABILITY ACT (COMPLIES WITH)	MECH.	MECHANICAL
A.F.F.	ABOVE FINISHED FLOOR	MET.	METAL
ARCH.	ARCHITECT	MIR.	MIRROR
В	BUSINESS OCCUPANCY	MIN.	MINIMUM
B.O.	BOTTOM OF	N.I.C.	NOT IN CONTRACT
BLDG.	BUILDING	O.C.	ON CENTER
BM	BEAM	OCC.	OCCUPANCY
CA	CARD ACCESS	O. DIA.	OUTSIDE DIAMETER
C.L.	CENTER LINE	OPP.	OPPOSITE
CLG.	CEILING	OTS.	OPEN TO STRUCTURE
CONC.	CONCRETE	P-E	PUBLIC ESTABLISHED ZONING
CONTR.	CONTINUOUS	PL.	PLATE
CONST.	CONSTRUCTION	PH.	PHASE
COORD.	COORDINATE	PRMT.	PERMIT
CPT.	CARPET	PROP.	PROPERTY
CT	CERAMIC TILE	P.T.D.	PAPER TOWEL DISPENSER
D.E.B.	DRY ERASE BOARD	PTD.	PAINTED
D.F.	DRINKING FOUNTAIN	R.	RISER
DIA.	DIAMETER	R.C.P.	REFLECTED CEILING PLAN
EA.	EACH	RE.	REFERENCE
EQUIPT.	EQUIPMENT	RB	RUBBER BASE
ES	ELECTRONIC STRIKE	S.A.C.	SUSPENDED ACOUSTICAL CEILING
ETC.	ET CETERA	SB	SOUND BOARD
EX	EXISTING	S.C.	SOLID CORE
EXP.	EXPOSED	SIM.	SIMILAR
EXT.	EXTERIOR	SPEC.	SPECIFICATION
F.E.	FIRE EXTINGUISHER	SS	STAINLESS STEEL
F.D.	FLOOR DRAIN	STL.	STEEL
FR	FIRE RATED	STO.	STORAGE
G.C.	GENERAL CONTRACTOR	STRUCT.	STRUCTURAL
GA.	GAGE	THICK.	THICKNESS
GALV.	GALVANIZED	T.	TREAD
G.W.B.	GYPSUM WALL BOARD	T.O.	TOP OF
HDWR.	HARDWARE	T.P.	TOILET PAPER DISPENSER
HGHT.	HEIGHT	TYP.	TYPICAL
I.B.C.	INTERNATIONAL BUILDING CODE	U.N.O.	UNLESS NOTED OTHERWISE
INS.	INSULATION	V.B.	VAPOR BARRIER
INT.	INTERIOR	V.I.F.	VERIFY IN FIELD
I.T.	INFORMATION TECHNOLOGY	W/	WITH
J	JOINT	WC	WATER CLOSET
KIT.	KITCHEN	WD.	WOOD
LNM	LINOLEUM	WP	WORK POINT

PROJECT DATA

1325 Pearl Street, Boulder, CO 80302

PROJECT DESCRIPTION: Third Floor of County Courthouse Remodel: Renovation of office spaces and hearing room. Demolition of non-load bearing walls. Upgrading one small toilet room to meet ADA requirements. New ADA dais to be constructed for new layout of hearing room. Insulation and furr out of exterior walls. Upgrading lighting and controls, AV Equipment, and addition of floor boxes. New floor finishes.

VERTICAL DATUM: 100'-0" = First Floor Finish

No additional square footage is added with this remodel.

PARCEL INFORMATION:

Property Address 1325 Pearl Street Boulder

County of Boulder, Jeff Maxwell, Public Works Director

146330324001 Parcel Number Mailing Address PO Box 471

Boulder CO 80306-0471 City, State, Zip Sec-Town-Range 30-1N-70

Subdivision Boulder O T East & West & North - BO

Jurisdiction Boulder

Public Square Blk Between Blk 94 & 95 Boulder O T Legal Description

Square Feet 2.05 RENOVATION SQUARE FOOTAGE: **BUILDING TOTAL:** 32,368 SF

6.450 SF PROJECT DIRECTORY OWNER: BOULDER COUNTY BCER ENGINEERING P.O. BOX 471 5420 WARD ROAD, SUITE 200 BOULDER, CO 80306 ARVADA, CO 80002-1838 MECH. ENGINEER: SHANE NEWMAN **BOULDER COUNTY PUBLIC WORKS** PROJECT MANAGER: JEFF ADAMS **BUILDING SERVICES DIVISION** snewman@bcer.com 2525 13TH ST, 2ND FLOOR 303-405-2862 BOULDER, CO 80302 iadams@bcer.com MACKENZIE SCHOOFS, 303-441-3187 303-422-7400 **ELECTRICAL ENGINEER:** mschoofs@bouldercounty.org **GENERAL CONTRACTOR BCER ENGINEERING BOULDER COUNTY PUBLIC WORKS** 5420 WARD ROAD, SUITE 200 **BUILDING SERVICES DIVISION** ARVADA, CO 80002-1838 2525 13TH ST, 2ND FLOOR ELECTRICAL DESIGNER: GREG MONDRAGON BOULDER, CO 80302 PROJECT MANAGER: JEFF ADAMS JOE MAY, 303-441-1263 gmondragon@bcer.com imay@bouldercounty.org 303-405-2878 GC License #LIC0099057 iadams@bcer.com **ELECTRICAL CONTRACTOR:** 303-422-7400 PLUMBING ENGINEER BOULDER COUNTY PUBLIC WORKS **BUILDING SERVICES DIVISION** BCER ENGINEERING 2525 13TH ST, 2ND FLOOR 5420 WARD ROAD, SUITE 200 BOULDER, CO 80302 ARVADA, CO 80002-1838 MARTIN MARINO, 303-434-4834 PLUMBING ENGINEER: JUSTIN PATTERSON PROJECT MANAGER: JEFF ADAMS mmarino@bouldercounty.org INFORMATION TECHNOLOGY: ipatterson@bcer.com

303-405-2856

303-422-7400

jadams@bcer.com

CODE INFORMATION

SHAWN BLEAM, 303-441-4537

sbleam@bouldercounty.org

BOULDER COUNTY IT

CONSTRUCTION SHALL COMPLY WITH THE 2018 IBC.

OCCUPANCY TYPE: B -BUSINESS (OFFICE AREAS)

A - ASSEMBLY (CONFERENCE AND HEARING ROOMS)

TYPE OF (NEW) CONSTRUCTION: 2B

ZONE: P(Public)

THIS PROJECT WILL BE CONSTRUCTED TO MEET THE ADA CODE REQUIREMENTS.

BUILDING USAGE OR SQUARE FOOTAGE IS NOT CHANGING.

SHOULD WE PENETRATE ANY RATED WALL ASSEMBLIES THE PENETRATION WILL BE IN COMPLIANCE WITH IBC 2015 CHAPTER 7 REQUIREMENTS FOR WALL PENETRATIONS.

THIS PROJECT WILL REMAIN FULLY SPRINKLERED, MEETING IBC AND CITY OF BOULDER REQUIREMENTS. ANYTHING ENTERING/EXITING RATED ASSEMBLIES WILL BE IN COMPLIANCE.

STAIR CALCULATION

MAXIMUM NUMBER OF OCCUPANTS THROUGH A STAIRWAY = 101 X .3 INCHES PER OCCUPANT = 30.3 INCHES MIN < 37 INCH WIDTH OF EXISTING STAIR #1. (PER 1005.3.1 STAIRWAY)

EXIT DOOR CALCULATION

MAXIMUM NUMBER OF OCCUPANTS THROUGH AN EXIT DOOR / OTHER MEANS OF EGRESS = 101 X .2 INCHES PER OCCUPANT = 20.2 INCHES MIN WIDTH < CLEAR DOOR WIDTH OF STANDARD PROJECT DOOR CLEAR WIDTH OF 36 INCHES. (PER 1005.3.1 OTHER EGRESS COMPONENTS) PLEASE NOTE

W EXIT: 101 X .2 = 20.2" < 36" SOUTH & WEST DOORS HAVE LARGEST N EXIT: 23 X .2 = 4.6" < 60" OCC LOAD FROM 3RD FLOOR (101 OCC.) E EXIT: 20 X .2 = 4" < 36" NORTH & EAST DOORS ARE SIZED FROM S EXIT: 96 X .2 = 19.2" < 60" 1ST FLOOR LOAD.

PROJECT ESTIMATE AREA OF REMODEL

FIRST FLOOR SECOND FLOOR 0 Sf THIRD FLOOR 6,450 SF FOURTH FLOOR 0 Sf FIFTH FLOOR

GENERAL NOTES:

- The contract documents include these drawings. Any discrepancies found among the drawings, these general notes. and the site conditions shall be reported to the Architect who shall address such inconsistencies in writing. Any work done by the contractor after discovery of such error shall be done at the contractor's risk. The contractor shall verify and familiarize themselves with all drawings prior to proceeding with any work or
- Mechanical, electrical, and plumbing to conform to work requirements indicated herein and suitable for the
- If there is a conflict between a large scale drawings and smaller scale drawing of the same area, the larger scale drawing is to be considered more precise.
- Architectural plans show the desired layout of furniture and ceiling grid. Notify architect immediately in writing if there is a discrepancy between Architectural, Mechanical, and Electrical.

PLUMBING FIXTURE COUNT (ENTIRE BUILDING)

FIXTURE COUNT BELOW VERIFIES EXISTING COMPLIANCE

APPLICABLE CODE REFERENCES

BUSINESS: (County Government offices)

TABLE 2902.1=

1 WC PER 25 FOR THE FIRST 50 AND 1 PER 50 FOR REMAINDER EXCEEDING 50.

1 LAV PER 40 FOR FIRST 80 AND 1 PER 80 REMAINING AFTER 80

1 DRINKING FOUNTAIN PER 100 (Required for occupant loads>15)

1 MOP SINK (required for occupant loads>15)

AUDITORIUMS WITHOUT PERMANENT SEATING: 1 PER 125 FOR MEN, 1 PER 65 WOMEN. LAVS= 1 PER 200

419.2 IPC = SUBSTITUTION FOR WATER CLOSETS. IN EACH BATHROOM OR TOILET ROOM, URINALS SHALL NOT BE SUBSTITUTED FOR MORE THAN 67 PERCENT OF THE REQUIRED WATER CLOSETS IN ASSEMBLY AND EDUCATIONAL OCCUPANCIES. URINALS SHALL NOT BE SUBSTITUTED FOR MORE THAN 50 PERCENT OF THE REQUIRED WATER CLOSETS IN ALL OTHER OCCUPANCIES

FIRST FLOOR 1ST FLOOR (2 public toilets and 1 unisex staff toilet)

8750/100 = 88 OCCUPANTS

8750 SF

8750 SF

2ND FLOOR (No Public toilets)

8750/100 = 88 OCCUPANTS

FIXTURE COUNT 1st + 2nd 88+88 = 176 OCCUPANTS

176/2 = 88 MALE / 88 FEMALE

REQUIRED WOMEN'S TOILETS = 88 FEMALE = 2

REQUIRED MEN'S TOILETS = 88 MALE = 2

EXISTING WOMEN'S TOILETS = 3 IN PUBLIC TOILET EXISTING MEN'S TOILETS = 2 = 1 + 2 URINALS (WE ARE EXCEEDING REQUIRES WC'S, >50% URINALS IS OK)

EXISTING STAFF ONLY UNISEX = 1 UNISEX IN OFFICES

EXISTING MOP SINK = 1 MOP SINK

THIRD FLOOR

NOTE: SEE A101 FOR FIXTURE LOCATION 2ND FLOOR (no toilets) 8750/100 = 88

<u> 3RD FLOOR (public toilets)</u>

6450/100 = 65 OCCUPANTS

*ASSEMBLY SPACES ON 3RD FLOOR = 1798 + 419 = 2217 SF (1 PER 125 FOR MEN, 1 PER 65 FOR WOMEN. LAVS

2217/15 = 148 = 74 MEN/74 WOMEN = 1 TOILET MEN'S & 1 TOILET WOMEN'S

FOURTH FLOOR (no toilets)

1441/100 = 15 OCCUPANTS

FIXTURE COUNT FOR THIRD FLOOR = 2ND + 3RD + 4TH (1 toilet each for assembly) + 88 + 65 + 15 = 168

168/2 = 84 MALE / 84 FEMALE

REQUIRED WOMEN'S TOILETS = 84 FEMALE = 1 FOR ASSEMBLY + 1 FOR FIRST 25 + 2 FOR NEXT 59 = 4 TOTAL REQUIRED MEN'S TOILETS = 84 MALE = 1 FOR ASSEMBLY + 1 FOR FIRST 25 + 2 FOR NEXT 59 = 4 TOTAL

EXISTING WOMEN'S TOILETS = 4 IN PUBLIC TOILET

EXISTING MEN'S TOILETS = 4 = 2 + 2 URINALS (50% URINALS IS OK)

EXISTING STAFF ONLY UNISEX TOILET = 1 UNISEX IN OFFICES

FIFTH FI OOR

FIFTH FLOOR 4620 Sf

4620/100 = 46.2 = 47 OCCUPANTS

_	FIXTURE COUNT 5TH (No public interface) 47/2 = 24 MALE/24 FEMALE
	24 MALE = 1 TOILET REQUIRED = 1 FOR FIRST 25

24 FEMALE = 1 TOILET REQUIRED = 1 FOR FIRS

TOILETS PROVIDED = 2 UNISEX

	T 25 RST 25 FLOOR:	EXISTING FIXTURES COUNT:	WATER CLOSET	URINALS	DISHWASHER	DRINKING FOUNTAINS	SINKS	MOP SINK	FLOOR DRAINS	FLOOR:	FIXTURES BEING REMOVED:	WATER CLOSET	URINALS	DISHWASHER	DRINKING FOUNTAINS	SINKS	OP SII	FLOOR DRAINS	FLOOR:	FIXTURES BEING ADDED:	WATER CLOSET	URINALS	DISHWASHER	DRINKING FOUNTAINS			FLOOR DRAINS
1	BASEMEN								3	BASEMEN	IT		_			•			BASEMEN	 T				\exists		=+	7
	FIRST		6	2		1	8		2	FIRST									FIRST	•						\top	_
	SECOND		Ť			1	1	1	_	SECOND									SECOND							\top	
	THIRD		6	2		1	7	1	2	THIRD						3			THIRD						3		
	FOURTH						1			FOURTH									FOURTH								
	FIFTH		2		1	1	3			FIFTH									FIFTH								
	TOTALS		13	4	1	4	18	2	7	TOTALS									TOTALS								
	NOTE: SEE	E A1	101	FO	R F	-IX	TUI	RE	LO	CATIONS (ON T	HII	RD	FL(001	?											

NOTES TO BOULDER COUNTY ELECTRICAL

CONFERENCE ROOMS ADD FLOORBOX IN CENTER OF ROOM (UNDER TABLE). ADD POWER TO CODE AND DATA JACKS ON OPPOSITE

ADD WAP PER BOULDER COUNTY I.T. TV WITH POWER & DATA ON SHORT WALL AWAY FROM

DOOR, OR AS NOTED ON FLOOR PLAN.

OPEN OFFICE

WALLS, TYP.

SHEET INDEX

A002

AD102

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A102

A201

A402

A502

M003

M005

M007

M008

M009

M010

MD203

MD303

E002

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E203

E303

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E503

P001

P004

P202

P203

TITLE SHEET

CODE AND EGRESS SHEET

INTERIOR ELEVATIONS

DOOR & FINISH SCHEDULES

MECHANICAL SPECIFICATIONS

MECHANICAL SPECIFICATION

MECHANICAL SPECIFICATION

MECHANICAL SPECIFICATION

MECHANICAL SPECIFICATION

MECHANICAL ENERGY COMPLIANCE

MECHANICAL ENERGY COMPLIANCE

BOCC THIRD FLOOR MECHANICAL PLAN

ELECTRICAL GENERAL INFORMATION

BOCC THIRD FLOOR POWER PLAN

BOCC THIRD FLOOR LIGHTING PLAN

PLUMBING GENERAL INFORMATION

BOCC SECOND FLOOR PLUMBING PLAN

BOCC THIRD FLOOR PLUMBING PLAN

BOCC THIRD FLOOR MECHANICAL PIPING PLAN

BOCC THIRD FLOOR POWER DEMOLITION PLAN

DEMOLITION ELECTRICAL ONE-LINE DIAGRAM

BOCC SECOND FLOOR PLUMBING DEMOLITION PLAN

BOCC THIRD FLOOR PLUMBING DEMOLITION PLAN

REVISED ELECTRICAL ONE-LINE DIAGRAM

BOCC THIRD FLOOR LIGHTING DEMOLITION PLAN

BOCC THIRD FLOOR MECHANICAL DEMOLITION PLAN

BOCC THIRD FLOOR MECHANICAL PIPING DEMOLITION PLAN

MECHANICAL SCHEDULES

MECHANICAL SCHEDULES

MECHANICAL SCHEMATICS

ELECTRICAL SPECIFICATION

ELECTRICAL SCHEDULES

ELECTRICAL COMCHECK

PANEL SCHEDULES

PLUMBING DETAILS

PLUMBING SPECIFICATION

PLUMBING SPECIFICATION

PLUMBING SPECIFICATION

MECHANICAL DETAILS

WALL SECTIONS

DETAILS

ENERGY CONSEVATION CODE COMPLIANCE

BOCC THIRD FLOOR REMODEL FINISH PLAN

ENLARGED PLANS & INTERIOR ELEVATIONS

ENLARGED PLANS & INTERIOR ELEVATIONS

ENLARGED PLANS & INTERIOR ELEVATIONS

MECHANICAL GENERAL INFORMATION

SYSTEMS FURNITURE PLAN - SECOND FLOOR

BOCC THIRD FLOOR DEMOLITION REFLECTED CEILING PLAN

BOCC THIRD FLOOR REMODEL REFLECTED CEILING PLAN

BOCC THIRD FLOOR DEMOLITION PLAN

BOCC THIRD FLOOR REMODEL PLAN

ADD WHIP PER EACH RUN OF HERMAN MILLER. ADD ONE OUTLET ON WALL PER STATION.

CONFIRM WITH IT MANAGER ACTIVE PORTS.

BREAK ROOMS

2-3 CIRCUITS DEPENDING ON FRIDGE GFCI'S ABOVE COUNTER PER CODE.

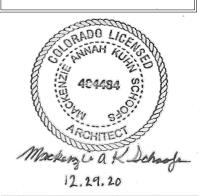
WAPS & SWITCHES WORK IT MANAGER TO LOCATE WAPS. County

BUILDING SERVICES

BOULDER, CO 80302 P.O.BOX 471 BOULDER, CO

2020 13TH ST.

PHONE: 303. 441.3187 nschoofs@bouldercounty.org



EMODEL $\overline{\mathbf{C}}$ TR 00 \overline{A} Ш П \mathbf{m}

3RD FLOOR BOCC REMODEL

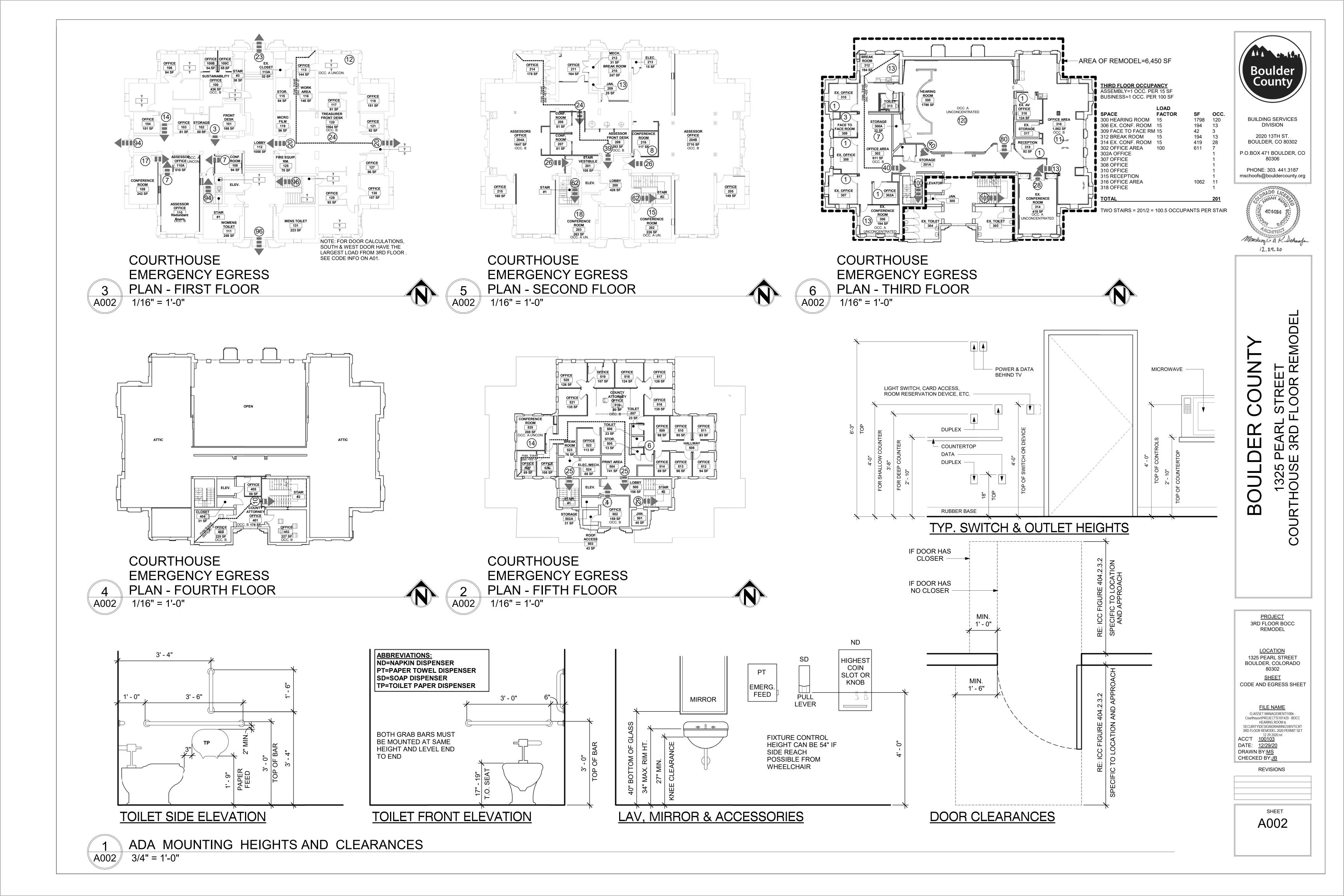
LOCATION 1325 PEARL STREET BOULDER, COLORADO SHEET TITLE SHEET

FILE NAME G:\ASSET MANAGEMENT\1006 Courthouse\PROJECTS\101420 - BOCC **HEARING ROOM &** 3RD FLOOR REMODEL 2020 PERMIT SET ACC'T 100103 DATE: <u>12/29/20</u> DRAWN BY:MS

CHECKED BY:JB

REVISIONS

SHEET



Commercial Prescriptive Measures Checklist



2020 City of Boulder Energy Conservation Code

Applies to: New Buildings and Additions with a construction valuation of <\$500,000 and Level 1 & 2 Alterations

Project Address: 1325 Pearl Street

DIRECTIONS: Compliance with these measures is required if the project uses the Prescriptive Compliance Path. Please complete this checklist and include it on an "Energy Conservation Code" sheet within the plans being submitted for permit application. Projects complying prescriptively also must meet Mandatory Measures and should include the Mandatory Measures Checklist as well.

meet Mand at or	ry Measures and sho	ould include the Mandato	ory Measures Checklist	as well.				
Code Section	Focus Area			Code Description		Plan Drawing or Reference # to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement dors not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
				All Other	Group R (Mixed Use)			
			Insulation entirely above deck	Min R-33 continuous	Min R-33 continucus	N/A	No changes to exterior	
		Roof	Metal buildings (w/R-5 thermal blocks)	Min R-19 + R-11 linear system	Min R-19 + R-11 linear system			
			Attic and other	Min R-553	Min R-53			
	:		Mass	Min R-13.3 continuous	Min R-13.3 continucus	N/A	No changes to exterior	
		AND THE RESIDENCE OF THE SECOND	Metal building	Mir R-13 + R-19.5 continuous	Min R-13 + R-13 continucus]		
		Walls, Above Grade	Metal framed	Min R-13 + R-11 continuous	Min R-13 + R-11 continucus]		
TABLE			Wood framed and other	Min R-13 + R-9 continuous or R-19 + R5 continuous	Min R-13 + R-9 continuous or R-19 + R5 continuous			
C407.1.3	00113000000000	Walls, BelowGrade	Below-grade wall	Min R-7.5 continuous	Min R-10 continucus	N/A	No changes to exterior	
	Insulation	Floors	Mass	Min \$-15 continuous	Min R-16.7 continucus	N/A	No new floors	
		115512	Joist/framing	Min R-30	Min R-3D			
		Slab-on-Grad # Floors	Unheated slabs	Min R-15 for 24" below	Min R-15 for 24" below	N/A	No new floors	
			Heated slabs	Min R-20 for 48" below	Min R-20 for 48" below			
		Opaque Doors	Swinging	Max U-0.37	Max U-0.37	N/A	No new exterior doors	
		Opaque Doors	Roll-up or sliding	Min R-4.75	Min R-4.75			
C402.2.6		Radiant Heating	Radiant Panels, associated U-bends, and headers	Min f	- 3.5	N/A	No radiantheating	

Code Section	Focus Area			Code Description		Plan Drawing or Reference # to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
C402.4.1			Area	Not to exceed 30% gross	s above-grade wall area	N/A	No new fenestrations	
				Fixed	Max U-0.36			
		Vertical fenestration	U-factor	Operable	Max U-0.45]		
				Entrancedoors >50% glass area	Max U-0.63			
C402.4			SHGC	Max N 0.51-0.61	/ SEW 0.38-0.61]		
C402.4			U-factor	Max U	J-0.50	N/A	No new skylights	
	Fenestration		SHGC	Max	0.40			
		Skylights	Area	Not to exceed 3%	gross floor area			
			Curb Insulation	Skylight curbs shall be insulated to entirely above deck or R-5, whicher				
C402.4.2		Minimum Skylight Fenestration	heights greater than a showing the total day shall provide a minim 1. Not less than 3 per	greater than 2,500 square feet, dired 15 feet, plar submitter must include flight zone under skylights shall be no sum skylightarea to daylight zone un cent with a skylight VT of at least 0.4 in skylight effective aperture of at lea documentation.	supporting documentation ot less than half the floor area and derskylights of either: 10; or	N/A	No new skylights	
C402.4.2.2		Haze factor	warehouse, retail sto	orage, automotive service, manufact re and distribution/sorting area spac actor greater than 90 percent when i M D1003.	es shall have a glazing material or	N/A	No new skylights	
C402.5.3		Rooms containing fuel burning appliances	containing a space-co 1. The room or space thermal envelope. 2. The room or space	ir is supplied through openings in an onditioning fuel-burning appliance, o containing the appliance shall be loo containing the appliance shall be en side the bulding thermal envelope.	ne of the following shall apply: cated outside of the building closed and isolated from	N/A	No changes to fuel burning appliances and no new fuel burning appliances	

Commercial Mandatory Measures Checklist

Applies to: All New Buildings, Additions, Alterations and Repairs which require a permit from the City.

1. Location of daylight zones on floor plans.

Building thermal

The building thermal envelope shall be represented on the construction drawings.

o new exterior fenestratons o changes to exterior 2020 City of Boulder Energy Conservation Code

Project Address: 1325 Pearl Street

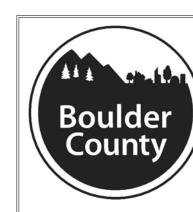
Date:

DIRECTIONS: Compliance with these Mandatory Measures is required whether the project is demonstrating compliance through the Performance or Prescriptive Path. Please complete this checklist and include it on an "Energy

Conservation Code" sheet within the plans being submitted for permit application. Plan Drawing or
Reference # to
Submitter Notes
demonstrate compliance (e.g. If "N/A" Please explain why requirement does not Code Section Code Description Plans Examiner Notes (N/A if not applicable) apply or is not demonstrated on plass/specs) (in office use) Mandatory and Prescriptive Compliance New Construction < \$500,000 ш Mandatory and Performance Modeling New Construction >/= \$500,000 Mandatory and Performance Modeling Addition > 1,000sf Theck compliance path applicable Alternation Mandatory and Prescriptive Compliance C401.2 Mandatory and Prescriptive Compliance Alteration Level 2 Mandatory and Prescriptive Compliance Mandatory and Performance Modeling Alteration Level 4 Mandatory and Performance Modeling 1. Insulation materials and their R-values. new exterior fenestratons 2. Fenestration U-factors and solar heat gain coefficients No new exterior fenestratons 3. Area-weighted U-factor and solar heat gain coefficient (SHGC) calculations. Construction
documents shall clearly
indicate the location,
nature and extent of
the work proposed,
and show in datail
pertinent data and C103.2 pertinent data and features of the building, systems and equipment.

9. Duct sealing, duct and pipe insulation and location. ly reconfiguration of existing mechanical M001-M601 10. Lighting fixture schedule with wattage and control narratives.

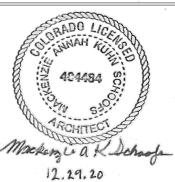
Code Section	Focus Area	Code Description	Plan Drawing or Reference # to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on plans/specs)	Plans Examiner Notes (in office use)
C303.1.3	The second supply of the second secon	U-factors of fenestration products shall be determined for windows, doors and skylights, U-factor ratings in accordance with NFRC 100. Drawings shall indicate NRFC labels or certicates must be provided to the building official prior to Certificate of Occupancy in compliance with NFRC 100.	N/A	No new exterior fenestratons	Building Condition: NFRC Label Certificate
BUILDING ENVE	LOPE				
C402.5.1	Air Barriers	The entire building envelope shall be designed and constructed with a continuous air barrier.	N/A	No changes to exterior	
C402.5.1.1	Air Barrier Design/ Construction	The air barrier shall be designed and noted in an approved manner per the specified code - joints, seams, penetrations, and recessed light fixtures sealed	N/A	No changes to exterior	
C402.5.1.2	Building Test	The completed building shall be tested and the air leakage rate of the building envelope shall not exceed 0.40 cfm/ft2 at a pressure differential of 0.3 inches water gauge (2.0 L/s • m2 at 75 Pa) in accordance with ASTM E 779 or an equivalent method approved by the code official.	N/A	No changes to exterior	Building Concition: Commercial Air Leakage Testing
C402.5.1.3	Dwelling UnitAir Infiltration	A sampling of dwelling units shall be tested and results shall not exceed 0.25cfm/ft2. See code for more details.	N/A	No dwelling units	Building Concition: Commercial Air Leakage Testing
C402.5.2	Fenestration	Factory-built fenestration and doors are labeled as meeting air leakage requirements	N/A	No new exterior fenestratons	
C402.4.6		Stairway enclosures, elevator shaft vents and other outdoor air intakes and exhaust openings integral to the building envelope shall be provided with dampers in accordance with Section C403.7.7.	N/A	Only reconfiguration of existing interior mechanical	
C402.5.6		Cargo doors and loading dock doors are equipped with weather seals to restrict infiltration when vehicles are parked in the doorway.	N/A	No loading dock	
C402.5.7	Vestibules	Building entrances shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices	N/A	No changes to exterior	
C402.5.8	Recessed lighting	Recessed luminaires installed in the building thermal envelope shall be IC-rated and labeled as having an air leakage rate of not more 2.0 cfm	N/A	No changes to exterior	



BUILDING SERVICES DIVISION

2020 13TH ST. BOULDER, CO 80302 P.O.BOX 471 BOULDER, CO 80306

PHONE: 303. 441.3187 mschoofs@bouldercounty.org



BOULDER COUNTY 1325 PEARL STREET COURTHOUSE 3RD FLOOR REMODEL

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION

1325 PEARL STREET
BOULDER, COLORADO
80302

SHEET
ENERGY CONSEVATION

FILE NAME

G:\ASSET MANAGEMENT\1006 COURTHOUSE\PROJECTS\101420 - BOCC
HEARING ROOM &
SECURITY\DESIGN\DRAWINGS\RVT\CRT
3RD FLOOR REMODEL 2020 PERMIT SET
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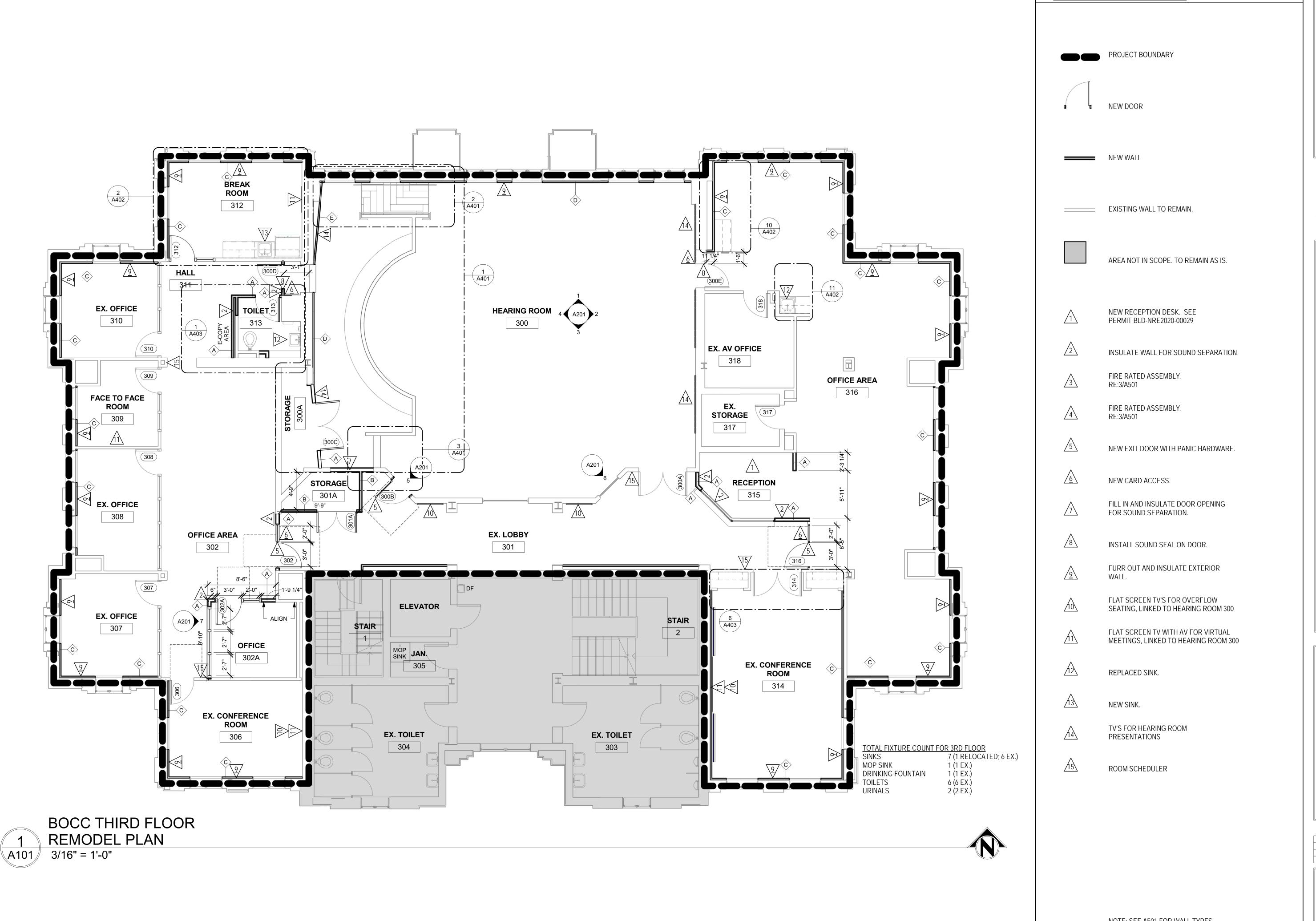
ACC'T 100103

DATE: 12/29/20
DRAWN BY:MS
CHECKED BY:JB

CODE COMPLIANCE

REVISIONS

A003





BUILDING SERVICES

2020 13TH ST. BOULDER, CO 80302 P.O.BOX 471 BOULDER, CO

Mackenge a K Schools 12.29.20

PHONE: 303. 441.3187 mschoofs@bouldercounty.org

NOTE: SEE A501 FOR WALL TYPES.

REMODEL LEGEND

STREET OOR REMODEL PEARI E 3RD 1325 | COURTHOUSE BOUL

PROJECT 3RD FLOOR BOCC REMODEL **LOCATION**

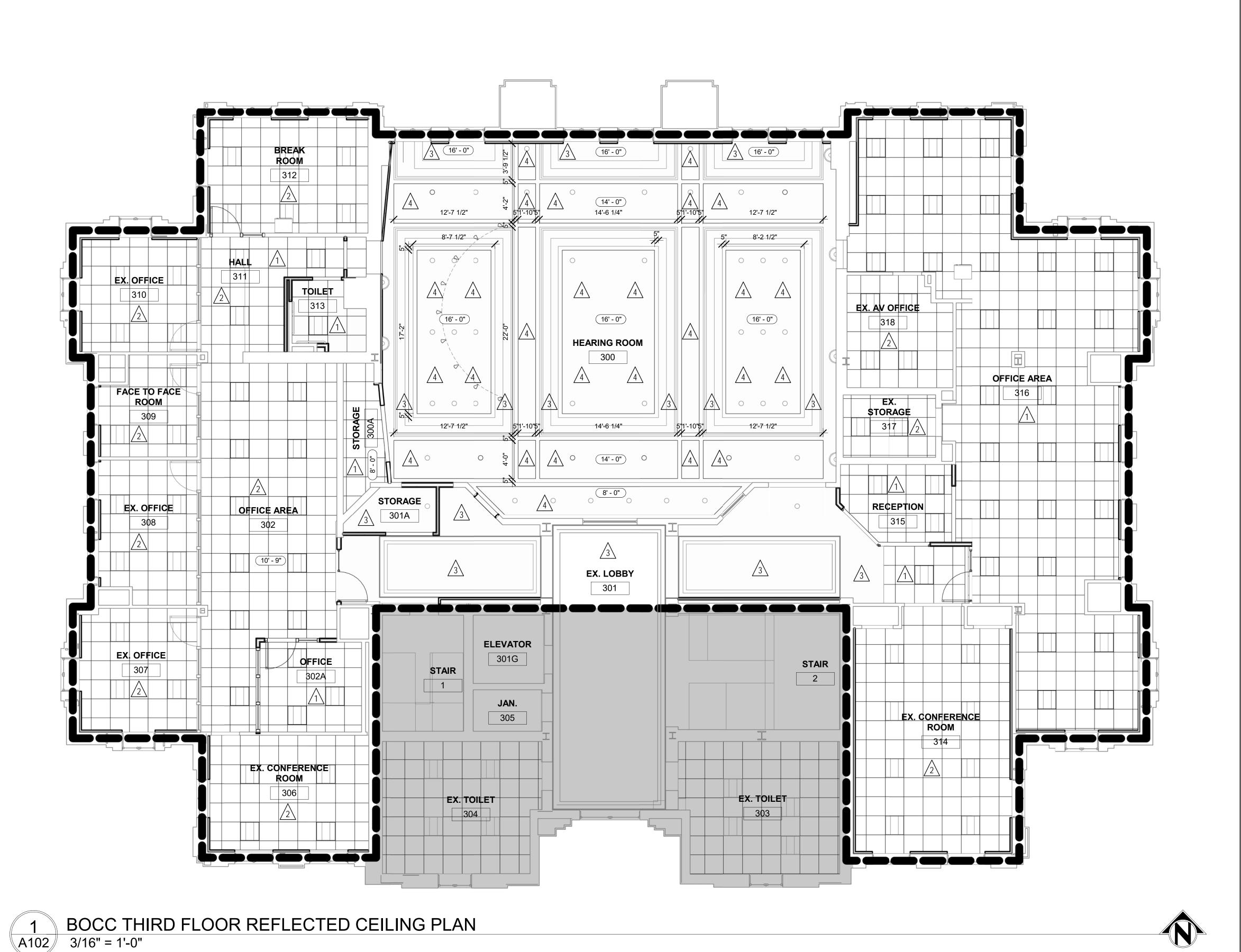
1325 PEARL STREET BOULDER, COLORADO 80302 **SHEET** BOCC THIRD FLOOR REMODEL PLAN

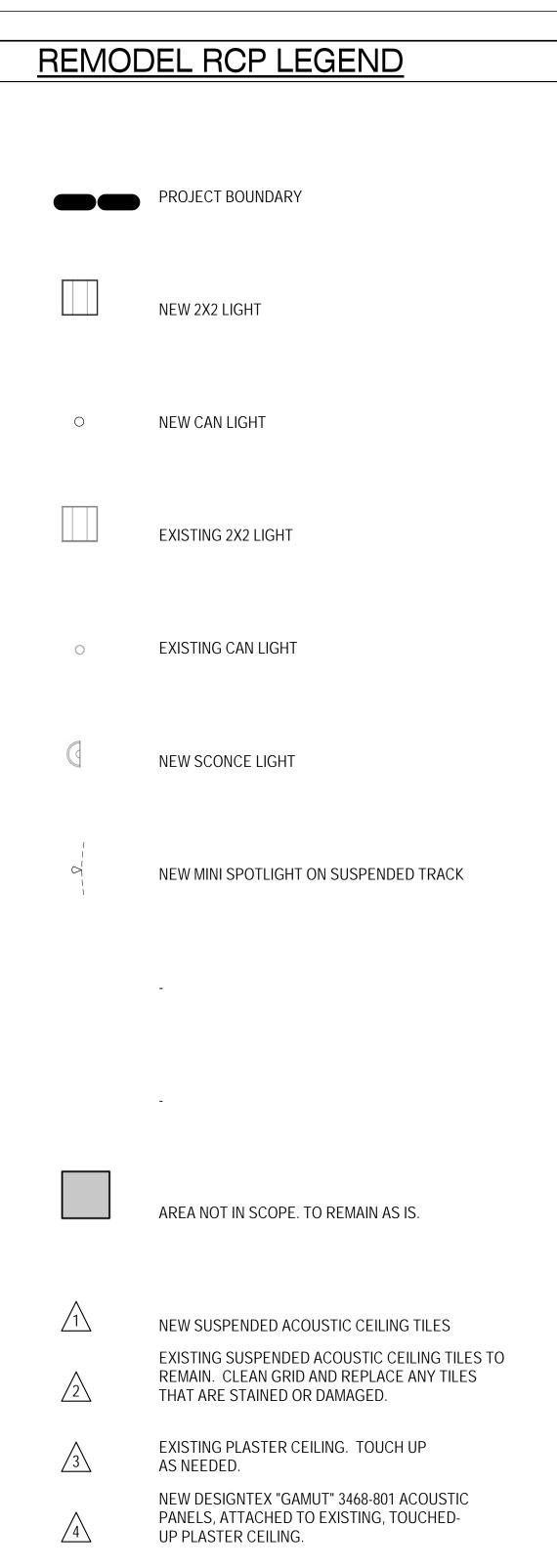
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3RD FLOOR REMODEL 2020 PERMIT SET
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ACC'T 100103
DATE: 12/29/20
DRAWN BY: MS
CHECKED BY: JB

REVISIONS

SHEET A101





BOULDER COUNTY
1325 PEARL STREET
COURTHOUSE 3RD FLOOR REMODEL

County

BUILDING SERVICES

2020 13TH ST.

BOULDER, CO 80302

P.O.BOX 471 BOULDER, CO

PHONE: 303. 441.3187 mschoofs@bouldercounty.org

Macken a K Dehaofe

12.29.20

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION

1325 PEARL STREET
BOULDER, COLORADO
80302

SHEET
BOCC THIRD FLOOR

REMODEL REFLECTED

CEILING PLAN

FILE NAME

G:\ASSET MANAGEMENT\1006 Courthouse\PROJECTS\101420 - BOCC
HEARING ROOM &
SECURITY\DESIGN\DRAWINGS\RVT\CRT
3RD FLOOR REMODEL 2020 PERMIT SET
12 29 2020.rvt

ACC'T 100103

DATE: 12/29/20

DRAWN BY:\MS

CHECKED BY:JB

REVISIONS

SHEET **A102**

NOTE: SEE MECHANICAL, ELECTRICAL, FIRE PROTECTION, AND PLUMBING FOR ALL LIGHTING, MECHANICAL, AND PLUMBING.

FINISH PLAN

A103 3/16" = 1'-0"

REMODEL RCP LEGEND

PROJECT BOUNDARY



NEW PLANK STYLE CARPET



NEW VINYL ENHANCED TILE



AREA NOT IN SCOPE. TO REMAIN AS IS.



NEW CARPET. TYPE A.



NEW CARPET . TYPE B.



NEW VINYL ENHANCED TILE.



EXISTING FLOORING TO REMAIN. PROTECT DURING CONSTRUCTION.

SELECTED FINISHES

CARPET TYPE A: MOHAWK **EXPEDITION COLLECTION** SEISMIC WAVE 12INX36IN 739 GLACIER HERRINGBONE INSTALLATION FADE AT DOORWAYS TO: DIGITAL TERRAIN 12INX36IN 739 GLACIER HERRINGBONE INSTALLATION

CARPET TYPE B: MOHAWK **EXPEDITION COLLECTION** DIGITAL TERRAIN 12INX36IN 739 GLACIER HERRINGBONE INSTALLATION

VINYL ENHANCED TILE JOHNSONITE TARKETT AZTERRA COLLECTION BLACK EARTH 12INX12IN AT114 QUARTER TURN INSTALLATION

RUBBER BASE JOHNSONITE TARKETT 40 BLACK B 4IN

PAINT COLORS

PAINT "LIGHT MOVES" SW 1053





PAINT "DANCING IN THE RAIN" DV 0644

PAINT "CAULIFLOWER CREAM" DV 0880

PAINT "KEY WEST ZENITH" DV 0646



PAINT "DOWAGER" DV 0442



PAINT "FAIR MAIDEN" DV 0456



PAINT "FUNCTIONAL GREY" SW 7024



PAINT "SMOKE"



PAINT "3A LATTE" DV 0175

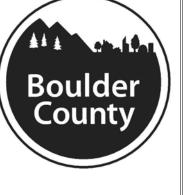


PAINT "DUSTY PATH" DV 0191

PAINT "EMPERORS ROBE" DV 0074



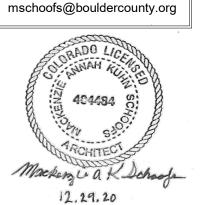
NOTE: ANY WALL NOT TAGGED WITH A SPECIFIC ACCENT COLOR WILL BE PAINTED "LIGHT MOVES" SW 1053



BUILDING SERVICES DIVISION 2020 13TH ST.

BOULDER, CO 80302 P.O.BOX 471 BOULDER, CO

PHONE: 303. 441.3187



OUNT

STREET OOR REMODEL EARI 3RD 1325 COURTHOUSE \mathbf{m}

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION 1325 PEARL STREET BOULDER, COLORADO 80302 **SHEET** BOCC THIRD FLOOR

REMODEL FINISH PLAN

FILE NAME

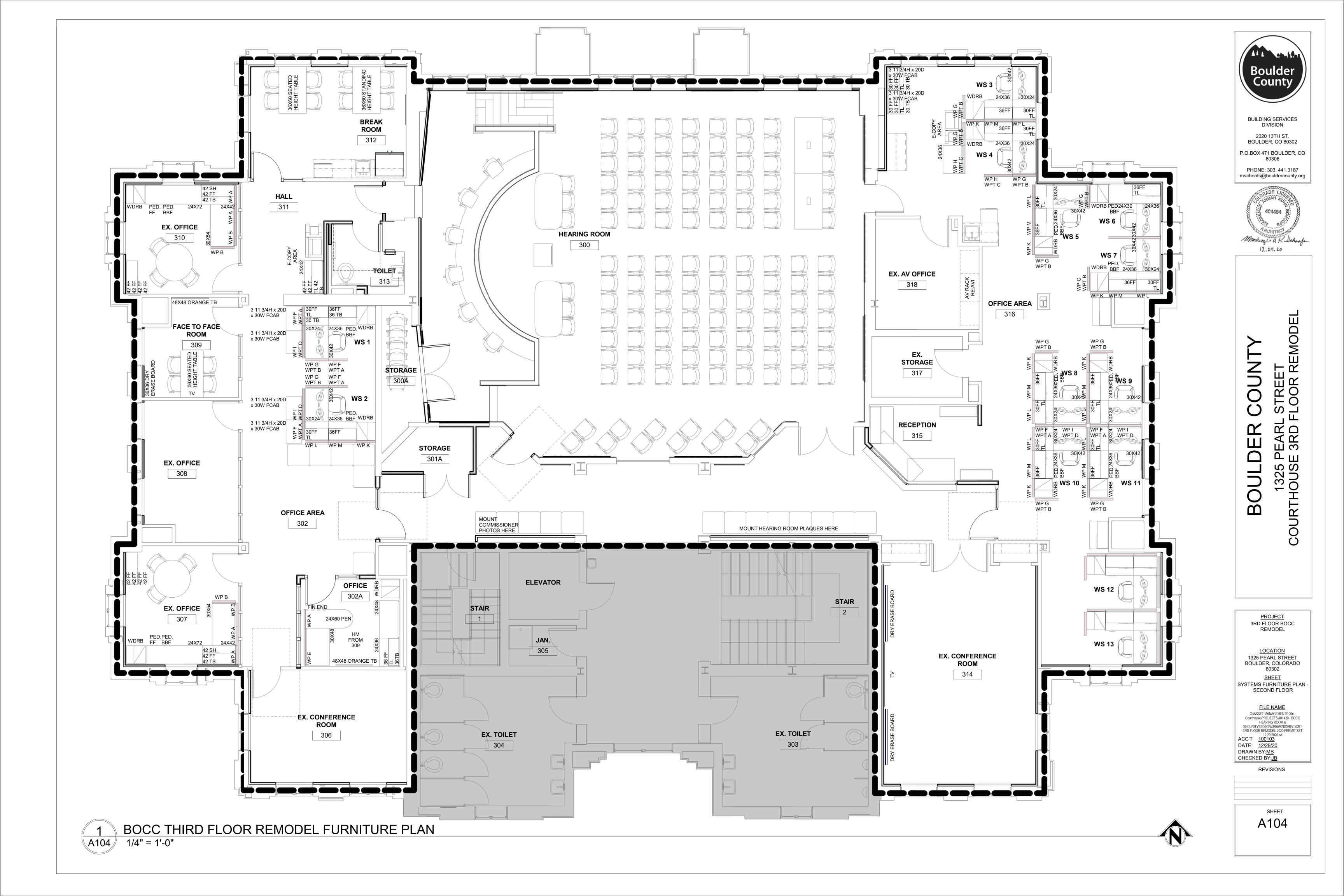
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SECURITY/DESIGN/DRAWINGS/RVT\CRT
3RD FLOOR REMODEL 2020 PERMIT SET
12 29 2020.rvt

ACC'T 100103
DATE: 12/29/20
DRAWN BY: MS

REVISIONS

CHECKED BY:JB

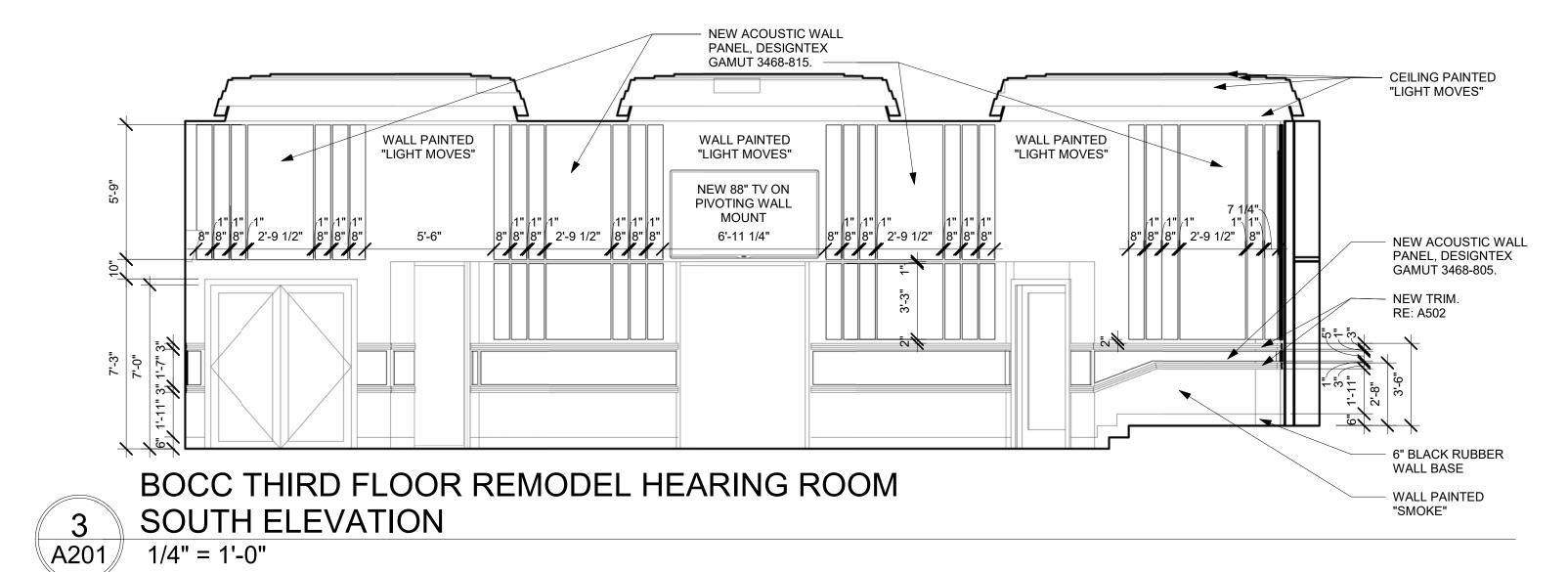
SHEET A103

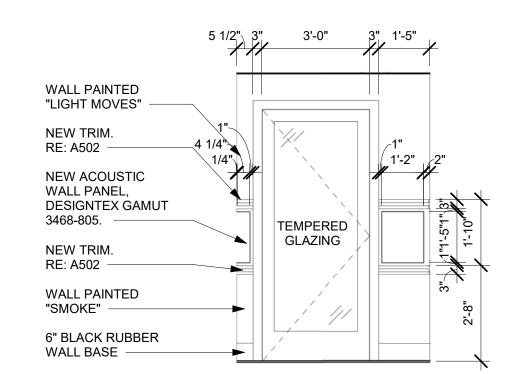


BOCC THIRD FLOOR REMODEL HEARING ROOM NORTH ELEVATION

1/4" = 1'-0"

A201

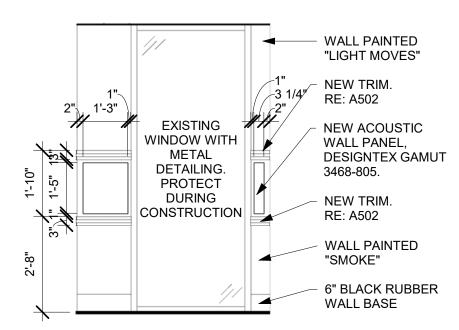




BOCC THIRD FLOOR REMODEL

NEW DOOR TO HEARING ROOM

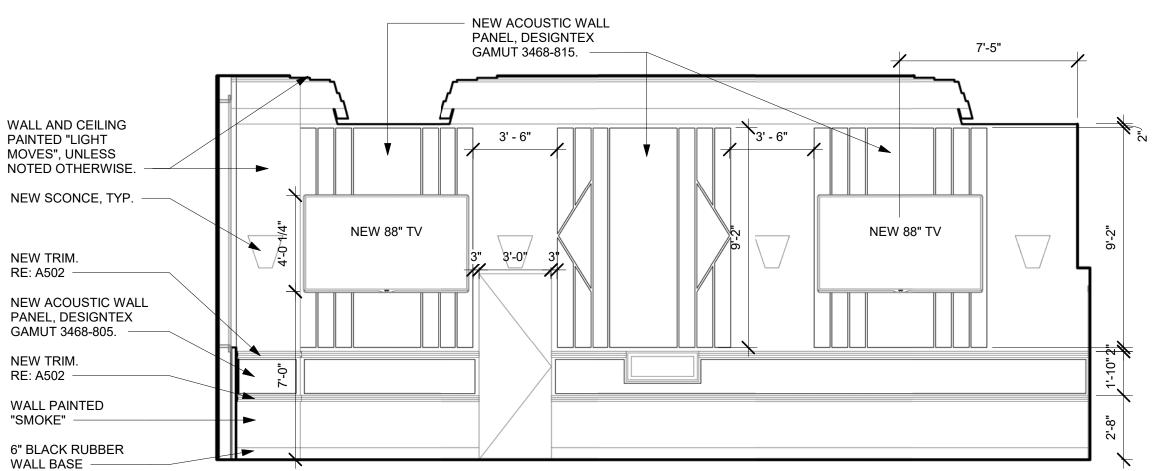
3/8" = 1'-0"



BOCC THIRD FLOOR REMODEL

6 EXISTING GLASS WALL ELEVATION

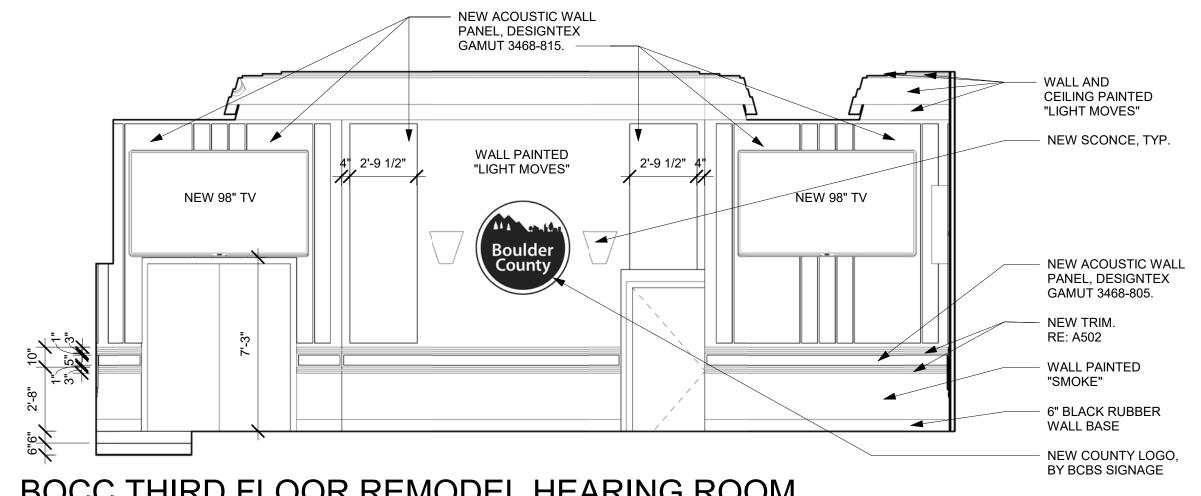
A201 3/8" = 1'-0"



BOCC THIRD FLOOR REMODEL HEARING ROOM

2 EAST ELEVATION

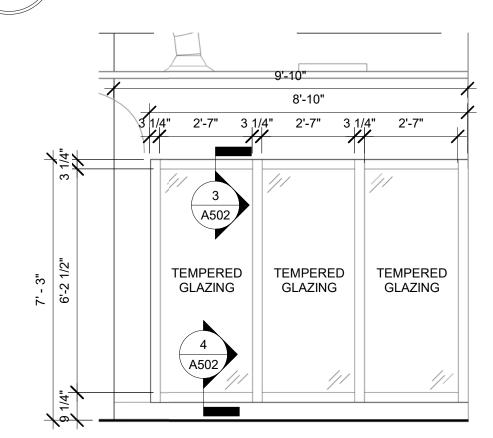
A201 1/4" = 1'-0"



BOCC THIRD FLOOR REMODEL HEARING ROOM WEST ELEVATION

1/4" = 1'-0"

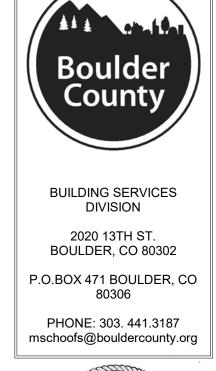
A201

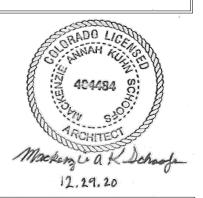


BOCC THIRD FLOOR REMODEL

NEW OFFICE HALLWAY ELEVATION

3/8" = 1'-0"





BOULDER COUNTY
1325 PEARL STREET
COURTHOUSE 3RD FLOOR REMODEL

PROJECT

3RD FLOOR BOCC
REMODEL

LOCATION

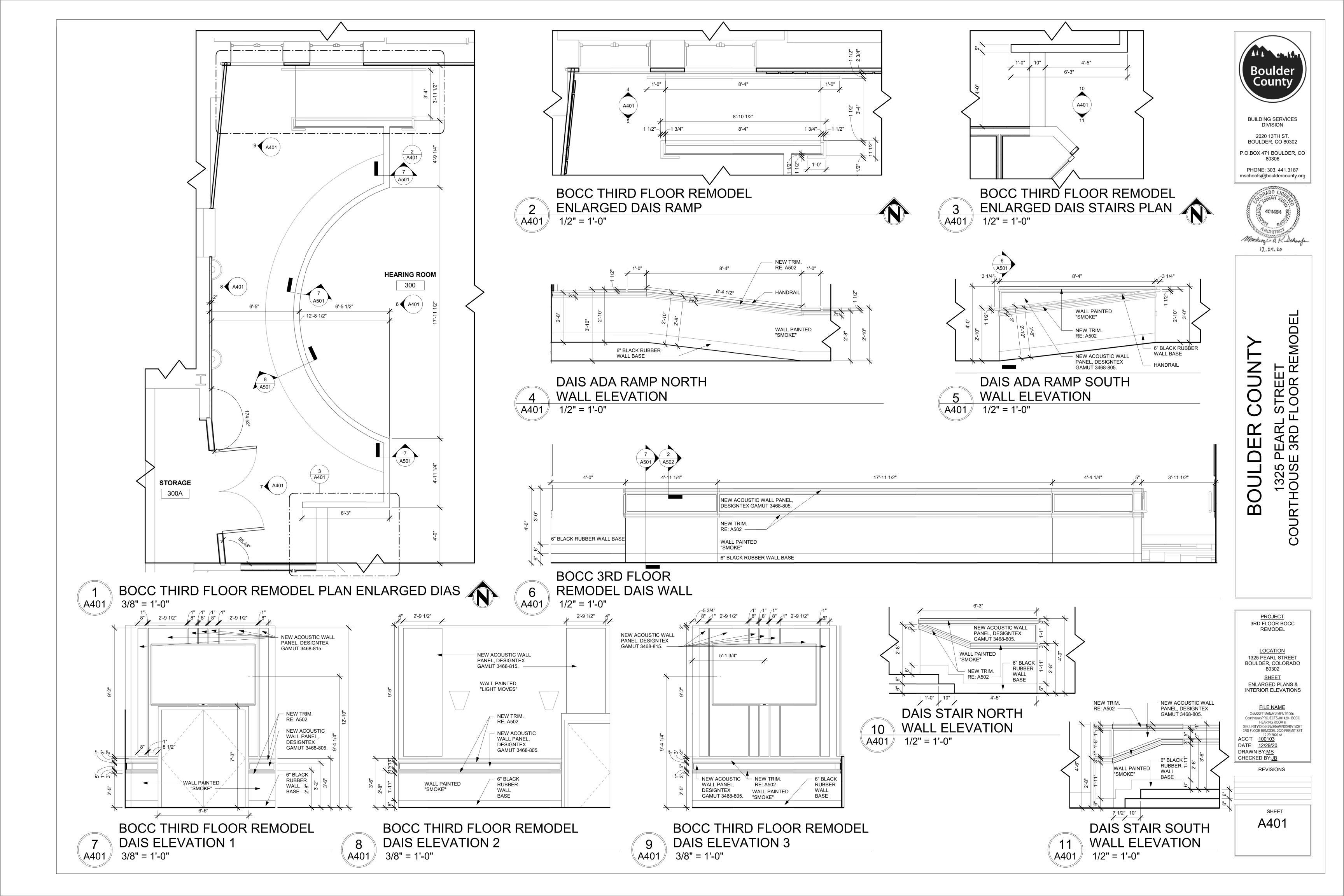
1325 PEARL STREET
BOULDER, COLORADO
80302
SHEET
INTERIOR ELEVATIONS

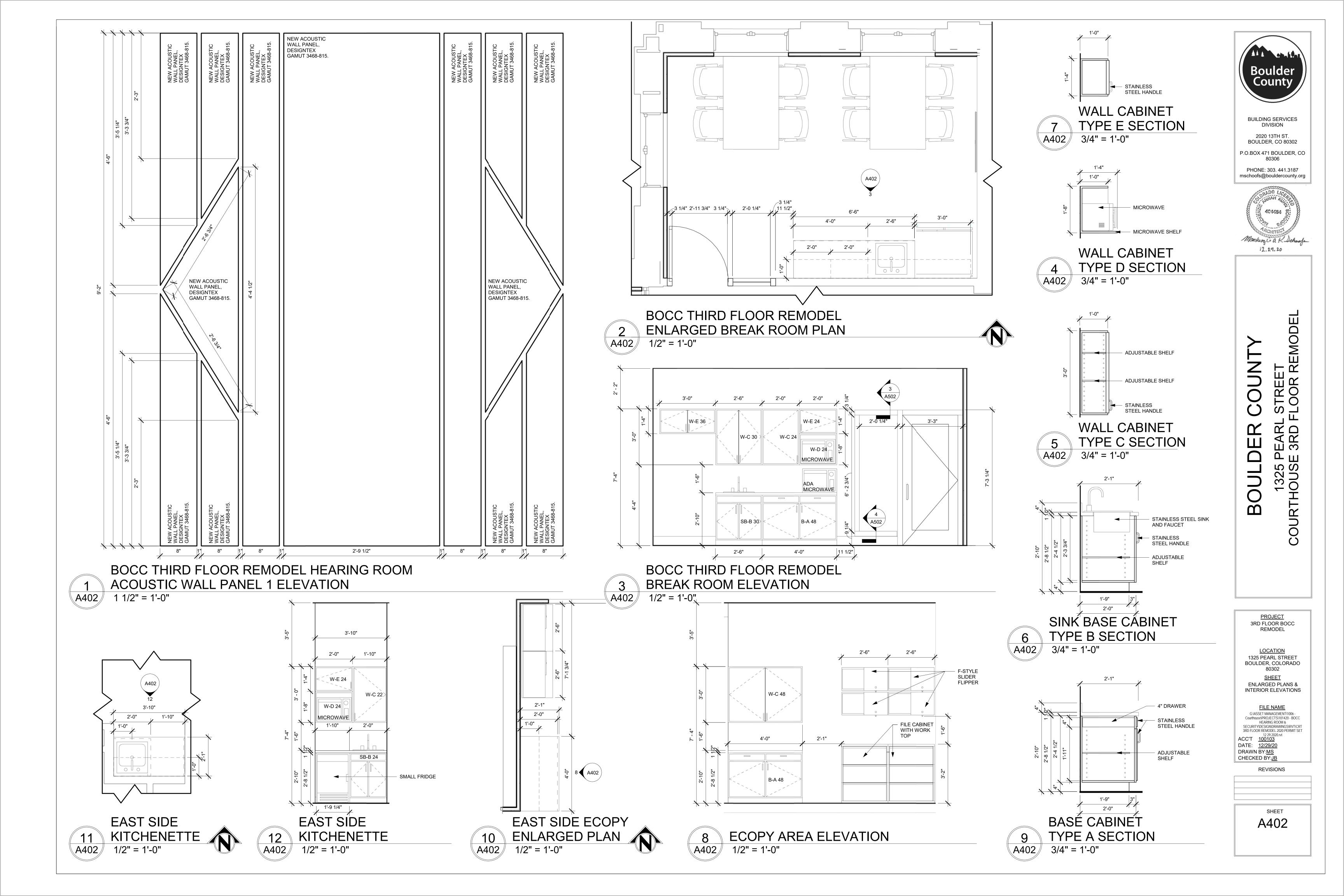
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HEARING ROOM &
SECURITYDESIGN\DRAWINGS\RVT\CRT
3RD FLOOR REMODEL 2020 PERMIT SET
12 29 2020.mt
ACC'T 100103
DATE: 12/29/20

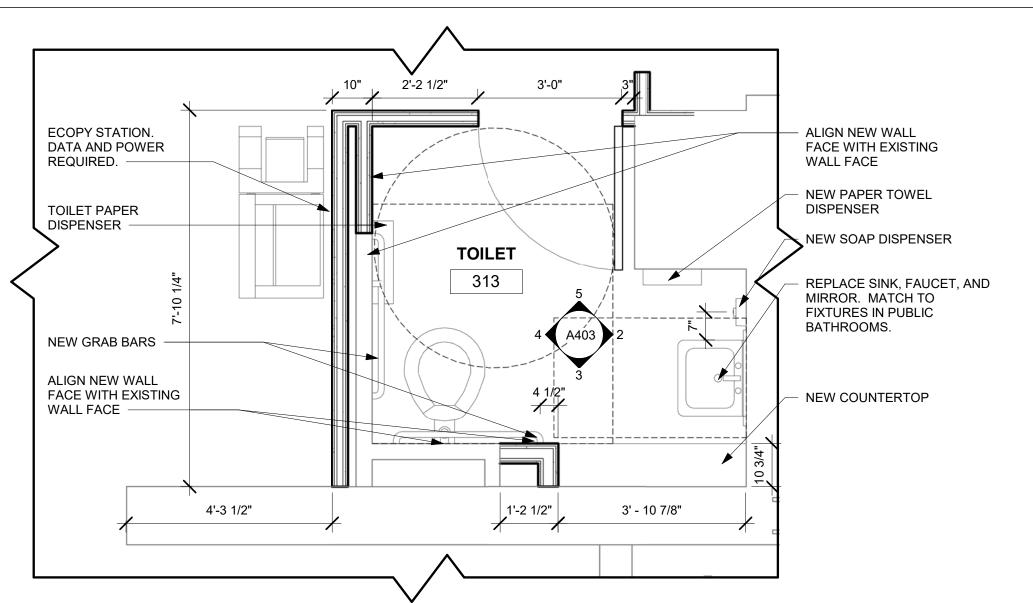
CHECKED BY:Checker
REVISIONS

DRAWN BY: Author

A201







BOCC THIRD FLOOR REMODEL TOILET 313 ENLARGED PLAN A403 / 1/2" = 1'-0"

PAPER TOWEL DISPENSER -SOAP DISPENSER NEW MIRROR NEW SINK, TO MATCH EXISTING PUBLIC **BATHROOMS NEW COUNTERTOP** NEW TILE, TO MATCH EXISTING PUBLIC BATHROOMS

BOCC 3RD FLOOR REMODEL **TOILET 313 EAST ELEVATION**

A403 / 1/2" = 1'-0"

3' - 10 7/8" 3' - 10 1/2" NEW MIRROR NEW TILE, TO MATCH EXISTING PUBLIC BATHROOMS SOAP DISPENSER NEW COUNTERTOP NEW GRAB BARS NEW SINK, TO MATCH EXISTING PUBLIC BATHROOMS **EXISTING TOILET**

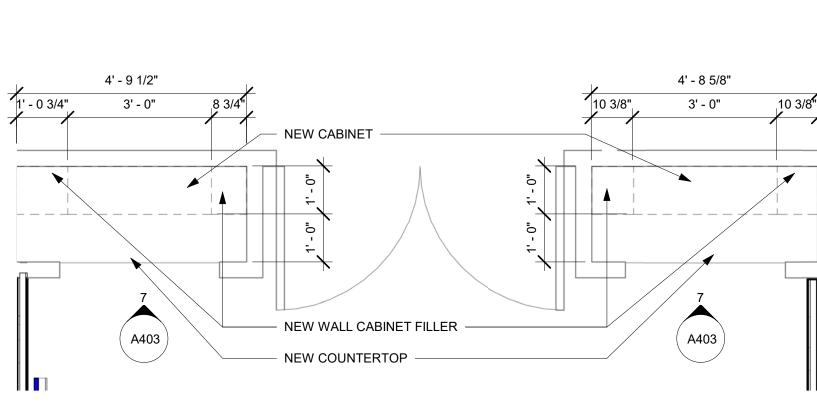
BOCC 3RD FLOOR REMODEL TOILET 313 SOUTH ELEVATION 1/2" = 1'-0"

> - EXISTING DOOR PAPER TOWEL DISPENSER SOAP DISPENSER 313 NEW TILE, TO MATCH EXISTING PUBLIC BATHROOMS

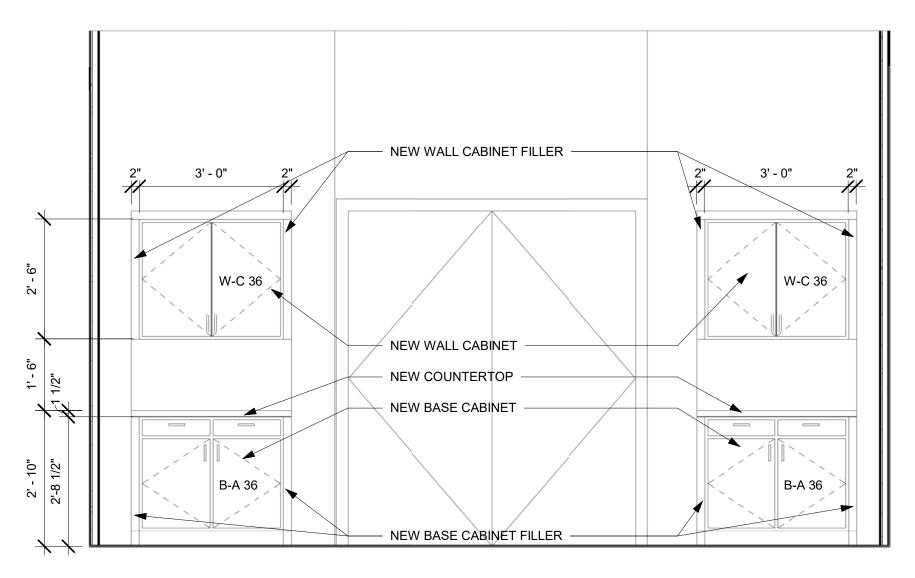
BOCC 3RD FLOOR REMODEL TOILET 313 NORTH ELEVATION 1/2" = 1'-0"

6' - 7 3/8" - NEW COUNTERTOP - NEW GRAB BARS - NEW TOILET PAPER DISPENSER NEW TILE, TO MATCH EXISTING PUBLIC **BATHROOMS**

BOCC 3RD FLOOR REMODEL TOILET 313 WEST ELEVATION A403 1/2" = 1'-0"



BOCC THIRD FLOOR REMODEL ENLARGED DICKEY LEE ROOM STORAGE PLAN A403/ 1/2" = 1'-0"



BOCC THIRD FLOOR REMODEL DICKEY LEE ROOM STORAGE ELEVATION A403 / 1/2" = 1'-0"

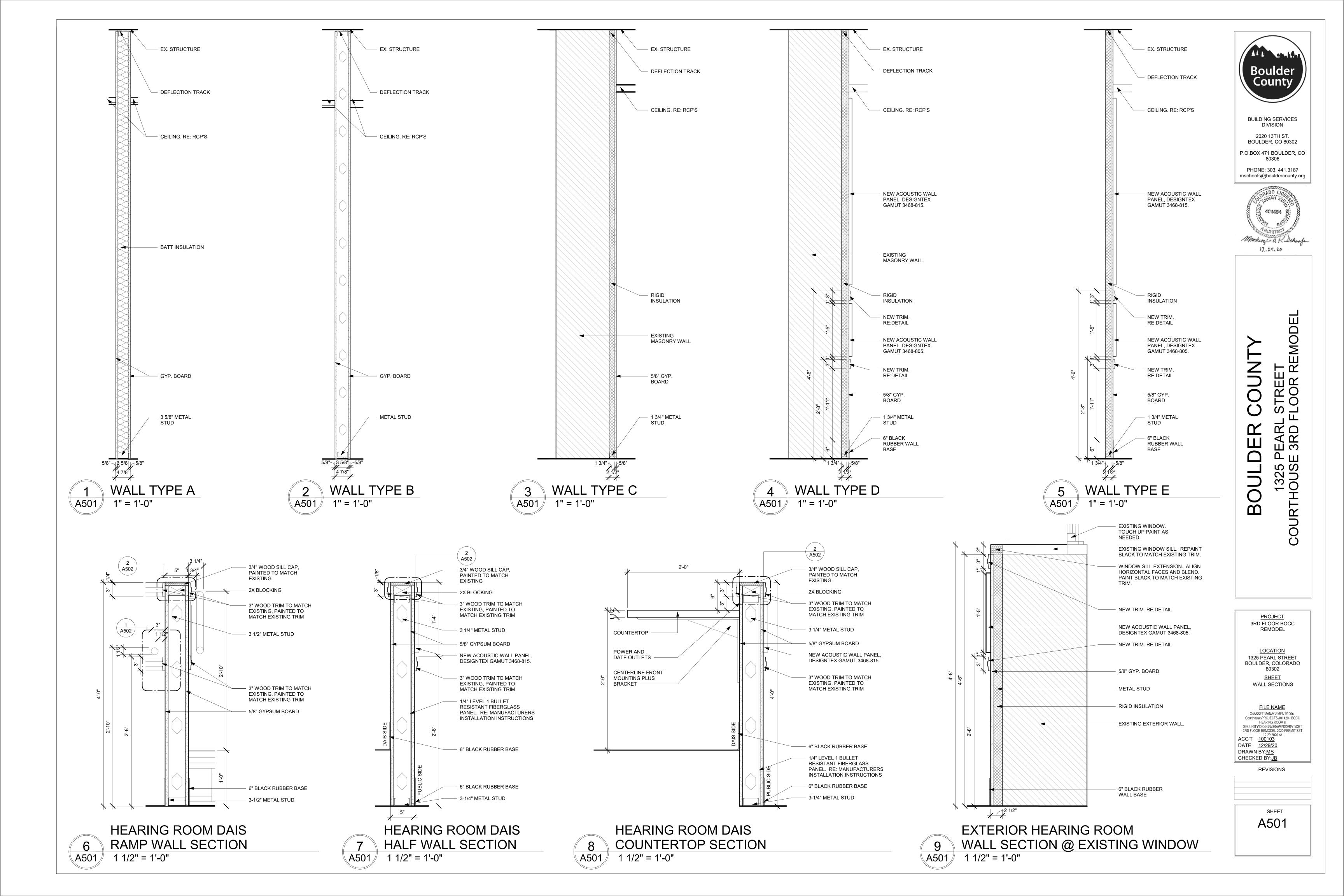


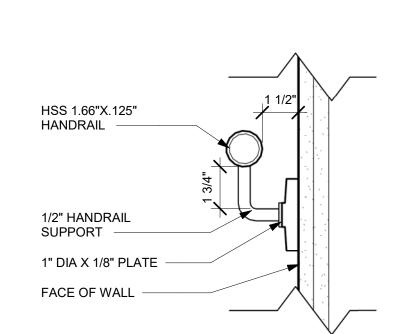
STREET FLOOR REMODEL 1325 | COURTHOUSE BOUL

PROJECT 3RD FLOOR BOCC 1325 PEARL STREET BOULDER, COLORADO ENLARGED PLANS & INTERIOR ELEVATIONS G:\ASSET MANAGEMENT\1006 -SECURITY/DESIGN\DRAWINGS\RVT\CRT 3RD FLOOR REMODEL 2020 PERMIT SE ACC'T 100103 DATE: 12/29/20 DRAWN BY:MS CHECKED BY:JE

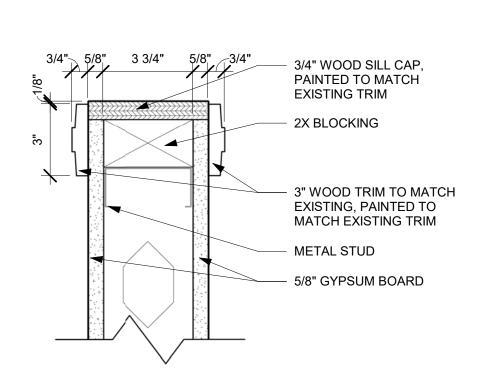
REVISIONS

A403

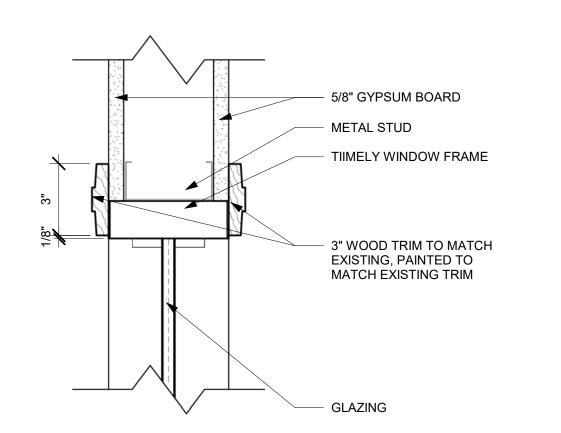




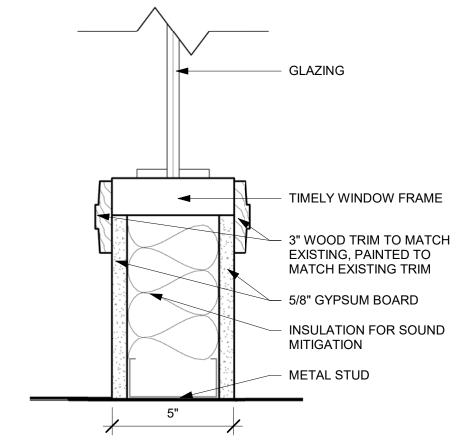


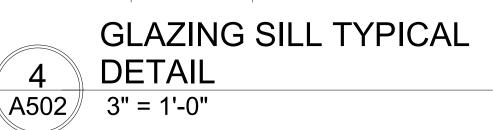


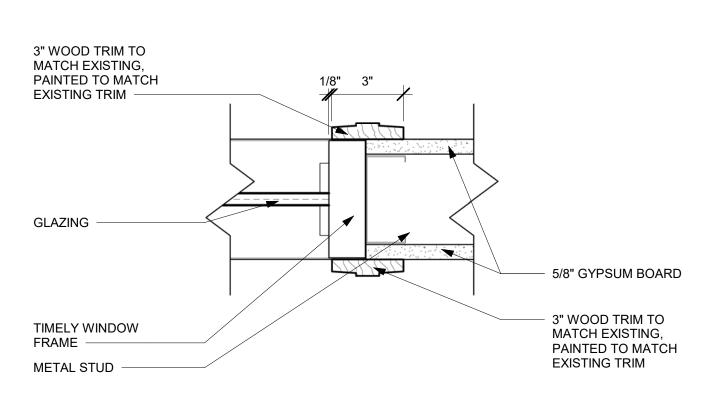
LOW WALL CAP
TYPICAL DETAIL
A502 3" = 1'-0"





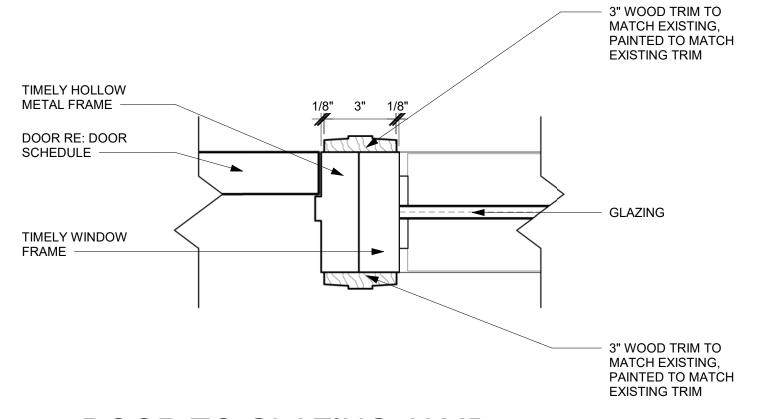




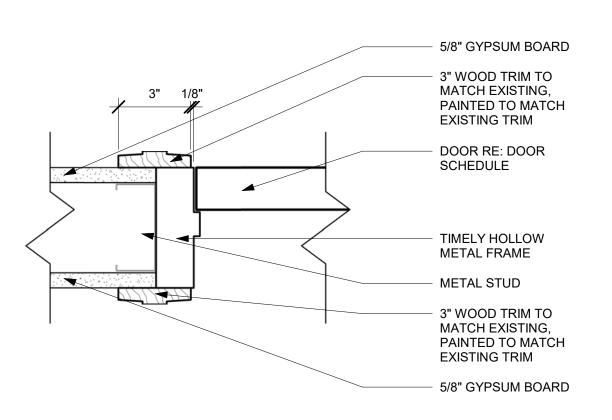


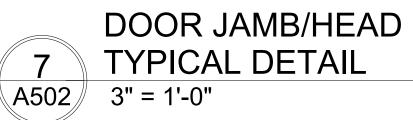


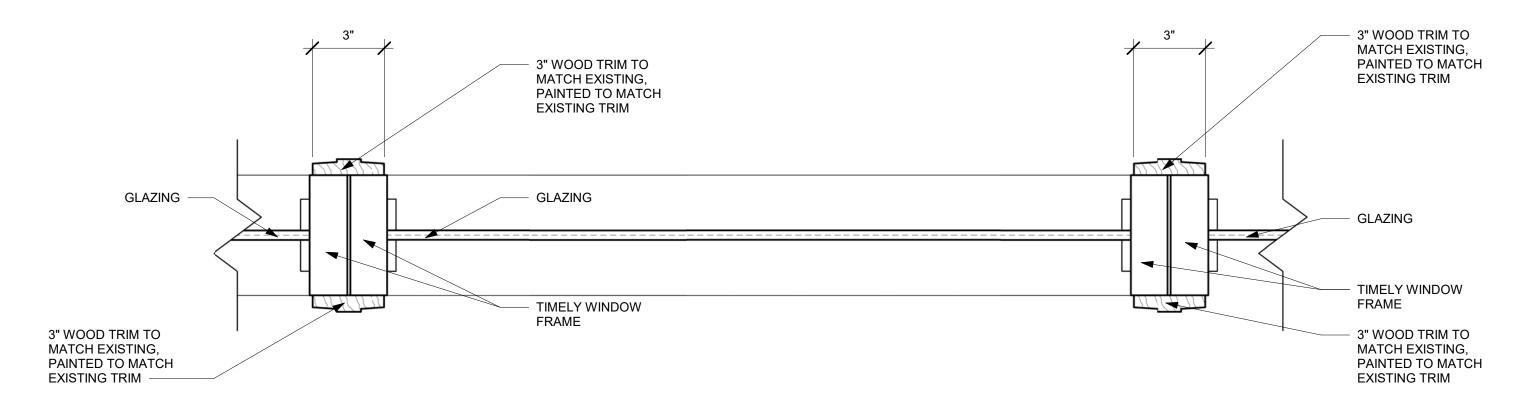
A502 3" = 1'-0"



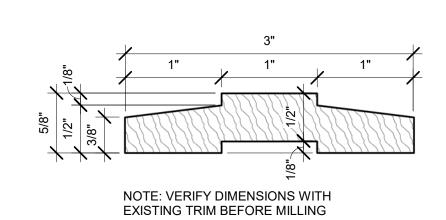












9 TRIM DETAIL A502 12" = 1'-0" PROJECT 3RD FLOOR BOCC REMODEL

<u>LOCATION</u> 1325 PEARL STREET BOULDER, COLORADO 80302 <u>SHEET</u> DETAILS

FILE NAME

G:\ASSET MANAGEMENT\1006 Courthouse\PROJECTS\1101420 - BOCC
HEARING ROOM &
SECURITY\DESIGN\DRAWINGS\RVT\CRT
3RD FLOOR REMODEL 2020 PERMIT SET
12 29 2020.rvt

ACC'T 100103
DATE: 12/29/20
DRAWN BY:Author
CHECKED BY:Checker

REVISIONS

SHEET **A502**

BOULDER COUNTY
1325 PEARL STREET
COURTHOUSE 3RD FLOOR REMODEL

BUILDING SERVICES

DIVISION

2020 13TH ST.

BOULDER, CO 80302

P.O.BOX 471 BOULDER, CO

PHONE: 303. 441.3187

mschoofs@bouldercounty.org

12.29.20

BOCC 3RD FLOOR REMODEL DOOR AND FRAME SCHEDULE

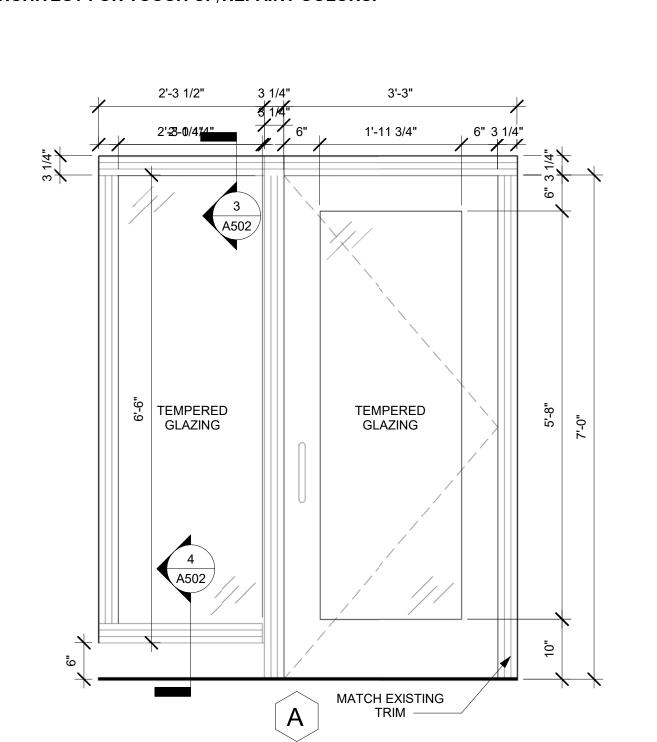
ASSESSORS REMODEL ROOM FINISH SCHEDULE

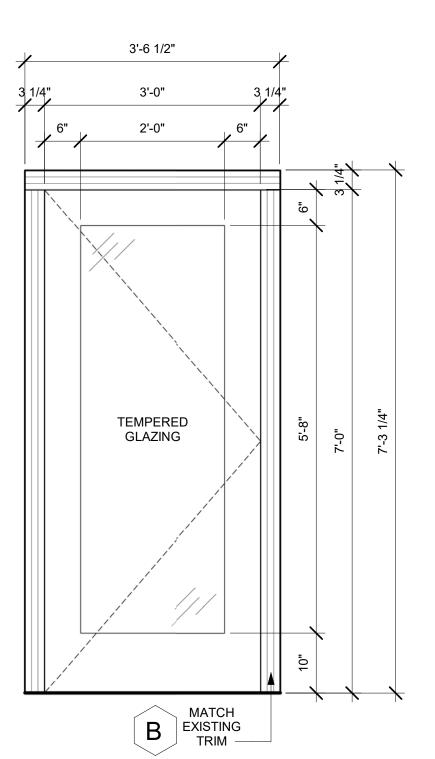
OPG.			DOC	PRS				FRAN	IES		HDWE.	DEMARKS
NO.	WIDTH	HEIGHT	THICK	MAT.	FINISH	TYPE	MAT.	FINISH	TYPE	DEPTH	GROUP	REMARKS
300A	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	4	TOUCH UP
300B	3'-0"	84"	1-3/4"	S.C. WOOD	PAINT	В	WOOD	PAINT	В	4 7/8""	4	PAINT TO MATCH OTHER EXISTING DOORS
300C	6'-0"	84"	1-3/4"	S.C. WOOD	PAINT	E	WOOD	PAINT	E	4 7/8"	6	PAINT TO MATCH OTHER EXISTING DOORS
300D	3'-0"	84"	1-3/4"	S.C. WOOD	PAINT	С	WOOD	PAINT	С	4 7/8"	2	CARD ACCESS; CLOSER; PAINT TO MATCH OTHER EXISTING DOORS
300E	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	2	CARD ACCESS; CLOSER; PAINT TO MATCH OTHER EXISTING DOORS
301A	5'-0"	84"	1-3/4"	S.C. WOOD	PAINT	E	WOOD	PAINT	E	4 7/8"	6	PAINT TO MATCH OTHER EXISTING DOORS
302	3'-0"	84"	1-3/4"	S.C. WOOD	PAINT	Α	WOOD	PAINT	Α	5 1/2"	2	CARD ACCESS; CLOSER; PAINT TO MATCH OTHER EXISTING DOORS
302A	3'-0"	84"	1-3/4"	S.C. WOOD	PAINT	Α	WOOD	PAINT	Α	4 7/8"	5	PAINT TO MATCH OTHER EXISTING DOORS
306	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	8	TOUCH UP
307	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	5	TOUCH UP
308	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	5	TOUCH UP
309	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	8	TOUCH UP
310	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	5	TOUCH UP
312	3'-0"	84"	1-3/4"	S.C. WOOD	PAINT	А	WOOD	PAINT	Α	4 7/8"	8	PAINT TO MATCH OTHER EXISTING DOORS
313	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	7	TOUCH UP
314	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	8	TOUCH UP
316	3'-0"	84"	1-3/4"	S.C. WOOD	PAINT	Α	WOOD	PAINT	Α	4 7/8"	2	CARD ACCESS; CLOSER; PAINT TO MATCH OTHER EXISTING DOORS
317	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	6	TOUCH UP
318	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	3	TOUCH UP
318A	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	PAINT	EX.	EX.	6	TOUCH UP

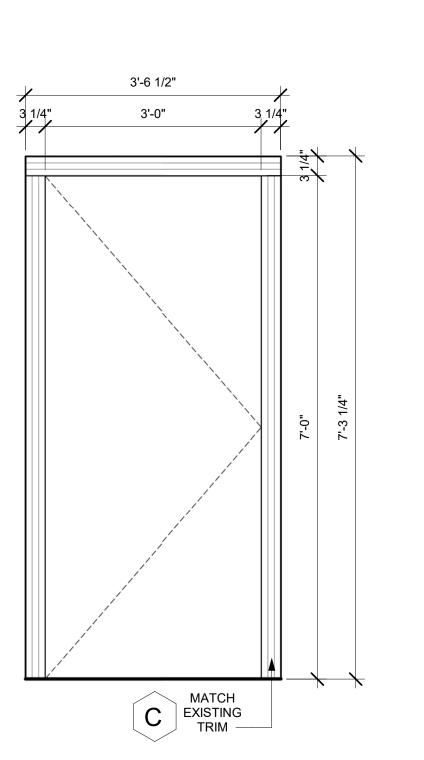
							WA	LLS							
ROOM	ROOM	FLOOR	BASE	NOI	RTH	EA	ST	sol	JTH	WE	ST		CEILIN	G	REMARKS
NUMBER	NAME			FINISH	MAT.	FINISH	MAT.	FINISH	MAT.	FINISH	MAT.	FINISH	MAT.	HEIGHT	
300	EX. HEARING ROOM	СРТ	RB	PAINT	GYP.	PAINT	GYP.	PAINT	GYP.	PAINT	GYP.	PAINT	EX.	EX.	TOUCH UP
300A	STORAGE	СРТ	RB	PAINT	GYP.	PAINT	GYP.	PAINT	GYP.	PAINT	GYP.	PAINT	SAC	8'-0"	-
301	EX. LOBBY	EX.	RB	EX.	EX.	EX.	EX.	EX.	EX.	EX.	EX.	PAINT	EX.	EX.	TOUCH UP; REPLACE DAMAGED CEILING TILES; CLEAN GRID
301A	STORAGE	EX.	RB	PAINT	EX.	PAINT	GYP.	PAINT	GYP.	PAINT	EX.	PAINT	EX.	EX.	-
302	OFFICE AREA	CPT	RB	PAINT	EX.	PAINT	GYP. EX.	PAINT	GYP. EX.	PAINT	EX.	SAC	SAC	10'-9"	REPAINT
302A	OFFICE	CPT	RB	PAINT	GYP. EX.	PAINT	EX.	PAINT	EX.	PAINT	GYP. EX.	SAC	SAC	10'-9"	-
306	EX. CONFERENCE RM.	CPT	RB	PAINT	EX.	PAINT	EX.	PAINT	EX.	PAINT	EX.	EX.	EX.	EX.	TOUCH UP; REPLACE DAMAGED CEILING TILES; CLEAN GRID
307	EX. OFFICE	CPT	RB	PAINT	EX.	PAINT	EX.	PAINT	GYP.	PAINT	GYP.	EX.	EX.	EX.	REPAINT; REPLACE DAMAGED CEILING TILES; CLEAN GRID
308	EX. OFFICE	CPT	RB	PAINT	EX.	PAINT	EX.	PAINT	GYP.	PAINT	GYP.	EX.	EX.	EX.	REPAINT; REPLACE DAMAGED CEILING TILES; CLEAN GRID
309	FACE TO FACE RM.	СРТ	RB	PAINT	EX.	PAINT	EX.	PAINT	EX.	PAINT	GYP. EX.	EX.	EX.	EX.	REPAINT; REPLACE DAMAGED CEILING TILES; CLEAN GRID
310	EX. OFFICE	CPT	RB	PAINT	GYP.	PAINT	EX.	PAINT	EX.	PAINT	GYP.	EX.	EX.	EX.	REPAINT; REPLACE DAMAGED CEILING TILES; CLEAN GRID
311	HALL	СРТ	RB	PAINT	EX.	PAINT	GYP.	PAINT	GYP. EX.	PAINT	EX.	EX.	EX.	EX.	REPAINT; REPLACE DAMAGED CEILING TILES; CLEAN GRID
312	BREAK ROOM	VET	RB	PAINT	GYP.	PAINT	EX.	PAINT	EX.	PAINT	GYP.	EX.	EX.	EX.	REPAINT; REPLACE DAMAGED CEILING TILES; CLEAN GRID
313	TOILET	VET	RB	PAINT	GYP. EX.	PAINT	EX.	PAINT	GYP. EX.	PAINT	GYP. EX.	EX.	EX.	EX.	REPAINT; REPLACE DAMAGED CEILING TILES; CLEAN GRID
314	EX. CONFERENCE RM.	СРТ	RB	PAINT	EX.	PAINT	GYP.	PAINT	GYP.	PAINT	GYP.	EX.	EX.	EX.	REPAINT; REPLACE DAMAGED CEILING TILES; CLEAN GRID
315	RECEPTION	СРТ	RB	PAINT	EX.	PAINT	GYP. EX.	PAINT	GYP. EX.	PAINT	GYP. EX.	SAC PAINT	SAC EX.	VARIES	TOUCH UP AS NEEDED
316	OFFICE AREA	СРТ	RB	PAINT	GYP. EX.	PAINT	GYP. EX.	PAINT	GYP. EX.	PAINT	GYP. EX.	EX.	EX.	EX.	REPAINT; REPLACE DAMAGED CEILING TILES; CLEAN GRID
317	EX. STORAGE	СРТ	RB	PAINT	EX.	PAINT	EX.	PAINT	EX.	PAINT	EX.	EX.	EX.	EX.	TOUCH UP AS NEEDED
318	EX. AV OFFICE	СРТ	RB	PAINT	EX.	PAINT	EX.	PAINT	EX.	PAINT	EX.	EX.	EX.	EX.	TOUCH UP AS NEEDED
					_										
														_	

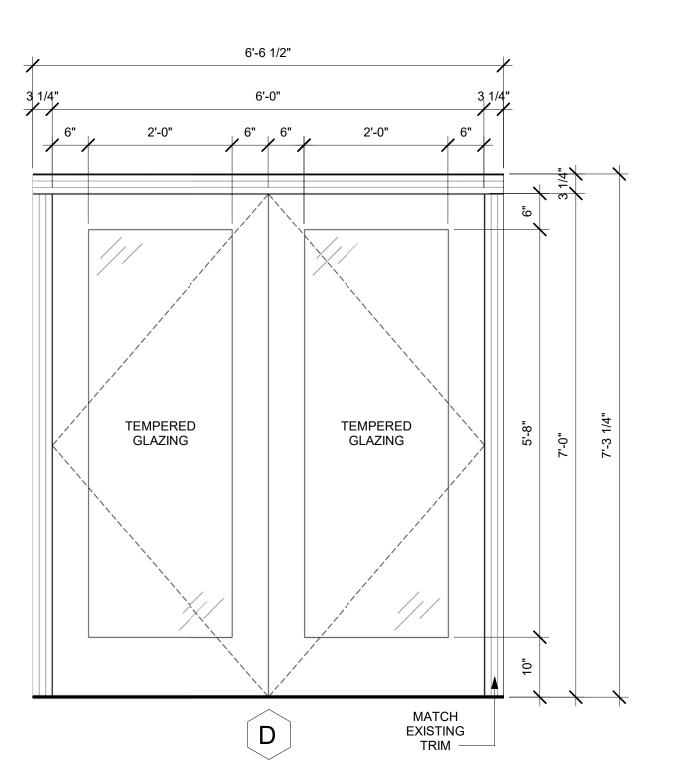
1. ENTRANCE	3. OFFICE LOCKING	5. OFFICE	7. PRIVACY
EXISTING	1 ENTRANCE (AB) SET	1 PASSAGE SET	1 PRIVACY SET
_,	1 WALL DOOR STOP	1 WALL DOOR STOP	1 SURFACE CLOSEF
2. CARD ACCESS			
1 PASSAGE SET	4. PUSH/PULL	6. STOREROOM	8. CLASSROOM
1 WALL DOOR STOP	1 PUSH/PULL PLATE SET	1 STOREROOM SET	1 CLASSROOM SET
1 SURFACE CLOSURE	1 WALL DOOR STOP	1 WALL DOOR STOP	1 SURFACE CLOSEF
	1 CLOSER		

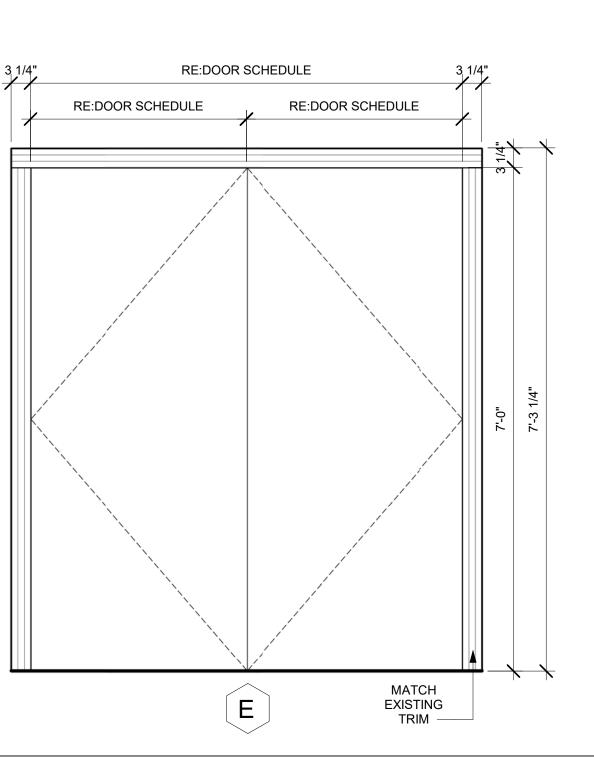
NOTE: ALL DOOR HARDWARE TO BE REPLACED WITH NEW LEVER SETS AS APPLICABLE. TOUCH UP OR REPAINT ALL FRAMES, AS NEEDED. CONSULT ARCHITECT FOR TOUCH UP/REPAINT COLORS.

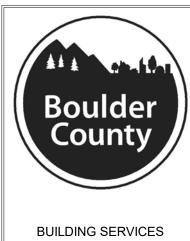












2020 13TH ST. BOULDER, CO 80302 P.O.BOX 471 BOULDER, CO

PHONE: 303. 441.3187

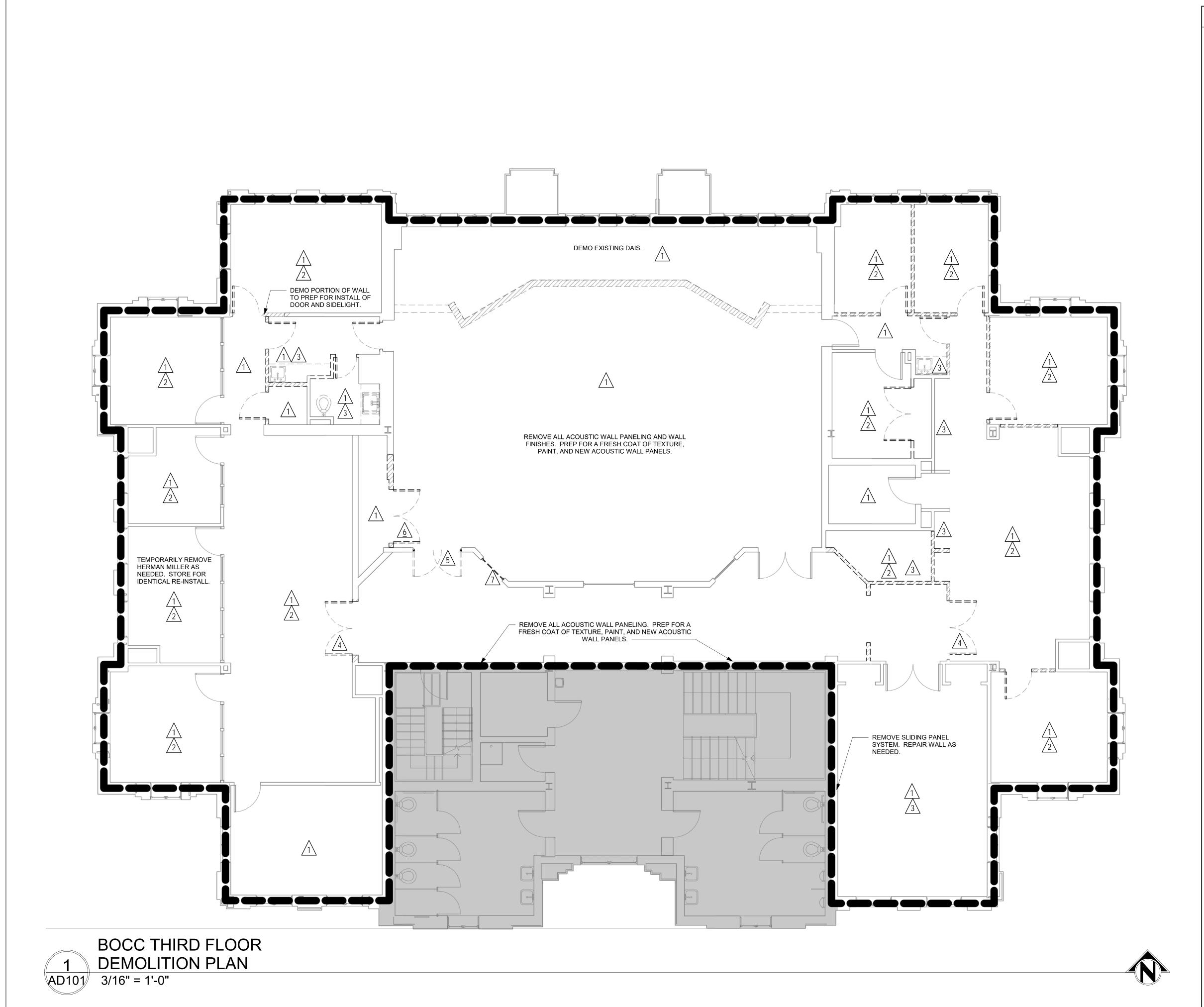
STREET FLOOR REMODEL 1325 I COURTHOUSE BOUL

PROJECT 3RD FLOOR BOCC REMODEL LOCATION 1325 PEARL STREET BOULDER, COLORADO 80302 <u>SHEET</u> DOOR & FINISH SCHEDULES FILE NAME

G:\ASSET MANAGEMENT\1006 Courthouse\PROJECTS\101420 - BOCC
HEARING ROOM &
SECURITY\DESIGN\DRAWINGS\RVT\CRT
3RD FLOOR REMODEL 2020 PERMIT SET
12 29 2020.rvt
ACC'T 100103
DATE: 12/29/20
DRAWN BY:\MS
CHECKED BY:\JB

REVISIONS

SHEET A601



DEMOLITION LEGEND

PROJECT BOUNDARY



EXISTING DOOR AND FRAME TO REMAIN. PROTECT DURING CONSTRUCTION.



EXISTING DOOR AND FRAME TO BE REMOVED.





EXISTING WALL TO REMAIN.



EXISTING WALL TO REMAIN.



EXISTING WALL TO BE REMOVED.



AREA NOT IN SCOPE. TO REMAIN AS IS.



FLOORING & BASE TO BE REMOVED. PREP FOR NEW FLOORING.



REMOVE EXISTING HERMAN MILLER FURNITURE.



REMOVE EXISTING CASEWORK.



REMOVE EXISTING DOUBLE DOORS. PREP FOR SINGLE DOOR AND SIDELIGHT.



REMOVE DOUBLE DOOR. PREP FOR INFILLING OPENING.

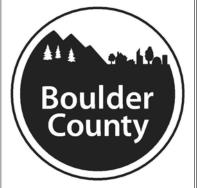


REMOVE DOUBLE DOOR.



REMOVE GLAZING AND METAL DETAILING. PREP OPENING FOR NEW DOOR. SAVE METAL DETAILING FOR INSTALL ON

NEW DOOR.



BUILDING SERVICES 2020 13TH ST.

BOULDER, CO 80302 P.O.BOX 471 BOULDER, CO

PHONE: 303. 441.3187



12.29.20

L STREET FLOOR REMODEL OUNT PEARL E 3RD 1325 COURTHOUSE BOUL

PROJECT 3RD FLOOR BOCC REMODEL

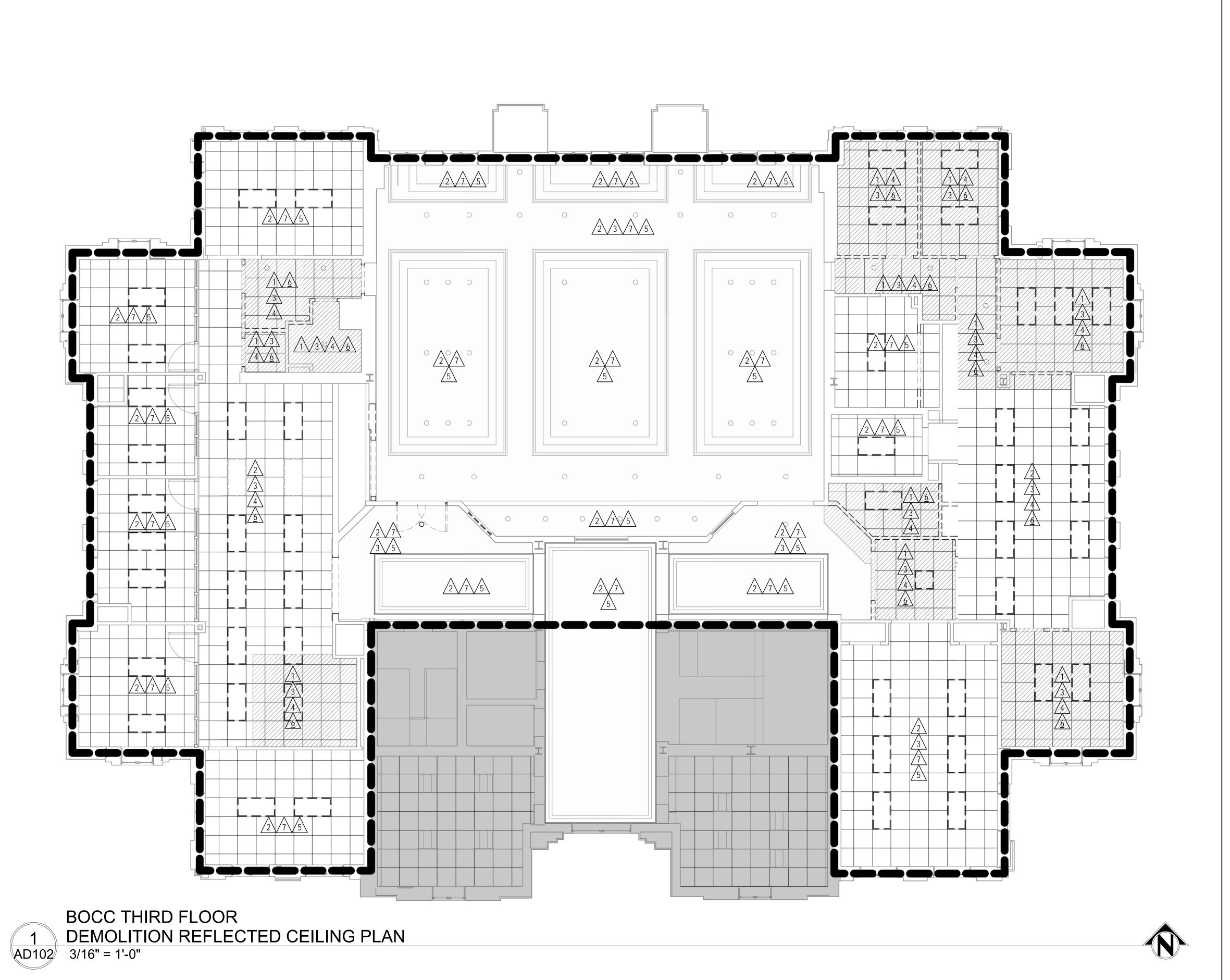
LOCATION 1325 PEARL STREET BOULDER, COLORADO BOCC THIRD FLOOR **DEMOLITION PLAN**

FILE NAME G:\ASSET MANAGEMENT\1006 -Courthouse\PROJECTS\101420 - BOCC HEARING ROOM & 3RD FLOOR REMODEL 2020 PERMIT SET ACC'T 100103 DATE: 12/29/20 DRAWN BY:MS

REVISIONS

CHECKED BY:JB

SHEET AD101





PROJECT BOUNDARY



EXISTING CEILING TO BE REMOVED.



EXISTING CEILING TO REMAIN. PROTECT DURING CONSTRUCTION.





EXISTING WALL TO REMAIN.



EXISTING WALL TO REMAIN.



===: EXISTING WALL TO BE REMOVED.



EXISTING LIGHT TO BE REMOVED.



EXISTING LIGHT TO REMAIN.



EXISTING CAN LIGHT TO REMAIN.



AREA NOT IN SCOPE. TO REMAIN AS IS.



EXISTING CEILING TO BE REMOVED.



EXISTING CEILING TO REMAIN. PROTECT DURING CONSTRUCTION. CLEAN GRID. REPLACE DAMAGED/STAINED TILES.



RECONFIGURE EXISTING MECHANICAL. RE:MECHANICAL



EXISTING LIGHTING TO BE REMOVED, RECONFIGURED, AND UPDATED TO NEW STANDARD 2X2. RE:ELECTRICAL



EXISTING SPRINKLER LAYOUT TO REMAIN AS IS.



EXISTING SPRINKLER LAYOUT TO BE RECONFIGURED. RE:FIRE PROTECTION



EXISTING LIGHTING TO BE REPLACED WITH NEW LED STANDARD FIXTURE.



RE: ELECTRICAL

AD102

NOTE: SEE MECHANICAL, ELECTRICAL, FIRE PROTECTION, AND PLUMBING FOR ALL LIGHTING, MECHANICAL, AND PLUMBING.

STREET FLOOR REMODEL COUNT PEARL E 3RD F 1325 | COURTHOUSE \mathbf{m}

Boulder County

BUILDING SERVICES

2020 13TH ST.

BOULDER, CO 80302

P.O.BOX 471 BOULDER, CO 80306

PHONE: 303. 441.3187 mschoofs@bouldercounty.org

Mackenge a K Dchoofe

12.29.20

PROJECT 3RD FLOOR BOCC REMODEL

LOCATION 1325 PEARL STREET BOULDER, COLORADO 80302 **SHEET** BOCC THIRD FLOOR DEMOLITION REFLECTED

CEILING PLAN FILE NAME

G:\ASSET MANAGEMENT\1006 -Courthouse\PROJECTS\101420 - BOCC HEARING ROOM & HEARING ROOM &
SECURITY/DESIGN/DRAWINGS/RVT/CRT
3RD FLOOR REMODEL 2020 PERMIT SET
12 29 2020.rvt
ACC'T 100103
DATE: 12/29/20
DRAWN BY:MS
CHECKED BY:JB

REVISIONS

SHEET