

PROJECT MANUAL FOR:

Harrison Hall Extrusion Lab Space Improvements

MONTANA STATE UNIVERSITY
BOZEMAN, MONTANA

October 1, 2020

PPA No. 19-0117



**MONTANA
STATE UNIVERSITY**

CAMPUS PLANNING,
DESIGN AND CONSTRUCTION
BOZEMAN, MONTANA
PHONE: (406) 994-5413 FAX: (406) 994-5665

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- MSU Supplemental Conditions

- State of Montana General Conditions
- [Montana Prevailing Wage Rates](#)

The following documents are included in electronic versions but not included in the printed project manual.

- | | |
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| Substitution Request, Form 99 | Certificate of Substantial Completion, Form 107 |
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| Periodic Estimate for Partial Payment, Form 101 | Request for Information, Form 111 |
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Additionally, these can be downloaded from our website: <http://www.montana.edu/pdc/docs/index.html>
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CAMPUS PLANNING, DESIGN & CONSTRUCTION
Sixth Avenue and Grant Street • P.O. Box 172760 • Bozeman, Montana 59717-2760
Phone: (406) 994-5413 • Fax: (406) 994-5665

PERMIT NOTICE

The drawings and specifications for this project have been submitted to the city of Bozeman for review. The contractor will pay all permit fees. The owner shall pay for plan review fee and the impact fee required for this project. The building permit must be appropriately displayed at the project site before construction may begin. The contractor shall contact the city of Bozeman for further clarification at the following:

CITY OF BOZEMAN
BUILDING INSPECTION DIVISION
DEPARTMENT OF PUBLIC WORKS
20 EAST OLIVE STREET, SUITE 208
PO BOX 640
BOZEMAN, MONTANA 59771-0640
(406) 582-2300

BUILDING PERMIT

INVITATION TO BID

Sealed bids will be received until **2:00 PM on Thursday, October 29, 2020**, and will be publicly opened and read aloud at the offices of **MSU Campus Planning, Design and Construction, Plew Building, 6th & Grant, Bozeman, Montana**, for: **Harrison Hall Extrusion Lab Space Improvements, PPA No. 19-0117**.

Bids shall be submitted on the form provided within the Contract Documents. Contract documents may be obtained at the offices of:

**Montana State University
Campus Planning, Design and Construction
Plew Building, 6th & Grant
PO Box 172760
Bozeman, Montana 59717-2760**

On the web at:

<http://www.montana.edu/pdc/bids.html>

A PRE-BID WALK-THROUGH IS SCHEDULED FOR Thursday, October 15, 2020, AT 10:00 AM. PARTICIPANTS SHOULD MEET AT: THE LOADING DOCK OF HARRISON HALL ON THE MSU BOZEMAN CAMPUS, BOZEMAN, MONTANA. ATTENDANCE IS STRONGLY RECOMMENDED. Bidders should thoroughly review the contract documents before the pre-bid conference.

Bids must be accompanied by a bid security meeting the requirements of the State of Montana in the amount of 10% of the total bid. After award, the successful bidder must furnish an approved Performance Security and a Labor & Material Payment Security each in the amount of 100% of the contract for contracts equal to or greater than \$25,000.

No bidder may withdraw his bid for at least thirty (30) calendar days after the scheduled time for receipt of bids except as noted in the Instructions to Bidders.

The Owner reserves the right to reject any or all bids and to waive any and all irregularities or informalities and the right to determine what constitutes any and all irregularities or informalities.

Time of Completion

Bidder agrees to commence work immediately upon receipt of the Notice to Proceed and to substantially complete the project **within (98) consecutive days (14 weeks)**.

The State of Montana makes reasonable accommodations for any known disability that may interfere with an applicant's ability to compete in the bidding and/or selection process. In order for the state to make such accommodations, applicants must make known any needed accommodation to the individual project managers or agency contacts listed in the contract documents.

State of Montana - Montana State University

Facilities Services

Campus Planning, Design and Construction

INSTRUCTIONS TO BIDDERS

1. Table of Contents

Provided in the Printed Project Manual:

Invitation to Bid
Instruction to Bidders
Bid Proposal, Form 098
Sample Standard Form of Contract
State of Montana General Conditions
MSU Supplementary Conditions
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Periodic Estimate for Partial Payment, Form 101
Acknowledgement of Subcontractors, Form 102
Consent of Surety to Final Payment, Form 103
Contract Change Order, Form 104
Contractor's Affidavit, Form 106
Certificate of Substantial Completion, Form 107
Construction Change Directive, Form 109
Request for Information, Form 111
Performance Bond, Form 112
Labor and Material Payment Bond, Form 113
Certificate of Final Acceptance, Form 118
Buy-Safe Montana Form

These additional forms can be found on our website or will be provided upon request:

<http://www.montana.edu/pdc/docs/index.html>

Substitution Request, Form 99
Schedule of Values, Form 100

For most current Montana Prevailing Wage Rates applicable to this project download from this site: <http://erd.dli.mt.gov/labor-standards/state-prevailing-wage-rates>

2. Viewing of Contract Documents

2.1. The Contract Documents may be viewed at the following locations:

Builders Exchange of Billings
2050 Broadwater STE A
Billings MT 59102
406/652-1311
bbx@billingsplanroom.com

NW MT - Flathead Builders Exchange
2303 Hwy 2 E
Kalispell, MT 59901
406/755-5888
planex@kalcop.com

Helena Plans Exchange
1530 Cedar Street Suite C
Helena MT 59601
406/457-2679
helenaplanex@helenacopycenter.com

Bozeman Builders Exchange
1105 Reeves RD W STE 800
Bozeman MT 59718
406/586-7653
exchange@bozemanplanroom.com

Great Falls Builders Exchange
202 2ND Avenue S
Great Falls MT 59401
406/453-2513
gfbe@greatfallsplans.com

Missoula Plans Exchange
201 N Russell ST
Missoula MT 59801
406/549-5002
mpe@vemcoinc.com

Butte Builders Exchange
4801 Hope Road
Butte MT 59701
406/782-5433
butteplans@gmail.com

3. Borrowing of Documents: Up to two hard copy sets may be obtained for General Contractors. Additionally, Contract Documents will be available electronically. If shipping of hard copies is required, it will be at the contractor's expense.

3.1. Contract Documents may be obtained at the office of:
**MONTANA STATE UNIVERSITY
CAMPUS PLANNING, DESIGN & CONSTRUCTION
PLEW BUILDING 1st FLOOR
6TH AND GRANT
BOZEMAN, MONTANA 59717-2760
406/994-5413**

3.2. All borrowed Contract Documents shall be returned to Campus Planning, Design & Construction within ten (10) calendar days after the bid opening for the deposit refund (if deposit was required). However, if the Contract Documents are not in a condition where they can be reused by the Owner to construct the project, the Owner may at its sole discretion may retain the deposit or levy costs to contractor in order to

reproduce a replacement set.

4. Visits to Site

4.1. Prospective bidders are requested to contact the following for inspection of the site:

Ara Meskimen, Project Manager
Montana State University
Campus Planning, Design & Construction
6th and Grant, PO Box 172760
Bozeman, Montana 59717-2760
Ph: 406/994-3230; Fax: 406/994-5665

4.2. Failure to visit site will not relieve the Contractor of the conditions of the contract.

5. Requests for Substitution

5.1 Any requests for product substitutions must be submitted on the "Substitution Request" Form 099, to the Architect/Engineer at least ten (10) days prior to the date of the bid opening for consideration by the Architect/Engineer. Any request for substitution made after this time restriction, including those made after award during project construction may be rejected without consideration by either the Architect/Engineer or the Owner.

6. Bids/Proposals

6.1. The bidder shall submit his bid on the Bid Proposal Form furnished with the Contract Documents.

6.2. DO NOT send the Contract Documents with the Proposal. The Contract Documents shall be returned as noted in Article 3.2 of the Instructions to Bidders.

6.3. If the project is funded by any portion of federal funds, the following may apply: on Federally-funded projects, a "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion" form must be submitted with the bid proposal. If the debarment form is not included within the Construction Documents, federal funds (if included) do not require the form or are not included in the project and the debarment form is not required.

6.4. Proposals shall be in a sealed envelope and addressed to:

STATE OF MONTANA, MONTANA STATE UNIVERSITY
CAMPUS PLANNING, DESIGN & CONSTRUCTION
PLEW BUILDING 1ST FLOOR
6TH AND GRANT
PO BOX 172760, BOZEMAN, MONTANA 59717-2760

6.5. The envelope shall state that it contains a "BID PROPOSAL" and indicate the following information:

Name of Project:	Harrison Hall Extrusion Lab Space Improvements
Location:	Montana State University Bozeman Campus
MSU PPA Project Number:	19-0117
Name of Bidder:	_____
Acknowledge Addendum Number:	___, ___, ___, ___

6.6. It is the bidder's responsibility to deliver or ensure delivery of the bid proposal to Montana State University, Campus Planning, Design, and Construction. Proposals received after the scheduled closing time for bids by either the bidder, a delivery service (e.g. Federal Express, U.S. Postal Service, United Parcel Service, etc.), or the state's own mail delivery system, will be rejected. Proposals entitled for consideration must be time-stamped in the Owner's office prior to the closing time for receipt of bids. The official time clock for receipt of bids and fax modifications is the Owner's time and date stamp clock located in the reception area of the Owner's office. No other clocks, calendars or timepieces are recognized. All bidders are responsible to ensure all bids and fax modifications are received in the Owner's office prior to the scheduled closing time.

6.7. If requested on the Bid Proposal, any person making a bid to perform the Work shall, as a requirement of a responsible bid, set forth the name of each subcontractor specified in the "List of Subcontractors" which is part of the bid proposal. The bidder shall list only one subcontractor for each such portion or work listed. The bidder whose bid is accepted shall not:

- 6.7.1. Substitute any other subcontractor in place of the subcontractor listed in the original bid, except by specific consent of the Owner. The Owner, at its sole discretion, may grant substitution with consent of the originally listed subcontractor, or in consideration of other factor(s) involved if deemed relevant to the successful performance of the Contract.
- 6.7.2. Permit any such subcontract to be voluntarily assigned, transferred or allow it to be performed by any party other than the subcontractor listed in the original bid without the consent of the Owner.
- 6.8. Bid Proposals entitled to consideration shall be made in accordance with the following instructions:
 - 6.8.1. Made upon form provided;
 - 6.8.2. All blank spaces properly filled;
 - 6.8.3. All numbers stated in both writing and in figures;
 - 6.8.4. Shall contain no additions, conditional or alternate bids, erasures or other irregularities;
 - 6.8.5. Shall acknowledge receipt of all addenda issued.
- 6.9. Bid Proposals entitled to consideration shall be signed by the proper representative of the firm submitting the proposal as follows:
 - 6.9.1. The principal of a single owner firm;
 - 6.9.2. A principal of a partnership firm;
 - 6.9.3. An officer of an incorporated firm, or an agent whose signature is accompanied by a certified copy of the resolution of the Board of Directors authorizing that agent to sign; or,
 - 6.9.4. Other persons signing for a single-owner firm or a partnership shall attach a power-of-attorney evidencing his authority to sign for that firm.
- 6.10. Unit Prices: When a Bid Proposal Form contains unit prices, any errors discovered in the extension of those unit prices will be corrected by the Owner using the unit price figures. The adjusted extended amount will then be used to determine the correct total bid. Only after the amounts have been checked and adjusted, if necessary, will the valid low bid be determined.
- 6.11. Estimated Quantities: All estimated quantities stipulated in the Bid Proposal and other Contract Documents are approximate and are to be used only as a basis for estimating the probable cost of the work and for the purpose of comparing proposals submitted for the work. It is understood and agreed that the actual amounts of work done, and materials furnished under unit price items may vary from such estimated quantities. The actual quantities will depend on the conditions encountered at the time the work is performed.
- 6.12. Any bidder may modify his bid by fax communication only.
 - 6.12.1 It is the bidder's responsibility to ensure that the entire modification is received at the bid opening location prior to the scheduled closing time for receipt of bids. The modification shall not reveal the bid price but shall only provide the ADDITION or SUBTRACTION from the original proposal.
 - 6.12.2 The Owner is not responsible for the performance of the facsimile/printer machine, maintaining adequate paper levels, toner levels, the telephone connection, quality of the facsimile, or any other factors affecting receipt of the fax. Unreadable or difficult-to-read facsimiles may be rejected at the sole discretion of the Owner.
 - 6.12.3 Changes in the listed subcontractors, if any, shall also be provided.
 - 6.12.4 Bid modifications must be verified by hard copy provided to the Owner within two (2) business days after the bid opening.
 - 6.12.5 Bid modifications shall be directed to fax phone (406) 994-5665.
 - 6.12.6 All facsimiles shall be date and time stamped on the same time-stamp clock in the Owner's office that is used for receipt of bids in order to be considered valid. The Owner may also use the date and time on the automatically-generated email notification of facsimile receipt as generated by the State's system. Any date and time indicated at the top of the facsimile on either the bidder's or the Owner's facsimile/printer machine will not be used in determining time of arrival of the modification.
- 6.13. The Owner reserves the sole right to reject any or all bids and to waive any irregularities or informalities. The Owner also reserves the sole right to determine what constitutes irregularities or informalities and/or what is material and/or immaterial to the bids received.

7. Bid Security

- 7.1. IF THE PROJECT COST IS LESS THAN \$25,000, AT ITS SOLE DISCRETION THE STATE OF MONTANA MAY OR MAY NOT REQUIRE BID SECURITY (18-2-302 MCA).
- 7.2. All proposals shall be accompanied by a bid security in the amount of 10% of the bid price, as evidence of good faith (18-2-302 MCA). (**MSU does not waive bid security.**)
- 7.3. Bid security shall be in the form of lawful moneys of the United States, cashier's check, certified check, bank money order or bank draft, bid bond or bonds payable to the State of Montana (18-2-302 MCA).
- 7.4. If the bidder, to whom a contract is awarded, fails to enter into and execute the proposed contract within fifteen (15) calendar days of award, the bidder shall forfeit the bid security (18-1-204 MCA).
- 7.5. The bid security of unsuccessful bidders will be returned when the contract has been awarded to the successful bidder or when all bids have been rejected (18-1-205 MCA).
- 7.6. Execution of and entering into a contract includes providing all necessary insurance certificates, bonds, signed contract and current copy of the construction contractor registration certificate.
- 7.7. **NOTE: PER STATE POLICY, IF CASH, CHECK, MONEY ORDER, OR BANK DRAFT ARE PROVIDED AS BID SECURITY, IT WILL BE DEPOSITED IN THE TREASURY. UNSUCCESSFUL BIDDERS WILL HAVE THEIR SECURITY RETURNED UPON CONTRACT AWARD. THE SUCCESSFUL BIDDER'S SECURITY MAY BE RETURNED UPON ISSUANCE OF NOTICE TO PROCEED.**

8. Withdrawal of Bids

- 8.1. Any bidder may withdraw his bid proposal at any time prior to the scheduled closing time for the receipt of bids.
- 8.2. Once the closing time for the receipt of bids is reached, a bid may not be withdrawn for a period of thirty (30) calendar days.

9. Interpretation of Contract Documents

- 9.1. Bidders shall promptly notify the Architect/Engineer of any ambiguity, inconsistency, or error which they may discover upon examination of the Contract Documents or of the site and local conditions.
- 9.2. Bidders requiring clarification or interpretation of the Contract Documents shall request, in writing, clarification from the Architect/Engineer at least ten (10) calendar days prior to the date set for receipt of bids.
- 9.3. Any interpretations, corrections, or change in the Contract Documents prior to the bid opening will be made by written addendum issued by the Architect/Engineer. The Architect/Engineer will endeavor to notify all plan holders of any addenda issued but it shall be the responsibility of the individual bidders to insure they have received all addenda prior to the submission of their bid.
- 9.4. All written addenda issued by the Architect/Engineer will become part of the Contract Documents and all bidders shall be bound by such addenda whether or not received and/or acknowledged by the bidder. No oral or telephone modifications of the Contract Documents will be considered or allowed.

10. Award of Bids

- 10.1. All bids received by the stated hour will be opened and publicly read aloud.
- 10.2. The Owner reserves the right to reject any and all bids and to waive any informality or irregularity in any bid received. Owner reserves the right to determine what constitutes material and/or immaterial informalities and/or irregularities.
- 10.3. The low bid shall be determined on the basis of the lowest Base Bid or the lowest combination of Base Bid and Alternate Bids, accepted in consecutive order.
- 10.4. The Owner shall award such contract to the lowest responsible bidder (18-1-102 MCA).

- 10.4.1. The Owner may make such investigations as it deems necessary to determine whether or not any or all bidders are responsible.
 - 10.4.2. The term “responsible” does not refer to pecuniary ability only, nor the ability to tender sufficient performance and payment bonds.
 - 10.4.3. The term “responsible” includes, but is not limited to:
 - 10.4.3.1. Having adequate financial resources to perform the contract or the ability to obtain them;
 - 10.4.3.2. Being able to comply with the required delivery, duration, and performance schedule;
 - 10.4.3.3. Having a satisfactory record of integrity and business ethics;
 - 10.4.3.4. Having the necessary organization, experience, accounting, and operational controls;
 - 10.4.3.5. Having the necessary production, construction, technical equipment, and facilities; and,
 - 10.4.3.6. Having the technical skill, ability, capacity, integrity, performance, experience, lack of claims and disputes, lack of actions on bonds, lack of mediations, arbitrations and/or lawsuits related to construction work or performance, and such like.
 - 10.4.4. Bidders shall furnish to the Owner all information and data for this purpose as the Owner may request.
 - 10.4.5. The Owner reserves the right to reject any bid if the investigation or evidence of any Bidder fails to satisfy the Owner that such Bidder is properly and adequately qualified to suitably perform and satisfactorily execute the obligations of the Contract and Work defined in the Contract Documents.
- 10.5. The Owner shall award such contract to the lowest responsible bidder without regard to residency except on a reciprocal basis: a resident bidder will be allowed a preference on a contract against the bid of any non-resident bidder from any state or country that enforces a preference for resident bidders. The preference given to resident bidders of the State of Montana must be equal to the preference given in the other state or country (18-1-102, MCA). This does not apply when prohibited by Federal requirements.
- 10.6. The State of Montana may negotiate deductive changes, not to exceed 7% of the total cost of the project, with the lowest responsible bidder when the lowest responsible bids causes the project cost to exceed the appropriation; or with the lowest responsible bidders if multiple contracts will be awarded on the projects when the total of the lowest responsible bids causes the project cost to exceed the appropriation. A bidder is not required to negotiate his bid but is required to honor his bid for the time specified in the bidding documents. The Owner may terminate negotiations at any time (18-2-105(7) MCA).
11. Contract
- 11.1. The sample Standard Form of Contract between Contractor and Owner, as issued by the Owner, will be used as the contracting instrument and is bound within the Contract Documents.
 - 11.2. The form shall be signed by a proper representative of the bidder as defined above in these instructions.
 - 11.3. The contractor shall also complete and return a federal form W-9 with the Contract.
12. Performance, Labor and Material Payment Security
- 12.1. IF THE PROJECT COST IS LESS THAN \$25,000, AT ITS SOLE DISCRETION THE STATE OF MONTANA MAY OR MAY NOT REQUIRE A PERFORMANCE OR LABOR AND MATERIAL PAYMENT SECURITY (18-2-201 MCA). **(MSU REQUIRES BONDS ON ALL PROJECTS ABOVE \$25,000.)**
 - 12.2. THE CONTRACTOR SHALL PROVIDE BOTH SECURITIES FOR THIS PROJECT AS SPECIFIED BELOW, UNLESS SPECIFICALLY DIRECTED THAT THIS REQUIREMENT HAS BEEN WAIVED ELSEWHERE IN THESE DOCUMENTS.
 - 12.3. The Owner shall require the successful bidder to furnish a Performance Bond in the amount of 100% of the contract price as security for the faithful performance of his contract (18-2-201, MCA).
 - 12.4. The Owner shall require the successful bidder to furnish a Labor and Material Payment Bond in the amount of 100% of the contract price as security for the payment of all persons performing labor and furnishing materials in connection therewith (18-2-201 MCA).

- 12.5. The bonds shall be executed on forms furnished by the Owner. No other forms will be acceptable.
- 12.6. The bonds shall be signed in compliance with State statutes (33-17-111 MCA).
- 12.7. Bonds shall be secured from a State licensed bonding company.
- 12.8. Power of Attorney
 - 12.8.1. Attorneys-in-fact who sign contract bonds must file with each bond a certified and effectively dated copy of their power of attorney;
 - 12.8.2. One original copy shall be furnished with each set of bonds.
 - 12.8.3. Others furnished with a set of bonds may be copies of that original.
13. Notice To Proceed
 - 13.1. The successful bidder who is awarded the contract for construction will not be issued a Notice to Proceed until there is a signed Contract, the specified insurance certificates and a copy of the bidder's current Construction Contractor Registration Certificate in the Owner's possession. All items are required within fifteen (15) calendar days of contract award made by the Owner.
14. Laws and Regulations
 - 14.1. The bidders' attention is directed to the fact that all applicable federal and state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over the project shall apply to the contract throughout and will be deemed to be included in this contract as if bound herein in full.
15. Payments
 - 15.1. NOTICE OF APPROVAL OF PAYMENT REQUEST PROVISION. Per Title 28, Chapter 2, Part 21, this contract allows the Owner to change the number of days to approve a Contractor's payment request. This contract allows the Owner to approve the Contractor's payment request within thirty-five (35) calendar days after it is received by the Owner without being subject to the accrual of interest.
16. Buy Safe Montana Provisions
 - 16.1. The successful bidder who is awarded the contract for construction shall provide their incident rate, experience modification ratio (EMR) and loss ratio via the Buy-Safe Montana form with the Award documents.
17. Time of Completion
 - 17.1. Bidder agrees to commence work immediately upon receipt of the Notice to Proceed and to substantially complete the project **within (98) consecutive days (14 weeks)**.
 - 17.2. Actual damages may be assessed pursuant to the General Conditions. The Contractor acknowledges and understands that the Owner may suffer loss for every day of delay Final Acceptance is not achieved. Nothing contained in this waiver of liquidated damages shall be deemed to preclude an award of actual damages in accordance with Paragraphs 4.3 through 4.6 of the General Conditions of the Contract for Construction.

~END OF INSTRUCTIONS~



BID PROPOSAL

Harrison Hall
Extrusion Lab Space Improvements
PPA No. 19-0117

TO:
State of Montana, Montana State University
Campus Planning, Design & Construction
Attn: Rebecca Barney, Contract Administrator
Plew Building, 6th & Grant,
PO Box 172760
Bozeman, Montana 59717-2760

Prospective Bidders:

The undersigned, having familiarized themselves with the Contract Documents, site, location, and conditions of the Work as prepared by Comma-Q Architecture, Inc 109 N Rouse Ave #1 Bozeman, MT 59715 (406)-585-1112, by submission of this Bid Proposal, hereby agrees to provide all materials, systems, equipment and labor necessary to complete the Work for the total sum as follows:

BASE BID:

_____ and _____ /100 DOLLARS
(ALPHA notation) \$ _____
(NUMERIC notation)

ALTERNATE NO. 1: ADD (Handwash Sink and associated casework, finishes, and accessories in Analytical Lab 132B)
THE BIDDER AGREES TO ADD THE SPECIFIED SCOPE OF WORK FOR THE TOTAL SUM OF:

_____ and _____ /100 DOLLARS
(ALPHA notation) \$ _____
(NUMERIC notation)

ALTERNATE NO. 2: ADD (Casework in Food Prep Area 132C)
THE BIDDER AGREES TO ADD THE SPECIFIED SCOPE OF WORK FOR THE TOTAL SUM OF:

_____ and _____ /100 DOLLARS
(ALPHA notation) \$ _____
(NUMERIC notation)

This bidder acknowledges receipt of the following addenda:

ADDENDUM No.:	_____	Dated:	_____
ADDENDUM No.:	_____	Dated:	_____
ADDENDUM No.:	_____	Dated:	_____

By signing below, the bidder agrees to all terms specified and AGREES TO fulfill the requirements of the CONTRACT in strict accordance with the bidding documents.

Company Name: _____

Signature: _____

Print Name: _____

Title: _____

Business Address: _____

Construction Contractor

Registration No.: _____

Phone No.: _____

Fax No.: _____

Email: _____

Date.: _____



STANDARD FORM OF CONTRACT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION

THIS CONTRACT IS SUBJECT TO ARBITRATION PURSUANT TO THE UNIFORM ARBITRATION ACT, MCA TITLE 27, CHAPTER 5

This CONTRACT is made as of:

(date)

BETWEEN:

*[FIRM NAME]
[ADDRESS]
[CITY, STATE, ZIP]
[PHONE, FAX]*

Herein after identified as the “CONTRACTOR” and the State of Montana, acting through its Director, Campus Planning, Design, and Construction, hereinafter identified as the “OWNER”:

*State of Montana
Montana State University
Campus Planning, Design, and Construction
Plew Building 6th & Grant, PO Box 172760
Bozeman, Montana 59717-2760*

WITNESSETH that the Contractor and the Owner, for the consideration hereinafter named, agree as follows:

ARTICLE 1 – SCOPE OF WORK

The Contractor shall perform all Work as shown in the Contract Documents entitled:

[PROJECT NAME]

PPA NO.: [PPA NO.]

Bid Documents Dated: (alpha date)

As prepared by:

*[FIRM NAME]
[ADDRESS]
[CITY, STATE, ZIP]
[PHONE, FAX]*

Hereinafter identified as the “ARCHITECT/ENGINEER.”

ARTICLE 2 – TIME OF COMPLETION

As time is of the essence in performance, coordination, and completion of the Work contemplated under this Contract, the Work to be performed shall commence on a date set forth by the Owner in a written “Notice To Proceed” and shall be completed Within or by:

CONSECUTIVE CALENDAR DAYS.

If the Work is not completed within the time specified, the Owner may assess liquidated damages in the amount of:

[DOLLARS IN ALPHA] DOLLARS (\$numeric) PER CALENDAR DAY.

ARTICLE 3 – CONTRACT SUM

The Owner shall pay the Contractor for performance of the Work, subject to additions and/or deductions by Change Order or damages as provided in the Contract Documents, the Contract Sum of:

[DOLLARS IN ALPHA] DOLLARS (\$(dollars in numeric)).

ARTICLE 4 – PROGRESS PAYMENTS

The Owner shall make payments on account in accordance with the Contract Documents as follows: Ninety-Five (95%) of the portion of the Contract Sum for labor, materials, and equipment incorporated in the Work and for materials suitable stored. The Contractor shall be aware that the Owner has thirty-five (35) calendar days upon receipt in which to make approval and payment without being in

violation of statute or being subject to the accrual of interest shall, or the need to make written notice or justification to deny payment in whole or in part. The Contractor shall, within seven (7) calendar days following receipt of payment from the Owner, make payment to subcontractor(s).

ARTICLE 5 – FINAL PAYMENT

Final Payment, constituting the entire unpaid balance of the Contract Sum, shall be paid by the Owner to the Contractor when: 1) the Work is completed in accordance with the Contract Documents; 2) the Contract fully performed; 3) a final Form 101, Periodic Estimate for Partial Payment showing the final correct amounts is approved by the Architect/Engineer; 4) a Form 106, "Contractor's Affidavit of Completion, Payment of Debts and Claims, and Release of Liens" is completed and submitted; and 5) a Form 103, "Consent of Surety Company To Final Payment" if required, is completed and submitted.

ARTICLE 6 – CONTRACT DOCUMENTS

The Contract Documents, together with this Contract, form the entire Contract and Agreement between the Contractor and Owner. The Contract Documents, which are totally and completely a part of this Contract as if attached hereto or repeated herein, are enumerated in the General Conditions of the Contract for Construction inclusive of Wage Rates, Reports, and all other items bound with the Specifications and/or Project Manual(s).

ARTICLE 7 – PREVAILING WAGE SCHEDULE

The Contractor and all subcontractors at any tier or level shall, as a minimum, pay the standard prevailing rate of wages schedule (including per diem, fringe benefits for health, welfare, and pension contributions and travel allowance) in effect and as applicable to the district in which the Work is being performed.

ARTICLE 8 – VENUE

In the event of any mediation, arbitration, or litigation concerning any matter or dispute arising out of or related to the Contract, venue shall be the Eighteenth Judicial District in and for the County of Gallatin, Montana. The Contract shall be interpreted and subject to the laws of the State of Montana.

ARTICLE 9 – MISCELLANEOUS PROVISIONS

Other documents if any forming part of these contract documents are as follows:

Addendum #1 dated: [] Addendum #2 dated: [] Addendum #3 dated: []

Contractor's Bid Proposal dated: []

Contractor's Revised Proposal dated: []

EXECUTION OF THIS CONTRACT

This Contract is entered into as of the day and year first written above:

CONTRACTOR: (COMPANY)
(ADDRESS)
(CITY, STATE, ZIP)
(PHONE, FAX)

OWNER: STATE OF MONTANA
MONTANA STATE UNIVERSITY
CAMPUS PLANNING, DESIGN, AND
CONSTRUCTION
6TH & GRANT AVENUE, P.O. Box 172760
BOZEMAN, MONTANA 59717-2760

(Signature)

John How, Director

(Print Name)

(Title)

(Date)

(Date)

Contractor's Registration Certificate No. _____

Federal Tax Identification No. _____

Incorporated? _____ No _____ yes

Please refer to PPA No. in all correspondence.



**GENERAL CONDITIONS
OF THE CONTRACT FOR CONSTRUCTION**

State of Montana Version
(Form Revision Date: April 2020)

FRONT PAGE HIGHLIGHTS

Note: This list of items is not an exhaustive or all-inclusive list of the contractor's responsibilities for the Project but is provided solely for convenience and reference.

ITEM	REFERENCE	GENERAL CONDITIONS
Prevailing Wage Rates	Article 3.4.4	The Commissioner of The Montana Department of Labor and Industry (DOLI) has established the standard prevailing rate of wages in accordance with 18-2-401 and 18-2-402, MCA.
Warranty	Article 3.5.2	The warranty period shall be defined as commencing with Substantial Completion (or with each Substantial Completion if there is more than one) of the Project, or any portion thereof, and continuing for one (1) calendar year from the date of Final Acceptance of the entire project.
Schedule	Article 3.10.1	The Contractor's schedule shall be in the "Critical Path Method" and shall be in a form that is acceptable to the Owner and meet all the conditions of 3.10.
Time Limit on Claims	Article 4.3.1.1	Claims by either party must be initiated within 21 calendar days after occurrence of the event giving rise to such claim.
Weather Delays	Article 4.3.5.2	If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the current critical- path scheduled construction activities.
Waiver of Consequential Damages	Article 4.3.6	The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract.
Mediation & Arbitration	Article 4.5 & 4.6	The parties shall endeavor to resolve their Claims by mediation unless the parties mutually agree otherwise. Claims not resolved by mediation shall be decided by arbitration.
Changes	Article 7	Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive, or order for a minor change in the Work subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.
Change Order Allowable Costs	Article 7.2.2.1	As described with a 5% allowance for overhead and a 10% allowance for profit.
Time	Article 8	Time is of the essence in performance, coordination, and completion of the Work contemplated herein.
Liquidated Damages	Article 8.1.6	The Contractor and his surety shall be liable for and shall pay to the Owner the sums stipulated as liquidated damages for each calendar day of delay until the Work is substantially complete.
Contract Duration/Milestones/Phases	Article 8.1.9	All Work shall reach Substantial Completion by the date(s) listed or within the consecutive calendar days indication after the start date on the written Notice To Proceed.
Applications for Payment	Article 9.3.2	The Owner has thirty-five (35) calendar days after receipt for approval of the Contractor's Pay Request without being subject to the accrual of interest.
Retainage	Article 9.3.7	Until the Work is complete, the Owner will pay 95% of the amount due the Contractor on account of progress payments. If the Work and its progress are not in accordance with all or any part, piece, or portion of the Contract Documents, the Owner may, at its sole discretion and without claim by the Contractor, increase the amount held as retainage to whatever level deemed necessary to effectuate performance and progress of the Work.
Safety & Protection	Article 10	The Contractor shall be solely responsible for initiating, maintaining and supervising all safety, safety precautions, and safety programs in connection with the performance of the Contract.
Indemnification and Insurance Requirements	Article 11	The Contractor shall indemnify the Owner against the Contractor's negligence. The Contractor shall least carry Workers' Comp, General Liability, Automobile/Equipment, and Property (all-risk) Insurance Coverages as identified. State of Montana shall be listed as an additional insured with copy of ENDORSEMENT provided along with certificates of insurance. No waivers of subrogation shall be accepted.
Performance & Payment Bonds	Article 11.7	The Contract shall furnish a Performance Bond in the amount of 100% of the contract price as security for the faithful performance of his contract. The Contractor shall also furnish a Labor and Material Payment Bond in the amount of 100% of the contract price as security for the payment of all persons performing labor and furnishing materials in connection therewith.
Payroll & Basic Records	Article 13.8	Payrolls and basic records pertaining to the project shall be kept on a generally recognized accounting basis and shall be available to the Owner, Legislative Auditor, the Legislative Fiscal Analyst or his authorized representative at mutually convenient times. Accounting records shall be kept by the Contractor for a period of three years after the date of the Owner's Final Acceptance of the Project.

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

(Form Revision Date: October 2019)

1. ARTICLE 1 – GENERAL PROVISIONS

1.1. BASIC DEFINITIONS

1.1.1. **CONTRACT DOCUMENTS.** The Contract Documents consist of the Contract between Owner and Contractor (hereinafter the “Contract”), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Contract and Modifications issued after execution of the Contract. A Modification is: (1) a written amendment to the Contract signed by both parties; (2) a Change Order; (3) a Construction Change Directive; or, (4) a written order for a minor change in the Work issued by the Architect/Engineer. The Contract Documents shall include the bidding documents and any alterations made thereto by addenda. In the event of a conflict, discrepancy, contradiction, or inconsistency within the Contract Documents and for the resolution of same, the following order of hierarchy and control shall apply and prevail:

1) Contract; 2) Addenda; 3) Supplementary General Conditions; 4) General Conditions; 5) Specifications; 6) Drawings; 7) Instructions to Bidders; 8) Invitation To Bid; 9) Sample Forms.

1.1.1.1. If a conflict, discrepancy, contradiction, or inconsistency occurs within or between the Specifications and the Drawings, resolution shall be controlled by the following:

1.1.1.1.1. As between figures, dimensions, or numbers given on drawings and any scaled measurements, the figures, dimensions, or numbers shall govern;

1.1.1.1.2. As between large scale drawings and small scale drawings, the larger scale drawings shall govern;

1.1.1.1.3. As between the technical specifications and drawings; the technical specifications shall govern.

1.1.1.1.4. Shop Drawings and Submittals: Shop drawings and other submittals from the Contractor, subcontractors, or suppliers do not constitute a part of the Contract Documents.

1.1.1.2. The Contractor acknowledges, understands and agrees that the Contract Documents cannot be changed except as provided herein by the terms of the Contract. No act(s), action(s), omission(s), or course of dealing(s) by the Owner or Architect/Engineer with the Contractor shall alter the requirements of the Contract Documents and that alteration can be accomplished only through a written Modification process defined herein.

1.1.2. **THE DRAWINGS.** The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, intent, location, and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

1.1.3. **THE SPECIFICATIONS.** The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

1.1.4. **THE CONTRACT.** The entire Contract for Construction is formed by the Contract Documents. The

Contract represents the entire, complete, and integrated agreement between the Owner and Contractor hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between: (1) the Architect/Engineer and Contractor; (2) the Owner and any Subcontractor, Sub-subcontractor, or Supplier; (3) the Owner and Architect/Engineer; or, (4) between any persons or entities other than the Owner and Contractor. However, the Architect/Engineer shall at all times be permitted and entitled to performance and enforcement of its obligations under the Contract intended to facilitate performance of the Architect/Engineer's duties.

- 1.1.5. THE WORK. The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to completely fulfill the Contract and the Contractor's obligations. The Work may constitute the whole or a part of the Project.
- 1.1.6. THE PROJECT. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.
- 1.1.7. TIME. Time is of the essence in performance, coordination, and completion of the Work contemplated herein. The Owner may suffer damages if the Work is not completed as specified herein. When any duration or time period is referred to in the Contract Documents by days, the first day of a duration or time period shall be determined as the day following the current day of any event or notice starting a specified duration. All durations in the Contract Documents are calendar days unless specifically stated otherwise.

1.2. CORRELATION, INTER-RELATIONSHIP, AND INTENT OF THE CONTRACT DOCUMENTS

- 1.2.1. The intent of the Contract Documents is to include all items and all effort necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary and inter-related, and what is required by one shall be as binding as if required by all. Performance by the Contractor shall be required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.
- 1.2.2. Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. It is the Contractor's responsibility to control the Work under the Contract.
- 1.2.3. Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.3. CAPITALIZATION

- 1.3.1. Terms capitalized in these General Conditions include those which are: (1) specifically defined; and, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document.

1.4. INTERPRETATION

- 1.4.1. In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.5. EXECUTION OF THE CONTRACT AND CONTRACT DOCUMENTS

- 1.5.1. The Contract shall be signed by the Owner and Contractor. Execution of the Contract by the Contractor constitutes the complete and irrevocable binding of the Contractor and his Surety to the Owner for complete performance of the Work and fulfillment of all obligations. By execution of the Contract, the Contractor acknowledges that it has reviewed and familiarized itself with all aspects of the Contract Documents and agrees to be bound by the terms and conditions contained therein.

- 1.5.2. Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.
- 1.5.3. The Contractor acknowledges that it has taken all reasonable actions necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to: (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, gas, electric power, phone service, and roads; (3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation, topography, and conditions of the ground; and, (5) the character of equipment and facilities needed for performance of the Work. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory geotechnical work done by the Owner, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the action described and acknowledged in this paragraph will not relieve the Contractor from responsibility for properly ascertaining and estimating the difficulty and cost of successfully performing the Work or for proceeding to successfully perform the Work without additional expense to the Owner.
- 1.5.4. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Owner, nor does the Owner assume responsibility for any understanding reached or representation made by any of its officers, agents, or employees concerning conditions which can affect the Work unless that understanding or representation is expressly stated in the Contract Documents.
 - 1.5.4.1. Performance of any portion of the Work beyond that required for complying with the specifications and all other requirements of the Contract, shall be deemed to be for the convenience of the Contractor and shall be at the Contractor's sole expense.
 - 1.5.4.2. There shall be no increase in the contract price or time allowed for performance which is for the convenience of the Contractor.

1.6. OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS, AND OTHER INSTRUMENTS OF SERVICE

- 1.6.1. The Drawings, Specifications and other documents, including those in electronic form, prepared by the Architect/Engineer and the Architect/Engineer's consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect/Engineer or the Architect/Engineer's consultants. Unless otherwise indicated, the Architect/Engineer and the Architect/Engineer's consultants shall be deemed the authors of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights except as defined in the Owner's Contract with the Architect/Engineer. All copies of Instruments of Service, except the Contractor's record set, shall be returned or suitably accounted for to the Architect/Engineer upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect/Engineer and the Architect/Engineer's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect/Engineer, and the Architect/Engineer's consultants. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect/Engineer and the Architect/Engineer's consultants appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings Specifications and other documents prepared by the Architect/Engineer and the Architect/Engineer's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect/Engineer's or Architect/Engineer's consultants' copyrights or other reserved rights.

- 1.6.2. Owner's Disclaimer of Warranty: The Owner has requested the Architect/Engineer prepare the Contract Documents for the Project which are adequate for bidding and constructing the Project. However, the Owner makes no representation, guarantee, or warranty of any nature whatsoever to the Contractor concerning such documents. The Contractor hereby acknowledges and represents that it has not, does not, and will not rely upon any such representation, guarantee, or warranty concerning the Contract Documents as no such representation, guarantee, or warranty have been or are hereby made.

2. ARTICLE 2 – THE OWNER

2.1. THE STATE OF MONTANA

- 2.1.1. The Owner is the State of Montana and is the sole entity to be identified as Owner in the Contract and as referred to throughout the Contract Documents as if singular in number.
- 2.1.2. Except as otherwise provided in Subparagraph 4.2.1, the Architect/Engineer does not have authority to bind the Owner. The observations and participations of the Owner or its authorized representative do not alleviate any responsibility on the part of the Contractor. The Owner reserves the right to observe the work and make comment. Any action or lack of action by the Owner shall not be construed as approval of the Contractor's performance.
- 2.1.3. The Owner reserves the right to require the Contractor, all sub-contractors and material suppliers to provide lien releases at any time. The Owner reserves the right to withhold progress payments until such lien releases are received for all work for which prior progress payments have been made. Upon the Owner's demand for lien releases (either verbally or written), the Contractor, all sub-contractors and material suppliers shall provide such releases with every subsequent application for payment through Final Acceptance of the Project.
- 2.1.4. Except for permits and fees, including those required under Subparagraph 3.7.1, which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.
- 2.1.5. Information or services required of the Owner by the Contract Documents shall be furnished by the Owner with reasonable promptness. Any other information or services relevant to the Contractor's performance of the Work under the Owner's control shall be furnished by the Owner after receipt from the Contractor of a written request for such information or services.
- 2.1.6. Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Specifications as are reasonably necessary for execution of the Work.

2.2. OWNER'S RIGHT TO STOP WORK

- 2.2.1. If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated. However, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3. The issuance of a stop work order by the Owner shall not give rise to a claim by the Contractor or any subcontractor for additional cost, time, or other adjustment.

2.3. OWNER'S RIGHT TO CARRY OUT THE WORK

- 2.3.1. If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period give the Contractor a second written notice to correct such deficiencies within a three-day period. If the Contractor within such three-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies

the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and increased costs, and compensation for the Architect/Engineer's additional services made necessary by such default, neglect, or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

2.4. OWNER'S RIGHT TO PERSONNEL

- 2.4.1. The Owner reserves the right to have the Contractor and/or subcontractors remove person(s) and/or personnel from any and all work on the project with cause but without cost to the Owner. Such requests from the Owner may be made verbally or in writing and may be done directly with the Contractor or indirectly through the Architect/Engineer. Cause may be, but not limited to, any of the following: incompetence, poor workmanship, poor scheduling abilities, poor coordination, disruption to the facility or others, poor management, causes delay or delays, disruption of the Project, will not strictly adhere to facility procedures and Project requirements either knowingly or unknowingly, insubordination, drug/alcohol use, possession of contraband, belligerent acts or actions, etc. The Contractor shall provide replacement person(s) and/or personnel acceptable to the Owner at no cost to the Owner.
- 2.4.2. Any issue or circumstance relating to or resulting out of this clause shall not be construed or interpreted to be interference with or impacting upon the Contractor's responsibilities and liabilities under the Contract Documents.
- 2.4.3. Person(s) and/or personnel who do not perform in accordance with the Contract Documents, shall be deemed to have provided the Owner with cause to have such persons removed from any and all involvement in the Work.
- 2.4.4. The Contractor agrees to indemnify and hold harmless the Owner from any and all causes of action, demands, claims, damages, awards, attorneys' fees, and other costs brought against the Owner and/or Architect/Engineer by any and all person(s) or personnel as a result of actions under this clause.

3. ARTICLE 3 – THE CONTRACTOR

3.1. GENERAL

- 3.1.1. The Contractor is the person or entity identified as such in the Contract and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.
- 3.1.2. Construction Contractor Registration: The Contractor is required to be registered with the Department of Labor and Industry under 39-9-201 and 39-9-204 MCA prior to the Contract being executed by the Owner. A bidder must demonstrate that it has registered or promises that it will register immediately upon notice of award and prior to the commencement of any work. If the prevailing bidder cannot or does not register in time for the Owner to execute the Contract within fifteen (15) days of the date on the notice of award, the Owner may award, at its sole discretion, to the next lowest responsible bidder who meets this requirement. The Owner will not execute a contract for construction nor issue a Notice to Proceed to a Contractor who is not registered per 39-9-401(a) MCA. It is solely the Contractor's responsibility to ensure that all Subcontractors are registered in accordance with Title 39, Chapter 9, MCA.
- 3.1.3. The Owner's engagement of the Contractor is based upon the Contractor's representations by submission of a bid to the Owner that it:
 - 3.1.3.1. has the requisite skills, judgment, capacity, expertise, and financial ability to perform the Work;
 - 3.1.3.2. is experienced in the type of labor and services the Owner is engaging the Contractor to perform;
 - 3.1.3.3. is authorized, licensed and registered to perform the type of labor and services for which it is being engaged in the State and locality in which the Project is located;

- 3.1.3.4. is qualified, willing and able to perform the labor and services for the Project in the manner and scope defined in the Contract Documents; and,
- 3.1.3.5. has the expertise and ability to provide labor and services that will meet the Owner's objectives, intent and requirements, and will comply with the requirements of all governmental, public, and quasi-public authorities and agencies having or asserting jurisdiction over the Project.
- 3.1.4. The Contractor shall perform the Work in accordance with the Contract Documents.
- 3.1.5. The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect/Engineer in the Architect/Engineer's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.
- 3.1.6. Quality Control (i.e. ensuring compliance with the Contract Documents) and Quality Assurance (i.e. confirming compliance with the Contract Documents) are the responsibility of the Contractor. Testing, observations, and/or inspections performed or provided by the Owner are solely for the Owner's own purposes and are for the benefit of the Owner. The Owner is not liable or responsible in any form or fashion to the Contractor regarding quality assurance or extent of such assurances. The Contractor shall not, under any circumstances, rely upon the Owner's testing or inspections as a substitute or in lieu of its own Quality Control or Assurance programs.
- 3.1.7. Buy-Safe Montana Provision: The Owner shall review the Buy-Safe Montana Form provided by the Bidder under Articles 16 of the Instructions to Bidders. To promote a safe work environment, the Owner encourages an incidence rate less than the latest average for non-residential building construction for Montana as established by the federal Bureau of Labor Statistics for the prior year; an experience modification rating (EMR) less than 1.0; and a loss ratio of less than 100%. The Contractor with a greater-than-average incidence rate, an EMR greater than 1.0, and a loss ratio of more than 100% shall schedule and obtain a Comprehensive Safety Consultation from the Montana Department of Labor & Industry, Employment Relations Division, Safety Bureau before the Owner grants Substantial Completion of the Work. For assistance in obtaining the Comprehensive Safety Consultation, visit <http://erd.dli.mt.gov/safety-health/onsite-consultation>.

3.2. REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

- 3.2.1. Since the Contract Documents are complementary and inter-related, before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions affecting the Work. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents. However, any errors, inconsistencies or omissions discovered by the Contractor shall be reported promptly to the Architect/Engineer as a request for information in such form as the Architect/Engineer may require.
- 3.2.2. Any errors or omissions noted by the Contractor during this review shall be reported promptly to the Architect/Engineer, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents.
- 3.2.3. If the Contractor believes that additional cost or time is involved because of clarifications or instructions issued by the Architect/Engineer in response to the Contractor's notices or requests for information pursuant to Subparagraphs 3.2.1 and 3.2.2, the Contractor shall make Claims as provided in Subparagraphs 4.3.4 and 4.3.5. If the Contractor fails to perform the obligations of Subparagraphs 3.2.1 and 3.2.2, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. The Contractor shall not be liable to the Owner or Architect/Engineer for damages resulting from errors, inconsistencies, or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents unless the Contractor recognized such error, inconsistency, omission or difference and failed to report it to the Architect/Engineer.

- 3.2.4. Except as otherwise expressly provided in this Contract, the Contractor assumes all risks, liabilities, costs, and consequences of performing any effort or work in accordance with any written or oral order (including but not limited to direction, instruction, interpretation, or determination) of a person not authorized in writing by the Owner to issue such an order.
- 3.2.5. By entering into this Contract, the Contractor acknowledges that it has informed itself fully regarding the requirements of the Drawings and Specifications, the General Conditions, the Supplementary General Conditions, all other documents comprising a part of the Contract Documents and all applicable laws, building codes, ordinances and regulations. Contractor hereby expressly acknowledges, guarantees, and warrants to the Owner that:
- 3.2.5.1. the Contract Documents are sufficient in detail and scope to enable Contractor to construct the finished project;
- 3.2.5.2. no additional or further work should be required by Owner at the time of Owner's acceptance of the Work; and,
- 3.2.5.3. when the Contractor's work is finished and the Owner accepts, the Work will be complete and fit for the purpose intended by the Contract Documents. This acknowledgment and guarantee does not imply that the Contractor is assuming responsibilities of the Architect/Engineer.
- 3.2.6. Sufficiency of Contract Documents: Prior to submission of its bid, and in all events prior to and upon signing the Contract, the Contractor certifies, warrants and guarantees that it has received, carefully reviewed, and evaluated all aspects of the Contract Documents and agrees that said Documents are adequate, consistent, coordinated, and sufficient for bidding and constructing the Work requested, intended, conceived, and contemplated therein.
- 3.2.6.1. The Contractor further acknowledges its continuing duty to review and evaluate the Contract Documents during the performance of its services and shall immediately notify the Architect/Engineer of any problems, conflicts, defects, deficiencies, inconsistencies, errors, or omissions it discovers in the Contract Documents and the Work to be constructed; and, any variances it discovers between the Contract Documents and applicable laws, statutes, building codes, rules or regulations.
- 3.2.6.2. If the Contractor performs any Work which it knows or should have known due to its experience, ability, qualifications, and expertise in the construction industry, that involves problems, conflicts, defects, deficiencies, inconsistencies, errors, or omissions in the Contract Documents and the Work to be constructed and, any variances between the Contract Documents and applicable laws, statutes, building codes, rules or regulations, without prior written notification to the Architect/Engineer and without prior authorization to proceed from the Architect/Engineer, the Contractor shall be responsible for and bear the costs and delays (including costs of any delay) of performing such Work and all corrective actions as directed by the Architect/Engineer.
- 3.2.6.3. Any and all claims resulting from the Contractor's failure, including those of any subcontractor or supplier, to carefully review, evaluate, and become familiar with all aspects of the Contract Documents shall be deemed void and waived by the Contractor.
- 3.2.7. Sufficiency of Site Conditions: Prior to submission of its bid, and in all events prior to and upon signing the Contract, the Contractor certifies, warrants and guarantees that it has visited, carefully reviewed, evaluated, and become familiar with all aspects of the site and local conditions at which the Project is to be constructed. The Contractor agrees that the Contract Documents are an adequate, consistent, coordinated, and sufficient representation of the site and local conditions for the Work.
- 3.2.7.1. The Contractor has reviewed and become familiar with all aspects with the Site Survey and Geotechnical Report for the Project and has a full understanding of the information provided therein.
- 3.2.7.2. If the Work involves modifications, renovations, or remodeling of an existing structure(s) or other man-made feature(s), the Contractor certifies, warrants and guarantees that it has

reviewed, evaluated, and become familiar with all available as-built and record drawings, plans and specifications, and has thoroughly inspected and become familiar with the structure(s) or man-made feature(s).

- 3.2.7.3. Any and all claims resulting from the Contractor's failure, including those of any subcontractor or supplier, to visit, carefully review, evaluate, and become familiar with all aspects of the site, available geotechnical information, and local conditions at which the Project is to be constructed shall be deemed void and waived by the Contractor.

3.3. SUPERVISION AND CONSTRUCTION PROCEDURES

- 3.3.1. The Contractor shall supervise and direct the Work using the Contractor's best skill and attention recognizing that time and quality are of the essence of the Work. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. It is the responsibility of and incumbent upon the Contractor to ensure, confirm, coordinate, inspect and oversee all Work (which is inclusive of but not limited to all submittals, change orders, schedules, workmanship, and appropriate staffing with enough competent and qualified personnel) so that the Work is not impacted in terms of any delays, costs, damages, or additional time, or effort on the part Architect/Engineer or Owner. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect/Engineer and shall not proceed with that portion of the Work without further written instructions from the Architect/Engineer. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Architect/Engineer or Owner as appropriate shall be solely responsible for any resulting loss or damage. The Contractor will be required to: review any specified construction or installation procedure; advise the Architect/Engineer if the specified procedure deviates from good construction practice; to advise the Architect/Engineer if following the procedure will affect any warranties, including the Contractor's general warranty, or of any objections the Contractor may have to the procedure and shall propose any alternative procedure which the Contractor will warrant and guarantee. The Contractor is required to: review any specified construction or installation procedure; advise the Architect/Engineer if the specified procedure deviates from good construction practice; to advise the Architect/Engineer if following the procedure will affect any warranties, including the Contractor's general warranty, or of any objections the Contractor may have to the procedure and to propose any alternative procedure which the Contractor will warrant.
- 3.3.2. The Contractor shall furnish management, supervision, coordination, labor and services that: (1) expeditiously, economically, and properly completes the Work; (2) comply with all requirements of the Contract Documents; and, (3) are performed in a quality workmanlike manner and in accordance with the standards currently practiced by persons and entities performing or providing comparable management, supervision, labor and services on projects of similar size, complexity, cost, and nature to this Project. However, the standards currently practiced within the construction industry shall not relieve the Contractor of the responsibility to perform the Work to the level of quality, detail, and excellence defined and intended by the Contract Documents as interpreted by the Architect/Engineer.
- 3.3.3. All services and labor rendered by the Contractor, including any subcontractors or suppliers, shall be performed under the immediate supervision at the site of persons possessing expertise and the requisite knowledge in the discipline or trade of service being rendered. The Contractor shall maintain such supervision and personnel at all times that the Contractor's personnel, subcontractors, and/or suppliers are at the site. The Contractor shall never be absent from the site during performance of any portion of the Work by any entity under the supervision and direction of the Contractor. Full time attendance by the Contractor from Notice to Proceed through Final Acceptance is an explicit requirement of this Contract.

- 3.3.4. The Contractor shall be responsible to the Owner for acts, damages, errors, and omissions of the Contractor's employees, subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.
- 3.3.5. The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

3.4. LABOR, WAGES, AND MATERIALS

- 3.4.1. Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, permits, licenses, goods, products, equipment, tools, construction equipment and machinery, water, heat, all utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work in accordance with the Contract Documents, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.
- 3.4.2. The Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect/Engineer and in accordance with a Change Order. This opportunity to request substitutions does not negate or waive any requirement for the Contractor to follow a pre-bidding "prior approval" requirement nor obligate the Owner to approve any substitution request.
- 3.4.3. The Contractor shall enforce strict discipline, appropriate behavior, and good order among the Contractor's employees, subcontractors at every tier and level, and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.
- 3.4.4. Prevailing Wages and Montana Residents.
 - 3.4.4.1. The Contractor and all subcontractors at any level or tier of the Work shall give preference to the employment of bona fide Montana residents in the performance of the Work and shall pay the standard prevailing rate of wages, including fringe benefits for health and welfare and pension contributions and travel allowance provisions in effect and applicable to the county or locality in which the work is being performed. (18-2-403, MCA)
 - 3.4.4.2. At least 50% of the workers, as defined by the Department of Labor & Industry (DOLI), must be bona fide Montana residents. (18-2-401, 18-2-402, MCA)
 - 3.4.4.3. Indian Employment Preference within the Boundaries of an Indian Reservation. All contractors that are awarded a state agency construction contract within the exterior boundaries of an Indian Reservation shall extend a hiring preference to qualified Indians as provided herein:
 - 3.4.4.3.1. "State agency" means a department, office, board, bureau, commission, agency, or other instrumentality of the executive or judicial branches of the government of this State. "Indian" means a person who is enrolled or who is a lineal descendent of a person enrolled in an enrollment listing of the Bureau of Indian Affairs or in the enrollment listing of a recognized Indian tribe domiciled in the United States.
 - 3.4.4.3.2. Qualified Indians – Employment Criteria: An Indian shall be qualified for employment in a permanent, temporary, or seasonal position if he or she has substantially equal qualifications for any position and resides on the reservation where the construction contract is to be performed.
 - 3.4.4.3.3. Non-Applicability: The Indian Employment Preference Policy does not apply to a project partially funded with federal-aid money from the United States Department of Transportation or when residency preference laws are specifically prohibited by federal law. It does not apply to independent contractors and their employees, student interns, elected officials, or appointed positions.
 - 3.4.4.4. The Commissioner of The Montana Department of Labor and Industry (DOLI) has established the standard prevailing rate of wages in accordance with 18-2-401 and 18-2-402, MCA. A copy of the Rates entitled "State of Montana, Prevailing Wage Rates" are bound herein. The Commissioner of the Montana DOLI has established the resident requirements in accordance with 18-2-409, MCA. The Contractor and all subcontractors at any level or tier of the Work

shall direct any and all questions concerning prevailing wage and Montana resident issues for all aspects of the Work to DOLI.

- 3.4.4.5. The Contractor and all subcontractors at any tier or level of the Work, and as determined by the Montana DOLI, shall classify all workers in the project in accordance with the State of Montana, Prevailing Wage Rates. In the event the Contractor is unable to classify a worker in accordance with these rates he shall contact DOLI for a determination of the classification and the prevailing wage rate to be paid.
- 3.4.4.6. The Contractor and all subcontractors at any tier or level of the Work shall be responsible for obtaining wage rates for all workers prior to their performing any work on the project. The Contractor is required to pay and insure that its subcontractors at any tier or level and others also pay the prevailing wage determined by the DOLI, insofar as required by Title 18 of the MCA and the pertinent rules and standards of DOLI.
- 3.4.4.7. It is not the responsibility of the Owner to determine who classifies as a subcontractor, sub-subcontractor, material man, supplier, or any other person involved in any aspect of the Work at any tier or level. All such determinations shall be the sole responsibility of the Contractor, subcontractors, sub-subcontractors, material men, suppliers and others involved in the project at any tier or level. The Contractor, subcontractors, sub-subcontractors, material men, suppliers and others involved in the project shall indemnify and hold harmless the Owner from all claims, attorneys' fees, damages and/or awards involving prevailing wage or Montana resident issues. Any changes to wages or penalties for failure to pay the correct wages will be the sole responsibility of the Contractor and/or his subcontractors and no further charges or claims shall be made to the Owner. If the parties mutually agree or an arbitrator or court determines that any change in wages is due and any part is attributable to the Owner, the Owner's sole liability shall be for the amount of wages ordered only and not for other expenses, charges, penalties, overhead, profit or other mark-ups.
- 3.4.4.8. In accordance with 18-2-422(1) MCA, each job classification's standard prevailing wage rate, including fringe benefits, that the contractors and employers shall pay during construction of the project is included herein by both reference to DOLI's "Building" or "Heavy/Highway" schedules and as part of these Contract Documents.
- 3.4.4.9. The Contractor and every employer, including all subcontractors at any tier or level, is required by 18-2-422(2) MCA to maintain payroll records in a manner readily capable of being certified for submission under 18-2-423 MCA, for a period of not less than 3 years after the contractor's, subcontractor's, or employer's completion of work on the project or the Final Acceptance by the Owner, whichever is later.
- 3.4.4.10. Each contractor is required by 18-2-422(3) MCA to post in a visible and accessible location a statement of all wages and fringe benefits in compliance with 18-2-423.

3.5. WARRANTY AND GUARANTEE

- 3.5.1. The Contractor warrants to the Owner and Architect/Engineer that materials and equipment furnished under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective and rejected. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect/Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.
- 3.5.2. The Contractor shall and does hereby warrant and guarantee all work, workmanship, and materials for the full warranty period as specified in the Contract Documents. The warranty period shall be defined as commencing with Substantial Completion (or with each Substantial Completion if there is more than one) of the Project, or any portion thereof, and continuing for one (1) calendar year from the date of Final Acceptance of the entire project by the Owner. The date of Final Acceptance shall be the date of the

Architect/Engineer's signature on the final request for payment unless otherwise agreed upon in writing for the entire project or any portion thereof, by the Owner, Architect/Engineer and Contractor.

3.5.3. In addition to the one (1) calendar year warranty and guarantee specified in this herein above, the Contractor warrants and guarantees all materials and workmanship for the roofing system for a period of two (2) calendar years from the date of Final Acceptance. This warranty shall cover all labor and materials for roof and roofing finish systems (e.g. flashing, terminations, parapet caps, etc.) repairs from moisture penetration and/or defects in workmanship.

3.5.4. Manufacturer and product warranties and guarantees, as provided by the manufacturer or as specified in the Contract Documents, are in addition to the Contractor's warranty.

3.6. TAXES

3.6.1. The Contractor is responsible for and shall pay all sales, consumer, use, and similar taxes for the Work provided by the Contractor which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

3.6.2. In compliance with 15-50-206 MCA, the Contractor will have 1% of his gross receipts withheld by the Owner from all payments due and sent to the Montana Department of Revenue. Each subcontractor who performs work greater than \$5,000 shall have 1% of its gross receipts withheld by the Contractor and sent to the Montana Department of Revenue. The Contractor shall notify the Department of Revenue on the Department's prescribed form.

3.7. PERMITS, FEES, AND NOTICES

3.7.1. Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract, including but not limited to, the building permit fee, electrical, plumbing, sewer connection fee and mechanical permit fee, and any required impact fees and which are legally required when bids are received or negotiations concluded.

3.7.2. The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the Work.

3.7.3. If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations, and does so without providing notice to the Architect/Engineer and Owner, the Contractor shall assume responsibility for such Work and shall bear the costs attributable to correction. The Contractor shall be solely responsible to insure that all work it performs is in full compliance with all prevailing and applicable codes and regulations.

3.7.4. Incident Reporting: The Contractor shall immediately notify the Owner and Architect/Engineer, both orally and in writing, of the nature and details of all incidents which may adversely affect the quality or progress of the Work, including, but not limited to, union disputes, accidents, delays, damages to Work, and other significant occurrences. Such notices are in addition to any other notices required regarding claims.

3.8. ALLOWANCES

3.8.1. The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct.

3.8.2. Unless otherwise provided in the Contract Documents:

3.8.2.1. allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

3.8.2.2. Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included by the Contractor in the Contract Sum but not in the allowances;

3.8.2.3. whenever costs are more than or less than stated allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect: (1) the difference between actual costs and the allowances under Clause 3.8.2.1; and, (2) changes in Contractor's costs under Clause 3.8.2.2.

3.8.3. Materials and equipment under an allowance shall be selected by the Owner.

3.9. CONTRACTOR'S PERSONNEL

3.9.1. The Contractor shall employ competent personnel, supervisors, project managers, project engineers, project superintendent, and all others who shall be assigned to the Work throughout its duration. Contractor's personnel extend to those employed by the Contractor whether at the site or not. The Owner shall have right to review and approve or reject all replacement of Contractor's personnel. All personnel assigned by the Contractor to the Work shall possess the requisite experience, skills, abilities, knowledge, and integrity to perform the Work.

3.9.2. The superintendent and others as assigned shall be in attendance at the Project site during the performance of any and all Work. The superintendent shall represent the Contractor. All communications given to the Contractor's personnel such as the project manager or the superintendent, whether verbal, electronic or written, shall be as binding as if given to the Contractor.

3.9.3. It is the Contractor's responsibility to appropriately staff, manage, supervise and direct the Work which is inclusive of the performance, acts, and actions of his personnel and subcontractors. As such, the Contractor further agrees to indemnify and hold harmless the Owner and the Architect/Engineer, and to protect and defend both from and against all claims, attorneys' fees, demands, causes of action of any kind or character, including the cost of defense thereof, arising in favor of or against the Owner, Architect/Engineer, Contractor, their agents, employees, or any third parties on account of the performance, behavior, acts or actions of the Contractor's personnel or subcontractors.

3.9.4. Prior to the commencement of any work, the Contractor shall prepare and submit a personnel listing and organizational chart in a format acceptable to the Owner which lists by name, phone number (including cell phone), job category, and responsibility the Contractor's key/primary personnel who will work on the Project. The Contractor shall promptly inform the Owner in writing of any proposed replacements, the reasons therefore, and the name and qualifications of any proposed replacements. The Owner shall have the right to reject any proposed replacements without cost or claim being made by the Contractor. The chart shall be provided to the Owner at the time of the pre-construction conference.

3.9.5. The Contractor shall immediately remove for the duration of the Project, any person making an inappropriate racial, sexual, or ethnic comment, statement, joke, or gesture toward any other individual.

3.9.6. The Contractor shall immediately remove for the duration of the Project, any person who is incompetent, careless, disruptive, or not working in harmony with others.

3.10. CONSTRUCTION SCHEDULES

3.10.1. The Contractor shall, promptly after being awarded the Contract, prepare and submit for the Owner's and Architect/Engineer's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and per the requirements of the Contract Documents, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The Contractor's schedule shall be in the "Critical Path Method" and shall show the Critical Path of the Work in sufficient detail to evaluate the Contractor's progress. A request for time extension by the Contractor will not be allowed unless a change in the Work is approved by the Owner and materially affects the Critical Path. It is the Contractor's responsibility to demonstrate that any time extensions requests materially affect the Critical Path.

- 3.10.2. The Contractor shall prepare and keep current, for the Architect/Engineer's approval, a schedule of submittals which is coordinated with the Contractor's Construction Schedule and allows the Architect/Engineer reasonable time to review submittals.
- 3.10.3. The Contractor shall perform the Work in accordance with the most recent schedule submitted to the Owner and Architect/Engineer.
- 3.10.4. The Contractor's operations (including but not limited to the Contractor's forces employed, sequences of operations, and methods of operation) at all times during the performance of the contract shall be: (a) subject to the review of the Owner or the Architect/Engineer; and, (b) sufficient to insure the completion of the Work within the specified performance period.
- 3.10.5. The Critical Path Method Construction Schedule prepared by the Contractor must be in a form that is acceptable to both the Architect/Engineer and the Owner.
 - 3.10.5.1. The Schedule shall show the estimated progress of the entire Project through the individual time periods allowed for completion of each discipline, trade, phase, section, and aspect of the Work. The Contractor shall provide written reports of all logic and resource loading data with the Schedule and with all updates to the Schedule.
 - 3.10.5.2. The Schedule shall show percent complete, progress to date, project work, and projected time to complete the work for all activities. The percent complete and minor schedule changes, including additions of activities, change orders, construction change directives, changes to sequences of activities and significant changes in activity demands must be shown by a revised Schedule. A written report providing details about the changes and what actions are anticipated to get the work completed in the contractual time period shall be submitted with the revised schedule.
 - 3.10.5.3. The Construction Schedule shall include coordinate dates for performance of all divisions of the Work, including shipping and delivery, off-site requirements and tasks, so the Work can be completed in a timely and orderly fashion consistent with the required dates of Substantial Completion and Final Acceptance.
 - 3.10.5.4. The Construction Schedule shall include: (i) the required commencement date, the required dates of Substantial Completion(s) and Final Acceptance for the complete Project and all phases (if any); (ii) any guideline and milestone dates required by the Owner or the Contract Documents; (iii) subcontractor and supplier schedules; (iv) a submittal schedule which allows sufficient time for review and action by the Architect/Engineer; (v) the complete sequence of all construction activities with start and completion dates; and, (vi) required decision dates.
 - 3.10.5.5. By receiving, reviewing, and/or commenting on the Construction Schedule or any portion thereof (including logic and resource loading), neither the Owner or Architect/Engineer assume any of the Contractor's responsibility or liability that the Schedule be coordinated or complete, or for timely and orderly completion of the Work.
 - 3.10.5.6. Receiving, reviewing, and/or commenting on the Schedule, any portion thereof, or any revision thereof, does not constitute an approval, acknowledgement, or acceptance of any duration, dates, milestones, or performance indicated therein.
 - 3.10.5.7. A printout of the Schedule's logic showing all activities and all resource loading is required with the Schedule and with all updates to the Schedule.
- 3.10.6. The Contractor shall review and compare, at a minimum on a weekly basis, the actual status of the Work against its Construction Schedule.
- 3.10.7. The Contractor shall routinely, frequently, and periodically (but not less than monthly) update and/or revise its Construction Schedule to show actual progress of the Work through the date of the update or revision, projected level of completion of each remaining activity, activities modified since the previous update or revision, and major changes in scope or logic. The updated/revised Schedule shall be accompanied by a narrative report which: (1) states and explains any modifications of the critical path, if

any, including any changes in logic; (2) defines problem areas and lists areas of anticipated delays; (3) explains the anticipated impact the change in the critical path or problems and delays will have on the entire Schedule and the completion of the Work; (4) provides corrective action taken or proposed; and, (5) states how problems or delays will be resolved in order to deliver the Work by the required phasing milestones (if any), Substantial Completion(s), and Final Acceptance dates.

- 3.10.8. Delay in Performance: If at any time the Contractor anticipates that performance of the Work will be delayed or has been delayed, the Contractor shall: (1) immediately notify the Architect/Engineer by separate and distinct correspondence of the probable cause and effect of the delay, and possible alternatives to minimize the delay; and, (2) take all corrective action reasonably necessary to deliver the Work by the required dates. Nothing in this paragraph or the Contract Documents shall be construed by the Contractor as a granting by the Architect/Engineer or Owner of constructive acceleration. The results of failure to anticipate delays, or to timely notify the Owner and Architect/Engineer of an anticipated or real delay, are entirely the responsibility of the Contractor whether compensable or not.
- 3.10.9. Early Completion: The Contractor may attempt to achieve Substantial Completion(s) on or before the date(s) required in the Contract. However, such early completion shall be for the Contractor's sole convenience and shall not create any real or implied additional rights to Contractor or impose any additional obligations on the Owner or Architect/Engineer. The Owner will not be liable for nor pay any additional compensation of any kind to the Contractor for achieving Substantial Completion(s) or Final Acceptance prior to the required dates as set forth in the Contract. The Owner will not be liable for nor pay any additional compensation of any kind should there be any cause whatsoever that the Contractor is not able to achieve Substantial Completion(s) earlier than the contractually required dates of Substantial Completion(s) or Final Acceptance.
- 3.10.10. Float in Schedule. Any and all float time in the Contractor's schedule, regardless of the path or activity, shall accrue to the benefit of the Owner and the Work, and not to the Contractor. Float also includes any difference shown between any early completion dates shown on the Contractor's Schedule for any phasing milestone(s), Substantial Completion(s) or Final Acceptance and the dates or durations as required by the Contract Documents.
- 3.10.11. Modification of Required Substantial Completion(s) or Final Acceptance Dates: Modification of the required dates shall be accomplished only by duly authorized, accepted, and approved change orders stating the new date(s) with specificity on the change order form. All rights, duties, and obligations, including but not limited to the Contractor's liability for actual, delay, and/or liquidated damages, shall be determined in relation to the date(s) as modified.

3.11. DOCUMENTATION AND AS-BUILT CONDITIONS AT THE SITE

- 3.11.1. The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and accurately marked to record current field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect/Engineer or Owner at any time and shall be delivered to the Architect/Engineer for submittal to the Owner upon completion of the Work.
- 3.11.2. The Owner shall not be required to process final payment until all documentation and data required by the Contract Documents is submitted to and approved by the Architect/Engineer including, but not limited to, the As-Built Drawings. The Owner will not process any final request for payment until the Architect/Engineer has received and verified that the Contractor has performed the requirements pertaining to the as-built drawings.
- 3.11.3. The as-built drawings shall be neatly and clearly marked during construction to record all deviations, variations, changes, and alterations as they occur during construction along with such supplementary notes and details necessary to clearly and accurately represent the as-built condition. The as-built drawings shall be available at all times to the Owner, Architect/Engineer and Architect/Engineer's consultants.

3.12. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.1. Definitions:

3.12.1.1. Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

3.12.1.2. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

3.12.1.3. Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

3.12.2. Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect/Engineer is subject to the limitations of Subparagraph 4.2.7. Informational submittals upon which the Architect/Engineer is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect/Engineer without action.

3.12.3. The Contractor shall review, approve, and submit to the Architect/Engineer, Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents within sixty (60) calendar days of being issued the Notice To Proceed unless noted otherwise and shall do so in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Any and all items submitted by the Contractor which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor, or in the opinion of the Architect/Engineer, have not been reviewed for compliance by the Contractor even if marked as such, may be returned by the Architect/Engineer without action and shall not result in any accusation or claim for delay or cost by the Contractor. Any submittal that, in the opinion of the Architect/Engineer, is incomplete in any area or detail may be rejected and returned to the Contractor. It is the responsibility of and incumbent upon the Contractor to ensure and confirm that all submittals are complete, accurate, and in conformance to the Contract Documents prior to submission.

3.12.4. By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents and guarantees to the Architect/Engineer and Owner that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.12.5. The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect/Engineer. Should the Contractor, Subcontractors or Sub-subcontractors install, construct, erect or perform any portion of the Work without approval of any requisite submittal, the Contractor shall bear the costs, responsibility, and delay for removal, replacement, and/or correction of any and all items, material, and /or labor.

3.12.6. The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect/Engineer's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect/Engineer in writing of such deviation at the time of submittal and: (1) the Architect/Engineer has given written approval to the specific deviation as a minor change in the Work; or, (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect/Engineer's approval thereof.

3.12.7. The Contractor shall direct specific attention, in writing or on re-submitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect/Engineer on previous submittals. In the absence of such written notice the Architect/Engineer's approval of a re-submission shall not apply to such revisions.

- 3.12.8. The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect/Engineer will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect/Engineer. The Owner and the Architect/Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Owner and Architect/Engineer have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this subparagraph, the Architect/Engineer will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents but shall be responsible and held liable for review and verification of all performance or design criteria as required by Paragraph 3.2.
- 3.12.9. Unless noted otherwise in the Contract Documents, the Contractor shall submit to the Architect/Engineer within sixty (60) days from the date of the Notice To Proceed a minimum of six (6) complete copies of all shop/setting drawings, schedules, cut sheets, products, product data, and samples required for the complete Work. Copies shall be reviewed, marked, stamped and approved on each and every copy by the Contractor prior to submission to the Architect/Engineer or they shall be returned without review or action. The Architect/Engineer shall review with reasonable promptness, making corrections, rejections, or other actions as appropriate. The Architect/Engineer's approval or actions on shop/setting drawings, schedules, cut sheets, products, product data, or samples shall not relieve the Contractor from responsibility for, nor deviating from, the requirements of the plans and specifications. Any deviations from the plans and specifications requested or made by the Contractor shall be brought promptly to the attention of the Architect/Engineer.
- 3.12.10. Cost for Re-Submissions: the Contractor is responsible for ensuring that all shop drawings, product data, samples, and submittals contain all information required by the Contract Documents to allow the Architect/Engineer to take action. The Contractor shall pay the Architect/Engineer's cost for any re-submission of any rejected item. Such costs shall be deducted from the contract sum by Change Order. The Contractor agrees that any action taken by the Architect/Engineer is solely in the Architect/Engineer's discretion and is non-negotiable for the purposes of the Architect/Engineer's cost recovery for multiple (i.e. more than one) review.

3.13. USE OF SITE

- 3.13.1. The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.
- 3.13.2. The Contractor shall not damage, endanger, compromise or destroy any part of the Project or the site, including but not limited to work performed by others, monuments, stakes, bench marks, survey points, utilities, existing features or structures. The Contractor shall be fully and exclusively responsible for and bare all costs and delays (including and costs of delay) for any damage, endangerment, compromise, or destruction of any part of the Project or site.

3.14. CUTTING AND PATCHING

- 3.14.1. The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

- 3.14.2. The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.15. CLEAN UP AND SITE CONTROL

- 3.15.1. The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract during performance of the Work and at the direction of the Owner or Architect/Engineer. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.
- 3.15.2. If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16. ACCESS TO WORK

- 3.16.1. The Contractor shall provide the Owner and Architect/Engineer access to the Work at all times wherever located.

3.17. ROYALTIES, PATENTS AND COPYRIGHTS

- 3.17.1. The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect/Engineer harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect/Engineer. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect/Engineer.

3.18. INDEMNIFICATION

- 3.18.1. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect/Engineer, Architect/Engineer's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph. The Contractor agrees that it will defend, protect, indemnify and save harmless the State of Montana and the Owner against and from all claims, liabilities, demands, causes of action, judgments (including costs and reasonable attorneys' fees), and losses from any cause whatever (including patent, trademark and copyright infringement) except the Owner's sole or partial negligence. This includes any suits, claims, actions, losses, costs, damages of any kind, including the State and Owner's legal expenses, arising out of, in connection with, or incidental to the Contract, but does not include any such suits, claims, actions, losses, costs or damages which are the result of the negligent acts, actions, losses, costs, or damages which are acts, omissions or misconduct of the Owner if they do not arise out of, depend upon or relate to a negligent act, omission or misconduct of the Contractor in whole or in part.
- 3.18.2. In claims against any person or entity indemnified under this Paragraph 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Subparagraph 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

4. ARTICLE 4 – ADMINISTRATION OF THE CONSTRUCTION CONTRACT

4.1. THE ARCHITECT/ENGINEER

- 4.1.1. The Architect/Engineer is the person lawfully licensed to practice or an entity lawfully practicing identified as such in the Agreement with the Owner and is referred to throughout the Contract Documents as if singular in number. The term “Architect/Engineer” means the Architect/Engineer’s duly authorized representative.
- 4.1.2. Duties, responsibilities and limitations of authority of the Architect/Engineer as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner.
- 4.1.3. If the employment of the Architect/Engineer is terminated, the Owner shall employ a new Architect/Engineer at the sole choice and discretion of the Owner, whose status under the Contract Documents shall be that of the former Architect/Engineer.

4.2. ARCHITECT/ENGINEER’S ADMINISTRATION OF THE CONSTRUCTION CONTRACT

- 4.2.1. The Architect/Engineer will provide administration of the Contract as described in the Contract Documents, and will be an Owner’s representative throughout the complete duration of the Project, including the warranty period. The Architect/Engineer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with the Architect/Engineer Contract.
- 4.2.2. The Architect/Engineer, as a representative of the Owner, will visit the site at intervals appropriate to the stage of the Contractor’s operations to: (1) become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed; (2) endeavor to guard the Owner against defects and deficiencies in the Work; and, (3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Owner and Architect/Engineer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Contractor’s Work. The Owner and Architect/Engineer will neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, for the safety of any person involved in the work, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor’s rights and responsibilities under the Contract Documents.
- 4.2.3. The Architect/Engineer will not be responsible for the Contractor’s failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect/Engineer will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.
- 4.2.4. Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect/Engineer about matters arising out of or relating to the Contract. Communications by and with the Architect/Engineer’s consultants shall be through the Architect/Engineer. Communications by and with Subcontractors and material suppliers shall be through the Contractor to the Architect/Engineer. Communications by and with separate contractors shall be through the Owner to the Architect/Engineer.
- 4.2.5. Based on the Architect/Engineer’s evaluations of the Contractor’s Applications for Payment, the Architect/Engineer will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts. The Contractor is fully aware that the Owner (i.e. the State of Montana) has established a billing cycle for processing payments in Article 9 of these General Conditions. The Contractor and all Subcontractors are subject to all provisions of Title 28, Chapter 2, Part 21 MCA regarding all aspects of the Work.
- 4.2.6. The Architect/Engineer will have authority to reject Work that does not conform to the Contract Documents. Whenever the Architect/Engineer considers it necessary or advisable, the Architect/Engineer

will have authority to require inspection or testing of the Work in accordance with the General Conditions and any applicable technical specification requirements, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect/Engineer nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect/Engineer to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

- 4.2.7. The Architect/Engineer will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect/Engineer's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect/Engineer's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect/Engineer's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Paragraphs 3.3, 3.5 and 3.12. The Architect/Engineer's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect/Engineer, of any construction means, methods, techniques, sequences or procedures. The Architect/Engineer's approval of a specific item shall not indicate approval of an assembly of which the item is a component.
- 4.2.8. The Architect/Engineer will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Paragraph 7.4.
- 4.2.9. The Architect/Engineer will conduct inspections to determine the date or dates of Substantial Completion(s) and the date of Final Acceptance, will receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.
- 4.2.10. If the Owner and Architect/Engineer agree, the Architect/Engineer will provide one or more project representatives to assist in carrying out the Architect/Engineer's responsibilities. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in the Owner's Agreement with the Architect/Engineer.
- 4.2.11. The Architect/Engineer will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the Owner or Contractor. The Architect/Engineer's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required of the Architect/Engineer shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the Architect/Engineer to furnish such interpretations until 15 days after written request is made for them.
- 4.2.12. Interpretations and decisions of the Architect/Engineer will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and initial decisions, the Architect/Engineer will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will render such interpretations and decisions in good faith.
- 4.2.13. The Architect/Engineer's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.
- 4.2.14. The Architect/Engineer's or Owner's observations or inspections do not alleviate any responsibility on the part of the Contractor. The Architect/Engineer and the Owner reserves the right to observe and inspect the work and make comment. Action or lack of action following observation or inspection is not to be construed as approval of Contractor's performance.

4.3. CLAIMS AND DISPUTES

- 4.3.1. Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extensions of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes, controversies, and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be initiated by written notice. The responsibility to substantiate Claims shall rest solely with the party making the Claim.
- 4.3.1.1. Time Limits on Claims. Claims by either party must be initiated within 21 calendar days after occurrence of the event giving rise to such claim. The following shall apply to the initiation of a claim:
- 4.3.1.1.1. A written notice of a claim must be provided to the Architect/Engineer and the other party within 21 calendar days after the occurrence of the event or the claim is waived by the claiming party and void in its entirety.
- 4.3.1.1.2. Claims must be initiated by separate, clear, and distinct written notice within the 21 calendar day time frame to the Architect/Engineer and the other party and must contain the notarized statement in Sub-Paragraph 4.3.1.5 when the claim is made by the Contractor. Discussions in any form with the Architect/Engineer or Owner, whether at the site or not, do not constitute initiation of a claim. Notes in project meeting minutes, email correspondence, change order proposals, or any other form of documentation does not constitute initiation of a claim. The written notice must be a separate and distinct correspondence provided in hardcopy to both the Architect/Engineer and Owner and must delineate the specific event and outline the causes and reasons for the claim whether or not cost or time have been fully determined. Written remarks or notes of a generic nature are invalid in their entirety. Comments made at progress meetings, project site visits, inspections, emails, voice mails, and other such communications do not meet the requirement of providing notice of claim.
- 4.3.1.1.3. Physical Injury or Physical Damage. Should the Owner or Contractor suffer physical injury or physical damage to person or property because of any error, omission, or act of the other party or others for whose acts the other party is legally and contractually liable, claim will be made in writing to the other party within a reasonable time of the first observance of such physical injury or physical damage but in no case beyond 30 calendar days of the first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. The provisions of this paragraph shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose. In all such cases, the indemnification provisions of the Contract shall be effectual and the Contractor's insurance shall be primary and in full effect.
- 4.3.1.2. All Claims must contain sufficient justification and substantiation with the written notice or they may be rejected without consideration by the Architect/Engineer or other party with no additional impact or consequence to the Contract Sum, Contract Time, or matter(s) in question in the Claim.
- 4.3.1.3. If additional compensation is claimed, the exact amount claimed and a breakdown of that amount into the following categories shall be provided with each and every claim:
- 4.3.1.3.1. Direct costs (as listed in Subparagraph 7.3.9.1 through 7.3.9.5);
- 4.3.1.3.2. Indirect costs (as defined in Paragraph 7.2.5); and,
- 4.3.1.3.3. Consequential items (i.e. time extensions, credits, logic, reasonableness, impacts, disruptions, dilution) for the change.
- 4.3.1.4. If additional time is claimed the following shall be provided with each and every claim:
- 4.3.1.4.1. The specific number of days and specific dates for which the additional time is sought;
- 4.3.1.4.2. The specific reasons, causes, and/or effects whereby the Contractor believes that additional time should be granted; and,

4.3.1.4.3. The Contractor shall provide analyses, documentation, and justification of its claim for additional time in accordance with the latest Critical Path Method schedule in use at the time of event giving rise to the claim.

4.3.1.5. With each and every claim, the Contractor shall submit to the Architect/Engineer and Owner a notarized statement containing the following language:

"Under penalty of law (including perjury and/or false/fraudulent claims against the State), the undersigned,

(Name) (Title)

Of _____
(Company) (Date)

hereby certifies, warrants, and guarantees that this claim made for Work on this Contract is a true statement of the costs, adjustments and/or time sought and is fully documented and supported under the contract between the parties.

(Signature) (Date)"

4.3.2. Continuing Contract Performance.

4.3.2.1. Pending final resolution of a Claim except as otherwise agreed in writing or as provided in Subparagraph 9.7.1 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents on the portion of the Work not involved in a Claim.

4.3.3. Claims for Cost or Time for Concealed or Unknown Conditions.

4.3.3.1. If conditions are encountered at the site which are: (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents; or, (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed.

4.3.3.2. The Architect/Engineer will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect/Engineer determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect/Engineer shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within 21 days after the date of the Architect/Engineer's decision.

4.3.3.3. If the conditions encountered are materially different, the Contract Sum and Contract Time shall be equitably adjusted, but if the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect/Engineer for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.3.3.4. Nothing in this paragraph shall relieve the Contractor of its obligation to adequately and sufficiently investigate, research, and examine the site, the site survey, topographical information, and the geotechnical information available whether included by reference or fully incorporated in the Contract Documents.

4.3.4. Claims for Additional Cost.

- 4.3.4.1. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.6.
- 4.3.4.2. If the Contractor believes additional cost is involved for reasons including but not limited to: (1) a written interpretation from the Architect/Engineer; (2) an order by the Owner to stop the Work solely for the Owner's convenience or where the Contractor was not at least partially at fault; (3) a written order for a minor change in the Work issued by the Architect/Engineer; (4) failure of payment by the Owner per the terms of the Contract; (5) termination of the Contract by the Owner; or, (6) other reasonable grounds, Claim must be filed in accordance with this Paragraph 4.3.

4.3.5. Claims for Additional Time

- 4.3.5.1. If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as specified in these General Conditions shall be provided along with the notarized certification. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay for the same event or cause only one Claim is necessary. However, separate and distinct written notice is required for each separate event.

4.3.5.2. Weather Delays:

- 4.3.5.2.1. If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction activities.
- 4.3.5.2.2. Inclement or adverse weather shall not be a prima facie reason for the granting of an extension of time, and the Contractor shall make every effort to continue work under prevailing conditions. The Owner may grant an extension of time if an unavoidable delay occurs as a result of inclement/severe/adverse weather and such shall then be classified as a "Delay Day". Any and all delay days granted by the Owner are and shall be non-compensable in any manner or form. The Contractor shall comply with the notice requirements concerning instances of inclement/severe/adverse weather before the Owner will consider a time extension. Each day of inclement/severe/adverse weather shall be considered a separate instance or event and as such, shall be subject to the notice requirements.
- 4.3.5.2.3. An "inclement", "severe", or "adverse" weather delay day is defined as a day on which the Contractor is prevented by weather or conditions caused by weather resulting immediately there from, which directly impact the current controlling critical-path operation or operations, and which prevent the Contractor from proceeding with at least 75% of the normal labor and equipment force engaged on such critical path operation or operations for at least 60% of the total daily time being currently spent on the controlling operation or operations.
- 4.3.5.2.4. The Contractor shall consider normal/typical/seasonal weather days and conditions caused by normal/typical/seasonal weather days for the location of the Work in the planning and scheduling of the Work to ensure completion within the Contract Time. No time extensions will be granted for the Contractor's failure to consider and account for such weather days and conditions caused by such weather for the Contract Time in which the Work is to be accomplished.
- 4.3.5.2.5. A "normal", "typical", or "seasonal" weather day shall be defined as weather that can be reasonably anticipated to occur at the location of the Work for each particular month involved in the Contract Time. Each month involved shall not be considered individually as it relates to claims for additional time due to inclement/adverse/severe weather but shall consider the entire Contract Time as it compares to normal/typical/seasonal weather that is reasonably anticipated to occur. Normal/typical/seasonal weather days shall be based upon U.S. National

Weather Service climatic data for the location of the Work or the nearest location where such data is available.

4.3.5.2.6. The Contractor is solely responsible to document, prepare and present all data and justification for claiming a weather delay day. Any and all claims for weather delay days shall be tied directly to the current critical-path operation or operations on the day of the instance or event which shall be delineated and described on the Critical-Path Schedule and shall be provided with any and all claims. The Contractor is solely responsible to indicate and document why the weather delay day(s) claimed are beyond those weather days which are reasonably anticipated to occur for the Contract Time. Incomplete or inaccurate claims, as determined by the Architect/Engineer or Owner, may be returned without consideration or comment.

4.3.5.3. Where the Contractor is prevented from completing any part of the Work with specified durations or phases due to delay beyond the control of both the Owner and the Contractor, an extension of the contract time or phase duration in an equal amount to the time lost due to such delay shall be the Contractor's sole and exclusive remedy for such delay.

4.3.5.4. Delays attributable to and/or within the control of subcontractors and suppliers are deemed to be within the control of the Contractor.

4.3.5.5. In no event shall the Owner be liable to the Contractor, any subcontractor, any supplier, Contractor's surety, or any other person or organization, for damages or costs arising out of or resulting from: (1) delays caused by or within the control of the Contractor which include but are not limited to labor issues or labor strikes on the Project, federal, state, or local jurisdiction enforcement actions related directly to the Contractor's Work (e.g. safety or code violations, etc.); or, (2) delays beyond the control of both parties including but not limited to fires, floods, earthquakes, abnormal weather conditions, acts of God, nationwide material shortages, actions or inaction by utility owners, emergency declarations by federal, state, or local officials enacted in the immediate vicinity of the project, or other contractors performing work for the Owner.

4.3.6. Claims for Consequential Damages

4.3.6.1. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:

4.3.6.1.1. damages incurred by the Owner for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and,

4.3.6.1.2. damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, income, and for loss of profit.

4.3.6.2. This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this waiver of consequential damages shall be deemed to preclude an award of liquidated or actual damages, when applicable, in accordance with the requirements of the Contract Documents.

4.4. RESOLUTION OF CLAIMS, DISPUTES, AND CONTROVERSIES

4.4.1. Decision of Architect/Engineer. Claims, including those alleging an error or omission by the Architect/Engineer, shall be referred initially to the Architect/Engineer for decision. A decision by the Architect/Engineer shall be required as a condition precedent to mediation, arbitration or litigation of all Claims between the Contractor and Owner arising prior to the date of Final Acceptance, unless 30 days have passed after the Claim has been referred to the Architect/Engineer with no decision having been rendered by the Architect/Engineer. The Architect/Engineer will not decide disputes between the Contractor and persons or entities other than the Owner. Any Claim arising out of or related to the Contract, except those already waived in Subparagraphs 4.3.6, 7.2.6, 7.3.8, 9.10.4 and 9.10.5 shall, pending compliance with Subparagraph 4.4.5, be subject to mediation, arbitration, or the institution of

legal or equitable proceedings. Claims waived in Subparagraphs 4.3.6, 7.2.6, 7.3.8, 9.10.4, and 9.10.5 are deemed settled, resolved, and completed.

- 4.4.2. The Architect/Engineer will review Claims and within ten (10) days of the receipt of the Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party; (2) reject the Claim in whole or in part; (3) approve the Claim; (4) suggest a compromise; or (5) advise the parties that the Architect/Engineer is unable to resolve the Claim if the Architect/Engineer lacks sufficient information to evaluate the merits of the Claim or if the Architect/Engineer concludes that, in the Architect/Engineer's sole discretion, it would be inappropriate for the Architect/Engineer to resolve the Claim.
- 4.4.3. If the Architect/Engineer requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond within ten (10) days after receipt of such request and shall either provide a response on the requested supporting data, advise the Architect/Engineer when the response or supporting data will be furnished, or advise the Architect/Engineer that no supporting data will be furnished. Upon either no response or receipt of the response or supporting data, the Architect/Engineer will either reject or approve the Claim in whole or in part.
- 4.4.4. The Architect/Engineer will approve or reject Claims by written decision, which shall state the reasons therefore and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect/Engineer shall be final and binding on the parties but subject to mediation and arbitration.
- 4.4.5. When 30 days have passed upon submission of a Claim without decision or action by the Architect/Engineer, or the Architect/Engineer has rendered a decision or taken any of the actions identified in Subparagraph 4.4.2, a demand for arbitration of a Claim covered by such decision or action must be made within 30 days after the date of expiration of Subparagraph 4.4.1 or within 30 days of the Architect/Engineer's decision or action. Failure to demand arbitration within said 30 day period shall result in the Architect/Engineer's decision becoming final and binding upon the Owner and Contractor whenever such decision is rendered.
- 4.4.6. If the Architect/Engineer renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.
- 4.4.7. Upon receipt of a Claim against the Contractor or at any time thereafter, the Architect/Engineer or the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Architect/Engineer or the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.
- 4.4.8. A Claim subject to or related to liens or bonds shall be governed by applicable law regarding notices, filing deadlines, and resolution of such Claim prior to any resolution of such Claim by the Architect/Engineer, by mediation, or by arbitration, except for claims made by the Owner against the Contractor's bonds.

4.5. MEDIATION

- 4.5.1. Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.6, 7.2.6, 7.3.8, 9.10.4 and 9.10.5 shall, after initial decision by the Architect/Engineer or 30 days after submission of the Claim to the Architect/Engineer, be subject to mediation as a condition precedent to arbitration or the institution of legal or equitable proceedings by either party.
- 4.5.2. The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect and/or those rules specified in the contract documents or separately agreed upon between the parties. Construction Industry Mediation Rule M-2 (filing with AAA) is void. The parties shall mutually agree upon a mediator who shall then take the place of AAA in the Construction Industry Mediation Rules. The parties must mutually agree to use AAA and no filing of a request for mediation shall be made to AAA by either party until such mutual agreement has been made.

Request for mediation shall be filed in writing with the other party to the Contract and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

- 4.5.3. The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

4.6. ARBITRATION

- 4.6.1. Any controversy or Claim arising out of or related to this Contract or the breach thereof shall be settled by arbitration in accordance with the Montana Uniform Arbitration Act (MUAA). To the extent it does not conflict with the MUAA, the Construction Industry Arbitration Rules of the American Arbitration Association shall apply except as modified herein. The parties to the arbitration shall bear their own costs and expenses for participating in the arbitration. Costs of the Arbitration panel shall be borne equally between the parties except those costs awarded by the Arbitration panel (including costs for the arbitration itself).
- 4.6.2. Prior to the arbitration hearing all parties to the arbitration may conduct discovery subject to the provisions of Montana Rules of Civil Procedure. The arbitration panel may award actual damages incurred if a party fails to provide full disclosure under any discovery request. If a party claims a right of information privilege protected by law, the party must submit that claim to the arbitration panel for a ruling, before failing to provide information requested under discovery or the arbitration panel may award actual damages.
- 4.6.3. The venue for all arbitration proceedings required by this Contract shall be the seat of the county in which the work occurs or the First Judicial District, Lewis & Clack County, as determined solely by the Owner. Arbitration shall be conducted by a panel comprised of three members with one selected by the Contractor, one selected by the Owner, and one selected by mutual agreement of the Owner and the Contractor.
- 4.6.4. Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Subparagraphs 4.3.6, 7.2.6, 7.3.8, 9.10.4 and 9.10.5, shall, after decision or action by the Architect/Engineer or 30 days after submission of the Claim to the Architect/Engineer, be subject to arbitration provided a demand for arbitration is made within the time frame provided in Subparagraph 4.4.5. If such demand is not made with the specified time frame, the Architect/Engineer's decision or action is final. Prior to arbitration, the parties shall endeavor to resolve disputes by mediation in accordance with the provisions of Paragraph 4.5.
- 4.6.5. Claims not resolved by mediation shall be decided by arbitration which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect and/or those rules specified in the Contract Documents or separately agreed upon between the parties. Construction Industry Arbitration Rule R-3 (filing with AAA) is void. The parties shall mutually agree upon an arbitrator or arbitrators who shall then take the place of AAA in the Construction Industry Arbitration Rules. The parties must mutually agree to use AAA and no filing of a demand for arbitration shall be made to AAA by either party until such mutual agreement has been made. The demand for arbitration shall be filed in writing with the other party to the Contract and a copy shall be filed with the Architect/Engineer.
- 4.6.6. A demand for arbitration shall be made within the time limits specified in Subparagraphs 4.4.5 and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Paragraph 13.7.
- 4.6.7. Pending final resolution of a Claim including arbitration, unless otherwise mutually agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract on Work or amounts not in dispute.
- 4.6.8. **Limitation on Consolidation or Joinder.** Arbitration arising out of or relating to the Contract may include by consolidation or joinder the Architect/Engineer, the Architect/Engineer's employees or consultants,

except by written consent containing specific reference to the Agreement and signed by the Architect/Engineer, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Architect/Engineer, Contractor, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Architect/Engineer, Contractor or a separate contractor as described in Article 6 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

4.6.9. **Claims and Timely Assertion of Claims.** The party filing a demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

4.6.10. **Judgment on Final Award.** The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof. The parties agree that the costs of the arbitrator(s)' compensation and expenses shall be borne equally. The parties further agree that the arbitrator(s) shall have authority to award to either party some or all of the costs and expenses involved, including attorney's fees.

5. **ARTICLE 5 – SUBCONTRACTORS**

5.1. **DEFINITIONS**

5.1.1. A Subcontractor is a person or entity who has a direct or indirect contract at any tier or level with the Contractor or any Subcontractor to the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.2. **AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK**

5.2.1. Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract and in no instance later than (30) days after award of the Contract, shall furnish in writing to the Owner through the Architect/Engineer the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect/Engineer will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect/Engineer, after due investigation, has reasonable objection to any such proposed person or entity.

5.2.2. The Contractor shall not contract with a proposed person or entity to which the Owner or Architect/Engineer has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

5.2.3. If the Owner or Architect/Engineer has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect/Engineer has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

5.2.4. The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner or Architect/Engineer makes reasonable objection to such substitute. The Contractor shall not change or substitute for a Subcontractor who was required to be listed on the bid without first getting the approval of the Owner.

- 5.2.5. Buy-Safe Montana Provision: Before commencement of each subcontractor's portion of the Work, the Contractor shall obtain each subcontractor's incidence rate, experience modification rate, and loss ratio. The Contractor shall endeavor--but is not required--to use subcontractors whose incidence rate is less than the latest average for non-residential building construction for Montana as established by the Federal Bureau of Labor Statistics for the prior year; whose experience modification rating (EMR) is less than 1.0; and whose loss ratio is less than 100%. Contractor shall require any of its subcontractors who, based on the safety information that the Contractor obtains, have greater-than-average incidence rate, an EMR greater than 1.0, and a loss ratio of more than 100%, to schedule and obtain a Comprehensive Safety Consultation from the Montana Department of Labor & Industry, Employment Relations Division, Safety Bureau before substantial completion of each such subcontractor's portion of the Work. For assistance in obtaining the Comprehensive Safety Consultation, visit <http://erd.dli.mt.gov/safety-health/onsite-consultation>.

5.3. SUBCONTRACTUAL RELATIONS

- 5.3.1. By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect/Engineer. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect/Engineer under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.
- 5.3.2. Upon written request by the Owner, the Contractor shall require its subcontractors to provide to it performance and payment securities for their portion of the Work in the types and form defined in statute (18-2-201 and 18-2-203 MCA) for all sub-contractual agreements.
- 5.3.3. The Contractor shall prepare a Subcontractors' and Suppliers' chart in CSI division format acceptable to the Owner which lists by name, all contact information, job category, and responsibility the Contractor's Subcontractors (at all tiers or levels) and Suppliers with a pecuniary interest in the Project of greater than \$5,000.00. The Contractor shall not enter into any agreement with any subcontractor or supplier to which the Owner raises a timely objection. The Contractor shall promptly inform the Owner in writing of any proposed replacements, the reasons therefore, and the name and qualifications of any proposed replacements. The Owner shall have the right to reject any proposed replacements without cost or claim being made by the Contractor. The chart shall be provided to the Owner at the time of the pre-construction conference but no less than 30 days after award of the Contract.
- 5.3.4. All Contractors and Subcontractors to this contract must comply with all Montana Department of Labor and Industry requirements, regulations, rules, and statutes.
- 5.3.5. In accordance with 39-51-1104 MCA, any Contractor who is or becomes an employer under the provisions of Title 39, Chapter 51 of Montana Code Annotated, who contracts with any Subcontractor who also is or becomes an employer under the provisions of Title 39, Chapter 51 of Montana Code Annotated, shall withhold sufficient money on the contract to guarantee that all taxes, penalties, and interest are paid upon completion of the contract.
- 5.3.5.1. It is the duty of any Subcontractor who is or becomes an employer under the provisions of Title 39, Chapter 51 of Montana Code Annotated, to furnish the Contractor with a certification issued by the Montana Department of Labor and Industry, prior to final payment stating that said

Subcontractor is current and in full compliance with the provisions of Montana Department of Labor and Industry.

5.3.5.2. Failure to comply shall render the Contractor directly liable for all taxes, penalties, and interest due from the Subcontractor, and the Montana Department of Labor and Industry has all of the remedies of collection against the Contractor under the provisions of Title 39, Chapter 51 of Montana Code Annotated, as though the services in question were performed directly for the Contractor.

5.3.6. In compliance with state statutes, the Contractor will have the 1% Gross Receipts Tax withheld from all payments. Each "Public Contractor" includes all Subcontractors with contracts greater than \$5,000 each. The Contractor and all Subcontractors will withhold said 1% from payments made to all Subcontractors with contracts greater than \$5,000.00 and make it payable to the Montana Department of Revenue. The Contractor and all Subcontractors shall also submit documentation of all contracts greater than \$5,000.00 to the Montana Department of Revenue on the Department's prescribed form.

5.3.7. Construction Contractor Registration: All Subcontractors at any tier or level are required to be registered with the Department of Labor and Industry under 39-9-201 and 39-9-204 MCA prior to the Contract being executed by the Owner. Subcontractors shall demonstrate to the Contractor that it has registered or promises that it will register immediately upon notice of award and prior to the commencement of any work.

5.4. CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.4.1. Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

5.4.1.1. assignment is effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor and Contractor in writing; and,

5.4.1.2. assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2. Upon such assignment, if the Work has been suspended for more than 30 days as a result of the Contractor's default, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension. Such adjustment shall be at the expense of the Contractor.

5.4.3. The Contractor shall engage each of its subcontractors and suppliers with written contracts that preserve and protect the rights of the Owner and include the acknowledgement and agreement of each subcontractor and supplier that the Owner is a third-party beneficiary of their sub-contractual and supplier agreements. The Contractor's agreements shall require that in the event of default by the Contractor or termination of the Contractor, and upon request of the Owner, the Contractor's subcontractors and suppliers will perform services for the Owner.

5.4.4. Construction Contractor Registration: All Subcontractors at any tier or level are required to be registered with the Department of Labor and Industry under 39-9-201 and 39-9-204 MCA prior to the Contract being executed by the Owner. Subcontractors shall demonstrate to the Contractor that it has registered or promises that it will register immediately upon notice of award and prior to the commencement of any work.

6. ARTICLE 6 – CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1. OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims

that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Paragraph 4.3.

- 6.1.2. When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.
- 6.1.3. The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.
- 6.1.4. Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

6.2. MUTUAL RESPONSIBILITY

- 6.2.1. The Contractor shall afford the Owner and separate contractors reasonable opportunity' for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.
- 6.2.2. If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect/Engineer apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.
- 6.2.3. The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor. The Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly timed activities, damage to the Work or defective construction of a separate contractor.
- 6.2.4. The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Paragraph 12.2.
- 6.2.5. The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Subparagraph 3.14.

6.3. OWNER'S RIGHT TO CLEAN UP

- 6.3.1. If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect/Engineer will determine the responsibility of those involved and allocate the cost accordingly.

7. ARTICLE 7 – CHANGES IN THE WORK

7.1. GENERAL

- 7.1.1. Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive, or order for a minor change in the Work subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Minor changes as ordered by the Architect/Engineer has the definition provided in Paragraph 7.4
- 7.1.2. A Change Order shall be based upon agreement among the Owner, Contractor, and Architect/Engineer; a Construction Change Directive requires agreement by the Owner and Architect/Engineer and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect/Engineer alone.
- 7.1.3. Changes in the Work shall be performed under applicable provisions of the Contract Documents and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.
- 7.1.4. No act, omission, or course of dealing, shall alter the requirement that Change Orders or Construction Change Directives shall be in writing and signed by the Owner, and that Change Orders and Construction Change Directives are the exclusive method for effecting any adjustment to the Contract. The Contractor understands and agrees that neither the Contract Sum nor the Contract Time can be changed by implication, oral agreement, verbal directive, or unsigned Change Order.

7.2. CHANGE ORDERS

- 7.2.1. A Change Order is a written instrument prepared by the Architect/Engineer and signed by the Owner, Contractor and Architect/Engineer, stating their agreement upon all of the following:
 - 7.2.1.1. change in the Work;
 - 7.2.1.2. the amount of the adjustment, if any, in the Contract Sum; and,
 - 7.2.1.3. the extent of the adjustment, if any, in the Contract Time.
- 7.2.2. The cost or credit to the Owner resulting from a change in the Work shall be determined as follows:
 - 7.2.2.1. Per the limitations of this Subparagraph, plus a 5% allowance for overhead and a 10% allowance for profit. The allowances for overhead and for profit are limited to the percentages as specified herein unless they are determined to be unreasonable by the Architect/Engineer (not the Contractor) per Subparagraph 7.3.9 for each Change Order or Construction Change Directive; or,
 - 7.2.2.2. By one of the methods in Subparagraph 7.3.4, or as determined by the Architect/Engineer per Subparagraph 7.3.9, plus a 5% allowance for overhead and a 10% allowance for profit. The allowances for overhead and for profit are limited to the percentages as specified herein unless they are determined to be unreasonable by the Architect/Engineer (not the Contractor) per Subparagraph 7.3.9 for each Change Order or Construction Change Directive.
 - 7.2.2.3. The Contractor's proposed increase or decrease in cost shall be limited to costs listed in Subparagraph 7.3.9.1 through 7.3.9.5.
- 7.2.3. The Contractor shall not submit any Change Order, response to requested cost proposals, or requested changes which are incomplete and do not contain full breakdown and supporting documentation in the following three areas:
 - 7.2.3.1. Direct costs (only those listed in Subparagraph 7.3.9.1 through 7.3.9.5 are allowable);
 - 7.2.3.2. Indirect costs (limited as a percentage on each Change Order per Supplementary General Conditions, Paragraph 7.2.2); and
 - 7.2.3.3. Consequential items (e.g. time extensions, credits, logic, reasonableness, impacts, disruptions, dilution).

- 7.2.4. Any Change Order, responses to requested proposals, or requested changes submitted by the Contractor which, in the opinion of the Architect/Engineer, are incomplete, may be rejected and returned to the Contractor without comment. It is the responsibility of and incumbent upon the Contractor to ensure and confirm that all Change Orders, responses to requested proposals, or requested changes are complete prior to submission.
- 7.2.5. Overhead, applicable to all areas and sections of the Contract Documents, means "Indirect Costs" as referenced in Subparagraph 7.2.3.2. Indirect costs are inclusive of, but not limited to, the following: home office overhead; off-site supervision; home office project management; change order and/or proposal preparation, design, research, negotiation and associated travel; effects of disruption and dilution of management and supervision off-site; time delays; coordination of trades; postage and shipping; and, effective increase in guarantee and warranty durations. Indirect costs applicable to any and all changes in the work, either through Change Order or Construction Change Directive, are limited to the percentage allowance for overhead in Subparagraph 7.2.2.
- 7.2.6. By signature on any Change Order, the Contractor certifies that the signed Change Order is complete and includes all direct costs, indirect costs and consequential items (including additional time, if any) and is free and clear of all claims or disputes (including, but not limited to, claims for additional costs, additional time, disruptions, and/or impacts) in favor of the Contractor, subcontractors, material suppliers, or other persons or entities concerning the signed change order and on all previously contracted Work and does release the Owner from such claims or demands.
- 7.2.7. Any and all changes or adjustments to the Contract Time requested or claimed by the Contractor as a result of a Change Order shall require documentation and justification for the adjustment by a Critical Path Method analysis of the Contractor's most recent Critical Path Schedule in use prior to the change. Changes which affect or concern activities containing float or slack time (i.e. not on the critical path) and which can be accomplished within such float or slack time, shall not result in an increase in the Contract Time.
- 7.2.8. Supervision means on-site, field supervision and not home office overhead, off-site management or off-site supervision.
- 7.2.9. Labor means those persons engaged in construction occupations as defined in Montana Prevailing Wage Rates for Building Construction or Heavy/Highway as bound in the Contract Documents and does not include design, engineering, superintendence, management, on-site field supervision, home office or other off-site management, off-site supervision, office or clerical work.

7.3. CONSTRUCTION CHANGE DIRECTIVES

- 7.3.1. A Construction Change Directive is a written order prepared by the Architect/Engineer directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.
- 7.3.2. Any and all changes or adjustments to the Contract Time requested or claimed by the Contractor as a result of a Construction Change Directive, shall require documentation and justification for the adjustment by a Critical Path Method analysis of the Contractor's most recent Critical Path Schedule in use prior to the change. Changes that affect or concern activities containing float or slack time (i.e. not on the critical path) and which can be accomplished within such float or slack time shall not result in an increase in the Contract Time.
- 7.3.3. A Construction Change Directive shall be used in the absence of agreement on the terms of a Change Order.
- 7.3.4. If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:
- 7.3.4.1. mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

- 7.3.4.2. unit prices stated in the Contract Documents or subsequently agreed upon;
 - 7.3.4.3. cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee;
 - 7.3.4.4. By actual cost as shown by the Contractor's and Subcontractor's itemized invoices; or
 - 7.3.4.5. as provided in Subparagraph 7.3.9.
- 7.3.5. Costs shall be limited to the following: cost of materials, including cost of delivery; cost of labor, including social security, old age and unemployment insurance and fringe benefits under collective bargaining agreements; workers' compensation insurance; bond premiums; and rental value of power tools and equipment.
- 7.3.6. Overhead and profit allowances shall be limited on all Construction Change Directives to those identified in 7.2.2.
- 7.3.7. Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect/Engineer of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.
- 7.3.8. A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.
- 7.3.9. If the Contractor does not respond or disagrees with the method for adjustment in the Contract Sum in writing within seven (7) calendar days, the method and the adjustment made shall be determined by the Architect/Engineer on the basis of reasonable expenditures and/or savings of those performing the Work directly attributable to the change including, in the case of an increase in the Contract Sum, plus an allowance for overhead and profit as listed under Subparagraph 7.2.2. In such case, and also under Clause 7.3.4.3, the Contractor shall keep and present, in such form as the Architect/Engineer may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Subparagraph 7.3.9 shall be limited to the following:
- 7.3.9.1. costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance as determined by the Prevailing Wage Schedules referenced in the Contract Documents;
 - 7.3.9.2. costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
 - 7.3.9.3. rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
 - 7.3.9.4. costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
 - 7.3.9.5. additional costs of field supervision and field office personnel directly attributable to the change.
- 7.3.10. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect/Engineer. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.
- 7.3.11. Pending final determination of the total cost of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied

by a Change Order indicating the parties' agreement with part or all of such costs. For any portion of such cost that remains in dispute, the Architect/Engineer will make an interim determination for purposes of monthly certification for payment for those costs. That determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a claim in accordance with Article 4.

- 7.3.12. When the Owner and Contractor agree with the determination made by the Architect/Engineer concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

7.4. MINOR CHANGES IN THE WORK

- 7.4.1. The Architect/Engineer will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

8. ARTICLE 8 – TIME

8.1. DEFINITIONS

- 8.1.1. Time is of the essence in performance, coordination, and completion of the Work contemplated herein. The Owner may suffer damages if the Work is not completed as specified herein. When any duration or time period is referred to in the Contract Documents by days, the first day shall be determined as the day following the current day of any event or notice starting a specified duration.
- 8.1.2. Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.
- 8.1.3. The date of commencement of the Work is the date established in the NOTICE TO PROCEED AS ISSUED BY THE OWNER.
- 8.1.4. The date the Contractor reaches Substantial Completion is the date certified by the Architect/Engineer in accordance with Paragraph 9.8.
- 8.1.5. The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.
- 8.1.6. Liquidated Damages. The Owner may suffer loss if the project is not substantially complete on the date set forth in the contract documents. The Contractor and his surety shall be liable for and shall pay to the Owner the sums hereinafter stipulated as liquidated damages for each calendar day of delay until the work is substantially complete: **See Instructions to Bidders.**
- 8.1.7. The Contractor shall not be charged liquidated or actual damages when delay in completion of the Work is due to:
 - 8.1.7.1. Any preference, priority or allocation order issued by the government;
 - 8.1.7.2. Unforeseeable cause beyond the control and without the fault or negligence of the Contractor, such as acts of God or of the public enemy, fires, floods, epidemics, quarantine restrictions, freight embargoes, and unusually severe weather. All such occurrences resulting in delay must be documented and approved by Change Order; or,
 - 8.1.7.3. Any delays of Subcontractors or suppliers occasioned by any of the causes specified in 8.1.7.1 and 8.1.7.2 of this article.
- 8.1.8. The Contractor is completely obligated and responsible to provide written notice of each day of delay as provided for in Paragraph 4.3.

- 8.1.9. Contract Time. All work shall reach Substantial Completion by: **See Instructions to Bidders.** The Owner will issue a written NOTICE TO PROCEED and finalized contract.

8.2. PROGRESS AND COMPLETION

- 8.2.1. Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Contract, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.
- 8.2.2. The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the date on the Notice to Proceed and in no case prior to the effective date of insurance required by Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance.
- 8.2.3. The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.
- 8.2.4. If the Contractor falls behind the latest construction schedule by more than 14 calendar days through its own actions or inaction, neglect, inexperience, lack of oversight and management of the Work including that of any Subcontractors, written notice to the Owner and Architect/Engineer shall be provided within three (3) days with explanation of how the Contractor intends to get back on schedule. Response to getting back on schedule consists of providing a sufficient number of qualified workers and/or proper materials or an acceptably reorganized schedule to regain the lost time in a manner acceptable to the Owner.

8.3. DELAYS AND EXTENSIONS OF TIME

- 8.3.1. If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect/Engineer, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending mediation and arbitration, or by other causes which the Architect/Engineer determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect/Engineer may determine.
- 8.3.2. Claims relating to time shall be made in accordance with applicable provisions of Paragraph 4.3.
- 8.3.3. This Paragraph 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

9. PAYMENTS AND COMPLETION

9.1. CONTRACT SUM

- 9.1.1. The Contract Sum is stated in the Contract and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2. SCHEDULE OF VALUES

- 9.2.1. Before the first Application for Payment, the Contractor shall submit to the Architect/Engineer a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect/Engineer may require. This schedule, unless objected to by the Architect/Engineer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3. APPLICATIONS FOR PAYMENT

- 9.3.1. The Contractor shall submit to the Architect/Engineer an itemized Application for Payment for operations completed in accordance with the Schedule of Values. Such application shall be signed and supported by such data substantiating the Contractor's right to payment as the Owner or Architect/Engineer may

require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for in the Contract Documents.

- 9.3.2. NOTICE OF APPROVAL OF PAYMENT REQUEST PROVISION. Per Title 28, Chapter 2, Part 21, this contract allows the Owner to change the number of days to approve a Contractor's payment request. This contract allows the Owner to approve the Contractor's payment request within thirty-five (35) calendar days after it is received by the Owner without being subject to the accrual of interest.
- 9.3.3. As provided in Subparagraph 7.3.11, such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives, or by interim determinations of the Architect/Engineer, but not yet included in Change Orders.
- 9.3.4. Applications for payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier.
- 9.3.5. Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.
- 9.3.6. The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.
- 9.3.7. Until the work is complete, the Owner will pay 95% of the amount due the Contractor on account of progress payments.
- 9.3.7.1. If the Work and its progress are not in accordance with all or any part, piece, or portion of the Contract Documents, the Owner may, at its sole discretion and without claim by the Contractor, increase the amount held as retainage to whatever level deemed necessary to effectuate performance and progress of the Work, for anticipated repairs, warranties or completion of the Work by the Contractor or through the letting of other contracts. The Contractor will not be entitled to additional costs, expenses, fees, time, and such like, in the event the Owner increases the amount held as retainage due to non-compliance and/or non-performance with all or any part, piece, or portion of the Contract Documents.
- 9.3.7.2. Prior to the first application for payment, the Contractor shall submit the following information on the appropriate forms:
- 9.3.7.2.1. Schedule of Amounts for Contract Payment (Form 100): This form shall contain a breakdown of the labor, material and other costs associated with the various portions of the work and shall be the basis for the progress payments to the Contractor. The use of electronic method shall be in the Owner's format.
- 9.3.7.2.2. Project/Progress Schedule: If no Schedule (or revised Schedule) is provided with each and every Periodic Estimates for Partial Payment, the Architect/Engineer and/or Owner may return the pay request, or hold it, and may choose not pay for any portion of the Work until the appropriate Schedule, indicating all changes, revisions and updates, is provided. No claim for additional costs or interests will be made by the Contractor or any subcontractor on account of holding or non-payment of the Periodic Estimate for Partial Payment request.
- 9.3.7.3. Progress Payments

- 9.3.7.3.1. Periodic Estimates for Partial Payment shall be on a form provided by the Owner (Form 101) and submitted to the Architect/Engineer for payment by the Owner. Payment shall be requested for the labor and material incorporated in the work to date and for materials suitably stored, less the aggregate of previous payments, the retainage, and the 1% gross receipts tax.
- 9.3.7.3.2. The Contractor, by submission of any partial pay request, certifies that every request for partial payment is correct, true and just in all respects and that payment or credit had not previously been received. The Contractor further warrants and certifies, by submission of any partial pay request, that all previous work for which payment has been received is free and clear of all liens, disputes, claims, security interests, encumbrances, or causes of action of any type or kind in favor of the Contractor, subcontractors, material suppliers or other persons or entities and does release the Owner from such.
- 9.3.7.3.3. Progress payments do not constitute official acceptance of any portion of the work or materials whether stored on or off-site.
- 9.3.7.3.4. In compliance with 15-50-206 MCA, the Contractor will have 1% of his gross receipts withheld by the Owner from all payments due. Each subcontractor who performs work greater than \$5,000 shall have 1% of its gross receipts withheld by the Contractor. The Contractor shall notify the Department of Revenue on the department's prescribed forms.

9.3.7.4. The Contractor may submit obligations/securities in a form specified in 18-1-301 Montana Code Annotated (MCA) to be held by a Financial Institution in lieu of retainage by the Owner. The Owner will establish the amount that would otherwise be held as retainage. Should the Contractor choose to submit obligations/securities in lieu of retainage, the Owner will require the Financial Institution to execute the Owner's "Account Agreement for Deposit of Obligations Other Than Retainage" (Form 120) prior to submission of any obligations/securities in accordance with 18-1-302 MCA. The Contractor must extend the opportunity to participate in all obligations/securities in lieu of retainage on a pro rata basis to all subcontractors involved in the project and shall be solely responsible for the management and administration of same. The Owner assumes no liability or responsibility from or to the Contractor or Subcontractors regarding the latter's participation.

9.3.7.5. The Contractor shall maintain a monthly billing cycle.

9.4. CERTIFICATES FOR PAYMENT

- 9.4.1. The Architect/Engineer will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect/Engineer determines is properly due, or notify the Contractor and Owner in writing of the Architect/Engineer's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1. For the purposes of this paragraph regarding certification of payment, electronic mail and/or notes provided through the use of an electronic approval system shall constitute written notice.
- 9.4.2. The issuance of a Certificate for Payment will constitute a representation by the Architect/Engineer to the Owner, based on the Architect/Engineer's evaluation of the Work and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect/Engineer's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect/Engineer. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect/Engineer has: (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences or procedures; (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or, (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.5. DECISIONS TO WITHHOLD CERTIFICATION

- 9.5.1. The Architect/Engineer may withhold or reject a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect/Engineer's opinion the representations to the Owner required by Subparagraph 9.4.2 cannot be made. If the Architect/Engineer is unable to certify payment in the amount of the Application, the Architect/Engineer will notify the Contractor and Owner as provided in Subparagraph 9.4.1. If the Contractor and Architect/Engineer cannot agree on a revised amount, the Architect/Engineer will promptly issue a Certificate for Payment for the amount for which the Architect/Engineer is able to make such representations to the Owner. The Architect/Engineer may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect/Engineer's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Subparagraph 3.3.4, because of:
- 9.5.1.1. defective Work not remedied;
 - 9.5.1.2. third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
 - 9.5.1.3. failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
 - 9.5.1.4. reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
 - 9.5.1.5. damage to the Owner or another contractor;
 - 9.5.1.6. reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or,
 - 9.5.1.7. persistent failure to carry out the Work in accordance with the Contract Documents.
- 9.5.2. When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.
- 9.5.3. Owner's Right to Refuse Payment: The Architect/Engineer's approval, or partial approval, of the Contractor's request for payment shall not preclude or prevent the Owner from exercising any of its remedies under this Contract. The Owner shall have right to refuse to make payment(s) to the Contractor due to:
- 9.5.3.1. the Contractor's failure to perform the Work in compliance with the Contract Documents;
 - 9.5.3.2. the Contractor's failure to correct any defective or damaged Work;
 - 9.5.3.3. the Contractor's failure to accurately represent the Work performed in the pay request;
 - 9.5.3.4. the Contractor's performance of its Work at a rate or in a manner that, in the Owner's opinion, is likely to result in the Work, or any portion thereof, to be delayed;
 - 9.5.3.5. the Contractor's failure to use funds previously paid to it by the Owner to pay for the Contractor's Work-related obligations including, but not limited to, subcontractors and suppliers on this Project;
 - 9.5.3.6. claims made, or anticipated by the Owner to be made, against the Owner or its property;
 - 9.5.3.7. inclusion in the pay request of any amounts in dispute or part of a claim;
 - 9.5.3.8. Damage or loss caused by the Contractor, including its subcontractors and suppliers; or,

9.5.3.9. The Contractor's failure or refusal to perform its obligations to the Owner.

9.6. PROGRESS PAYMENTS

- 9.6.1. After the Architect/Engineer has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents or the Owner may take any action the Owner deems necessary under Subparagraph 9.5.3.
- 9.6.2. The Contractor shall promptly pay each Subcontractor in accordance with Title 28, Chapter 2, Part 21, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.
- 9.6.3. The Contractor is prohibited from holding higher amounts in retainage on any Subcontractor than the Owner is holding from the Contractor.
- 9.6.4. The Architect/Engineer will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect/Engineer and Owner on account of portions of the Work done by such Subcontractor.
- 9.6.5. Neither the Owner nor Architect/Engineer shall have an obligation to pay, or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.
- 9.6.6. Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.6.2, 9.6.3, 9.6.4, and 9.6.5.
- 9.6.7. A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.
- 9.6.8. Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

9.7. FAILURE OF PAYMENT

- 9.7.1. If the Owner does not approve payment to the Contractor within thirty-five (35) calendar days after the receipt of a certified Application for Payment, then the Contractor may, upon seven additional days' written notice to the Owner and Architect/Engineer, suspend the Work until payment of the amount owing has been received. Nothing in the Subparagraph shall limit the Owner's rights and options as provided in Subparagraph 9.5.3. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

9.8. SUBSTANTIAL COMPLETION

- 9.8.1. Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.
- 9.8.2. When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect/Engineer a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item

on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

- 9.8.3. Upon receipt of the Contractor's list, the Architect/Engineer will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect/Engineer's Inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect/Engineer. In such case, the Contractor shall then submit a request for another inspection by the Architect/Engineer to determine Substantial Completion.
- 9.8.4. The Contractor shall ensure the project is substantially complete prior to requesting any inspection by the Architect/Engineer so that no more than one (1) inspection is necessary to determine Substantial Completion for all or any portion of the Work. If the Contractor does not perform adequate inspections to develop a comprehensive list as required in Subparagraph 9.8.2 and does not complete or correct such items upon discovery or notification, the Contractor shall be responsible and pay for the costs of the Architect/Engineer's additional inspections to determine Substantial Completion.
- 9.8.5. When the Work or designated portion thereof is substantially complete, the Architect/Engineer will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion and which shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance. After issuance of the Certificate of Substantial Completion, the Contractor shall finish and complete all remaining items within thirty (30) calendar days of the date on the Certificate. The Architect/Engineer shall identify and fix the time for completion of specific items which may be excluded from the thirty (30) calendar day time limit. Failure to complete any items within the specified time frames may be deemed by the Owner as default of the contract on the part of the Contractor.
- 9.8.6. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety if there are claims or past payment issues, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

9.9. PARTIAL OCCUPANCY OR USE

- 9.9.1. The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect/Engineer as provided under Subparagraph 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect/Engineer.
- 9.9.2. Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect/Engineer shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.
- 9.9.3. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.10. FINAL COMPLETION AND FINAL PAYMENT

- 9.10.1. Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect/Engineer will promptly make such inspection and, when the Architect/Engineer finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect/Engineer will approve the Contractor's final Certificate for Payment stating that to the best of the Architect/Engineer's knowledge, information and belief, and on the basis of the Architect/Engineer's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect/Engineer's signature on the Contractor's final Certificate for Payment will constitute a further representation that conditions listed in Subparagraph 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.
- 9.10.2. Neither final payment nor any remaining retainage shall become due until the Contractor submits to the Architect/Engineer:
 - 9.10.2.1. completed Contractor's Affidavit of Completion, Payment of Debts and Claims, and Release of Liens (Form 106) that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied;
 - 9.10.2.2. a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner;
 - 9.10.2.3. a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents
 - 9.10.2.4. Consent of Surety Company to Final Payment (Form 103); and,
 - 9.10.2.5. if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner.
- 9.10.3. The Contractor and his surety accepts and assumes responsibility, liability, and costs for and agrees to defend and hold harmless the Owner for and against any and all actions as a result of the Owner making final payment.
- 9.10.4. By submitting any Application for Payment to the Architect/Engineer the Contractor and his surety certify and declare that all bills for materials, supplies, utilities and for all other things furnished or caused to be furnished by the Contractor and all Subcontractors and used in the execution of the Contract will be fully paid upon receipt of Final Payment and that there are no unpaid obligations, liens, claims, security interests, encumbrances, liabilities and/or demands of State Agencies, subcontractors, suppliers, mechanics, laborers or any others resulting from or arising out of any work done, caused to be done or ordered to be done by the Contractor under the contract.
- 9.10.5. In consideration of the prior payments and the final payment made and all payments made for authorized changes, the Contractor releases and forever discharges the Owner from any and all obligations, liens, claims, security interests, encumbrances and/or liabilities arising by virtue of the contract and authorized changes between the parties, either verbal or in writing, and any and all claims and demands of every kind and character whatsoever against the Owner, arising out of or in any way relating to the contract and authorized changes.
- 9.10.6. The date of Final Payment by the Owner shall constitute Final Acceptance of the Work. The determining date for the expiration of the warranty period shall be as specified in Paragraphs 3.5 and 12.2.2.
- 9.10.7. If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect/Engineer so confirms, the Owner shall, upon application by the Contractor and certification by the Architect/Engineer, and without terminating the Contract, make payment of the balance due for that

portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect/Engineer prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

9.10.8. The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

9.10.8.1. liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;

9.10.8.2. failure of the Work to comply with the requirements of the Contract Documents; or,

9.10.8.3. terms of special warranties required by the Contract Documents.

9.10.9. Acceptance of final payment by the Contractor, a Subcontractor, or material supplier, shall constitute a waiver of any and all obligations, liens, claims, security interests, encumbrances and/or liabilities against the Owner except those previously made in writing per the requirements of Paragraph 4.3 and as yet unsettled at the time of submission of the final Application for Payment.

9.10.10. The Owner's issuance of Final Payment does not constitute a waiver or release of any kind regarding any past, current, or future claim the Owner may have against the Contractor and/or the surety.

10. ARTICLE 10 – PROTECTION OF PERSONS AND PROPERTY

10.1. SAFETY

10.1.1. **Importance of Safety.** The Contractor and all Subcontractors (at any tier or level) recognize that safety is paramount at all times. The Contractor shall perform the work in a safe manner with the highest regard for safety of its employees and all other individuals and property at the work site. Contractor shall maintain its tools, equipment, and vehicles in a safe operating condition and take all other actions necessary to provide a safe working environment for performance of work required under this Contract. The Contractor is solely responsible for the means, methods, techniques, sequences and procedures for coordinating and constructing the Work, including all site safety, safety precautions, safety programs, and safety compliance with OSHA and all other governing bodies.

10.1.2. **Particular Safeguards.** (a) The Contractor shall erect and maintain, as required by Paragraphs 10.1.1 and 10.1.3, safeguards for safety and protection, including posting danger signs and other warnings against hazards, installing suitable barriers and lighting, promulgating safety regulations, and providing notification to all parties who may be impacted by the Contractor's operations. (b) When use or storage of explosives or other Hazardous Materials/Substances (defined below) or equipment are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. (c) The Contractor shall not encumber or load or permit any part of the construction site to be encumbered or loaded so as to endanger the safety of any person(s).

10.1.3. **Compliance with Safety Laws.** Contractor represents and warrants to Owner that it knows and understands all federal, state and local safety statutes, rules, and regulations (Laws) related to the work under this Contract. Contractor shall comply with these Laws. Contractor shall keep all material data safety sheets on site and available at all times.

10.1.4. **Remedy property damage.** The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, a Subcontractor of any tier or level, or anyone employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.18.

10.1.5. **Designation of Safety Representative.** Unless the Contractor designates, in writing to the Owner and the Architect/Engineer, another responsible member of the Contractor's organization as the Safety Representative, the Contractor's superintendent is the Safety Representative. The Safety Representative is defined as that member of the Contractor's organization responsible for all safety under this Contract.

- 10.1.6. **Release/Indemnity of Owner and Architect/Engineer.** The Contractor agrees that the Owner and Architect/Engineer are not responsible for safety at the work site and releases them from all obligations and liability regarding safety at the work site. The Contractor shall indemnify and defend the Owner and the Architect/Engineer against and from all claims, liabilities, fines, penalties, orders, causes of action, judgments, losses, costs and expenses (including but not limited to court costs and reasonable attorney fees), arising from injuries and death to any persons and damage to real and personal property arising from, in connection with, or incidental to Contractor's safety responsibilities under this Contract.

10.2. HAZARDOUS MATERIALS/SUBSTANCES

- 10.2.1. "Hazardous Materials/Substances" means any substance: (a) the presence of which requires investigation, or remediation under any federal, state or local statute, rule, regulation, ordinance, order, policy or common law; (b) that is or becomes defined as "hazardous waste," "hazardous substance," pollutant, or contaminant under any federal, state or local statute, rule, regulation, or ordinance or amendments thereto; (c) that is toxic, explosive, corrosive flammable, or otherwise hazardous and is or becomes regulated by any government authority, agency, board, commission or instrumentality of the United States, the state of Montana or any political subdivision thereof; (d) gasoline, diesel fuel or other petroleum hydrocarbons; (e) containing contains polychlorinated biphenyls (PCBs) or asbestos; or (f) the presence of which causes or threatens to cause a nuisance or trespass on the work site or adjacent property.
- 10.2.2. The Contractor is solely responsible for all compliance with all regulations, requirements, and procedures governing Hazardous Materials/Substances at the Work Site or that Contractor brings on the site. The Contractor is solely responsible for remediation, costs, damages, loss, and/or expenses for all Hazardous Materials/Substances brought to the site. The Contractor shall not and is strictly prohibited from purchasing and/or installing any asbestos-containing materials or products as part of the Work. Should the Contractor do so, the Contractor shall be solely responsible for the immediate remediation and all costs, damages, loss, and/or expenses per Paragraphs 10.1.6, 10.2.2, 10.2.3, and 10.2.4.
- 10.2.3. If the Contractor encounters Hazardous Materials/Substances during the course of the Work, whether or not identified in the Contract Documents, Work, the Contractor agrees that:
- 10.2.3.1. Encountering any Hazardous Materials/Substances during performance of the Work does not necessarily mean a change in conditions has occurred, nor is it evidence that the Contractor is due additional Contract Time or an increase in the Contract Sum. If encountering Hazardous Materials/Substances is determined to be a change in conditions to the Contract Documents, Paragraph 4.3 and Article 7 apply in determining any additional compensation or extension of time claimed by the Contractor.
- 10.2.3.2. The Contractor is solely responsible for securing the Work in accordance with this Article 10 involving any Hazardous Materials/Substances against unlawful, unregulated, or improper intrusion, disturbance, or removal. The Contractor shall implement protections and take protective actions throughout the performance of the Work to prevent exposure to workers, occupants, and contamination of the site or area.
- 10.2.3.3. If the Contractor is unable to or fails to properly secure the Work against unlawful, unregulated, or improper intrusion, disturbance, or removal of Hazardous Materials/Substances, the Contractor shall immediately implement protections and take protective actions, up to and including stopping Work in the area or on the item affected, to prevent exposure to workers, occupants, and contamination of the site or area. The Contractor shall immediately notify the Owner and Architect in writing giving details of the failure and the corrective actions taken. If the condition is an emergency and notice cannot be provided in writing, then Contractor shall orally and immediately notify the Owner and Architect/Engineer of the condition followed by a full written explanation. In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss.
- 10.2.3.4. If the Contractor notifies the Owner and takes precautions in accordance with this Article 10 upon encountering materials/substances suspected of containing asbestos or polychlorinated biphenyls that are unidentified in the Contract Documents, the Owner shall verify if the

unidentified material or substance contains asbestos or polychlorinated biphenyls and shall arrange for the removal or other measures as necessary to allow the Contractor to proceed with the Work. The Contract Time may be extended as appropriate if the Work affected is on the critical path and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs as provided in Article 7. Should the Contractor fail to notify the Owner upon encountering asbestos, polychlorinated biphenyls, or materials/substances suspected of containing asbestos or polychlorinated biphenyls, that are unidentified in the Contract Documents, the Contractor is solely responsible for all mitigation in accordance with Paragraphs 10.1.6, 10.2.2, 10.2.3, and 10.2.4.

10.2.4. The Contractor shall indemnify, hold harmless, and defend the Owner from and against all claims, liabilities, fines, penalties, orders, causes of action, judgments, losses, costs and expenses, including but not limited to court costs and reasonable attorneys' fees, arising from, in connection with, or incidental to the Contractor's handling, disposal, encountering, or release of Hazardous Materials/Substances.

10.3. UTILITIES

10.3.1. Underground Utilities: Buried utilities, including, but not limited to, electricity, gas, steam, air, water, telephone, sewer, irrigation, broadband coaxial computer cable, and fiber optic cables are very vulnerable and damage could result in loss of service. The telephone, broadband and fiber optic cables are especially sensitive and the slightest damage to these components will result in disruption of the operations of the campus.

10.3.2. "One Call" must be notified by phone and in writing at least 72 hours (3 business days) prior to digging to arrange and assist in the location of buried utilities in the field. (Dial 811). The Contractor shall mark the boundary of the work area. The boundary area shall be indicated with white paint and white flags. In winter, pink paint and flags will be accepted.

10.3.3. After buried utilities have been located, the Contractor shall be responsible for any utilities damaged while digging. Such responsibility shall include all necessary care including hand digging. Contractor's responsibility shall also include maintaining markings after initial locate. The area for such responsibility, unless otherwise indicated, shall extend 24 inches to either side of the marked center line of a buried utility line.

10.3.4. The Contractor's responsibility shall include repair or replacement of damaged utilities. The Contractor will also be responsible for all costs associated with reterminations and recertification.

10.3.5. Any buried utilities exposed by the operations of the Contractor shall be marked on the plans and adequately protected by the Contractor. If any buried utilities not located are exposed, the Contractor shall immediately contact the Owner and the Architect/Engineer. If, after exposing an unlocated buried utility, the Contractor continues digging without notifying Owner and Architect/Engineer and further damages the utility, the Contractor will be fully and solely responsible.

10.3.6. Damage to irrigation systems during seasons of no irrigation that are not immediately and adequately repaired and tested will require the Contractor to return when the system is in service to complete the repair.

10.3.7. In the event of a planned interruption of any existing utility service, the Contractor shall make arrangements with Owner at least 72 hours (3 business days) in advance. Shutdowns of the broadband or fiber optic cables will normally require 5 working days' notice to the Owner. The Contractor shall bear all costs associated with the interruptions and restorations of service.

11. ARTICLE 11 - INSURANCE AND BONDS

11.1. CONTRACTOR'S LIABILITY INSURANCE

11.1.1. The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the State of Montana with a rating no less than "A-", such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the

Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- 11.1.1.1. claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;
 - 11.1.1.2. claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
 - 11.1.1.3. claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
 - 11.1.1.4. claims for damages insured by usual personal injury liability coverage;
 - 11.1.1.5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting there from;
 - 11.1.1.6. claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
 - 11.1.1.7. claims for bodily injury or property damage arising out of completed operations; and,
 - 11.1.1.8. claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.
- 11.1.2. The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until termination of any coverage required to be maintained after final payment.
- 11.1.3. Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire at any time prior to Final Acceptance and then not until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.
- 11.1.4. At the request of the Owner, the Contractor shall provide copies of all insurance policies to the Owner.

11.2. INSURANCE, GENERAL REQUIREMENTS

- 11.2.1. The Contractor shall maintain for the duration of the contract, at its cost and expense, insurance against claims for injuries to persons or damages to property, including contractual liability, which may arise from or in connection with the performance of the Work by the Contractor, its agents, employees, representatives, assigns, or subcontractors. The Contractor is responsible for all deductibles regardless of policy or level of coverage. The Owner reserves the right to demand, and the Contractor agrees to provide, copies of any and all policies at any time.
- 11.2.2. Hold Harmless and Indemnification: The Contractor shall protect, defend, and save the state, its elected and appointed officials, agents, and employees, while acting within the scope of their duties as such, harmless from and against all claims, liabilities, demands, causes of action, and judgments whatsoever (including the cost of defense and reasonable attorney fees): 1) arising in favor of or asserted by third parties on account of damage to property, personal injury, or death which injury, death, or damage; or, 2) arising out of or resulting from performance or failure to perform, or omissions of services, or in any way results from the negligent acts or omissions of the Contractor, its agents, agents, or subcontractors.

- 11.2.3. Contractor's Insurance: insurance required under all sections herein shall be in effect for the duration of the contract that extends through the warranty period. Insurance required herein shall be provided by insurance policies issued only by insurance companies currently authorized to do business in the state of Montana. No Contractor or Sub-contractor shall commence any Work under this contract until all required insurance has been obtained. During the term of this contract, the Contractor shall, not less than thirty days prior to the expiration date of any policy for which a certificate of insurance is required, deliver to the Owner a certificate of insurance with respect to the renewal insurance policy. The Contractor shall furnish one copy of insurance certificates of insurance herein required, which shall specifically set forth evidence of all coverage required by these contract documents and which shall be signed by authorized representatives of the insurance company or companies evidencing that insurance as required herein is in force and will not be canceled, limited or restricted without thirty days' written notice by certified mail to the contractor and the Owner. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits. Additionally, all certificates shall include the project name and A/E project number.
- 11.2.4. Certificates of Insurance and Endorsements. All certificates of insurance and the additional insured endorsements are to be received by the state prior to issuance of the Notice to Proceed. The contractor is responsible to ensure that all policies and coverages contain the necessary endorsements for the State being listed as an additional insured. The state reserves the right to require complete copies of all insurance policies at any time to verify coverage. The contractor shall notify the state within 30 days of any material change in coverage.

11.3. WORKERS' COMPENSATION INSURANCE

- 11.3.1. The Contractor shall carry **Workers' Compensation Insurance**. Such Workers' Compensation Insurance shall protect the Contractor from claims made by his own employees, the employees of any Sub-contractor, and also claims made by anyone directly or indirectly employed by the Contractor or Sub-contractor. The Contractor shall require each Sub-contractor similarly to provide Workers' Compensation Insurance.

11.4. COMMERCIAL GENERAL LIABILITY INSURANCE

- 11.4.1. Each Contractor shall carry per occurrence coverage **Commercial General Liability Insurance** including coverage for premises; operations; independent contractor's protective; products and completed operations; products and materials stored off-site; broad form property damage and comprehensive automobile liability insurance with not less than the following limits of liability:

11.4.1.1. **\$1,000,000 per occurrence; aggregate limit of \$2,000,000;**

- 11.4.2. The **Commercial General and Automobile Liability Insurance** shall provide coverage for both bodily injury, including accidental death, sickness, disease, occupational sickness or disease, personal injury liability coverage and property damage which may arise out of the work under this contract, or operations incidental thereto, whether such work and operations be by the Contractor or by any Subcontractor or by anyone directly or indirectly employed by the Contractor or by Sub-contractor, or by anyone for whose acts any of them may be liable. The Contractor shall maintain the liability insurance required herein for a period of not less than one year after final payment or anytime the Contractor goes on to the location of the project.
- 11.4.3. The Contractor's liability insurance policies shall list the STATE OF MONTANA as an additional insured. **AN ADDITIONAL INSURED ENDORSEMENT DOCUMENT SHALL BE SUBMITTED WITH THE CERTIFICATES OF INSURANCE.** The STATE OF MONTANA includes its officers, elected and appointed officials, employees and volunteers and political subdivisions thereof. Should the Contractor not be able to list the state as an additional insured, the Contractor shall purchase a per occurrence Owner's/Contractor's Protective Policy (OCP) with the STATE OF MONTANA as the insured party in the same occurrence and aggregate limits as that indicated above for the Contractor's Commercial General Liability Policy.
- 11.4.4. Property damage liability insurance shall be written without any exclusion for injury to or destruction of any building, structure, wires, conduits, pipes, or other property above or below the surface of the ground

arising out of the blasting, explosion, pile driving, excavation, filling, grading or from the moving, shoring, underpinning, raising, or demolition of any building or structure or structural support thereof.

- 11.4.5. The Contractor's insurance coverage shall be PRIMARY insurance as respects the State, its officers, elected and appointed officials, employees and volunteers. Any insurance or self-insurance maintained by the state, its officers, elected and appointed officials, employees and volunteers shall be excess of the Contractor's insurance and shall not contribute to it. NO WAIVERS OF SUBROGATION OR ENDORSEMENTS LIMITING, TRANSFERRING, OR OTHERWISE INDEMNIFYING LIABLE OR RESPONSIBLE PARTIES OF THE CONTRACTOR OR ANY SUBCONTRACTOR WILL BE ACCEPTED.

11.5. PROPERTY INSURANCE (ALL RISK)

- 11.5.1. New Construction (for projects involving new construction): At its sole cost and expense, the contractor shall keep the building and all other improvements on the premises insured throughout the term of the agreement against the following hazards:

11.5.1.1. Loss or damage by fire and such other risks (including earthquake damage for those areas with a shaking level at 10g or above as indicated on the seismic map, <http://rmtd.mt.gov/Portal/62/aboutus/publications/files/NEHRP.pdf> in an amount sufficient to permit such insurance to be written at all times on a replacement cost basis. This may be insured against by attachment of standard form extended coverage endorsement to fire insurance policies. Certificates of Insurance MUST indicate earthquake coverage if coverage is required per the above referenced map.

11.5.1.2. Loss or damage from leakage or sprinkler systems now or hereafter installed in any building on the premises.

11.5.1.3. Loss or damage by explosion of steam boilers, pressure vessels, and oil or gasoline storage tanks, or similar apparatus now or hereafter installed in a building or buildings on the premises.

- 11.5.2. Building Renovation (for projects involving building renovation or remodeling):

11.5.2.1. The contractor shall purchase and maintain Builder's Risk/Installation insurance on a "special causes of loss" form (so called "all risk") for the cost of the work and any subsequent modifications and change orders. The contractor is not responsible for insuring the existing structure for Builder's Risk/Installation insurance.

11.5.2.2. At its sole cost and expense, the contractor shall insure all property construction on the premises throughout the term of the agreement against the following hazards:

11.5.2.2.1. Loss or damage by fire and such other risks (including earthquake damage for those areas with a shaking level at 10g or above as indicated on the seismic map at <http://rmtd.mt.gov/Portal/62/aboutus/publications/files/NEHRP.pdf> in an amount sufficient to permit such insurance to be written at all times on a replacement cost basis. This may be insured against by attachment of standard form extended coverage endorsement to fire policies. Certificates of Insurance MUST indicate earthquake coverage if coverage is required per the above referenced map.

11.5.2.2.2. Loss or damage from leakage or sprinkler systems now or hereafter installed in any building on the premises.

11.5.2.2.3. Loss or damage by explosion of steam boilers, pressure vessels, oil or gasoline storage tanks, or similar apparatus now or hereafter installed in a building or buildings on the premises.

11.6. ASBESTOS ABATEMENT INSURANCE

- 11.6.1. If Asbestos Abatement is identified as part of the Work under this contract, the Contractor or any subcontractor involved in asbestos abatement shall purchase and maintain **Asbestos Liability Insurance** for coverage of bodily injury, sickness, disease, death, damages, claims, errors or omissions regarding the asbestos portion of the work in addition to the CGL Insurance by reason of any negligence

in part or in whole, error or omission committed or alleged to have been committed by the Contractor or anyone for whom the Contractor is legally liable.

- 11.6.2. Such insurance shall be in "per occurrence" form and shall clearly state on the certificate that asbestos work is included in the following limits:

- 11.6.2.1. **\$1,000,000 per occurrence; aggregate limit of \$2,000,000.**

- 11.6.3. Asbestos Liability Insurance as carried by the asbestos abatement subcontractor in these limits in lieu of the Contractor's coverage is acceptable provided the Contractor and the State of Montana are named as additional insureds and that the abatement subcontractor's insurance is PRIMARY as respects both the Owner and the Contractor. If the Contractor or any other subcontractor encounters asbestos, all operations shall be suspended until abatement with the associated air monitoring clearances are accomplished. The certificate of coverage shall be provided by the asbestos abatement subcontractor to both the Contractor and the Owner.

11.7. PERFORMANCE BOND AND LABOR & MATERIAL PAYMENT BOND (BOTH ARE REQUIRED ON THIS PROJECT)

- 11.7.1. The Contract shall furnish a Performance Bond in the amount of 100% of the contract price as security for the faithful performance of his contract (18-2-201 MCA). The Contractor shall also furnish a Labor and Material Payment Bond in the amount of 100% of the contract price as security for the payment of all persons performing labor and furnishing materials in connection therewith (18-2-201MCA). The bonds shall be executed on forms furnished by the Owner and no other forms or endorsements will be acceptable. The bonds shall be signed in compliance with state statutes (33-17-1111 MCA). Bonds shall be secured from a state licensed bonding company. Power of Attorney is required with each bond. Attorneys-in-fact who sign contract bonds must file with each bond a certified and effectively dated copy of their power of attorney:

- 11.7.1.1. one original copy shall be furnished with each set of bonds.

- 11.7.1.2. Others furnished with a set of bonds may be copies of that original.

- 11.7.2. The Owner reserves the right at any time during the performance of Work to require bonding of Subcontractors provided by the General Contractor. Should this occur, the Owner will cover the direct cost. This shall not be construed as to in any way affect the relationship between the General Contractor and his Subcontractors.

- 11.7.3. Surety must have an endorsement stating that their guarantee of Contractor's performance automatically covers the additional contract time added to a Contractor's contract by Change Order.

- 11.7.4. A change in the Contractor's organization shall not constitute grounds for Surety to claim a discharge of their liability and requires an endorsement from Surety so stating.

- 11.7.5. Except as noted below, the Contractor is required to notify Surety of any increase in the contract amount resulting from a Change Order within 48 hours of signing and submitting a Change Order and shall submit a copy of Surety's written acknowledgment and consent to Owner before a Change Order can be approved. The Surety's written acknowledgment and consent on the Change Order form shall also satisfy this consent requirement.

- 11.7.5.1. Surety consent shall not be required on Change Order(s) which, in the aggregate total amount of all Changes Orders, increase the original contract amount by less than 10%. However, the Contractor is still required to notify Surety of any increase in contract amount resulting from a Change Order(s) within 48 hours of signing and submitting every Change Order.

- 11.7.5.2. Surety is fully obligated to the Owner for the full contract amount, inclusive of all Change Orders, regardless of whether or not written acknowledgement and consent is received and regardless of whether or not the aggregate total of all Change Orders is more or less than 10% of the original contract amount.

11.7.5.3. A fax with hard copy to follow of Surety's written acknowledgment and consent is acceptable. If hard copy is not received by Owner before Application for Payment on any portion or all of said Change Order, it will not be accepted by Owner for payment.

11.7.6. The Surety must take action within 30 days of notice of default on the part of the Contractor or of any claim on bonds made by the Owner or any Subcontractor or supplier.

12. ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

12.1. UNCOVERING OF WORK

12.1.1. If a portion of the Work is covered contrary to the Architect/Engineer's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect/Engineer, be uncovered for the Architect/Engineer's examination and be replaced at the Contractor's expense without change in the Contract Time.

12.1.2. If a portion of the Work has been covered which the Architect/Engineer has not specifically requested to examine prior to it being covered, the Architect/Engineer may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2. CORRECTION OF WORK

12.2.1. BEFORE OR AFTER SUBSTANTIAL COMPLETION

12.2.1.1. The Contractor shall promptly correct Work that fails to conform to the requirements of the Contract Documents or that is rejected by the Architect/Engineer, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect/Engineer's services and expenses made necessary thereby, shall be at the Contractor's expense. The Contractor is responsible to discover and correct all defective work and shall not rely upon the Architect/Engineer's or Owner's observations.

12.2.1.2. Rejection and Correction of Work in Progress. During the course of the Work, the Contractor shall inspect and promptly reject any Work that:

12.2.1.2.1. does not conform to the Construction Documents; or,

12.2.1.2.2. does not comply with any applicable law, statute, building code, rule or regulation of any governmental, public and quasi-public authorities, and agencies having jurisdiction over the Project.

12.2.1.3. The Contractor shall promptly correct or require the correction of all rejected Work, whether observed before or after Substantial Completion. The Contractor shall bear all costs of correcting such Work, including additional testing, inspections, and compensation for all services and expenses necessitated by such corrective action.

12.2.2. AFTER SUBSTANTIAL COMPLETION AND AFTER FINAL ACCEPTANCE

12.2.2.1. In addition to the Contractor's obligations under Paragraph 3.5, if, within one year after the date of Final Acceptance of the Work or designated portion thereof or after the date for commencement of warranties, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives

the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect/Engineer, the Owner may correct it in accordance with Paragraph 2.3.

- 12.2.2.1.1. The Contractor shall remedy any and all deficiencies due to faulty materials or workmanship and pay for any damage to other work resulting there from, which shall appear within the period of Substantial Completion through one (1) year from the date of Final Acceptance in accordance with the terms and conditions of the Contract and with any special guarantees or warranties provided in the Contract Documents. The Owner shall give notice of observed deficiencies with reasonable promptness. All questions, claims or disputes arising under this Article shall be decided by the Architect/Engineer. All manufacturer, product and supplier warranties are in addition to this Contractor warranty.
 - 12.2.2.1.2. The Contractor shall respond within seven (7) days after notice of observed deficiencies has been given and he shall proceed to immediately remedy these deficiencies.
 - 12.2.2.1.3. Should the Contractor fail to respond to the notice or not remedy those deficiencies; the Owner shall have this work corrected at the expense of the Contractor.
 - 12.2.2.1.4. Latent defects shall be in addition to those identified above and shall be the responsibility of the Contractor per the statute of limitations for a written contract (27-2-208 MCA) starting from the date of Final Acceptance.
- 12.2.2.2. The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work.
- 12.2.2.3. The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Paragraph 12.2.
- 12.2.3. The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.
- 12.2.4. The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.
- 12.2.5. Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the one-year period for correction of Work as described in Subparagraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.3. ACCEPTANCE OF NONCONFORMING WORK

- 12.3.1. If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

13. ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.1. GOVERNING LAW

- 13.1.1. The Contract shall be governed by the laws of the State of Montana and venue for all legal proceedings shall be the First Judicial District, Lewis & Clark County.

13.2. SUCCESSORS AND ASSIGNS

13.2.1. The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempt to make such assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.3. WRITTEN NOTICE

13.3.1. Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4. RIGHTS AND REMEDIES

13.4.1. Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

13.4.2. No action or failure to act by the Owner, Architect/Engineer or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5. TESTS AND INSPECTIONS

13.5.1. Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect/Engineer timely notice of when and where tests and inspections are to be made so that the Architect/Engineer may be present for such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

13.5.2. If the Architect/Engineer, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, the Architect/Engineer will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect/Engineer of when and where tests and inspections are to be made so that the Architect/Engineer may be present for such procedures. Such costs, except as provided in Subparagraph 13.5.3 shall be at the Owner's expense.

13.5.3. If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect/Engineer's services and expenses shall be at the Contractor's expense.

13.5.4. Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect/Engineer.

13.5.5. If the Architect/Engineer is to observe tests, inspections or approvals required by the Contract Documents, the Architect/Engineer will do so promptly and, where practicable, at the normal place of testing.

13.5.6. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6. INTEREST

13.6.1. Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

13.7. COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.7.1. As between the Owner and Contractor:

13.7.1.1. **Before Substantial Completion.** As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;

13.7.1.2. **Between Substantial Completion and Final Certificate for Payment.** As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and,

13.7.1.3. **After Final Payment.** As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any Warranty provided under Paragraph 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Paragraph 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

13.8. PAYROLL AND BASIC RECORDS

13.8.1. Payrolls and basic records pertaining to the project shall be kept on a generally recognized accounting basis and shall be available to the Owner, Legislative Auditor, the Legislative Fiscal Analyst or his authorized representative at mutually convenient times. Accounting records shall be kept by the Contractor for a period of three years after the date of the Owner's Final Acceptance of the Project.

14. ARTICLE 14 – TERMINATION OR SUSPENSION OF THE CONTRACT

14.1. TERMINATION BY THE CONTRACTOR

14.1.1. The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

14.1.1.1. issuance of an order of a court or other public authority having jurisdiction which requires all Work to be stopped; or,

14.1.1.2. an act of government, such as a declaration of national emergency which requires all Work to be stopped.

14.1.2. The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Paragraph 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

- 14.1.3. If one of the reasons described in Subparagraph 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect/Engineer, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead and profit but not damages.
- 14.1.4. If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect/Engineer, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.3.

14.2. TERMINATION BY THE OWNER FOR CAUSE

- 14.2.1. The Owner may terminate the Contract if the Contractor:
 - 14.2.1.1. persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
 - 14.2.1.2. fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
 - 14.2.1.3. persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or,
 - 14.2.1.4. otherwise is guilty of any breach of a provision of the Contract Documents.
- 14.2.2. When any of the above reasons exist, the Owner, upon certification by the Architect/Engineer that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:
 - 14.2.2.1. take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
 - 14.2.2.2. accept assignment of subcontracts pursuant to Paragraph 5.4; and,
 - 14.2.2.3. finish the Work by whatever reasonable method the Owner may deem expedient. Upon request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.
- 14.2.3. When the Owner terminates the Contract for one of the reasons stated in Subparagraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.
- 14.2.4. If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect/Engineer's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect/Engineer, upon application, and this obligation for payment shall survive termination of the Contract.

14.3. SUSPENSION BY THE OWNER FOR CONVENIENCE

- 14.3.1. The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.
- 14.3.2. The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Subparagraph 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

14.3.2.1. that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or,

14.3.2.2. that an equitable adjustment is made or denied under another provision of the Contract.

14.4. TERMINATION BY THE OWNER FOR CONVENIENCE

14.4.1. The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

14.4.2. Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

14.4.2.1. cease operations as directed by the Owner in the notice;

14.4.2.2. take actions necessary, or that the Owner may direct, for the protection and preservation of the Work, and;

14.4.2.3. except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

14.4.3. In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed. The Contractor shall provide a full and complete itemized accounting of all costs.

15. ARTICLE 15 – EQUAL OPPORTUNITY

15.1. The Contractor and all Sub-contractors shall not discriminate against any employee or applicant for employment because of race, color, sex, pregnancy, childbirth or medical conditions related to pregnancy or childbirth, political or religious affiliation or ideas, culture, creed, social origin or condition, genetic information, sexual orientation, gender identity or expression, national origin, ancestry, age, disability, military service or veteran status, or marital status, or physical or mental disability and shall comply with all Federal and State laws concerning fair labor standards and hiring practices. The Contractor shall ensure that applicants are employed, and that employees are treated during employment, without regard to race, color, sex, pregnancy, childbirth or medical conditions related to pregnancy or childbirth, political or religious affiliation or ideas, culture, creed, social origin or condition, genetic information, sexual orientation, gender identity or expression, national origin, ancestry, age, disability, military service or veteran status, or marital status, or physical or mental disability.

15.2. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

15.3. The Contractor and all Sub-contractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, color, sex, pregnancy, childbirth or medical conditions related to pregnancy or childbirth, political or religious affiliation or ideas, culture, creed, social origin or condition, genetic information, sexual orientation, gender identity or expression, national origin, ancestry, age, disability, military service or veteran status, or marital status, or physical or mental disability.

[END OF GENERAL CONDITIONS]

SUPPLEMENTAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

(REVISED MARCH 1, 2016)

FOR STATE OF MONTANA GENERAL CONDITIONS

ARTICLE 1 – GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.3 SPECIFICATIONS

1.1.3.1 ADD: “Approved”: When used to convey Architect’s/Engineer’s action on Contractor’s submittals, applications, and requests, “approved” is limited to Architect’s/Engineer’s duties and responsibilities as stated in the Conditions of the Contract.

1.1.3.2 ADD: “Directed”: A command or instruction by Architect/Engineer. Other terms including “requested,” “authorized,” “selected,” “required,” and “permitted” have the same meaning as “directed.”

1.1.3.3 ADD: “Indicated”: Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including “shown,” “noted,” “scheduled,” and “specified” have the same meaning as “indicated.”

1.1.3.4 ADD: “Regulations”: Laws ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

1.1.3.5 ADD: “Furnish”: Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

1.1.3.6 ADD: “Install”: Operations at Project site including unloading, temporarily shoring, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

1.1.3.7 ADD: “Provide”: Furnish and install, complete and ready for the intended use.

1.1.3.8 ADD: “Project site”: Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land or portion of the building on which the Project is to be built.

1.6.1 Insert in the sixth line: “All documents which constitute the instruments of service are the property of the Owner.” In lieu of the phrase “Unless otherwise indicated, the Architect/Engineer and the Architect/Engineer’s consultants shall be deemed the authors of them... except as defined in the Owner’s Contract with the Architect/Engineer.”

ARTICLE 2 – THE OWNER

2.1 THE STATE OF MONTANA

2.1.1.1 ADD: The State of Montana includes its officers, elected and approved officials, employees and volunteers, and political subdivisions thereof. The State of Montana and Montana State University are synonymous throughout the contract documents.

ARTICLE 3 – THE CONTRACTOR

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.6 ADD: PRODUCT DELIVERY, STORAGE AND HANDLING

3.3.6.1 ADD: Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer’s written instructions.

3.3.6.2 ADD: DELIVERY AND HANDLING:

3.3.6.2.1 ADD: Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.

3.3.6.2.2 ADD: Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3.3.6.2.3 ADD: Deliver products to Project site in an undamaged condition in manufacturer’s original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

3.3.6.2.4 ADD: Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and property protected.

3.3.6.3 ADD: STORAGE

3.3.6.3.1 ADD: Store products to allow for inspection and measurement of quantity or counting of units

3.3.6.3.2 ADD: Store materials in a manner that will not endanger Project structure.

3.3.6.3.3 ADD: Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

3.3.6.3.4 ADD: Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

3.3.6.3.5 ADD: Comply with product manufacturer’s written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

3.3.6.3.6 ADD: Protect stored products from damage and liquids from freezing.

3.10 CONSTRUCTION SCHEDULES

3.10.1.1 ADD: A pre-construction meeting will be held at a time mutually agreed upon by the Owner, Architect/Engineer and Contractor at Campus Planning, Design and Construction, Montana State University, Bozeman, Montana. The contractor shall confirm the Contractor’s Construction Schedule for the Work. Coordination of operating requirements of the affected buildings, and surrounds, schedule of activities and Owner requirements will be discussed, as well as the order in which the Contractor intends to pursue the work. This schedule will be reviewed and must be mutually agreed upon by the Architect, Contractor and Owner.

3.11 DOCUMENTATION AND AS-BUILT CONDITIONS AT THE SITE

3.11.4 ADD: The contractor shall maintain at the site two (2) construction reference sets of all specifications, drawings, approved shop drawings, change orders and other modifications, addenda, schedules and instructions, in good order.

3.11.4.1 ADD: The record drawings shall be two (2) sets of black (or blue) and white prints of the drawings on which the contractor must record all “red line” changes during the course of construction and will include references to change order numbers, field directives, etc., and their dates. This record set shall be maintained separate and apart from documents used for construction reference. This set will be available for review by the project consultant, architect, engineer and MSU project manager at all times.

3.11.4.2 ADD: All as-built conditions shall be kept current and the contractor shall not permanently conceal or cover any work until all required information has been recorded.

3.11.4.3 ADD: All survey and exterior underground utilities shall be recorded using the spatial reference, Montana State Plane, NAD 83, CORS 96, Lambert Conformal Conic. The National Geodetic Survey publishes NAD 83

coordinates in the metric system (i.e., meters). The conversion factor that should be used to convert between English and metric systems is the international conversion factor of 1 ft. = 0.3048 m. coordinate system.

3.11.4.4 ADD: In marking any as-built conditions, the contractor shall ensure that such drawings indicate by measured dimension to building corners or other permanent monuments the exact locations of all piping, conduit or utilities concealed in concrete slabs, behind walls or ceilings or underground. Record drawings shall be made to scale and shall also include exact locations of valves, pull boxes and similar items as required for maintenance or repair service.

3.11.4.5 ADD: The contractor shall prepare and maintain a binder with all project warranty information. This will be provided to the project consultant, architect or engineer at final acceptance.

3.12.1 DEFINITIONS:

3.12.1.4 ADD: Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term “product” includes the terms “material,” “equipment,” “system,” and terms of similar intent.

3.12.1.5 ADD: Named Products: Items identified by manufacturer’s product name, including make or model number or other designation shown or listed in manufacturer’s published product literature that is current as of date of the Contract Documents.

3.12.1.6 ADD: New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

3.12.1.7 ADD: Comparable Products: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

3.12.1.8 ADD: Basis-of-Design Product Specification: A specification in which a specific manufacturer’s product is named and accompanied by the words “basis-of-design product,” including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specifications.

3.13. USE OF SITE

3.13.3 ADD: MSU BOZEMAN Vehicle Regulations state:

“All students, faculty, staff, and visitors must register any motor vehicle they park on the University campus, for any reason. A visitor is anyone not defined as student, staff or faculty.”

All Contractor and Contractor employees shall comply with Montana State University parking regulations. MSU parking permits can be purchased at the Huffman Building at Seventh Avenue and Kagy Boulevard. Contractor should call University Police at 994-2121 for permit information. Violators of MSU Bozeman Vehicle Regulations may be ticketed and towed.

Unless otherwise indicated on the drawings, all Contractor and Contractor employee vehicles on campus shall be parked in designated parking lots. If allowed on the drawings, vehicles to a maximum number stated, may be parked in project site areas designated and shall only be Contractor vehicles with company signs clearly visible. No personal vehicles shall be parked at the project site in any case. If a driver of a vehicle not allowed to be parked at the project site must unload equipment, tools, or materials, the vehicle must be immediately thereafter moved to a designated lot or leave campus. Vehicles parked in the project site, other than those allowed on the drawings, may be ticketed and towed.

Access to the project site shall be only by the route designated on the drawings. In cases where a different route must be used for a specific purpose, permission must be obtained from MSU Facilities Services. In no case will vehicles be used on the Centennial Mall paving. Access routes are for delivery of equipment, tools, and not for parking.

Site staging areas for materials and equipment if permitted, will be designated on the drawings if permitted. If not designated, staging is intended to be in the construction area boundaries. Staged materials and equipment must be secured on the ground surface or in trailers. Site staging areas shall be fenced.

3.13.4 ADD: The Contractor shall coordinate his operations with the Owner in order that the Owner will have maximum use of existing facilities surrounding the area of the Work, as agreed upon, at all times during normal working hours. Contractor further agrees to coordinate his operations so as to avoid interference with the Owner's normal operations to as great an extent as possible.

3.13.5 ADD: By acceptance of MSU Building Keys the Contractor agrees with the following: University keys are the property of Montana State University. Fabricating, duplicating or modifying University keys is prohibited. Doors must remain locked at all times. The use of these keys to allow unauthorized persons to enter the above areas is prohibited. Loss of any key must be reported immediately to the Director, Office of Facilities Services and University Police, if the loss of keys results in re-keying costs, these costs will be charged to the Contractor. **See attached Estimated Re-Keying Costs per Building.**

3.13.6 ADD: The Montana Legislature decreed that the "right to breath smoke-free air has priority over the desire to smoke" (MCA 20-40-102). It is the policy of MSU to promote the health, wellness and safety of all employees, students, guests, visitors, and contractors while on campus. Therefore, the campus will be free of tobacco-use effective August 1, 2012. The use of tobacco (including cigarettes, cigars, pipes, smokeless tobacco and all other tobacco products) by students, faculty, staff, guests, visitors, and contractors is prohibited on all properties owned or leased by MSU.

Littering any university property, whether owned or leased, with the remains of tobacco products is prohibited.

All university employees, students, visitors, guests, and contractors are required to comply with this policy, which shall remain in effect at all times. Refusal to comply with this policy may be cause for disciplinary action in accordance with employee and student conduct policies. Refusal to comply with the policy by visitors, guests and contractors may be grounds for removal from campus. (http://www2montana.edu/policy/smoking_facilities/)

3.13.7 ADD: The Contractor may use the University's toilet facilities only as directed by the Owner.

ARTICLE 4 – ADMINISTRATION OF THE CONSTRUCTION CONTRACT

4.6. ARBITRATION

4.6.3 Insert in the second line "the Eighteenth Judicial District, Gallatin County" in lieu of "First Judicial District, Lewis & Clark County."

4.6.11 ADD: In responding to a claim brought by a Contractor, the Owner shall have a minimum of forty-five (45) days in which to respond to a revised claim prior to the arbitration hearing.

ARTICLE 7 – CHANGES IN WORK

7.2 CHANGE ORDERS

7.2.2.1 Insert the word "maximum" before "5%" and insert the word "maximum" before "10%".

7.2.2.4 ADD: Total Change Order markup shall not exceed (cost of the work) x 1.15.

7.2.3.1 Insert at the beginning of the first sentence the word "Itemized".

7.2.3.2 Insert at the beginning of the first sentence the word "Itemized".

7.2.3.3 Insert at the beginning of the first sentence the word "Itemized".

7.2.3.4 ADD: The Contractor shall provide a complete description summarizing all work involved.

ARTICLE 8 - TIME

8.1. DEFINITIONS

8.1.8.1 ADD: The Owner will issue a written Notice to Proceed on satisfactory receipt of the signed Contract and all required bonds, insurance and other required submittals. Work commenced before receipt of the Notice to Proceed will be entirely at the Contractor's risk.

8.2. PROGRESS AND COMPLETION

8.2.5 ADD: Completion of the work within the stated time and/or by the date stated on the Notice to Proceed is of the essence of this Contract and failure to complete, without approved time extension, may be considered default of the Contract. At the time for completion as stated on the Notice to Proceed or as extended by approved change order, if the work is not substantially complete, the Owner may notify the Contractor and the Contractor's surety company in writing of the recourse the Owner intends to take, within the Contract, to assess liquidated damages and /or cause the work to be completed.

8.3. DELAYS AND EXTENSIONS OF TIME

8.3.4 ADD: By the act of signing the Contract, the Contractor signifies that he/she and all subcontractors can perform the work within the stated schedule and that subcontractors, manufacturers, suppliers, and deliverers are known to be able to support the schedule. Time extension may be granted for unforeseen conditions or events out of the Contractor's control causing delay in delivery of materials or causing delay in the Contractor's ability to perform the work within the Contract Documents. The Contractor is expected to take all possible measures and bear all reasonable costs in order to anticipate, control, counteract, and expedite such delay-causing conditions, including finding alternative sources of materials, equipment, shipping, and labor. Notification of any claim for schedule delay must be made in writing to the Owner within one week of the causing event or of first knowledge of a known delay causing condition with supporting documentation as required by the Owner. The Owner will respond in writing within one week to claims of delay. No claims of delay will be entertained after the date of completion as stated on the Notice to Proceed or as extended by previously approved delay claims.

ARTICLE 9 – PAYMENTS AND COMPLETION

9.3. APPLICATIONS FOR PAYMENT

9.3.7.2.1. Insert in the first line "Schedule of Values" in lieu of "Schedule of Amounts for Contract Payment".

9.3.7.2.3 ADD: Subcontractor's List: The Contractor shall list all subcontractors doing work in excess of \$5,000.

9.8. SUBSTANTIAL COMPLETION

9.8.4.1 ADD: Prior to the inspection, the Contractor shall complete the final clean-up of the project site which, unless otherwise stated in the Contract Documents, shall consist of:

9.8.4.1.1 Removal of all debris and waste. All construction debris and waste shall be removed from the campus grounds. Use of the University trash containers will not be permitted.

9.8.4.1.2 Removal of all stains, smears, marks of any kind from surfaces including existing surfaces if said damage is the result of the work.

9.8.4.1.3 Removal of all temporary structures and barricades.

9.10. FINAL COMPLETION AND FINAL PAYMENT

9.10.2.4 Insert in the first line after the word "(Form 103)": "for contracts greater than or equal to \$25,000"

ARTICLE 10 – PROTECTIONS OF PERSONS AND PROPERTY

10.1. SAFETY

10.1.2 Insert in the second line before the word "safeguards": "and as approved by Owner,"

10.1.2.1 ADD: The Contractor recognizes that the Work will be conducted in and around buildings and areas that are occupied and will continue to function for the purposes of the University. The Contractor shall conduct a project safety meeting prior to the start of the Work, with the Owner's representative and all others that the Owner's representative deems necessary. The purpose of the meeting shall be to produce project specific rules and guidelines pertaining to but not restricted to: safety of persons in and around the area of the Work including type and location of fencing, guards, signage, etc.; closing of existing campus circulation routes and designation of alternate routes,

including creation of temporary routes of access as required; creation and location of temporary signage as required to maintain accessible routes for handicapped access to and around the site of the Work. The Contractor shall be solely responsible for implementing all required means and methods for site safety and security that may be agreed upon in this meeting.

10.1.2.2 ADD: Contractor shall notify Owner any time his operations will disrupt use of and access to existing accessible routes. Contractor is solely responsible for maintaining existing accessible routes in the area of the project with the exception of temporary interruptions lasting one day or less. Contractor is responsible for erecting signage identifying temporary re-routing of accessible routes. Such re-routing shall be coordinated with Owner in advance.

10.3. UTILITIES

10.3.1 ADD: Underground Utilities: Buried utilities, including, but not limited to, electricity, gas, steam, air, water, telephone, sewer, irrigation, broadband coaxial computer cable, and fiber optic cables are very vulnerable and damage could result in loss of service. The telephone, broadband and fiber optic cables are especially sensitive and the slightest damage to these components will result in disruption of the operations of the campus.

10.3.2 ADD: "One Call" must be notified by phone and in writing at least 72 hours (3 business days) prior to digging to arrange and assist in the location of buried utilities in the field. (Dial 811). The Contractor shall mark the boundary of the work area. The boundary area shall be indicated with white paint and white flags. In winter, pink paint and flags will be accepted.

10.3.3 ADD: After buried utilities have been located, the Contractor shall be responsible for any utilities damaged while digging. Such responsibility shall include all necessary care including hand digging. Contractor's responsibility shall also include maintaining markings after initial locate. The area for such responsibility, unless otherwise indicated, shall extend 24 inches to either side of the marked center line of a buried utility line. In cases of multiple or overlapping utilities or inconclusive electronic locating signals, MSU Project Manager may specifically indicate a wider area for Contractor's responsibility.

10.3.4 ADD: The Contractor's responsibility shall include repair or replacement of damaged utilities. In the event of damage to the 15 KV electrical distribution system, the broadband or fiber optic cables, repair will consist of replacement from termination to termination. Facilities Services and the MSU Information Technology Center will verify repair and recertification. The Contractor will also be responsible for all costs associated with reterminations and recertification.

10.3.5 ADD: Any buried utilities exposed by the operations of the Contractor shall be marked on the plans and adequately protected by the Contractor. If any buried utilities not located are exposed, the Contractor shall immediately contact Facilities Services at the numbers above. If, after exposing an unlocated buried utility, the Contractor continues digging without notifying Facilities Services and further damages the utility, the Contractor will be responsible.

10.3.6 ADD: Damage to irrigation systems during seasons of no irrigation that are not immediately and adequately repaired and tested will require the Contractor to return when the system is in service to complete the repair.

10.3.7 ADD: In the event of a planned interruption of any existing utility service, the Contractor shall make arrangements with Facilities Services at least 72 hours (3 business days) in advance. Shutdowns of the broadband or fiber optic cables will normally require 5 working days notice to Facilities Services and the Information Technology Center. The Contractor shall bear all costs associated with the interruptions and restorations of service.

10.3.8 ADD: The Owner allows the contractor to use the Owner's utilities (water, heat, electricity) services without charge for procedures necessary for the completion of the work.

ARTICLE 11 - INSURANCE AND BONDS

11.4. COMMERCIAL GENERAL LIABILITY INSURANCE

11.4.1.3. Insert in the first line after "State of Montana": ", Montana State University".

11.7. PERFORMANCE BOND AND LABOR & MATERIAL PAYMENT BOND (BOTH ARE REQUIRED ON THIS PROJECT)

11.7.1. Insert in the first line at the beginning of the sentence "For contracts equal to or greater than \$25,000".

11.8. CANCELLATION

11.8 ADD All Certificates shall contain a provision that coverage provided by the policies will not be cancelled without at least thirty (30) days prior notice to the Owner.

ARTICLE 13 – MISCELLANEOUS PROVISIONS

13.1. GOVERNING LAW

13.1.1. Insert in the second line “The Eighteenth Judicial District, Gallatin County” in lieu of “First Judicial District, Lewis and Clark County”.

13.9 EMERGENCY AND PUBLIC SAFETY

ADD: Montana State University has an Emergency and Public Safety Alert System that warns the campus community in the event of an emergency or public safety event. Because contractors, consultants, and vendors are considered members of the campus community when working on campus, they must be familiar with the alert system and understand when the system is used. Montana State University requires all contractors, consultants, vendors, and their employees working on or entering the MSU-Bozeman campus to register for the Emergency and Public Safety Alert System. The link to register is: <http://www.montana.edu/msualert/>.

END OF SUPPLEMENTARY GENERAL CONDITIONS

Cost Estimate to Re-key Buildings

Building	Core #	Cut keys	Budget
AJM Johnson	112	448	\$13,000.00
Animal BioScience	109	436	\$13,000.00
ARC	122	488	\$14,000.00
Athletics (Fieldhouse etc.)	500	2,000	\$52,000.00
Cheever Hall	136	544	\$18,000.00
Chem Building	229	916	\$30,000.00
Chem Modular	16	64	\$3,000.00
Cobleigh Hall	380	1,520	\$41,000.00
Cooley Lab	99	396	\$12,000.00
Creative Arts Complex	368	1,472	\$50,000.00
Culbertson Hall	171	684	\$23,000.00
Haynes Hall	113	452	\$16,000.00
Howard Hall	119	476	\$16,000.00
Huffman	39	156	\$6,000.00
EPS	408	1,632	\$45,000.00
EPS Complex	928	3,712	\$106,000.00
Gaines Hall	175	700	\$23,000.00
Grad Art	6	24	\$2,000.00
Hamilton Hall	99	396	\$16,000.00
Heat Plant	17	68	\$3,000.00
Herrick Hall	118	472	\$16,000.00
Kellog Center	35	140	\$5,000.00
Leon Johnson Hall	313	1,252	\$37,000.00
Lewis Hall	163	652	\$21,000.00
Linfield Hall	295	1,180	\$34,000.00
Marga Hosaeus	134	536	\$18,000.00
Marsh Lab	187	748	\$24,000.00
McCall Hall	52	208	\$9,000.00
Molecular Bean	5	20	\$2,000.00
Montana Hall	156	624	\$22,000.00
Museum of the Rockies	166	664	\$25,000.00
OutDoor Rec	16	64	\$3,000.00
Plant BioScience	112	448	\$16,000.00
Plant Growth	152	608	\$20,000.00
Reid Hall	302	1,208	\$36,000.00
Renne Library	255	1,020	\$32,000.00
Roberts Hall	140	560	\$20,000.00
Romney	98	392	\$15,000.00
Swingle Health Center	137	548	\$18,000.00
Taylor Hall	56	224	\$10,000.00
Traphagen Hall	148	592	\$21,000.00
Univ. Record Storage	9	36	\$2,000.00
VisComm (Black Box)	144	576	\$21,000.00
Wilson Hall	325	1,300	\$38,000.00
Mech Room	501	2,004	\$30,000.00

PROJECT CLOSEOUT CHECKLIST

PROJECT TITLE: _____ PPA No. _____
 CONTRACTOR: _____ DATE: _____
 CONSULTANT _____

*** In absence of a Consultant, responsibilities will be determined at Pre-construction meeting*

To be submitted with Application of Final Payment

Contract Requirements	Date PM Verified	Date Completed	Required Documentation:
			Final application for payment (all contracts)
			Certificate of Substantial Completion - MSU Form 107 (over \$25K)
			Certificate of Final Acceptance - MSU Form118 (over \$25K)
			Consent of Surety to final payment MSU Form103 (if over \$25K)

To be submitted with Application of Final Payment

MSU PM			Verification of All Change Orders & Final Amounts with Contract amounts
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*Contractor to submit all deliverables to the Consultant
To be submitted with Application of Final Payment*

Contractor Requirements	Date PM Verified	Date Completed	Required Documentation:
			Final walk through and instructions to Owner
			As-built "red lined" drawings (PDF Color Scan of Redlined Construction Set)
			Complete set of project shop drawings/Product Data (3Sets)
			Demonstration & Training
			City of Bozeman Building Permits: <input type="checkbox"/> Fire Suppression test & Certificate <input type="checkbox"/> Fire Alarm test & Certificate <input type="checkbox"/> Elevator Inspection <input type="checkbox"/> Plumbing & HVAC test & Inspection <input type="checkbox"/> Electrical Inspection <input type="checkbox"/> Temporary certificate of occupancy <input type="checkbox"/> Final certificate of occupancy
			Final project inspection
			Notification of completion of punch list
			Copy of warranty Binder

Contractor Signature _____ Consultant Signature _____

Submit at Record Document Stage/Consultant shall submit Contractor Deliverables to Owner

Consultant Requirements	Date PM Verified	Date Completed	Required Documentation:
			<u>Operation & Maintenance Manuals</u> : including warranties or guarantees for all equipment (1 copy each – PDF & Paper): <input type="checkbox"/> HVAC <input type="checkbox"/> Plumbing <input type="checkbox"/> Electrical <input type="checkbox"/> Elevator <input type="checkbox"/> Fire Alarm <input type="checkbox"/> Roof <input type="checkbox"/> Project Manual (Divisions 1-13)

Consultant Signature _____ Project Manager _____

**MONTANA
PREVAILING WAGE RATES FOR BUILDING CONSTRUCTION SERVICES 2020**

Effective: January 2, 2020

**Steve Bullock, Governor
*State of Montana***

**Galen Hollenbaugh, Commissioner
*Department of Labor and Industry***

To obtain copies of prevailing wage rate schedules, or for information relating to public works projects and payment of prevailing wage rates, visit ERD at www.mtwagehourbopa.com or contact:

Employment Relations Division
Montana Department of Labor and Industry
P. O. Box 201503
Helena, MT 59620-1503
Phone 406-444-6543

The department welcomes questions, comments, and suggestions from the public. In addition, we'll do our best to provide information in an accessible format, upon request, in compliance with the Americans with Disabilities Act.

MONTANA PREVAILING WAGE REQUIREMENTS

The Commissioner of the Department of Labor and Industry, in accordance with Sections 18-2-401 and 18-2-402 of the Montana Code Annotated (MCA), has determined the standard prevailing rate of wages for the occupations listed in this publication.

The wages specified herein control the prevailing rate of wages for the purposes of Section 18-2-401, et seq., MCA. It is required each employer pay (as a minimum) the rate of wages, including fringe benefits, travel allowance, zone pay and per diem applicable to the district in which the work is being performed as provided in the attached wage determinations.

All Montana Prevailing Wage Rates are available on the internet at www.mtwagehourbopa.com or by contacting the department at (406) 444-6543.

In addition, this publication provides general information concerning compliance with Montana's Prevailing Wage Law and the payment of prevailing wages. For detailed compliance information relating to public works contracts and payment of prevailing wage rates, please consult the regulations on the internet at www.mtwagehourbopa.com or contact the department at (406) 444-6543.

GALEN HOLLENBAUGH
Commissioner
Department of Labor and Industry
State of Montana

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A. Date of Publication January 2, 2020

B. Definition of Building Construction

For the purposes of Prevailing Wage, the Commissioner of Labor and Industry has determined that building construction occupations are defined to be those performed by a person engaged in a recognized trade or craft, or any skilled, semi-skilled, or unskilled manual labor related to the construction, alteration, or repair of a public building or facility, and does not include engineering, superintendence, management, office or clerical work.

The Administrative Rules of Montana (ARM), 24.17.501(2) – 2(a), states *“Building construction projects generally are the constructions of sheltered enclosures with walk-in access for housing persons, machinery, equipment, or supplies. It includes all construction of such structures, incidental installation of utilities and equipment, both above and below grade level, as well as incidental grading, utilities and paving.”*

Examples of building construction include, but are not limited to, alterations and additions to buildings, apartment buildings (5 stories and above), arenas (closed), auditoriums, automobile parking garages, banks and financial buildings, barracks, churches, city halls, civic centers, commercial buildings, court houses, detention facilities, dormitories, farm buildings, fire stations, hospitals, hotels, industrial buildings, institutional buildings, libraries, mausoleums, motels, museums, nursing and convalescent facilities, office buildings, out-patient clinics, passenger and freight terminal buildings, police stations, post offices, power plants, prefabricated buildings, remodeling buildings, renovating buildings, repairing buildings, restaurants, schools, service stations, shopping centers, stores, subway stations, theaters, warehouses, water and sewage treatment plants (buildings only), etc.”

C. Definition of Public Works Contract

Section 18-2-401(11)(a), MCA defines “public works contract” as *“...a contract for construction services let by the state, county, municipality, school district, or political subdivision or for nonconstruction services let by the state, county, municipality, or political subdivision in which the total cost of the contract is in excess of \$25,000...”*.

D. Prevailing Wage Schedule

This publication covers only Building Construction occupations and rates. These rates will remain in effect until superseded by a more current publication. Current prevailing wage rate schedules for Heavy Construction, Highway Construction, and Nonconstruction Services occupations can be found on the internet at www.mtwagehoubopa.com or by contacting the department at (406) 444-6543.

E. Rates to Use for Projects

ARM, 24.17.127(1)(c), states *“The wage rates applicable to a particular public works project are those in effect at the time the bid specifications are advertised.”*

F. Wage Rate Adjustments for Multiyear Contracts

Section 18-2-417, MCA states:

“(1) Any public works contract that by the terms of the original contract calls for more than 30 months to fully perform must include a provision to adjust, as provided in subsection (2), the standard prevailing rate of wages to be paid to the workers performing the contract.

(2) The standard prevailing rate of wages paid to workers under a contract subject to this section must be adjusted 12 months after the date of the award of the public works contract. The amount of the adjustment must be a 3% increase. The adjustment must be made and applied every 12 months for the term of the contract.

(3) Any increase in the standard rate of prevailing wages for workers under this section is the sole responsibility of the contractor and any subcontractors and not the contracting agency.”

G. Fringe Benefits

Section 18-2-412, MCA states:

“(1) To fulfill the obligation...a contractor or subcontractor may:

(a) pay the amount of fringe benefits and the basic hourly rate of pay that is part of the standard prevailing rate of wages directly to the worker or employee in cash;

(b) make an irrevocable contribution to a trustee or a third person pursuant to a fringe benefit fund, plan, or program that meets the requirements of the Employee Retirement Income Security Act of 1974 or that is a bona fide program approved by the U. S. department of labor; or

(c) make payments using any combination of methods set forth in subsections (1)(a) and (1)(b) so that the aggregate of payments and contributions is not less than the standard prevailing rate of wages, including fringe benefits and travel allowances, applicable to the district for the particular type of work being performed.

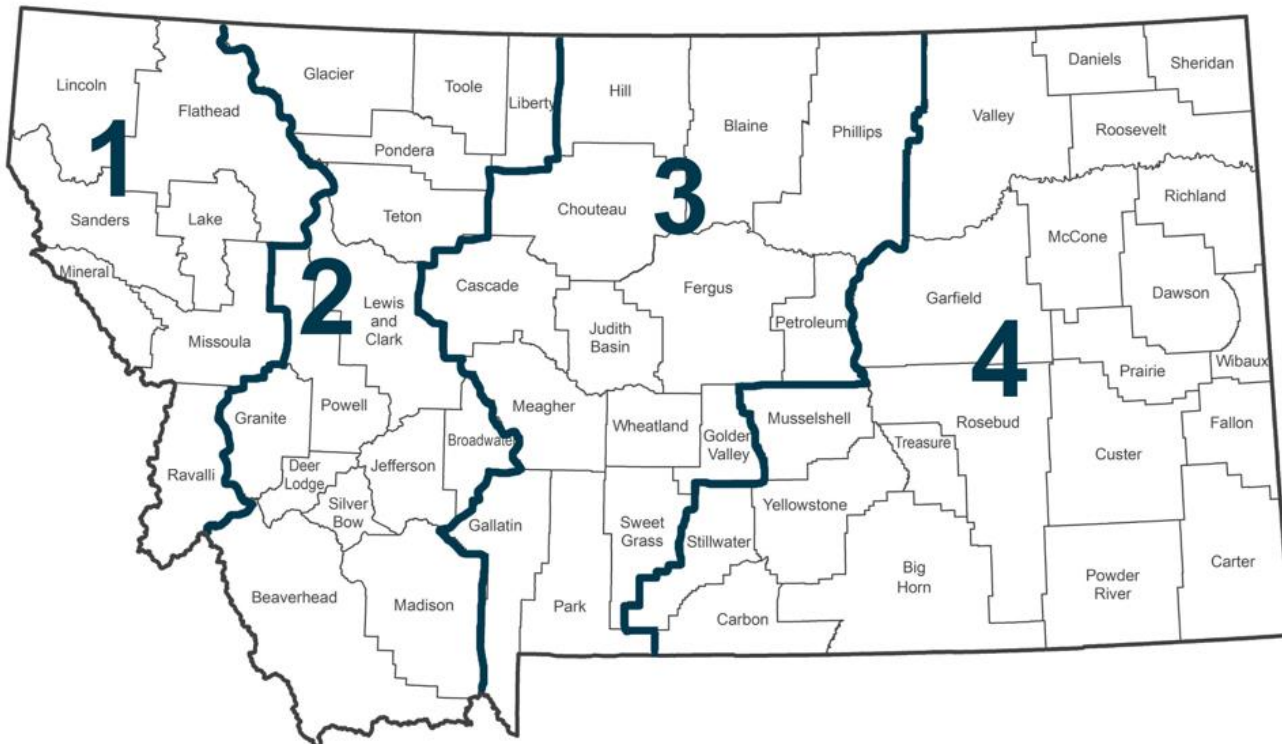
(2) The fringe benefit fund, plan, or program described in subsection (1)(b) must provide benefits to workers or employees for health care, pensions on retirement or death, life insurance, disability and sickness insurance, or bona fide programs that meet the requirements of the Employee Retirement Income Security Act of 1974 or that are approved by the U. S. department of labor.”

Fringe benefits are paid for all hours worked (straight time and overtime hours). However, fringe benefits are not to be considered a part of the hourly rate of pay for calculating overtime, unless there is a collectively bargained agreement in effect that specifies otherwise.

H. Prevailing Wage Districts

Montana counties are aggregated into 4 districts for the purpose of prevailing wage. The prevailing wage districts are composed of the following counties:

Montana Prevailing Wage Districts



I. Dispatch City

ARM, 24.17.103(11), defines dispatch city as “...*the courthouse in the city from the following list which is closest to the center of the job: Billings, Bozeman, Butte, Great Falls, Helena, Kalispell, and Missoula.*” A dispatch city shall be considered the point of origin only for jobs within the counties identified in that district (as shown below):

District 1 – Kalispell and Missoula: includes Flathead, Lake, Lincoln, Mineral, Missoula, Ravalli, and Sanders;

District 2 – Butte and Helena: includes Beaverhead, Broadwater, Deer Lodge, Glacier, Granite, Jefferson, Lewis and Clark, Liberty, Madison, Pondera, Powell, Silver Bow, Teton, and Toole;

District 3 – Bozeman and Great Falls: includes Blaine, Cascade, Chouteau, Fergus, Gallatin, Golden Valley, Hill, Judith Basin, Meagher, Park, Petroleum, Phillips, Sweet Grass, and Wheatland;

District 4 – Billings: includes Big Horn, Carbon, Carter, Custer, Daniels, Dawson, Fallon, Garfield, McCone, Musselshell, Powder River, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Stillwater, Treasure, Valley, Wibaux, and Yellowstone.

J. Zone Pay

Zone pay is not travel pay. ARM, 24.17.103(24), defines zone pay as “...*an amount added to the base pay; the combined sum then becomes the new base wage rate to be paid for all hours worked on the project. Zone pay must be determined by measuring the road miles one way over the shortest practical maintained route from the dispatch city to the center of the job.*” See section I above for a list of dispatch cities.

K. Computing Travel Benefits

ARM, 24.17.103(22), states “ ‘*Travel pay,*’ also referred to as ‘*travel allowance,*’ is and must be paid for travel both to and from the job site, except those with special provisions listed under the classification. The rate is determined by measuring the road miles one direction over the shortest practical maintained route from the dispatch city or the employee's home, whichever is closer, to the center of the job.” See section I above for a list of dispatch cities.

L. Per Diem

ARM, 24.17.103(18), states “ ‘*Per diem*’ typically covers costs associated with board and lodging expenses. *Per diem* is paid when an employee is required to work at a location outside the daily commuting distance and is required to stay at that location overnight or longer.”

M. Apprentices

Wage rates for apprentices registered in approved federal or state apprenticeship programs are contained in those programs. Additionally, Section 18-2-416(2), MCA states “...*The full amount of any applicable fringe benefits must be paid to the apprentice while the apprentice is working on the public works contract.*” Apprentices not registered in approved federal or state apprenticeship programs will be paid the appropriate journey level prevailing wage rate when working on a public works contract.

N. Posting Notice of Prevailing Wages

Section 18-2-406, MCA provides that contractors, subcontractors and employers who are “...*performing work or providing construction services under public works contracts, as provided in this part, shall post in a prominent and accessible site on the project or staging area, not later than the first day of work and continuing for the entire duration of the project, a legible statement of all wages and fringe benefits to be paid to the employees.*”

O. Employment Preference

Sections 18-2-403 and 18-2-409, MCA requires contractors to give preference to the employment of bona fide Montana residents in the performance of work on public works contracts.

P. Projects of a Mixed Nature

Section 18-2-408, MCA states:

“(1) The contracting agency shall determine, based on the preponderance of labor hours to be worked, whether the public works construction services project is classified as a highway construction project, a heavy construction project, or a building construction project.

(2) Once the project has been classified, employees in each trade classification who are working on that project must be paid at the rate for that project classification”

Q. Occupations Definitions

You can find definitions for these occupations on the following Bureau of Labor Statistics website:

http://www.bls.gov/oes/current/oes_stru.htm

R. Welder Rates

Welders receive the rate prescribed for the craft performing an operation to which welding is incidental.

S. Foreman Rates

Rates are no longer set for foremen. However, if a foreman performs journey level work, the foreman must be paid at least the journey level rate.

WAGE RATES

BOILERMAKERS

	Wage	Benefit
District 1	\$33.17	\$30.88
District 2	\$33.17	\$30.88
District 3	\$33.17	\$30.88
District 4	\$33.17	\$30.88

Duties Include:

Construct, assemble, maintain, and repair stationary steam boilers, boiler house auxiliaries, process vessels, and pressure vessels.

Travel:

All Districts

0-120 mi. free zone

>120 mi. federal mileage rate/mi.

Special Provision:

Travel is paid only at the beginning and end of the job.

Per Diem:

All Districts

0-70 mi. free zone

>70-120 mi. \$65.00/day

>120 mi. \$80.00/day

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BRICK, BLOCK, AND STONE MASONS

	Wage	Benefit
District 1	\$28.71	\$14.96
District 2	\$28.71	\$14.96
District 3	\$28.71	\$14.96
District 4	\$28.71	\$14.96

Travel:

All Districts

0-45 mi. free zone

>45-60 mi. \$32.50/day

>60-90 mi. \$62.00/day

>90 mi. \$75.00/day

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CARPENTERS

	Wage	Benefit
District 1	\$24.00	\$13.57
District 2	\$24.00	\$13.86
District 3	\$24.00	\$13.57
District 4	\$24.00	\$13.57

Duties Include:

Install roll and batt insulation, and hardwood floors.

Zone Pay:

All Districts

0-30 mi. free zone

>30-60 mi. base pay + \$4.00/hr.

>60 mi. base pay + \$6.00/hr.

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CARPET INSTALLERS

No Rate Established

Duties Include:

Lay and install carpet from rolls or blocks on floors.
Install padding and trim flooring materials.

Travel and Per Diem:

All Districts

No travel or per diem established.

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CEMENT MASONS AND CONCRETE FINISHERS

	Wage	Benefit
District 1	\$22.85	\$12.64
District 2	\$22.85	\$12.64
District 3	\$22.85	\$12.64
District 4	\$22.85	\$12.64

Duties Include:

Smooth and finish surfaces of poured concrete, such as floors, walks, sidewalks, or curbs. Align forms for sidewalks, curbs, or gutters.

Zone Pay:

All Districts

0-30 mi. free zone

>30-60 mi. base pay + \$2.95/hr.

>60 mi. base pay + \$4.75/hr.

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CONSTRUCTION EQUIPMENT OPERATORS GROUP 1

	Wage	Benefit
District 1	\$27.91	\$13.55
District 2	\$27.91	\$13.55
District 3	\$27.91	\$13.55
District 4	\$27.91	\$13.55

This group includes but is not limited to:

Air Compressor; Auto Fine Grader; Belt Finishing; Boring Machine (Small); Cement Silo; Crane, A-Frame Truck Crane; Crusher Conveyor; DW-10, 15, and 20 Tractor Roller; Farm Tractor; Forklift; Form Grader; Front-End Loader, under 1 cu. yd; Oiler, Heavy Duty Drills; Herman Nelson Heater; Mucking Machine; Oiler, All Except Cranes/Shovels; Pumpman.

Zone Pay:

All Districts

0-30 mi. free zone

>30-60 mi. base pay + \$3.50/hr.

>60 mi. base pay + \$5.50/hr.

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CONSTRUCTION EQUIPMENT OPERATORS GROUP 2

	Wage	Benefit
District 1	\$28.70	\$13.55
District 2	\$28.70	\$13.55
District 3	\$28.70	\$13.55
District 4	\$28.70	\$13.55

Zone Pay:
All Districts
 0-30 mi. free zone
 >30-60 mi. base pay + \$3.50/hr.
 >60 mi. base pay + \$5.50/hr.

This group includes but is not limited to:

Air Doctor; Backhoe\Excavator\Shovel, up to and incl. 3 cu. yds; Bit Grinder; Bituminous Paving Travel Plant; Boring Machine, Large; Broom, Self-Propelled; Concrete Travel Batcher; Concrete Float & Spreader; Concrete Bucket Dispatcher; Concrete Finish Machine; Concrete Conveyor; Distributor; Dozer, Rubber-Tired, Push, & Side Boom; Elevating Grader\Gradall; Field Equipment Serviceman; Front-End Loader, 1 cu. yd up to and incl. 5 cu. yds; Grade Setter; Heavy Duty Drills, All Types; Hoist\Tugger, All; Hydralift Forklifts & Similar; Industrial Locomotive; Motor Patrol (except finish); Mountain Skidder; Oiler, Cranes\Shovels; Pavement Breaker, EMSCO; Power Saw, Self-Propelled; Pugmill; Pumpcrete\Grout Machine; Punch Truck; Roller, other than Asphalt; Roller, Sheepsfoot (Self-Propelled); Roller, 25 tons and over; Ross Carrier; Rotomill, under 6 ft; Trenching Machine; Washing /Screening Plant.

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CONSTRUCTION EQUIPMENT OPERATORS GROUP 3

	Wage	Benefit
District 1	\$29.45	\$13.55
District 2	\$29.45	\$13.55
District 3	\$29.45	\$13.55
District 4	\$29.45	\$13.55

Zone Pay:
All Districts
 0-30 mi. free zone
 >30-60 mi. base pay + \$3.50/hr.
 >60 mi. base pay + \$5.50/hr.

This group includes but is not limited to:

Asphalt Paving Machine; Asphalt Screed; Backhoe\Excavator\Shovel, over 3 cu. yds; Cableway Highline; Concrete Batch Plant; Concrete Curing Machine; Concrete Pump; Cranes, Creter; Cranes, Electric Overhead; Cranes, 24 tons and under; Curb Machine\Slip Form Paver; Finish Dozer; Front-End Loader, over 5 cu. yds; Mechanic\Welder; Pioneer Dozer; Roller Asphalt (Breakdown & Finish); Rotomill, over 6 ft; Scraper, Single, Twin, or Pulling Belly-Dump; YO-YO Cat.

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CONSTRUCTION EQUIPMENT OPERATORS GROUP 4

	Wage	Benefit
District 1	\$30.45	\$13.55
District 2	\$30.45	\$13.55
District 3	\$30.45	\$13.55
District 4	\$30.45	\$13.55

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + \$3.50/hr.
>60 mi. base pay + \$5.50/hr.

This group includes but is not limited to:

Asphalt\Hot Plant Operator; Cranes, 25 tons up to and incl. 44 tons; Crusher Operator; Finish Motor Patrol; Finish Scraper.

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CONSTRUCTION EQUIPMENT OPERATORS GROUP 5

	Wage	Benefit
District 1	\$31.45	\$13.55
District 2	\$31.45	\$13.55
District 3	\$31.45	\$13.55
District 4	\$31.45	\$13.55

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + \$3.50/hr.
>60 mi. base pay + \$5.50/hr.

This group includes but is not limited to:

Cranes, 45 tons up to and incl. 74 tons.

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CONSTRUCTION EQUIPMENT OPERATORS GROUP 6

	Wage	Benefit
District 1	\$32.45	\$13.55
District 2	\$32.45	\$13.55
District 3	\$32.45	\$13.55
District 4	\$32.45	\$13.55

Zone Pay:
All Districts
0-30 mi. free zone
>30-60 mi. base pay + \$3.50/hr.
>60 mi. base pay + \$5.50/hr.

This group includes but is not limited to:

Cranes, 75 tons up to and incl. 149 tons; Cranes, Whirley (All).

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CONSTRUCTION EQUIPMENT OPERATORS GROUP 7

	Wage	Benefit
District 1	\$33.45	\$13.55
District 2	\$33.45	\$13.55
District 3	\$33.45	\$13.55
District 4	\$33.45	\$13.55

Zone Pay:
All Districts
 0-30 mi. free zone
 >30-60 mi. base pay + \$3.50/hr.
 >60 mi. base pay + \$5.50/hr.

This group includes but is not limited to:

Cranes, 150 tons up to and incl. 250 tons; Cranes, over 250 tons—add \$1.00 for every 100 tons over 250 tons; Crane, Tower (All); Crane Stiff-Leg or Derrick; Helicopter Hoist.

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CONSTRUCTION LABORERS GROUP 1/FLAG PERSON FOR TRAFFIC CONTROL

	Wage	Benefit
District 1	\$20.65	\$10.47
District 2	\$20.65	\$10.47
District 3	\$20.65	\$10.47
District 4	\$20.65	\$10.47

Zone Pay:
All Districts
 0-15 mi. free zone
 >15-30 mi. base pay + \$0.65/hr.
 >30-50 mi. base pay + \$0.85/hr.
 >50 mi. base pay + \$1.25/hr.

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CONSTRUCTION LABORERS GROUP 2

	Wage	Benefit
District 1	\$20.50	\$7.87
District 2	\$19.94	\$8.73
District 3	\$21.40	\$6.73
District 4	\$20.51	\$5.27

Zone Pay:
All Districts
 0-15 mi. free zone
 >15-30 mi. base pay + \$0.65/hr.
 >30-50 mi. base pay + \$0.85/hr.
 >50 mi. base pay + \$1.25/hr.

This group includes but is not limited to:

General Labor; Asbestos Removal; Burning Bar; Bucket Man; Carpenter Tender; Caisson Worker; Cement Mason Tender; Cement Handler (dry); Chuck Tender; Choker Setter; Concrete Worker; Curb Machine-lay Down; Crusher and Batch Worker; Heater Tender; Fence Erector; Landscape Laborer; Landscaper; Lawn Sprinkler Installer; Pipe Wrapper; Pot Tender; Powderman Tender; Rail and Truck Loaders and Unloaders; Riprapper; Sign Erection; Guardrail and Jersey Rail; Spike Driver; Stake Jumper; Signalman; Tail Hoseman; Tool Checker and Houseman and Traffic Control Worker.

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CONSTRUCTION LABORERS GROUP 3

	Wage	Benefit
District 1	\$21.65	\$10.47
District 2	\$21.65	\$10.47
District 3	\$21.65	\$10.47
District 4	\$21.65	\$10.47

This group includes but is not limited to:

Concrete Vibrator; Dumpman (Grademan); Equipment Handler; Geotextile and Liners; High-Pressure Nozzleman; Jackhammer (Pavement Breaker) Non-Riding Rollers; Pipelayer; Posthole Digger (Power); Power Driven Wheelbarrow; Rigger; Sandblaster; Sod Cutter-Power and Tamper.

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Zone Pay:

All Districts

0-15 mi. free zone
>15-30 mi. base pay + \$0.65/hr.
>30-50 mi. base pay + \$0.85/hr.
>50 mi. base pay + \$1.25/hr.

CONSTRUCTION LABORERS GROUP 4

	Wage	Benefit
District 1	\$21.67	\$10.47
District 2	\$22.00	\$10.47
District 3	\$21.70	\$10.47
District 4	\$21.93	\$10.47

This group includes but is not limited to:

Hod Carrier***; Water Well Laborer; Blaster; Wagon Driller; Asphalt Raker; Cutting Torch; Grade Setter; High-Scaler; Power Saws (Faller & Concrete) Powderman; Rock & Core Drill; Track or Truck Mounted Wagon Drill and Welder incl. Air Arc.

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Zone Pay:

All Districts

0-15 mi. free zone
>15-30 mi. base pay + \$0.65/hr.
>30-50 mi. base pay + \$0.85/hr.
>50 mi. base pay + \$1.25/hr.

DRYWALL APPLICATORS

	Wage	Benefit
District 1	\$24.00	\$13.57
District 2	\$24.00	\$13.86
District 3	\$24.00	\$13.57
District 4	\$24.00	\$13.57

Duties Include:

Drywall and ceiling tile installation.

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Zone Pay:

All Districts

0-30 mi. free zone
>30-60 mi. base pay + \$4.00/hr.
>60 mi. base pay + \$6.00/hr.

ELECTRICIANS: INCLUDING BUILDING AUTOMATION CONTROL

	Wage	Benefit
District 1	\$31.04	\$13.77
District 2	\$29.59	\$14.56
District 3	\$31.05	\$13.33
District 4	\$34.08	\$14.91

Duties Include:

Electrical wiring; equipment and fixtures; street lights; electrical control systems. Installation and/or adjusting of building automation controls also during testing and balancing, commissioning and retro-commissioning.

Travel:

District 1

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

- 0-15 mi. free zone
- >15-45 mi. \$0.585/mi. in excess of the free zone.
- >45 mi. \$75.00/day

District 2

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

- 0-10 mi. free zone
- >10-55 mi. federal mileage rate/mi.
- >55 mi. \$66.00/day

District 3

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

- 0-08 mi. free zone
- >08-50 mi. federal mileage rate/mi. in excess of the free zone.
- >50 mi. \$66.00/day

District 4

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

- 0-18 mi. free zone
- >18-60 mi. federal mileage rate/mi.
- >60 mi. \$75.00/day

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ELEVATOR CONSTRUCTORS

	Wage	Benefit
District 1	\$54.09	\$34.12
District 2	\$54.09	\$34.12
District 3	\$54.09	\$34.12
District 4	\$54.09	\$34.12

Travel:

All Districts

0-15 mi. free zone

>15-25 mi. \$43.25/day

>25-35 mi. \$86.49/day

>35 mi. \$84.90/day or cost of receipts for hotel and meals, whichever is greater.

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FLOOR LAYERS

No Rate Established

Apply blocks, strips, or sheets of shock-absorbing, sound-deadening, or decorative coverings to floors.

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GLAZIERS

	Wage	Benefit
District 1	\$16.98	\$2.46
District 2	\$18.35	\$2.50
District 3	\$19.51	\$3.73
District 4	\$21.26	\$3.26

Travel and Per Diem:

All Districts

No travel or per diem established.

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HEATING AND AIR CONDITIONING

	Wage	Benefit
District 1	\$27.55	\$18.83
District 2	\$30.09	\$18.83
District 3	\$30.09	\$18.83
District 4	\$30.09	\$18.83

Duties Include:

Testing and balancing, commissioning and retro-commissioning of all air-handling equipment and duct work.

Travel:

All Districts

0-50 mi. free zone

>50 mi.

- \$0.25/mi. in employer vehicle.
- \$0.65/mi. in employee vehicle.

Per Diem:

All Districts

\$70/day

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INSULATION WORKERS - MECHANICAL (HEAT AND FROST)

	Wage	Benefit
District 1	\$33.37	\$19.87
District 2	\$33.37	\$19.87
District 3	\$33.37	\$19.87
District 4	\$33.37	\$19.87

Duties Include:

Insulate pipes, ductwork or other mechanical systems.

Travel:

All Districts

0-30 mi. free zone

>30-40 mi. \$25.00/day

>40-50 mi. \$35.00/day

>50-60 mi. \$45.00/day

>60 mi. \$60.00/day plus

- \$0.56/mi. if transportation is not provided.
- \$0.20/mi. if in company vehicle.

>60 mi. \$90.00/day on jobs requiring an overnight stay plus

- \$0.56/mi. if transportation is not provided.
- \$0.20/mi. if in company vehicle.

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IRONWORKERS - STRUCTURAL STEEL AND REBAR PLACERS

	Wage	Benefit
District 1	\$28.00	\$26.40
District 2	\$27.25	\$22.19
District 3	\$27.25	\$22.19
District 4	\$22.92	\$22.29

Duties Include:

Structural steel erection; assemble prefabricated metal buildings; cut, bend, tie, and place rebar; energy producing windmill type towers; metal bleacher seating; handrail fabrication and ornamental steel.

Travel:

District 1

0-45 mi. free zone

>45-60 mi. \$45.00/day

>60-100 mi. \$70.00/day

>100 mi. \$90.00/day

Special Provision:

When the employer provides transportation, travel will not be paid. However, when an employee is required to travel over 70 miles one way, the employee may elect to receive the travel pay in lieu of the transportation.

Districts 2, 3 & 4

0-45 mi. free zone

>45-85 mi. \$60.00/day

>85 mi. \$90.00/day

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MILLWRIGHTS

	Wage	Benefit
District 1	\$34.00	\$13.57
District 2	\$34.00	\$13.86
District 3	\$34.00	\$13.57
District 4	\$34.00	\$13.57

Zone Pay:

All Districts

0-30 mi. free zone

>30-60 mi. base pay + \$4.00/hr.

>60 mi. base pay + \$6.00/hr.

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PAINTERS: INCLUDING PAPERHANGERS

	Wage	Benefit
District 1	\$23.60	\$9.35
District 2	\$21.83	\$8.13
District 3	\$21.06	\$8.31
District 4	\$21.28	\$8.31

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Travel and Per Diem:

All Districts

No travel or per diem established.

PILE BUCKS

	Wage	Benefit
District 1	\$31.00	\$13.57
District 2	\$31.00	\$13.86
District 3	\$31.00	\$13.57
District 4	\$31.00	\$13.57

Duties Include:

Set up crane; set up hammer; weld tips on piles; set leads; insure piles are driven straight with the use of level or plum bob. Give direction to crane operator as to speed and direction of swing. Cut piles to grade.

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Zone Pay:

All Districts

0-30 mi. free zone

>30-60 mi. base pay + \$4.00/hr.

>60 mi. base pay + \$6.00/hr.

PLASTERERS

No Rate Established

Duties Include:

All materials beyond the substrate, such as a moisture barrier, any type of drainage installation between the moisture barrier and insulation or EPS board, the attachment of the EPS board, installation of fiberglass mesh embedded in the base coat, any water-resistant coat that is applied on top of the insulation to serve as a weather barrier, and the application of the finish coat.

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Travel and Per Diem:

All Districts

No travel or per diem established.

PLUMBERS, PIPEFITTERS, AND STEAMFITTERS

	Wage	Benefit
District 1	\$30.48	\$13.56
District 2	\$31.30	\$16.00
District 3	\$31.30	\$16.00
District 4	\$33.11	\$18.71

Duties Include:

Assemble, install, alter, and repair pipe-lines or pipe systems that carry water, steam, air, other liquids or gases. Testing of piping systems, commissioning and retro-commissioning. Workers in this occupation may also install heating and cooling equipment and mechanical control systems.

Travel:

District 1

0-30 mi. free zone
>30-50 mi. \$25.00/day
>50-75 mi. \$40.00/day
>75 mi. \$75.00/day

Special Provision

If transportation is not provided, mileage at \$0.35/mi. with a separate free zone of 20 miles is added to the amounts above. However, if the employee is traveling more than 75 miles/day, only subsistence is required.

Districts 2 & 3

0-40 mi. free zone
>40-80 mi. \$30.00/day
>80 mi. \$60.00/day

Special Provision:

If employer provides transportation, travel pay will be ½ of the amounts listed above unless the employee stays overnight. If the employee chooses to stay overnight, the employee will receive the full amount of travel listed above even if the employer furnishes transportation.

District 4

0-70 free zone
>70 mi.

- On jobs when employees do not work consecutive days: \$0.55/mi. if employer doesn't provide transportation. Not to exceed two trips.
- On jobs when employees work any number of consecutive days: \$100.00/day.

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ROOFERS

	Wage	Benefit
District 1	\$19.26	\$6.71
District 2	\$19.89	\$8.42
District 3	\$20.99	\$6.32
District 4	\$20.63	\$5.62

Duties Include:

Metal roofing.

Travel:

District 1

0-50 mi. free zone
>50 mi. \$0.35/mi.

District 2 and 3

0-35 mi. free zone
>35 mi. \$0.30/mi only when employer doesn't provide transportation.

District 4

0-25 mi. free zone
>25 mi. \$0.30/mi only when employer doesn't provide transportation.

Per Diem:

District 1

\$60.00/day

District 2 and 3

Employer pays for room + \$26.50/day.

District 4

Employer pays for room + \$25.00/day.

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SHEET METAL WORKERS

	Wage	Benefit
District 1	\$30.09	\$18.83
District 2	\$30.09	\$18.83
District 3	\$30.09	\$18.83
District 4	\$30.09	\$18.83

Duties Include:

Testing and balancing, commissioning and retro-commissioning of all air-handling equipment and duct work. Manufacture, fabrication, assembling, installation, dismantling, and alteration of all HVAC systems, air conveyer systems, and exhaust systems. All lagging over insulation and all duct lining.

Travel:

All Districts

0-50 mi. free zone
>50 mi.
▪ \$0.25/mi. in employer vehicle
▪ \$0.65/mi. in employee vehicle

Per Diem:

All Districts

\$70.00/day

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SOLAR PHOTOVOLTAIC INSTALLERS

	Wage	Benefit
District 1	\$29.59	\$14.56
District 2	\$31.05	\$14.56
District 3	\$31.05	\$13.33
District 4	\$34.08	\$14.91

Travel: District 1

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

- 0-15 mi. free zone
- >15-45 mi. \$0.585/mi. in excess of the free zone.
- >45 mi. \$75.00/day

District 2

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

- 0-10 mi. free zone
- >10-55 mi. federal mileage rate/mi.
- >55 mi. \$66.00/day

District 3

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

- 0-08 mi. free zone
- >08-50 mi. federal mileage rate/mi. in excess of the free zone.
- >50 mi. \$66.00/day

District 4

No mileage due when traveling in employer's vehicle.

The following travel allowance is applicable when traveling in employee's vehicle:

- 0-18 mi. free zone
- >18-60 mi. federal mileage rate/mi.
- >60 mi. \$75.00/day

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SPRINKLER FITTERS

	Wage	Benefit
District 1	\$34.35	\$21.93
District 2	\$34.35	\$21.93
District 3	\$34.35	\$21.93
District 4	\$34.35	\$21.93

Duties Include:

Duties Include but not limited to any and all fire protection systems: Installation, dismantling, inspection, testing, maintenance, repairs, adjustments, and corrections of all fire protection and fire control systems, including both overhead and underground water mains, all piping, fire hydrants, standpipes, air lines, tanks, and pumps used in connection with sprinkler and alarm systems.

Travel All Districts

The following travel allowance is applicable when traveling in employee's vehicle.

0-60 mi. free zone
>60-80 mi. \$19.00/day
>80-100 mi. \$29.00/day
>100 mi. \$105.00/day.

Special Provision

When traveling >100 miles, mileage at \$0.54/mi. + \$8.59 for every 15 miles traveled at beginning and end of job.

The following travel allowance is applicable when traveling in employer's vehicle.

0-100 mi. free zone
>100 mi. \$105.00/day

Special Provision

When traveling >100 miles, \$8.59 for every 15 miles traveled, at beginning and end of job.

Per Diem: All Districts

No per diem is applicable when traveling in employee's vehicle

The following per diem is applicable when traveling in employer's vehicle.

0-100 mi. free zone
>100 mi. \$105.00/day

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TAPERS

	Wage	Benefit
District 1	\$23.60	\$9.35
District 2	\$21.83	\$8.13
District 3	\$21.06	\$8.31
District 4	\$21.28	\$8.31

Travel and Per Diem: All Districts

No travel or per diem established.

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TEAMSTERS GROUP 2

Pilot Car Driver

No Rate Established

	Wage	Benefit
District 1	\$28.88	\$7.68
District 2	\$28.88	\$7.68
District 3	\$28.88	\$7.68
District 4	\$28.88	\$7.68

This group includes but is not limited to:

Combination Truck & Concrete Mixer; Distributor Driver; Dry Batch Trucks; Dump Trucks & Similar Equipment; Flat Trucks; Lowboys, Four-Wheel Trailers, Float Semitrailer; Powder Truck Driver (Bulk Unloader Type); Servicemen; Service Truck Drivers, Fuel Truck Drivers, Tiremen; Trucks with Power Equipment; Truck Mechanic; Water Tank Drivers, Petroleum Product Drivers.

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Zone Pay:

All Districts

No zone pay established.

TELECOMMUNICATIONS EQUIPMENT INSTALLERS

	Wage	Benefit
District 1	\$29.46	\$ 8.73
District 2	\$24.61	\$ 9.80
District 3	\$24.71	\$ 8.50
District 4	\$24.61	\$10.18

Duties Include:

Install voice; sound; vision and data systems. This occupation includes burglar alarms, fire alarms, fiber optic systems, and video systems for security or entertainment.

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Travel:

All Districts

The federal mileage rate/mi. in effect when travel occurs if using own vehicle.

Per Diem:

All Districts

Employer pays for meals and lodging up to \$75.00/day. When jobsite is located in Big Sky, West Yellowstone, and Gardiner, lodging and meals will be provided by the employer for all actual and reasonable expenses incurred.

TERRAZZO WORKERS AND FINISHERS

No Rate Established

Duties Include:

Finish work on hard tile, marble, and wood tile to floors, ceilings, and roof decks

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TILE AND STONE SETTERS

No Rate Established

Duties Include:

Apply hard tile, stone, and comparable materials to walls, floors, ceilings, countertops, and roof decks.

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SUBSTITUTION REQUEST (PRIOR APPROVAL)

Project Title: _____

PPA No: __ - ____

Location: _____

Owner: MONTANA STATE UNIVERSITY Bidder (Sub-): _____

This request is submitted for the approval of the Architect. Bidder / Sub-Bidder shall submit one request in accordance with Bidders' Instructions and Information for each proposed substitution. All blanks are to be completed.

The material, system, or equipment defined by this Substitution Request is proposed as a replacement for the material, system, or equipment originally specified and defined as follows:

SECTION PARAGRAPH SPECIFIED MATERIAL, SYSTEM, OR EQUIPMENT

PROPOSED SUBSTITUTION: The material, system, or equipment being proposed is defined as follows:

- What are the differences between the specified material, system, or equipment and the proposed substitution?
• Does the proposed substitution require dimensional changes on the Construction Drawings? (Y/N)
• Does the proposed substitution require changes to the Work of other trades? (Y/N)
• Is the warranty for the proposed substitution comparable with that of the specified product? (Y/N)

By signing and submitting this request, the Bidder / Sub-Bidder represents that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified material, system, or equipment.

By signing and submitting this request, the Bidder / Sub-Bidder agrees to pay all costs, including architectural and engineering fees, associated with the incorporation of the proposed substitution into the Project.

SUBMITTED BY (BIDDER / SUB-BIDDER)

AUTHORIZED AGENT

DATE

Received: _____
DATE

Architect's Action: [] Rejected

[] Rejected - For reasons as follows:

[] Approved

[] Approved as noted:

REVIEWED BY (ARCHITECT)

AUTHORIZED AGENT

DATE

STANDARD FORM INSTRUCTIONS

To simplify the form and request for payment process, formulas have been inserted in the form. Fields shaded in light blue are formula fields and cannot be manipulated. Please start by completing the top of Page 1 along with the RED outlined fields, then move to Page 2 inserting the necessary detail. **Formulas will pull the detail from Page 2 into Page 1 to correctly calculate payment due.** Don't forget to check your retainage calculation for each request submitted. Retainage is calculated at 5%, which is the default contractual retainage. [Please see the instructions below if you are working under an MSU Bozeman General Services Contract.]

SUBMISSION

Periodic Estimates for Partial Payment (Form 101) should be submitted with a valid signature at the bottom of Page 1.

With the exception of Final Requests for payment, Faxed or Scanned/Emailed requests for payment are acceptable with a valid signature and date. Faxed Requests should be sent to 406-994-6572 Attn: Accounting. Emailed requests should be sent to ara.meskimen@montana.edu.

CONSULTANT APPROVAL

If there is an Architectural Firm (Consultant) assigned to your project their approval is required prior to submitting the request for payment to MSU. Please submit the Periodic Estimate for Partial Payment (Form 101) to the consultant on the project directly, they will route the request for payment to MSU once they have approved it.

COMPLETE BOTH PAGES

Please complete BOTH pages of the Periodic Estimate for Partial Payment (Form 101). Because both pages are contract documents, **your request can be declined if both pages are not completed.** Also, your amount due is calculated from the detail on Page 2, it will not calculate appropriately without Page 2 completed. (Use the tabs at the bottom of Excel to move between the instructions and both pages)

FINAL REQUESTS

Final Requests for payment need to be submitted with an original Notorized and Signed Affidavit of Completion (Form 108) Retainage will be held on Final Requests received without an Affidavit of Completion attached or on file.

RETAINAGE CALCULATION

The retainage field auto calculates the default contract retainage amount of 5%. This field can be overwritten in order for the contractor to request no retainage holding or a reduced retainage holding amount. Please keep in mind that MSU Bozeman reserves the right to make changes to the submitted Periodic Estimate For Partial Payment (Form 101) in keeping with the signed contractual agreement between MSU Bozeman and the contractor.

GENERAL SERVICE CONTRACT INSTRUCTIONS

If you are a contractor working under an MSU Bozeman issued **General Services** contract. Please **request the electronic version of the GENERAL SERVICES pay request form.**

If you have questions on the [Pay Request Form](#) or need additional information regarding the usage of this form:
Please Contact:

Ara Meskimen | MSU Bozeman
ara.meskimen@montana.edu
406-994-5461

If you have questions on [Change Orders, Addendums, Contracts, or other Contract Documents](#) related to your work on campus:
Please Contact:

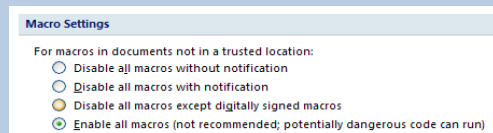
Your Project Manager OR

Rebecca Barney | MSU Bozeman
Rebecca.Barney@montana.edu
406-994-5287

HINTS:

Please note: the Macro Settings for the user computer need to be set at "Enable" in order to run the **PRINT** and **RESET FORM** macros.

That can be done by entering the Trust Center for Microsoft Excel and selecting Enable Macros.



*(Trust Center is on Windows XP and newer versions)
*(Older versions have the "Enable Macros" setting, however, it is under Security settings)

If you need additional help adjusting these settings do a search under Microsoft Excel Help for "Enable Macros", there you can get step by step instructions for adjusting your macro settings.



PERIODIC ESTIMATE FOR PARTIAL PAYMENT

PPA No.: _____ Date: _____
 Period From: _____ To: _____
 Pay Estimate No.: _____

Project Title: _____
 Location: Montana State University

Contractor: _____
 Address: _____
 Phone: _____

RETAINAGE ADJUSTMENT	
1. Total Retainage to Date:	
2. Less Securities Deposited:	-
3. Retainage Withheld (1 - 2)	-

CONTRACT AMOUNT STATUS	
1. Original Contract Amount:	
2. Net +/- by Change Order: [Pulls from Change Order Summary]	-
3. Contract Amount to Date:	-

CHANGE ORDER SUMMARY			
No.	Date Approved	Additions	Deductions
TOTALS:		-	-
NET TOTAL:		-	-

CONTRACT STATUS	
1. Work in Place (from next page): [Column D + E Total - Page 2]	
2. Total Work & Stored Material: [Column G Total - Page 2]	
3. Retainage Withheld:	5.0%
4. Total Earned Less Retainage:	-
5. Less Previous Payments (+ 1 % Tax):	-
6. Amount Due This Payment:	-
7. Less 1% State Contractor's Tax: [Contracts > 4999.99]	-
8. Payment Due Contractor:	-

I hereby certify that this submitted request for payment is correct, true and just in all respects and that payment or credit has not previously been received. I further warrant and certify by submission of this request that all previous work for which payment has been received is free and clear of all liens, disputes, claims, security interests, encumbrances, or causes of action of any type or kind in favor of the contractor, subcontractors, material suppliers, or other persons or entities and do hereby release the Owner from such.

Submitted by: _____

 (Name) Date: _____

Reviewed by: _____
 (Consultant)

 (Name) Date: _____

Approved by: **State of Montana, Montana State University**
Facilities Planning, Design and Construction

 (Name) Date: _____



CONSENT OF SURETY

Project:
Location: Montana State University
PPA No.

TO: Montana State University
Campus Planning, Design & Construction
6TH & Grant, PO Box 172760
Bozeman, Montana 59717-2760

Contractor: Contract Date:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(here insert name and address of Surety Company)

on bond of (here insert name and address of Contractor)
,Surety Company,
,Contractor,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not
relieve the Surety Company of any of its obligations to State of Montana, Owner, as set forth in the said Surety
Company's bond. The Surety agrees to be bound to the warranty period under the same conditions as the
Contractor. The warranty is defined as commencing with Substantial Completion (or with each Substantial
Completion if there is more than one) of the Project, or any portion thereof, and continuing for one (1) calendar year
from the date of Final Acceptance of the entire project unless otherwise modified in writing as part of the Substantial
Completion or Final Acceptance.

IN WITNESS WHEREOF,

the Surety Company has hereunto set its hand this Day of ,

Surety Company

Signature of Authorized Representative

Attest:
(Seal)

Title

JUSTIFICATION FOR CHANGE(S) (To be completed by Architect/Engineer):

Describe the details which mandate the change(s).

JUSTIFICATION FOR COST ADJUSTMENT (To be completed by Architect/Engineer):

Describe the basis used to calculate the cost adjustment.

JUSTIFICATION FOR SCHEDULE ADJUSTMENT (To be completed by Architect/Engineer):

Describe the impact of adjustment(s) to the critical path.

APPROVALS

By signature on this change order, the Contractor certifies that this change order is complete and includes all direct costs, indirect costs and consequential items (including additional time, if any) and is free and clear of any and all claims or disputes (including, but not limited to, additional costs, additional time, disruptions, and impacts) in favor of the Contractor, subcontractors, material suppliers, or other persons or entities concerning this change order and on all previously contracted Work and does hereby release the Owner from such.

Approved by Contractor:

(Company)

(Signature)

Recommended by Architect/Engineer:

(Company)

(Signature)

Surety Consent: SURETY CONSENT IS REQUIRED IF THE TOTAL AMOUNT OF ALL CHANGE ORDERS (LINE 6) EXCEEDS 10% OF THE ORIGINAL CONTRACT AMOUNT.

The Surety consents to this Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as modified or amended per this Change Order. The principal and the Surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bond and Labor & Material Bond is increased by:

(____)

By One Hundred Percent (100%) of ALL Change Orders

Countersigned by Resident Agent:

Surety:

Recommended by: CPDC Project Manager:

(Signature)

Date:

Accepted by:

(Signature)

MSU Campus Planning, Design, & Construction

Date:



CONTRACTOR'S AFFIDAVIT OF COMPLETION
PAYMENT OF DEBTS AND CLAIMS, AND RELEASE OF LIENS

Project Name:
Location: Montana State University
PPA No.:

I CERTIFY to the best of my knowledge and belief that all work has been performed and materials supplied in strict accordance with the terms and conditions of the corresponding contract documents between the STATE OF MONTANA, acting by and through its DIRECTOR, MONTANA STATE UNIVERSITY, CAMPUS PLANNING, DESIGN & CONSTRUCTION, hereinafter called the Owner, and, hereinafter called the CONTRACTOR, for the above referenced project.

I further certify and declare that all bills for materials, supplies, utilities and for all other things furnished or caused to be furnished by the CONTRACTOR and used in the execution of the contract will be fully paid upon receipt of Final Payment and that there are no unpaid obligations, liens, claims, security interests, encumbrances, liabilities and/or demands of State Agencies, subcontractors, material men, mechanics, laborers or any others resulting from or arising out of any work done, caused to be done or ordered to be done by the CONTRACTOR under the contract.

In consideration of the prior and final payments made and all payments made for authorized changes, the CONTRACTOR releases and forever discharges the OWNER from any and all obligations, liens, claims, security interests, encumbrances and/or liabilities arising by virtue of the contract and authorized changes between the parties, either verbal or in writing, and any and all claims and demands of every kind and character whatsoever against the OWNER, arising out of or in any way relating to the contract and authorized changes.

I further certify and agree that the warranty period is defined as commencing with Substantial Completion (or with each Substantial Completion if there is more than one) of the Project, or any portion thereof, and continuing for one (1) calendar year from the date of Final Acceptance of the entire project unless otherwise modified in writing as part of the Substantial Completion or Final Acceptance.

This statement is made for the purpose of inducing the OWNER to make FINAL PAYMENT under the terms of the contract, relying on the truth and statements contained herein.

(Seal)

CONTRACTOR

Four horizontal lines for signature and title.

(Signature)

(Title)

State of Montana
County of

Subscribed and sworn to me this Day of,

(Seal)

NOTARY

Notary Public for the State of Montana
My Commission Expires:



CERTIFICATE OF SUBSTANTIAL COMPLETION

Project Name: _____ PPA NO.: _____
 Project Address: _____ Date: _____
 Project Location: _____

To: MONTANA STATE UNIVERSITY

Campus Planning, Design & Construction
6TH & Grant, PO Box 172760
Bozeman, Montana 59717-2760

Architect/Engineer: _____

Contractor: _____ Contract Date: _____
 _____ Contract Award _____
 _____ Amount: _____

PROJECT OR DESIGNATED PORTION SHALL INCLUDE:

The work performed under this Contract has been reviewed and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above, which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below is hereby established as: _____

BASIC PROJECT INFORMATION <small>(required by Risk & Tort Defense Division)</small>	NEW	REMODEL/RENOVATION
Total Square Footage	Sq. Ft.	Sq. Ft.
General Construction Material <small>(e.g. masonry, metal panel, wood, etc.)</small>		
Total Construction Cost		
Fire Sprinklers Installed (yes/no)	Yes No	Yes No
Estimated Date of Occupancy <small>(if different from date of Substantial)</small>		
Building Usage:		
Safety Consultation with DLI:	Yes No	Yes No
Additional Comments:		



CONSTRUCTION CHANGE DIRECTIVE

Project Name:
Location: Montana State University
Contractor:

PPA No.:

Date:

Change Directive No.: CCD-

Owner: Montana State University
Campus Planning, Design & Construction
6TH & Grant, PO Box 172760
Bozeman, Montana 59717-2760

Architect/Engineer:

The Contractor is directed to proceed as described below. Proceed with this Work promptly. Costs for the Work (if any) involved and change in Contract Time (if any) will be included in a subsequent Change Order.

Description:

Attachments: (insert listing of documents that support description)

The following is based on information provided by the Contractor:

Change in Contract Sum of
Change in Contract Time of ___ Calendar Days.

Issued by Arch/Eng.: By: Date:
Accepted by Owner: Montana State University By: Date:
Accepted by Contractor: By: Date:



CAMPUS PLANNING, DESIGN & CONSTRUCTION

Sixth Avenue and Grant Street
PO Box 172760 • Bozeman, Montana 59717-2760
Phone: (406) 994-5413 • Fax: (406) 994-5665

REQUEST FOR INFORMATION

Project Title: _____
Location: Montana State University

PPA No.: _____
RFI No.: _____
Date: _____

To: _____

Attention: _____

From: _____

Attention: _____

Trades Affected: _____

In order to expedite the Work and avoid or minimize delays in the Work the following information is requested. Please return a response by: _____ Date Sent: _____ Date Received: _____

Information Requested:

Response:

Response Date: _____ Respondent: _____

- Cost Impact
Schedule Impact

This RFI is for clarification only. The contractor shall document the Owner's Representative within 48 hours if he/she feels the response to this RFI constitutes additional work.

- Distribution: Owner, Architect, Engineer, Agency, Contractor, Other



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Phone: (406) 994-5413 • Fax: (406) 994-5665

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we:

(Contractor), hereinafter called the Principal, and

(Surety), a corporation licensed to do business as a surety under the laws of the State of Montana, hereinafter called Surety, are held and firmly bound unto the State of Montana in the full and just sum of:

Alpha Notation _____ DOLLARS (\$) _____ Numeric Notation

to be paid to the State of Montana or its assigns, to which payment we bind ourselves, heirs, executors, administrators, successors and assigns, jointly, severally, firmly by this bond.

WHEREAS, the Principal has entered into a contract with State of Montana, acting by and through its Director, Montana State University, Campus Planning, Design & Construction dated _____ and whereas it is one of the conditions of the award of the contract pursuant to statutes that this bond be executed for the Project entitled:

Project Title: _____
Montana State University
PPA No.: __-____

NOW, THEREFORE, the conditions of this obligation are such that if the above Principal as Contractor shall promptly and faithfully perform all of the provisions of the contract, and all obligations thereunder including the specifications, and any alterations provided for, and shall in a manner satisfactory to the State of Montana, complete the work contracted for including any alterations, and shall save harmless the State of Montana from any expense incurred through the failure of the Contractor to complete the work as specified, then this obligation shall be void; otherwise it shall remain in full force and effect.

The surety hereby waives notice of any extension of time and any alterations made in the terms of the contract, unless the cumulative cost of such alterations cause the total project cost to exceed the original contract sum by more than 10%.

FOR STATE USE ONLY:
Surety is licensed in MT: [] Yes [] No
Date verified: _____
Verified by: _____
Montana State University
State of Montana

Contractor: _____
(signature)

(print name)

(date)
Surety: _____
(print name)

(date)
By: _____
(Attorney-in-Fact, seal & signature)

(Agency)

(Street Address)

(Address)

(Phone/Fax)



LABOR & MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we:

(Contractor), hereinafter called the Principal, and

(Surety), a corporation licensed to do business as a surety under the laws of the State of Montana, hereinafter called Surety, are held and firmly bound unto the State of Montana in the full and just sum of:

Alpha Notation DOLLARS (\$))
Numeric Notation

to be paid to the State of Montana or its assigns, to which payment we bind ourselves, heirs, executors, administrators, successors and assigns, jointly, severally, firmly by this bond.

WHEREAS, the Principal has entered into a contract with State of Montana, acting by and through its Director, Montana State University, Campus Planning, Design & Construction dated and whereas it is one of the conditions of the award of the contract pursuant to statutes that this bond be executed for the Project entitled:

Project Title: _____
Montana State University
PPA No.: __-____

NOW, THEREFORE, the conditions of this obligation are such that if the above Principal as Contractor shall duly and promptly pay all laborers, mechanics, subcontractors and material men who perform work or furnish material under the contract and all persons who shall supply him or the subcontractor with materials, services, bonds and insurance for the carrying on of the work, then this obligation shall be void; otherwise it shall remain in full force and effect and shall save harmless the State of Montana from any expense incurred through the failure of the Contractor to comply.

The surety hereby waives notice of any extension of time and any alterations made in the terms of the contract, unless the cumulative cost of such alterations cause the total project cost to exceed the original contract sum by more than 10%.

FOR STATE USE ONLY:

Surety is licensed in MT: Yes No

Date verified: _____

Verified by: _____
 Montana State University
 State of Montana

Contractor: _____
 (signature)

 (print name)

 (date)

Surety: _____

 (print name)

 (date)

By: _____

 (Attorney-in-Fact, seal & signature)

 (Agency)

 (Street Address)

 (Address)



CERTIFICATE OF FINAL ACCEPTANCE
--

Project Title: _____ PPA NO.: ____-____
 Location: Montana State University Date: _____

To: Montana State University
 Campus Planning, Design & Construction
 PO Box 172760
 Bozeman, Montana 59717-2760

Architect/Engineer: _____

Contractor: _____ Contract Date: _____
 _____ Contract Amount: _____

The Work performed under this Contract has been reviewed and found to be complete and has reached Final Acceptance. The Date of Final Acceptance of the Work is defined as the Date Certified by the Architect/Engineer upon which the Work is fully complete in all aspects, **and** which the Owner accepts the Contractor's work as complete. The Date of Final Acceptance of the Project, or portion thereof designated above, is also the basis for commencement of the DURATION of applicable warranties required by the Contract Documents. The Warranty Period is defined in the Contract Documents as commencing with Substantial Completion(s) and continuing for one (1) calendar year from the Date of Final Acceptance. This date shall correspond to the date of the Architect/Engineer's approval on the final pay application unless otherwise agreed upon in writing. In the event of a disparity between the date of the Architect/Engineer's approval and this form, if no other written agreement exists as to the date of final acceptance, this form shall constitute such agreement and it shall govern as the date of Final Acceptance.

Date of Substantial Completion:	Date of Final Acceptance:	Date of Warranty Expiration:

Notes:

 Architect/Engineer By _____ Date _____

 Contractor By _____ Date _____

State of Montana
Montana State University
Campus Planning, Design & Construction

 Owner By _____ Date _____



Buy-Safe Montana

_____ submits the following Buy-Safe Montana values for A&E review. For assistance, clarification, or the latest industry average rates, visit: https://www.bls.gov/iif/osheval.htm

Incident Rate: _____

Industry Average Incident Rate: _____

Experience Modification Ratio (EMR): _____

Loss Ratio: _____

Less than Industry Average Incident Rate - Yes No

EMR less than 1.0 - Yes No

Loss ratio less than 100% - Yes No

Is a Comprehensive Safety Consultation Required? Yes No

*If all 3 options are responded to as "No," a consultation is required

Explanation of above average incident rate, EMR greater than 1.0, or loss ratio greater than 100%...

Per 3.1.7 – Buy-Safe Montana. The Owner shall review the Buy-Safe Montana form provided by the Bidder under Articles 16 of the Instructions to Bidders. To promote a safe work environment, the Owner encourages an incidence rate less than the latest average for non-residential building construction for Montana as established by the federal Bureau of Labor Statistics for the prior year; an experience modification rating (EMR) less than 1.0; and a loss ratio of less than 100%. The Contractor with a greater-than-average incidence rate, an EMR greater than 1.0, and a loss ratio of more than 100% shall schedule and obtain a Comprehensive Safety Consultation from the Montana Department of Labor & Industry, Employment Relations Division, Safety Bureau before the Owner grants Substantial Completion of the Work. For assistance in obtaining the Comprehensive Safety Consultation, visit http://erd.dli.mt.gov/safety-health/ onsite-consultation.

Name

Signature

Date

SECTION 011000
SUMMARY

1.1 PART 1 - GENERAL

A. Related Documents

1. Drawings and general provisions of Contract, including General Conditions, Supplemental Conditions and other Division 1 Specification Sections, apply to this Section.

B. Project Description

1. Scope of work includes but is not necessarily limited to the following. *The project includes demolition within and retrofit of a portion of existing commercial kitchen and office area. The retrofit area will house an extruder, a piece of food processing equipment used in research, and associated research spaces. Mechanical, electrical, and fire protection systems upgrades are included in the project. The project includes bid alternates, refer to section 01 2300.*

C. Site Information

1. *The Extruder Food Lab Project is located on Montana State University campus in Bozeman, Montana. The project renovates a portion of the Johnstone Center complex locate in Harrison Hall.*

D. Contracts

1. Contracts shall be under one General Contract and shall include, but not be limited to, all labor, materials, and supervision necessary to furnish and install the Work.

E. Work Sequence

1. The work will be conducted in One (1) phase to provide the least possible interference to the activities of the Owner's personnel and activities.
2. The Contractor will have access to Harrison Hall from the date of receipt of the contract.

F. Contractor Use of Premises

1. Work on this contract is expected to be done during regular working hours Monday through Friday. Any variation from this will require prior approval of the Consultant and Owner.
2. All work must be coordinated with MSU at all times and MSU must be informed about any work impacting campus operations 72 hours or 3 working days in advance of work being conducted and shall require MSU approval.
3. General: Limit use of the premises to construction activities in areas indicated; allow for Owner/MSU occupancy and use by the public. Confine operations to areas within contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
4. Contractor shall conduct all his work in such a manner as to minimize the inconvenience and disruption of MSU's daily schedule.
5. Confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed.

Conform to site rules and regulations affecting the work while engaged in project construction.

6. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials to the areas designated on the drawings. If additional storage is necessary, obtain and pay for such storage off-site.
7. Contractor shall establish a staging area for storage of materials and equipment.
8. The Contractor is to coordinate with MSU for the location of the job site trailer office.
9. Keep driveways and entrances serving the premises clear and available to MSU and MSU's employees, staff and visitors at all times, unless otherwise agreed by MSU. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

G. **Parking and Site Access** (*See also Supplemental Conditions of the Contract for Construction.*)

1. MSU Bozeman Vehicle Regulations state: "All students, faculty, staff, and visitors must register any motor vehicle they park on the University campus, for any reason. A visitor is anyone not defined as student, staff or faculty."
2. All Contractor and Contractor employees shall comply with Montana State University parking regulations. MSU parking permits can be purchased at the University Police Office located in the Huffman Building at Seventh Avenue and Kagy Boulevard. Violators of MSU Bozeman Vehicle Regulations may be ticketed and towed.
3. A maximum of three (3) Contractor Permits (or as agreed with MSU) will be made available to the Contractor for parking of essential vehicles within the designated parking lot (as designated on the Cover Sheet of the Contract Documents). Essential vehicles are vehicles used for delivery of equipment and tools required to be parked in close proximity to the construction area. All allowed vehicles only to be parked on hard surfaced areas within the Staging Area. All other Contractor and Contractor employee vehicles on campus shall be parked in designated parking lots to be agreed with MSU. No personal vehicles shall be parked at the project site in any event. If a driver of a vehicle not allowed to be parked at the project site must unload equipment, tools, or materials, the vehicle must be immediately thereafter move to a designated lot or leave campus.
4. Access and egress to and from the project site shall be directed by the MSU Project Manager at Pre-Construction Conference. In cases where a different route must be used for a specific purpose, permission must be obtained from MSU. Access routes are for delivery of equipment, tools, and materials and not for parking.
5. The site Staging Areas for materials and equipment are designated on the Cover Sheet of the Contract Documents. Staged materials and equipment must be secured on the ground surface or in trailers. Site staging areas shall be fenced in accordance with the Contract Documents. Vehicles in addition to those allowed to be parked may not be used for staging of equipment, tools, or materials.

H. **Owner Occupancy**

1. **Full Owner/MSU Occupancy:** The Owner/MSU will occupy the site during the entire construction period. Cooperate with MSU during construction operations to minimize conflicts and facilitate MSU usage. Perform the work so as not to interfere with MSU's operations.

I. Safety Requirements

1. General: The safety measures required by the Contract Documents are not meant to be inclusive. The Contractor shall be solely responsible for safety on a 24-hours-per-day, 7 days-per-week basis and shall take whatever additional measures are necessary to insure the health and safety of the buildings' occupants, or pedestrians at or near the construction site and access routes and of all other persons in all areas affected by the Contractor's activities. Prior to the start of construction, the Contractor is to submit to the Consultant, a detailed written plan specifying the safety procedures that will be followed. Include (but not by way of limitation) the following: Verbiage, size and locations of warning signs; construction sequence as related to safety; use of barricades (type and location); employee policies as related to safety; and delivery of materials as related to safety. Revise the safety plan as required during construction and resubmit to the Owner.
2. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
3. Comply with Federal, State, local, and the Owner's fire, health and safety requirements.
4. Advise MSU whenever work is expected to be hazardous or inconvenient (including objectionable odors) to MSU's employees, students, visitors or the building occupants.
5. Construction materials or equipment shall be placed so as not to endanger the work or prevent free access to all emergency devices or utility disconnects.
6. Maintain the proper rated fire extinguishers within easy access where power tools, sanding or other equipment is being used.
7. The Contractor shall erect and maintain, as required by law, conditions and progress of the work, warning signs, barricades and other reasonable safeguards for safety and protection.

J. Existing Premises Condition

1. The Contractor is responsible for adequately documenting in photos the existing condition of the premises, to include external road surfaces, curbing and landscaped areas, specifically the cleanliness of areas. Any damage to the premises which is found after construction and is not so documented will be the responsibility of the Contractor to repair or replace.

K. Discrepancies in the Documents

1. The Contractor shall bring any discrepancies between any portions of the drawings and specifications to the attention of the Owner and the Consultant in writing. The Owner and Consultant shall review the discrepancy and clarify the intent desired in the Contract Documents. Unless specifically directed otherwise, the Contractor shall be obligated to provide the greater quantity or quality without any change in contract sum or time.

END OF SECTION 011000

**SECTION 012000
PRICE AND PAYMENT PROCEDURES**

1.1 GENERAL

A. Related Documents

1. Drawings and general provisions of Contract, including General Conditions, Supplemental Conditions and other Division 1 Specification Sections, apply to this Section.

B. Summary

1. This Section specified administrative and procedural requirements governing the Contractor's Applications for Payment.
2. The Contractor's Construction Schedule and Submittal Schedule are included in Section "Submittals".

C. Schedule of Values

1. Coordinate preparation of the Schedule of Values, Form 100, with preparation of the Contractor's Construction Schedule.
2. Each prime Contractor shall coordinate preparation of its Schedule of Values for its part of the work with preparation of the Contractor's Construction Schedule.
3. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
 - a. Contractor's construction schedule
 - b. Application for Payment form
 - c. List of subcontractors
 - d. Schedule of allowances
 - e. Schedule of alternates
 - f. List of products
 - g. List of principal suppliers and fabricators
 - h. Schedule of submittals
 - i. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than seven (7) days before the date scheduled for submittal of the initial Application for Payment.
 - j. Sub-Schedules: Where the work is separated into phases that require separately phased payments, provide sub-schedules showing values correlated with each phase of payment.
4. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.
 - a. Identification: Include the following project identification on the Schedule of Values:
 - 1) Project name
 - 2) Name of the Architect
 - 3) Project number (PPA No.)
 - 4) Contractor's name and address
 - 5) Date of submittal

- b. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
 - 1) Generic name
 - 2) Related specification section
 - 3) Name of subcontractor
 - 4) Name of manufacturer or fabricator
 - 5) Name of supplier
 - 6) Change Orders (numbers) that have affected value
 - 7) Dollar value
 - a) Percentage of Contract Sum in the nearest one-hundredth percent, adjusted to total 100%
 - c. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.
 - d. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
 - e. For each part of the work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that art of the work.
5. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of general overhead and profit margin.
- a. At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.
6. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum.

D. Applications for Payment

1. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
2. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
3. Payment Application Forms: Use Montana Form 101 as the form for Application for Payment.
4. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action.

- a. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
 - b. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
5. Transmittal: Submit one (1) executed copy of each Application for Payment to the Architect by means ensuring receipt within 24 hours, including waivers of lien and similar attachments, when required.
- a. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.
6. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
- a. List of subcontractors
 - b. Schedule of Values
 - 1) Contractor's Construction Schedule (preliminary if not final)
 - c. Copies of building permits
 - 1) Copies of authorizations and licenses from governing authorities for performance of the work
 - d. Certificates of insurance and insurance policies (submitted with Contract)
 - e. Performance and payment bonds (submitted with Contract if required)
7. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the work.
8. Administrative actions and submittals that shall proceed or coincide with this application include:
- a. Occupancy permits and similar approvals
 - b. Warranties (guarantees) and maintenance agreements
 - c. Test/adjust/balance records
 - d. Maintenance instructions
 - e. Meter readings
 - f. Start-up performance reports
 - 1) Change-over information related to Owner's occupancy, use, operation and maintenance.
 - g. Final cleaning
 - 1) Application for reduction of retainage, and consent of surety

9. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final Application for Payment include the following:
- a. Completion of project closeout requirements
 - 1) Completion of items specified for completion after Substantial Completion
 - b. Assurance that unsettled claims will be settled
 - 1) Assurance that work not complete and accepted will be completed without undue delay
 - 2) Transmittal of required project construction records to Owner

END OF SECTION 01200

**SECTION 012300
ALTERNATES**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental Conditions and other Division 1 Specification Sections, apply to this section. See also *Instructions to Bidders 10.3 Award of Bids*.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. **Alternate No. 1** - ADD: Handwash Sink and associated casework, finishes, and accessories in Analytical Lab 132B.
1. Provide and install handwash sink and eyewash station as shown in the drawings and specifications. Please note: Plumbing rough-in for these items shall be included in the base bid.
 2. Provide and install sink base and countertop as shown in the drawings and specifications.
 3. Provide and install fiber reinforced plastic (FRP) panels at the new framed wall behind the handwash sink per the drawings and specifications. Please note: The framed wall behind the handwash sink and associated gypsum wall board finish shall be included in the base bid.
 4. Provide and install peg board drying rack, paper towel dispenser, and soap dispenser per the drawings and specifications.
- B. **Alternate No. 2** - ADD: Casework in Food Prep Area 132C.
1. Provide and install base cabinets, upper cabinets and countertop as shown in the drawings and specifications.

END OF SECTION

**SECTION 012500
SUBSTITUTION PROCEDURES**

PART 1 - GENERAL

- A. Related Documents
 - 1. Drawings and general provisions of Contract, including General Conditions, Supplemental Conditions and *Instructions to Bidders*.

- B. Substitution Procedures
 - 1. Substitutions include changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by the Contractor.
 - 2. Substitution Requests: Submit three copies of each request on MSU Substitution Request Form 099 for each consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - a. Submit requests in accordance with *Instructions to Bidders*.
 - b. Identify product to be replaced and show compliance with requirements for substitutions. Include a detailed comparison of significant qualities of proposed substitution with those of the Work specified, a list of changes needed to other parts of the Work required to accommodate proposed substitution, and any proposed changes in the Contract Sum or the Contract Time should the substitution be accepted.

- C. Architect will review proposed substitutions and notify Contractor of their acceptance or rejection. If necessary, Architect will request additional information or documentation of evaluation.
 - 1. Architect will notify Contractor of acceptance or rejection of proposed substitution within 10 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

- D. Do not submit unapproved substitutions on Shop Drawings or other submittals.

END OF SECTION 012500

SECTION 013000

SUBMITTALS

1.1 GENERAL

A. Related Documents

1. Drawings and general provisions of Contract, including General Conditions, Supplemental Conditions and other Division 1 Specification Sections, apply to this Section.

B. Summary

1. This Section specifies administrative and procedural requirements for submittals required for performance of the work, including:
 - a. Contractor's construction schedule
 - b. Submittal schedule
 - c. Daily construction reports
 - d. Shop Drawings
 - e. Product data
 - f. Samples

Note: All Submittals are to be both print and electronic.

2. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
 - a. Permits
 - b. Applications for Payment
 - c. Performance and payment bonds
 - d. Insurance certificates
 - e. List of Subcontractors

3. The Schedule of Values submitted is included in Section "Applications for Payment".
4. Inspection and test reports are included in Section "Quality Requirements".
5. Unless otherwise instructed by the Owner all submittals shall be directed to Architect/Engineer Consultant of Record. The Contractor's construction schedule, submittal schedule and daily construction reports shall be directed to the Consultant's representative, the State of Montana's representative and MSU's representative. Shop drawings, product data and samples shall be directed to the Consultant's representative.

C. Submittal Procedures

1. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - a. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

- b. Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - 1) The Consultant reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
 - c. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
 - 1) Allow two (2) weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Consultant will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
 - 2) If an intermediate submittal is necessary, process the same as the initial submittal.
 - 3) Allow two (2) weeks for reprocessing each submittal.
 - 4) No extension of contract time will be authorized because of failure to transmit submittals to the Consultant sufficiently in advance of the work to permit processing.
2. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
- a. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 - b. Include the following information on the label for processing and recording action taken.
 - 1) Project name and PPA Number
 - 2) Date
 - 3) Name and address of Consultant
 - 4) Name and address of Contractor
 - 5) Name and address of Subcontractor
 - 6) Name and address of supplier
 - 7) Name of manufacturer
 - a) Number and title of appropriate Specification Section
 - b) Drawing number and detail references, as appropriate
3. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Consultant using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
- a. On the transmittal record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include

Contractor's certification that information complies with Contract Documents requirements.

- b. Transmittal Form: Contractor's standard form.

D. Contractor's Construction Schedule

1. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit both in print and electronically within thirty (30) days of the date established for "Commencement of the Work".
 - a. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the work as indicated in the "Schedule of Values".
 - b. Within each time bar indicate estimated completion percentage in 10 percent increments. As work progresses, place a contrasting mark in each bar to indicate actual completion.
 - c. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.
 - d. Secure time commitments for performing critical elements of the work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the work.
 - e. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other schedules.
 - f. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Consultant's procedures necessary for certification of Substantial Completion.
2. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.
3. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the work. Indicate where each element in an area must be sequenced or integrated with other activities.
4. Cost Correlation: At the head of the schedule, provide a two (2) item cost correlation line, indicating "pre-calculated" and "actual" costs. On the line show dollar-volume of work performed as of the dates used for preparation of payment requests.
 - a. Refer to Section "Price and Payment Procedures" for cost reporting and payment procedures.
5. Distribution: Following response to the initial submittal, print and distribute copies to the Consultant, Owner, subcontractors, and other parties required to comply with scheduled dates. Transmit electronically and post copies in the project meeting room and temporary field office.
 - a. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have

completed their assigned portion of the work and are no longer involved in construction activities.

6. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule electronically and in print concurrently with report of each meeting.

E. Submittal Schedule

1. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within ten (10) days of the date required for establishment of the Contractor's construction schedule.
 - a. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products, as well as the Contractor's construction schedule.
 - b. Prepare the schedule in chronological order; include submittals required during the first thirty (30) or sixty (60) days of construction. Provide the following information:
 - 1) Scheduled date for the first submittal
 - 2) Related section number
 - 3) Submittal category
 - 4) Name of subcontractor
 - 5) Description of the part of the work covered
 - 6) Scheduled date for resubmittal
 - a) Scheduled date the Consultant's final release or approval
2. Distribution: Following response to initial submittal, print and distribute copies to the Consultant, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the project meeting room and field office.
 - a. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the work and are no longer involved in construction activities.
3. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

F. Daily Construction Reports

1. Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Consultant at weekly intervals:
 - a. List of subcontractors at the site
 - b. Approximate count of personnel at the site
 - c. High and low temperatures, general weather conditions
 - d. Accidents and unusual events
 - e. Meetings and significant decisions

- f. Stoppages, delays, shortages, losses
- g. Meter readings and similar recordings
- h. Emergency procedures
- i. Orders and requests of governing authorities
- j. Change Orders received, implemented
- k. Services connected, disconnected
- l. Equipment or system tests and start-ups
- m. Partial completions, occupancies
- n. Substantial Completions authorized

G. Shop Drawings

1. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the project is not considered Shop Drawings.
2. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings. Include the following information:
 - a. Dimensions
 - b. Identification of products and materials included
 - c. Compliance with specified standards
 - d. Notation of coordination requirements
 - e. Notation of dimensions established by field measurement
 - f. Sheet Size: Except for templates, patterns and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2" x 11", but no larger than 36" x 48".
 - g. Submittal: Submit electronically and in print for the Consultant's review; Consultant's comments will be returned electronically.
 - 1) One (1) of the prints returned shall be marked-up and maintained as a "Record Document".
 - k. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.
3. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.
 - a. Preparation of coordination drawings is specified in section "Project Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.
 - b. Submit coordination drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

H. Product Data

1. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's

installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings".

- a. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
 - 1) Manufacturer's printed recommendations
 - a) Compliance with recognized trade association standards
 - b) Compliance with recognized testing agency standards
 - 2) Application of testing agency labels and seals
 - a) Notation of dimensions verified by field measurement
 - 3) Notation of coordination requirements
- b. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
- c. Preliminary Submittal: Submit a preliminary single-copy of Product Data where selection of options is required.
- d. Submittals: Submit two (2) copies of each required submittal; submit four (4) copies where required for maintenance manuals. The Consultant will retain one (1), and will return the other marked with action taken and corrections or modifications required.
 - 1) Unless non-compliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
- e. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - 1) Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.
 - 2) Do not permit use of unmarked copies of Product Data in connection with construction.

I. Samples

1. Submit full-size, fully fabricated samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
 - a. Mount, display, or package samples in the manner specified to facilitate review of qualities indicated. Prepare samples to match the Consultant's sample. Include the following:
 - 1) Generic description of the sample
 - 2) Sample source
 - 3) Product name or name of manufacturer

- 4) Compliance with recognized standards
 - 5) Availability and delivery time
2. Submit samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Where variation in color, pattern, texture, or other characteristics are inherent in the material or product represented, submit multiple units (not less than three (3), that show approximate limits of the variations.
 - b. Refer to other specification sections for requirements for samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
 - c. Refer to other sections for samples to be returned to the Contractor for incorporation in the work. Such samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of sample submittals.
 3. Preliminary Submittals: Where samples are for selection of color, pattern, texture, or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.
 - a. Preliminary submittals will be reviewed and returned with the Consultant's mark indicating selection and other action.
 4. Submittals: Except for samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit three (3) sets; one (1) will be returned marked with the action taken.
 - a. Maintain sets of samples, as returned, at the project site, for quality comparisons throughout the course of construction.
 - 1) Unless non-compliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - 2) Sample sets may be used to obtain final acceptance of the construction associated with each set.
 5. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the work. Show distribution on transmittal forms.
 - a. Field samples specified in individual sections are special types of samples. Field samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the work will be judged.
 - 1) Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

J. Consultant's Action

1. Except for submittals for record, information, or similar purposes, where action and return is required or requested, the Consultant will review each submittal, mark to indicate action taken, and return promptly. Compliance with specified characteristics is the Contractor's responsibility.
2. Action Stamp: The Consultant will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
 - a. Final-But-Restricted Release: When submittals are marked "Make Corrections Noted", that part of the work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
 - b. Returned for Resubmittal: When submittal is marked "Revise and Resubmit", do not proceed with that part of the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - 1) Do not permit submittals marked "Revise and Resubmit" to be used at the project site, or elsewhere where work is in progress.
 - c. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action not Required".

END OF SECTION 013000

SECTION 013100
PROJECT COORDINATION

1.1 GENERAL

- A. Related Documents
 - 1. Drawings and general provisions of Contract, including General Conditions and Supplemental Conditions and other Division 1 Specification Sections, apply to this Section.

- B. Summary
 - 1. This section specifies administrative and supervisor requirements necessary for project coordination including, but not necessarily limited to:
 - a. Coordination
 - b. Administrative and supervisory personnel
 - c. General installation provisions
 - d. Cleaning and protection
 - 2. Field Engineering is included in Section "Field Engineering".
 - 3. Progress meetings, coordination meetings and pre-installation conferences are included in Section "Project Meetings".
 - 4. Requirements for Contractor's Construction Schedule are included in Section "Submittals".

- C. Coordination
 - 1. Coordination: Coordinate construction activities included under various sections of these specifications to assure efficient and orderly installation of each part of the work. Coordinate construction operations included under different sections of the specifications that are dependent upon each other for proper installation, connection, and operation.
 - a. Provide access to work at all times for inspections by Owner and authorized representatives.
 - b. Provide safe working conditions and protection of completed work.
 - c. Provide barricades and signs.
 - d. Where installation of one part of the work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 - e. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
 - f. Make adequate provisions to accommodate items scheduled for later installation.
 - g. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1) Prepare similar memoranda for the Owner and separate Contractors where coordination of their work is required.
 - 2. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the work. Such administrative activities include, but are not limited to, the following:

- a. Notify Facilities Services or Campus Planning, Design and Construction of any expected disruptions in service or changes in construction schedule at least 72 hours (3 working days) in advance.
 - b. Preparation of schedules.
 - c. Installation and removal of temporary facilities.
 - d. Delivery and processing of submittals.
 - e. Progress meetings.
 - f. Project close-out activities.
3. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
- a. Salvage materials and equipment involved in performance of, but not actually incorporated in, the work. Refer to other sections for disposition of salvaged materials that are designated as Owner's property.
- D. Submittals
- 1. Coordinated Drawings: Prepare and submit coordination drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.
 - a. Show the interrelationship of components shown on separate shop drawings.
 - b. Indicate required installation sequences.
 - c. Comply with requirements contained in Section "Submittals".
 - d. Section "Basic Electrical Requirements" for specific coordination drawing requirements for mechanical and electrical installations.
 - 2. Staff Names: Within 15 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers. Post copies of the list in the project meeting room, the temporary field office, and each temporary telephone.

1.2 PROJECT MEETINGS

- A. Related Documents
- 1. Drawings and general provisions of the Contract, including General and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Summary
- 1. This section specifies administrative and procedural requirements for project meetings including but not limited to:
 - a. Pre-construction conference
 - b. Pre-installment conferences
 - c. Coordination meetings
 - d. Progress meetings
- C. Pre-construction Conference
- 1. Schedule a pre-construction conference and organizational meeting.
 - a. Hold meeting at the project site or other convenient location and prior to commencement of construction activities, including the moving of

equipment on to the site. Conduct the meeting to review responsibilities and personnel assignments.

2. Attendees: The Owner, Consultant and their consultants, the Contractor and its superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the work. Both the Contractor and the Contractor's job foremen shall attend the meeting, along with all subcontractors.
3. Agenda: Discuss items of significance that could affect progress including such topics as:
 - a. Tentative construction schedule
 - b. Critical work sequencing
 - c. Designation of responsible personnel
 - d. Procedures for processing field decisions and Change Orders
 - e. Procedures for processing Applications for Payment
 - f. Distribution of Contract Documents
 - g. Submittal of Shop Drawings, Product Data and Samples
 - h. Preparation of record documents
 - i. Use of the premises
 - j. Office, work and storage areas
 - k. Equipment deliveries and priorities
 - l. Safety procedures
 - m. First aid
 - n. Security
 - o. Housekeeping
 - p. Working hours

D. Pre-Installation Conferences

1. Conduct a pre-installation conference at the site before each construction activity that requires coordination with other construction. The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Consultant of scheduled meeting dates.
2. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for:
 - a. Contract Documents
 - b. Options
 - c. Related Change Orders
 - d. Purchases
 - e. Deliveries
 - f. Shop Drawings, Product Data and quality control samples
 - g. Possible conflicts
 - h. Compatibility problems
 - i. Time schedules
 - j. Weather limitations
 - k. Manufacturer's recommendations
 - l. Compatibility of materials
 - m. Acceptability of substrates
 - n. Temporary facilities
 - o. Space and access limitations
 - p. Governing regulations

- q. Safety
 - r. Inspection and testing requirements
 - s. Required performance results
 - t. Recording requirements
 - u. Protection
3. The Consultant will record significant discussions and agreements and disagreements of each conference, along with the approved schedule. Distribute the record of the meeting to everyone concerned, promptly, including the Owner and Consultant.
 4. Do not proceed if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of work and reconvene the conference at the earliest feasible date.
- E. Coordination Meeting
1. Conduct project coordination meetings at regularly scheduled times convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special pre-installation meetings.
 2. Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.
 3. The Consultant will record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.
- F. Progress Meetings
1. Conduct progress meetings at the project site at regularly scheduled intervals. Coordinate with the Owner and Consultant of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.
 2. Attendees: In addition to representatives of the Owner and Consultant, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the project and authorized to conclude matters relating to progress.
 3. Agenda: Visit job site to raise specific pending issues prior to meeting. Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the contract time.
 - b. Review the present and future needs of each entity present, including such items as:
 - 1) Interface requirements
 - 2) Time
 - 3) Sequences
 - 4) Deliveries
 - 5) Off-site fabrication problems
 - 6) Access
 - 7) Site utilization

- 8) Temporary facilities and services
 - 9) Hours of work
 - 10) Hazards and risks
 - 11) Housekeeping
 - 12) Quality and work standards
 - 13) Change Orders
 - 14) Documentation of information for payment requests
4. Reporting: The Consultant shall distribute printed and electronic copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
- a. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

1.3 PRODUCTS (NOT APPLICABLE)

1.4 EXECUTION

A. General Installation Provisions

1. Inspection of Conditions: Require the installer of each major component to inspect both the substrate and conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
2. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
3. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
4. Provide attachment and connection devices and methods necessary for securing work. Secure work true to line and level. Allow for expansion and building movement.
5. Visual Effects: Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to the Consultant for final decision.
6. Recheck measurements, quantities and dimensions, before starting each installation.
7. Install each component during weather conditions and project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
8. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
9. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated and in compliance with accessibility requirements. Refer questionable mounting height decisions to the Consultant for final decision.

B. Cleaning and Protection

1. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

2. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
3. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
 - a. Excessive static or dynamic loading
 - b. Excessive internal or external pressures
 - c. Excessively high or low temperatures
 - d. Thermal shock
 - e. Excessively high or low humidity
 - f. Air contamination or pollution
 - g. Water or ice
 - h. Solvents
 - i. Chemicals
 - j. Light
 - k. Radiation
 - l. Puncture
 - m. Abrasion
 - n. Heavy traffic
 - o. Soiling, staining and corrosion
 - p. Bacteria
 - q. Rodent and insect infestation
 - r. Combustion
 - s. Electrical current
 - t. High speed operation
 - u. Improper lubrication
 - v. Unusual wear or other misuse
 - w. Contact between incompatible materials
 - x. Destructive testing
 - y. Misalignment
 - z. Excessive weathering
 - aa. Unprotected storage
 - ab. Improper shipping or handling
 - ac. Theft
 - ad. Vandalism

END OF SECTION 013100

SECTION 014000
QUALITY REQUIREMENTS

1.1 GENERAL

A. RELATED DOCUMENTS

1. Drawings and general provisions of Contract, including General Conditions, Supplemental Conditions and other Division-1 Specification Sections, apply to this Section.

B. SUMMARY

1. This Section specifies administrative and procedural requirements for quality control services.
2. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Architect.
3. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
4. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - a. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
 - b. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - c. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. RESPONSIBILITIES

1. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity; these services include those
 - a. Services specified to be performed by an independent agency and not by the Contractor. Costs for these services shall be included in the Contract Sum.
 - b. The Contractor shall employ and pay an independent agency, to perform specified quality control services.
 - c. The Owner will engage and pay for the services of an independent agency

to perform inspections and tests specified as the Owner's responsibility. Payment for these services will be made by the Owner.

- d. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the Owner.
2. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services provide unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
 - a. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
 3. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Associated services required include but are not limited to:
 - a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 - b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
 - c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
 - d. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
 - e. Security and protection of samples and test equipment at the Project site.
 4. Owner Responsibilities: The Owner will provide inspections, tests and similar quality control services specified to be performed by independent agencies and not by the Contractor, except where they are specifically indicated as the Contractor's responsibility or are provided by another identified entity. Costs for these services are not included in the Contract Sum.
 - a. The Owner will employ and pay for the services of an independent agency, testing laboratory or other qualified firm to perform services which are the Owner's responsibility.
 5. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Architect and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.
 - a. The agency shall notify the Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

- b. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
 - c. The agency shall not perform any duties of the Contractor.
6. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

D. SUBMITTALS

- 1. The independent testing agency shall submit a certified written report and electronic copy of each inspection, test or similar service, to the Architect, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible for the service, submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate.
 - a. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
 - b. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
 - 1) Date of issue
 - 2) Project title and number
 - 3) Name, address and telephone number of testing agency
 - 4) Dates and locations of samples and tests or inspections
 - 5) Names of individuals making the inspection or test
 - 6) Designation of the Work and test method
 - 7) Identification of product and Specification Section
 - 8) Complete inspection or test data
 - 9) Test results and in interpretations of test results
 - 10) Ambient conditions at the time of sample-taking and testing
 - 11) Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements
 - 12) Name and signature of laboratory inspector
 - 13) Recommendations on retesting

E. QUALITY ASSURANCE

- 1. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
- 2. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State of Montana.

1.2 PRODUCTS (NOT APPLICABLE)

1.3 EXECUTION

A. GENERAL

1. Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes.
2. Protect construction exposed by or for quality control service activities, and protect repaired construction.
3. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION 014000

SECTION 015000
TEMPORARY FACILITIES AND UTILITIES

1.1 GENERAL

A. RELATED DOCUMENTS

1. Drawings and general provisions of the Contract, including General Conditions and Supplemental Conditions and other Division-1 Specification Sections, apply to this Section.

B. SUMMARY

1. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.
2. Temporary utilities required may include but are not limited to:
 - a. Telephone service
 - b. Electric Service
 - c. Water
 - d. Natural gas
 - e. Sewer
3. Temporary construction and support facilities required may include but are not limited to:
 - a. Field offices and storage sheds.
 - b. Sanitary facilities, including drinking water
 - c. Temporary Project identification signs and bulletin boards
 - d. Waste Disposal services
 - e. Construction aids and miscellaneous services and facilities
4. Security and protection facilities required include but are not limited to:
 - a. Temporary Security Fencing
 - b. Temporary fire protection
 - b. Barricades, warning signs, lights
 - c. Environmental protection

C. QUALITY ASSURANCE

1. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:
 - a. Building Code requirements
 - b. Health and safety regulations
 - c. Utility company regulations
 - d. Police, Fire Department and Rescue Squad rules
 - e. Environmental protection regulations
2. Standards: Comply with NFPA Code 241, "Building Construction and

Demolition Operations" and ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition".

D. PROJECT CONDITIONS

1. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

1.2 PRODUCTS

A. MATERIALS

1. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
2. Water: Provide potable water approved by local health authorities.
3. Open-Mesh Fencing: Provide 11-gage, galvanized 2-inch, chain link fabric fencing 6-feet high with galvanized barbed wire top strand and galvanized steel pipe posts, 1 1/2" I.D. for line posts and 2-1/2" I.D. for corner posts.

B. EQUIPMENT

1. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
2. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.
3. Electrical Outlets: Provide properly configured NEA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.
4. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.
5. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.
6. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.
7. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent

material.

9. First Aid Supplies: Comply with governing regulations.
10. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
 - a. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

1.3 EXECUTION

A. INSTALLATION

1. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work and Owner's operations. Relocate and modify facilities as required.
2. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

B. TEMPORARY UTILITIES

1. Temporary Telephones: Provide temporary telephone service for all personnel engaged in construction activities, throughout the construction period. Provide cellular telephone, operational and on site at all times.

C. TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

1. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access and minimal interruption to Owner's operations.
 - a. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
2. Field Offices: The Contractor, at his option, shall provide insulated, weather tight temporary offices of sufficient size to accommodate required office personnel at the Project site. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as follows:
 - a. Furnish with a desk and chairs, a 4-drawer file cabinet, plan table and plan rack and a 6-shelf bookcase.
 - b. Equip with a water cooler and private toilet complete with water closet, lavatory and mirror-medicine cabinet unit.
3. Storage and Fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved,

including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on the site.

4. Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
 - a. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. Provide covered waste containers for used material.
5. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
6. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.
 - a. Provide safety showers, eye-wash fountains and similar facilities for convenience, safety and sanitation of personnel.
7. Drinking Water Facilities: Provide containerized tap-dispenser bottled-water type drinking water units, including paper supply.
 - a. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F (7 to 13 deg C).
8. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg. F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner. Do not use University trash containers for any reason.

D. SECURITY AND PROTECTION FACILITIES INSTALLATION

1. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
 - (a) Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
3. Open-Mesh Fencing: Provide 11-gage, galvanized 2-inch, chain link fabric fencing 6-feet high with galvanized barbed wire top strand and galvanized steel

pipe posts, 1 1/2" I.D. for line posts and 2-1/2" I.D. for corner posts.

4. Barricades, Warning Signs and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
5. Do not remove temporary security and protection facilities until Substantial Completion, or longer as requested by the Architect.
6. Temporary Fire Protection: Install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."
 - a. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 - b. Store combustible materials in containers in fire-safe locations.
 - c. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
 - d. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
7. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

E. OPERATION, TERMINATION AND REMOVAL

1. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
2. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
3. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
 - a. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.

END OF SECTION 015000

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplemental Conditions and Division 1 Specification Sections, apply to this section.

1.2 SECTION REQUIREMENTS

- A. Provide products of same kind from a single source. The term "product" includes the terms "material," "equipment," "system," and similar terms.
- B. Deliver, store, and handle products according to manufacturer's written instructions, using means and methods that will prevent damage, deterioration, and loss, including theft.
 - 1. Inspect products at time of delivery for compliance with the Contract Documents and to ensure items are undamaged and properly protected.
- C. Product Substitutions: Reasonable and timely requests for substitutions will be considered. Substitutions include products and methods of construction differing from that required by the Contract Documents and proposed by Contractor after award of Contract. Substitutions only allowed for products when more than one manufacturer is indicated.
 - 1. Submit two (2) copies of each request for product substitution. Identify product to be replaced and provide complete documentation showing compliance of proposed substitution with applicable requirements. Include a full comparison with the specified product, a list of changes to other Work required to accommodate the substitution, and any proposed changes in Contract Sum or Contract Time should the substitution be accepted.
 - 2. Submit requests for product substitution in time to permit processing of request and subsequent Submittals, if any, sufficiently in advance of when materials are required in the Work. Do not submit unapproved substitutions on Shop Drawings or other submittals.
 - 3. Owner will review the proposed substitution and notify Contractor of its acceptance or rejection.

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

- A. Provide products that comply with the Contract Documents, are undamaged, and are new at the time of installation.
 - 1. Provide products complete with accessories, trim, finish, and other devices and components needed for a complete installation and the intended use and effect.

B. Select products as follows:

1. Where only a single product or manufacturer is named, provide the item indicated. No substitutions will be permitted.
2. Where two or more products or manufacturers are named, provide one of the items indicated. No substitutions will be permitted.
3. Where products or manufacturers are specified by name, accompanied by the term "or equal," provide the named item or comply with provisions concerning "product substitutions" to obtain approval for use of an unnamed product or manufacturer.
4. Where a product is described with required characteristics, with or without naming a brand or trademark, provide a product that complies with those characteristics and other Contract requirements.
5. Where compliance with performance requirements is specified, provide products that comply and are recommended in writing by the manufacturer for the application.
6. Where compliance with codes, regulations, or standards, is specified, select a product that complies with the codes, regulations, or standards referenced.

C. Unless otherwise indicated, Owner will select color, pattern, and texture of each product from manufacturer's full range of options.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 60 00

SECTION 173000 EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

1. Drawings and general provisions of Contract, including General Conditions, Supplemental Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Installation of the Work.
3. Cutting and patching.
4. Coordination of Owner-installed products.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.
8. Correction of the Work.

- B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.

1.3 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Consultant of locations and details of cutting and await directions from Consultant before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or those results in increased maintenance or decreased operational life or safety.
3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Consultant's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
 - 1. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Consultant for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a written and email request for information to Consultant.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings. If discrepancies are discovered, promptly notify Consultant by email and in writing.
 - 1. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 2. Inform installers of lines and levels to which they must comply.
 - 3. Check the location, level and plumb, of every major element as the Work progresses.
 - 4. Notify Consultant when deviations from required lines and levels exceed allowable tolerances.
- B. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Consultant.

3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Consultant, and in compliance with accessibility requirements.
 2. Allow for building movement, including thermal expansion and contraction.
 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond- core drill.
 4. Proceed with patching after construction operations requiring cutting are complete.
- F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste.
 4. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
1. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- H. Clean and provide maintenance on completed construction as frequently as necessary through

the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

- I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

**SECTION 017320
WASTE MANAGEMENT**

PART 1 - GENERAL

1.1 WASTE MANAGEMENT REQUIREMENTS

Owner requires that this project generate the least amount of trash and waste possible. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration and shall be recycled:

Aluminum and plastic beverage containers.

Corrugated cardboard.

Wood pallets.

Clean dimensional wood: May be used as blocking or furring.

Land clearing debris, including brush, branches, logs, and stumps.

Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.

Methods of trash/waste disposal that are **not** acceptable are:

Burning on the project site.

Burying on the project site.

Dumping or burying on other property, public or private.

Other illegal dumping or burying.

Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, State and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.2 DEFINITIONS

Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

Non-hazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

Return: To give back reusable items or unused products to vendors for credit.

**SECTION 017320
WASTE MANAGEMENT**

Reuse: To reuse a construction waste material in some manner on the project site.

Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

Toxic: Poisonous to humans either immediately or after a long period of exposure.

Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

1.3 WASTE MANAGEMENT PLAN IMPLEMENTATION

Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and the Architect.

Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

Meetings: Discuss trash/waste management goals and issues at project meetings, including the Pre-bid meeting, Pre-construction meeting and regular job-site meetings.

Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.

As a minimum, provide:

Separate area for storage of materials to be reused on-site, such as wood cut-offs for blocking.

Separate dumpsters for each category of recyclable.

Recycling bins at worker lunch area.

Provide containers as required.

Provide adequate space for pick-up and delivery and convenience to subcontractors.

Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION 017320

**SECTION 017400
WARRANTIES AND BONDS**

1.1 GENERAL

A. RELATED DOCUMENTS

1. Drawings and general provisions of Contract, including General and Supplemental Conditions and other Division-1 Specification Sections, apply to this Section.

B. SUMMARY

1. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers standard warranties on products and special warranties.
 - a. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
 - b. General closeout requirements are included in Section "Project Closeout."
 - c. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions-2 through -16.
 - d. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
2. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

C. DEFINITIONS

1. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
2. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

D. WARRANTY REQUIREMENTS

1. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
2. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
3. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with

requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefitted from use of the Work through a portion of its anticipated useful service life.

4. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - a. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
5. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

E. SUBMITTALS

1. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
 - a. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within fifteen days of completion of that designated portion of the Work.
2. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate items and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.
 - a. Refer to individual Sections of Divisions-2 through -16 for specific content requirements, and particular requirements for submittal of special warranties.
3. Forms of Submittal: At Final Completion compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
1. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
 - a. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a

typed description of the product or installation, including the name or the product, and the name, address and telephone number of the installer.

- b. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS, the Project title or name, and the name of the Contractor.

2. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.2 PRODUCTS (NOT APPLICABLE)

1.3 EXECUTION

A. SCHEDULE OF WARRANTIES

1. Schedule: Provide warranties and bonds on products and installations as specified in the appropriate Sections.

END OF SECTION 017400

**SECTION 017700
PROJECT CLOSEOUT**

1.1 GENERAL

A. RELATED DOCUMENTS

1. Drawings and general provisions of Contract, including General and Supplemental Conditions and other Division-1 Specification Sections, apply to this Section.

B. SUMMARY

1. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - a. Inspection procedures
 - b. Project record document submittal
 - c. Operating and maintenance manual submittal
 - d. Submittal of warranties
 - e. Final cleaning
 - f. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions - 2 through - 33.

C. SUBSTANTIAL COMPLETION

1. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - a. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - 1) If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - b. Advise Owner of pending insurance change-over requirements.
 - c. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 - d. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 - e. See the *Supplemental Conditions of the Contract for Construction* 3.11 for Documentation and As-Built Conditions, and the *Project Closeout Checklist: Contractor Requirements*. Submit maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.
 - f. Deliver tools, spare parts, extra stock, and similar items.
 - h. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
 - i. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

2. Inspection Procedures: On receipt of a request for inspection, the Consultant will either proceed with inspection or advise the Contractor of unfilled requirements. The Consultant will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
 - a. The Consultant will repeat inspection when requested and assured that the Work has been substantially completed.
 - b. Results of the completed inspection will form the basis of requirements for final inspection.

D. FINAL ACCEPTANCE

1. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
 - a. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - b. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 - c. Submit a certified copy of the Consultant's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Consultant.
 - e. Submit consent of surety to final payment.
 - f. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
2. Re-inspection Procedure: The Consultant will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Consultant.
 - a. Upon completion of re-inspection, the Consultant will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
 - b. If necessary, re-inspection will be repeated.

E. RECORD DOCUMENT SUBMITTALS

1. **See also the *Supplemental Conditions of the Contract for Construction 3.11 for Documentation and As-Built Conditions, and the Project Closeout Checklist: Contractor Requirements.***
2. General: Do not use record documents (red-line markups) for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Consultant's reference during normal working hours.
3. Record Drawings (Red-lined): Maintain two clean, undamaged sets of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the sets to show the red-line changes during the course of construction with actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the

corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

- a. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
 - b. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
 - c. Note related Change Order numbers where applicable.
 - d. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
4. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.
- a. Upon completion of the Work, submit record Specifications to the Consultant for the Owner's records.
5. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark up of record drawings and Specifications.
- a. Upon completion of mark-up, submit (3) complete sets of record Product Data to the Consultant for the Owner's records.
6. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Consultant and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area
7. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Consultant for the Owner's records.
8. Maintenance Manuals: Provide one (1) draft copy for review. Provide **one (1)** final paper copy and one electronic pdf file prior to final completion. Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 3-inch, 3 ring vinyl-covered binders **MSU will supply specific binders. Contact CPDC at 406/994-5413.** Mark appropriate identification on front and spine of each binder. Include the following types of information; and others as specified in other Divisions:
- a. Emergency instructions
 - b. Spare parts list
 - c. Copies of warranties
 - d. Wiring diagrams

- e. Recommended "turn around" cycles
- f. Inspection procedures
- g. Shop Drawings and Product Data
- h. Fixture lamping schedule
- i. List of final color and material selections

F. WARRANTIES AND BONDS

1. SUMMARY

- a. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.
 - 1) Refer to the General Conditions and Supplemental Conditions for terms of the Contractor's special warranty of workmanship and materials.
 - 2) General closeout requirements are included in Section "Project Closeout."
 - 3) Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions-2 through -16.
 - 4) Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.
- C. Separate Prime Contracts: Each prime Contractor is responsible for warranties related to its own Contract.

2. DEFINITIONS

- a. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- b. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

3. WARRANTY REQUIREMENTS

- a. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- b. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- c. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is

responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefitted from use of the Work through a portion of its anticipated useful service life.

- d. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1) Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- e. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

4. SUBMITTALS

- a. Submit written warranties to the Consultant prior to the date certified for Substantial Completion. If the Consultant's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Consultant.
 - 1) When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Consultant within fifteen days of completion of that designated portion of the Work.
- b. Forms of Submittal: At Final Completion compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- c. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
 - 1) Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name or the product, and the name, address and telephone number of the installer.
 - 2) Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS, the Project title or name, and the name of the Contractor.
- e. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.2 EXECUTION

A. CLOSEOUT PROCEDURES

1. Functional Demonstration: Demonstrate proper operation of all systems to Consultants and Owners representative prior to request for substantial completion. Coordinate schedule with Consultant.
2. Operating and Maintenance Instructions: Provide two (2) duplicate training sessions for each MSU trade group responsible for systems installed under this project. Coordinate schedule with Owner. Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:
 - a. Maintenance manuals
 - b. Record documents
 - c. Spare parts and materials
 - d. Tools
 - e. Lubricants
 - f. Fuels
 - g. Identification systems
 - h. Control sequences
 - i. Hazards
 - j. Cleaning
 - k. Warranties and bonds
 - 1) Maintenance agreements and similar continuing commitments

END OF SECTION 017700

SECTION 017823
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 A.RELATED DOCUMENTS

- A. General provisions of Contract, including General and Supplemental Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Operation manuals for systems, subsystems, and equipment.
3. Product maintenance manuals.
4. Systems and equipment maintenance manuals.

1.3 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

- B. Format: Submit operations and maintenance manuals in the following format:

1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
2. One paper copy and one electronic pdf. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect will deliver one copy to the Owner. **For Final manuals MSU will supply specific binders. Contact CPDC at 406/994-5413.**

- C. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect and Commissioning Authority will return copy with comments.

1. Correct or revise each manual to comply with Architect's and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and Commissioning Authority's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR OPERATION, AND MAINTENANCE MANUALS

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information.
- B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 1. Title page.
 2. Table of contents.
 3. Manual contents.
- C. Title Page: Include the following information:
 1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Architect.
 8. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 9. Cross-reference to related systems in other operation and maintenance manuals.
- D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- E. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- F. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily

navigated file tree. Configure electronic manual to display bookmark panel on opening file.

- G. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
1. Binders: **MSU will supply specific binders. Contact CPDC at 406/994-5413.** These binders are sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and oversize sheets will need to be folded to 8x11.5.
 - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
 4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor is delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Precautions against improper use.
 9. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.

7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.3 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.4 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

- B. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- C. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- D. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.
- E. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

PART 4 - MATERIAL AND FINISHES MAINTENANCE MANUAL

- A. General: Incorporate as part of the O & M Manuals. Material and finishes to the Architect/Engineer for approval and distribution. Provide one section for architectural products, including applied materials and finishes, and a second section for products designed for moisture protection and products exposed to the water.
 - 1. Refer to individual specification sections for additional requirements on the care and maintenance of materials and finishes
- B. Architectural Products, Applied Materials and Finishes: Provide complete manufacturers data and instructions on the care and maintenance of architectural products, including applied materials and finishes.
- C. Manufacturers Data: Provide complete information on architectural products, including but not limited to the following items, as applicable:
 - 1. Manufacturer's catalog number
 - 2. Size
 - 3. Material composition
 - 4. Color texture reordering information for specially manufactured products
 - 5. Manufacturer and supplier/installers contact information
 - 6. Warranty terms
- D. Care and Maintenance Instruction: Provide complete information on the care and maintenance of architectural products, including the manufacturer's recommendations for the types of cleaning agents to be used and the methods of cleaning. In addition, provide information regarding cleaning agents and methods which could prove detrimental to the product. Include the manufacturer's recommended schedule for cleaning and maintenance.

- E. Manufacturer's Data: Provide complete manufacturer's data giving detailed information including, but not limited to the following, as applicable:
1. Applicable standards
 2. Chemical composition
 3. Installation details
 4. Inspection procedures
 5. Maintenance information
 6. Repair procedures
- F. Schedule: Provide complete information in the materials and finishes manual on products specified in the following sections:
(To be determined with Owner)
- G. Color Schedule: Provide complete information on MSU CPDC provided electronic spreadsheet form, to include manufacturer's name and number, location, item and surface of all painted, stained or treated material, surface or piece of equipment.

END OF SECTION 017823

SECTION 017839
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. See also General Conditions and Supplemental Conditions of the Contract for Construction.
- B. **See the *Supplemental Conditions of the Contract for Construction 3.11 for Documentation and As-Built Conditions, and the Project Closeout Checklist: Contractor Requirements***
- C. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- D. Related Requirements:
 - 1. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 2. Divisions 02 through 33 Sections for specific requirements for project record documents of the Work in those Sections.

1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings (Redline Markups): Comply with the following:
 - 1. Number of Copies: Submit one set(s) of marked-up record prints.
 - 2. Number of Copies: Submit copies of record Drawings as follows:
 - a. Submittal:
 - 1) Submit two for review paper-copy set(s) of marked-up record prints.
 - 2) Submit PDF electronic files of scanned record prints and one set(s) of file prints.
 - 3) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit one paper-copy set(s) of marked-up record prints.
 - 2) Submit PDF electronic files of scanned record prints and one set(s) of prints.
 - 3) Print each drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit one paper copy or annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one paper copy or annotated PDF electronic files and directories of each submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.
1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it.
 - c. Record and check the markup before enclosing concealed installations.
 2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file with comment function enabled.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. Identification: As follows:
 - a. Project name and PPA Number.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.

4. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Submit record Specifications as annotated PDF electronic file, paper copy or scanned PDF electronic file(s) of marked-up paper copy of Specifications.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: Submit record Product Data as annotated PDF electronic file, paper copy or scanned PDF electronic file(s) of marked-up paper copy of Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as PDF electronic file, paper copy, or scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 017839

**SECTION 017900
DEMONSTRATION AND TRAINING**

PART 1 - GENERAL

1.1 SUMMARY

1. System Demonstration:

- a. **General:**
 - i. The system demonstration is a functional test of systems to determine whether they are substantially complete and operating as specified. Systems are to be tested and confirmed to be operating properly by the contractor prior to the Demonstration.
 - ii. Where initial Demonstration Session uncovers substantial deficiencies that require more than one Demonstration Session, Contractor shall reimburse Owner for personnel costs associated with performing subsequent Sessions.
- b. **Systems to be Tested:**
 - i. All systems installed and/or provided under the project to have functional testing.
- c. **Attendance:**
 - i. The system demonstration is to be provided by trained representatives that are familiar with the systems, and can operate systems as required to test and verify proper function. The Engineer and Owner's representatives will be present to document performance and/or deficiencies. The General Contractor or others may attend if desired.
 - ii. Individual testing sessions (modules) shall be provided for each type or group of systems, separated roughly by trade group that will be performing maintenance on the system. MSU trades groups and systems typically involved in testing are:
 - (1) Electricians
 - (2) Heating Plant (Hydronic and steam heating systems, controls)
 - (3) Plumbers (Plumbing, gas-fired heating, process piping systems)
 - (4) Refrigeration (Refrigeration, chilled water, packaged cooling systems)
- d. **Schedule:**
 - i. Contractor to coordinate time requirements and dates with Owner and Engineer. Begin scheduling with sufficient time prior to desired Substantial Completion date to allow all parties to work into schedule, and for deficiencies to be completed prior to desired Substantial Completion date. Demonstration is to be provided prior to, and separate from, training.

2. Training:

- a. **General:**
 - i. The system training is intended to familiarize the Owner's operating and maintenance staff with all systems requiring maintenance. Training is to be provided after the systems are in place and operational, after issues noted during the Demonstration have been resolved, and before final acceptance.
- b. **Systems Requiring Training:**
 - i. All systems installed and/or provided under the project are to have training.
- c. **Attendance:**
 - i. Training is to be provided by trained representatives that are familiar with the system's operation and maintenance requirements. Individual training sessions (modules) shall be provided for each type or group of systems, separated roughly by trade group that will be performing maintenance on the system. MSU trades groups and systems typically requiring training are:
 - (1) Electricians

- (2) Heating Plant (Hydronic and steam heating systems, controls)
 - (3) Plumbers (Plumbing, gas-fired heating, process piping systems)
 - (4) Refrigeration (Refrigeration, chilled water, packaged cooling systems)
- d. Schedule:
- i. Duplicate training sessions are to be provided for each training module, so that Owner's operating personnel can be split into two groups during training. Duplicate training sessions to be scheduled during different weeks. Length of training sessions will be determined by scope of training, and as coordinated with Owner after draft copy of training documents have been reviewed.
- 2.1 PRODUCTS
- 1. Not applicable
- 3.1 EXECUTION
- 1. Demonstration:
 - a. Demonstration Program:
 - i. Engineer to develop a demonstration program to verify the proper operation of all required systems. Submit program to Owner and Contractor at least two weeks prior to Demonstration.
 - ii. Engineer to work with Contractor to generate methods to be used to verify sequences and modes of operation that cannot be verified directly.
 - iii. Engineer to provide at least one copy of all submittals, contract drawings, specifications, and changes related to systems to be demonstrated. Documents to be made available during Demonstration.
 - iv. Contractor to provide at least one copy of Operating and Maintenance Manuals to be used during demonstration, including specified sequences of operation for field-constructed systems, and operating sequences for all manufactured equipment.
 - b. Demonstration Session:
 - i. Verify that all systems are functional and ready to operate in all modes prior to demonstration.
 - ii. Assemble all program materials required for demonstration.
 - iii. Contractor to provide all equipment necessary for access to, and operation of, systems including tools, ladder, lighting, and diagnostic equipment.
 - iv. Verify operation of individual components within systems.
 - v. Verify controls of related components are coordinated.
 - vi. Verify all operating sequences, operating modes, and safety controls.
 - vii. Record all pressures, temperatures, and other relevant data available from installed devices.
 - viii. Where digital control systems are available, set-up trend reports of relevant parameters which will confirm proper operation of systems installed, modified, or affected by changes made during this project. Provide copies of reports to Engineer and Owner for review. Review, analyze, and discuss results, and provide follow-up reports as required to confirm proper operation.
 - 2. Training:
 - a. Training Documentation:
 - i. Contractor to submit draft copy of agenda and training documents to Owner for review at least two weeks prior to training date.
 - ii. Provide a copy of the following items for each person that will be attending the

training sessions. Coordinate required number with the Owner.

- (1) Training agenda.
- (2) Summary of new systems and existing systems affected by this project.
- (3) Summary of work performed under this project.
- (4) Control system drawings and sequences of operation.
- (5) List of important maintenance and trouble-shooting operations for all systems.

iii. Provide minimum of 2 copies of following items:

- (1) Contract documents including all drawings, specifications, addendums, and change orders.

b. Training Sessions:

- i. Assemble at location to be determined by the Owner.
- ii. Distribute training documentation as indicated above.
- iii. Provide classroom style training if required for orientation, discussion of new systems and existing systems affected by this project, and other issues appropriate for a classroom format.
- iv. Visit site and review locations, and perform detailed review of operation and maintenance requirements for current systems.

END OF SECTION 179000

MONTANA STATE UNIVERSITY – BOZEMAN ASBESTOS ABATEMENT PROCEDURES ASBESTOS HAZARD RISK MANAGEMENT

I. **Scope**

This plan provides a description of the minimum requirements for the removal (abatement) of asbestos containing building materials for Montana State University (MSU), Bozeman. This document provides general guidelines and regulatory references to be followed and fully complied with during work involving greater than 10-square feet of asbestos containing building material (ACBM) or 3-linear feet of thermal system insulation (TSI) material containing asbestos. ACBM is defined as a material containing greater than 1% asbestos mineral.

II. **Purpose**

The purpose of this document is to create and communicate a uniform expectation for the management of asbestos and its associated risks on the MSU Bozeman campus. It outlines the mechanisms to protect the occupants of our buildings, our staff and faculty, the general public, and the environment from asbestos fiber release as well as to ensure regulatory compliance.

The document is intended to communicate minimum expectations both to internal abatement staff as well as contractors who may perform abatement work on campus.

III. **Definitions**

Definitions related to asbestos work and asbestos hazard control are taken from the following references:

- 40 CFR 61 Subpart A & M;
- 29 CFR 1926.1101;
- 29 CFR 1910.1001; and
- MDEQ Asbestos Control Act (Current Regulation).

Note: In some cases, extra detail or clarification has been added to the regulatory definition. At all times the regulatory definition is the minimum standard and this document may prescribe best business practices that exceed requirements.

Asbestos Containing Building Material (ACBM): Any building component determined to contain 1% or greater of asbestos mineral as specified in 40 CFR 61 Subpart M (EPA) (MDEQ), 29 CFR 1926.1101 and 29 CFR 1910.1001 (OSHA).

Background: Pre-construction fiber results either by Phase Contrast Microscopy (PCM) or Transmission Electron Microscopy (TEM) collected in proximity to the work space and to be used for determination of existing conditions where concern exists that fiber concentrations are above the accepted industry clearance level of 0.010 f/cc (PCM) or 70 structures/mm² (TEM).

Friable ACBM: Any ACBM that can be crushed to powder by hand or that may be crushed to powder in the course of the construction activity. All materials mechanically disturbed and significantly crushed on campus are assumed to have the potential for friability and are to be handled as such.

Negative Pressure Enclosure: An enclosure of the work area constructed of wood or poly (plastic). . All enclosures are to be constructed with HEPA (High Efficiency Particulate Air) filtered ventilation to provide a negative pressure differential with adjacent areas equal to or greater than 0.020 inches of H₂O column as measured by a logging manometer. At a minimum, the HEPA filtered ventilation is to provide four (4) air changes per hour. In effect, a negative pressure enclosure ensures asbestos fibers do not escape during entry, work, or exit – fibers are captured in filters. All surfaces not to be impacted by the work are to be isolated from the work by the enclosure or have the ability to be cleaned within the enclosure to ensure they are free of dust and fibers related to the work.

Decontamination Unit: A two or three room attachment to the containment used for ensuring that the workers have a space to don Personal Protective Equipment on the entry and decontaminate clothing and tools prior to exit from work area. Decontamination rooms are separated by plastic flaps and are kept under negative pressure during the work. A shower is used during friable removal to ensure workers wash themselves prior to exit.

IV. Friable Asbestos Material Indoors and Outdoors

All abatement of friable material is to be performed inside a fully isolated negative pressure enclosure with a minimum of 0.020 inches of H₂O column negative pressure differential with the adjacent space and a minimum of four (4) air changes per hour maintained throughout the work. Attached to the enclosure is to be a fully functional three (3) stage decontamination unit to be used for entry and exit from the enclosure during work. Logging manometer is required for verification and documentation.

Specifically:

- Proper notification to the MDEQ regarding performance of project (annual permit included);
- Notification to an industrial hygienist regarding clearance sampling when project is initially scheduled, in order to provide assurance that samples can be taken without negative impact to project schedule;
- Isolation poly barrier (Critical barriers) to isolate the work area from adjacent areas;
- Two layers of poly for all critical barrier locations;
- All ventilation and openings inside the work area must be sealed with plastic. These areas are called “Critical barriers” in the abatement industry;
- Isolation of all surfaces from the work area that are not impacted or thorough cleaning of these surfaces to meet visual clearance criteria;
- A pre-work containment check by an industrial hygienist is preferred for all jobs and may be required depending upon scope, level of hazard and associated risk as determined by MSU project lead;
- Wet methods are to be used for removal as required by EPA and MDEQ regulations;
- Disposal is to be made of all Asbestos containing material (ACM) according to EPA and MDEQ requirements for wetting, bagging, labeling and manifesting;
- Compliance with air monitoring and worker protection standards is required per OSHA regulations;
- All removal of debris and equipment is to be performed through the negative pressure enclosure entry/access point using appropriate decontamination techniques and work practices;
- All enclosures are to be visually and analytically cleared (air clearance sampling) according to MDEQ requirements using either PCM or TEM analytical techniques; and
- All other requirements of federal, state, and local regulations are to be followed for friable removal.

V. Non-Friable Asbestos Material Inside

MSU has extensive non-friable abatement needs related to asbestos containing resilient floor tile, associated mastics, and cement asbestos materials. These materials are routinely handled in a non-friable fashion and have a reduced hazard of asbestos fiber generation. However, MSU must maintain a high standard of worker protection and building stewardship through all construction work. Thus all work is to be performed in a negative pressure enclosure with a minimum of 0.020 inches of water column negative pressure in relation to adjacent areas and with a HEPA filtered ventilation providing at a minimum four air changes per hour. Logging manometer use is required.

Specifically:

- Determination of method of removal and evaluation of breakage percentage;
- Mechanical removal methods are to be considered friable and thus comply with above friable requirements;
- Single layer (critical) barriers for isolation of work area and surfaces;
- Minimum of a two stage decontamination for HEPA vacuum of equipment and workers and disposal of coveralls and cleaning of PPE;
- Disposal of all materials in asbestos waste bags sealed and secured at all times—manifest of all disposal of material. Materials cannot be mixed with standard construction waste stream;
- All removal of waste debris and equipment is to be performed through controlled access points of the decontamination unit or “load out” access through the containment. All bags and equipment must be removed using appropriate decontamination techniques ;
- Pass of at a minimum visual clearance of work area—depending upon Work Control requirements air clearance may be required; and
- Where non friable material becomes friable air clearances and hygienist visual clearance is required. Hygienist is to be notified prior to start of work to ensure schedule is maintained.

VI. Wall Component Systems—Composite Analysis Less Than 1% Asbestos

Various locations on campus have drywall systems with joint compound/drywall mud that has been identified as containing varying amounts of asbestos mineral.

Thus all work impacting an area of wall greater than 10 square feet is to comply with OSHA requirements and to ensure the protection of occupants these wall systems are to be demolished as asbestos containing friable material. All applicable requirements for OSHA and above (friable material) are to be met or exceeded.

Specifically:

- Determination of method of removal and evaluation of breakage percentage;
- Mechanical removal methods are to be considered friable and thus comply with above friable requirements;
- Single layer (critical) barriers for isolation of work area and surfaces;
- Minimum of a three stage decontamination for HEPA vacuum of equipment and workers and disposal of coveralls and cleaning of PPE;
- Disposal of all materials in asbestos waste bags sealed and secured at all times—manifest of all disposal of material;
- All load out of debris and equipment is to be performed through controlled access points under negative pressure and using appropriate decontamination techniques and work practices; and

- Pass of a visual & Air clearance of work area—depending upon Work Control requirements TEM air clearance may be required.

Note: The Trades Supervisor and/or Project Manager can work with an industrial hygienist to adjust these requirements to suit work areas and to manage risk on a case-by-case basis.

Small impacts to the compound (less than 10ft²) are to be performed using HEPA vacuum attendance and wet methods to ensure no dust generation and capture of the debris at the point of impact.

VII. Non-Friable Asbestos Materials---Outside

Non-friable roofing materials, siding materials, cement asbestos pipe, and paper are found on MSU-Bozeman campus and frequently require abatement. MSU recognizes that these materials are routinely handled without becoming friable and expects that all such materials are impacted by the contractor in a fashion to ensure non-friable removal. Where impact is required the following minimum steps are to be taken.

Specifically:

- Remove with methods preventing dust generation;
- When sawing/cutting/grinding/drilling keep material wet at all times and attend with HEPA vacuum to capture all dust;
- Collect material and appropriately bag, label, and manifest for disposal;
- CONTROL all material and ensure no debris escapes from work area;
- Critical (cover with poly) adjacent ventilation intakes, windows, or opening into occupied buildings; and
- Meet OSHA requirements for worker protection and monitoring at all times.

The compliance with regulatory requirements on the campus of MSU-Bozeman is seen as the minimum level of risk management. Compliance with the additional guidance in this document is seen as best business practice to most effectively protect people and environment and to manage risk.

MSU recognizes that each project will have specific needs and challenges. Variance from these requirements is only to be done with the approval from MSU work control or from MSU designated representatives in consult with an industrial hygienist. Variation from regulatory requirements of friable material is only allowed with written MDEQ approval and MSU written approval.

It is emphasized that MSU must maintain a visible and documented control of asbestos hazards at all times for the management of our buildings and the satisfaction of our occupants, students, faculty/staff, and administration. The cooperation of our contractors is critical to our success.

Questions can be directed to:

Tom Pike 994-7533
Chris Catlett 994-4146
Dan Archer 994-7597

SECTION 02 2100 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removal of designated building materials, fixtures and equipment.
 - 2. Removal of existing construction to accommodate new construction.
 - 3. Disconnecting and capping, abandoning or removing identified utilities.
 - 4. Installation of temporary partitions to allow continued building occupancy by Owner.
 - 5. Salvage of indicated items.
- B. Related Sections:
 - 1. Section 01 3000 - Administrative Requirements
 - 2. Section 01 4000 - Quality Requirements
 - 3. Section 01 4500 - Cutting and Patching.
 - 4. Section 01 5000 - Temporary Facilities and Controls
 - 5. Section 01 6000 - Product Requirements and Substitutions

1.2 DEFINITIONS

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

1.3 SUBMITTALS

- A. General: Submit in accordance with Section 01 3000.
- B. Closeout Submittals:
 - 1. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.4 QUALITY ASSURANCE

- A. Contractor Qualifications: Company specializing in demolition work with minimum of 3 years documented experience.
- B. Regulatory Requirements:
 - 1. Comply with applicable codes, ordinances, rules, regulations, and laws of local, municipal, state and federal authorities having jurisdiction.
 - a. Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
 - b. Standards: Comply with ANSI A10.6 and NFPA 241.
 - 2. Obtain and pay for necessary permits and notices; post where required.
 - 3. Comply with safety requirements of local fire department.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct egress width of fire exits or access.
- E. Do not disable or disrupt building fire or life safety systems without more than 72 hours prior written notice to Owner.

1.5 PRE-DEMOLITION CONFERENCE

- A. Conduct conference in accordance with Section 01 3000 to discuss following:
 - 1. Present draft of demolition schedule for review.
 - 2. Coordinate phasing requirements.
 - 3. Coordinate Abatement work.
 - 4. Identify items to be protected and preserved before proceeding with work.
 - 5. Conduct walking inspection to identify materials and equipment to be salvaged for re-installation and Owner use.

6. During walking inspection, photograph or otherwise determine and record existing physical conditions of boundary areas. Surfaces, equipment, or other items damaged during demolition work are to be restored to original condition as recorded during walking inspection.
7. Agree upon location where items salvaged for Owner are to be delivered and stored.
8. Obtain agreement from Owner on day-to-day scheduling requirements and restrictions to avoid disruption of Owner operations resulting from demolition work, dirt, or noise.

1.6 PROJECT CONDITIONS

- A. Hazardous Materials: Hazardous materials are present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is included in the Contract Documents and abatement of hazardous materials is included in the work of the project. Examine report to become aware of locations where hazardous materials are present. Complete abatement work as specified. Do not proceed with selective demolition until all hazardous materials have been removed in the area of work.
 1. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
- B. Storage or sale of removed items or materials on-site is not permitted.
- C. Occupancy:
 1. Owner will vacate demolition area prior to start of abatement and demolition work.
 2. Owner will continuously occupy portions of the building adjacent to selective demolition areas.
 3. Conduct selective demolition work in manner that will minimize need for disruption of Owner's normal operations.
 4. Provide minimum of 72 hours advanced notice to Owner of demolition activities which will severely impact Owner's normal operations.
 5. Maintain free and safe passage to and from Owner occupied areas.
- D. Existing Conditions:
 1. Owner assumes no responsibility for actual condition of areas to be demolished.
- E. Explosives: Not permitted.
- F. Traffic and Passageways:
 1. Maintain accessibility for fire fighting apparatus.
 2. Conduct demolition operations and debris removal to avoid interference with use of adjacent roads, streets, walks, and occupied facilities.
 3. Obtain written permission from authorities having jurisdiction prior to closing or obstructing streets, walks, or other adjacent occupied facilities.
 4. Provide alternate routes when closing or obstructing traffic ways when required by governing authorities.
 5. Ensure safe passage of persons around area of demolition. Provide and maintain temporary covered passageways; comply with requirements of governing authorities.
- G. Protection:
 1. Perform Work in manner to eliminate hazards to persons or property and avoid interference with adjacent areas, utilities and structures.
 2. Provide and maintain temporary barricades, fences, warning signs, guardrails, warning lights, weatherproof and dust partitions, and other similar provisions as necessary or required by applicable regulatory authorities for protection of building occupants and workers.
 3. Provide and maintain fire extinguishers; comply with requirements of governing authorities.
 4. Maintain existing utilities which are to remain in service and protect from damage during demolition operations.
 5. Do not interrupt existing utilities serving occupied facilities, except when authorized by Owner in writing. Provide temporary services during interruptions to existing utilities as required by the Owner.
 6. Coordinate in advance with Owner mechanical, electrical, and plumbing shutdowns.
 7. Protect from damage existing work indicated to remain.
 8. When necessary to complete the specified work, existing improvements and appurtenances to remain shall be removed temporarily. All such appurtenances removed shall be reinstalled in as good or better condition than original.
 9. Protect existing floors with suitable coverings when necessary.

10. Construct temporary dustproof partition at wall demolition area and seal any wall openings or ducts where necessary to keep occupied areas clear of dust and debris.
11. Provide temporary weather protection for areas where existing exterior elements were removed to ensure no water leakage or damage occurs to structure or interior areas of existing building.
12. Provide temporary drainage of surface runoff as required to protect buildings to remain from flooding and water damage.

1.7 SEQUENCING

- A. Sequence work under the provisions of the Contract to allow the Owner to utilize the maximum amount of the building and premises as possible.

1.8 SCHEDULING

- A. Schedule work to conform to the approved construction progress schedule specified in Section 01 3000.
- B. Schedule work to coincide with new construction.
- C. Describe demolition removal procedures and schedule.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions and proceed with Work in accordance with Section 01 7000.
- B. Verify demolition areas are unoccupied.
- C. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- D. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- E. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit and email a written report to the Architect and MSU Project Manager.

3.2 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls".
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- C. All work shall be done in conformance with the rules and regulations pertaining to safety established by federal, state, and local authorities, and as specified elsewhere in the contract documents.
- D. Protect existing structures and landscaping materials which are not being demolished.
- E. Prevent movement or settlement of adjacent structures. Provide bracing and shoring as necessary and be responsible for safety and support of structure. Assume liability for such movement, settlement, damage, or injury.
- F. Cover and protect equipment and fixtures scheduled to remain from soiling or damage when demolition work is performed in rooms or areas from which such items have not been removed.
- G. Utilities:
 1. Mark and identify location of utilities to be disconnected.
 2. The Contractor shall be responsible for having the appropriate utility or Owner turn off all services before demolition is started. Notify affected utility company in advance of date and time when service needs to be disconnected.
 3. Disconnect and cap utility services; comply with requirements of governing authorities. Do not commence demolition operations until associated disconnections have been completed.
- H. During removal of existing roofing or rooftop items, provide proper protection from falling objects over entrances which are to be kept open during normal working hours.

3.3 SALVAGEABLE MATERIAL AND EQUIPMENT

- A. Carefully remove, store and protect salvage materials and equipment for Owner's use. Deliver to location directed by Owner.
- B. Carefully remove, store, and protect items noted on Drawings for salvage and re-installation.
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area on campus as directed by Owner.
 - 5. Protect items from damage during transport and storage.
- C. Removed and Reinstalled Items:
 - 1. Clean and repair items to functional condition adequate for intended reuse.
 - 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 - 3. Protect items from damage during transport and storage.
 - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Items to be salvaged or removed and reinstalled include:
 - 1. None identified.

3.4 UTILITY SERVICES AND MECHANICAL/ ELECTRICAL SYSTEMS

- A. Existing Services/ Systems to Remain: Maintain services/ systems indicated to remain and protect them against damage.
- B. Comply with requirements for existing services/ systems interruptions specified in Section 011000 "Summary."
- C. Existing Services/ Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/ electrical systems serving areas to be selectively demolished.
 - 1. If services/ systems are required to be removed, relocated, or abandoned, provide temporary services/ systems that bypass area of selective demolition and that maintain continuity of services/ systems to other parts of building.
 - 2. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - 3. Piping to be removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - 4. Piping to be abandoned in place: Drain piping and cap or plug piping with same or compatible piping material.
 - 5. Equipment to be removed: Disconnect and cap services and remove equipment.
 - 6. Equipment to be removed and reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - 7. Equipment to be removed and salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - 8. Ducts to be removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - 9. Ducts to be abandoned in place: Cap or plug ducts with same or compatible ductwork material.

3.5 DEMOLITION

- A. General:
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal".
 - 5. Conduct demolition to minimize interference with adjacent occupied building areas.
 - 6. Cease demolition operations immediately if adjacent structures appear to be in danger. Conduct safety operations as necessary. Do not resume demolition operations until directed.
 - 7. Conduct operations with minimum interference to public or private accesses. Maintain egress

- and access at all times.
8. Sprinkle debris with water to minimize dust. Provide hoses and water connections as necessary.
 9. Do not cause flooding or contaminated runoff.
- B. Demolish existing construction as indicated in orderly and careful manner to accommodate new work. Protect supporting structural members. Remove demolished materials from site daily and legally dispose of such materials.
 - C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.
 - D. Perform demolition in accordance with governing authorities.
 - E. Remove foundations, footings, walls and other work as specifically indicated or as necessary to permit construction and other work indicated.
 - F. Report to Architect and Owner unanticipated mechanical, electrical, structural or utility elements which conflict with intended function or design when encountered. Submit report in writing. Rearrange demolition schedule as necessary to continue overall project progress without delay.
 - G. Do not burn or bury materials or debris on site. Leave structures and site in clean condition.
 - H. Utilities:
 1. Where electrical, natural gas, telephone, or any other utility lines are exposed by demolition excavation, the Contractor shall immediately notify the owner(s) of these utilities that their facilities have been exposed, and shall allow sufficient time for the utility to either re-locate their facilities or to determine that they have been abandoned.
 2. Remove utilities as specifically indicated or as necessary to permit construction and other work indicated.
 3. Temporarily cap existing cleanouts until connection to new work per drawings.

3.6 ADJUSTING

- A. Repair demolition performed in excess of that required.
- B. Return structures and surfaces to remain to conditions existing prior to commencement of selective demolition Work.

3.7 CLEANING

- A. Broom and vacuum clean demolition areas of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to start of work.
- B. Provide thorough and complete cleaning of selective demolition areas after demolition work is complete and prior to installation of any new work.
- C. Return adjacent areas not included in this project to condition existing prior to start of work.
- D. Remove temporary work and protection when no longer needed.

END OF SECTION 02 2100

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SECTION 02 2623 – REPORT OF ASBESTOS ASSESSMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. A Pre-Renovation Asbestos Inspection Report has been provided by Tetra Tech, Inc..
 - 1. The report described inspections and results in the Extruder Lab project area and an adjacent area which also undergoing renovation (MSU ROTC Relocation project).
 - 2. Asbestos was detected in the Extruder Lab project area.
 - 3. In preparing this bid, each bidder shall consider and evaluate data contained in above documents as well as Drawings and Project Manual prepared by Architect.
 - 4. The bid shall include abatement of hazardous materials in the work area as specified.
- B. Pre-Renovation Asbestos Inspection Report
 - 1. Titled: Pre-Renovation Asbestos Inspection Report Harrison Extrusion Lab and ROTC Renovation.
 - 2. Project No. 117-8598042
 - 3. Dated: July 29, 2020
 - 4. Prepared by: Tetra Tech, Inc., Billings, MT.
- C. A copy of this data will be distributed with each copy of the bidding documents as an attachment to this Section. The data is for information only.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION 02 2623

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July 29, 2020

Mr. Ben Lloyd
Comma-Q Architects, Inc.
109 North Rouse Avenue, Suite #1
Bozeman, Montana 59715

Delivered via email: ben@commaq.com

**SUBJECT: Pre-Renovation Asbestos Inspection Report
Harrison Extrusion Lab and ROTC Renovation
Harrison Hall
Montana State University
Bozeman, Montana
Tetra Tech Project No. 117-8598042**

Dear Mr. Lloyd:

On June 18, 2020, Tetra Tech, Inc. (Tetra Tech) conducted a pre-renovation asbestos inspection for the Harrison Extrusion Lab and ROTC renovation at Harrison Hall on the Montana State University Bozeman Campus. This pre-renovation inspection covered only those areas that were anticipated to be disturbed during the renovation project.

Based on correspondence with you prior to commencement of the project, the pre-renovation inspection consisted of reviewing the findings presented in the *Asbestos Inspection Report*, dated January 17, 2013, completed by Environmental Solutions, LLC of Bozeman, Montana (Environmental Solutions). In addition, additional sampling was conducted of suspect asbestos-containing materials (ACM) associated with the renovation project that were not included in that report. Details of our inspection is provided below.

PRE-RENOVATION ASBESTOS INSPECTION

The pre-renovation asbestos inspection was conducted in accordance with the Administrative Rules of Montana 17.74.354, using the currently recognized standard protocol developed under the National Emission Standards for Hazardous Air Pollutants (NESHAP) and the Asbestos Hazard Emergency Response Act (AHERA), as administered by the State of Montana Department of Environmental Quality (MDEQ).

As mentioned above, the asbestos inspection services were conducted based on the areas expected to be disturbed during the Harrison Extrusion Lab and ROTC renovation project and the findings in Environmental Solutions 2010 *Asbestos Inspection Report*. The results of that document were considered to be correct and only suspect building materials that are anticipated to be disturbed during the renovation project were evaluated. In addition to the materials sampled by Environmental Solutions, several more suspect ACM were identified in the areas expected to be disturbed during the fire suppression project and these additional materials were sampled by Tetra Tech during this investigation.



Mr. Shane Matolyak of Tetra Tech, a MDEQ Accredited Asbestos Inspector, collected samples of newly identified suspect ACM. His Inspector Accreditation Certification is presented in Attachment A.

The bulk samples were shipped, along with completed chain-of-custody documentation, to Crisp Analytical of Carrollton, Texas for the analysis of asbestos fibers by polarized light microscopy (PLM) using U.S. Environmental Protection Agency (EPA) Methods described in 40 CFR Part 763 Appendix E Subpart E (Interim and EPA 600/R-93 / 116 (Improved). A copy of the laboratory analytical report is contained in Attachment B.

A summary of the suspect building materials that are anticipated to be disturbed during the renovation project and identified to contain asbestos is provided in Table 1. These materials were identified as asbestos containing by Environmental Solutions in their 2013 *Asbestos Inspection Report* or by Tetra Tech. Tetra Tech’s approximate sample collection locations of the newly identified suspect ACM are presented on Figures 1 through 2 and approximate ACM locations are presented on Figure 3

Table 1 Summary of ACM Harrison Extrusion Lab and ROTC Renovation Montana State University Bozeman, Montana				
HA Number	Material Description and Location	Percent Asbestos	Material Type	NESHAP Category
46,47,48, and F6.1	Brown with multiple stripes 9-inch by 9-inch vinyl floor tile and associated black mastic	Tile: 8% Chrysotile Mastic: 8% Chrysotile	Miscellaneous	Category I Non-Friable
64, 65, 66, and F6.2	Tan and black mastic associated with non-asbestos containing various color carpet squares	8% Chrysotile	Miscellaneous	Category I Non-Friable
HA: Homogeneous Area Number NESHAP: National Emission Standard for Hazardous Air Pollutants				

In accordance with state and federal regulations pertaining to asbestos, the ACMs identified in Table 1 are required to be abated prior to disturbance. These ACMs are required to be removed by a licensed asbestos abatement contractor using appropriate asbestos abatement methods and procedures in accordance with applicable state and federal regulations. Following the completion of asbestos abatement, a visual inspection and asbestos air clearance need to be conducted as required by ARM 17.74.357. Any contractor preparing to bid or perform work on the site should be informed of the potential presence of ACM. Contractors should also be informed of compliance requirements under current state and federal regulations.

A summary of the ACM identified to contain greater than 0% asbestos, but less than 1% asbestos is provided in Table 2. Approximate ACM locations are presented on Figure 3.

Table 2 Summary of ACM Harrison Extrusion Lab and ROTC Renovation Montana State University Bozeman, Montana		
HA Number	Material Description	Percent Asbestos
73, 74, 75, and S1.1	Cream and gray painted plaster walls and ceilings	<1% Chrysotile
HA: Homogeneous Area Number		

Based on the asbestos concentration associated with the analysis of the material identified in Table 2, it is not regulated by the EPA or MDEQ. However, Occupational Safety and Health Administration (OSHA) regulations for training and worker protection would apply for any disturbance activities associated with this material. Accordingly, Tetra Tech recommends that individuals engaging in the disturbance or removal of this material utilize “asbestos safe” work practices as specified within 29 CFR 1926.1101. As stipulated under 29 CFR 1926.1101, work practice requirements and prohibitions that must be observed regardless of the exposure levels and of the percentage of asbestos in the installed construction materials include, but are not necessarily limited to:

- 29 CFR 1926.1101(g)(1)(ii), which requires: wet methods, or wetting agents, to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup, except where employers demonstrate that the use of wet methods is infeasible due to, for example, the creation of electrical hazards, equipment malfunction, and, in roofing, except as provided in paragraph (g)(8)(ii) of this section;
- 29 CFR 1926.1101(g)(1)(iii), which requires: prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers except in roofing operations, where the procedures specified in paragraph (g)(8)(ii)3 of this section apply;
- 29 CFR 1926.1101(g)(3)(i), which prohibits: high-speed abrasive disc saws that are not equipped with point-of-cut ventilator or enclosures with HEPA filtered exhaust air;
- 29 CFR 1926.1101(g)(3)(ii), which prohibits: compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air; and
- 29 CFR 1926.1101(g)(3)(iv), which prohibits: employee rotation as a means of reducing employee exposure to asbestos.

The following suspect building materials that Tetra Tech sampled during this investigation were found not to contain asbestos by laboratory analysis:

- White 12-inch by 12-inch ceiling tiles and associated brown mastic located in Room 146 (HH-F6.3A, B, C)
- Smooth textured white 2-foot by 4-foot ceiling panels located in Room 146 (HH-M5.1A, B, C)
- White 2-foot by 4-foot with pinholes and fissures ceiling panels located in Room 145 (HH-M5.2A, B, C)
- Gray 12-inch by 12-inch ceiling tiles located in Room 146 (HH-M6.1A, B, C)
- Brown and tan square pattern ceramic floor tile and associated gray grout located throughout (HH-M16.1A, B, C)
- Cream and brown square pattern ceramic floor tile and associated gray grout located in Room 146 (HH-M16.2A, B, C)
- White 1-inch by 1-inch ceramic floor tile and associated gray grout located throughout (HH-M16.3A, B, C)
- Black and tan 1-inch by 1-inch ceramic floor tile and associated gray grout located in Room 196S4 (HH-M16.4A, B, C)
- Brown 6-inch by 6-inch ceramic floor tile and associated gray grout located in Room 196S4 (HH-M16.5A, B, C)
- Cream colored 6-inch by 12-inch ceramic wall block and associated gray grout located throughout (HH-M16.6A, B, C)
- Gray 6-inch by 12-inch block and associated gray mortar located throughout (HH-M16.7A, B, C)
- Concrete foundation, floor, and pillars located throughout (HH-M18.1A, B, C)
- Concrete landing on dock and stairs located in Room 146 (HH-M18.2A, B, C)
- Gray CMU block and associated gray mortar located in Rooms 145-147 (HH-M22.1A, B, C)
- Brown mastic associated straight run pipe insulation located throughout ceiling (HH-M32.1A, B, C)
- White pookie on straight run pipe insulation located throughout ceiling (HH-T2.1A, B, C)
- Black HVAC vent pipe sealant located on roof (HH-T4.1A, B, C)

LIMITATIONS

This report only covers the areas that will be disturbed during the renovation project that was described above. Other ACMs are present at the site that is not anticipated to be disturbed as part of the renovation project. These ACMs are described in the *Asbestos Inspection Report*, dated January 17, 2013, completed by Environmental Solutions, LLC of Bozeman, Montana. Please note that prior to any remodel or demolition activities that will affect other materials, an extensive inspection, will need to be conducted in accordance with the requirements put forth by NESHAP and MDEQ.

Our opinions are intended exclusively for use by Comma-Q Architects, Inc. and Montana State University. The scope of services performed by Tetra Tech may not be appropriate to satisfy the needs of other users, and any use or re-use of this document, or the findings presented herein is prohibited and at the sole risk of the user. No additions or deletions are permitted without the express written consent of Tetra Tech.



Furthermore, the opinions presented herein are limited by the requested scope of services and the site conditions existing at the time of our investigation. Therefore, our opinions and recommendations may not apply to future site conditions which we have not had the opportunity to evaluate.

It has been a pleasure assisting you with this project. If you should have any questions or need any additional information please contact me in our Tetra Tech Billings, Montana office at (406) 248-9161.

Respectfully submitted,

Tetra Tech, Inc.

A handwritten signature in blue ink that reads 'Roger W. Herman, Jr.'.

Roger W. Herman, Jr.
Asbestos, Lead & IH Services Manager

PB/RH

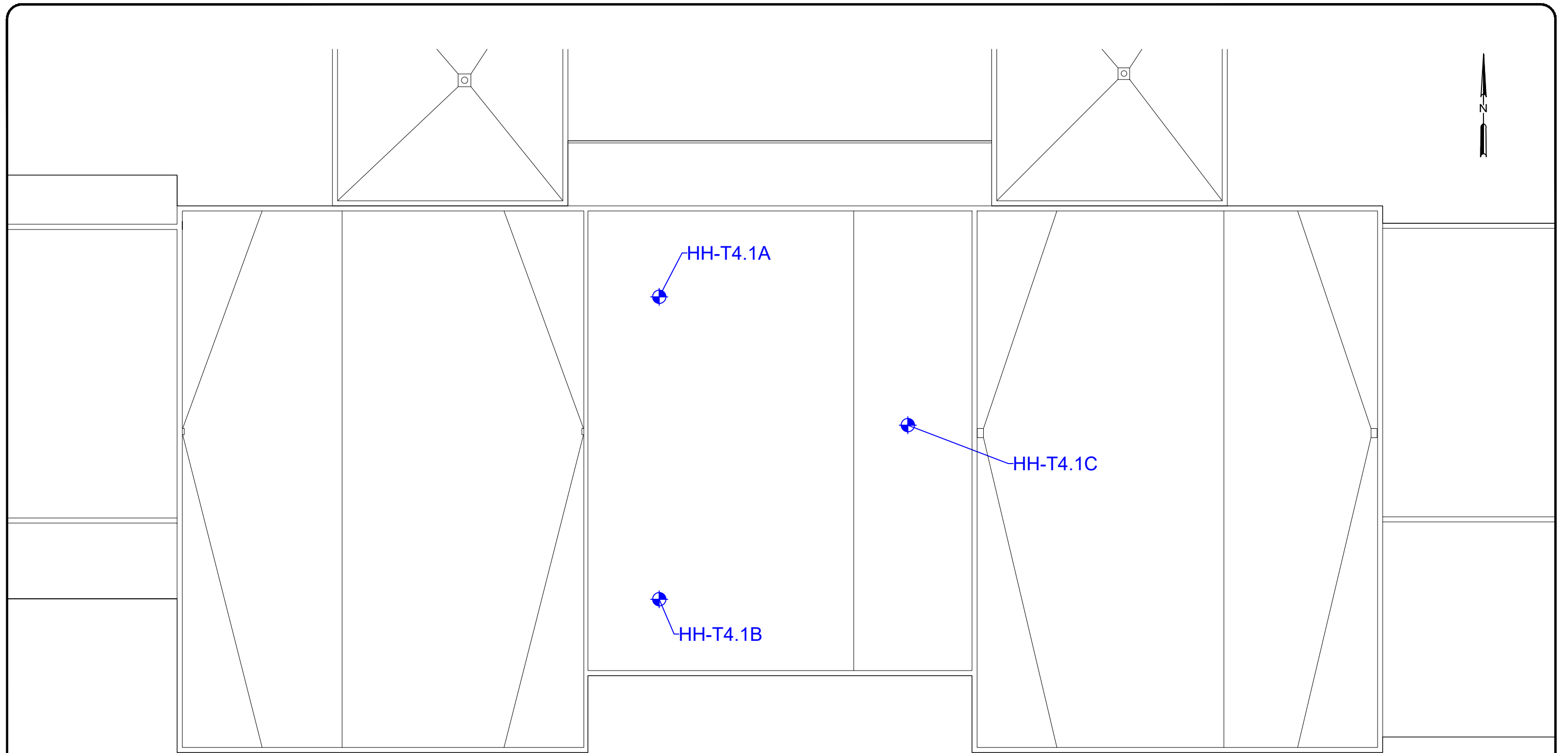
I:\A-G\Comma-Q Architecture Inc\117-8774001 - Harrison Extrusion Lab & ROTC\05-Deliverables\Final\MSU Harrison Hall-ROTC Renovation ASB Report.docx

Figures

Attachment A – Inspector Accreditation Certification


Attachment B – Laboratory Analytical Report of Newly Identified Suspect ACM

FIGURES



1 HARRISON DINING - ROOF LEVEL

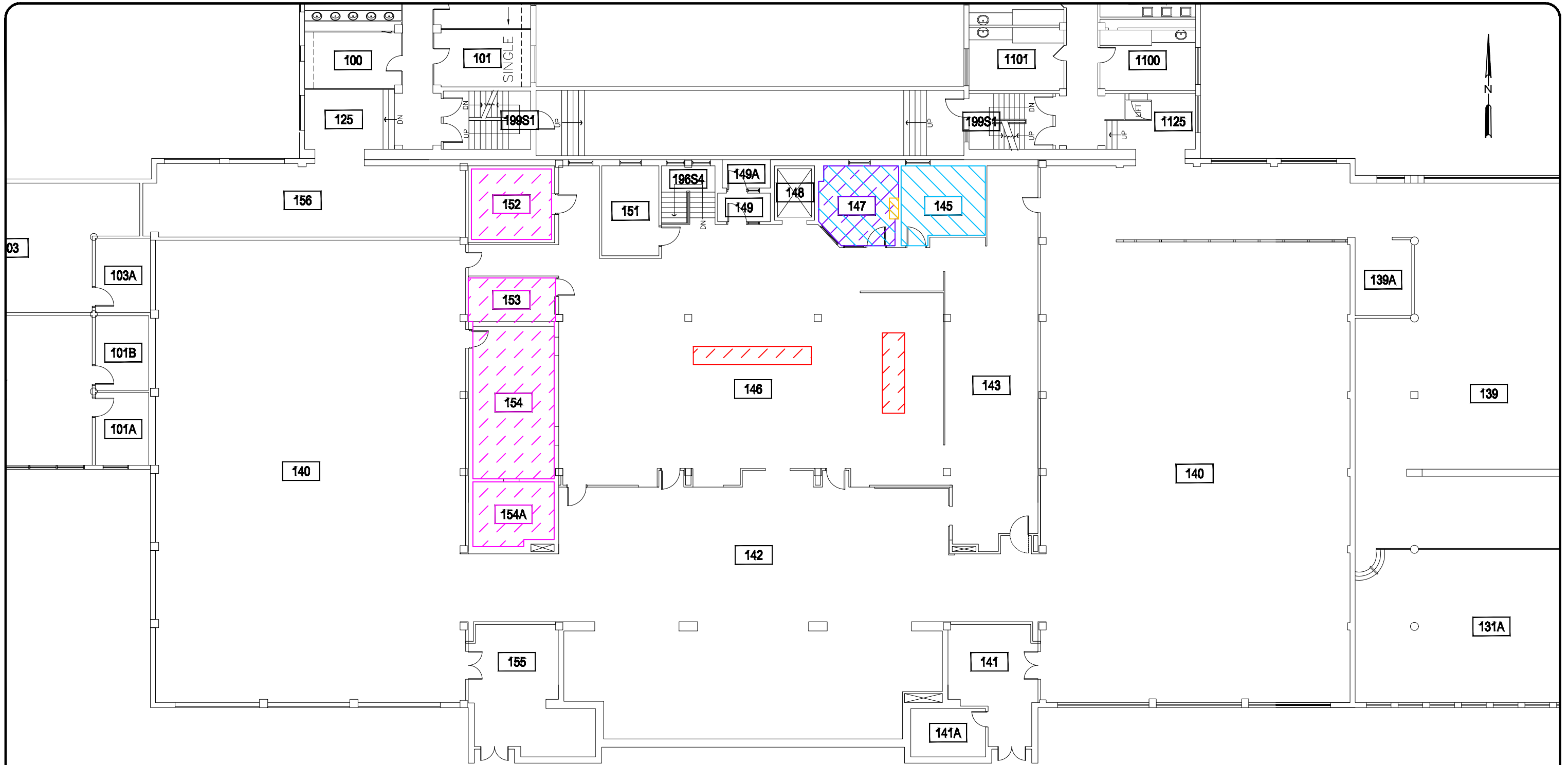
LEGEND

-  Sample Location
- 101 Room Number

TETRA TECH
 www.tetrattech.com
 7100 Commercial Ave, Suite 4
 Billings, Montana 59101
 PHONE: 406-248-9161 FAX: 406-248-9282






PRE-RENOVATION ASBESTOS INSPECTION
 SAMPLE LOCATIONS
 HARRISON EXTRUSION LAB AND ROTC
 HARRISON HALL
 MONTANA STATE UNIVERSITY
 BOZEMAN, MONTANA

Project No.:	117-8774001
Designed By:	TETRA TECH
Drawn By:	CJM
Checked By:	PB/SM
FIGURE	
2	



1 HARRISON DINING - FIRST LEVEL

LEGEND

- 101 Room Number
-  F6.1 - 9-inch by 9-inch floor tile and associated brown mastic
-  HH-F6.2 - Yellow carpet tile glue over black mastic
-  HH-M33.1 - Vent hoods (not sampled)
-  HH-M34.1 - Walk in coolers (not sampled)
-  S1.1 - Plaster on walls and ceiling

TETRA TECH
 www.tetrattech.com
 7100 Commercial Ave, Suite 4
 Billings, Montana 59101
 PHONE: 406-248-9161 FAX: 406-248-9282

PRE-RENOVATION ASBESTOS INSPECTION
 ASBESTOS LOCATIONS
 HARRISON EXTRUSION LAB AND ROTC
 HARRISON HALL
 MONTANA STATE UNIVERSITY
 BOZEMAN, MONTANA

Project No.:	117-8774001
Designed By:	TETRA TECH
Drawn By:	CJM
Checked By:	PB/SM
FIGURE 3	



ATTACHMENT A

Inspector Accreditation Certification

SHANE MATOLYAK

has met the requirements of Montana Administrative Rule 17.74.362 and/or 17.74.363 for accreditation in the following asbestos occupation(s) through the specified expiration date(s).

MTA-5586

Asbestos Inspector
Project Contractor/Supervisor

08/21/2020
08/09/2020

MT DEQ Asbestos Control Program

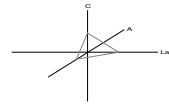


ATTACHMENT B

Asbestos Laboratory Analytical Report of
Newly Identified Suspect ACM

CA Labs
Dedicated to Quality

Crisp Analytical, L.L.C.
1929 Old Denton Road
Carrollton, TX 75006
Phone 972-242-2754
Fax 972-242-2798



CA Labs, L.L.C.
12232 Industriplex, Suite 32
Baton Rouge, LA 70809
Phone 225-751-5632
Fax 225-751-5634

Materials Characterization - Bulk Asbestos Analysis

Laboratory Analysis Report - Polarized Light

Tetra Tech

7100 Commercial Ave. Ste 4
Billings, MT 59101

Customer Project: Harrison Hall/ROTC Remodel
Reference #: CAL20064220AG Date: 06/29/20

Analysis and Method

Summary of polarized light microscopy (PLM / Stereomicroscopy bulk asbestos analysis) using the methods described in 40CFR Part 763 Appendix E to Subpart E (Interim and EPA 600 / R-93 / 116 (Improved). The sample is first viewed with the aid of a stereomicroscope. Numerous liquid slide preparations are created for analysis under the polarized microscope where identifications and quantifications are performed. Calibrated liquid refractive oils are used as liquid mounting medium. These oils are used for identification (dispersion staining). A calibrated visual estimation is reported, should any asbestiform mineral be present. Other techniques such as acid washing are used in conjunction with refractive oils for detection of smaller quantities of asbestos. All asbestos percentages are based on calibrated visual estimation traceable to NIST standards for regulated asbestos. Traceability to measurement and calibration is achieved by using known amounts and types of asbestos from standards where analyst and laboratory accuracy are measured. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 0.50% (well above the laboratory definition of trace).

Discussion

Vermiculite containing samples may contain trace amounts of actinolite/tremolite. When not detected by PLM, these samples should be analyzed using TEM methods and / or water separation techniques. Suspected actinolite/vermiculite presence will be indicated through the sample comment section of this report.

Fibrous talc containing samples may contain a regulated asbestos fiber known as anthophyllite. Under certain conditions the same fiber may actually contain both talc and anthophyllite (a phenomenon called intergrowth). Again, TEM detection methods are recommended. CA Labs PLM report comments will denote suspected amounts of asbestiform anthophyllite with talc, where further analysis is recommended.

Some samples (floor tiles, surfacings, etc.) may contain fibers too small to be detectable by PLM analysis and should be analyzed by TEM bulk protocols.

A "trace asbestos" will be reported if the analyst observes far less than 1% asbestos. CA Labs defines "trace asbestos" as a few fibers detected by the analyst in several preparations and will indicate as such under these circumstances.

Since allowable variation in quantification of samples close to 1% is high, <1% may be reported. Such results are ideal for point counting, and the technique is mandatory for friable samples (NESHAP, Nov. 1990 and clarification letter 8 May 1991) under 1% percent asbestos or "trace asbestos". **In order to make all initial PLM reports issued from CA Labs NESHAP compliant, all <1% asbestos results (except floor tiles) will be point counted at no additional charge.**

Qualifications

CA Labs is accredited by the National Voluntary Accreditation Program (NVLAP) for selected test methods for airborne fiber analysis (TEM), and for bulk asbestos fiber analysis (PLM). CA Labs is also accredited by AIHA LAP, LLC. in the PLM asbestos field of testing for Industrial Hygiene. All analysts have completed college courses or hold a degree in a natural science (geology, biology, or environmental science). Recognition by a state professional board in one these disciplines is preferred, but not required. Extensive in-house training programs are used to augment the educational background of the analyst. The Laboratory Director and Quality Manager have received supplemental McCrone Research training for asbestos identification. Analysis performed at Crisp Analytical Labs, LLC 1929 Old Denton Road Carrollton, TX 75006

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235
AIHA LAP, LLC Laboratory #102929

Overview of Project Sample Material Containing Asbestos

Customer Project:		Harrison Hall/ROTC Remodel			CA Labs Project #: CAL20064220AG	
Laboratory Sample ID	Sample #	Layer #	Analysts Physical Description of Subsample	Asbestos type / calibrated visual estimate percent	List of Affected Building Material Types	
55504	HH-F6.2B	F6.2B-1	black mastic	2% Chrysotile	black mastic	

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235
AIHA LAP, LLC Laboratory #102929

Glossary of abbreviations (non-asbestos fibers and non-fibrous minerals):

ca - carbonate	pe - perlite	fg - fiberglass	pa - palygorskite (clay)
gypsum - gypsum	qu - quartz	mw - mineral wool	
bi - binder		wo - wollastinite	
or - organic		ta - talc	
ma - matrix		sy - synthetic	
mi - mica		ce - cellulose	
ve - vermiculite		br - brucite	
ot - other		ka - kaolin (clay)	

This report relates to the items tested. This report is not to be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, AIHA LAP, LLC, or any other agency of the federal government. This report may not be reproduced except in full without written permission from CA Labs. These results are submitted pursuant to CA Labs' current terms and sale, condition of sale, including the company's standard warranty and limitations of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, CA Labs will store the samples for a period of ninety (90) days before discarding. A shipping or handling fee may be assessed for the return of any samples.

Polarized Light Asbestiform Materials Characterization

Customer Info: Tetra Tech 7100 Commercial Ave. Ste 4 Billings, MT 59101	Attn:	Customer Project: Harrison Hall/ROTC Remodel	CA Labs Project #: CAL20064220AG
Phone # 406-248-9161		Turnaround Time: 5 days	Date: 6/29/2020
Fax # 406-248-9282			Samples Rec'd: 6/22/20 10:30AM
			Date Of Sampling: None Given
			Purchase Order #:

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55503	HH-F6.2A		F6.2A-1	tan mastic	y	None Detected		100% gy,bi
55504	HH-F6.2B		F6.2B-1	black mastic	n	2% Chrysotile		98% gy,bi
55505	HH-F6.2C		F6.2C-1	black mastic		Positive Stop		
55506	HH-F6.3A		F6.3A-1	brown mastic	y	None Detected		100% gy,bi
55507	HH-F6.3B		F6.3B-1	brown mastic	y	None Detected		100% gy,bi
55508	HH-F6.3C		F6.3C-1	brown mastic	y	None Detected		100% gy,bi
55509	HH-M5.1A		M5.1A-1	white surfacing	y	None Detected		100% qu,bi


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:


Julio Robles
Analyst


Technical Manager
Tanner Rasmussen

Senior Analyst
Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

Polarized Light Asbestiform Materials Characterization

Customer Info: Tetra Tech 7100 Commercial Ave. Ste 4 Billings, MT 59101	Attn:	Customer Project: Harrison Hall/ROTC Remodel	CA Labs Project #: CAL20064220AG
Phone # 406-248-9161		Turnaround Time: 5 days	Date: 6/29/2020
Fax # 406-248-9282			Samples Rec'd: 6/22/20 10:30AM
			Date Of Sampling: None Given
			Purchase Order #:

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55509			M5.1A-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca
55510	HH-M5.1B		M5.1B-1	white surfacing	y	None Detected		100% qu,bi
55510			M5.1B-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca
55511	HH-M5.1C		M5.1C-1	white surfacing	y	None Detected		100% qu,bi
55511			M5.1C-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca
55512	HH-M5.2A		M5.2A-1	white surfacing	y	None Detected		100% qu,bi
55512			M5.2A-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:


Julio Robles
Analyst


Technical Manager
Tanner Rasmussen

Senior Analyst
Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
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5. Not enough sample to analyze

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9. < 1% Result point counted positive
10. TEM analysis suggested

Polarized Light Asbestiform Materials Characterization

Customer Info: Tetra Tech 7100 Commercial Ave. Ste 4 Billings, MT 59101	Attn:	Customer Project: Harrison Hall/ROTC Remodel	CA Labs Project #: CAL20064220AG
Phone # 406-248-9161		Turnaround Time: 5 days	Date: 6/29/2020
Fax # 406-248-9282			Samples Rec'd: 6/22/20 10:30AM
			Date Of Sampling: None Given
			Purchase Order #:

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55513	HH-M5.2B		M5.2B-1	white surfacing	y	None Detected	100% qu,bi	
55513			M5.2B-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca
55514	HH-M5.2C		M5.2C-1	white surfacing	y	None Detected	100% qu,bi	
55514			M5.2C-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca
55515	HH-M6.1A		M6.1A-1	off-white vinyl covering	y	None Detected	100% gy,ma	
55515			M6.1A-2	yellow ceiling tile	y	None Detected	100% fg	
55516	HH-M6.1B		M6.1B-1	off-white vinyl covering	y	None Detected	100% gy,ma	


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

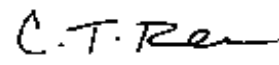
AIHA LAP, LLC Laboratory #102929

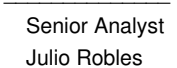
Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:


Julio Robles
Analyst


Technical Manager
Tanner Rasmussen


Senior Analyst
Julio Robles

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10. TEM analysis suggested

Polarized Light Asbestiform Materials Characterization

Customer Info: Tetra Tech 7100 Commercial Ave. Ste 4 Billings, MT 59101	Attn:	Customer Project: Harrison Hall/ROTC Remodel	CA Labs Project #: CAL20064220AG
Phone # 406-248-9161		Turnaround Time: 5 days	Date: 6/29/2020
Fax # 406-248-9282			Samples Rec'd: 6/22/20 10:30AM
			Date Of Sampling: None Given
			Purchase Order #:

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55516			M6.1B-2	yellow ceiling tile	y	None Detected	100% fg	
55517	HH-M6.1C		M6.1C-1	off-white vinyl covering	y	None Detected		100% gy,ma
55517			M6.1C-2	yellow ceiling tile	y	None Detected	100% fg	
55518	HH-M16.1A		M16.1 A-1	tan ceramic tile	y	None Detected		100% qu,ot
55518			M16.1 A-2	gray grouting	y	None Detected		100% qu,ca
55519	HH-M16.1B		M16.1 B-1	tan ceramic tile	y	None Detected		100% qu,ot
55519			M16.1 B-2	gray grouting	y	None Detected		100% qu,ca


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
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ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

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55520	HH-M16.1C		M16.1 C-1	tan ceramic tile	y	None Detected		100% qu,ot
55520			M16.1 C-2	gray grouting	y	None Detected		100% qu,ca
55521	HH-M16.2A		M16.2 A-1	tan ceramic tile	y	None Detected		100% qu,ot
55521			M16.2 A-2	gray grouting	y	None Detected		100% qu,ca
55522	HH-M16.2B		M16.2 B-1	tan ceramic tile	y	None Detected		100% qu,ot
55522			M16.2 B-2	gray grouting	y	None Detected		100% qu,ca
55523	HH-M16.2C		M16.2 C-1	tan ceramic tile	y	None Detected		100% qu,ot


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55523			M16.2 C-2	gray grouting	y	None Detected		100% qu,ca
55524	HH-M16.3A		M16.3 A-1	white ceramic tile	y	None Detected		100% qu,ot
55524			M16.3 A-2	gray grouting	y	None Detected		100% qu,ot
55525	HH-M16.3B		M16.3 B-1	white ceramic tile	y	None Detected		100% qu,ot
55525			M16.3 B-2	gray grouting	y	None Detected		100% qu,ca
55526	HH-M16.3C		M16.3 C-1	white ceramic tile	y	None Detected		100% qu,ot
55526			M16.3 C-2	gray grouting	y	None Detected		100% qu,ca


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55527	HH-M16.4A		M16.4 A-1	black ceramic tile	y	None Detected		100% qu,ot
55527			M16.4 A-2	gray grouting	y	None Detected		100% qu,ca
55528	HH-M16.4B		M16.4 B-1	red ceramic tile	y	None Detected		100% qu,ot
55528			M16.4 B-2	gray grouting	y	None Detected		100% qu,ca
55529	HH-M16.4C		M16.4 C-1	red ceramic tile	y	None Detected		100% qu,ot
55529			M16.4 C-2	gray grouting	y	None Detected		100% qu,ca
55530	HH-M16.5A		M16.5 A-1	red ceramic tile	y	None Detected		100% qu,ot


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55530			M16.5 A-2	gray grouting	y	None Detected		100% qu,ca
55531	HH-M16.5B		M16.5 B-1	tan ceramic tile	y	None Detected		100% qu,ot
55531			M16.5 B-2	gray grouting	y	None Detected		100% qu,ca
55532	HH-M16.5C		M16.5 C-1	tan ceramic tile	y	None Detected		100% qu,ot
55532			M16.5 C-2	gray grouting	y	None Detected		100% qu,ca
55533	HH-M16.6A		M16.6 A-1	tan ceramic tile	y	None Detected		100% qu,ot
55533			M16.6 A-2	gray grouting	y	None Detected		100% qu,ca


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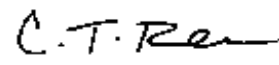
AIHA LAP, LLC Laboratory #102929

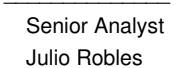
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55534	HH-M16.6B		M16.6 B-1	tan ceramic tile	y	None Detected	100% qu,ot	
55534			M16.6 B-2	gray grouting	y	None Detected	100% qu,ca	
55535	HH-M16.6C		M16.6 C-1	tan ceramic tile	y	None Detected	100% qu,ot	
55535			M16.6 C-2	gray grouting	y	None Detected	100% qu,ca	
55536	HH-M16.7A		M16.7 A-1	tan ceramic tile	y	None Detected	100% qu,ot	
55536			M16.7 A-2	gray grouting	y	None Detected	100% qu,ca	
55537	HH-M16.7B		M16.7 B-1	tan ceramic tile	y	None Detected	100% qu,ot	


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

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55537			M16.7 B-2	gray grouting	y	None Detected		100% qu,ca
55538	HH-M16.7C		M16.7 C-1	tan ceramic tile	y	None Detected		100% qu,ot
55538			M16.7 C-2	gray grouting	y	None Detected		100% qu,ca
55539	HH-M18.1A		M18.1 A-1	gray mortar	y	None Detected		100% qu,ca
55540	HH-M18.1B		M18.1 B-1	gray mortar	y	None Detected		100% qu,ca
55541	HH-M18.1C		M18.1 C-1	white surfaced off-white finishing compound	n	None Detected		100% qu,bi,ca
55541			M18.1 C-2	gray cement/mortar	y	None Detected		100% qu,ca


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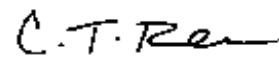
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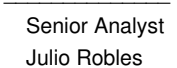
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55542	HH-M22.1A		M22.1 A-1	gray cement/mortar	y	None Detected		100% qu,ca
55542			M22.1 A-2	gray mortar	y	None Detected		100% qu,ca
55543	HH-M22.1B		M22.1 B-1	gray cement/mortar	y	None Detected		100% qu,ca
55543			M22.1 B-2	gray mortar	y	None Detected		100% qu,ca
55544	HH-M22.1C		M22.1 C-1	gray cement/mortar	y	None Detected		100% qu,ca
55544			M22.1 C-2	gray mortar	y	None Detected		100% qu,ca
55545	HH-M32.1A		M32.1 A-1	tan sealant with paper and foil	n	None Detected	30% ce	70% qu,bi,ot

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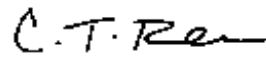
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55546	HH-M32.1B		M32.1 B-1	tan sealant with paper and foil	n	None Detected	30% ce	70% qu,bi,ot
55547	HH-M32.1C		M32.1 C-1	tan sealant with paper and foil	n	None Detected	30% ce	70% qu,bi,ot
55548	HH-T2.1A		T2.1A- 1	white woven covering	y	None Detected	100% ce	
55548			T2.1A- 2	gray insulation	y	None Detected		100% qu,ca,ma
55549	HH-T2.1B		T2.1B- 1	white woven covering	y	None Detected	100% ce	
55549			T2.1B- 2	gray insulation	y	None Detected		100% qu,ca,ma
55550	HH-T2.1C		T2.1C- 1	white woven covering	y	None Detected	100% ce	

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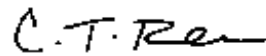
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or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:



Julio Robles
Analyst



Technical Manager
Tanner Rasmussen

Senior Analyst
Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

Polarized Light Asbestiform Materials Characterization

Customer Info: Tetra Tech 7100 Commercial Ave. Ste 4 Billings, MT 59101	Attn:	Customer Project: Harrison Hall/ROTC Remodel	CA Labs Project #: CAL20064220AG
Phone # 406-248-9161		Turnaround Time: 5 days	Date: 6/29/2020
Fax # 406-248-9282			Samples Rec'd: 6/22/20 10:30AM
			Date Of Sampling: None Given
			Purchase Order #:

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55550			T2.1C-2	yellow insulation	y	None Detected	100% fg	
55550			T2.1C-3	gray insulation	y	None Detected	100% qu,ca,ma	
55551	HH-T4.1A		T4.1A-1	black sealant	y	None Detected	100% qu,gy,bi	
55552	HH-T4.1B		T4.1B-1	black sealant	y	None Detected	100% qu,gy,bi	
55553	HH-T4.1C		T4.1C-1	black sealant	y	None Detected	100% qu,gy,bi	
58116	HH-M18.2A		M18.2 A-1	gray concrete	y	None Detected	100% qu,ca	
58117	HH-M18.2B		M18.2 B-1	gray concrete	y	None Detected	100% qu,ca	


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
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CA Labs
Dedicated to Quality

Crisp Analytical, L.L.C.
1929 Old Denton Road
Carrollton, TX 75006
Phone 972-242-2754
Fax 972-242-2798

CA Labs, L.L.C.
12232 Industriplex, Suite 32
Baton Rouge, LA 70809
Phone 225-751-5632
Fax 225-751-5634

Polarized Light Asbestiform Materials Characterization

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Phone # 406-248-9161		Turnaround Time: 5 days	Date: 6/29/2020
Fax # 406-248-9282			Samples Rec'd: 6/22/20 10:30AM
			Date Of Sampling: None Given
			Purchase Order #:

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous us (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
58118	HH-M18.2C		M18.2 C-1	gray concrete	y	None Detected		100% qu,ca


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

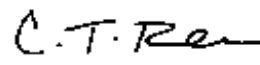
AIHA LAP, LLC Laboratory #102929

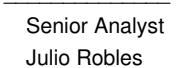
Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

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618 South 25th Street
 Billings, Montana 59101
 Phone: 406.248.9161 Fax 406.248.9282

AL2006 4220

ASBESTOS PLM CHAIN OF CUSTODY

CONTACT INFORMATION

Company: Tetra Tech, Inc. Phone: 406.582.8780
 Primary Contact: Shane Matolyak Phone / Email: shane.matolyak@tetratech.com
 Additional Contact: Roger W. Herman, Jr. Phone / Email: direct - 406.384.0297 cell - 406.670.4844
 Sampler Name(s) (print): Shane Matolyak Sampler Signature(s): [Signature]

PROJECT INFORMATION

Client: MSU Project Name: Harrison Hall / ROTC Remodel
 Project Location: Bozeman Project Number: Not Available

PLM INSTRUCTIONS

- PLM EPA 600/R-93/116
- PLM Point Count, PC 400 Points (All samples greater than 0%, but less than 10%)

Multi-Layered Samples:

- Analyze and Report All Separable Layers per EPA 600
- Report Composite for Drywall System per NESHP (where applicable)
- Only Analyze specifically noted layer
- Analyze Until Positive Stop: Positive Stop by Material Type as Noted

TURNAROUND TIME

10 Day 5 Day 3 Day 2 Day 1 Day Same Day RUSH. Results by: _____

Relinquished By	Date & Time	VIA	Received By	Date & Time
Shane Matolyak	6-19-2020 12:30	FEDEX	JUN 22 2020	

Erin Saunders M-18-24, M-18-25, M-18-26, M-18-27, M-18-28, M-18-29, M-18-30

[Signature]



TETRA TECH

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AL20664220

ASBESTOS PLM CHAIN OF CUSTODY

HOMOGENEOUS ID	LAB ID	SAMPLE DESCRIPTION AND LOCATION	NOTES
HH-F6-2-A		Yellow carpet tile glue over black mastic	
HH-F6-2-B		Yellow carpet tile glue over black mastic	
HH-F6-2-C		Yellow carpet tile glue over black mastic	
HH-F6-3-A		Brown ceiling tile glue pucks	
HH-F6-3-B		Brown ceiling tile glue pucks	
HH-F6-3-C		Brown ceiling tile glue pucks	
HH-M5-1-A		Smooth textured 2-ft by 4-ft ceiling panels	
HH-M5-1-B		Smooth textured 2-ft by 4-ft ceiling panels	
HH-M5-1-C		Smooth textured 2-ft by 4-ft ceiling panels	
HH-M5-2-A		Pinhole and fissure textured 2-ft by 4-ft ceiling panels	
HH-M5-2-B		Pinhole and fissure textured 2-ft by 4-ft ceiling panels	10:30AM
HH-M5-2-C		Pinhole and fissure textured 2-ft by 4-ft ceiling panels	JUN 22 2020
HH-M6-1-A		12-inch by 12-inch tan with grey patterned ceiling tiles	



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ASBESTOS PLM CHAIN OF CUSTODY

HH-M6-1-B		12-inch by 12-inch tan with grey patterned ceiling tiles	
HH-M6-1-C		12-inch by 12-inch tan with grey patterned ceiling tiles	
HH-M16-1-A		Brown and tan square and rectangle floor tile	
HH-M16-1-B		Brown and tan square and rectangle floor tile	
HH-M16-1-C		Brown and tan square and rectangle floor tile	
HH-M16-2-A		Cream and brown square and rectangle floor tile	
HH-M16-2-B		Cream and brown square and rectangle floor tile	
HH-M16-2-C		Cream and brown square and rectangle floor tile	
HH-M16-3-A		White square floor tile	
HH-M16-3-B		White square floor tile	
HH-M16-3-C		White square floor tile	10:30AM
HH-M16-4-A		Black and tan square floor tile	JUN 22 2020



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AC20064220

ASBESTOS PLM CHAIN OF CUSTODY

HH-M16-4-B		Black and tan square floor tile	
HH-M16-4-C		Black and tan square floor tile	
HH-M16-5-A		Brown 6-inch by 6-inch floor tile	
HH-M16-5-B		Brown 6-inch by 6-inch floor tile	
HH-M16-5-C		Brown 6-inch by 6-inch floor tile	
HH-M16-6-A		Ceramic glossy wall block with grey mortar	
HH-M16-6-B		Ceramic glossy wall block with grey mortar	
HH-M16-6-C		Ceramic glossy wall block with grey mortar	
HH-M16-7-A		Rough textured wall block with mortar	
HH-M16-7-B		Rough textured wall block with mortar	10:30AM JUN 22 2020
HH-M16-7-C		Rough textured wall block with mortar	<i>[Signature]</i>



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AL20064220

ASBESTOS PLM CHAIN OF CUSTODY

HH-M18-1-A		Concrete floor/foundation/pillars	
HH-M18-1-B		Concrete floor/foundation/pillars	
HH-M18-1-C		Concrete floor/foundation/pillars	
HH-M22-1-A		Grey block and mortar	
HH-M22-1-B		Grey block and mortar	
HH-M22-1-C		Grey block and mortar	
HH-M32-1-A		Brown insulation mastic	
HH-M32-1-B		Brown insulation mastic	
HH-M32-1-C		Brown insulation mastic	
HH-T2-1-A		Pipe insulation	10:30AM JUN 22 2020
HH-T2-1-B		Pipe insulation	



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AL20064220

ASBESTOS PLM CHAIN OF CUSTODY

HH-T2-1-C		Pipe insulation	
HH-T4-1-A		Black HVAC/vent sealant	
HH-T4-1-B		Black HVAC/vent sealant	
HH-T4-1-C		Black HVAC/vent sealant	

10:30AM

JUN 22 2020

SECTION 02 8200 - ABATEMENT OF ASBESTOS-CONTAINING MATERIALS

PART 1 - GENERAL

1.1 SUMMARY OF WORK

A. Contract Documents and Related Requirements

- 1 Drawings, general provisions of the contract, including general and supplementary conditions and other specification sections shall apply to the work of this section. The contract documents show the work to be done under the contract and related requirements and conditions impacting the project. Related requirements and conditions include applicable codes and regulations, notices and permits, existing site conditions and restrictions on use of the site, requirements for partial occupancy during the work, coordination with other work and the phasing of the work. In the event the Abatement Contractor discovers a conflict in the contract documents and/or requirements or codes, the conflict must be brought to the immediate attention of the Owner, Owner Representative, and general contractor for resolution. Whenever there is a conflict or overlap in the requirements, the most stringent shall apply. Any actions taken by the Abatement Contractor without obtaining guidance from the Owner shall become the sole risk and responsibility of the Abatement Contractor. All costs incurred due to such action are also the responsibility of the Asbestos Abatement Contractor.

B. Extent of Work

1. Abatement Contractor will coordinate all work, phasing, and scheduling with the Owner, Owner Representative, and General Contractor. Abatement Contractor will coordinate start date, the number of mobilizations required with the Owner, Owner Representative, and General Contractor. Strict adherence to the schedule will be required to allow the work to be completed in a timely manner to accommodate other activities on the site.
2. The project work areas have been inspected for the presence of asbestos-containing materials (ACM). The survey and test results are provided in Attachment A of this specification.
3. The Abatement Contractor shall satisfy himself as the actual quantities to be abated, disposed, and installed. Nothing in this section may be interpreted as limiting the extent of work otherwise required by this contract and related documents.
4. The work includes the remediation, disposal and cleanup of ACM 9-inch by 9-inch vinyl floor tile and associated mastics.
5. The work includes the remediation, disposal and cleanup of ACM mastics associated with non-asbestos various color carpet squares.
6. The work includes the remediation, disposal and cleanup of less than 1 percent ACM plaster walls and ceilings.
7. The Contractor shall take into consideration that the concrete flooring may be pitted, cracked, in bad condition, and have leveling compound. The Contractor shall insure that all costs are covered in his/her bid as no additional costs shall be made to the contract.
8. Abatement Contractor shall insure that all costs are covered in his/her bid as no additional costs shall be made to the contract for unusual containment enclosures.
9. The Abatement Contractor shall be responsible for moving all non-fixed school property out of the Abatement Contractors work areas excluding cabinets and other fixed objects which will be removed by the Abatement Contractor under containment.
10. Removal, packaging, clean-up, and disposal of ACM and asbestos contaminated elements in an appropriate regulated area as necessary to accommodate disposal of ACM.
11. Any damage to components not scheduled for demolition, resulting from the Abatement Contractors work shall be repaired or replaced at the sole cost of the Abatement Contractor utilizing appropriately qualified tradespersons.
12. Abatement Contractor will coordinate all work, phasing and number of mobilizations with the General Contractor.

C. Tasks

The work tasks are summarized briefly as follows:

1. The Abatement Contractor will coordinate with the Owner, Owner Representative, and General Contractor for scheduling of access to the building. The Abatement Contractor shall assume that the building will be partially occupied during this project.

2. Access to the site will be restricted to the Abatement Contractor, General Contractor, General Contractor's Sub-contractors, Owner, Owner Representative and Architect. The work areas shall be demarcated in accordance with the OSHA requirements. Appropriate signage is discussed elsewhere in this specification.
 3. Pre-abatement activities including pre-abatement meeting(s), inspection(s), notifications, permits, submittal approvals, work-site preparations, emergency procedures arrangements, and standard operating procedures (SOPs) for asbestos abatement work.
 4. Abatement activities including removal, packaging, encapsulation, clean-up, storing, and disposal of ACM waste, recordkeeping, security, monitoring, and inspections.
 5. Cleaning and decontamination activities including final visual inspection, air monitoring, and certification of decontamination.
- D. Abatement Contractors Use of Premises
1. The Abatement Contractor and Abatement Contractor's personnel shall cooperate fully with the Owner, Owner Representative, General Contractor, and Architect to facilitate efficient use of the site. The Abatement Contractor shall perform the work in accordance with the specifications, phasing plan and in compliance with any/all applicable Federal, State and Local regulations and requirements.
 2. The Abatement Contractor shall specify the facilities proposed to be utilized in the pre-abatement work plan. The Abatement Contractor shall use only the existing facilities in the building strictly within the limits indicated in the approved pre-abatement work plan. Any variation from the approved work plan shall be secured in writing from the Owner.

1.2 STOP ASBESTOS REMOVAL

- A. If the Owner or Owner Representative presents a verbal Stop Asbestos Removal Order, the Abatement Contractor/Personnel shall immediately stop all asbestos removal and maintain HEPA filtered air flow and adequately wet any exposed ACM. If a verbal Stop Asbestos Removal Order is issued, the Owner shall follow-up with a written order to the Abatement Contractor as soon as it is practicable. The Abatement Contractor shall not resume any asbestos removal activity until authorized to do so by the Owner. A stop asbestos removal order may be issued at any time the Owner or Owner Representative determines abatement conditions or activities are not within specification requirements, regulatory requirements or that an imminent hazard exists to human health or the environment. Work stoppage will continue until conditions have been corrected to the satisfaction of the Owner and Owner Representative. Standby time and costs for corrective actions will be borne by the Abatement Contractor, including the Owner Representative(s) time. The occurrence of any of the following events shall be reported immediately by the Abatement Contractor's competent person to the Owner or Owner Representative using the most expeditious means (e.g., verbal or telephonic), followed up with written notification to the Owner as soon as practical. The Abatement Contractor shall immediately stop asbestos removal/disturbance activities and initiate fiber reduction activities:
1. Airborne PCM analysis results equal to or greater than 0.01 f/cc outside a regulated area or >0.05 f/cc inside a regulated area;
 2. breach or break in regulated area containment barrier(s);
 3. less than -0.02" WCG pressure in the regulated area;
 4. serious injury/death at the site;
 5. fire/safety emergency at the site;
 6. respiratory protection system failure;
 7. power failure or loss of wetting agent; or
 8. any visible emissions observed outside the regulated area.

1.3 DEFINITIONS

- A. Definitions and explanations here are neither complete nor exclusive of all terms used in the contract documents, but are general for the work to the extent they are not stated more explicitly in another element of the contract documents. Drawings must be recognized as diagrammatic in nature and not completely descriptive of the requirements indicated therein.
- B. Glossary
Definitions relative to Asbestos Abatement.
1. Abatement - Procedures to control fiber release from asbestos-containing materials, typically

- during removal. Includes removal, encapsulation, enclosure, demolition and renovation activities related to asbestos.
2. ACBM - Asbestos-containing building materials.
 3. ACE - Asbestos contaminated elements.
 4. ACM - Asbestos-containing material.
 5. Aerosol - Solid or liquid particulate suspended in air.
 6. Adequately wet - Sufficiently mixed or penetrated with liquid to prevent the release of particulates. If visible emissions are observed coming from the ACM, then that material has not been adequately wetted.
 7. Aggressive method - Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact ACM.
 8. Aggressive sampling - EPA AHERA defined clearance sampling method using air moving equipment such as fans and leaf blowers to aggressively disturb and maintain in the air residual fibers after abatement.
 9. AHERA - Asbestos Hazard Emergency Response Act. Asbestos regulations for schools issued in 1987.
 10. AIHA - American Industrial Hygiene Association.
 11. Aircell - Pipe or duct insulation made of corrugated cardboard which contains asbestos.
 12. Air monitoring - The process of measuring the fiber content of a known volume of air collected over a specified period of time. The NIOSH 7400 Method, Issue 2 is used to determine the fiber levels in air.
 13. Air monitoring firm - The firm retained by the Owner to conduct baseline, area, and clearance air monitoring prior to, during, and following the asbestos abatement.
 14. Air sample filter - The filter used to collect fibers which are then counted. The filter is made of mixed cellulose ester membrane for PCM (Phase Contrast Microscopy) and polycarbonate for TEM (Transmission Electron Microscopy)
 15. Amended water - Water to which a surfactant (wetting agent) has been added to increase the penetrating ability of the liquid.
 16. Asbestos - Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated or altered. Asbestos also includes PACM, as defined below.
 17. Asbestos-containing building material (ACBM) - Any building material containing more than one percent by weight of asbestos of any type or mixture.
 18. Asbestos-containing material (ACM) - Any material containing more than one percent by weight of asbestos of any type or mixture.
 19. Asbestos contaminated elements (ACE) - Building elements such as ceilings, walls, lights, or ductwork that are contaminated with asbestos.
 20. Asbestos contaminated soil (ACS) - Soil found in the regulated area or in adjacent areas such as crawlspaces or pipe tunnels, which is contaminated with asbestos-containing material debris and cannot be easily separated from the material.
 21. Asbestos-containing waste (ACW) material - Asbestos-containing material or asbestos contaminated objects requiring disposal.
 22. Asbestos waste decontamination facility - A system consisting of drum/bag washing facilities and a temporary storage area for cleaned containers of asbestos waste. Used as the exit for waste and equipment leaving the regulated area. In an emergency, it may be used to evacuate personnel.
 23. ASHARA - Asbestos School Hazard Abatement Re-Authorization Act. This act on the regulations for implementation requires individuals conducting asbestos inspections to be AHERA trained with current certification.
 24. Authorized person - Any person authorized by the Owner, Owner Representative, the Abatement Contractor, or government agency and required by work duties to be present in regulated areas.
 25. Authorized visitor - Any person approved by the Owner, Owner Representative, the Abatement Contractor, or any government agency having jurisdiction over the regulated area.
 26. Barrier - Any surface that isolates the regulated area and inhibits fiber migration from the regulated area.

27. Containment Barrier - An airtight barrier consisting of walls, floors, and/or ceilings of sealed plastic sheeting which surrounds and seals the outer perimeter of the regulated area.
28. Critical Barrier - The barrier responsible for isolating the regulated area from adjacent spaces, typically constructed of plastic sheeting secured in place at openings such as doors, windows, or any other opening into the regulated area.
29. Primary Barrier - Barriers placed over critical barriers and exposed directly to abatement work.
30. Secondary Barrier - Any additional plastic barriers used to isolate and provide protection from debris during abatement work.
31. Breathing zone - The hemisphere, forward of the shoulders with a radius of about 150–225 mm (6–9 inches), from the worker's nose.
32. Bridging encapsulant - An encapsulant that forms a layer on the surface of the ACM.
33. Building/facility owner - The legal entity, including a lessee, which exercises control over management and recordkeeping functions relating to a building and/or facility in which asbestos activities take place.
34. Bulk testing - The collection and analysis of suspect asbestos-containing materials.
35. Certified Industrial Hygienist (CIH) - One certified in practice of industrial hygiene by the American Board of Industrial Hygiene (AIHA).
36. Class I asbestos work - Activities involving the removal of Thermal System Insulation (TSI), surfacing ACM and Presumed Asbestos-containing Material (PACM).
37. Class II asbestos work - Activities involving the removal of ACM, which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic.
38. Class III asbestos work - Repair and maintenance operations where ACM, including TSI and surfacing ACM and PACM, may be disturbed.
39. Class IV asbestos work - Maintenance and custodial activities during which employees contact but do not disturb ACM or PACM, and activities to clean up dust, waste, and debris resulting from Class I, II, and III activities.
40. Clean room/Changing room - An uncontaminated room having facilities for the storage of employee's street clothing and uncontaminated materials and equipment.
41. Clearance sample - The final air sample taken after all asbestos work has been done and visually inspected. Performed by the Owners industrial hygiene consultant (IHC).
42. Closely resemble - The major workplace conditions, which have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.
43. Competent person - In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f); in addition, for Class I and II work, who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisor.
44. Count - Refers to the fiber count or the average number of fibers greater than five microns in length per cubic centimeter of air.
45. Crawlspace - An area which can be found either in or adjacent to the regulated area. This area has limited access and egress and may contain asbestos materials and/or asbestos contaminated soil.
46. Decontamination area/unit - An enclosed area adjacent to and connected to the regulated area and consisting of an equipment room, shower room, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
47. Demolition - The wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.
48. Disposal bag - Typically 6-milimeter (mil) thick sift proof, dustproof, leak tight container, used to package and transport asbestos waste from regulated areas to the approved landfill. Each bag or container must be labeled and marked in accordance with EPA, OSHA and United States Department of Transportation (USDOT) requirements.

49. Disturbance - Activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM or PACM, no greater than the amount that can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or disposal bag, which shall not exceed 60 inches in length or width.
50. Drum - A rigid, impermeable container made of cardboard fiber, plastic, or metal which can be sealed in order to be sift proof, dustproof, and leak tight.
51. Employee exposure - The exposure to airborne asbestos that would occur if the employee were not wearing respiratory protection equipment.
52. Encapsulant - A material that surrounds or embeds asbestos fibers in an adhesive matrix and prevents the release of fibers.
53. Encapsulation - Treating ACM with an encapsulant.
54. Enclosure - The construction of an air tight, impermeable, permanent barrier around ACM to control the release of asbestos fibers from the material and also eliminate access to the material.
55. Equipment room - A contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.
56. Fiber - A particulate form of asbestos, 5 microns or longer, with a length to width ratio of at least 3 to 1.
57. Fibers per cubic centimeter (f/cc) - Abbreviation for fibers per cubic centimeter, used to describe the level of asbestos fibers in air.
58. Filter - Media used in respirators, vacuums, or other machines to remove particulate from air.
59. Firestopping - Material used to close the open parts of a structure in order to prevent a fire from spreading.
60. Friable asbestos-containing material - Any material containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR 763, Section 1, Polarized Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
61. Glove bag - Not more than a 60" x 60" impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which materials and tools may be handled.
62. High efficiency particulate air (HEPA) filter - A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 microns or greater in diameter.
63. HEPA vacuum - vacuum collection equipment equipped with a HEPA filter system capable of collecting and retaining asbestos fibers.
64. Homogeneous area - An area of surfacing, thermal system insulation or miscellaneous ACM that is uniform in color, texture and date of application.
65. HVAC - Heating, Ventilation and Air Conditioning
66. Industrial hygienist (IH) - A professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards and meets definition requirements of AIHA.
67. Industrial hygienist technician (IH Technician) - A person working under the direction of an IH or CIH who has special training, experience, certifications and licenses required for the industrial hygiene work assigned.
68. Intact - The ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.
69. Lockdown - Applying encapsulant, after a final visual inspection, on all abated surfaces at the conclusion of ACM removal prior to removal of critical barriers.
70. National Emission Standards for Hazardous Air Pollutants (NESHAP's) - EPA's rule to control emissions of asbestos to the environment.
70. National Emission Standards for Hazardous Air Pollutants (NESHAP) - EPA's rule to control emissions of asbestos to the environment (40 CFR part 61, Subpart M).
71. Negative initial exposure assessment - A demonstration by the employer which complies with the criteria in 29 CFR 1926.1101 (f) (2) (iii), that employee exposure during an operation is expected to be consistently below the PEL's.

72. Negative pressure - Air pressure, which is lower than the surrounding area, created by exhausting air from a sealed regulated area through HEPA equipped filtration units. OSHA requires maintaining a 5.0 Pa (-0.02") water gauge inside the negative pressure enclosure.
73. Negative pressure respirator - A respirator in which the air pressure inside the facepiece is negative during inhalation, relative to the air outside the respirator.
74. Non-friable ACM - Material that contains more than 1 percent asbestos but cannot be crumbled, pulverized, or reduced to powder by hand pressure.
75. Organic vapor cartridge - The type of cartridge used on air purifying respirators for organic vapor exposures.
76. Outside air - The air outside buildings and structures, including, but not limited to, the air under a bridge or in an open ferry dock.
77. Penetrating encapsulant - Encapsulant that is absorbed into the ACM matrix without leaving a surface layer.
78. Personal sampling/monitoring - Representative air samples obtained in the breathing zone of the person, using a cassette and battery-operated pump to determine asbestos exposure.
79. Permissible exposure limit (PEL) - The level of exposure OSHA allows for an 8-hour time weighted average. For asbestos fibers, the PEL is 0.1 fibers per cubic centimeter.
80. Personal protective equipment (PPE) - equipment designed to protect user from injury and/or specific job hazard. Such equipment may include protective clothing, hard hats, safety glasses, and respirators.
81. Pipe tunnel - An area, typically located adjacent to mechanical spaces or boiler rooms, in which the pipes servicing the heating system in the building are routed to allow the pipes to access heating elements. These areas may contain asbestos pipe insulation, asbestos fittings, or asbestos contaminated soil.
82. Polarized light microscopy (PLM) - Light microscopy using dispersion staining techniques and refractive indices to identify and quantify the type(s) of asbestos present in a bulk sample.
83. Polyethylene sheeting - Strong plastic barrier material 4 to 6-mil thick, semitransparent, sometimes flame retardant is in compliance with NFPA 241.
84. Positive/negative fit check - A method of verifying the fit of a respirator by closing off the filters and breathing in or closing off the exhalation valve and breathing out while detecting leakage of the respirator.
85. Presumed ACM (PACM) - Thermal system insulation, surfacing, and flooring material installed in buildings prior to 1981. If the building owner has actual knowledge, or should have known through the exercise of due diligence that other materials are ACM, they too must be treated as PACM. The designation of PACM may be rebutted pursuant to 29 CFR 1926.1101 (k) (5).
86. Professional IH - An IH who meets the definition requirements of AIHA; meets the definition requirements of OSHA as a "Competent Person" at 29 CFR 1926.1101 (b); Must have AHERA type training for supervisor; has completed two specialized EPA approved courses on management and supervision of asbestos abatement projects; has formal training in respiratory protection and waste disposal; and has a minimum of four projects of similar complexity with this project of which at least three projects serving as the supervisory IH.
87. Project designer - A person who has successfully completed the training requirements for an asbestos abatement project designer as required by 40 CFR 763 Appendix C, Part I; (B)(5).
88. Assigned Protection factor - A value assigned by OSHA/NIOSH to indicate the expected protection provided by each respirator class, when the respirator is properly selected and worn correctly. The number indicates the reduction of exposure level from outside to inside the respirator facepiece.
89. Qualitative fit test (QLFT) - A fit test using a challenge material that can be sensed by the wearer if leakage in the respirator occurs.
90. Quantitative fit test (QNFT) - A fit test using a challenge material which is quantified outside and inside the respirator thus allowing the determination of the actual fit factor.
91. Regulated area - An area established by the employer to demarcate where Class I, II, III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work may accumulate; and a work area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed the PEL.

92. Regulated ACM (RACM) - Friable ACM; Category I nonfriable ACM that has become friable; Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading or; Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of the demolition or renovation operation.
 93. Removal - All operations where ACM, PACM and/or RACM is taken out or stripped from structures or substrates, including demolition operations.
 94. Renovation - Altering a facility or one or more facility components in any way, including the stripping or removal of asbestos from a facility component which does not involve demolition activity.
 95. Repair - Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.
 96. Shower room - The portion of the personal decontamination facility (PDF) where personnel shower before leaving the regulated area. Also used for bag/drum decontamination in the Waste/Equipment Decontamination Facility (W/EDF).
 97. Standard operating procedures (SOPs) - Asbestos work procedures required to be submitted by the Abatement Contractor before work begins.
 98. Supplied air respirator (SAR) - A respirator that utilizes an air supply separate from the air in the regulated area.
 99. Surfacing ACM - A material containing more than 1 percent asbestos that is sprayed, troweled on or otherwise applied to surfaces for acoustical, fireproofing and other purposes.
 100. Surfactant - A chemical added to water to decrease water's surface tension thus making it more penetrating into ACM.
 101. Thermal system ACM - A material containing more than 1 percent asbestos applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain.
 102. Transmission electron microscopy (TEM) - A microscopy method that can identify and count asbestos fibers.
 103. Visible emissions - Any emissions, which are visually detectable without the aid of instruments, coming from ACM/PACM/RACM or ACM waste material.
 104. Waste/Equipment decontamination facility (W/EDF) - The area in which equipment is decontaminated before removal from the regulated area.
 105. Waste generator - Any owner or operator whose act or process produces asbestos-containing waste material.
 106. Waste shipment record - The shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.
 107. Wet cleaning - The process of thoroughly eliminating, by wet methods, any asbestos contamination from surfaces or objects.
- C. Referenced Standards Organizations
1. The following acronyms or abbreviations as referenced in contract/specification documents are defined to mean the associated names. Names and addresses may be subject to change.
 - a. AIHA American Industrial Hygiene Association
2700 Prosperity Avenue, Suite 250
Fairfax, VA 22031
Telephone: 703-849-8888
 - b. ANSI American National Standards Institute
1430 Broadway
New York, NY 10018
Telephone: 212-354-3300
 - c. ASTM American Society for Testing and Materials
1916 Race St.
Philadelphia, PA 19103
Telephone: 215-299-5400

- d. CFR Code of Federal Regulations
Government Printing Office
Washington, DC 20420
- e. CGA Compressed Gas Association
1235 Jefferson Davis Highway
Arlington, VA 22202
Telephone: 703-979-0900
- f. CS Commercial Standard of the National Institute of Standards and Technology (NIST)
U. S. Department of Commerce
Government Printing Office
Washington, DC 20420
- g. EPA Environmental Protection Agency
401 M St., SW
Washington, DC 20460
Telephone: 202-382-3949
- h. NIST National Institute for Standards and Technology
U. S. Department of Commerce
Gaithersburg, MD 20234
Telephone: 301-921-1000
- i. NEC National Electrical Code (by NFPA)
- j. NEMA National Electrical Manufacturer's Association
2101 L Street, N.W.
Washington, DC 20037
- k. NFPA National Fire Protection Association
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
Telephone: 1-800-344-3555
- l. NIOSH National Institutes for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226
Telephone: 513-533-8236
- m. OSHA Occupational Safety and Health Administration
U.S. Department of Labor
Government Printing Office
Washington, DC 20402
- n. UL Underwriters Laboratory
333 Pfingsten Rd.
Northbrook, IL 60062
Telephone: 312-272-8800

1.4 APPLICABLE CODES AND REGULATIONS

- A. General Applicability of Codes, Regulations, and Standards
 - 1. All work under this contract shall be done in strict accordance with all applicable Federal, State, and local regulations, standards and codes governing asbestos abatement, and any other trade work done in conjunction with the abatement. All applicable codes, regulations and standards are adopted into this specification and will have the same force and effect as this specification.
 - 2. The most recent edition of any relevant regulation, standard, document or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirement(s) shall be utilized.
 - 3. Copies of all standards, regulations, codes and other applicable documents, including this specification and those listed in this Section 1.4 shall be available at the worksite.
- B. Abatement Contractor Responsibility
 - 1. The Abatement Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State and Local regulations related to any and all aspects of the abatement project. The Abatement Contractor is responsible for providing and maintaining training,

accreditations, medical exams, medical records, PPE including respiratory protection including respirator fit testing, as required by applicable Federal, State and Local regulations. The Abatement Contractor shall hold the Owner, Owner Representative, Architect, Consultant and IHC harmless for any failure to comply with any applicable work, packaging, transporting, disposal, safety, health, or environmental requirement on the part of himself, his employees, or his subcontractors. The Abatement Contractor will incur all costs of the IHC, including all sampling/analytical costs to assure compliance with OSHA/EPA/State requirements related to failure to comply with the regulations applicable to the work.

C. Federal Requirements

1. Federal requirements which govern some aspect of asbestos abatement include, but are not limited to, the following regulations.
 - a. OSHA
 - i. Title 29 CFR 1910 Subpart I - Personal Protective Equipment
 - ii. Title 29 CFR 1910.134 - Respiratory Protection
 - iii. Title 29 CFR 1910.1020 - Access to Employee Exposure and Medical Records
 - iv. Title 29 CFR 1910.1200 - Hazard Communication
 - v. Title 29 CFR 1910 Subpart K - Medical and First Aid
 - vi. 29 CFR 1926 - Construction Industry
 - vii. Title 29 CFR 1926.1101 - Construction Standard for Asbestos
 - b. EPA
 - i. 40 CFR 61 Subpart A and M (Revised Subpart B) - National Emission Standard for Hazardous Air Pollutants - Asbestos
 - ii. 40 CFR 763.80 - Asbestos Hazard Emergency Response Act (AHERA)
 - c. USDOT
 - i. Title 49 CFR 100 - 185 - Transportation

D. State Requirements

1. State requirements that apply to the asbestos abatement work, disposal, transportation, clearance, etc., include, but are not limited to, the following regulations.
 - a. Montana Department of Environmental Quality (MDEQ)
 - i. MCA Title 75, Chapter 2, Parts 1-4 – Air Quality
 - ii. MCA Title 75, Chapter 10, Part 4 – Hazardous Waste Management
 - iii. MCA Title 75, Chapter 2, Part 5 – Asbestos Control
 - iv. ARM Title 17, Chapter 8 – Air Quality
 - v. ARM Title 17, Chapter 53 – Hazardous Waste Management
 - vi. ARM Title 17, Chapter 74 – Asbestos Control

E. Standards

1. Standards which govern asbestos abatement activities include, but are not limited to, the following:
 - a. ANSI Z9.2-79 - Fundamentals Governing the Design and Operation of Local Exhaust Systems Z88.2 - Practices for Respiratory Protection.
 - b. ANSI Z41.1 - Safety Toe Footwear.
 - c. ANSI Z87.1 - Practice for Occupational and Educational Eye and Face Protection
 - d. ANSI Z88.2-80 - Practices for Respiratory Protection
 - e. ANSI X88.6 - Respiratory Protection - Respiratory Use Physical Qualifications for Personnel
 - f. ANSI Z89.1 - Requirements for Industrial Head Protection
 - g. Underwriters Laboratories (UL) 586-90 - UL Standard for Safety of HEPA Filter Units, 7th Edition.
2. Standards which govern encapsulation work include, but are not limited to the following:
 - a. ASTM
3. Standards governing testing laboratories:
 - a. AIHA
 - b. NIST
4. Standards which govern the fire and safety concerns in abatement work include, but are not limited to, the following:
 - a. National Fire Protection Association (NFPA) 10 - Standard for Fire Extinguishers.
 - b. NFPA 70 - Standard for National Electric Code.

- c. NFPA 101 - Life Safety Code
 - d. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.
 - e. NFPA 701 - Standard Methods for Fire Tests for Flame Resistant Textiles and Film.
 - f. Uniform Building Code (UBC) - 2006 Edition
- F. EPA Guidance Documents
- 1. EPA guidance documents which discuss asbestos abatement work activities are listed below. These documents are made part of this section by reference. EPA publications can be ordered from (800) 424-9065.
 - 2. Guidance for Controlling ACM in Buildings (Purple Book) EPA 560/5-85-024
 - 3. Asbestos Waste Management Guidance EPA 530-SW-85-007
 - 4. A Guide to Respiratory Protection for the Asbestos Abatement Industry EPA-560-OPTS-86-001
 - 5. Guide to Managing Asbestos in Place (Green Book) TS 799 20T July 1990
- G. Notices
- 1. State and Local agencies: Send written notification as required by state and local regulations including the local fire department prior to beginning any work on ACM.
 - 2. Copies of notifications shall be submitted to the Owner for the facility's records in the same time frame notification is given to Montana Department of Environmental Quality authorities.
- H. Permits/Licenses/Fees
- 1. The Abatement Contractor shall apply for and have all required permits and licenses to perform asbestos abatement work, packaging, and storing, and provide timely notification of such actions as may be required by Federal, State, and Local regulations. Written notification/permit shall be submitted to:
 - a. Montana Department of Environmental Quality
Waste and Underground Tank Bureau
Asbestos Control Program
1520 East 6th Avenue, P.O. Box 200901
Helena, Montana 59620-0901
Phone (406) 444-5300
 - 2. The Abatement Contractor shall be responsible for all applicable fees associated with permits and licenses.
 - 3. The Abatement Contractor shall be responsible for all applicable fees associated with patent(s).
- I. Posting and Filing of Regulations
- 1. Maintain two copies of applicable federal, state, and local regulations. Post one copy of each at the regulated area where workers will have daily access to the regulations and keep another copy in the Abatement Contractor's office.
- J. Owner Responsibilities
- 1. Prior to commencement of work:
 - a. Owner or Owner Representative will notify others of project dates and requirements for relocation, if needed. Note: Notification of adjacent personnel is required by OSHA in 29 CFR 1926.1101 (k) to prevent unnecessary or unauthorized access to the regulated area.
 - b. Submit to the Abatement Contractor results of background air sampling; including location of samples, person who collected the samples, equipment utilized and method of analysis (as applicable). During abatement, submit to the Abatement Contractor, results of bulk material analysis and air sampling data collected during the course of the abatement (as applicable). This information shall not release the Abatement Contractor from any responsibility for OSHA compliance.

1.5 EMERGENCY ACTION PLAN AND ARRANGEMENTS

- A. An Emergency Action (Plan) shall be developed by the Abatement Contractor prior to commencing abatement activities and shall be agreed to by the Abatement Contractor and the Owner. The Plan shall meet the requirements of 29 CFR 1910.38 (a) and (b).
- B. Emergency procedures shall be in written form and prominently posted in the clean room and equipment room of the decontamination unit. Everyone, prior to entering the regulated area, must read and sign these procedures to acknowledge understanding of the regulated area layout, location of emergency exits and emergency procedures.

- C. Emergency planning shall include written notification of police, fire, and emergency medical personnel of planned abatement activities; work schedule and layout of regulated area, particularly barriers that may affect response capabilities.
- D. Emergency planning shall include consideration of fire, explosion, hazardous atmospheres, electrical hazards, slips/trips and falls, confined spaces, and heat stress illness. Written procedures for response to emergency situations shall be developed and employee training in procedures shall be provided.
- E. Employees shall be trained in regulated area/site evacuation procedures in the event of workplace emergencies.
 - 1. For non-life-threatening situations - employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the regulated area to obtain proper medical treatment.
 - 2. For life threatening injury or illness, worker decontamination shall take least priority after measures to stabilize the injured worker, remove them from the regulated area, and secure proper medical treatment.
- F. Telephone numbers of all emergency response personnel shall be prominently posted in the clean room, along with the location of the nearest telephone.
- G. The Abatement Contractor shall provide verification of first aid/CPR training for personnel responsible for providing the training. OSHA requires medical assistance within 3-4 minutes of a life-threatening injury/illness. Bloodborne pathogen training shall also be verified for those personnel required to provide first aid/CPR.
- H. The Emergency Action Plan shall provide a Contingency Plan in the event that an incident occurs that may require the modification of the SOPs during abatement. Such incidents include, but are not limited to, fire; accident; power failure; negative pressure failure; and supplied air system failure. The Abatement Contractor shall detail procedures to be followed in the event of an incident assuring that work is stopped and wetting is continued until correction of the problem.

1.6 PRE-CONSTRUCTION MEETING

- A. Prior to commencing the work, the Abatement Contractor shall meet with the Owner, Owner Representative, General Contractor, other Contractors (as applicable), and the Industrial Hygienist/Air Monitoring Firm (IHC) to present and review, as appropriate, of the items following this paragraph. The Abatement Contractor's Competent Person(s) who will be on-site shall participate in the pre-construction meeting. The pre-construction meeting is to discuss and determine procedures to be used during the project. At this meeting, the Abatement Contractor shall provide:
 - 1. Proof of Abatement Contractor licensing.
 - 2. Proof the Competent Person is trained and accredited and certified for working in the State of Montana. Verification of the experience of the Competent Person(s) shall also be presented.
 - 3. A list of all workers who will participate in the project, including experience and verification of training and accreditation in the State of Montana.
 - 4. A list of and verification of training for all personnel who have current first aid/ CPR training. A minimum of one person per shift must have adequate training.
 - 5. Current medical written opinions for all personnel working on-site meeting the requirements of 29 CFR 1926.1101 (m).
 - 6. Current fit-tests for all personnel wearing respirators on-site meeting the requirements of 29 CFR 1926.1101 (h) and Appendix C.
 - 7. A copy of the Abatement Contractor's Asbestos Hazard Abatement Plan. In these procedures, the following information must be detailed, specifically for this project.
 - a. Regulated area preparation procedures;
 - b. Notification requirements procedure of Abatement Contractor as required in 29 CFR 1926.1101 (d);
 - c. Decontamination area set-up/layout and decontamination procedures for employees;
 - d. Abatement methods/procedures and equipment to be used; and
 - e. PPE to be used.
 - 8. At this meeting the Abatement Contractor shall provide all submittals as required.
 - 9. Procedures for handling, packaging, storage, and disposal of asbestos waste.
 - 10. Emergency Action Plan and Contingency Procedures.

1.7 PROJECT COORDINATION

The following are the minimum administrative and supervisory personnel necessary for coordination of the work.

A. Personnel

1. Administrative and supervisory personnel shall consist of a qualified Competent Person(s) as defined by OSHA in the Construction Standards and the Asbestos Construction Standard. These employees are the Abatement Contractor's Representatives responsible for compliance with these specifications and all other applicable requirements.
2. Non-supervisory personnel shall consist of an adequate number of qualified personnel to meet the schedule requirements of the project. Personnel shall meet required qualifications. Personnel utilized on-site shall be pre-approved by the Owner. A request for approval shall be submitted for any person to be employed during the project giving the person's name; qualifications; Certificate of Worker's Acknowledgment; and Affidavit of Medical Surveillance and Respiratory Protection.
3. Minimum qualifications for the Abatement Contractor and assigned personnel are:
 - a. The Abatement Contractor has conducted within the last 3 years, three projects of similar complexity and dollar value as this project; has not been cited and penalized for serious violations of asbestos regulations in the past 3 years; has adequate liability/occurrence insurance for asbestos work; is licensed in applicable states; has adequate and qualified personnel available to complete the work; and has comprehensive SOPs for asbestos work; has adequate materials, equipment and supplies to perform the work.
 - b. The Competent Person has 4 years of abatement experience, of which 2 years were as the Competent Person on the project; meets the OSHA definition of a Competent Person; has been the Competent Person on two projects of similar size and complexity as this project; has completed EPA AHERA/OSHA/State/ training requirements/accreditation(s) and refreshers; and has all required OSHA documentation related to medical and respiratory protection. Competent Person shall be accredited by the State of Montana.
 - c. The Abatement Personnel shall have completed the EPA AHERA/OSHA/State abatement worker course; have training on the SOPs of the Abatement Contractor; has one year of asbestos abatement experience; has applicable medical and respiratory protection documentation; has a certificate of training and a State of Montana accreditation.

All personnel should be in compliance with OSHA construction safety training as applicable and submit certification documents.

1.8 RESPIRATORY PROTECTION

A. General – Respiratory Protection Program

1. The Abatement Contractor shall develop and implement a Respiratory Protection Program (RPP) which is in compliance with OSHA requirements found at 29 CFR 1926.1101 and 29 CFR 1910.132;134. ANSI Standard Z88.2-1992 provides excellent guidance for developing a respiratory protection program. All respirators used must be NIOSH approved for asbestos abatement activities. The written RPP shall, at a minimum, contain the basic requirements found at 29 CFR 1910.134 (c) (1) (i - ix) - Respiratory Protection Program.

B. Respiratory Protection Program Coordinator

1. The Respiratory Protection Program Coordinator (RPPC) must be identified. The RPPC must provide a signed statement attesting to the fact that the program meets the above requirements.

C. Selection and Use of Respirators

1. The procedure for the selection and use of respirators must be submitted to the Owner as part of the Abatement Contractor's qualification. The procedure must be written enabling workers to understand clearly. A copy of the Respiratory Protection Program plan must be available onsite for reference by employees or authorized visitors.

D. Respiratory Protection

1. Minimum respiratory protection shall be a half face air purifying respirator when airborne fiber levels are maintained consistently at or below 0.1 f/cc, as determined by PLM analysis. A higher level of respiratory protection may be provided or required, depending on the concentration of airborne fiber levels in the regulated area. Respirator selection shall meet the requirements of 29 CFR 1926.1101 (h); Table 1, except as indicated in this paragraph. Abatement personnel must each have a respirator for their exclusive use. Onsite respirator use must comply with the

- requirements of 29 CFR 1910.134.
- E. Medical Written Opinion
 - 1. No employee shall be allowed to wear a respirator unless a physician or other licensed health care professional has provided a written determination stating that the employee is medically qualified to wear the specified respirator, while wearing whole body impermeable garments, and subject to heat and cold stress.
 - F. Respirator Fit Test
 - 1. All personnel wearing respirators shall have a current qualitative/quantitative fit test conducted in accordance with 29 CFR 1910.134 (f) and Appendix A. Quantitative fit tests shall be done for PAPRs which have been put into a motor/blower failure mode.
 - G. Respirator Fit Check
 - 1. The Competent Person shall assure that the positive/negative fit check is done each time the respirator is donned by an employee. Head coverings must cover respirator head straps. Any situation that prevents an effective face piece to face seal as evidenced by failure of a fit check, shall preclude that person from wearing a respirator until resolution of the problem.
 - H. Maintenance and Care of Respirators
 - 1. The Respiratory Protection Program Coordinator shall submit evidence and documentation showing compliance with 29 CFR 1910.134 (h) Maintenance and care of respirators.
 - I. Supplied Air Systems
 - 1. If a supplied air system is used, the system shall meet all requirements of 29 CFR 1910.134 and the ANSI/Compressed Gas Association (CGA) Commodity Specification for air current requirements for Type 1 - Grade D breathing air. Low pressure systems are not allowed to be used on asbestos abatement projects. Supplied Air respirator use shall be in accordance with EPA/NIOSH publication EPA-560-OPTS-86-001 "A Guide to Respiratory Protection for the Asbestos Abatement Industry". The Competent Person on site will be responsible for the supplied air system to ensure the safety of the worker.

1.9 WORKER PROTECTION

- A. Training of Removal Personnel
 - 1. Prior to beginning any abatement activity, all personnel shall be trained in accordance with OSHA 29 CFR 1926.1101 (k)(9) and State of Montana requirements. Training must include, at a minimum, the elements listed at 29 CFR 1926.1101 (k)(9)(viii). Training shall have been conducted by a third party, EPA or state approved trainer meeting the requirements of EPA 40 CFR 763 Appendix C (AHERA MAP). Additional, all personnel shall be accredited in accordance with MCA Title 75, Environmental Protection, Chapter 2, Air Quality, Part 5 Asbestos Control (75-2-511 State of Montana Accreditation requirements. Initial training certificates and current refresher and accreditation proof must be submitted for each person working at the site.
- B. Medical Examinations
 - 1. Medical examinations meeting the requirements of 29 CFR 1926.1101 (m) shall be provided for all personnel working in the regulated area, regardless of exposure levels. The physician's written opinion as required by 29 CFR 1926.1101 (m)(4) shall be provided for each person and shall include statement indicating that the person has been evaluated for working in a heat and cold stress environment while wearing PPE and is able to perform the work without risk of material health impairment.
- C. Protective Clothing
 - 1. Provide boots, booties, hard hats, goggles, clothing, respirators and any other PPE as determined by conducting the hazard assessment required by OSHA at 29 CFR 1910.132 (d). Provide all personnel entering the regulated area with disposable full body coveralls, disposable head covering, and 18-inch boot coverings. The Competent Person shall ensure the integrity of PPE worn for the duration of the project. Provide plastic/rubber disposable gloves for hand protection. Cloth type gloves may be worn under plastic/rubber gloves, but cannot be used alone. Duct tape shall be used to secure all suit sleeves to wrists and to secure foot coverings at the ankle.
- D. Regulated Area Entry Procedure (Class I Work Areas)
 - 1. Worker protection shall meet the most stringent requirement. The Competent Person shall ensure that each time workers enter the regulated area; they remove street clothes in the clean room of

the decontamination unit and put on new disposable coveralls, head coverings, a clean respirator, and then proceed through the shower room to the equipment room where they will put on non-disposable required PPE.

E. Decontamination Procedure – Powered Air Purifying Respirator (PAPR)

1. The Competent Person shall require all personnel to adhere to following decontamination procedures whenever they leave the regulated area.
 - a. When exiting the regulated area, remove disposable coveralls, and other clothes, including disposable head coverings, and foot coverings or boots in the equipment room.
 - b. Still wearing the respirator and without street clothing, proceed to the shower. Showering is MANDATORY. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers while showering. The following procedure is required as a minimum:
 - i. Thoroughly wet body including hair and face. If using a PAPR, hold blower above head to keep filters dry.
 - ii. With respirator still in place, thoroughly decontaminate body, hair, respirator face piece, and all other parts of the respirator except the blower and battery pack on a PAPR. Pay particular attention to cleaning the seal between the face and respirator face piece and under the respirator straps.
 - iii. Take a deep breath, hold it and/or exhale slowly, completely wetting hair, face, and respirator. While still holding breath, remove the respirator and hold it away from the face before starting to breathe.
 - iv. Carefully decontaminate the face piece of the respirator inside and out. If using a PAPR, shut down using the following sequence: a) first cap inlets to filters; b) turn blower off to keep debris collected on the inlet side of the filter from dislodging and contaminating the outside of the unit; c) thoroughly decontaminate blower and hoses; d) carefully decontaminate battery pack with a wet rag being cautious of getting water in the battery pack thus preventing destruction. (Note: THIS PROCEDURE IS NOT A SUBSTITUTE FOR RESPIRATOR CLEANING!).
 - v. Shower and wash body completely with soap and water. Rinse thoroughly.
 - vi. Rinse shower room walls and floor to drain prior to exiting.
 - vii. Proceed from shower room to clean room and change into street clothes or into new disposable work clothes.

F. Decontamination Procedure - Air Purifying, Negative Pressure Respirator

1. The Competent Person shall require all personnel use the following decontamination procedures, as a minimum, whenever leaving the regulated area with a full face, HEPA filtered respirator:
 - a. When exiting the regulated area, remove disposable coveralls and other clothes, disposable head coverings, and disposable foot coverings or boots in the equipment room.
 - b. While still wearing the respirator and free of street clothing, proceed to the shower, which is mandatory. Care must be taken to follow reasonable procedures in removing the respirator and filters to avoid asbestos fibers while showering. The following procedure is required, as a minimum:
 - i. Thoroughly wet body from neck down. Wet hair as thoroughly as possible without wetting the respirator filters.
 - ii. Take a deep breath, hold it and/or exhale slowly, complete wetting of hair, thoroughly wetting face, respirator and filter(s). While still holding breath, remove respirator and hold it away from face before starting to breathe.
 - iii. Dispose of wetted or overloaded filters from respirator.
 - iv. Carefully decontaminate respirator face piece and respirator inside and out. (NOTE: THIS IS NOT A SUBSTITUTE FOR RESPIRATOR CLEANING!).
 - v. Shower and wash body completely with soap and water. Rinse thoroughly.
 - vi. Rinse shower room walls and floor to drain prior to exiting.
 - vii. Proceed from shower room to clean room and change into street clothes or into new disposable work clothes.

G. Regulated Area Requirements

1. The Competent Person shall meet all requirements of 29 CFR 1926.1101 (o) and assure that all requirements for regulated areas at 29 CFR 1926.1101 (e) are met. All personnel in the regulated

area shall not be allowed to eat, drink, smoke, chew tobacco or gum, apply cosmetics, or in any way interfere with the fit of their respirator.

1.10 DECONTAMINATION FACILITIES

A. Description

1. In work areas where it is required, provide each regulated area with separate personnel decontamination facilities (PDF) and waste/equipment decontamination facilities (W/EDF). Ensure that the PDF are the only means of ingress and egress to the regulated area and that all equipment, bagged waste, and other material exit the regulated area only through the W/EDF.

B. General Requirements

1. All personnel entering or exiting a regulated area must go through the PDF and shall follow the requirements at 29 CFR 1926.1101 (j) (1) and these specifications. All waste, equipment and materials must exit the regulated area through the W/EDF and be decontaminated in accordance with these specifications. Walls and ceilings of the PDF and W/EDF must be constructed of a minimum of two layers of 6-mil opaque fire retardant polyethylene sheeting and be securely attached to existing building components and/or an adequate temporary framework. A minimum of two layers of 6 mil poly shall also be used to cover the floor under the PDF and W/EDF units. Construct doors so that they overlap and secure to adjacent surfaces. Weight inner doorway sheets with layers of duct tape so that they close quickly after release. Put arrows on sheets so they show direction of travel and overlap. If the building adjacent area is occupied, construct a solid barrier on the occupied side(s) to protect the sheeting and reduce potential for non-authorized personnel entering the regulated area.

C. Temporary Facilities to the PDF and W/EDF

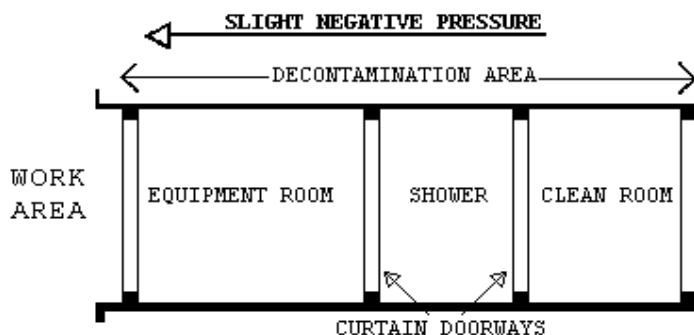
1. The Abatement Contractor shall provide temporary water service connections to the PDF and W/EDF. Backflow prevention must be provided at the point of connection to the system. Water supply must be of adequate pressure and meet requirements of 29 CFR 1910.141(d)(3). Provide adequate temporary electric power with ground fault protection and overhead wiring in the PDF and W/EDF. Provide a sub-panel for all temporary power in the clean room. Provide adequate temporary lighting to provide a minimum of 50-foot candles in the PDF and W/EDF. Provide temporary heat, if needed, to maintain 70°F throughout the PDF and W/EDF.

D. Personnel Decontamination Facility (PDF)

1. The Competent Person shall provide a PDF consisting of a shower room which is contiguous to a clean room and equipment room. The PDF must be sized to accommodate the number of personnel scheduled for the project. The shower room, located in the center of the PDF, shall be fitted with as many portable showers as necessary to insure all employees can complete the entire decontamination procedure within 15 minutes. The PDF shall be constructed of opaque polyethylene for privacy. The PDF shall be constructed to eliminate any parallel routes of egress without showering.
 - a. Clean Room: The clean room must be physically and visually separated from the rest of the building to protect the privacy of personnel changing clothes. The clean room shall be constructed of at least two layers of 6-mil fire retardant polyethylene to provide an air tight room. Provide a minimum of 2 - 900 mm (3-foot) wide flapped doorways. One doorway shall be the entry from outside the PDF and the second doorway shall be to the shower room of the PDF. The floor of the clean room shall be maintained in a clean, dry condition. An adequate supply of disposable towels and disposable protective clothing must be provided. Provide 1 storage locker or equivalent per person. A portable fire extinguisher, Type ABC, shall be provided in accordance with OSHA and NFPA Standard 10. All persons entering the regulated area shall remove all street clothing in the clean room and dress in disposable protective clothing and respiratory protection. Any person entering the clean room does so either from the outside with street clothing on or is coming from the shower room completely naked and thoroughly washed. Females required to enter the regulated area shall be ensured of their privacy throughout the entry/exit process by posting guards at both entry points to the PDF so no male can enter or exit the PDF during her stay in the PDF.
 - b. Shower Room: The Competent Person shall assure that the shower room is a completely water tight compartment to be used for the movement of all personnel from the clean room to the equipment room and for the showering of all personnel going from the regulated area

to the clean room. Each shower shall be constructed so water runs down the walls of the shower and into a drip pan. Install a freely draining smooth floor on top of the shower pan. The shower room shall be separated from the rest of the building and from the clean room and equipment room using air tight walls made from at least two layers of 6-mil fire retardant polyethylene. The shower shall be equipped with a shower head and controls, hot and cold water, drainage, soap dish and continuous supply of soap, and shall be maintained in a sanitary condition throughout its use. The controls shall be arranged so an individual can shower without assistance. Provide a flexible hose shower head, hose bibs and all other required items. Waste water will be pumped to a drain after being filtered through a minimum of a 100-micron sock in the shower drain; a 20-micron filter; and a final 5-micron filter. Filter changes must be done in the shower to prevent loss of contaminated water. Hose down all shower surfaces after each shift and clean any debris from the shower pan. Residue is to be disposed of as asbestos waste.

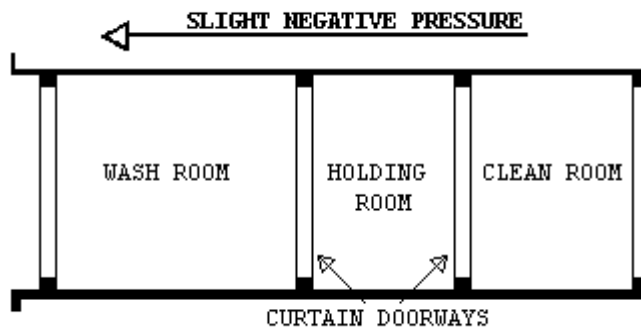
- c. Equipment Room: The Competent Person shall provide an equipment room which shall be an air tight compartment for the storage of work equipment, reusable footwear and for use as a change station for personnel exiting the regulated area. The equipment room shall be separated from the regulated area by a minimum 3-foot wide door made of three layers of 6-mil fire retardant polyethylene. The equipment room shall be separated from the regulated area, the shower room and the rest of the building, by air tight walls and a ceiling constructed of a minimum of two layers of 6-mil fire retardant polyethylene. If the airborne level of asbestos in the regulated area is expected to exceed 0.5 f/cc, add an intermediate cleaning space between the equipment room and the regulated area. Damp wipe all surfaces of the equipment room after each shift change. Provide an additional loose layer of 6-mil fire retardant polyethylene per shift change and remove this layer after each shift. Provide a temporary electrical sub-panel in this room to accommodate any power tools and equipment used in the regulated area.
- d. An example of the PDF is below: The clean room is at the entrance, followed by a shower room, followed by an equipment room leading to the regulated area. Each doorway in the PDF is at a minimum of double flaps of 6-mil fire retardant polyethylene.



E. Waste/Equipment Decontamination Facility (W/EDF)

- 1. The Competent Person shall provide a W/EDF consisting of a wash room, holding room, and clean room for removal of equipment and material from the regulated area. Personnel shall not enter or exit the W/EDF except in the event of an emergency. Clean debris and residue in the W/EDF daily. All surfaces in the W/EDF shall be wiped/hosed down after each shift and all debris shall be cleaned from the shower pan. The W/EDF shall consist of the following:
 - a. Wash Down Station: Provide an enclosed shower unit in the regulated area just outside the wash room as an equipment bag and container cleaning station.
 - b. Wash Room: Provide a wash room for cleaning of bagged or containerized asbestos-containing waste materials passed from the regulated area. Construct the wash room using 50 mm x 100 mm (2" x 4") wood framing and two layers of 6-mil fire retardant polyethylene. Locate the wash room so that packaged materials, after being wiped clean, can be passed to the holding room. Doorways in the wash room shall be constructed of two layers of 6-mil fire retardant polyethylene.

- c. Holding Room: Provide a holding room as a drop location for bagged materials passed from the wash room. Construct the holding room using 50 x 100 mm (2" x 4") wood framing and three layers of 6-mil fire retardant polyethylene. The holding room shall be located so that bagged material cannot be passed from the wash room to the clean room unless it goes through the holding room. Doorways in the holding room shall be constructed of two layers of 6-mil fire retardant polyethylene.
- d. Clean Room: Provide a clean room to isolate the holding room from the exterior of the regulated area. Construct the clean room using 50 x 100 mm (2" x 4") wood framing and two layers of 6-mil fire retardant polyethylene. The clean room shall be located so as to provide access to the holding room from the building exterior. Doorways to the clean room shall be constructed of two layers of 6-mil fire retardant polyethylene. When a negative pressure differential system is used, a rigid enclosure separation between the W/EDF clean room and the adjacent areas shall be provided.
- e. The W/EDF shall be provided as follows: wash room leading to a holding room followed by a clean room leading to the outside. See diagram.



F. Waste/Equipment Decontamination Procedures

1. At washdown station, in the regulated area, thoroughly wet clean contaminated equipment and/or sealed polyethylene bags, and pass into wash room after visual inspection. When passing anything into the wash room, close all doorways of the W/EDF, other than the doorway between the washdown station and the wash room. Keep all outside personnel clear of the W/EDF. Once inside the wash room, wet clean the equipment and/or bags. After cleaning and inspection, pass items into the holding room. Close all doorways except the doorway between the holding room and the clean room. Workers from the clean room/exterior shall enter the holding room and remove the decontaminated/cleaned equipment/bags for removal and disposal by Abatement Contractor. These personnel shall wear full protective clothing and appropriate respirators. At no time shall personnel from the clean side be allowed to enter the wash room.

PART 2 - PRODUCTS, MATERIALS AND EQUIPMENT

2.1 MATERIALS AND EQUIPMENT

A. General Requirements

1. Prior to the start of work, the Abatement Contractor shall provide and maintain a sufficient quantity of materials and equipment to assure continuous and efficient work throughout the duration of the project.
2. All materials shall be delivered in their original package, container or bundle bearing the name of the manufacturer and the brand name (where applicable).
3. Store all materials subject to damage off the ground, away from wet or damp surfaces and under cover sufficient enough to prevent damage or contamination. Flammable materials cannot be stored inside buildings. Replacement materials shall be stored outside of the regulated area until abatement is completed.
4. The Abatement Contractor shall not block or hinder use of site by staff, and visitors by placing materials/equipment in any unauthorized place.
5. The Competent Person shall inspect for damaged, deteriorating or previously used materials. Such materials shall not be used and shall be removed from the worksite and disposed of properly.
6. Polyethylene sheeting for walls in the regulated area shall be a minimum of 4-mil thickness. For floors and all other uses, sheeting shall be a minimum of 6-mil thickness and shall be used in widths selected to minimize the frequency of joints. Fire retardant poly shall be used throughout.
7. The method of attaching polyethylene sheeting shall be agreed upon in advance by the Abatement Contractor and Owner and selected to minimize damage to equipment and surfaces. Method of attachment may include any combination of moisture resistant duct tape or other waterproof tape, furring strips, spray glue, staples, nails, screws, lumber and plywood for enclosures or other effective procedures capable of sealing polyethylene to dissimilar finished or unfinished surfaces under both wet and dry conditions. The Abatement Contractor shall repair all damage (i.e. fasteners, duct tape damages, etc.) to finishes not scheduled for removal and/or restoration by others.
8. Polyethylene sheeting utilized for the PDF shall be opaque white or black in color, 6-mil fire retardant polyethylene.
9. Installation and plumbing hardware, showers, hoses, drain pans, sump pumps and waste water filtration system shall be provided by the Abatement Contractor.
10. An adequate number of HEPA vacuums, scrapers, sprayers, nylon brushes, brooms, disposable mops, rags, sponges, staple guns, shovels, ladders and scaffolding of suitable height and length as well as meeting OSHA requirements, fall protection devices, water hose to reach all areas in the regulated area, airless spray equipment, and any other tools, materials or equipment required to conduct the abatement project. All electrically operated hand tools, equipment, electric cords shall be connected to GFCI protection.
11. Special protection for objects in the regulated area shall be detailed (e.g., plywood over carpeting or hardwood floors to prevent damage from scaffolds, water and falling material).
12. Disposal bags – 2 layers of 6 mil poly for asbestos waste shall be pre-printed with labels, markings and address as required by OSHA, EPA and DOT regulations.
13. OSHA DANGER demarcation signs, as many and as required by OSHA 29 CFR 1926.1101(k)(7) shall be provided and placed by the Competent Person. All other posters and notices required by Federal and State regulations shall be posted in the Clean Room.
14. Adequate and appropriate PPE for the project and number of personnel/shifts shall be provided. All personal protective equipment issued must be based on a written hazard assessment conducted under 29 CFR 1910.132(d).
15. Any damage to building components not scheduled for general renovation, resulting from the Abatement Contractor's work and/or work practices shall be repaired or replaced at the sole cost of the Abatement Contractor utilizing appropriately qualified and insured tradespersons equal to or greater than the original condition.

2.2 MONITORING, INSPECTION, AND TESTING

A. General

1. The Abatement Contractor shall perform, throughout abatement work, monitoring of their personnel's exposure, inside the regulated area in accordance with OSHA requirements and this abatement project specification. The Abatement Contractor's Industrial Hygiene Technician (IHT) or accredited supervisor ("Competent Person") shall personally review conditions inside the regulated area to ensure compliance with EPA and this asbestos abatement project specification. In addition, the IHT or accredited supervisor shall personally manage air sample collection, analysis and evaluation for personnel samples and area samples to satisfy OSHA requirements. Additional inspection and testing requirements are specified in other parts of this section.
2. The IHT or accredited supervisor shall be responsible for managing all personnel monitoring, the inspection and testing required by this asbestos abatement project specification, the OSHA Regulation 29 CFR 1926.1101, and for continuous monitoring of all sub-systems and procedures affecting the safety of the Abatement Contractor's employees. Safety of the Abatement Contractor's employees and providing safe conditions inside the regulated area for all persons entering is the exclusive responsibility of the Abatement Contractor. The analytical laboratory that shall be used by the Abatement Contractor to analyze the samples shall be AIHA accredited. The IHT or accredited supervisor shall keep a daily log of personnel and area samples taken and analyzed and make such a log available to the Owner and Owner Representative. The log shall contain information on the person's breathing zone sampled, activities being performed, the date of the sample collection, the time of the sample start to finish, flow rate, volume and fibers/cc. Collect and analyze personnel samples for fifty percent of the work force each day throughout the duration of the project.
3. The Owner will employ an independent industrial hygiene consultant (IHC) to perform various services on behalf of the Owner. The IHC will perform the necessary monitoring, inspection, testing, and other support services to ensure that Owner employees, and visitors will not be adversely affected by the abatement work, and that the abatement work proceeds in accordance with these specifications, and that the abated areas or abated building have been successfully decontaminated. The work of the IHC in no way relieves the Abatement Contractor from their responsibility to perform the work in accordance with contract/specification requirements, to perform continuous inspection, monitoring and testing for the safety of their employees, and to perform other such services as specified. The cost of the IHC and their services will be borne by the Owner, except for any repeat of final inspection and testing that may be required due to unsatisfactory initial results. Any repeated final inspections and/or testing, if required, will be paid for by the Abatement Contractor.
4. If fibers counted by the IHC during abatement work, either inside or outside the regulated area, utilizing the NIOSH 7400 air monitoring method, exceed the specified respective limits, the Abatement Contractor shall stop work. The Abatement Contractor may request confirmation of the results by analysis of the samples by TEM. Request must be in writing and submitted to the Owner. Cost for the confirmation of results will be borne by the Abatement Contractor for both the collection and analysis of samples and for the time delay that may/does result for this confirmation.

B. Scope of Services of the IHC

1. The purpose of the work of the IHC is to: Assure quality; resolve problems; and prevent the spread of contamination beyond the regulated areas. In addition, their work includes performing the final inspection and testing to determine whether the regulated areas or building have been adequately decontaminated. All air clearance monitoring is to be done utilizing PCM. The IHC could at Owner request perform the following tasks:
 - a. Task 1: Establish background levels before abatement begins by collecting background samples. Retain samples for possible PCM analysis.
 - b. Task 2: Perform continuous air monitoring, inspection, and testing outside the regulated area during actual abatement work to detect any faults in the regulated area isolation and any adverse impact on the surroundings from regulated area activities.
 - c. Task 3: Perform unannounced visits to spot check overall compliance of work with contract/specifications. These visits may include any inspection, monitoring, and testing inside and outside the regulated area and all aspects of the operation except personnel

- monitoring.
- d. Task 4: Provide support to the Owner and Owner Representative, such as evaluation of submittals from the Abatement Contractor, scheduling, resolution of unforeseen developments, etc.
 - e. Task 5: Perform, in the presence of the Owner or Owner Representative, final inspection and testing of a decontaminated regulated area or building at the conclusion of the abatement and clean-up work to certify compliance with the Owner or Owner Representative requirements.
 - f. Task 6: Issue a Certificate of Decontamination for each regulated area or building and project Report.
2. All data, inspection results and testing results generated by the IHC will be available to the Abatement Contractor for information and consideration. The Abatement Contractor shall cooperate with and support the IHC for efficient and smooth performance of their work.
 3. The monitoring and inspection results of the IHC will be used by the Owner or Owner Representative to issue any stop removal orders to the Abatement Contractor during abatement work and to accept or reject a regulated area or building as decontaminated.

2.3 ASBESTOS HAZARD ABATEMENT PLAN

- A. The Abatement Contractor shall have established an Asbestos Hazard Abatement Plan (AHAP) in printed form and loose-leaf folder consisting of simplified text, diagrams, sketches, and pictures that establish and explain clearly the procedures to be followed during all phases of the work by the Abatement Contractor's personnel. The AHAP must be modified as needed to address specific requirements of the project. The AHAP shall be submitted for review and approval prior to the start of any abatement work. The minimum topics and areas to be covered by the AHAP are:
 1. Minimum Personnel Qualifications
 2. Emergency Action Plan/Contingency Plans and Arrangements
 3. Security and Safety Procedures
 4. Respiratory Protection/PPE Program and Training
 5. Medical Surveillance Program and Recordkeeping
 6. Regulated Area Requirements - Containment Barriers/Isolation of Regulated Area
 7. Decontamination Facilities and Entry/Exit Procedures (PDF and W/EDF)
 8. Negative Pressure Systems Requirements
 9. Monitoring, Inspections, and Testing
 10. Removal Procedures for ACM and ACE
 11. Removal of Contaminated Soil (if applicable)
 12. Encapsulation Procedures for ACM
 13. Disposal of ACM waste/equipment
 14. Regulated Area Decontamination/Clean-up
 15. Regulated Area Visual and Air Clearance
 16. Project Completion/Closeout

2.4 SUBMITTALS

- A. Pre-Construction Meeting Submittals
 1. Submit to the Owner a minimum of 14 days prior to the pre-start meeting the following for review and approval. Meeting this requirement is a prerequisite for the pre-start meeting for this project:
 - a. Submit a detailed work schedule for the entire project reflecting contract documents and the phasing/schedule requirements.
 - b. Submit a staff organization chart showing all personnel who will be working on the project and their capacity/function. Provide their qualifications, training, MDEQ accreditations, and licenses, as appropriate. Provide a copy of the "Certificate of Worker's Acknowledgment" and the "Affidavit of Medical Surveillance and Respiratory Protection" for each person.
 - c. SOPs developed specifically for this project, incorporating the requirements of the specifications, prepared, signed and dated.
 - d. Submit the specifics of the materials and equipment to be used for this project with brand names, model numbers, performance characteristics, pictures/diagrams, and number available for the following:

- i. Supplied air system, if used, negative air machines, HEPA vacuums, air monitoring pumps, calibration devices, pressure differential monitoring device and emergency power generating system.
 - ii. Waste water filtration system, shower system, containment barriers.
 - iii. Encapsulants, surfactants, hand held sprayers, airless sprayers, glove bags and fire extinguishers.
 - iv. Respirators, protective clothing, PPE.
 - v. Fire safety equipment to be used in the regulated area.
- e. Submit the name, location, and phone number of the approved landfill; proof/verification the landfill is approved for ACM disposal; the landfill's requirements for ACM waste; the type of vehicle to be used for transportation; and name, address, and phone number of subcontractor, if used. Proof of asbestos training for transportation personnel shall be provided.
- f. Submit required notifications and arrangements made with regulatory agencies having regulatory jurisdiction (MDEQ) and the specific contingency/emergency arrangements made with local health, fire, ambulance, hospital authorities and any other notifications/arrangements.
- g. Submit the name, location and verification of the laboratory and/or personnel to be used for analysis of air and/or bulk samples. Air monitoring must be done in accordance with OSHA 29 CFR 1926.1101(f) and Appendix A.
- h. Submit qualifications verification: Submit the following evidence of qualifications. Make sure that all references are current and verifiable by providing current phone numbers and documentation.
 - i. Abatement Company: Project experience within the past 3 years; listing projects first most similar to this project: Project Name; Type of Abatement; Duration; Cost; Reference Name/Phone Number; Final Clearance; Completion Date.
 - ii. List of project(s) halted by Owner, Architect, IH firms, regulatory agencies in the last 3 years: Project Name; Reason; Date; Reference Name/Number; Resolution.
 - iii. List asbestos regulatory citations (e.g., OSHA), notices of violations (e.g., Federal and state EPA), penalties, and legal actions taken against the company including and of the company's officers (including damages paid) in the last 3 years. Provide copies and all information needed for verification.
- i. Submit information on personnel: Provide a resume; address each item completely; provide references; phone numbers; copies of certificates, accreditations, and licenses. Submit an affidavit stating that all personnel submitted below have medical records in accordance with OSHA 29 CFR 1926.1101(m) and 29 CFR 1910.20 and that the company has implemented a medical surveillance program and maintains recordkeeping in accordance with the above regulations. Submit the phone number and doctor/clinic/hospital used for medical evaluations.
 - i. Competent Person(s)/Supervisor(s): Number; names; years of abatement experience as Competent Person/Supervisor; list of similar projects as Competent Person/Supervisor; as a worker; certificates, licenses, accreditations; proof of MDEQ/AHERA/OSHA specialized asbestos training; maximum number of personnel supervised on a project; medical opinion; current respirator fit test.
 - ii. Workers: Numbers; names; years of abatement experience; certificates, licenses, accreditations; training courses in asbestos abatement and respiratory protection; medical opinion; current respirator fit test.
- j. Submit copies of State license; copy of insurance policy, including exclusions with a letter from agent stating in English the coverage provided and the fact that asbestos abatement activities are covered by the policy; copy of AHAP incorporating the requirements of this specification; information on who provides your training, how often; who provides medical surveillance, how often; who does and how is air monitoring conducted; a list of references of independent laboratories/IH's familiar with your air monitoring and standard operating procedures; copies of monitoring results of the five referenced projects listed and analytical method(s) used.
- k. Rented equipment must be decontaminated prior return to the rental agency.

- I. Submit, before the start of work, the manufacturer's technical data for all types of encapsulants, all SDS and application instructions.
- B. Submittals During Abatement
 - 1. The Competent Person shall maintain and submit a daily log at the regulated area documenting the dates and times of the following: purpose, attendees and summary of meetings; all personnel entering/exiting the regulated area; document and discuss the resolution of unusual events such as barrier breeching, equipment failures, emergencies, and any cause for stopping work; representative air monitoring and results/TWA's/EL's. Submit this information daily to the Owner Representative.
- C. Submittals at Completion of Abatement
 - 1. The Abatement Contractor shall submit a project report to the Owner Representative consisting of the daily log book requirements and documentation of events during the abatement project including Waste Shipment Records signed by the landfill's agent. The report shall include a certificate of completion, signed and dated by the Competent Person, in accordance with Attachment #1.

2.5 ENCAPSULANTS

- A. Types of Encapsulants
 - 1. The following four types of encapsulants, if used, must comply with performance requirements as stated in paragraph 2.5 B:
 - a. Removal encapsulant - used as a wetting agent to remove ACM.
 - b. Bridging encapsulant - provides a tough, durable coating on ACM.
 - c. Penetrating encapsulant - penetrates/encapsulates ACM at least 13 mm (1/2").
 - d. Lockdown encapsulant - seals microscopic fibers on surfaces after ACM removal.
- B. Performance Requirements
 - 1. Encapsulants shall meet the latest requirements of EPA; shall not contain toxic or hazardous substances; or solvents; and shall comply with the following performance requirements:
 - 2. General Requirements for all Encapsulants:
 - a. ASTM E84: Flame spread of 25; smoke emission of 50.
 - b. University of Pittsburgh Protocol: Combustion Toxicity; zero mortality.
 - c. ASTM C732: Accelerated Aging Test; Life Expectancy - 20 years.
 - d. ASTM E96: Permeability - minimum of 0.4 perms.
 - 3. Bridging/Penetrating Encapsulants:
 - a. ASTM E736: Cohesion/Adhesion Test - 24 kPa (50 lbs/ft²).
 - b. ASTM E119: Fire Resistance - 3 hours (Classified by UL for use on fibrous/cementitious fireproofing).
 - c. ASTM D2794: Gardner Impact Test; Impact Resistance - minimum 11.5 kg-mm (43 in/lb).
 - d. ASTM D522: Mandrel Bend Test; Flexibility - no rupture or cracking.
 - 4. Lockdown Encapsulants:
 - a. ASTM E119: Fire resistance - 3 hours (tested with fireproofing over encapsulant applied directly to steel member).
 - b. ASTM E736: Bond Strength - 48 kPa (100 lbs/ft²) (test compatibility with cementitious and fibrous fireproofing).
 - c. In certain situations, encapsulants may have to be applied to hot pipes/equipment. The encapsulant must be able to withstand high temperatures without cracking or off-gassing any noxious vapors during application.

2.6 CERTIFICATES OF COMPLIANCE

- A. The Abatement Contractor shall submit to the Owner certification from the manufacturer indicating compliance with performance requirements for encapsulants when applied according to manufacturer recommendations.

PART 3 - EXECUTION

3.1 REGULATED AREA PREPARATIONS

A. Site Security

1. Regulated area access is to be restricted only to authorized, trained/accredited and protected personnel. These may include the Contractor's employees, employees of Subcontractors, Owner employees and representatives, State and local inspectors, and any other designated individuals. A list of authorized personnel shall be established prior to commencing the project and be posted in the clean room of the decontamination unit.
2. Entry into the regulated area by unauthorized individuals shall be reported immediately to the Competent Person by anyone observing the entry. The Competent Person shall immediately require any unauthorized person to leave the regulated area and then notify the Owner or Owner Representative using the most expeditious means.
3. A log book shall be maintained in the clean room of the decontamination unit. Anyone who enters the regulated area must record their name, affiliation, time in, and time out for each entry.
4. Access to the regulated area shall be through a single decontamination unit. All other access (doors, windows, hallways, etc.) shall be sealed or locked to prevent entry to or exit from the regulated area. The only exceptions for this requirement are the waste/equipment load-out area which shall be sealed except during the removal of containerized asbestos waste from the regulated area, and emergency exits. Emergency exits shall not be locked from the inside; however, they shall be sealed with poly sheeting and taped until needed. In any situation where exposure to high temperatures which may result in a flame hazard, fire retardant poly sheeting must be used.
5. The Contractor's Competent Person shall control site security during abatement operations in order to isolate work in progress and protect adjacent personnel.
6. The Contractor will have the Owner's assistance in notifying adjacent personnel of the presence, location and quantity of ACM in the regulated area and enforcement of restricted access by the Owner's employees.

B. Signage and Power Management

1. Post OSHA DANGER signs meeting the specifications of OSHA 29 CFR 1926.1101 at any location and approaches to the regulated area where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away from the regulated area to permit any personnel to read the sign and take the necessary measures to avoid exposure. Additional signs will be posted following construction of the regulated area enclosure.
2. Shut down and lock out electric power to the regulated area. Provide temporary power and lighting. Insure safe installation including GFCI of temporary power sources and equipment by compliance with all applicable electrical code requirements and OSHA requirements for temporary electrical systems. Electricity shall be provided by the Owner at no expense to the Abatement Contractor.
3. Shut down and lock out heating, cooling, and air conditioning system (HVAC) components that are in, supply or pass through the regulated area. Interiors of existing ductwork may require decontamination. This may be done during the pre-cleaning phase of operations before the ductwork is sealed off or during the final cleaning phase prior to re-engagement of the system. Appropriate equipment and control measures shall be utilized to prevent contamination of building spaces during this operation. Adequate cleaning of ductwork may sometimes be accomplished by drawing high volumes of air through the system using the HEPA filtered negative pressure ventilation units. Investigate and document the regulated area and agree on the pre-abatement condition with the Owner. Seal all intake and exhaust vents in the regulated area with duct tape and two layers of 6-mil plastic. Also, seal any seams in system components that pass through the regulated area. Remove all contaminated HVAC system filters and place in labeled 6-mil polyethylene disposal bags for staging and eventual disposal as asbestos waste.

C. Negative Pressure Filtration System

1. The Contractor shall provide enough HEPA negative air machines to effect $> - 0.02''$ WCG pressure. The Competent Person shall determine the number of units needed for the regulated area by dividing the cubic feet in the regulated area by 15 and then dividing that result by the

- cubic feet per minute (CFM) for each unit to determine the number of units needed to effect > - 0.02" WCG pressure. Provide a standby unit in the event of machine failure and/or emergency in an adjacent area.
2. NIOSH has done extensive studies and has determined that negative air machines typically operate at ~50% efficiency. The contractor shall consider this in their determination of number of units needed to provide > - 0.02" WCG pressure. The contractor shall use double the number of machines, based on their calculations, or submit proof their machines operate at stated capacities, at a 2" pressure drop across the filters.
- D. Design and Layout
1. Before start of work submit the design and layout of the regulated area and the negative air machines. The submittal shall indicate the number of, location of and size of negative air machines. The point(s) of exhaust, air flow within the regulated area, anticipated negative pressure differential, and supporting calculations for sizing shall be provided. In addition, submit the following:
 - a. Method of supplying power to the units and designation/location of the panels.
 - b. Description of testing method(s) for correct air volume and pressure differential.
 - c. If auxiliary power supply is to be provided for the negative air machines, provide a schematic diagram of the power supply and manufacturer's data on the generator and switch.
- E. Negative Air Machines (HEPA Units)
1. Negative Air Machine Cabinet: The cabinet shall be constructed of steel or other durable material capable of withstanding potential damage from rough handling and transportation. The width of the cabinet shall be less than 30" in order to fit in standard doorways. The cabinet must be factory sealed to prevent asbestos fibers from being released during use, transport, or maintenance. Any access to and replacement of filters shall be from the inlet end. The unit must be on casters or wheels.
 2. Negative Air Machine Fan: The rating capacity of the fan must be the air moving capacity under actual operating conditions. Manufacturer's typically use "free-air" (no resistance) conditions when rating fans. The fan must be a centrifugal type fan.
 3. Negative Air Machine Final Filter: The final filter shall be a HEPA filter. The filter media must be completely sealed on all edges within a structurally rigid frame. The filter shall align with a continuous flexible gasket material in the negative air machine housing to form an air tight seal. Each HEPA filter shall be individually tested and certified by the manufacturer to have an efficiency of not less than 99.97% when challenged with 0.3µm dioctylphthalate (DOP) particles. Testing shall have been done in accordance with Military Standard MIL-STD-282 and Army Instruction Manual 136-300-175A. Each filter must bear a UL586 label to indicate ability to perform under specified conditions. Each filter shall be marked with the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.
 4. Negative Air Machine Pre-filters: The pre-filters, which protect the final HEPA filter by removing larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. A first stage pre-filter shall be a low efficiency type for particles 10 µm or larger. A second stage pre-filter shall have a medium efficiency effective for particles down to 5 µm or larger. Pre-filters shall be installed either on or in the intake grid of the unit and held in place with a special housing or clamps.
 5. Negative Air Machine Instrumentation: Each unit must be equipped with a gauge to measure the pressure drop across the filters and to indicate when filters have become loaded and need to be changed. A table indicating the cfm for various pressure readings on the gauge shall be affixed near the gauge for reference or the reading shall indicate at what point the filters shall be changed, noting cfm delivery at that point. The unit must have an elapsed time meter to show total hours of operation.
 6. Negative Air Machine Safety and Warning Devices: An electrical/ mechanical lockout must be provided to prevent the fan from being operated without a HEPA filter. Units must be equipped with an automatic shutdown device to stop the fan in the event of a rupture in the HEPA filter or blockage in the discharge of the fan. Warning lights are required to indicate normal operation; too high a pressure drop across filters; or too low of a pressure drop across filters.
 7. Negative Air Machine Electrical: All electrical components shall be approved by the National Electrical Manufacturer's Association (NEMA) and Underwriter's Laboratories (UL). Each unit

- must be provided with overload protection and the motor, fan, fan housing, and cabinet must be grounded.
8. It is essential that replacement HEPA filters be tested using an "in-line" testing method, to ensure the seal around the periphery was not damaged during replacement. Damage to the outer HEPA filter seal could allow contaminated air to bypass the HEPA filter and be discharged to an inappropriate location. Contractor will provide written documentation of test results for negative air machine units with HEPA filters changed by the contractor or documentation when changed and tested by the contractor filters
- F. Pressure Differential
1. The fully operational negative air system within the regulated area shall continuously maintain a pressure differential of -0.02" water column gauge. Before any disturbance of any asbestos material, this shall be demonstrated to the Owner Representative by use of a pressure differential meter/manometer as required by OSHA 29 CFR 1926.1101(e)(5)(i). The Competent Person shall be responsible for providing, maintaining, and documenting the negative pressure and air changes as required by OSHA and this specification.
- G. Monitoring
1. The pressure differential shall be continuously monitored and recorded between the regulated area and the area outside the regulated area with a monitoring device that incorporates a strip chart recorder. The strip chart recorder shall become part of the project log and shall indicate at least -0.02" water column gauge for the duration of the project.
- H. Supplemental Make-Up Air Inlets
1. Provide, as needed for proper air flow in the regulated area, in locations approved by the Owner or Owner Representative by making openings in the plastic sheeting to allow outside air to flow into the regulated area. Auxiliary makeup air inlets must be located as far from the negative air machines as possible, off the floor near the ceiling, and away from the barriers that separate the regulated area from the occupied clean areas. Cover the inlets with weighted flaps which will seal in the event of failure of the negative pressure system. The flap must be sprayed with adhesive to assure sealing if it closes.
- I. Testing the System
1. The negative pressure system must be tested before ACM is disturbed in any way. After the regulated area has been completely prepared, the decontamination units set up, and the negative air machines installed, start the units up one at a time. Demonstrate and document the operation and testing of the negative pressure system to the Owner or Owner Representative and/or IHC using smoke tubes and a negative pressure gauge. Testing must also be done at the start of each work shift.
- J. Demonstration of the Negative Pressure Filtration System
1. The demonstration of the operation of the negative pressure filtration system to the Owner or Owner Representative and/or IHC shall include, but not be limited to, the following:
 - a. Plastic barriers and sheeting move lightly in toward the regulated area.
 - b. Curtains of the decontamination units move in toward regulated area.
 - c. There is a noticeable movement of air through the decontamination units. Use the smoke tube to demonstrate air movement from the clean room to the shower room to the equipment to the regulated area.
 - d. Use smoke tubes to demonstrate air is moving across all areas in which work is to be done. Use a differential pressure gauge to indicate a negative pressure of at least -0.02" across every barrier separating the regulated area from the rest of the building. Modify the system as necessary to meet the above requirements.
- K. Use of the Negative Pressure Filtration System During Abatement Operations
1. Start units before beginning any disturbance of ACM occurs. After work begins, the units shall run continuously, maintaining 4 actual air changes per hour at a negative pressure differential of -0.02" water column gauge, for the duration of the work until a final visual clearance and final air clearance has been successfully completed.
 2. The negative air machines shall not be shut down for the duration of the project unless authorized by the Owner or Owner Representative, in writing.
 3. Abatement work shall begin at a location farthest from the units and proceed towards them. If an electric failure occurs, the Competent Person shall stop all abatement work and immediately

begin wetting all exposed asbestos materials for the duration of the power outage. Abatement work shall not resume until power is restored and all units necessary are operating properly again.

4. The negative air machines shall continue to run after all work is completed and until a final visual clearance and a final air clearance has been completed for that regulated area.
- L. Dismantling the System
1. After completion of the final visual and final air clearance has been obtained, the units may be shut down. The unit exterior surfaces shall have been completely decontaminated; pre-filters are not to be removed and the unit(s) inlet/outlet sealed with 2 layers of 6 mil poly immediately after shut down. No filter removal shall occur at the Owner site following successful completion of site clearance. OSHA/EPA/DOT asbestos shall be attached to the units.

3.2 CONTAINMENT BARRIERS AND COVERINGS IN THE REGULATED AREA

- A. General
1. Seal off the perimeter to the regulated area to completely isolate the regulated area from adjacent spaces. All surfaces in the regulated area must be covered to prevent contamination and to facilitate clean-up. Should adjacent areas become contaminated as a result of the work, shall immediately stop work and clean up the contamination at no additional cost to the Owner. Provide firestopping and identify all fire barrier penetrations due to abatement work as specified in Section 3.2 H; FIRESTOPPING.
- B. Preparation Prior to Sealing the Regulated Area
1. Place all tools, scaffolding, materials and equipment needed for working in the regulated area prior to erecting any plastic sheeting. Remove all uncontaminated removable furniture, equipment and/or supplies from the regulated area before commencing work, or completely cover with two layers of 6-mil polyethylene sheeting and secure with duct tape. Lock out and tag out any HVAC systems in the regulated area.
- C. Controlling Access to the Regulated Area
1. Access to the regulated area is allowed only through the PDF. All other means of access shall be eliminated and OSHA Danger signs posted as required by OSHA. If the adjacent area is accessible to the public, the barrier must be solid and capable of withstanding the negative pressure and must be drywall/gypsum board. Danger signs must be posted as per OSHA. Any alternate method must be submitted for Owner written approval.
- D. Critical Barriers
1. Completely separate the regulated area from adjacent areas using polyethylene at least 4-mil thick and duct tape. Individually seal with two layers of 6-mil polyethylene and duct tape all HVAC openings into the regulated area. Individually seal all lighting fixtures, clocks, doors, windows, convectors, speakers, ducts, diffusers, grilles, or any other objects in the regulated area. Use care with hot/warm surfaces.
- E. Primary Barriers
1. Clean all contaminated furniture, equipment, etc., with HEPA vacuum and/or wet cleaning prior to being moved or covered. Clean all surfaces in the regulated area with the HEPA vacuum and/or wet wiping before installing polyethylene sheeting.
 2. Cover the regulated area with two layers of 6-mil polyethylene on the floors and two layers of 4-mil polyethylene on the walls, unless otherwise directed in writing by the Owner or Owner Representative. Floor layers must form a right angle with the wall and turn up the wall at least 300 mm (12"). Seams must overlap at least 900 mm (3') and must be spray glued and taped. Install sheeting so that layers can be removed independently from each other. Carpeting shall be covered with three layers of 6-mil polyethylene. Corrugated cardboard sheets must be placed between the top and middle layers of polyethylene. Mechanically support and seal with duct tape and glue all wall layers.
 3. If stairs and ramps are covered with 6-mil polyethylene, two layers must be used. Provide 19 mm (3/4") exterior grade plywood treads held in place with duct tape/glue on the plastic. Do not cover rungs or rails with any isolation materials.
- F. Secondary Barriers
1. A loose layer of 6 mil shall be used as a drop cloth to protect the primary layers from debris generated during the abatement. This layer shall be replaced as needed during the work and at a

minimum once per work day.

G. Extension of the Regulated Area

1. If the enclosure of the regulated area is breached in any way that could allow contamination to occur, the affected area shall be included in the regulated area and constructed as per this section. If the affected area cannot be added to the regulated area, decontamination measures must be started immediately and continue until air monitoring indicates background levels are met.

H. Firestopping

1. Through penetrations caused by cables, cable trays, and pipes, sleeves must be firestopped with a fire-rated firestop system providing an air tight seal.
2. Firestop materials that are not equal to the wall or ceiling penetrated shall be brought to the attention of the Owner and Owner Representative. The Abatement Contractor shall list all areas of penetration, the type of sealant used, and whether or not the location is fire rated. Any discovery of penetrations during abatement shall be brought to the attention of the Owner and Owner Representative immediately. All walls, floors and ceilings are considered fire rated unless otherwise determined by the Owner or Owner Representative or Fire Marshall.
3. Any visible openings, whether or not caused by a penetration shall be reported by the Abatement Contractor to the Owner and Owner Representative for a sealant system determination. Firestops shall meet ASTM E814 and UL 1479 requirements for the opening size, penetrant, and fire rating needed.

3.3 SANITARY FACILITIES

- A. The General Contractor shall provide sanitary facilities for abatement personnel and maintain them in a clean and sanitary condition throughout the abatement project.

3.4 PERSONAL PROTECTIVE EQUIPMENT

- A. Provide whole body clothing, head coverings, gloves and foot coverings and any other personal protective equipment as determined by conducting the hazard assessment required by OSHA at 29 CFR 1910.132 (d). The Competent Person shall ensure the integrity of personal protective equipment worn for the duration of the project. Duct tape shall be used to secure all suit sleeves to wrists and to secure foot coverings at the ankle.

3.5 PRE-ABATEMENT ACTIVITIES

B. Pre-Abatement Meeting

1. The Owner, upon receipt, review, and substantial approval of the pre-abatement submittals and verification that all materials and equipment required for the project are on site, will arrange for a pre-abatement meeting between the Abatement Contractor, Competent Person(s), other Abatement Contractors, the Owner, Owner Representative, General Contractor for Renovation, and the IHC. The purpose of the meeting is to discuss any aspect of the submittals needing clarification or amplification and to discuss any aspect of the project execution and the sequence of the operation. The Abatement Contractor shall be prepared to provide supplemental information/documentation to the Owner regarding any submittals, documentation, materials or equipment. Upon satisfactory resolution of outstanding issues, the Owner will issue a written order to proceed to the Abatement Contractor. No abatement work of any kind described in the following provisions shall be initiated prior to the Owner written order to proceed.

C. Pre-Abatement Inspections and Preparations

1. Before any work begins on the construction of the regulated area, the Abatement Contractor will:
2. Conduct a space-by-space inspection with the Owner or Owner Representative and prepare a written inventory of all existing damage in those spaces where asbestos abatement will occur. Still or video photography may be used to supplement the written damage inventory. Documentation will be signed and certified as accurate by both parties.
3. Shut down and seal with a minimum of two layers of 6-mil plastic all HVAC systems serving the regulated area. The regulated area environment shall be completely isolated from any other air in the building.
4. Shut down and lock out in accordance with 29 CFR 1910.147 all electrical circuits which pose a potential hazard. Electrical arrangements will be tailored to the particular regulated area and the systems involved. All electrical circuits affected will be turned off at the circuit box outside the

- regulated area, not just the wall switch. The goal is to eliminate the potential for electrical shock which is a major threat to life in the regulated area due to water use and possible energized circuits. Electrical lines used to power equipment in the regulated area shall conform to all electrical safety standards and shall be isolated by the use of a ground fault circuit interrupter (GFCI). All GFCI shall be tested prior to use.
5. Ensure that all carpeting from floors in the regulated area has been cleaned and decontaminated and then properly protected from contamination.
 6. Inspect existing firestopping in the regulated area. Correct as needed.
- D. Pre-Abatement Construction and Operations
1. Perform all preparatory work for the first regulated area in accordance with the approved work schedule and with this specification.
 2. Upon completion of all preparatory work, the IHC will inspect the work and systems and will notify the Owner when the work is completed in accordance with this specification. The Owner or Owner Representative may inspect the regulated area and the systems with the IHC and may require that, upon satisfactory inspection, the Abatement Contractor's employees perform all major aspects of the approved SOPs, especially worker protection, respiratory systems, contingency plans, decontamination procedures, and monitoring to demonstrate satisfactory operation. The operational systems for respiratory protection and the negative pressure system shall be demonstrated for proper performance.
 3. The Abatement Contractors Competent Person shall document the pre-abatement activities described above and deliver a copy to the Owner.
 4. Upon satisfactory inspection of the installation of and operation of systems.
 5. The Owner will notify the Abatement Contractor in writing to proceed with the asbestos abatement work in accordance with this specification.

3.6 REMOVAL OF ACM

- A. Wetting Materials
1. Use amended water for the wetting of ACM prior to removal. The Competent Person shall assure the wetting of ACM meets the definition of "adequately wet" in the EPA NESHAP's regulation for the duration of the project. A removal encapsulant may be used instead of amended water with written approval of the Owner.
 2. Amended Water: Provide water to which a surfactant has been added to wet the ACM and reduce the potential for fiber release during disturbance of ACM. The mixture must be equal to or greater than the wetting provided by water amended by a surfactant consisting of one ounce of 50% polyoxyethylene ester and 50% polyoxyethylene ether, mixed with 5 gallons (19L) of water.
 3. Removal Encapsulant: When authorized by the Owner, provide a penetrating encapsulant designed specifically for the removal of ACM. The material must, when used, result in adequate wetting of the ACM and retard fiber release during removal.
- B. Secondary Barrier and Walkways
1. Install as a drop cloth a 6-mil polyethylene sheet at the beginning of each work shift where removal is to be done during that shift. Completely cover floors and any walls within 10-feet (3M) of the area where work is to be done. Secure the secondary barrier with duct tape to prevent debris from getting behind it. Remove the secondary barrier at the end of the shift or as work in the area is completed. Keep residue on the secondary barrier wetted. When removing, fold inward to prevent spillage and place in a disposal bag.
 2. Install walkways using 6-mil black polyethylene between the regulated area and the decontamination facilities (PDF and W/EDF) to protect the primary layers from contamination and damage. Install the walkways at the beginning of each shift and remove at the end of each shift.
- C. Wet Removal of ACM
1. Adequately and thoroughly wet the ACM to be removed prior to removal with amended water or when authorized by Owner, removal encapsulant to reduce/prevent fiber release to the air. Adequate time (at a minimum two hours) must be allowed for the amended water or removal encapsulant to saturate the ACM. Abatement personnel must not disturb dry ACM. Use a fine spray of amended water or removal encapsulant. Saturate the material sufficiently to wet to the substrate without causing excessive dripping. The material must be sprayed repeatedly/continuously during the removal process in order to maintain adequately wet

conditions. Removal encapsulants must be applied in accordance with the manufacturer's written instructions. Perforate or carefully separate, using wet methods, an outer covering that is painted or jacketed in order to allow penetration and wetting of the material. Where necessary, carefully remove covering while wetting to minimize fiber release. **In no event shall dry removal occur except when authorized in writing by the Owner and MDEQ when a greater safety hazard (e.g., electricity) is present.**

2. If ACM does not wet well with amended water due to coating or jacketing, remove as follows:
 - a. Mist regulated area continuously with amended water whenever necessary to reduce airborne fiber levels.
 - b. Remove saturated ACM in small sections. Do not allow material to dry out. As material is removed, bag material while still wet into disposal bags. Twist tightly the bag neck, bend over (gooseneck) and seal with a minimum of three tight wraps of duct tape. Clean/decontaminate the outside of any residue and move to washdown station adjacent to W/EDF.
 - c. Fireproofing or Architectural Finish on Scratch Coat: Spray with a fine mist of amended water or removal encapsulant. Allow time for saturation to the substrate. Do not oversaturate causing excess dripping. Scrape material from substrate. Remove material in manageable quantities and control falling to staging or floor. If the falling distance is over 20-feet (6 meters), use a drop chute to contain material through descent. Remove residue remaining on the scratch coat after scraping is done using a stiff bristle hand brush. If a removal encapsulant is used, remove residue completely before the encapsulant dries. Periodically re-wet the substrate with amended water as needed to prevent drying of the material before the residue is removed from the substrate.
 - d. Fireproofing or Architectural Finish on Wire Lath: Spray with a fine mist of amended water or removal encapsulant. Allow time to completely saturate the material. Do not oversaturate causing excess dripping. If the surface has been painted or otherwise coated, cut small holes as needed and apply amended water or removal encapsulant from above. Cut saturated wire lath into 2' x 6' (50mm x 150mm) sections and cut hanger wires. Roll up complete with ACM, cover in burlap and hand place in disposal bag. Do not drop to floor. After removal of lath/ACM, remove any overspray on decking and structure using stiff bristle nylon brushes. Depending on hardness of overspray, scrapers may be needed for removal.

D. Wet Removal Utilizing Glove Bag Procedures

1. The work areas where the glove bag technique is to be utilized shall be posted with warning signs on the perimeter to prevent unauthorized personnel from entering the work area. All openings between the work area and uncontaminated areas outside the work area will be sealed off with 6-mil polyethylene sheeting and tape. A minimum of 6-mil thickness plastic drop cloths shall be placed under the planned glove bag removal area. Where glove bag removal is planned along existing walls, protect the walls with a minimum of 4-mil drop cloths.
2. All necessary materials and supplies will be brought into the work area before removal begins.
3. HEPA filter equipped air filtration devices shall be placed in operation as close to the actual removal area as is feasible throughout the glove bag removal process.

E. Alternate Procedures

1. Procedures described in this specification are to be utilized at all times.
2. If specified procedures cannot be utilized, a request must be made in writing to the Owner or Owner Representative providing details of the problem encountered and recommended alternatives.
3. Any alternative procedure must be approved in writing by the Owner or Owner Representative prior to implementation.

3.7 LOCKDOWN ENCAPSULATION

B. General

1. Lockdown encapsulation is an integral part of the ACM removal. At the conclusion of ACM removal and before removal of the primary barriers, all surfaces shall be encapsulated with a bridging encapsulant. The Abatement Contractor shall verify that the proposed lockdown encapsulant is compatible with other Contractor's restoration materials.

C. Delivery and Storage

1. Deliver materials to the job site in original, new and unopened containers bearing the manufacturer's name and label as well as the following information: name of material, manufacturer's stock number, date of manufacture, thinning instructions, application instructions and the SDS for the material.
- D. Acceptable Encapsulants
 1. Encapsulants shall be rated acceptable when tested under the requirements of ASTM Standards for the evaluation/performance of encapsulants.
- E. Worker Protection
 1. Before beginning work with any material for which an SDS has been submitted, provide workers with required PPE. The required PPE shall be used whenever exposure to the material might occur. In addition to OSHA/specification requirements for respiratory protection, paint pre-filter and an organic vapor cartridge, at a minimum, shall use in addition to the HEPA filter when a solvent based encapsulant is used.
- F. Encapsulation of Substrate
 1. Apply two coats of encapsulant to the substrate after all ACM has been removed. Apply in strict accordance with the manufacturer's instructions. Any deviation from the instructions must be approved by the Owner Representative in writing prior to commencing the work.
 2. Apply the encapsulant with an airless sprayer using a nozzle orifice as recommended by the manufacturer. Apply the first coat while the substrate is still damp from the asbestos removal process, after assuring that all ACM residues has been removed. If the surface has been allowed to dry, wet wipe or HEPA vacuum prior to spraying with encapsulant. Apply a second coat over the first coat in strict conformance with the manufacturer's instructions. Color the encapsulant and contrast the color in the second coat so that visual confirmation of completeness and uniform coverage of each coat is possible. Adhere to the manufacturer's instructions for coloring. At the completion of the encapsulation, the surface must be a uniform third color produced by the mixture.
- G. Sealing Exposed Edges
 1. Seal edges of ACM exposed by removal work which is inaccessible, such as a sleeve, wall penetration, etc., with two coats of bridging encapsulant. Prior to sealing, permit the exposed edges to dry completely to permit penetration of the bridging encapsulant. Apply in accordance with 3.3.4 (B).

3.8 DISPOSAL OF ACM WASTE MATERIALS

- A. General
 1. Dispose of waste ACM and debris which is packaged in accordance with these specifications, OSHA, EPA and DOT. The landfill requirements for packaging must also be met. Transport will be in compliance with 49 CFR 100–185 regulations and the State of Montana. Disposal shall be done at an approved landfill. Disposal of non-friable ACM shall be done in accordance with applicable regulations.
- B. Procedures
 1. The Owner must be notified at least 24 hours in advance of any waste removed from the containment.
 2. Asbestos waste shall be packaged and moved through the W/EDF into a covered transport container in accordance with NESHAP's packaging requirements. Waste shall be double bagged prior to disposal. Wetted waste can be very heavy. Bags shall not be overfilled. Bags shall securely seal to prevent accidental opening and/or leakage. The top shall be tightly twisted and goosenecked prior to sealing with at least three wraps of duct tape. Ensure that unauthorized persons do not have access to the waste material once it is outside the regulated area. Transport containers must be covered at all times when not in use. NESHAP's signs must be adhered to containers during loading and unloading. Material shall not be transported in open vehicles. If drums are used for packaging, the drums shall be labeled properly and shall not be re-used.
 3. Waste Load Out: Waste load out shall be done in accordance with the procedures in the W/EDF Decontamination Procedures. Bags shall be decontaminated on exterior surfaces by wet cleaning and/or HEPA vacuuming before being placed in the second bag. Manifesting of all waste shipments shall be performed by Abatement Contractor.
 4. Asbestos waste with sharp edged components, i.e., nails, screws, lath, strapping, tin sheeting,

jacketing, metal mesh, etc., which might tear polyethylene bags, shall be wrapped securely in burlap before packaging and, if needed, use a polyethylene lined fiber drum as the second container, prior to disposal.

3.9 PROJECT DECONTAMINATION

A. General

1. The entire work related to project decontamination shall be performed under close supervision.
2. If the asbestos abatement work is in an area which was contaminated prior to the start of abatement, the decontamination will be done by cleaning the primary barrier poly prior to its removal and cleanings of the surfaces of the regulated area after the primary barrier removal.
3. If the asbestos abatement work is in an area which was uncontaminated prior to the start of abatement, the decontamination will be done by cleaning the primary barrier poly prior to its removal, thus preventing contamination of the building when the regulated area critical barriers are removed.

B. Regulated Area Clearance

1. Clearance air testing and other requirements which must be met before release of the Abatement Contractor and re-occupancy of the regulated area space, are specified in Final Visual Inspection and Air Clearance Testing Procedures.

C. Work Description

1. Decontamination includes the cleaning and clearance of the air in the regulated area and the decontamination and removal of the enclosures/facilities installed prior to the abatement work including primary/critical barriers, PDF, W/EDF facilities, and negative pressure systems.

D. Pre-Decontamination Conditions

1. Before decontamination starts, all ACM and ACE from the regulated area shall be removed, all waste collected and removed, and the secondary barrier of polyethylene removed and disposed of along with any gross debris generated by the work.
2. At the start of decontamination, the following shall be in place:
 - a. Primary barriers consisting of two layers of 6-mil polyethylene on the floor and on the walls.
 - b. Critical barriers consisting of two layers of 6-mil polyethylene, which is the sole barrier between the regulated area and the rest of the building or outside.
 - c. Critical barrier polyethylene over lighting fixtures, clocks, HVAC openings, doorways, windows, convectors, speakers and other openings in the regulated area.
 - d. Decontamination facilities for personnel and equipment in operating condition, and the negative pressure system in operation.

E. First Cleaning

1. Carry out a first cleaning of all surfaces of the regulated area including items of remaining polyethylene sheeting, tools, scaffolding, ladders/staging by wet methods and/or HEPA vacuuming. Do not use dry dusting/sweeping methods. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible residue from abated surfaces, polyethylene or other surfaces. Remove all filters in the air handling system and dispose of as ACM waste in accordance with these specifications. The negative pressure system shall remain in operation during this time. If determined by the IHC, additional cleaning(s) may be needed.

F. Lockdown Encapsulation of Abated Surfaces

1. With the express written permission of the Owner Representative, perform lockdown encapsulation of all surfaces from which asbestos was abated in accordance with the procedures in this specification. Negative pressure shall be maintained in the regulated area during the lockdown.

3.10 FINAL VISUAL INSPECTION AND AIR CLEARANCE TESTING

A. General

1. Notify the Owner and Owner Representative 48 hours in advance for the performance of the final visual inspection and air clearance testing. The final visual inspection and air clearance testing will be performed by the IHC starting after the final cleaning.

B. Final Visual Inspection

1. Final visual inspection will include the entire regulated area, the PDF, all polyethylene sheeting, seals over HVAC openings, doorways, windows, and any other openings. If debris, residue, dust

or any other suspect material is detected, the final cleaning shall be repeated at no cost to the Owner. Dust/material samples may be collected and analyzed at no cost to the Owner at the discretion of the IHC, to confirm visual findings. When the regulated area is visually clean the final air clearance testing can be done.

C. Final Air Clearance Testing

1. After an acceptable final visual inspection by the IHC, the IHC will perform the final air clearance testing. Air samples will be collected and analyzed in accordance with procedures for AHERA in this specification. 5 PCM or TEM samples shall be collected for clearance and a minimum of one field blank. TEM analysis shall be done in accordance with procedures for EPA AHERA in this specification. If the release criteria are not met, the Contractor shall repeat the final cleaning and continue decontamination procedures until clearance is achieved. **All Additional inspection and testing costs will be borne by the Contractor.**
2. If release criteria are met, proceed to perform the abatement closeout and to issue the certificate of completion in accordance with these specifications.

D. Final Air Clearance Procedures

1. Contractor's Release Criteria: Work in a regulated area is complete when the regulated area is visually clean and airborne fiber levels have been reduced to or below 0.01 f/cc as measured by the AHERA PCM protocol, or 70 AHERA structures per square millimeter (s/mm²) by AHERA TEM.
2. Air Monitoring and Final Clearance Sampling: To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to the specified level, the IHC will secure samples and analyze them according to the following procedures:
 - a. Fibers Counted: "Fibers" referred to in this section shall be either all fibers regardless of composition as counted in the NIOSH 7400 PCM method or asbestos fibers counted using the AHERA TEM method.
 - b. Aggressive Sampling: All final air testing samples shall be collected using aggressive sampling techniques except where soil is not encapsulated or enclosed. Samples will be collected on 0.8 μ MCE filters for PCM analysis and 0.45 μ Polycarbonate filters for TEM. A minimum of 1200 Liters of using calibrated pumps shall be collected for clearance samples. Before pumps are started, initiate aggressive air mixing sampling as detailed in 40 CFR 763 Subpart E (AHERA) Appendix A (III)(B)(7)(d). Air samples will be collected in areas subject to normal air circulation away from corners, obstructed locations, and locations near windows, doors, or vents. After air sampling pumps have been shut off, circulating fans shall be shut off. The negative pressure system shall continue to operate.

E. Clearance Sampling Using PCM

1. The IHC will perform clearance samples as indicated by the specification.
2. The NIOSH 7400 PCM method will be used for clearance sampling with a minimum collection volume of 1200 Liters of air. A minimum of 5 PCM clearance samples shall be collected. All samples must be equal to or less than 0.01 f/cc to clear the regulated area.

F. Clearance Sampling Using TEM

1. The TEM method will be used for clearance sampling with a minimum collection volume of 1200 Liters of air. A minimum of 5 clearance samples shall be collected. All samples must be equal to or less than 70 AHERA structures per square millimeter (s/mm²) AHERA TEM.

G. Laboratory Testing of PCM Clearance Samples

1. The services of an AIHA accredited laboratory will be employed by the IHC to perform analysis for the PCM air samples (where applicable). The accredited laboratory shall be successfully participating in the AIHA Proficiency Analytical Testing (PAT) program. Samples will be sent daily by the IHC so that verbal/faxed reports can be received within 24 hours. A complete record, certified by the laboratory, of all air monitoring tests and results will be furnished to the Abatement Contractor.

H. Laboratory Testing of TEM Clearance Samples

1. Samples shall be sent by the IHC to a NIST accredited laboratory for analysis by TEM. The laboratory shall be successfully participating in the NIST Airborne Asbestos Analysis (TEM) program. Verbal/faxed results from the laboratory shall be available within 24 hours after receipt of the samples. A complete record, certified by the laboratory, of all TEM results shall be furnished to the Abatement Contractor.

3.11 ABATEMENT CLOSEOUT AND CERTIFICATE OF COMPLIANCE

- A. Completion of Abatement Work
 - 1. After thorough decontamination, seal negative air machines with two layers of 6-mil polyethylene and duct tape to form a tight seal at the intake/outlet ends before removal from the regulated area. Complete asbestos abatement work upon meeting the regulated area clearance criteria and fulfilling the following:
 - 2. Remove all equipment, materials, and debris from the project area.
 - 3. Package and dispose of all asbestos waste as required.
 - 4. Repair or replace all interior finishes damaged during the abatement work not scheduled for restoration by others.
 - 5. Fulfill other project closeout requirements as specified elsewhere in this specification.
- B. Certificate of Completion by Abatement Contractor
 - 1. The Abatement Contractor shall complete and sign the "Certificate of Completion" in accordance with Attachment 1 at the completion of the abatement and decontamination of the regulated area.
- C. Work Shifts
 - 1. All work shall be done during administrative hours (7:00 AM to 5:00 PM) Monday through Friday excluding federal holidays. Any change in the work schedule must be approved in writing by the Owner.

ATTACHMENT #1

CERTIFICATE OF COMPLETION

PROJECT NAME AND NUMBER: _____

PROJECT ADDRESS: _____

ABATEMENT CONTRACTOR'S NAME AND ADDRESS: _____

1. I certify that I have personally inspected, monitored and supervised the abatement work of (specify regulated areas or building):

Which took place from _____ to _____

- 2. That throughout the work, all applicable requirements/regulations and the specifications were met.
- 3. That any person who entered the regulated area was protected with the appropriate PPE and respirator and that they followed the proper entry and exit procedures and the proper operating procedures for the duration of the work.
- 4. That all employees of the Abatement Contractor engaged in this work were trained in respiratory protection, were experienced with abatement work, had proper medical surveillance documentation, were fit-tested for their respirator, and were not exposed at any time during the work to asbestos without the benefit of appropriate respiratory protection.
- 5. That I performed and supervised all inspection and testing specified and required by applicable regulations and specifications.
- 6. That the negative pressure system was installed, operated and maintained in order to provide a minimum of 4 air changes per hour with a continuous 5.0 Pa (-0.02") of water column pressure.

Signature: _____
(Printed Name/ Signature and Accreditation No./Exp.)

Date: _____

Signature: _____
(Printed Name/ Signature and Accreditation No./Exp.)

Date: _____

ATTACHMENT #2

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME AND NUMBER: _____

PROJECT ADDRESS: _____

ABATEMENT CONTRACTOR'S NAME AND ADDRESS: _____

WORKING WITH ASBESTOS CAN BE HAZARDOUS TO YOUR HEALTH. INHALING ASBESTOS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCERS. IF YOU SMOKE AND INHALE ASBESTOS FIBERS YOUR CHANCES OF DEVELOPING LUNG CANCER IS 50% TO 90% GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with the Owner or General Contractor for the above project requires that: You must be supplied with the proper PPE including an adequate respirator and be trained in its use. You must be trained in safe and healthy work practices and in the use of the equipment found at an asbestos abatement project. You must receive/have a current medical examination for working with asbestos. These things shall be provided at no cost to you. By signing this certificate, you are indicating to the Owner that your employer has met these obligations.

RESPIRATORY PROTECTION: I have been trained in the proper use of respirators and have been informed of the type of respirator to be used on the above indicated project. I have a copy of the written Respiratory Protection Program issued by my employer. I have been provided for my exclusive use, at no cost, with a respirator to be used on the above indicated project.

TRAINING COURSE: I have been trained by a third party, State/EPA accredited trainer in the requirements for an AHERA/OSHA Asbestos Abatement Worker training course, 32 hours minimum duration. I currently have a valid State accreditation certificate. The topics covered in the course include, as a minimum, the following:

- Potential Health Effects Related to Exposure to Chemical Hazards
- Potential Health Effects Related to Exposure to Asbestos
- Employee Personal Protective Equipment
- Establishment of a Respiratory Protection Program
- State of the Art Work Practices
- Personal Hygiene
- Additional Safety Hazards
- Medical Monitoring
- Air Monitoring, if required
- Relevant Federal, State and Local Regulatory Requirements, Procedures, and Standards
- Asbestos Waste Disposal

MEDICAL EXAMINATION: I have had a medical examination within the past 12 months which was paid for by my employer. This examination included: health history, occupational history, pulmonary function test, and may have included a chest x-ray evaluation. The physician issued a positive written opinion after the examination.

Signature: _____ Printed Name: _____

ATTACHMENT #3

AFFIDAVIT OF MEDICAL SURVEILLANCE, RESPIRATORY PROTECTION AND TRAINING/ACCREDITATION

PROJECT NAME AND NUMBER: _____

PROJECT ADDRESS: _____

ABATEMENT CONTRACTOR'S NAME AND ADDRESS: _____

1. I verify that the following individual

Name: _____

who is proposed to be employed in asbestos abatement work associated with the above project by the named Abatement Contractor, is included in a medical surveillance program in accordance with 29 CFR 1926.1101(m), and that complete records of the medical surveillance program as required by 29 CFR 1926.1101(m)(n), 29 CFR 1910.134, and 29 CFR 1910.20 are kept at the offices of the Abatement Contractor at the following address.

Address: _____

2. I verify that this individual has been trained, fit-tested and instructed in the use of all appropriate respiratory protection systems and that the person is capable of working in safe and healthy manner as expected and required in the expected work environment of this project.

3. I verify that this individual has been trained as required by 29 CFR 1926.1101(k). This individual has also obtained a valid accreditation certificate. Documentation will be kept onsite.

Signature of Abatement Contractor: _____ Date: _____

Printed Name of Abatement Contractor: _____

ATTACHMENT #4

ABATEMENT CONTRACTOR/COMPETENT PERSON(S) REVIEW AND ACCEPTANCE OF THE VA'S ASBESTOS SPECIFICATIONS

PROJECT NAME AND NUMBER: _____

PROJECT ADDRESS: _____

ABATEMENT CONTRACTOR'S NAME AND ADDRESS: _____

This form shall be signed by the Asbestos Abatement Contractor Owner and the Abatement Contractor's Competent Person(s) prior to any start of work at this site related to this Specification. If the Abatement Contractor's/Competent Person(s) has not signed this form, they shall not be allowed to work on-site.

I, the undersigned, have read Owner's Asbestos Specification regarding the asbestos abatement requirements. I understand the requirements of the Owner's Asbestos Specification and agree to follow these requirements as well as all required rules and regulations of OSHA/EPA/DOT/MDEQ and Local requirements. I have been given ample opportunity to read the Owner's Asbestos Specification and have been given an opportunity to ask any questions regarding the content and have received a response related to those questions. I do not have any further questions regarding the content, intent and requirements of the Owner's Asbestos Specification.

At the conclusion of the asbestos abatement, I will certify that all asbestos abatement work was done in accordance with the Owner's Asbestos Specification and all ACM was removed properly and no fibrous residue remains on any abated surfaces.

Abatement Contractor Owner's Signature _____ Date _____

Abatement Contractor Competent Person(s) _____ Date _____

ATTACHMENT #7

VISITOR RELEASE FORM

PROJECT NAME AND NUMBER: _____

PROJECT ADDRESS: _____

ABATEMENT CONTRACTOR'S NAME AND ADDRESS: _____

VISITOR NAME: _____

VISITOR'S COMPANY: _____

PURPOSE OF VISIT: _____

Time of Entry to the Project Site: _____ to the Exclusion Zone: _____

Time of Departure from the Site: _____ from the Exclusion Zone: _____

Personal Protective Equipment Utilized: _____

I acknowledge and understand that I am visiting a hazardous waste control work area. I understand the dangers of exposure to hazardous waste.

I have read and understand the Site Safety and Health Plan for this project and will abide by the directions, stipulations and terms specified therein.

I knowingly assume all risks in connection with potential exposure to hazardous waste and I do hereby, for myself and my heirs at law, release and forever discharge the Owner, Owner Representative, Project Administrator, independent testing laboratory, architect, engineers, consultants or contracting firms employed by the Owner, employees, nominees, personal representative, affiliates, successors, and assigns from and against any and all liability whatsoever at common law or otherwise. I hereby waive and relinquish any and all claims of every nature which I now have or may have or claim to have which are in any way, directly or indirectly, related to exposure to hazardous waste and hazardous waste containing materials.

Furthermore, I know that I am entering a construction area where workplace conditions, such as water on floors, scaffolding, electrical equipment, etc., CAN CREATE HAZARDOUS SITUATIONS FOR VISITORS. I assume all risk of accidental injury or illness regardless of cause while visiting this construction site. I hereby waive and relinquish any and all claims of every nature which I now have or may have or claim to have which are in any way, directly or indirectly, related to such injury.

THIS RELEASES ALL PARTIES ON THE ABOVE NAMED PROJECT:

Visitor's Signature: _____

Date: _____

Witness: _____

APPENDIX A

Pre-Renovation Asbestos Inspection Report



July 29, 2020

Mr. Ben Lloyd
Comma-Q Architects, Inc.
109 North Rouse Avenue, Suite #1
Bozeman, Montana 59715

Delivered via email: ben@commaq.com

**SUBJECT: Pre-Renovation Asbestos Inspection Report
Harrison Extrusion Lab and ROTC Renovation
Harrison Hall
Montana State University
Bozeman, Montana
Tetra Tech Project No. 117-8598042**

Dear Mr. Lloyd:

On June 18, 2020, Tetra Tech, Inc. (Tetra Tech) conducted a pre-renovation asbestos inspection for the Harrison Extrusion Lab and ROTC renovation at Harrison Hall on the Montana State University Bozeman Campus. This pre-renovation inspection covered only those areas that were anticipated to be disturbed during the renovation project.

Based on correspondence with you prior to commencement of the project, the pre-renovation inspection consisted of reviewing the findings presented in the *Asbestos Inspection Report*, dated January 17, 2013, completed by Environmental Solutions, LLC of Bozeman, Montana (Environmental Solutions). In addition, additional sampling was conducted of suspect asbestos-containing materials (ACM) associated with the renovation project that were not included in that report. Details of our inspection is provided below.

PRE-RENOVATION ASBESTOS INSPECTION

The pre-renovation asbestos inspection was conducted in accordance with the Administrative Rules of Montana 17.74.354, using the currently recognized standard protocol developed under the National Emission Standards for Hazardous Air Pollutants (NESHAP) and the Asbestos Hazard Emergency Response Act (AHERA), as administered by the State of Montana Department of Environmental Quality (MDEQ).

As mentioned above, the asbestos inspection services were conducted based on the areas expected to be disturbed during the Harrison Extrusion Lab and ROTC renovation project and the findings in Environmental Solutions 2010 *Asbestos Inspection Report*. The results of that document were considered to be correct and only suspect building materials that are anticipated to be disturbed during the renovation project were evaluated. In addition to the materials sampled by Environmental Solutions, several more suspect ACM were identified in the areas expected to be disturbed during the fire suppression project and these additional materials were sampled by Tetra Tech during this investigation.



Mr. Shane Matolyak of Tetra Tech, a MDEQ Accredited Asbestos Inspector, collected samples of newly identified suspect ACM. His Inspector Accreditation Certification is presented in Attachment A.

The bulk samples were shipped, along with completed chain-of-custody documentation, to Crisp Analytical of Carrollton, Texas for the analysis of asbestos fibers by polarized light microscopy (PLM) using U.S. Environmental Protection Agency (EPA) Methods described in 40 CFR Part 763 Appendix E Subpart E (Interim and EPA 600/R-93 / 116 (Improved). A copy of the laboratory analytical report is contained in Attachment B.

A summary of the suspect building materials that are anticipated to be disturbed during the renovation project and identified to contain asbestos is provided in Table 1. These materials were identified as asbestos containing by Environmental Solutions in their 2013 *Asbestos Inspection Report* or by Tetra Tech. Tetra Tech's approximate sample collection locations of the newly identified suspect ACM are presented on Figures 1 through 2 and approximate ACM locations are presented on Figure 3

Table 1 Summary of ACM Harrison Extrusion Lab and ROTC Renovation Montana State University Bozeman, Montana				
HA Number	Material Description and Location	Percent Asbestos	Material Type	NESHAP Category
46,47,48, and F6.1	Brown with multiple stripes 9-inch by 9-inch vinyl floor tile and associated black mastic	Tile: 8% Chrysotile Mastic: 8% Chrysotile	Miscellaneous	Category I Non-Friable
64, 65, 66, and F6.2	Tan and black mastic associated with non-asbestos containing various color carpet squares	8% Chrysotile	Miscellaneous	Category I Non-Friable
HA: Homogeneous Area Number NESHAP: National Emission Standard for Hazardous Air Pollutants				

In accordance with state and federal regulations pertaining to asbestos, the ACMs identified in Table 1 are required to be abated prior to disturbance. These ACMs are required to be removed by a licensed asbestos abatement contractor using appropriate asbestos abatement methods and procedures in accordance with applicable state and federal regulations. Following the completion of asbestos abatement, a visual inspection and asbestos air clearance need to be conducted as required by ARM 17.74.357. Any contractor preparing to bid or perform work on the site should be informed of the potential presence of ACM. Contractors should also be informed of compliance requirements under current state and federal regulations.

A summary of the ACM identified to contain greater than 0% asbestos, but less than 1% asbestos is provided in Table 2. Approximate ACM locations are presented on Figure 3.

Table 2 Summary of ACM Harrison Extrusion Lab and ROTC Renovation Montana State University Bozeman, Montana		
HA Number	Material Description	Percent Asbestos
73, 74, 75, and S1.1	Cream and gray painted plaster walls and ceilings	<1% Chrysotile
HA: Homogeneous Area Number		

Based on the asbestos concentration associated with the analysis of the material identified in Table 2, it is not regulated by the EPA or MDEQ. However, Occupational Safety and Health Administration (OSHA) regulations for training and worker protection would apply for any disturbance activities associated with this material. Accordingly, Tetra Tech recommends that individuals engaging in the disturbance or removal of this material utilize “asbestos safe” work practices as specified within 29 CFR 1926.1101. As stipulated under 29 CFR 1926.1101, work practice requirements and prohibitions that must be observed regardless of the exposure levels and of the percentage of asbestos in the installed construction materials include, but are not necessarily limited to:

- 29 CFR 1926.1101(g)(1)(ii), which requires: wet methods, or wetting agents, to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup, except where employers demonstrate that the use of wet methods is infeasible due to, for example, the creation of electrical hazards, equipment malfunction, and, in roofing, except as provided in paragraph (g)(8)(ii) of this section;
- 29 CFR 1926.1101(g)(1)(iii), which requires: prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers except in roofing operations, where the procedures specified in paragraph (g)(8)(ii)3 of this section apply;
- 29 CFR 1926.1101(g)(3)(i), which prohibits: high-speed abrasive disc saws that are not equipped with point-of-cut ventilator or enclosures with HEPA filtered exhaust air;
- 29 CFR 1926.1101(g)(3)(ii), which prohibits: compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air; and
- 29 CFR 1926.1101(g)(3)(iv), which prohibits: employee rotation as a means of reducing employee exposure to asbestos.

The following suspect building materials that Tetra Tech sampled during this investigation were found not to contain asbestos by laboratory analysis:

- White 12-inch by 12-inch ceiling tiles and associated brown mastic located in Room 146 (HH-F6.3A, B, C)
- Smooth textured white 2-foot by 4-foot ceiling panels located in Room 146 (HH-M5.1A, B, C)
- White 2-foot by 4-foot with pinholes and fissures ceiling panels located in Room 145 (HH-M5.2A, B, C)
- Gray 12-inch by 12-inch ceiling tiles located in Room 146 (HH-M6.1A, B, C)
- Brown and tan square pattern ceramic floor tile and associated gray grout located throughout (HH-M16.1A, B, C)
- Cream and brown square pattern ceramic floor tile and associated gray grout located in Room 146 (HH-M16.2A, B, C)
- White 1-inch by 1-inch ceramic floor tile and associated gray grout located throughout (HH-M16.3A, B, C)
- Black and tan 1-inch by 1-inch ceramic floor tile and associated gray grout located in Room 196S4 (HH-M16.4A, B, C)
- Brown 6-inch by 6-inch ceramic floor tile and associated gray grout located in Room 196S4 (HH-M16.5A, B, C)
- Cream colored 6-inch by 12-inch ceramic wall block and associated gray grout located throughout (HH-M16.6A, B, C)
- Gray 6-inch by 12-inch block and associated gray mortar located throughout (HH-M16.7A, B, C)
- Concrete foundation, floor, and pillars located throughout (HH-M18.1A, B, C)
- Concrete landing on dock and stairs located in Room 146 (HH-M18.2A, B, C)
- Gray CMU block and associated gray mortar located in Rooms 145-147 (HH-M22.1A, B, C)
- Brown mastic associated straight run pipe insulation located throughout ceiling (HH-M32.1A, B, C)
- White pookie on straight run pipe insulation located throughout ceiling (HH-T2.1A, B, C)
- Black HVAC vent pipe sealant located on roof (HH-T4.1A, B, C)

LIMITATIONS

This report only covers the areas that will be disturbed during the renovation project that was described above. Other ACMs are present at the site that is not anticipated to be disturbed as part of the renovation project. These ACMs are described in the *Asbestos Inspection Report*, dated January 17, 2013, completed by Environmental Solutions, LLC of Bozeman, Montana. Please note that prior to any remodel or demolition activities that will affect other materials, an extensive inspection, will need to be conducted in accordance with the requirements put forth by NESHAP and MDEQ.

Our opinions are intended exclusively for use by Comma-Q Architects, Inc. and Montana State University. The scope of services performed by Tetra Tech may not be appropriate to satisfy the needs of other users, and any use or re-use of this document, or the findings presented herein is prohibited and at the sole risk of the user. No additions or deletions are permitted without the express written consent of Tetra Tech.



Furthermore, the opinions presented herein are limited by the requested scope of services and the site conditions existing at the time of our investigation. Therefore, our opinions and recommendations may not apply to future site conditions which we have not had the opportunity to evaluate.

It has been a pleasure assisting you with this project. If you should have any questions or need any additional information please contact me in our Tetra Tech Billings, Montana office at (406) 248-9161.

Respectfully submitted,

Tetra Tech, Inc.

A handwritten signature in blue ink that reads 'Roger W. Herman, Jr.'.

Roger W. Herman, Jr.
Asbestos, Lead & IH Services Manager

PB/RH

I:\A-G\Comma-Q Architecture Inc\117-8774001 - Harrison Extrusion Lab & ROTC\05-Deliverables\Final\MSU Harrison Hall-ROTC Renovation ASB Report.docx

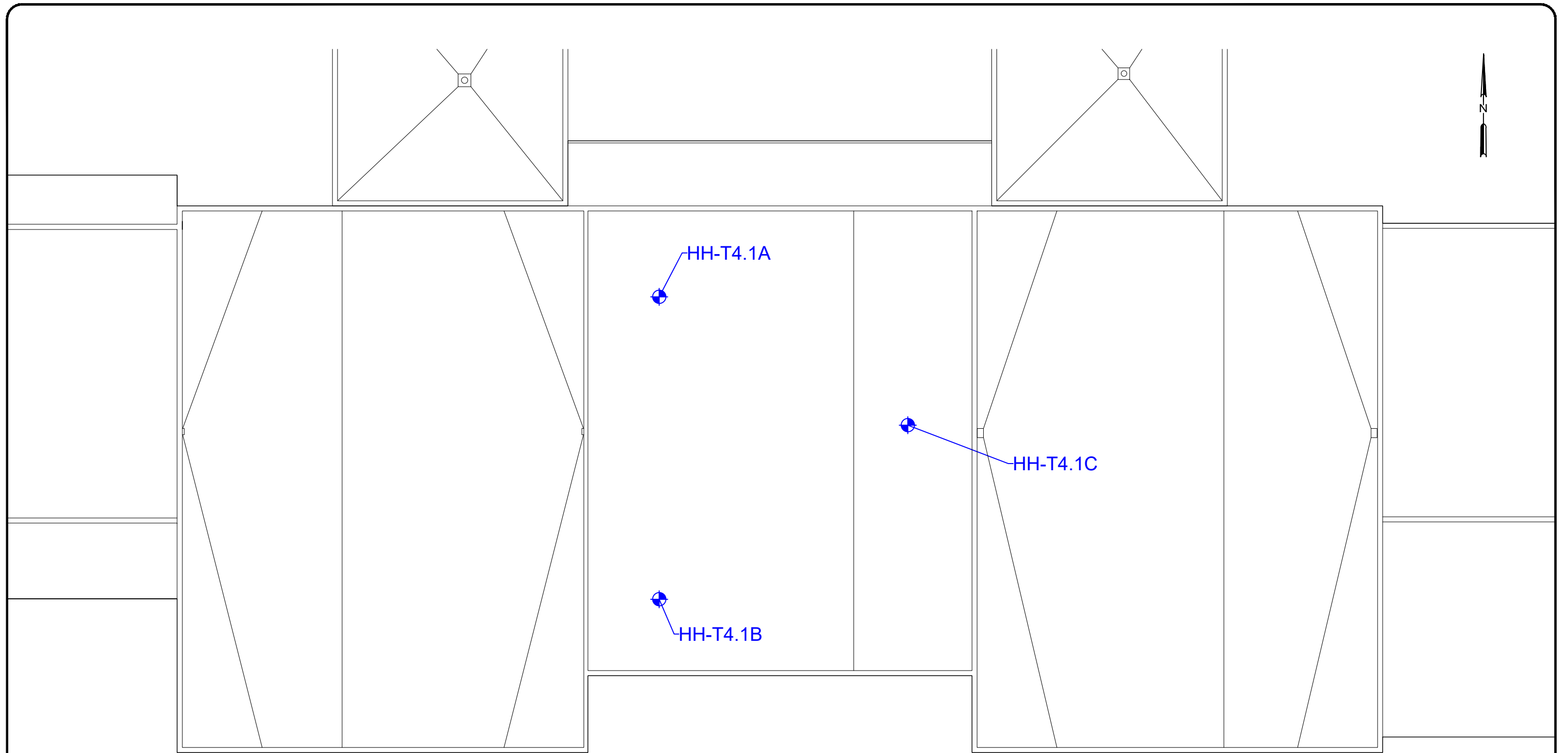
Figures

Attachment A – Inspector Accreditation Certification

Attachment B – Laboratory Analytical Report of Newly Identified Suspect ACM


FIGURES

7/21/2020 11:12 AM - C:\USERS\CONNOR.MCHUGH\DOCUMENTS\AUTOCAD\MSU\117-XXXXXXX\117-8774001_HHALL_ROT.C.DWG



1 HARRISON DINING - ROOF LEVEL

LEGEND

-  Sample Location
- 101 Room Number

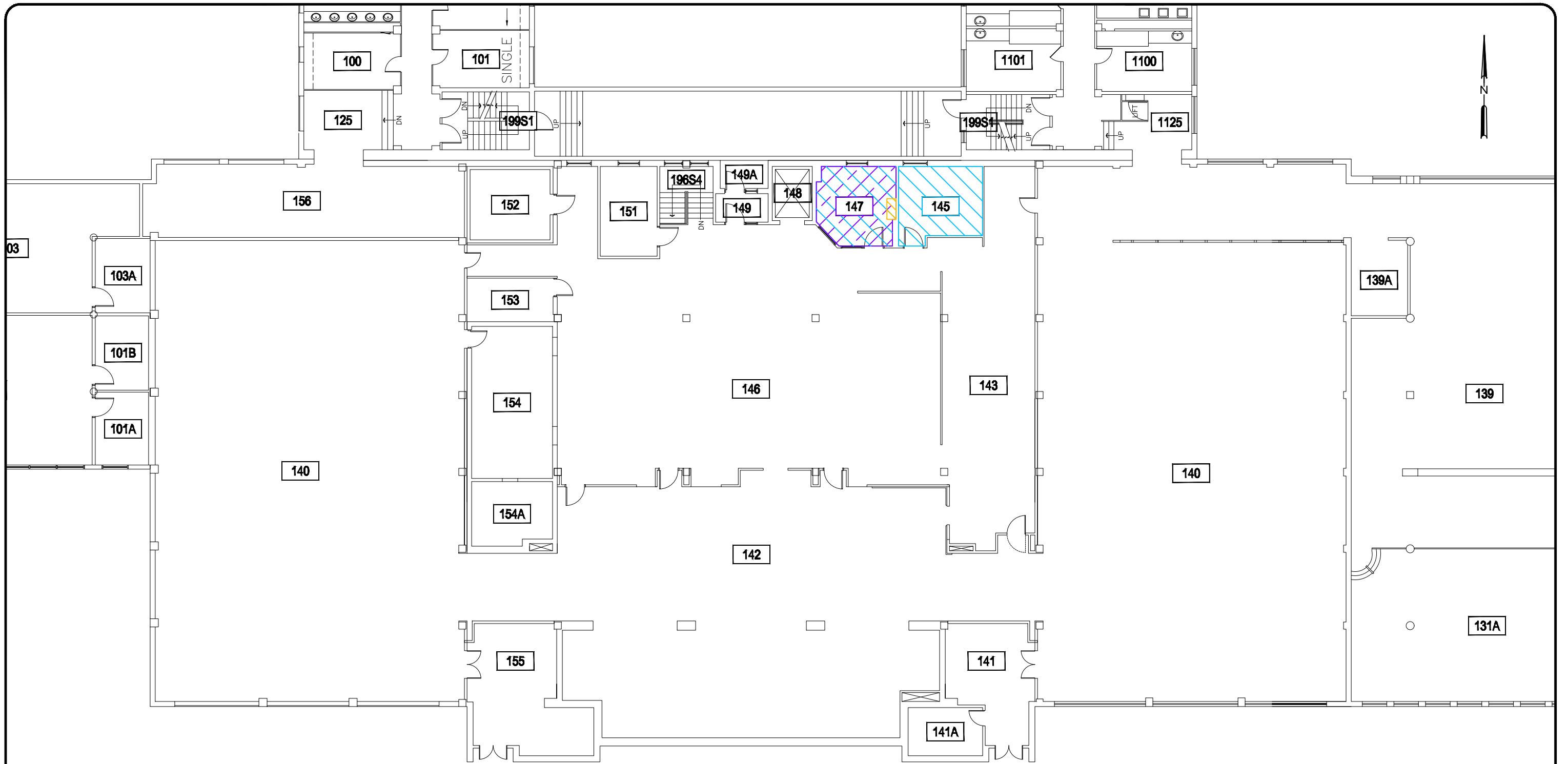
TETRA TECH
 www.tetrattech.com
 7100 Commercial Ave, Suite 4
 Billings, Montana 59101
 PHONE: 406-248-9161 FAX: 406-248-9282

PRE-RENOVATION ASBESTOS INSPECTION
 SAMPLE LOCATIONS
 HARRISON EXTRUSION LAB AND ROTC
 HARRISON HALL
 MONTANA STATE UNIVERSITY
 BOZEMAN, MONTANA

Project No.:	117-8774001
Designed By:	TETRA TECH
Drawn By:	CJM
Checked By:	PB/SM
FIGURE	
2	




Not To Scale

Copyright Tetra Tech



1 HARRISON DINING - FIRST LEVEL

LEGEND

- 101 Room Number
-  F6.1 - 9-inch by 9-inch floor tile and associated brown mastic
-  HH-F6.2 - Yellow carpet tile glue over black mastic
-  S1.1 - Plaster on walls and ceiling

TETRA TECH
 www.tetrattech.com
 7100 Commercial Ave, Suite 4
 Billings, Montana 59101
 PHONE: 406-248-9161 FAX: 406-248-9282

PRE-RENOVATION ASBESTOS INSPECTION
 ASBESTOS LOCATIONS
 HARRISON EXTRUSION LAB AND ROTC
 HARRISON HALL
 MONTANA STATE UNIVERSITY
 BOZEMAN, MONTANA

Project No.: 117-8774001
 Designed By: TETRA TECH
 Drawn By: C/JM
 Checked By: PBI/SM
FIGURE 3



ATTACHMENT A

Inspector Accreditation Certification

SHANE MATOLYAK

has met the requirements of Montana Administrative Rule 17.74.362 and/or 17.74.363 for accreditation in the following asbestos occupation(s) through the specified expiration date(s).



Asbestos Inspector
Project Contractor/Supervisor

08/21/2020
08/09/2020

MT DEQ Asbestos Control Program

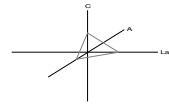


ATTACHMENT B

Asbestos Laboratory Analytical Report of
Newly Identified Suspect ACM

CA Labs
Dedicated to Quality

Crisp Analytical, L.L.C.
1929 Old Denton Road
Carrollton, TX 75006
Phone 972-242-2754
Fax 972-242-2798



CA Labs, L.L.C.
12232 Industriplex, Suite 32
Baton Rouge, LA 70809
Phone 225-751-5632
Fax 225-751-5634

Materials Characterization - Bulk Asbestos Analysis

Laboratory Analysis Report - Polarized Light

Tetra Tech

7100 Commercial Ave. Ste 4
Billings, MT 59101

Customer Project: Harrison Hall/ROTC Remodel
Reference #: CAL20064220AG Date: 06/29/20

Analysis and Method

Summary of polarized light microscopy (PLM / Stereomicroscopy bulk asbestos analysis) using the methods described in 40CFR Part 763 Appendix E to Subpart E (Interim and EPA 600 / R-93 / 116 (Improved). The sample is first viewed with the aid of a stereomicroscope. Numerous liquid slide preparations are created for analysis under the polarized microscope where identifications and quantifications are performed. Calibrated liquid refractive oils are used as liquid mounting medium. These oils are used for identification (dispersion staining). A calibrated visual estimation is reported, should any asbestiform mineral be present. Other techniques such as acid washing are used in conjunction with refractive oils for detection of smaller quantities of asbestos. All asbestos percentages are based on calibrated visual estimation traceable to NIST standards for regulated asbestos. Traceability to measurement and calibration is achieved by using known amounts and types of asbestos from standards where analyst and laboratory accuracy are measured. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 0.50% (well above the laboratory definition of trace).

Discussion

Vermiculite containing samples may contain trace amounts of actinolite/tremolite. When not detected by PLM, these samples should be analyzed using TEM methods and / or water separation techniques. Suspected actinolite/vermiculite presence will be indicated through the sample comment section of this report.

Fibrous talc containing samples may contain a regulated asbestos fiber known as anthophyllite. Under certain conditions the same fiber may actually contain both talc and anthophyllite (a phenomenon called intergrowth). Again, TEM detection methods are recommended. CA Labs PLM report comments will denote suspected amounts of asbestiform anthophyllite with talc, where further analysis is recommended.

Some samples (floor tiles, surfacings, etc.) may contain fibers too small to be detectable by PLM analysis and should be analyzed by TEM bulk protocols.

A "trace asbestos" will be reported if the analyst observes far less than 1% asbestos. CA Labs defines "trace asbestos" as a few fibers detected by the analyst in several preparations and will indicate as such under these circumstances.

Since allowable variation in quantification of samples close to 1% is high, <1% may be reported. Such results are ideal for point counting, and the technique is mandatory for friable samples (NESHAP, Nov. 1990 and clarification letter 8 May 1991) under 1% percent asbestos or "trace asbestos". **In order to make all initial PLM reports issued from CA Labs NESHAP compliant, all <1% asbestos results (except floor tiles) will be point counted at no additional charge.**

Qualifications

CA Labs is accredited by the National Voluntary Accreditation Program (NVLAP) for selected test methods for airborne fiber analysis (TEM), and for bulk asbestos fiber analysis (PLM). CA Labs is also accredited by AIHA LAP, LLC. in the PLM asbestos field of testing for Industrial Hygiene. All analysts have completed college courses or hold a degree in a natural science (geology, biology, or environmental science). Recognition by a state professional board in one these disciplines is preferred, but not required. Extensive in-house training programs are used to augment the educational background of the analyst. The Laboratory Director and Quality Manager have received supplemental McCrone Research training for asbestos identification. Analysis performed at Crisp Analytical Labs, LLC 1929 Old Denton Road Carrollton, TX 75006

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235
AIHA LAP, LLC Laboratory #102929

Overview of Project Sample Material Containing Asbestos

Customer Project:		Harrison Hall/ROTC Remodel			CA Labs Project #: CAL20064220AG	
Laboratory Sample ID	Sample #	Layer #	Analysts Physical Description of Subsample	Asbestos type / calibrated visual estimate percent	List of Affected Building Material Types	
55504	HH-F6.2B	F6.2B-1	black mastic	2% Chrysotile	black mastic	

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235
AIHA LAP, LLC Laboratory #102929

Glossary of abbreviations (non-asbestos fibers and non-fibrous minerals):

ca - carbonate	pe - perlite	fg - fiberglass	pa - palygorskite (clay)
gypsum - gypsum	qu - quartz	mw - mineral wool	
bi - binder		wo - wollastinite	
or - organic		ta - talc	
ma - matrix		sy - synthetic	
mi - mica		ce - cellulose	
ve - vermiculite		br - brucite	
ot - other		ka - kaolin (clay)	

This report relates to the items tested. This report is not to be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, AIHA LAP, LLC, or any other agency of the federal government. This report may not be reproduced except in full without written permission from CA Labs. These results are submitted pursuant to CA Labs' current terms and sale, condition of sale, including the company's standard warranty and limitations of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, CA Labs will store the samples for a period of ninety (90) days before discarding. A shipping or handling fee may be assessed for the return of any samples.

Polarized Light Asbestiform Materials Characterization

Customer Info: Tetra Tech 7100 Commercial Ave. Ste 4 Billings, MT 59101	Attn:	Customer Project: Harrison Hall/ROTC Remodel	CA Labs Project #: CAL20064220AG
Phone # 406-248-9161		Turnaround Time: 5 days	Date: 6/29/2020
Fax # 406-248-9282			Samples Rec'd: 6/22/20 10:30AM
			Date Of Sampling: None Given
			Purchase Order #:

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55503	HH-F6.2A		F6.2A-1	tan mastic	y	None Detected		100% gy,bi
55504	HH-F6.2B		F6.2B-1	black mastic	n	2% Chrysotile		98% gy,bi
55505	HH-F6.2C		F6.2C-1	black mastic		Positive Stop		
55506	HH-F6.3A		F6.3A-1	brown mastic	y	None Detected		100% gy,bi
55507	HH-F6.3B		F6.3B-1	brown mastic	y	None Detected		100% gy,bi
55508	HH-F6.3C		F6.3C-1	brown mastic	y	None Detected		100% gy,bi
55509	HH-M5.1A		M5.1A-1	white surfacing	y	None Detected		100% qu,bi


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:


Julio Robles
Analyst


Technical Manager
Tanner Rasmussen

Senior Analyst
Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

Polarized Light Asbestiform Materials Characterization

Customer Info: Tetra Tech 7100 Commercial Ave. Ste 4 Billings, MT 59101	Attn:	Customer Project: Harrison Hall/ROTC Remodel	CA Labs Project #: CAL20064220AG
Phone # 406-248-9161		Turnaround Time: 5 days	Date: 6/29/2020
Fax # 406-248-9282			Samples Rec'd: 6/22/20 10:30AM
			Date Of Sampling: None Given
			Purchase Order #:

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55509			M5.1A-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca
55510	HH-M5.1B		M5.1B-1	white surfacing	y	None Detected		100% qu,bi
55510			M5.1B-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca
55511	HH-M5.1C		M5.1C-1	white surfacing	y	None Detected		100% qu,bi
55511			M5.1C-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca
55512	HH-M5.2A		M5.2A-1	white surfacing	y	None Detected		100% qu,bi
55512			M5.2A-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

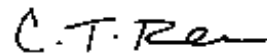
Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
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ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
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ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:



Julio Robles
Analyst



Technical Manager
Tanner Rasmussen

Senior Analyst
Julio Robles

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Polarized Light Asbestiform Materials Characterization

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Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55513	HH-M5.2B		M5.2B-1	white surfacing	y	None Detected	100% qu,bi	
55513			M5.2B-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca
55514	HH-M5.2C		M5.2C-1	white surfacing	y	None Detected	100% qu,bi	
55514			M5.2C-2	gray ceiling tile	y	None Detected	60% fg	40% qu,pe,ca
55515	HH-M6.1A		M6.1A-1	off-white vinyl covering	y	None Detected	100% gy,ma	
55515			M6.1A-2	yellow ceiling tile	y	None Detected	100% fg	
55516	HH-M6.1B		M6.1B-1	off-white vinyl covering	y	None Detected	100% gy,ma	

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235


AIHA LAP, LLC Laboratory #102929

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55516			M6.1B-2	yellow ceiling tile	y	None Detected	100% fg	
55517	HH-M6.1C		M6.1C-1	off-white vinyl covering	y	None Detected		100% gy,ma
55517			M6.1C-2	yellow ceiling tile	y	None Detected	100% fg	
55518	HH-M16.1A		M16.1 A-1	tan ceramic tile	y	None Detected		100% qu,ot
55518			M16.1 A-2	gray grouting	y	None Detected		100% qu,ca
55519	HH-M16.1B		M16.1 B-1	tan ceramic tile	y	None Detected		100% qu,ot
55519			M16.1 B-2	gray grouting	y	None Detected		100% qu,ca


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55520	HH-M16.1C		M16.1 C-1	tan ceramic tile	y	None Detected		100% qu,ot
55520			M16.1 C-2	gray grouting	y	None Detected		100% qu,ca
55521	HH-M16.2A		M16.2 A-1	tan ceramic tile	y	None Detected		100% qu,ot
55521			M16.2 A-2	gray grouting	y	None Detected		100% qu,ca
55522	HH-M16.2B		M16.2 B-1	tan ceramic tile	y	None Detected		100% qu,ot
55522			M16.2 B-2	gray grouting	y	None Detected		100% qu,ca
55523	HH-M16.2C		M16.2 C-1	tan ceramic tile	y	None Detected		100% qu,ot


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55523			M16.2 C-2	gray grouting	y	None Detected		100% qu,ca
55524	HH-M16.3A		M16.3 A-1	white ceramic tile	y	None Detected		100% qu,ot
55524			M16.3 A-2	gray grouting	y	None Detected		100% qu,ot
55525	HH-M16.3B		M16.3 B-1	white ceramic tile	y	None Detected		100% qu,ot
55525			M16.3 B-2	gray grouting	y	None Detected		100% qu,ca
55526	HH-M16.3C		M16.3 C-1	white ceramic tile	y	None Detected		100% qu,ot
55526			M16.3 C-2	gray grouting	y	None Detected		100% qu,ca


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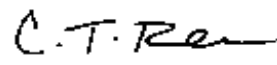
AIHA LAP, LLC Laboratory #102929

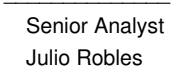
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Analyst


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Polarized Light Asbestiform Materials Characterization

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			Date Of Sampling: None Given
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Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55527	HH-M16.4A		M16.4 A-1	black ceramic tile	y	None Detected		100% qu,ot
55527			M16.4 A-2	gray grouting	y	None Detected		100% qu,ca
55528	HH-M16.4B		M16.4 B-1	red ceramic tile	y	None Detected		100% qu,ot
55528			M16.4 B-2	gray grouting	y	None Detected		100% qu,ca
55529	HH-M16.4C		M16.4 C-1	red ceramic tile	y	None Detected		100% qu,ot
55529			M16.4 C-2	gray grouting	y	None Detected		100% qu,ca
55530	HH-M16.5A		M16.5 A-1	red ceramic tile	y	None Detected		100% qu,ot


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

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55530			M16.5 A-2	gray grouting	y	None Detected		100% qu,ca
55531	HH-M16.5B		M16.5 B-1	tan ceramic tile	y	None Detected		100% qu,ot
55531			M16.5 B-2	gray grouting	y	None Detected		100% qu,ca
55532	HH-M16.5C		M16.5 C-1	tan ceramic tile	y	None Detected		100% qu,ot
55532			M16.5 C-2	gray grouting	y	None Detected		100% qu,ca
55533	HH-M16.6A		M16.6 A-1	tan ceramic tile	y	None Detected		100% qu,ot
55533			M16.6 A-2	gray grouting	y	None Detected		100% qu,ca


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55534	HH-M16.6B		M16.6 B-1	tan ceramic tile	y	None Detected		100% qu,ot
55534			M16.6 B-2	gray grouting	y	None Detected		100% qu,ca
55535	HH-M16.6C		M16.6 C-1	tan ceramic tile	y	None Detected		100% qu,ot
55535			M16.6 C-2	gray grouting	y	None Detected		100% qu,ca
55536	HH-M16.7A		M16.7 A-1	tan ceramic tile	y	None Detected		100% qu,ot
55536			M16.7 A-2	gray grouting	y	None Detected		100% qu,ca
55537	HH-M16.7B		M16.7 B-1	tan ceramic tile	y	None Detected		100% qu,ot


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55537			M16.7 B-2	gray grouting	y	None Detected		100% qu,ca
55538	HH-M16.7C		M16.7 C-1	tan ceramic tile	y	None Detected		100% qu,ot
55538			M16.7 C-2	gray grouting	y	None Detected		100% qu,ca
55539	HH-M18.1A		M18.1 A-1	gray mortar	y	None Detected		100% qu,ca
55540	HH-M18.1B		M18.1 B-1	gray mortar	y	None Detected		100% qu,ca
55541	HH-M18.1C		M18.1 C-1	white surfaced off-white finishing compound	n	None Detected		100% qu,bi,ca
55541			M18.1 C-2	gray cement/mortar	y	None Detected		100% qu,ca


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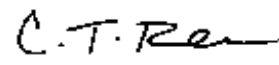
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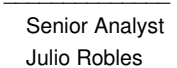
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Polarized Light Asbestiform Materials Characterization

Customer Info: Tetra Tech 7100 Commercial Ave. Ste 4 Billings, MT 59101	Attn:	Customer Project: Harrison Hall/ROTC Remodel	CA Labs Project #: CAL20064220AG
Phone # 406-248-9161		Turnaround Time: 5 days	Date: 6/29/2020
Fax # 406-248-9282			Samples Rec'd: 6/22/20 10:30AM
			Date Of Sampling: None Given
			Purchase Order #:

Laboratory Sample ID	Sample #	Com ment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55542	HH-M22.1A		M22.1 A-1	gray cement/mortar	y	None Detected		100% qu,ca
55542			M22.1 A-2	gray mortar	y	None Detected		100% qu,ca
55543	HH-M22.1B		M22.1 B-1	gray cement/mortar	y	None Detected		100% qu,ca
55543			M22.1 B-2	gray mortar	y	None Detected		100% qu,ca
55544	HH-M22.1C		M22.1 C-1	gray cement/mortar	y	None Detected		100% qu,ca
55544			M22.1 C-2	gray mortar	y	None Detected		100% qu,ca
55545	HH-M32.1A		M32.1 A-1	tan sealant with paper and foil	n	None Detected	30% ce	70% qu,bi,ot


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

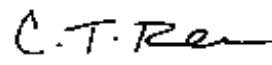
AIHA LAP, LLC Laboratory #102929

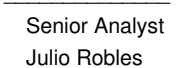
Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
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gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:


Julio Robles
Analyst


Technical Manager
Tanner Rasmussen


Senior Analyst
Julio Robles

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2. Fire Damage no significant fiber damages effecting fibrous percentages
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9. < 1% Result point counted positive
10. TEM analysis suggested

Polarized Light Asbestiform Materials Characterization

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			Date Of Sampling: None Given
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Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55546	HH-M32.1B		M32.1 B-1	tan sealant with paper and foil	n	None Detected	30% ce	70% qu,bi,ot
55547	HH-M32.1C		M32.1 C-1	tan sealant with paper and foil	n	None Detected	30% ce	70% qu,bi,ot
55548	HH-T2.1A		T2.1A- 1	white woven covering	y	None Detected	100% ce	
55548			T2.1A- 2	gray insulation	y	None Detected		100% qu,ca,ma
55549	HH-T2.1B		T2.1B- 1	white woven covering	y	None Detected	100% ce	
55549			T2.1B- 2	gray insulation	y	None Detected		100% qu,ca,ma
55550	HH-T2.1C		T2.1C- 1	white woven covering	y	None Detected	100% ce	

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

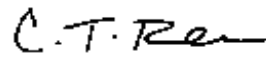
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Julio Robles
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Technical Manager
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Polarized Light Asbestiform Materials Characterization

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Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
55550			T2.1C-2	yellow insulation	y	None Detected	100% fg	
55550			T2.1C-3	gray insulation	y	None Detected	100% qu,ca,ma	
55551	HH-T4.1A		T4.1A-1	black sealant	y	None Detected	100% qu,gy,bi	
55552	HH-T4.1B		T4.1B-1	black sealant	y	None Detected	100% qu,gy,bi	
55553	HH-T4.1C		T4.1C-1	black sealant	y	None Detected	100% qu,gy,bi	
58116	HH-M18.2A		M18.2 A-1	gray concrete	y	None Detected	100% qu,ca	
58117	HH-M18.2B		M18.2 B-1	gray concrete	y	None Detected	100% qu,ca	


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

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CA Labs
Dedicated to Quality

Crisp Analytical, L.L.C.
1929 Old Denton Road
Carrollton, TX 75006
Phone 972-242-2754
Fax 972-242-2798

CA Labs, L.L.C.
12232 Industripex, Suite 32
Baton Rouge, LA 70809
Phone 225-751-5632
Fax 225-751-5634

Polarized Light Asbestiform Materials Characterization

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58118	HH-M18.2C		M18.2 C-1	gray concrete	y	None Detected		100% qu,ca


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

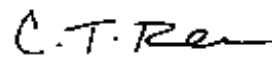
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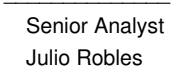
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618 South 25th Street
 Billings, Montana 59101
 Phone: 406.248.9161 Fax 406.248.9282

AL2006 4220

ASBESTOS PLM CHAIN OF CUSTODY

CONTACT INFORMATION

Company: Tetra Tech, Inc. Phone: 406.582.8780
 Primary Contact: Shane Matolyak Phone / Email: shane.matolyak@tetratech.com
 Additional Contact: Roger W. Herman, Jr. Phone / Email: direct - 406.384.0297 cell - 406.670.4844
 Sampler Name(s) (print): Shane Matolyak Sampler Signature(s): [Signature]

PROJECT INFORMATION

Client: MSU Project Name: Harrison Hall / ROTC Remodel
 Project Location: Bozeman Project Number: Not Available

PLM INSTRUCTIONS

- PLM EPA 600/R-93/116
- PLM Point Count, PC 400 Points (All samples greater than 0%, but less than 10%)
- Multi-Layered Samples:

- Analyze and Report All Separable Layers per EPA 600
- Report Composite for Drywall System per NESHP (where applicable)
- Only Analyze specifically noted layer
- Analyze Until Positive Stop: Positive Stop by Material Type as Noted

TURNAROUND TIME

- 10 Day
- 5 Day
- 3 Day
- 2 Day
- 1 Day
- Same Day
- RUSH, Results by: _____

Relinquished By	Date & Time	VIA	Received By	Date & Time
Shane Matolyak	6-19-2020 12:30	FEDEX	10:30AM	
			JUN 22 2020	

Erin Saunders M-18-24, M-18-25, M-18-26, M-18-27, M-18-28, M-18-29, M-18-30

[Signature]



TETRA TECH

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AL20664220

ASBESTOS PLM CHAIN OF CUSTODY

HOMOGENEOUS ID	LAB ID	SAMPLE DESCRIPTION AND LOCATION	NOTES
HH-F6-2-A		Yellow carpet tile glue over black mastic	
HH-F6-2-B		Yellow carpet tile glue over black mastic	
HH-F6-2-C		Yellow carpet tile glue over black mastic	
HH-F6-3-A		Brown ceiling tile glue pucks	
HH-F6-3-B		Brown ceiling tile glue pucks	
HH-F6-3-C		Brown ceiling tile glue pucks	
HH-M5-1-A		Smooth textured 2-ft by 4-ft ceiling panels	
HH-M5-1-B		Smooth textured 2-ft by 4-ft ceiling panels	
HH-M5-1-C		Smooth textured 2-ft by 4-ft ceiling panels	
HH-M5-2-A		Pinhole and fissure textured 2-ft by 4-ft ceiling panels	
HH-M5-2-B		Pinhole and fissure textured 2-ft by 4-ft ceiling panels	10:30AM
HH-M5-2-C		Pinhole and fissure textured 2-ft by 4-ft ceiling panels	JUN 22 2020
HH-M6-1-A		12-inch by 12-inch tan with grey patterned ceiling tiles	



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ASBESTOS PLM CHAIN OF CUSTODY

HH-M6-1-B		12-inch by 12-inch tan with grey patterned ceiling tiles	
HH-M6-1-C		12-inch by 12-inch tan with grey patterned ceiling tiles	
HH-M16-1-A		Brown and tan square and rectangle floor tile	
HH-M16-1-B		Brown and tan square and rectangle floor tile	
HH-M16-1-C		Brown and tan square and rectangle floor tile	
HH-M16-2-A		Cream and brown square and rectangle floor tile	
HH-M16-2-B		Cream and brown square and rectangle floor tile	
HH-M16-2-C		Cream and brown square and rectangle floor tile	
HH-M16-3-A		White square floor tile	
HH-M16-3-B		White square floor tile	
HH-M16-3-C		White square floor tile	10:30AM
HH-M16-4-A		Black and tan square floor tile	JUN 22 2020



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AC20064220

ASBESTOS PLM CHAIN OF CUSTODY

HH-M16-4-B		Black and tan square floor tile	
HH-M16-4-C		Black and tan square floor tile	
HH-M16-5-A		Brown 6-inch by 6-inch floor tile	
HH-M16-5-B		Brown 6-inch by 6-inch floor tile	
HH-M16-5-C		Brown 6-inch by 6-inch floor tile	
HH-M16-6-A		Ceramic glossy wall block with grey mortar	
HH-M16-6-B		Ceramic glossy wall block with grey mortar	
HH-M16-6-C		Ceramic glossy wall block with grey mortar	
HH-M16-7-A		Rough textured wall block with mortar	
HH-M16-7-B		Rough textured wall block with mortar	10:30AM JUN 22 2020
HH-M16-7-C		Rough textured wall block with mortar	<i>[Signature]</i>



TETRA TECH

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AL20064220

ASBESTOS PLM CHAIN OF CUSTODY

HH-M18-1-A		Concrete floor/foundation/pillars	
HH-M18-1-B		Concrete floor/foundation/pillars	
HH-M18-1-C		Concrete floor/foundation/pillars	
HH-M22-1-A		Grey block and mortar	
HH-M22-1-B		Grey block and mortar	
HH-M22-1-C		Grey block and mortar	
HH-M32-1-A		Brown insulation mastic	
HH-M32-1-B		Brown insulation mastic	
HH-M32-1-C		Brown insulation mastic	
HH-T2-1-A		Pipe insulation	10:30AM JUN 22 2020
HH-T2-1-B		Pipe insulation	



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AL20064220

ASBESTOS PLM CHAIN OF CUSTODY

HH-T2-1-C		Pipe insulation	
HH-T4-1-A		Black HVAC/vent sealant	
HH-T4-1-B		Black HVAC/vent sealant	
HH-T4-1-C		Black HVAC/vent sealant	

10:30AM

JUN 22 2020

SECTION 05 5000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Miscellaneous steel framing and supports.
 - 2. Steel Trims.

1.2 REFERENCES

- A. American Institute of Steel Construction (AISC).
- B. American Society for Testing and Materials (ASTM).
- C. The Society for Protective Coatings (SSPC).
- D. National Association of Corrosion Engineers International (NACE International).
- E. International Code Council (ICC).
- F. Occupational Safety and Health Administration (OSHA).
- G. International Building Code (IBC).
- H. American Welding Society (AWS).

1.3 SUBMITTALS

- A. Submit the following in accordance with Division 1 Section "Submittal Procedures."
- B. Shop drawings showing dimensioned details of all components. Cross-reference shop drawing details to detail numbers on the Drawings to facilitate checking.
- C. Welding Certificates: Copies of certificates for welding procedures and personnel.

PART 2 - PRODUCTS

2.1 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.
- D. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.
- E. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.

2.2 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941

2.3 METAL FABRICATION ITEMS

- A. Miscellaneous steel trim to be hot rolled and shop primed, field painted, unless noted otherwise. All exposed fasteners at steel trim to be pan head square drive screws; black; unless noted otherwise.
- B. Lintels at Masonry Veneer to be hot rolled, shop primed & field painted.

2.4 FABRICATION

- A. Examine Drawings for required items and furnish in sizes, number and kind to complete the Work.
- B. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- C. Form metal work to required shapes and sizes, with true curves, lines and angles. Provide components in sizes and profiles indicated, but not less than required to comply with requirements indicated for structural performance or, if not indicated, to comply with requirements of authorities having jurisdiction and with structural properties to sustain safety or withstand loads to which normally subjected.
- D. Allow for thermal movement resulting from a maximum change (range) in ambient temperature of 100°F, in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints and overstressing of welds and fasteners. Base design calculations on actual

surface temperatures of metals due to both solar heat gain and night time sky heat loss. Provide necessary rebates, lugs, and brackets for assembly of units. For Work exposed to view, use concealed fasteners unless indicated as exposed fasteners or welded joints, or unless otherwise indicated on final shop drawings.

- E. Mill all exposed joints to a tight, hairline fit, flush and smooth. Miter exposed corner joints as indicated and machine fit to hairline joint. Joints shall be securely and neatly tenoned, drawn together using concealed fasteners. Locate joints where indicated or accepted on final shop drawings.
- F. Cut shapes to pattern, sizes, and dimensions as detailed and approved. Punch and drill holes accurately, maintaining proper edge and end clearance and proper diameter to fit each fastening. Countersink holes for flat head wood screws.
- G. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- H. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
- I. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- J. Furnish and shop assemble all items true to measurements taken at the job, disassembled and ship to the job, complete with all sleeves, bolts, etc., necessary for erection.
- K. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.
- L. Mark each member or assembly of members with erection marks for identification; furnish an erection diagram with marks as detailed. Ship assembled units in such a manner that they may be transported and unloaded without being excessively stressed, deformed or otherwise damaged. Place fabricated material on skids, off the ground; keep clean and properly drained.
- M. All welding performed by Certified Welders and in accordance with AWS D1.1. Perform welding, brazing, and soldering such that surface exposed to view in completed Work will be free of pitting, runs, spatter, cracks, warping, dimpling, depressions, distortion, discoloration and other imperfections. Grind exposed welds to match adjacent finish. Welds shall not be visible on finished surface.
- N. Grind exposed ends and cut edge of all items smooth and slightly beveled to remove sharpness, burrs, and cutting marks. Use gas cutting torch in the field to cut holes or correct fabrication errors only after submitting each condition to Architect for review.
- O. Fabrication tolerance for flat surface shall be $\pm 1/32$ -inch in 2-feet measured in every direction at any location with no evidence of oil canning.
- P. Separate dissimilar metals fabricated under this Section and metals of this Section that contact metals of other construction with separator recommended by fabricator to prevent corrosion and galvanic action. Do not extend coating onto exposed surfaces.

2.5 STEEL FINISHES

- A. One shop coat rust inhibiting primer paint on all items whether concealed or exposed, except do not prime surfaces to be bonded into concrete or masonry, at friction type connections or surfaces within 2-inches of bolts or welds.

PART 3 - EXECUTION

3.1 ERECTION

- A. Furnish items to other trades when setting and installation is part of their Work.
- B. Do not set permanent bolting or welding until as much of the assembly as will be stiffened thereby has been properly aligned and within tolerances.
- C. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

- D. Set steel elements accurately to the lines and elevations indicated. Align and adjust the various members before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
- E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- F. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- G. At completion of erection, grind exposed welds smooth, touch-up paint field bolts and welds and abrasions with the same paint used for shop painting or galvanized repair paint on galvanized items.

END OF SECTION 05 5000

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SECTION 06 1000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Miscellaneous framing and sheathing.
- B. Concealed wood blocking, nailers, and supports.
- C. Miscellaneous wood nailers, furring, and grounds.

1.2 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.
- B. Section 09 2116 - Gypsum Board Assemblies

1.3 REFERENCE STANDARDS

- A. AFPA (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; American Forest and Paper Association; 2012.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- C. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2011.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2012.
- E. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.
- F. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17; West Coast Lumber Inspection Bureau; 2004, and supplements.
- G. WWPA G-5 - Western Lumber Grading Rules; Western Wood Products Association; 2011.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

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

2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Grading Agency: Western Wood Products Association (WWPA).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: Kiln-dry or MC15..
- D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 1 or Construction Grade.
 - 2. Boards: Standard or No. 3.

2.3 CONSTRUCTION PANELS

- A. Miscellaneous Applications:
 - 1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
 - 2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
 - 3. Other Locations: PS 1, C-D Plugged or better.

2.4 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

2.5 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
- B. Preservative Treatment:
 1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
 - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - b. Treat lumber exposed to weather.
 - c. Treat lumber in contact with roofing, flashing, or waterproofing.
 - d. Treat lumber in contact with masonry or concrete.
 - e. Treat lumber less than 18 inches above grade.
 - f. Treat lumber in other locations as indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

3.2 INSTALLATION - GENERAL

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

3.3 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
- C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
- E. Specifically, provide the following non-structural framing and blocking:
 1. Cabinets and shelf supports.
 2. Wall brackets.
 3. Handrails.
 4. Towel and bath accessories.
 5. Wall-mounted door stops.
 6. Wall paneling and trim.
 7. Joints of rigid wall coverings that occur between studs.

3.4 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

END OF SECTION 06 1000

SECTION 06 2000 - FINISH CARPENTRY

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Finish carpentry items:
 - 1. Miscellaneous wood trims.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 09 9000 - Painting and Coating: Painting and finishing of finish carpentry items.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with electrical rough-in and installation of associated and adjacent components.
 - 1. Coordinate lay-out of wood trims with electrical rough-in to assure outlet boxes finish flush.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Provide data on wood material and fasteners.
- C. Samples: Submit two samples each trim type, in dimensional size proposed to be used, illustrating wood grain and specified finish.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of experience.
- B. Installer Qualifications: Employ qualified and experienced finish carpenters.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect work from moisture damage.

PART 2 - PRODUCTS

2.1 FINISH CARPENTRY ITEMS

- A. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.
- B. Interior Woodwork Items:
 - 1. Miscellaneous wood trim items: Poplar, prepare for opaque finish.

2.2 LUMBER MATERIALS

- A. Hardwood Lumber: Poplar species, paint grade, maximum moisture content of 6 percent; of quality suitable for opaque paint finish.

2.3 FASTENINGS

- A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.
- B. Fasteners: Of size and type to suit application or as indicated on the drawings.

2.4 ACCESSORIES

- A. Lumber for Shimmiing, Blocking, and furring: Softwood lumber of pine species.
- B. Primer: Alkyd primer sealer.
- C. Wood Filler: Solvent base, tinted to match surface finish color.

2.5 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.6 FINISHING

- A. Sand work smooth and set exposed nails and screws.

- B. Apply wood filler in exposed nail and screw indentations.
- C. Finish work in accordance with paint specification.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.2 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards requirements for grade indicated.
- B. Install end joints of panels flush, with matching chamfered edges butting.
- C. Set and secure materials and components in place, plumb and level.
- D. Layout fasteners in even, neat and consistent lines.
- E. Install components with nails at 16 inch on center, unless noted otherwise on Drawings.
- F. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.3 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Site Finishing: See Section 09 9000.

3.4 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION 06 2000

SECTION 07 2119 - SPRAY-APPLIED FOAM INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Spray-Applied foamed-in-place insulation.
 - 1. At all portions of walls exposed to the exterior on one side and in the work area unless finished with existing drywall, plaster, or glazed block to remain or unless noted otherwise.
 - 2. In locations identified on drawings.
- B. Protective cementitious overcoat.

1.2 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2010.
- B. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2012.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2013a.
- D. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, insulation properties, overcoat properties, and preparation requirements.
- C. Certificates: Certify that products of this section meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than five years of experience.
- B. Applicator Qualifications: Company specializing in performing work of the type specified, with minimum three years documented experience.

1.5 REGULATORY REQUIREMENTS

- A. Conform to applicable code for flame and smoke limitations.

1.6 FIELD CONDITIONS

- A. Do not install insulation when ambient temperature is lower than 70 degrees F.
- B. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.
- C. Do not apply foam when temperature is within 5 F of dew point.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Foamed-In-Place Insulation:
 - 1. BASF Polyurethane Foam Enterprises LLC: www.basf.us.
 - 2. Dow Chemical Co: www.dowbuildingsolutions.com
 - 3. Johns Manville Insulation Systems: www.specJM.com
 - 4. Gaco Western LLC: www.gaco.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.2 MATERIALS

- A. Foamed-In-Place Insulation: Two-component spray polyurethane closed cell cellular plastic foam; foamed on-site.
 - 1. Nominal Density: 2.0 lb/cu. ft. when tested in accordance with ASTM D 1622.
 - 2. Aged Thermal Resistance (R-value): 6.4 (deg F hr sq ft)/Btu, minimum, when tested at 1 inch thickness in accordance with ASTM C 1029-07 after aging for 180 days at 41 degrees F.
 - 3. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.
 - 4. Air Permeance: 0.001 cfm/sq ft, maximum, when tested at intended thickness in accordance with ASTM E2178 at 1.5 psf.
 - 5. Closed Cell Content: At least 90 percent.

6. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.
7. Basis of Design Products:
 - a. Johns Manville: "JM Corbond III".
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.3 ACCESSORIES

- A. Primer: As required by insulation manufacturer.
- B. Overcoat: Cementitious type, spray applied; flame spread index of 25 and smoke developed index of 450, when tested in accordance with ASTM E84 to meet 15 minutes minimum protection barrier required by the 2009 IBC. Basis of Design; provide JM Ignition Barrier IB Coating manufactured by Johns Manville.
 1. Apply in locations where spay-applied foam insulation is exposed to occupiable space and where no ceiling is to be installed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify work within construction spaces or crevices is complete prior to insulation application.
- B. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation or overcoat adhesion.

3.2 PREPARATION

- A. Mask and protect adjacent surfaces from over spray or dusting.
- B. Apply primer in accordance with manufacturer's instructions.

3.3 APPLICATION

- A. Apply insulation in accordance with manufacturer's instructions.
- B. Apply insulation by spray method, to a uniform monolithic density without voids.
- C. Apply to a minimum cured thickness per the Schedule at end of this Section.
- D. Apply to achieve a thermal resistance per the Schedule at end of this Section.
- E. Apply overcoat monolithically, without voids to fully cover foam insulation, to achieve fire rating required.
- F. Patch damaged areas.
- G. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.
- H. Trim excess away for applied trim or remove as required for continuous sealant bead.

3.4 FIELD QUALITY CONTROL

- A. Field inspections and tests may be performed by an independent testing agency under provisions of Section 01 4000.
- B. Inspection will include verification of insulation and overcoat thickness and density.

3.5 PROTECTION

- A. Do not permit subsequent construction work to disturb applied insulation.

3.6 SCHEDULE

- A. At all portions of walls exposed to the exterior on one side and in the work area unless noted otherwise: R21.

END OF SECTION 07 2119

SECTION 07 9005 - JOINT SEALERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Exterior joints in vertical surfaces and non-traffic horizontal surfaces where indicated on the drawings and otherwise not provided as part of the work under other sections of the specifications.
- B. Interior joints in vertical and horizontal surfaces and sanitary joints
- C. Sealants and joint backing.

1.2 REFERENCE STANDARDS ASTM C834 - STANDARD SPECIFICATION FOR LATEX SEALANTS; 2010.

- A. ASTM C834 - Standard Specification for Latex Sealants; 2010.
- B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2011.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with other sections referencing this section.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating sealant chemical characteristics.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum seven years experience.
- B. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

1.6 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.
- B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less or more than allowed by joint sealant manufacturer for application indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Silicone Sealants:
 - 1. Bostik Inc: www.bostik-us.com.
 - 2. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
 - 3. BASF Construction Chemicals-Building Systems: www.chemrex.com.
 - 4. Sherwin-Williams Company; Silicone Rubber All Purpose Sealant: www.sherwin-williams.com.
- B. Polyurethane Sealants:
 - 1. Bostik Inc: www.bostik-us.com.
 - 2. BASF Construction Chemicals-Building Systems: www.chemrex.com.
 - 3. Sherwin-Williams Company; Stampeed-1/-TX Polyurethane Sealant: www.sherwin-williams.com.
- C. Acrylic Emulsion Latex Sealants:
 - 1. Bostik Inc: www.bostik-us.com.
 - 2. BASF Construction Chemicals-Building Systems: www.chemrex.com.
 - 3. Sherwin Williams Company; White Lightning 30D6 Silconized Acrylic Latex Caulk: www.sherwin-williams.com.
- D. Butyl Sealants:
 - 1. Bostik Inc: www.bostik-us.com.
 - 2. Tremco Global Sealants; www.Tremcosealants.com.
 - 3. Sherwin-Williams Company; Storm Blaster All Season Sealant: www.sherwin-williams.com.

2.2 SEALANTS

- A. Type Exterior - General Purpose Exterior Sealant: Polyurethane or Silicone; ASTM C920, Grade NS,

Class 25, Uses M, G, and A; single component.

1. Color: Match adjacent finished surfaces.
- B. Type Exterior Metal - Exterior Metal Lap Joint Sealant: Butyl or polyisobutylene, nondrying, nonskinning, noncuring.
- C. Type Interior - General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
- D. Type Interior- Plumbing Fixture - Bathtub/Tile Sealant: White silicone; ASTM C920, Uses I, M and A; single component, mildew resistant.
- E. Type Acoustic - Acoustical Sealant for Concealed Locations
 1. Composition: Permanently tacky non-hardening butyl sealant.

2.3 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify that joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean and prime joints in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Protect elements surrounding the work of this section from damage or disfigurement.

3.3 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.
- D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.
- E. Install bond breaker where joint backing is not used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- H. Tool joints concave.
- I. Precompressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

3.4 CLEANING

- A. Clean adjacent soiled surfaces.

3.5 PROTECTION

- A. Protect sealants until cured.

3.6 SCHEDULE

- A. Exterior Joints for Which No Other Sealant Type is Indicated: Type Exterior Color to match adjacent materials as approved by Architect.
- B. Lap Joints in Exterior Sheet Metal Work: Type Exterior-Metal.
- C. Interior Joints for Which No Other Sealant is Indicated: Type Interior; None; N/A.
- D. Joints Between Plumbing Fixtures and Walls and Floors, and Between Countertops and Walls: Type Interior-Plumbing Fixtures.
- E. Water Sealant Joints around pipe and conduit penetrations for water tight wall and floor surfaces,

Type Interior.

- F. In Acoustic Walls, Between Outlet Boxes and Gypsum Board and along full perimeter of gypsum board and framing: Type Acoustic.

END OF SECTION 07 9005

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SECTION 08 1113 – HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Non-fire-rated steel doors and frames.
- B. Steel frames for wood doors.

1.2 RELATED REQUIREMENTS

- A. Section 08 1416 - Flush Wood Doors
- B. Section 08 7100 - Door Hardware.
- C. Section 08 8000 - Glazing: Glass for doors.
- D. Section 09 9000 - Painting and Coating: Field painting.

1.3 REFERENCE STANDARDS

- A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.
- B. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2003.
- C. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 1998 (R2011).
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.
- E. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2006.
- F. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; The National Association of Architectural Metal Manufacturers; 2007.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.
- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.
- D. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years' experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store in accordance with NAAMM HMMA 840.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Steel Doors and Frames:
 - 1. Assa Abloy Ceco or Curries: www.assaabloydss.com.
 - 2. Steelcraft, an Allegion brand: www.allegion.com.
 - 3. Republic Doors and Frames; www.republicdoors.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.2 DOORS AND FRAMES

- A. Requirements for All Doors and Frames:
 - 1. Accessibility: Comply with ANSI/ICC A117.1.
 - 2. Door Top Closures: Flush with top of faces and edges.
 - 3. Door Edge Profile: Beveled on both edges.
 - 4. Door Texture: Smooth faces. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
 - 5. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in place,

- in addition to other requirements specified in door grade standard.
6. Galvanizing for doors and frames exposed to exterior: All components hot-dipped zinc-iron alloy-coated (galvannealed), A60/ZF180.
 7. Finish: Factory primed, for field finishing.
- B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.3 STEEL DOORS

- A. Interior Doors:
1. Grade: ANSI A250.8 Level 2, physical performance Level B, Model 1, full flush.
 2. Thickness: 1-3/4 inches.

2.4 STEEL FRAMES

- A. General:
1. Comply with the requirements of grade specified for corresponding door.
 - a. Frames for Wood Doors: Comply with frame requirements specified in ANSI A250.8 for Level 2
 2. Finish: Factory primed, for field finishing.
- B. Interior Door Frames, Non-Fire-Rated: Face welded type.

2.5 ACCESSORY MATERIALS

- A. Glazing: As specified in Section 08 8000, factory installed.
- B. Removable Stops: Formed sheet steel, mitered corners; prepared for countersink style tamper proof screws.
- C. Astragals for Double Doors:
1. Steel, Z-shaped.
- D. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.
- E. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

2.6 FINISH MATERIALS

- A. Primer: Rust-inhibiting, complying with ANSI A250.10, door manufacturer's standard.
- B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.

3.2 PREPARATION

- A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.
- B. Coat inside of other frames with bituminous coating to a thickness of 1/16 inch.

3.3 INSTALLATION

- A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.
- B. In addition, install fire rated units in accordance with NFPA 80.
- C. Coordinate frame anchor placement with wall construction.
- D. Coordinate installation of hardware.
- E. Coordinate installation of glazing.

3.4 TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.5 ADJUSTING

- A. Adjust for smooth and balanced door movement.

3.6 SCHEDULE - SEE DRAWINGS

END OF SECTION 08 1113

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SECTION 08 1416 – FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Wall and Ceiling access door and frame units.

1.2 RELATED REQUIREMENTS

- A. Section 09 2116 - Gypsum Board Assemblies
- B. Section 09 9000 - Painting and Coating: Field paint finish.

1.3 REFERENCE STANDARDS

- A. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- B. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
- C. Shop Drawings: Indicate exact position of all access door units.
- D. Manufacturer's Installation Instructions: Indicate installation requirements.
- E. Project Record Documents: Record actual locations of all access units.

PART 2 - PRODUCTS

2.1 WALL AND CEILING ACCESS UNITS

- A. Manufacturers:
 - 1. Basis of Design: Acudor Products Inc., model UF-5000: www.acudor.com.
 - 2. Cendrex, Inc: www.cendrex.com.
 - 3. Elmdor Stoneman: elmdorstoneman.com
 - 4. Karp Associates, Inc: www.karpinc.com.
 - 5. Milcor by Commercial Products Group of Hart & Cooley, Inc: www.milcorinc.com.
 - 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Access Doors: Factory fabricated door and frame units, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies which units are to be installed in.
 - 1. Material: Steel.
 - 2. Style: Exposed frame with door surface flush with frame surface.
 - a. In Gypsum Board: Use drywall bead type frame.
 - 3. Door Style: Single thickness with rolled or turned in edges.
 - 4. Frames: 16 gauge, 0.0598 inch, minimum.
 - 5. Steel Finish: Factory Primed, Field Painted to match adjacent surfaces.
 - 6. Size(s): As Shown on the Interior Elevations and Reflected Ceiling Plans Drawings.
 - 7. Hardware:
 - a. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
 - b. Latch/Lock: Tamperproof tool-operated cam latch.
 - c. Gasketing: Extruded neoprene, around the perimeter of the door panel.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that rough openings are correctly sized and located.

3.2 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings. Secure rigidly in place.
- C. Position units to provide convenient access to the concealed work requiring access.

END OF SECTION 08 3100

SECTION 08 3100 – ACCESS PANELS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Wall and Ceiling access door and frame units.

1.2 RELATED REQUIREMENTS

- A. Section 09 2116 - Gypsum Board Assemblies
- B. Section 09 9000 - Painting and Coating: Field paint finish.

1.3 REFERENCE STANDARDS

- A. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- B. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
- C. Shop Drawings: Indicate exact position of all access door units.
- D. Manufacturer's Installation Instructions: Indicate installation requirements.
- E. Project Record Documents: Record actual locations of all access units.

PART 2 - PRODUCTS

2.1 WALL AND CEILING ACCESS UNITS

- A. Manufacturers:
 - 1. Basis of Design: Acudor Products Inc., model UF-5000: www.acudor.com.
 - 2. Cendrex, Inc: www.cendrex.com.
 - 3. Elmdor Stoneman: elmdorstoneman.com
 - 4. Karp Associates, Inc: www.karpinc.com.
 - 5. Milcor by Commercial Products Group of Hart & Cooley, Inc: www.milcorinc.com.
 - 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Access Doors: Factory fabricated door and frame units, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies which units are to be installed in.
 - 1. Material: Steel.
 - 2. Style: Exposed frame with door surface flush with frame surface.
 - a. In Gypsum Board: Use drywall bead type frame.
 - 3. Door Style: Single thickness with rolled or turned in edges.
 - 4. Frames: 16 gauge, 0.0598 inch, minimum.
 - 5. Steel Finish: Factory Primed, Field Painted to match adjacent surfaces.
 - 6. Size(s): As Shown on the Interior Elevations and Reflected Ceiling Plans Drawings.
 - 7. Hardware:
 - a. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
 - b. Latch/Lock: Tamperproof tool-operated cam latch.
 - c. Gasketing: Extruded neoprene, around the perimeter of the door panel.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that rough openings are correctly sized and located.

3.2 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings. Secure rigidly in place.
- C. Position units to provide convenient access to the concealed work requiring access.

PART 4 - END OF SECTION 08 3100

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SECTION 08 7100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES

1. Finish hardware for doors as scheduled and specified herein, including:
 - a. Mechanical hardware for swinging doors.
2. Any parts, components, materials, and accessories, whether specified or not, that are required for a complete and operational access control system. Provide access control system with features, capabilities, and operation at each door as specified herein.

B. RELATED SECTIONS

1. Provide hardware complying with division 01 section "references" as well as the following publications to the extent referenced within this specification.
 - a. Division 06 Section: "Finish Carpentry"
 - b. Division 08 Section: "Hollow Metal Doors and Frames"
 - c. Division 08 Section: "Wood Doors"

1.2 REFERENCED STANDARDS

- A. Provide hardware in accordance with the following standards in addition to those specified in Division 01 Section "References."
 1. American National Standards Institute (ANSI), A117.1: Accessible and Usable Buildings and Facilities, edition as adopted by local Authority Having Jurisdiction (AHJ).
 2. Builders Hardware Manufacturer's Association (BHMA)
 - a. ANSI/BHMA A156.18: Materials and Finishes, 2006 edition
 3. Door and Hardware Institute (DHI)
 - a. Recommended Locations for Architectural Hardware for Flush Wood Doors, 1993 edition
 - b. Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames, 2004 edition
 - c. Installation Guide for Doors and Hardware, 1994 edition
 - d. Keying Systems and Nomenclature, 2003 edition
 - e. Sequence and Format for the Hardware Schedule, 2001 edition

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination
 - a. Coordinate layout, templating, and installation of work with other sections as required. Provide templates, product information, schedules, and diagrams required to fully coordinate the work.
- B. Coordinate blocking for wall stops and other surface-applied hardware with Division 06 Section "Rough Carpentry."
- C. Coordinate hardware locations and templating with the appropriate Division 08 door and frame sections.
- D. Pre-installation Meetings
 1. Upon approval of hardware schedule and wiring diagram submittals and before hardware installation, conduct a pre-installation meeting complying with Division 01 Section "Project Management and Coordination."
 2. Meeting attendees shall include the owner's representative, architect, contractor, hardware supplier, hardware installer, other affected trades, and manufacturer representative(s) for locks, exit hardware, operators, and closers.
 3. Discuss the installation of continuous hinges, locksets, door closers, exit devices, electromechanical finish hardware, and finish hardware. Coordinate installation between trades.
 - a. Discuss special installation requirements.
 - b. Inspect and discuss electrical rough-in and other preparatory work performed by other trades.
 - c. Review sequence of operation for each electrified door opening.
 - d. Review and finalize construction schedule and verify availability of materials, Installer's

- personnel, equipment, and facilities needed to make progress and avoid delays.
- e. Review required testing, inspecting, and certifying procedures
- 4. At the meeting, distribute installation manuals, templates, wiring diagrams, and approved hardware schedule submittals to each attendee.
- 5. Notify participants at least five (5) working days before meeting.

1.4 SUBMITTALS

A. General

1. Provide submittals in accordance with Division 01 Section "Submittal Procedures."
2. Advise architect within the submittal package of incompatibility or issues which may detrimentally affect the work of this section.
3. Submittals shall be prepared by or under the supervision of Architectural Hardware Consultant. Stamp submittals with the DHI certification seal and signature of the supervising Architectural Hardware Consultant.
4. Submittals submitted without the above certification seal shall be marked incomplete and returned.
5. Submittal sequence: Submit product data, hardware schedule, samples, and qualification data concurrently. Coordinate submission of finish hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in project construction schedule. Upon approval of first submittal package, submit wiring diagrams and key schedule.

B. Product Data

1. Submit manufacturer's technical product data for each item of finish hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Highlight relevant product information such as model, function, trim, finish, options, electrical requirements, and accessories.

C. Hardware Schedule

1. Submit hardware schedule detailing fabrication and assembly of finish hardware, as well as procedures and diagrams. Coordinate the final finish hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of finish hardware.
2. Check specified hardware for suitability and adaptability to details and surrounding conditions. Indicate unsuitable or incompatible items and proposed substitutions.
 - a. Format schedule complying with the vertical format in DHI's "Sequence and Format for the Hardware Schedule" publication. Double space entries, and number and date each page. Use same scheduling sequence and door numbers as in the Contract Documents
 - b. Include the following information:
 - i. Numerical door index indicating door number, heading number, and architect's specified hardware set number.
 - ii. Identification number, location, hand, fire rating and material of each door and frame.
 - iii. Type, style, function, size, quantity, and finish of each finish hardware item. Include description and function of each lockset and exit device.
 - iv. Complete designations of every item required for each door or opening including name and manufacturer.
 - v. Fastenings and other pertinent information.
 1. Where universal-type closers are scheduled, indicate the application method to be used for installation at each door (e.g. regular arm, parallel arm, or top jamb).
 - vi. Location of each finish hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - vii. Explanation of abbreviations, symbols, and codes contained in schedule.
 - viii. Mounting locations for finish hardware.
 - ix. Door and frame sizes and materials.
 - x. List of related door devices specified in other Sections for each door and frame.
 - c. Submit, with the hardware schedule, a list of lead times for hardware items.

D. Manufacturer's Templates

1. After final approval of the hardware schedule, provide templates for doors, frames, and other work specified to be factory prepared for the installation of finish hardware. Check shop drawings

of other work to ensure that adequate provisions are made for locating and installing finish hardware to comply with indicated requirements. Provide additional templates, template lists, hardware schedules, and product information to other trades upon request.

E. Qualification Certificates

1. For installer, supplier, and Architectural Hardware Consultant provide letters of certification that indicate compliance with the requirements specified herein. Submit certifications concurrently with hardware schedule submittal. Submittals will not be considered without certifications.
 - a. Installer: Provide documentation showing installer's past experience.
 - b. Supplier: Provide letters of certification from the hardware manufacturer stating that the supplier is a factory direct authorized distributor. Provide documentation showing suppliers past experience.
 - c. Architectural Hardware Consultant: Provide certificate showing consultant holds the required certificate(s) from DHI.

1.5 CLOSE OUT SUBMITTALS

A. General

1. Upon substantial completion, provide two (2) copies of the closeout submittals complying with Division 01 Section "Close Out Submittals."

B. Operation And Maintenance Data

1. Provide operation and maintenance manuals that include the following for each hardware item:
 - a. Project information including contact information for architect, contractor, supplier, installer, Architectural Hardware Consultant, and local representative of each hardware manufacturer
 - b. Complete information on care, maintenance, adjustment, repair and replacement of parts, and preservation of finishes
 - c. Product data, templates, installation information, service manual, and parts lists.
 - d. Copy of final hardware and keying schedules for each. Edit schedules and diagrams to reflect "As installed" conditions.

C. Warranty Documentation

1. Provide information required for warranty service or replacement of each hardware item including:
2. Warranty certificates from manufacturer stating warranty period and conditions, complying with warranty requirements specified herein.
3. Copy of manufacturer's order confirmation or original packing slip with manufacturer's original order #, date of manufacture, and ship date.

1.6 QUALITY ASSURANCE

A. Qualifications

1. Supplier Qualifications: Supplier shall have documented experience in the supply of finish hardware for five (5) years or for three (3) prior projects similar in scope, size, and quality. Supplier shall have an Architectural Hardware Consultant, complying with the requirements specified herein, available to properly handle, detail, and service hardware in a satisfactory manner. Architectural Hardware Consultant shall be available during the course of the work to consult with contractor, architect, and owner about finish hardware and keying.
 - a. Supplier shall be a certified direct distributor and be a full sales and service organization for the manufacturer(s) listed.
 - b. Supplier shall have warehousing facilities within Project's Vicinity.
2. Installer Qualifications: Installer shall have documented experience in the installation of finish hardware for (5) years or for three (3) prior projects similar in scope, size, and quality.
3. Manufacturer Sourcing Qualifications: Obtain each type of finish hardware (hinges, latch & locksets, exit devices, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.
 - a. Provide electrified hardware from same manufacturer as mechanical finish hardware unless otherwise indicated. Manufacturer's that perform electrical modifications that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction (AHJ) are acceptable.
4. Architectural Hardware Consultant Qualifications: A person who is certified by DHI as an Architectural Hardware Consultant (AHC) or Architectural Openings Consultant (AOC) and is enrolled in the DHI Continuing Education Program. Consultant shall be experienced in providing

consulting services for finish hardware installations that are comparable in material, design, and extent indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Marking And Packaging
 - 1. Package hardware items manufacturer's standard packaging, clearly marked with hardware set number correlating to finish hardware schedule and architect's door number.
- B. Delivery And Acceptance
 - 1. Coordinate with construction schedule and deliver packaged hardware items to place of installation (e.g. project site, fabrication shop). Upon delivery, inspect and inventory finish hardware. Immediately notify supplier of defective or missing items.
 - 2. Deliver keys and cores to owner by registered mail or overnight package service. Ship keys separately from cores.
- C. Storage And Handling
 - 1. Provide secure, dry storage area complying with Division 01 Section "Product Storage and Handling Requirements" for finish hardware delivered to the project site, but not yet installed. Store items on shelves or pallets to prevent damage.
 - 2. Control handling and installation of hardware items that are not immediately replaceable so that completion of work will not be delayed by hardware losses both before and after installation.
- D. Packaging Waste Management
 - 1. Upon delivery and installation of finish hardware, discard packaging and other waste items in accord with Division 01 Section "Construction Waste Management and Disposal."

1.8 WARRANTY

- A. General Warranty
 - 1. Warrant finish hardware against defects in material and workmanship as set forth in Division 01 Section "Closeout Procedures."
 - 2. Special warranties specified herein shall not deprive owner of other rights specified in the contract documents, but shall be in addition to, and run concurrent with, other warranty requirements.
- B. Special Warranty
 - 1. Provide a written warranty, executed by the product manufacturer agreeing to repair or replace components of finish hardware that fail in materials or workmanship within the specified warranty period.
 - a. Failures include, but are not limited to, the following:
 - i. Structural failures including excessive deflection, cracking, or breakage.
 - ii. Faulty operation of operators and finish hardware.
 - iii. Deterioration of metals, metal finishes, and other materials beyond normal wear.
 - b. Warranty Period: Two (2) years from date of Substantial Completion, except for:
 - c. 1) Heavy Duty Bored Locks: Ten (10) years
 - d. 2) Door Closers: Thirty (30) years

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Substitutions submitted, no later than 10 business days prior to bid and complying with Division 01 Section "Substitutions" requirements will be reviewed for conformance to basis of design. Substitutions found in compliance will be approved by bid addendum.

2.2 MATERIALS

- A. Base Metals: Produce hardware units of basic metal and forming method indicated using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units for finish designations indicated.
- B. Provide hardware manufactured to conform to published templates generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.

2.3 FASTENERS

- A. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as

otherwise indicated. Furnish stainless steel (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.

- B. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners. Use through bolts only as indicated in this section unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

2.4 HINGES

- A. Manufacturers that may be incorporated into the Work:
 - 1. Ives
 - 2. Stanley
 - 3. McKinney
 - 4. Bommer
- B. Requirements:
 - 1. Screws: Provide Phillips flat-head screws complying with the following requirements:
 - a. For metal doors and frames install machine screws into drilled and tapped holes.
 - b. For wood doors and frames install wood screws.
 - c. For fire-rated wood doors install #12 x 1-1/4-inch, threaded-to-the-head steel wood screws.
 - 2. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
 - a. Out-Swing Doors with Locks: Non-Removable Pins (NRP).
 - b. Interior Doors: Non-rising pins.
 - c. Tips: Flat button and matching plug, finished to match leaves.
 - 3. All hinges at swinging doors to be ball bearing.
 - 4. Number of Hinges: At non-rated openings, provide two hinges for each door leaf 60 inches or less in height and one additional hinge for each 30 inches of additional height or portion thereof. At fire rated openings, provide no less than three ball bearing hinges for each door leaf 86 inches or less in height and one additional hinge for each 30 inches of additional height or portion thereof.
 - 5. Hinge Width: Where applied trim or closer templating require hinge widths wider than 4-1/2 inches, provide minimum width required. Otherwise, provide hinges 4-1/2 inches in width.
 - 6. Hinge Height: Provide hinges 5 inches in height where door leaf exceeds 3'0 in width. Otherwise, provide hinges 4-1/2 inches in height.
 - 7. Hinge Weight: Provide heavy weight hinges where door leaf exceeds 3'0 in width, exterior doors, and at doors scheduled with, panic hardware and push/pull hardware. Otherwise provide standard weight hinges.

2.5 FLUSH BOLTS

- A. Manufacturers:
 - 1. Scheduled Manufacturer: Door Controls.
 - 2. Acceptable Manufacturers: Ives, Rockwood.
- B. Requirements:
 - 1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

2.6 COORDINATORS

- A. Manufacturers:
 - 1. Scheduled Manufacturer: Ives.
 - 2. Acceptable Manufacturers: Burns, Rockwood.
- B. Requirements:
 - 1. Where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors, provide bar-type coordinating device, surface applied to underside of stop at frame head.
 - 2. Provide filler bar of correct length for unit to span entire width of opening, and appropriate

brackets for parallel arm door closers, surface vertical rod exit device strikes or other stop mounted hardware. Factory-prepared coordinators for vertical rod devices as specified.

2.7 LOCKS AND LATCHES

- A. General:
 - 1. Lock Chassis: Shall be made from steel, with locking spindles of stainless steel.
 - 2. Latch Bolt: Shall be constructed of stainless steel with 3/4 inch throw on mortise locks and 1/2 inch throw otherwise. Latch to be deadlocking on keyed functions.
 - 3. Lever Trim: Shall be pressure cast brass, bronze, zinc, or steel with wrought rose design. Levers are to be solid with no voids or plastic inserts.
 - 4. Fire Rating: Lock shall be listed for up to 3 hours.
 - 5. Strike Plates: Provide ANSI 4-7/8 inch strike plates. At pairs of doors, provide strike with 7/8 inch flat lip. At single doors, provide round-lipped strike with lip length as required to minimally clear jamb and trim. Provide dust box at each strike location.
- B. Heavy Duty Bored Locks
 - 1. Products that may be incorporated into the Work:
 - a. Schlage: ND Series
 - b. Best: 9K Series
- C. Requirements:
 - 1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed.
 - 2. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
 - 3. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
 - 4. All locksets shall be provided with a lever as per American Disabilities Act (ADA) requirements.

2.8 CYLINDERS AND KEYING

- A. Products that may be incorporated into the Work:
 - 1. Medeco (permanent cores provided by Owner)
- B. Requirements:
 - 1. Small Format Interchangeable Cylinders: Provide cylinders of quantity and type and with the appropriate cam/tailpiece to be compatible with the locking hardware provided. Provide cylinder housings ready to accept Owner's key system.
 - a. Permanent Cores: Provided by Owner.
 - 2. Temporary Construction Keying: Provide each cylinder with temporary keying during the construction period. At substantial completion, accompany the owner's representative while voiding construction keying. Provide temporary construction keying to comply with the following:
 - a. Keyed Temporary Cores: Provide interchangeable core compatible cylinders and levers with keyed construction cores during the construction period. Cores will remain property of the contractor and will be returned upon installation of owner's permanent key system.
 - 3. Keys: Provide cylinder manufacturer's standard keys. Keys shall be shipped separate from cores directly to owner's representative. For estimating purposes, provide keys in the following quantities:
 - a. Construction Control Keys: 2 each
 - b. Construction Change Keys: 12 each
 - c. Permanent Control Keys: 2 each
 - d. Permanent Master Keys: 2 each
 - e. Permanent Change Keys: 2 per core

2.9 MECHANICAL DOOR CLOSERS

- A. General:
 - 1. Valves: Closers shall have separate valves for latch speed, main speed, and back check. Valves shall be staked to prevent accidental removal. Internal Pressure Relief Valves (PRVs) are prohibited.
 - 2. Provide the appropriate closer body, handing, and brackets to mount closer inside the building on the least-public side of the door.
 - a. Where closers are to be mounted regular arm and the opening can otherwise be opened to 180 degrees, provide closer with the appropriate special templating to allow 180 degree door

- swing. Where a special template is not available for 180 degree swing, provide closer arm with integrated stop.
3. Integrated Stop Closer Arms: Where a closer with integrated stop is required, provide the appropriate closer and arm as follows:
 - a. Parallel arm with spring-cushioned stop arm: Provide where door is otherwise able to open to 95 degrees and requires a parallel arm mount closer.
 - b. Parallel arm with dead stop arm: Provide where door is obstructed from opening to 95 degrees and requires a parallel arm mount closer.
 - c. Regular arm with push side surface-mounted overhead stop: Provide where door closer should mount on pull side of door.
 4. Hold Open Arms: Provide closer arms with mechanical hold-opens as scheduled.
 5. Provide closers with any special templates, brackets, plates, or other accessories required for interface with header, door, wall, and other hardware. Provide closers with screw packs containing thru-bolts, machine screws, and wood screws.
 6. Closers shall be provided with all-weather fluid and shall not require readjustment from 120 degrees F to -30 degrees F. Fluid shall be non-flaming and shall not fuel door or floor covering fires. Upon request, provide data indicating thermal properties of fluid.
 7. Closers shall close and latch door when adjusted to meet accessibility requirements for door opening force: 8.5 lbs at exterior doors, 5 lbs at interior doors, and 15 lbs at labeled fire doors.
 8. Provide closers with spring size adjustment dial for ease of adjusting.
- B. Heavy Duty Door Closers:
1. Products that may be incorporated into the Work:
 - a. LCN: 4040XP Series
 - b. Stanley: QDC100 Series

2.10 ARCHITECTURAL DOOR TRIM

- A. Protection Plates
1. Manufacturers that may be incorporated into the Work:
 - a. Ives
 - b. Rockwood
 - c. Trimco
 2. Requirements:
 - a. Provide .050 inch thick stainless steel protection plates with height as scheduled. Plate shall have four beveled edges. Provide no screw holes and adhesive as required by door manufacturer's fire labeling requirements. Otherwise provide plate manufacturer's standard countersunk fasteners.
 - b. Provide plate with width as follows:
 - i. Pairs of Doors without a mullion: Provide plate to be 1 inch less door width.
 - ii. Single Doors and pairs of doors with a mullion: Provide plate to be 2 inches less door width on push side, pull side mounted plates to be 1 inch less door width.
- B. Door Stops
1. Manufacturers that may be incorporated into the Work:
 - a. Ives
 - b. Rockwood
 - c. Trimco
 2. Requirements:
 - a. Provide wall stops wherever possible.
 - b. Provide stops and holders as indicated in the HW sets.

2.11 OVERHEAD STOPS AND HOLDERS

- A. Manufacturers that may be incorporated into the Work:
1. Glynn Johnson
 2. Rixson
 3. Sargent
- B. Requirements:
1. Provide overhead stops and holders as scheduled, sized per manufacturer's recommendations based on door width.

2. Provide concealed overhead stops with adjustable jamb bracket.
3. Where possible without conflicting with other hardware, mount surface overhead stops on least public side of door.
4. Provide stops with any special templates, brackets, plates, or other accessories required for interface with header, door, wall, and other hardware.

2.12 MISCELLANEOUS HARDWARE

- A. Silencers
 1. Manufacturers that may be incorporated into the Work:
 - a. Ives
 - b. Rockwood
 - c. Trimco
 2. Requirements:
 - a. Where indicated on single openings, provide 3 each grey rubber silencers on lock jamb.
 - b. Where indicated on paired openings, provide 2 each grey rubber silencers on header.

2.13 FINISHES

- A. Match items to the manufacturer's standard color and texture finish for the latch and locksets (or push-pull units if no latch or locksets).
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.
- D. The designations used in schedules and elsewhere to indicate hardware finishes are the industry-recognized standard commercial finishes, except as otherwise noted.
 1. Brushed Chrome and/or Stainless Steel Appearance
 - a. Brushed Stainless Steel, no coating: ANSI 630.
 - b. Satin Chrome, Clear Coated: ANSI 626, ANSI 652.
 - c. Powder Coated Aluminum finish: ANSI 689.
 - d. Saddle and Panic Thresholds: Mill Aluminum finish.
 - e. Weatherstrip and Gasket: Clear Anodized Aluminum finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify conditions of walls, flooring, doors, frames, and hardware are satisfactory for installation of hardware.
 1. Prior to installing doors and hardware, wash down of masonry and painting or staining of doors and frames shall be completed.
 2. Verify that walls have blocking behind wall mounted stop locations.
 3. Verify that flooring does not interfere with door or hardware operation.
 4. Ensure that frames are installed plumb, square, and true. Verify that doors and frames are properly sized and handed and are correctly prepared for hardware installation.
 5. Verify function, quantity, type, hand, and finish of hardware to be installed with the approved hardware schedule.
 6. Verify that electrical rough-in is complete and correctly located for each door.
- B. Conditions that do not allow proper installation of hardware shall be corrected before proceeding.

3.2 INSTALLATION

- A. General
 1. Install door hardware as detailed in the approved hardware schedule using only approved fasteners and in accordance with manufacturer's recommended procedures and methods.
 2. Install hardware and signage at fire rated openings in accordance with NFPA 80 requirements.
- B. Hardware Mounting Heights
 1. Mount door hardware units at heights indicated, as follows, unless otherwise indicated or required to comply with governing regulations.

- a. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - b. Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."
 - c. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- C. Clearances
- 1. Install doors, both rated and non-rated, in accordance with NFPA 80 requirements for door clearances as follows:
 - a. 1/8 inch between door and frame head and jambs for wood doors
 - b. 3/8 inch between door and frame head and jambs for metal doors
 - c. 1/8 inch at meeting stiles of pairs of doors.
 - d. 3/4 inch undercut maximum.
- D. Surface Mounted Door Closers
- 1. Install surface mounted door closers on room side of openings, except where prohibited by scheduled hardware. Use appropriate arms, spacers, brackets, and accessories to properly install surface mounted door closers. Adjust spring power to the appropriate setting to ensure the doors reliably close under normal operating conditions.
- E. Wall Mounted Door Stops
- 1. Locate wall mounted door stops at the appropriate height and location to properly contact protruding door trim.

3.3 FIELD QUALITY CONTROL

- A. Architectural Hardware Consultant: Architect will engage a qualified Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
- B. Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.4 ADJUSTING

- A. After building HVAC system is balanced and adjusted, conduct final adjustment of door closers. Verify spring power of the surface mounted door closer is properly adjusted to close and latch the door and to comply with the opening force requirements of ANSI A117.1 as follows:
 - 1. Doors with Closers shall take five (5) seconds to close from 90 degrees to 12 degrees.
 - 2. Interior, non-fire rated swinging doors shall open with a maximum of 5 lbs of pressure.
 - 3. Exterior doors and fire rated doors shall open with the minimum amount of pressure required to positively close and latch the door.

3.5 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 SCHEDULE

- A. The following schedule of hardware sets shall be considered a guide and the supplier is cautioned to refer to general conditions, special conditions, and the full requirements of this section. It shall be the hardware supplier's responsibility to furnish all required hardware.
- B. Where items of hardware are not definitely or correctly specified and are required for completion of the Work, a written statement of such omission, error, conflict, or other discrepancy shall be sent to the Architect, prior to date specified for receipt of bids, for clarification by addendum.
- C. Adjustments to the Contract Sum will not be allowed for omissions or items of hardware not clarified prior to bid opening.

Hardware Group No. 01

For use on Door #(s):

01A

Provide each door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	SET	INTERIOR BALL BEARING HINGE	5BB1 (SIZE, QTY, WEIGHT, NRP AS REQ'D)	652	IVE
1	EA	CONSTANT LATCHING FLUSH BOLT	845/945 AS REQUIRED	630	DCI
1	EA	DUST PROOF STRIKE	DP1 / DP2 AS REQ'D	626	IVE
1	EA	CLASSROOM LOCK	ND70HD RHO	626	SCH
1	EA	PERMANENT CORE	PROVIDED BY OWNER	626	MED
1	EA	COORDINATOR	COR X FL X MB AS REQUIRED	628	IVE
2	EA	SURFACE CLOSER (W/ SPRING STOP)	4040XP SCUSH ST-2648	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 02

For use on Door #(s):

01B

Provide each door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	SET	INTERIOR BALL BEARING HINGE	5BB1 (SIZE, QTY, WEIGHT, NRP AS REQ'D)	652	IVE
1	EA	CLASSROOM LOCK	ND70HD RHO	626	SCH
			ADJUST BACKSET OF LOCK AS REQ'D BY SOUND SEALS		
1	EA	PERMANENT CORE	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER (W/ STOP)	4040XP CUSH	689	LCN
1	SET	CLOSER BRACKETS	AS REQ'D TO INSTALL CLOSER	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	SET	STC RATED DOOR SEALS	PROVIDED BY STC DOOR MANUFACTURER		

PROVIDE HARDWARE STAND OFF BRACKETS AS REQUIRED FOR A CONTINUOUS SEAL INSTALLATION.

Hardware Group No. 03

For use on Door #(s):

02A

Provide each door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	SET	INTERIOR BALL BEARING HINGE	5BB1 (SIZE, QTY, WEIGHT, NRP AS REQ'D)	652	IVE
1	EA	ENTRANCE LOCK	ND53HD RHO	626	SCH
1	EA	PERMANENT CORE	PROVIDED BY OWNER	626	MED
1	EA	OH STOP	90S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

END OF SECTION 08 7100

SECTION 08 8000 - GLAZING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Glass.
- B. Glazing compounds and accessories.

1.2 RELATED REQUIREMENTS

- A. Section 07 2500 - Weather Barriers.
- B. Section 07 9005 - Joint Sealers: Sealant and back-up material.
- C. Section 08 1113 - Hollow Metal Doors and Frames: Glazed doors and borrowed lites.
- D. Section 08 1416 - Flush Wood Doors: Glazed lites in doors.
- E. Section 08 4313 - Aluminum-Framed Storefronts

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data on Glass Types: Provide structural, thermal, physical and environmental characteristics, size limitations, special handling or installation requirements.
- C. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.
- D. Shop drawing: Submit elevation drawings which shall indicate mullion locations, sealant width(s), individual glazed panels, glazed surface to receive any films or coatings and related information as required.
- E. Samples: Submit (2) 12-inch-long bead of glazing sealant, black color.
- F. Manufacturer's Certificate: Certify that all glass meets or exceeds specified requirements.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Company specializing in performing the work of this section with minimum 15 years documented experience.
 - 2. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association Glazier Certification Program as Level 2 (Senior Glaziers) or Level 3 (Master Glaziers).

1.5 FIELD CONDITIONS

- A. Do not install glazing when ambient temperature is less than 50 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.6 WARRANTY

- A. See Section 01 7800 - Closeout Procedures and Submittals, for additional warranty requirements.
- B. Sealed Insulating Glass Units: Provide a five (5) year warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.

PART 2 - PRODUCTS

2.1 INTERIOR GLAZING TYPES

- A. Interior Type GL - 1 - Single Vision Glazing:
 - 1. Applications: Door Lites
 - 2. Type: Fully tempered float glass.
 - 3. Tint: Clear.
 - 4. Thickness: 1/4 inch.

2.2 GLASS MATERIALS

- A. Float Glass Manufacturers:
 - 1. AGC Flat Glass North America, Inc: www.na.agc-flatglass.com.
 - 2. Pilkington North America Inc: www.pilkington.com/na.

3. PPG Industries, Inc: www.ppgideascape.com.
4. Substitutions: Refer to Section 01 6000 - Product Requirements.
- B. Float Glass: All glazing is to be float glass unless otherwise indicated.
 1. Annealed Type: ASTM C1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).
 2. Heat-Strengthened and Fully Tempered Types: ASTM C1048.
 3. Tinted Types: Color and performance characteristics as indicated.
 4. Thicknesses: As indicated; for exterior glazing comply with specified requirements for wind load design regardless of specified thickness.
- C. Glass shall be annealed, heat-strengthened or tempered as required by codes, or as required to meet thermal stress and wind loads.
- D. Heat Strengthened float glass shall comply with ASTM C1048, Type 1, Class 1 (Clear), Class 2 (tinted), Quality Q3, Kind HS.
- E. Tempered float glass shall comply with ASTM C1048, Type 1, Class 1 (Clear), Class 2 (tinted), Quality Q3, Kind FT. Provide tempered safety glass where shown on drawings and where required by building code.

2.3 GLAZING COMPOUNDS

- A. Manufacturers:
 1. Bostik Inc: www.bostik-us.com.
 2. Pecora Corporation: www.pecora.com.
 3. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 4. Substitutions: Refer to Section 01 6000 - Product Requirements.
- B. Butyl Sealant: Single component; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; Shore A hardness of 10 to 20; black color; non-skinning.

2.4 GLAZING ACCESSORIES

- A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, ASTM C864 Option I. Length of 0.1 inch for each square foot of glazing or minimum 4-inch x width of glazing rabbet space minus 1/16-inch x height to suit glazing method and pane weight and area.
- B. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.
 1. Manufacturers:
 - a. Pecora Corporation: www.pecora.com.
 - b. Substitutions: Refer to Section 01 6000 - Product Requirements.
- C. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option I.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that openings for glazing are correctly sized and within tolerance.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.2 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Prime surfaces scheduled to receive sealant.
- C. Install sealants in accordance with ASTM C1193 and GANA Sealant Manual.
- D. Install sealant in accordance with manufacturer's instructions.

3.3 INSTALLATION - EXTERIOR/INTERIOR DRY METHOD (GASKET GLAZING)

- A. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
- B. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- C. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.4 MANUFACTURER'S FIELD SERVICES

- A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

- B. Monitor and report installation procedures and unacceptable conditions.

3.5 CLEANING

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after Work is complete.
- C. Clean glass and adjacent surfaces.

3.6 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

END OF SECTION 08 8000

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SECTION 09 2116 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Metal channel ceiling framing.
- D. Acoustic insulation.
- E. Tile backing board.
- F. Gypsum wallboard.
- G. Exterior Gypsum Sheathing.
- H. Joint treatment and accessories.
- I. Reveal moldings and edge trims.
- J. Finish system.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 07 9005 - Joint Sealers: Acoustic sealant.

1.3 REFERENCE STANDARDS

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- B. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).
- C. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2011a.
- D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011.
- F. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2011.
- G. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2011.
- H. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.
- I. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012.
- J. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.
- K. ASTM E413 - Classification for Rating Sound Insulation; 2010.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
- C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
- D. Test Reports: For all stud framing products that do not comply with ASTM C645 or C 754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.
- E. Samples: Submit two samples of gypsum board finished with proposed texture application, 12 by 12 inches (300 by 300 mm) in size, illustrating finish color and texture.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Protection:
 - 1. Store in dry ventilated space off ground.
 - 2. Protect materials from surface contamination, soiling, corrosion, construction traffic, and damage.
 - 3. Support on level platform and fully protect from weather and direct sunlight exposure.

4. Store and support gypsum board in flat stacks to prevent sagging.
5. Protect materials to keep them dry. Remove wet gypsum board from Project site except for gypsum board wetted for application to curved surfaces.
6. Protect gypsum board panels to prevent damage to edges, ends, and surfaces.
7. Do not bend or damage metal trim.

1.6 PROJECT CONDITIONS

- A. Environmental Requirements: Comply with more restrictive of ASTM C840, or manufacturer's written requirements under which products can be installed.
 1. Maintain minimum uniform 50 degrees F temperature in building for 48 hours before and continuously until applied joint treatment and bonding adhesives are thoroughly dry.
 2. Do not allow ambient temperature to exceed 95 degrees F.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing gypsum board application and finishing, with minimum 5 years of experience.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
 1. See PART 3 for finishing requirements.
- B. Interior Partitions Indicated as Acoustic: Provide completed assemblies with the following characteristics:
 1. Acoustic Attenuation: STC as indicated calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.2 METAL FRAMING MATERIALS

- A. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf. Deflection to be 1/360 at all locations to receive tile finish.
 1. Studs: "C" shaped with flat or formed webs with knurled faces.
 2. Runners: U shaped, sized to match studs.
 3. Ceiling Channels: C shaped.
- B. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
- C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
 1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
 2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.
 3. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; minimum track length of 12 feet.
- D. Resilient Channels:
 1. Basis of Design: Clark Dietrich 'RC Deluxe' Resilient Channel
 - a. Material: Grade 33ksi min. yield strength
 - b. Coating: G40EQ
 - c. Thickness: 22mil, 0.0232"

2.3 BOARD MATERIALS

- A. Approved Manufacturers:
 1. Georgia-Pacific Gypsum: <https://www.buildgyp.com/georgia-pacific-gypsum>
 2. US Gypsum Corporation: www.usg.com
 3. CertainTeed: <https://www.certainteed.com/drywall/commercial/>
 4. Substitutions
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396, UL Classified Type X;

sizes to minimize joints in place; ends square cut.

1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 2. Thickness:
 - a. Vertical Surfaces: 5/8 inch (16 mm).
 - b. Ceilings: 5/8 inch (16 mm).
 - c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
 3. Basis-of-Design Product: Georgia-Pacific Gypsum, 'ToughRock FireGuard X'
- C. Mold Resistant Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396, UL Classified Type X; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces and ceilings at damp areas including bathrooms, food processing areas & kitchens.
 2. Thickness:
 - a. Vertical Surfaces: 5/8 inch (16 mm).
 - b. Ceilings: 5/8 inch (16 mm).
 - c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
 3. Mold Resistance: Score of 10 when tested in accordance with ASTM D3273.
 4. Basis-of-Design Product: Georgia-Pacific Gypsum, 'ToughRock FireGuard X MoldGuard'

2.4 ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness as indicated on drawings.
- B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.
- C. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
 1. Tape: 2 inch (50 mm) wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
 2. Tape: 2 inch (50 mm) wide, creased paper tape for joints and corners, except as otherwise indicated.
 3. Ready-mixed vinyl-based joint compound.
- D. Textured Finish Materials: Latex-based compound; containing fine aggregate.
- E. Screws for Attachment to Steel Members Less Than 0.03 inch (0.7 mm) In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type; cadmium-plated for exterior locations.
- F. Control Joint Materials: ASTM C1047 and as recommended by gypsum board manufacturer for project conditions.
 1. Type: 3/32 inch wide, PVC (polyvinyl chloride) material.
 2. Tape: 1/4" opening by 7/16" deep reveal
 3. Install per manufacturer's recommendations.
- G. Metals Trim:
 1. General:
 - a. Comply with ASTM C1047.
 - b. Material: Zinc alloy or galvanized steel; zinc alloy required for application in shower areas, exterior soffits, and locker rooms.
 - c. Uncoated sheet metal thickness: 26 gauge minimum.
 - e. Flanges designed for concealment in joint compound, flange width to suit installation requirements.
 2. Corner Beads at Straight Surfaces:
 - a. Drywall Corner Bead, Alabama Metal Industries Corporation (AMICO), Fontana, CA
 - b. Cornerbead, Clinch-On Products, Mounds View, MN.
 - c. Wallboard Corner Bead, National Gypsum Company, Charlotte, NC
 - d. 100 Series Dur-A-Bead, United States Gypsum Company, Chicago, IL
 3. Edge Trim Beads:
 - a. Drywall L-Metal, Alabama Metal Industries Corporation (AMICO), Fontana, CA.
 - b. L-Bead and U-Bead, Clinch-On Products, Mounds View, MN.
 - c. Number 100 and 200 Wallboard Casing, National Gypsum Company, Charlotte, NC.

- d. United States Gypsum Company, Chicago, IL.
 - i. No. 701-A and 801-A J-trim.
 - ii. No. 701-B and 801-B L-trim.
- 4. Control Joints:
 - a. V-Shaped slot.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 FRAMING INSTALLATION

- A. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
 - 1. Level ceiling system to a tolerance of 1/1200.
 - 2. Laterally brace entire suspension system.
- B. Studs: Space studs as permitted by standard.
 - 1. Extend partition framing to structure where indicated and to ceiling in other locations.
- C. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- D. Blocking: Install wood blocking for support of:
 - 1. Framed openings.
 - 2. Wall mounted cabinets.
 - 3. Plumbing fixtures.
 - 4. Toilet partitions.
 - 5. Toilet accessories.
 - 6. Wall mounted door hardware.
 - 7. Wall mounted display boards and accessories.
 - 8. Wall mounted projection screens
- E. Resilient Channels:
 - 1. Install per manufacturer's instruction.

3.3 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 - 1. Place one bead continuously on substrate before installation of perimeter framing members.
 - 2. Place continuous bead at perimeter of each layer of gypsum board.
 - 3. For non-fire-rated construction, seal around all penetrations by conduit, pipe, ducts, and rough-in boxes.

3.4 BOARD INSTALLATION

- A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- C. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

3.5 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
 - 1. Not more than 30 feet (10 meters) apart on walls and ceilings over 50 feet (16 meters) long.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.6 JOINT TREATMENT

- A. Paper Faced Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 5: Walls and ceilings to receive satin, semi-gloss, or gloss paint finish and other areas

- specifically indicated.
2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 3. Level 3: Walls to receive textured wall finish.
 4. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
 5. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
 6. Level 0: Temporary partitions and surfaces indicated to be finished in later stage of project.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).
 2. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.

3.7 TOLERANCES

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

END OF SECTION 09 2116

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SECTION 09 3000 - TILING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Tile patching requirements.

1.2 RELATED REQUIREMENTS

- A. Section 07 9005 - Joint Sealers.

1.3 REFERENCE STANDARDS

- A. ANSI A108 Series/A118 Series/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2012.1.
- B. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2012.
- C. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2017.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets for all materials required.
- C. Samples:
 - 1. Provide (1) samples of tile matching material.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

1.5 QUALITY ASSURANCE

- A. Comply with ANSI Standard for Tile Installation Material and current Tile Council of America Handbook for products and materials indicated for setting and grouting.
- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum 5 years of documented experience.
- C. Installer Qualifications: Company specializing in performing tile installation, with minimum of 5 years of documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.
- B. Store tile and setting materials on elevated platforms, under cover and in a dry location and protect from contamination, dampness, freezing or overheating.

1.7 FIELD CONDITIONS

- A. Do not install solvent-based products in an unventilated environment.
- B. Maintain ambient and substrate temperature of 50 degrees F (10 degrees C) during installation of mortar materials.

PART 2 - PRODUCTS

2.1 FLOOR PATCHING COMPOUND.

- A. Cement-based Patching Mortar.
 - 1. Applications: For use in patching tile areas less than 6" in one direction.
 - 2. Basis of Design Product:
 - a. Laticrete International, Inc. 'Duracrete'
 - b. Color(s): Standard Grey

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- B. Verify that required utilities are in correct location.
- C. The surface of the substrate must have the following flatness before installation: no more than a permissible variation of 1/8" in 10 feet from the required plane; nor more than 1/16" in 24" when measured from high points in the surface with a straight edge

3.2 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.3 INSTALLATION - FLOOR PATCHING COMPOUND.

- A. Application: Tile floor may be patched with a floor patching compound where the patch is not greater than 6" in one direction. And not greater than 24" in both directions.
- B. Install patching compound in accordance with manufacturer's instruction.
- C. Surface Preparation:
 - 1. Clean patch areas so that it is free of loose or deteriorated concrete, dust, dirt, paint, efflorescence, oil, and other possible contaminants.
 - 2. Profile the surface mechanically to ICRI 03732 CSP 5 or greater. Properly clean the profiled area.
- D. Prime damp surface to be repaired with a liquid slurry bond coat per manufacturer's instructions.
- E. Mix according to manufacturer's instruction. Do not re-temper.
- F. Place patching compound to fill patching areas only.
- G. Curing: Protect patched areas during curing. Cure per manufacturer's instructions. Do not water cure.

3.4 CLEANING

- A. Clean existing tile and grout surfaces and patched areas.

3.5 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION 09 3000

SECTION 09 5100 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

1.2 RELATED REQUIREMENTS

- A. Section 07 9005 - Joint Sealers: Acoustical sealant.
- B. Section 08 3100 - Access Doors and Panels: Access panels.
- C. Section 28 3100 - Fire Detection and Alarm: Fire alarm components in ceiling system.
- D. Section 21 1300 - Fire-Suppression Sprinkler Systems: Sprinkler heads in ceiling system.
- E. Section 23 3700 - Air Outlets and Inlets: Air diffusion devices in ceiling.
- F. Section 26 5100 - Interior Lighting: Light fixtures in ceiling system.

1.3 REFERENCE STANDARDS

- A. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2007.
- B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels; 2008.
- C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2011.
- D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2008e1.
- E. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning.
- C. Product Data: Provide data on suspension system components.
- D. Samples: Submit two samples four x four inch in size illustrating material and finish of acoustical units.
- E. Manufacturer's Installation Instructions: Indicate special procedures.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.6 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.7 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F (16 degrees C), and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 - PRODUCTS

2.1 ACOUSTICAL UNITS

- A. Manufacturers:
 - 1. Armstrong World Industries, Inc: www.armstrong.com.
 - 2. CertainTeed Corporation: www.certainteed.com.
 - 3. USG: www.usg.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

- B. Acoustical Units - General: ASTM E1264, Class A.
- C. Tile Types:
 1. Acoustical Tile Type **ACT-1**: Factory applied latex paint finish, wet-formed mineral fiber, ASTM E84 surface burning characteristics, ASTM E1264 Type IV, Form 2, Pattern E, Fire Class A with to the following characteristics:
 - a. Size: 24 x 48 inches
 - b. Thickness: 3/4" inches.
 - c. Composition: Wet formed mineral fiber.
 - d. Light Reflectance: 0.79, determined as specified in ASTM E1264.
 - e. NRC rating: 0.55 minimum
 - f. Ceiling Attenuation Class (CAC): 35 minimum, determined as specified in ASTM E1264.
 - g. Edge: Square Lay-in.
 - h. Surface Color: White.
 - i. Basis of Design Product: Clean Room FL by Armstrong World Industries, Inc.
 - j. Suspension System: Exposed grid.

2.2 SUSPENSION SYSTEM(S)

- A. Manufacturers:
 1. Armstrong World Industries, Inc: www.armstrong.com.
 2. USG: www.usg.com.
 3. Chicago Metallic by Rockfon, www.rockfon.com
 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Suspension Systems - General: ASTM C635; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
 1. Ceiling systems shall conform to the requirements of the International Building Code for Seismic Zone D and follow CISCA "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies". Contractor to supply and install all system components required by code including, but not limited to:
 - a. Heavy Duty suspension system as defined by ASTM C 635.
 - b. Hanging wires, perimeter wires, lateral bracing and stabilizer bars, compression struts and played wires.
 2. Compression struts and splayed wire bracing shall be provided within 6 feet of any wall or ceiling discontinuity and at 12 feet on center in each direction.
 3. Compression struts shall be fastened to main runners and to building structure and located at center of splayed wire bracing.
- C. Steel Suspension System: Formed steel, commercial quality cold rolled; heavy-duty.
 1. Profile: Tee; 15/16-inch-wide face.
 2. Construction: Double web.
 3. Finish: White factory painted.
 4. Basis of Design Product: Prelude XL by Armstrong World Industries, Inc.

2.3 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Perimeter Moldings: Same material and finish as grid.
 1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.2 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Lay out system to align with structural roof joists above.

- D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- E. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- H. Support fixture loads using supplementary hangers located within 6 inches (150 mm) of each corner, or support components independently.
- I. Do not eccentrically load system or induce rotation of runners.
- J. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
 - 2. Overlap and rivet corners.

3.3 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
 - 1. Make field cut edges of same profile as factory edges.

3.4 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet (3 mm in 3 m).
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION 09 5100

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SECTION 09 6500 - RESILIENT FLOORING & ACCESSORIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Resilient flooring
- B. Resilient base.
- C. Installation accessories.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors and concrete finishing.
- B. Section 09 2116 – Gypsum Board Assemblies:

1.3 REFERENCE STANDARDS

- A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2010e1.
- B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- C. ASTM F1861 - Standard Specification for Resilient Wall Base; 2008 (Reapproved 2012).
- D. BAAQMD 8-51 - Bay Area Air Quality Management District Regulation 8, Rule 51, Adhesive and Sealant Products; www.baaqmd.gov; 2002.
- E. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2011.
- F. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; Resilient Floor Covering Institute; October 2011.
- G. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Verification Samples: Submit two samples in manufacturer's standard sample size illustrating color and pattern for each resilient product specified.
- D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Flooring Material: Quantity equivalent of 5% of each type and color.
 - 3. Extra Wall Base: 15 linear feet of each type and color.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect roll materials from damage by storing on end.

1.6 FIELD CONDITIONS

- A. Maintain temperature in storage area between 55 degrees F (13 degrees C) and 90 degrees F (72 degrees C).
- B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F (21 degrees C) to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F (13 degrees C).

PART 2 - PRODUCTS

2.1 RESILIENT FLOORING

- A. Manufacturers:
 - 1. Johnsonite, Inc.
 - 2. Interface Flooring
 - 3. Mannington Commercial
 - 4. Patcraft

5. Substitutions: See Section 01 6000 - Product Requirements.
- B. **LVT-1:** Luxury Vinyl Tile for patching at corridor to east of Extruder Lab.
 1. Basis of Design Product: Interface, Modular Resilient Flooring, 'Natural Woodgrains', with the following characteristics:
 - a. Wear Layer Thickness: 22 mil
 - b. Total Thickness: 4.5 mm
 - c. Backing Class: Commercial Grade
 - d. Finish: Ceramor Coating
 - e. Dimenions: 25cm x 1m (9.845in x 39.38in)
 - f. Color: A00210 Teak
 - g. Installation Pattern: Ashlar
- C. **SV-1:** Homogeneous Sheet Vinyl Flooring
 1. Basis of Design Product: Johnsonite 'IQ Optima', homogeneous sheet vinyl flooring.
 2. Thickness/Wearlayer: 0.080 inch (2.0 mm).
 3. Size specify: [6 ft. 6 inches (2 m)]
 4. Colors and Patterns: As selected by Architect from full range of industry colors
 5. Test data:
 - a. Flexibility (ASTM F137): Passes
 - b. Chemical Resistance (ASTM F925): Passes
 - c. Static Load Limit (ASTM F 970): Passes 250 psi
 - d. Resistance to Heat (ASTM F1514): $\Delta E \leq 8$
 - e. Resistance to Light (ASTM F1515): $\Delta E \leq 8$
 - f. Residual Indentation (ASTM F1914): Passes
 - g. Static Coefficient of Friction (ASTM D 2047): ≥ 0.5 SCOF
 - h. Flamability (ASTM E648, Critical Radiant Flux): Class 1 (≥ 0.45 W/cm²)
 - i. Limited Commercial Warranty: 10 years
 6. Accessories:
 - a. Johnsonite cfs-00-a cove filler strip.
 - b. Manufacturer's recommended cove cap.

2.2 RESILIENT BASE

- A. Manufacturers:
 1. Burke Flooring; www.burkemerger.com.
 2. Johnsonite, Inc; www.johnsonite.com.
 3. Roppe Corp; www.roppe.com.
 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Resilient Base (**RB-1**): ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove, and as follows:
 1. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
 2. Height: 4 inch (100 mm).
 3. Thickness: 0.125 inch (3.2 mm) thick.
 4. Finish: Satin.
 5. Length: Roll.
 6. Color: To be selected from manufacturer's standard colors
 7. Accessories: Pre-molded external corners and end stops.

2.3 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
 1. Include in the scope of work $\frac{1}{4}$ " average of filler at entire area to recieved Flooring Type LVT-1.
- B. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer.
 1. Provide only products having lower volatile organic compound (VOC) content than required by the more stringent of the South Coast Air Quality Management District Rule No.1168 and the Bay Area Air Quality Management District Regulation 8, Rule 51.
- C. Moldings, Transition and Edge Strips: Homogeneous rubber composition type.
 1. Manufacturers:

- a. Johnsonite, Inc; www.johnsonite.com.
 - b. Roppe Corp; www.roppe.com.
 - c. Flexco Floors; http://www.flexcofloors.com/
 - d. Substitutions: See Section 01 6000 - Product Requirements.
2. Product: Must be ADA-Compliant. See Floor Transitions in drawing for transition types.
 3. Basis of Design Products:
 - a. Transtion 1: Johnsonite "Edge Guard: EG-XXX-J".
 - b. Transtion 2: Johnsonite "Slim-Line: SLT-XX-J".
 4. Colors: Selected by Architect from manufacturer's full range of colors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.
 1. Include in the scope of work ¼" average of filler at entire area to recieved Flooring Type SV-1.
- C. Prohibit traffic until filler is cured.
- D. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- E. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for resilient flooring installation by testing for moisture and pH.
 1. Test in accordance with ASTM F710.
 2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

3.2 PREPARATION

- A. Clean substrate.
- B. Prepare floor substrates as recommended by product manufacturer.
- C. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.3 INSTALLATION

- A. Starting installation constitutes acceptance of substrate conditions.
- B. Install in accordance with manufacturer's instructions.
- C. Spread only enough adhesive to permit installation of materials before initial set.
- D. Fit joints tightly.
- E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
 1. Resilient Strips: Attach to substrate using adhesive.

1.1 SHEET VINYL FLOORING:

- A. Install with manufacturer's reccomended adhesive specified for the site conditions and follow adhesive label for proper use.
- B. Install rolls in sequential order following roll numbers on the labels.
- C. Reverse non-pattern sheets as referenced in the tarket installation instructions.
- D. Roll the flooring in both directions using a 100 pound three-section roller.
- E. Vinyl sheet flooring must be welded.
- F. Provide flash covered base at all sheet vinyl flooring locations.
 1. Install cove filler strip per manufacturer's requirееmtns.
 2. Net fit flooring material into the appropriate cove cap.

3.4 RESILIENT BASE

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches (45 mm) between joints.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
- C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.5 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's instructions.

3.6 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

3.7 SCHEDULE

- A. See Interior Finish Schedule and Interior Finish Plan in Drawings.

END OF SECTION 09 6500

SECTION 09 7700 - FIBERGLASS REINFORCED PLASTIC

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Glass fiber reinforced plastic panels.
- B. Trim.

1.2 RELATED REQUIREMENTS

- A. Section 01 2300 – Alternates: Fiberglass reinforced plastic panels are associated with Alternate 1.

1.3 REFERENCE STANDARDS

- A. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2010.
- B. ASTM D2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of Barcol Impressor; 2013a.
- C. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012.
- D. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels; 2012.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2013a.
- F. FDA Food Code - Chapter 6, Physical Facilities; current edition with Supplements, if any.
- G. FM 4880 - Class 1 Fire Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings and Exterior Wall Systems; 2010.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Samples: Submit two samples 6 inch in size illustrating material and surface design of panels.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store panels flat, indoors, on a clean, dry surface. Remove packaging and allow panels to acclimate to room temperature for 48 hours prior to installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Glass Fiber Reinforced Plastic Panels:
 - 1. Marlite: www.marlite.com.
 - 2. Crane Composites, Inc. www.cranecomposites.com.
 - 3. Panolam FRP, www.panolam.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.2 PANEL SYSTEMS

- A. Wall Panels at Extruder Lab: **FRP**
 - 1. Panel Size: 4 by 8 feet
 - 2. Panel Thickness: 3 / 32 inch.
 - 3. Surface Design: Smooth.
 - 4. Color: White.
 - 5. Attachment Method: Adhesive only, with trim and sealant in joints.

2.3 MATERIALS

- A. Panels: Glass fiber reinforced plastic, complying with ASTM D5319.
 - 1. Surface Burning Characteristics: Flame Spread Index of 25, maximum; Smoke Developed Index of 450, maximum; when whole system is tested in accordance with ASTM E84.
 - 2. Class 1 fire rated as tested in accordance with FM Approval Standard 4880.
 - 3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.

4. Scratch Resistance: Barcol hardness score of not less than 35, when tested in accordance with ASTM D2583.
 5. Impact Strength: Not less than 6 ft-lb/in, when tested in accordance with ASTM D256.
 6. Surface Characteristics and Cleanability: Provide products that are smooth, durable, and easily cleanable, in compliance with FDA Food Code, Chapter 6 - Physical Facilities.
- B. Trims: Extruded aluminum, color coordinating with panel, shapes as required for conditions.
- C. Adhesive: Type recommended by panel manufacturer.
- D. Sealant: Type recommended by panel manufacturer; clear.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions and substrate flatness before starting work.
- B. Verify that substrate conditions are ready to receive the work of this section.

3.2 INSTALLATION - WALLS

- A. Install panels in accordance with manufacturer's instructions.
- B. Cut and drill panels with carbide tipped saw blades or drill bits, or cut with snips.
- C. Apply adhesive to the back side of the panel using trowel recommended by adhesive manufacturer.
- D. Apply panels to wall with seams plumb and pattern aligned with adjoining panels.
- E. Install panels with manufacturer's recommended gap for panel field and corner joints.
- F. Place trim on panel before fastening edges, if required.
- G. Fill channels in trim with sealant before attaching to panel.
- H. Install trim with adhesive and screws or nails as required.
- I. Seal gaps at floor, ceiling, and between panels with specified sealant to prevent moisture intrusion.
- J. Remove excess sealant as paneling is installed.

END OF SECTION 09 7700

SECTION 09 9000 - PAINTING AND COATING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Preparation and priming of surfaces scheduled at end of this Section to receive finish coatings.
 - 2. Painting and finish coating of exterior and interior items and surfaces, including:
 - a. Exposed interior surfaces.
 - b. Scheduled and otherwise identified exterior surfaces.
 - 3. Exterior and interior items and surfaces not requiring painting, unless noted otherwise:
 - a. Surfaces coated by other specification sections.
 - b. Items with factory applied finishes.
 - c. Aluminum, stainless steel, brass, bronze, chromium plate, copper, and nickel.
 - d. Brick, stone, ceramic tile, plastic laminate, and precast concrete.
 - e. Moving parts of operating units.
 - f. Code required labels or equipment identification plates.
 - g. Acoustical ceilings.
 - 4. Field finish coating of shop or factory primed items. Refer to individual Sections for priming requirements.
 - 5. Finish coatings schedule.
 - 6. Preparation work and coatings specified in this Section are in addition to shop and factory applied finishes and surface treatment specified in other Sections.
 - 7. Refer to Divisions 15 and 16 for painting requirements for items in dedicated mechanical and electrical spaces.
 - 8. Paint all other items unless specifically indicated not to be painted.
 - 9. Color schedule.
- B. Related Sections:
 - 1. Section 01 2300 – Alternates: Finish at some existing interior components is associated with Alternate 1 & 2.
 - 2. Section 03 3000 – Cast-in-place concrete: for concrete floor finish
 - 3. Division 21 – Fire Suppression: Piping identification.
 - 4. Division 22 – Plumbing: Piping identification.
 - 5. Division 23 – Heating, Ventilating, and Air Conditioning: Mechanical identification.
 - 6. Division 26 – Electrical: Electrical identification.

1.2 DEFINITIONS

- A. Conform to PDCA Glossary for interpretation of terms used in this Section except as modified below.
- B. Exposed Surfaces: Surfaces of products, assemblies, and components visible from any angle after final installation. Includes internal surfaces visible when operable doors, panels or drawers are open, and surfaces visible behind registers, grilles, or louvers.
- C. Concealed Surfaces: Surfaces permanently hidden from view in finished construction and which are only visible after removal or disassembly of part or all of product or assembly.
- D. Inaccessible Spaces: Spaces not intended for human use.
- E. Spaces listed below are defined as "Concealed" or "Inaccessible":
 - 1. Space between suspended ceilings and floor or roof construction above.
 - 2. Inside furred spaces.
 - 3. Inside of partitions.
 - 4. Mechanical and electrical items enclosed within casework or equipment.
 - 5. Foundation spaces.
 - 6. Crawl spaces.
 - 7. Trenches and manholes.
 - 8. Mechanical shafts or chases.
 - 9. Enclosed elevator shafts.
 - 10. Utility tunnels
- F. Sheen: Degree of luster as measured with specular gloss meter in accordance with ASTM D523:
 - 1. Flat: 85 degree meter Below 15

2. Eggshell: 60 degree meter 5 to 20
 3. Satin: 60 degree meter 15 to 35
 4. Semi-gloss: 60 degree meter 30 to 65
 5. Gloss: 60 degree meter 65 to 80
 6. High Gloss: 60 degree meter Over 80
- G. Industrial Maintenance Primers and Topcoats: High performance coatings formulated for and applied to substrates in industrial, commercial, or institutional situations for purpose resisting heavy abrasion, immersion, prolonged exposure to temperatures in excess of 250 degrees F, prolonged moisture condensation, chemical corrosion, solvent cleaning, or exterior exposure of metal structures.
- H. Metallic Pigmented Coatings: Coatings containing at least 0.4 pounds of metallic pigment per gallon of coating as applied.
- I. System DFT: Dry film thickness of entire coating system unless otherwise noted.

1.3 SYSTEM REQUIREMENTS

- A. Perform testing according to following methods:
1. Solids Content by Volume: ASTM D2832.
 2. Surface Burning Characteristics: ASTM E84.
- B. Application Requirements: Apply scheduled coatings to exposed surfaces of items and spaces unless specifically indicated otherwise.
- C. Surfaces Not To Be Painted:
1. Architectural concrete.
 2. Clay and glass unit masonry, decorative concrete unit masonry, and stone.
 3. Aluminum and aluminum based alloys, copper and copper based alloys, lead and lead based alloys, nickel and nickel based alloys, stainless steel, plated architectural metals, and "weathering" metals.
 4. Decorative plastic and metal laminates, and synthetic countertops.
 5. Elastomeric membranes and flashings, roofing materials, and exterior sealants and caulking.
 6. Acoustic materials.
 7. Rubber, vinyl, or plastic seals and bumpers.
 8. Surfaces concealed or inaccessible in finished construction unless specifically required.
 9. Other surfaces specifically scheduled or indicated to remain unfinished or unpainted.
- D. Materials and Products Not To Be Painted:
1. Items with integral or factory-applied final finish unless indicated otherwise.
 2. Wire fencing and areaway grating.
 3. Cast metal stair nosings trench drain grates, manhole covers, and curb inlets.
 4. Wire mesh partitions and gates, metal storage shelving.
 5. Moving parts of operating equipment such as valve and damper operators, linkages, sensing devices, motor and fan shafts.
 6. UL, FM or other code-required labels, name plates, identification or performance rating labels.
 7. Sprinkler heads.
 8. Mechanical and electrical items within unfinished spaces unless noted otherwise.
- E. Interface with Adjacent Systems:
1. Review other Sections specifying prime coats to ensure compatibility of total coating system for various substrates.
 2. Upon request from other trades, furnish information on characteristics of finish materials proposed for use to ensure compatibility of various coatings.
 3. Test compatibility of existing coatings, including shop applied primers and previously applied coatings, by applying specified special coating to small, inconspicuous area.
 4. If specified coating lifts or blisters existing coating, apply barrier or tie coat as recommended by coating manufacturer.
 5. If no compatible barrier or tie coat exists, remove existing coating completely and apply coating system as specified for new work.

1.4 SUBMITTALS

- A. General: Submit in accordance with Section 01 3000 – Administrative Requirements.
- B. Product Data:
1. Submit product data, including label analysis for each product proposed for use.

2. Specifically include percent solids-by-volume and lead content (percent of weight of dried film).
3. Schedule:
 - a. List each material proposed for use, and cross-reference to specific coating system and substrate application.
 - b. Identify each material by manufacturer's catalog number, product name, and generic classification.
 - c. Include typewritten list identifying coating systems and colors applied to each room, space, or item.
- C. Color and Sheen Samples:
 1. Prepare 1 sample of each opaque finish coating specified in each color and sheen selected for appearance verification.
 2. Apply to 12 by 12 by 1/4 inch hardboard. Apply sufficient coating thickness to provide proper hiding and appearance.
 3. Label each sample to indicate material, color, and sheen.
- D. Coating System Samples:
 1. Prepare 1 sample of each transparent coating system scheduled on actual wood substrate proposed for use. Apply in each top coat color selected.
 2. Prepare 1 sample of each opaque coating system scheduled on actual substrate materials proposed for use. Apply in most common top coat color scheduled.
 3. Step back each coat and process at least one inch to show bare substrate and each coat and process in system build-up.
 4. Minimum sample size of 4 by 8 inches.
 5. Label each sample to indicate materials, color, sheen, DFT of each coat applied, and total system DFT.
- E. Closeout Submittals:
 1. Submit under provisions of Section 01 7800 – Closeout Procedures and Submittals.
 2. Warranty: Submit specified warranty.

1.5 QUALITY ASSURANCE

- A. Single Source Responsibility:
 1. Provide products of single manufacturer for use in each coating system.
 2. Do not mix products of different manufacturers without approval of Architect and manufacturers involved.
 3. Provide manufacturer recommended materials (base and tints) for deep tone colors.
- B. Applicator Qualifications: Company specializing in commercial painting and finishing with 3 years documented experience.
- C. Regulatory Requirements:
 1. Comply with CPSC 16 CFR 1303 and other applicable federal, state, and local regulation limiting lead content of coatings to be applied.
- D. Certifications: Submit certification from manufacturer that materials furnished for use on this Project meet or exceed specified requirements and comply with applicable federal, state, and local requirements regarding lead content.

1.6 FIELD SAMPLES

- A. General: Comply with requirements of Section 01 4000 – Quality Requirements.
- B. Sample Installation: Duplicate finishes of approved coating system samples on wall surfaces and other interior and exterior components selected by Architect.
- C. Provide full-coat finish on at least 100 sq ft of surface until required color, sheen, and texture are obtained. Simulate finished lighting conditions for review of in-place work.
- D. Request review by Architect of first finished room, space, or item for each coating system for color, texture, quality, and workmanship.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Section 01 6000 – Product Requirements.
- B. Deliver products to site in manufacturer's sealed and labeled containers; inspect to verify compliance with specified requirements.
- C. Label containers to indicate manufacturer's name, product name and type of coating, brand code or

stock number, date of manufacture, coverage, surface preparation, drying time, cleanup, color designation and instructions for mixing and reducing.

- D. Store coating materials in tightly covered containers in well ventilated area at ambient temperatures of 45 degrees F minimum and 90 degrees F maximum, unless required otherwise by manufacturer. Maintain containers in clean condition, free of foreign materials and residue with labels in legible condition.
- E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.8 PROJECT CONDITIONS

- A. Environmental Conditions: Comply with more restrictive of following or manufacturer's requirements under which systems can be applied.
 - 1. Provide continuous ventilation during application of coatings to exhaust hazardous fumes.
 - 2. Provide heating necessary to maintain surface and ambient temperatures within specified limits.
 - 3. Maintain temperature and humidity conditions for minimum 24 hours before, during, and 48 hours after application of finishes, unless longer times are required by manufacturer.
 - 4. Do not permit wide variations in ambient temperatures which might result in condensation on freshly coated surfaces.
 - 5. Provide illumination of not less than 80 foot candles measured mid-height at substrate surface during application of coatings.
 - 6. Apply water reducible coatings only when ambient and surface temperatures are between 50 degrees F and 90 degrees F.
 - 7. Apply solvent reducible coatings only when ambient and surface temperatures are between degrees F and 90 degrees F.
 - 8. Do not apply coatings under any of following conditions:
 - a. When surfaces are damp or wet.
 - b. During snow, rain, fog, or mist.
 - c. When relative humidity is less than 20 percent or exceeds 85 percent.
 - d. When temperature is less than 5 degrees F above dew point.
 - e. When dust may be generated before coatings have dried.
 - f. In direct sunlight.
 - g. When wind velocity is above 20 mph.
 - 9. Application of coatings may continue during inclement weather provided work areas and surfaces to be coated are enclosed and specified environmental conditions are maintained.

1.9 WARRANTY

- A. Comply with provisions of Section 01 7800 – Closeout Procedures and Submittals.
- B. Provide a one hundred twenty (120) month FULL PAINT SYSTEM WARRANTY issued by the Paint Manufacturer including materials and labor beginning upon date of completion and final acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
 - 1. Sherwin-Williams
 - 2. Cabot wood stains.
 - 3. Benjamin Moore and Company.
 - 4. Columbia Paints and Coatings.
 - 5. PPG Industries, Inc.
 - 6. Pratt and Lambert Specialty Products.
 - 7. Thnec Company, Inc.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 APPLICATIONS/SCOPE

- A. Interior Paints and Coatings:
 - 1. Concrete: Existing structural concrete; previously coated and un-coated.
 - 2. Metal: structural, ferrous metals, primed; ferrous metal previously coated; new door frames and doors.

3. Wood: underside of existing decking; new wood trims.
4. Gypsum Board: new walls and ceilings.

2.3 COATING MATERIALS – GENERAL

- A. Paints and Coatings:
 1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
 2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color. Or follow manufacturer's product instructions for optimal color conformance.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.
- D. Color: Refer to Finish Schedule for paint colors, and as selected.

2.4 FILLERS AND SEALERS

- A. Interior Block Filler:
 1. Benjamin Moore and Company: Super Craft Block Filler No. 285
 2. PPG Industries, Inc.: Speedhide Acrylic Latex Masonry Block Filler, 6-7.
 3. Sherwin-Williams: Interior/Exterior Block Filler No. B25W25.
- B. Paste Wood Filler:
 1. Benjamin Moore and Company: Benwood Wood Filler #238
 2. Sherwin-Williams: Sher-wood Wood Filler.

2.5 PRIME COATINGS

- A. Acrylic Latex Ferrous Metal Primer:
 1. Benjamin Moore: Acrylic Metal Primer M04
 2. Sherwin Williams: Pro Cryl Universal Metal Primer B66W310
 3. PPG Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel 90-712 Series.
- B. Galvanized Primer:
 1. Benjamin Moore: Acrylic Metal Primer M04
 2. PPG Industries, Inc.: Galvanized Steel Primer No. 6-209.
 3. Sherwin-Williams: Galvite HS B50WZ30.
- C. Latex Primer: Interior
 1. Benjamin Moore: Super Spec Primer Sealer & Latex Undercoat No 253.
 2. PPG Industries, Inc.: Speedhide Latex Wall Sealer No. 6-2.
 3. Sherwin-Williams: PrepRite Primer B28W200
- D. Latex Primer: Interior Wood
 1. Sherwin-Williams: Premium Wall and Wood Primer, B28W8111
 2. PPG Industries, Inc.: Speedhide Latex Wood Primer

2.6 WATER REDUCIBLE COATINGS

- A. Interior Premium Acrylic Latex Enamel:
 1. Benjamin Moore and Company:
 - a. Eggshell: Super Spec Latex Eggshell Enamel (286)
 - b. Pearl Finish: Super Sec Latex Pearl Finish (277)
 - c. Semi-Gloss: Super Spec Latex Semi-Gloss Enamel (283)
 - d. Gloss: Impervex Metal & Wood Enamel no. 309
 2. PPG Industries, Inc.:
 - a. Eggshell: Speedhide Acrylic Latex Enamel, 6-411.
 - b. Semi-Gloss: Speedhide Acrylic Latex Enamel, 6-500.
 - c. Gloss: Speedhide Gloss Acrylic Latex Enamel 6-8534 Series.
 3. Sherwin-Williams:
 - a. Eggshell: ProMar 200 EgShel B20W200.
 - b. Semi-Gloss: Pro Mar 200 Latex Semi Gloss B31 Series

- c. Gloss: Pro Classic Gloss B21
- B. Water Based Epoxy:
 - 1. Benjamin Moore and Company: Super Spec Acrylic Epoxy Enamel No. 256
 - 2. PPG Industries, Inc.: Pitt-Glaze Water Based Acrylic Epoxy Enamel 16-551.
 - 3. Sherwin Williams: Water Based Epoxy B70-200.

2.7 ACCESSORY MATERIALS

- A. Muriatic acid, mildewcide, TSP (tri-sodium phosphate), acidic-detergent, zinc sulfate, sodium metasilicate, and solvent: Commercially available, non-damaging to surface being cleaned; as specified in PDCA Specification Manual; acceptable to coating manufacturer.
- B. Metal Conditioner: Proprietary phosphoric acid based, etching type solution; acceptable to coating manufacturer.
- C. Rust Inhibitor: Water containing 0.32 percent of sodium nitrite and 1.28 percent by weight of secondary ammonium phosphate (dibasic); or water containing 0.2 percent by weight of chromic acid or sodium chromate or sodium dichromate or potassium dichromate.
- D. Spackling compound, putty, plastic wood filler, liquid de-glosser, latex patching plaster, latex base filler, thinners, and other materials not specifically indicated but required to achieve finishes specified: Pure, of highest commercial quality, compatible with coatings and acceptable to coating manufacturer.
- E. Do not use products of different manufacturers in combination.

2.8 MIXING

- A. Use factory prepared colors matching approved samples. Site tinting will not be permitted.
- B. Thoroughly mix and stir coatings before use to ensure homogeneous dispersion of ingredients. Prior to application, blend multiple containers of same material and color by pouring from one container to another several times to ensure uniform consistency, color, and smoothness.
- C. Mix only in clean mixing pails of material recommended by manufacturer to avoid contamination.
- D. Remove film which may form on surface of material in containers and strain material before using. Stir frequently during use to maintain pigments in suspension. Do not stir film into material.
- E. Apply coatings of consistency recommended by manufacturer. Thin only within recommended limits using thinners approved by coating manufacturer.

2.9 COLORS AND FINISHES

- A. Refer to Schedules at end of this Section.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions and proceed with work in accordance with Section 01 7000.
- B. Measure moisture content of substrates using recently calibrated electronic moisture meter. Do not apply coatings if moisture content of surfaces exceeds lesser of percentages listed below or those required by coating manufacturer. If excess moisture content exists and cannot be reduced, obtain written approval of coating manufacturer before application of coatings.
 - 1. Gypsum board and gypsum plaster: 17 percent.
 - 2. Architectural woodwork, trim, cabinets, and casework: 10 percent; measure with resistance type meter in accordance with ASTM D4442.
 - 3. Common board and dimension lumber: 12 percent; measure with resistance-type meter in accordance with ASTM D4442.
 - 4. Masonry, concrete, CMU, and Portland cement plaster: 17 percent for solvent reduced coatings. Test concrete floors in accordance with ASTM D4263.
 - 5. Canvas and cotton insulation coverings: 12 percent max.
- C. Prior to applying alkali and acid sensitive coatings, test surface pH with universal pH paper placed against wetted surface. Substrate pH shall not exceed pH of clean wash water.
- D. Beginning of execution constitutes acceptance of existing conditions.

3.2 PREPARATION - GENERAL

- A. Protect completed construction from damage. Furnish drop cloths, shields, and protective methods to prevent spray, splatter, or droppings from disfiguring other surfaces.
- B. Remove surface hardware, mechanical diffusers, escutcheons, registers, electrical plates, light fixture

- trim, fittings, fastenings and similar items prior to preparing surfaces for finishing. Provide surface-applied protective masking for non-removable items. Carefully store removed items for reinstallation.
- C. Remove mildew by scrubbing with mildewcide. Rinse thoroughly with clean water.
 - D. Before beginning application of coatings, ensure surfaces are clean, dry, and free of dirt, dust, rust or rust scale, oil, grease, mold, mildew, algae, efflorescence, release agents, or any other foreign material which could adversely affect coating adhesion or finished appearance.

3.3 SURFACE PREPARATION

- A. General:
 - 1. Correct minor defects.
 - 2. Remove temporary labels, wrappings, and protective coverings from surfaces to be coated.
 - 3. Seal stains, marks, and other imperfections which may bleed through surface finishes.
- B. Cloth Insulation Coverings:
 - 1. Remove dirt, grease, oil, and other foreign substances.
 - 2. Seal with thin coating of drywall compound thinned with latex PVA primer to working consistency.
- C. Gypsum Board:
 - 1. Refer to Section 09 2116 for general surface preparation.
 - 2. Fill remaining cracks, depressions, holes and other irregularities with spackling compound.
 - 3. Sand rough or high spots left by joint cement or spackling compound without damaging paper face.
 - 4. Remove dust by wiping with damp cloths or vacuuming.
- D. Existing Concrete:
 - 1. Remove dirt, scale, loose material, efflorescence, and powder by wire brushing or by other approved methods.
 - 2. Remove oil and grease with solution of TSP, rinse, and allow to dry.
 - 3. Wash and neutralize surfaces as recommended by coating manufacturer, rinse, and allow to dry.
- E. Existing Plaster:
 - 1. Remove dirt, efflorescence, scale, loose sand, and powder by wire brushing or by other approved methods.
 - 2. Remove oil and grease with solution of TSP, rinse, and allow to dry.
 - 3. Wash portland cement plaster to receive solvent reducible coatings with zinc sulfate solution, rinse, and allow to dry.
 - 4. Wash gypsum plaster to receive solvent reducible coatings with acidic-detergent, rinse and allow to dry.
 - 5. Fill hairline cracks, small holes and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces.
- F. Steel - Uncoated:
 - 1. Remove weld spatter by chipping or grinding.
 - 2. Clean interior and weather protected steel in accordance with SSPC SP2 "Hand Tool Cleaning" and SP3 "Power Tool Cleaning". Clean areas of excessive corrosion or scale in accordance with SSPC SP7 "Brush-Off Blast Cleaning".
 - 3. Clean exterior steel permanently exposed to elements in accordance with SSPC SP6 "Commercial Blast Cleaning".
 - 4. Apply metal conditioner to bare surfaces in accordance with manufacturer's recommendations, paying particular attention to abrasions, welds, bolts, and nuts. Allow to set as recommended by solution manufacturer. Rinse with clean water with rust inhibitor mixed with water or applied immediately following rinse. Allow to dry.
 - 5. Prime coat or clear coat as indicated immediately.
- G. Steel - Prime Coated:
 - 1. Remove loose primer and rust to feather-edge at adjacent sound primer by cleaning in accordance with SSPC SP2 "Hand Tool Cleaning" and SP3 "Power Tool Cleaning".
 - 2. Apply metal conditioner to abrasions, welds, bolts, and nuts in accordance with manufacturer's recommendations. Allow to set as recommended by manufacturer. Rinse with clean water with rust inhibitor mixed with water or applied immediately following rinse.
 - 3. Allow to dry.
 - 4. Prime coat bare areas immediately.

H. Steel - Galvanized:

1. Remove white rust by cleaning in accordance with SSPC SP2 "Hand Tool Cleaning" and SP3 "Power Tool Cleaning". Exercise care not to remove galvanizing.
2. Pretreat surfaces to receive solvent reducible coatings immediately.

I. New Wood - Opaque Finish:

1. Remove excess residue from knots, pitch streaks, cracks, open joints, and sappy spots. Ensure exposed fasteners are countersunk.
2. Sand wood surfaces and edges smooth. Remove dust after each sanding.
3. Fill nail holes, cracks, open joints and other defects with putty or plastic wood filler.

3.4 APPLICATION

A. General Requirements:

1. Coat all surfaces specified, scheduled, illustrated, and otherwise exposed unless specifically noted otherwise.
2. Apply coatings of type, color, and sheen as scheduled.
3. Apply products in accordance with Section 01700. Use application materials, equipment, and techniques as recommended by coating manufacturer and best suited for substrate and type of material being applied.
4. Do not apply finishes to surfaces that are improperly prepared.
5. Number of coats specified are minimum number acceptable.
6. Apply coating systems to total dry film thickness scheduled. Apply material at not less than manufacturer's recommended spreading rate. Do not exceed maximum single coat thickness recommended by coating manufacturer. Do not double-back with spray equipment building up film thickness of two coats in one pass.
7. Ensure that edges, corners, crevices, welds, and exposed fasteners receive dry film thickness equivalent of flat surfaces.
8. Finish edges of coatings adjoining other materials or colors sharp and clean, without overlapping.

B. Prime Coats:

1. Apply initial coat to surfaces as soon as practical after preparation and before subsequent surface deterioration.
2. Apply primer to wood and metal sash before field glazing.

C. Intermediate and Top Coats:

1. Allow previously applied coat to dry before next coat is applied.
2. Sand and dust lightly between coats as recommended by coating manufacturer.
3. Apply each coat to achieve uniform finish, color, appearance, and coverage free of brush and roller marks, runs, misses, visible laps or shadows, hazing, bubbles, pin holes, or other defects.
4. If stains, undercoats, or other conditions show through final topcoat, correct defects and apply additional topcoats until coating film is of uniform finish, color, and appearance.

D. Finish Matching:

1. Finish closets same as adjoining rooms, unless otherwise specified.
2. Finish tops, bottoms, and edges of doors same as door faces. Apply sanding sealer to cutouts. When faces are different colors, finish edges of doors to match space from which they are visible when door is in partly open position.
3. Finish other surfaces not specifically mentioned to match adjoining surfaces.

E. Mechanical and Electrical Items:

1. Refer to Division 21 – Fire Suppression, Division 22 – Plumbing, Division 23 - Heating, Ventilating, and Air Conditioning, and Division 26 - Electrical for schedule of color coding and identification banding of equipment, ductwork, piping, and conduit. Color code equipment, piping, conduit and exposed ductwork in accordance with requirements indicated.
2. Prior to finishing mechanical and electrical items, remove louvers, grilles, covers, and access panels and finish separately. Replace when dry.
3. Paint interior surfaces of ducts, and heating cabinets that are visible or reflective behind grilles and registers with one coat of flat black paint.
4. Paint both sides and edges of plywood equipment backboards before installing equipment.
5. Do not apply coatings over name plates, tags, or other equipment identification.
6. Reinstall trim, fittings, and other items removed for finishing.

3.5 FIELD QUALITY CONTROL

- A. General: Comply with requirements of Section 01 4000.
- B. Periodically test film thickness of each coat with wet film gage to ensure coatings are being applied to proper thickness.
- C. Request review of each applied coat by Architect before application of successive coats. Only reviewed coats will be considered in determining number of coats applied.
- D. Immediately prior to Substantial Completion, perform detailed inspection of painted surfaces and repair or refinish abraded, stained, or otherwise disfigured surfaces.
- E. Testing: Owner reserves right to employ independent testing agency to verify acceptability of substrates and conformance of coating materials to specified requirements; and to test coating quality and dry film thickness.
- F. If test results show that material does not comply with specified requirements, remove noncomplying coatings, recoat with acceptable material, and pay costs of additional testing to ensure compliance.

3.6 CLEANING

- A. Promptly remove spilled, splashed, or spattered coatings. Clean spots, oil, and other soiling from finished surfaces using cleaning agents and methods which will not damage materials.
- B. If completed construction is damaged beyond normal cleaning or repair by painting operations, replace damaged items at no additional cost to Owner.
- C. Maintain premises and storage areas free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- D. Collect waste, cloths, and material which may constitute fire hazards and place in closed metal containers; remove from site daily along with empty containers.

3.7 PROTECTION

- A. Protect finished work in accordance with Section 01 7000.
- B. Protect work of other trades against damage from coating activities. Correct damage by cleaning, repairing, replacing, and recoating as acceptable to Architect.
- C. Provide "Wet Paint" signs and other methods to protect newly coated surfaces. Remove when directed or when no longer needed.

3.8 FINISH COATINGS SCHEDULE. NOTE: it is not the intent of this schedule to state in detail each surface to receive finish; it is intended only as a guide. Omission of any surface from this list shall not relieve the contractor from the responsibility of providing finish. Any further clarification required shall be brought to the attention of the architect.

- A. Interior Coating Systems:
 - 1. Concrete Surfaces:
 - a. Existing Structural Concrete:
 - i. System Epoxy Finish (at Extruder Lab):
 - Sheen: Satin.
 - Prime Coat: Interior Block Filler at 11.0 mils.
 - Under Coat: Water Based Epoxy at 2.5 mils.
 - Top Coat: Water Based Epoxy 2.5 mils.
 - 2. Metal Surfaces:
 - a. Non-Ferrous Metals and Zinc-Coated (Galvanized) Steel:
 - i. System Latex Finish:
 - Sheen: Satin.
 - Prime Coat: Galvanized Primer at 2.0 mils.
 - Under Coat: Interior Latex Enamel at 1.5 mils.
 - Top Coat: Interior Latex Enamel at 1.5 mils.
 - b. Ferrous Metals - Uncoated:
 - i. System Latex Finish:
 - Sheen: Satin.
 - Prime Coat: Acrylic Latex Ferrous Metal Primer
 - Under Coat: Interior Latex Enamel at 1.5 mils.
 - Top Coat: Interior Latex Enamel at 1.5 mils.
 - c. Ferrous Metals - Previously Coated:

- i. System Latex Finish:
 - Sheen: Satin.
 - Prime Coat: Acrylic Latex Ferrous Metal Primer
 - Under Coat: Interior Latex Enamel at 1.5 mils.
 - Top Coat: Interior Latex Enamel at 1.5 mils.
- 3. Wood Surfaces
 - a. Miscellaneous new wood trim.
 - i. System Water Based Epoxy:
 - Sheen: Satin.
 - Prime Coat: Latex Primer at 1.0 mils.
 - Under Coat: Water Based Epoxy at 2.5 mils.
 - Top Coat: Water Based Epoxy 2.5 mils.
 - System DFT: 6 mils.
- 4. Gypsum Surfaces:
 - a. Gypsum Board:
 - i. System Water Based Epoxy:
 - Sheen: Satin.
 - Prime Coat: Latex Primer at 1.0 mils.
 - Under Coat: Water Based Epoxy at 2.5 mils.
 - Top Coat: Water Based Epoxy 2.5 mils.
 - System DFT: 6 mils.
- 5. Plaster Surfaces:
 - a. Existing plaster finish:
 - i. System Water Based Epoxy at Walls:
 - Sheen: Satin.
 - Prime Coat: Latex Primer at 1.0 mils.
 - Under Coat: Water Based Epoxy at 2.5 mils.
 - Top Coat: Water Based Epoxy 2.5 mils.
 - System DFT: 6 mils.

3.9 PAINT COLOR SCHEDULE:

- A. P-1: Manufacturer: TBD. (off white)
- B. P-2: Manufacturer: TBD (charcoal grey)
- C. P-3: Manufacturer: TBD: Ceiling White. (off white)

END OF SECTION 09 9000

SECTION 10 1400 - SIGNS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Room Signs
 - 2. Other signs as requested by Owner
- B. Related Sections include the following:
 - 1. Division 1 Section "Temporary Facilities and Controls" for temporary project identification signs.
 - 2. Division 15 Section "Mechanical Identification" for labels, tags and nameplates for mechanical equipment.
 - 3. Division 16 Section "Electrical Identification" for labels, tags, and nameplates for electrical equipment.
 - 4. Division 16 Section "Interior Lighting" for illuminated exit signs.

1.3 SUBMITTALS

- A. All sign submittals must be reviewed by the Owner.
- B. Product Data: For each type of product indicated include construction details, material descriptions, dimensions of individual components, profiles and finishes, and maintenance recommendations for each type of sign.
- C. Shop Drawings: Include construction details, material descriptions, dimensions of individual components, profiles and finishes, and fabrication and installation details for each type of sign.
 - 1. Show sign mounting heights and locations.
 - 2. Provide message list for each sign, including large-scale details of wording, lettering typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.
- D. Samples for Verification: For the selected color, texture and sign material indicated, of sizes indicated:
 - 1. Provide a full-scale sample sign for the A2 sign type.
 - 2. Approved samples will not be returned to Vendor.
 - 3. Samples will at no cost to the Owner.
- E. Sign Schedule: Use same designations indicated on Drawings and/or "Room Numbering Designations" schedule, as provided by the Owner.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance. References may be requested and used for evaluation of vendor and product.
- B. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.
- C. Regulatory Requirements: Sign types shall consist of room number and room function to meet referenced standards.

1.5 COORDINATION

- A. Coordinate installation with all other trades.
 - 1. Example: Paint shall be dry and completely cured before wall signs are adhered with tape to the walls.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:

- a. Deterioration of finishes beyond normal weathering.
 - b. Deterioration of colors or sign lamination.
2. Warranty Period: One year from date of Substantial Completion.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Store products of this section in manufacturer's unopened packaging until installation.
- B. Maintain dry, heated storage area for products of this section until installation of products.
- C. Failure to meet delivery deadlines may result in disqualification of Vendor

1.8 REFERENCED STANDARDS

- A. ADAAG (ADA Accessibility Guidelines for Buildings and Facilities), current edition.
- B. ANSI (Americans National Standards Institute) A117.1.

PART 2 - PRODUCTS

2.1 GRAPHIC PROCESS

- A. All signs shall be manufactured so that:
 - 1. All text shall be accompanied by Grade 2 Braille. Braille shall be separated 1/2-inch from the corresponding raised characters or symbols. May be machine or hand placed. If hand placed, Braille does not have to match the raised border color. Braille to comply with ANSI A117.1. Braille to have domed or rounded shape. Grade 2 Braille translation to be provided by signage manufacturer.
 - 2. All letters, numbers and/or symbols, and borders shall be Architectural Gray 3279 or approved alternate. Background shall be White 225 or approved alternate. If a backer plate is used it shall be Architectural Gray 3279, or approved alternate, to match border color. Characters and backgrounds shall have a non-glare finish and comply with ANSI A117.1.
- B. Plaque material shall be Special Purpose SP125 decorative thermosetting high-pressure laminate or approved alternate. Material to be 1/8-inch thick laminate with melamine resin surfacing and a phenolic resin core which provides resistance to abrasion, stains, alcohol, solvents, boiling water, and heat. The material shall be NEMA rated and have flammability and smoke values that meet the standards for flammability of interior materials.
- C. Font shall be Franklin Gothic Book, upper case letters and numbers. Character spacing and line weight to comply with ANSI A117.1.
- D. Size of letters and numbers shall be as follows:
 - 1. Room numbers shall be 3/4-inch high
 - 2. Symbol size shall be 4 inches high.
 - 3. Outside corners of sign shall be square. Inside corners shall be filleted 1/16-inch maximum.

2.2 SIGN DESIGN

- A. The sign design is based on the Montana State University Interior Signage Standard Catalog, current edition.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces to receive signs have been finished and that finishes are dry and correctly cured.
- B. Examine substrates, areas, and conditions, with Contractor present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- C. Verify that items, including anchor device (double sided foam tape), provided under other sections of work are sized and located to accommodate signs.
- D. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Locate signs and accessories where indicated on drawings, with sign surfaces free of distortion and other defects in appearance.
- B. Install signs level, plumb and at heights indicated, with sign surfaces free of distortion and other defects in appearance

- C. Sign shall be mounted on the latch side of the door. The top edge of the sign shall be mounted 60 inches about finish floor (AFF), typical. Mount sign with centerline of tactile text a minimum of nine inches from door opening., typical.
- D. Where there is no wall space on the latch side of a single door, sign shall be mounted on the nearest adjacent wall. Signs shall be located so that a clear floor area 18 inches minimum by 18 inches minimum centered on the tactile text is provided beyond the arc of any door swing between the closed position and a 45-degree open position.
- E. Where a tactile sign is provided at double doors with two active leaves, the sign shall be mounted to the right of the right-hand door.
- F. Where a tactile sign is provided at double doors with one active leaf, the sign shall be located on the inactive leaf.
- G. Where there is no wall space on the right side of the double doors, sign shall be mounted on the nearest adjacent wall. Signs shall be located so that a clear floor area 18 inches minimum by 18 inches minimum centered on the tactile text is provided beyond the arc of any door swing between the closed position and a 45-degree open position.
- H. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.
- I. Mount the signs to the wall using the double-sided foam tape on the back of the sign. For sand blasted or etched signs, use 100% silicon adhesive in addition to the double-sided foam tape if the sign is heavy.

3.3 CLEANING AND PROTECTION

- A. After installation, clean soiled sign surfaces according to manufacturer’s written instructions. Protect signs from damage until acceptance by Owner.

3.4 SIGN TYPE AND ROOM NUMBERING DESIGNATION SCHEDULE:

ADJACENT DOOR NO.	SIGN TYPE	TEXT ON SIGN
01A	A2	###
01B	A2	###
02	A2	###
(E) DOOR TO FOOD PREP AREA	A2	###
01A	A1	EXIT
01B	A1	EXIT

END OF SECTION 10 1400

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FPDC

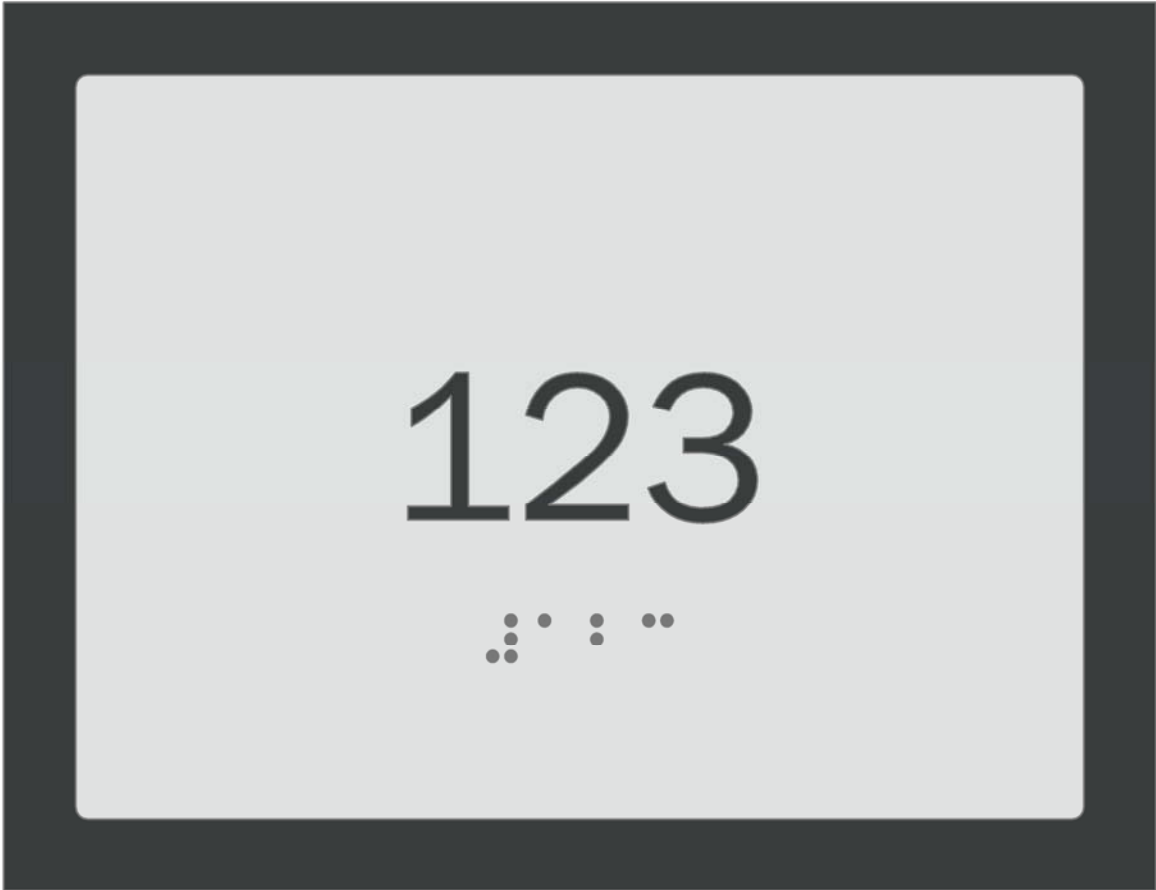
Montana State University Interior Signage Standard

This catalog contains samples of standard signs available for Montana State University projects.

Facilities Planning, Design & Construction
6th Avenue & Grant Street, P.O. Box 172760
Bozeman, MT 59717-2760



MONTANA
STATE UNIVERSITY



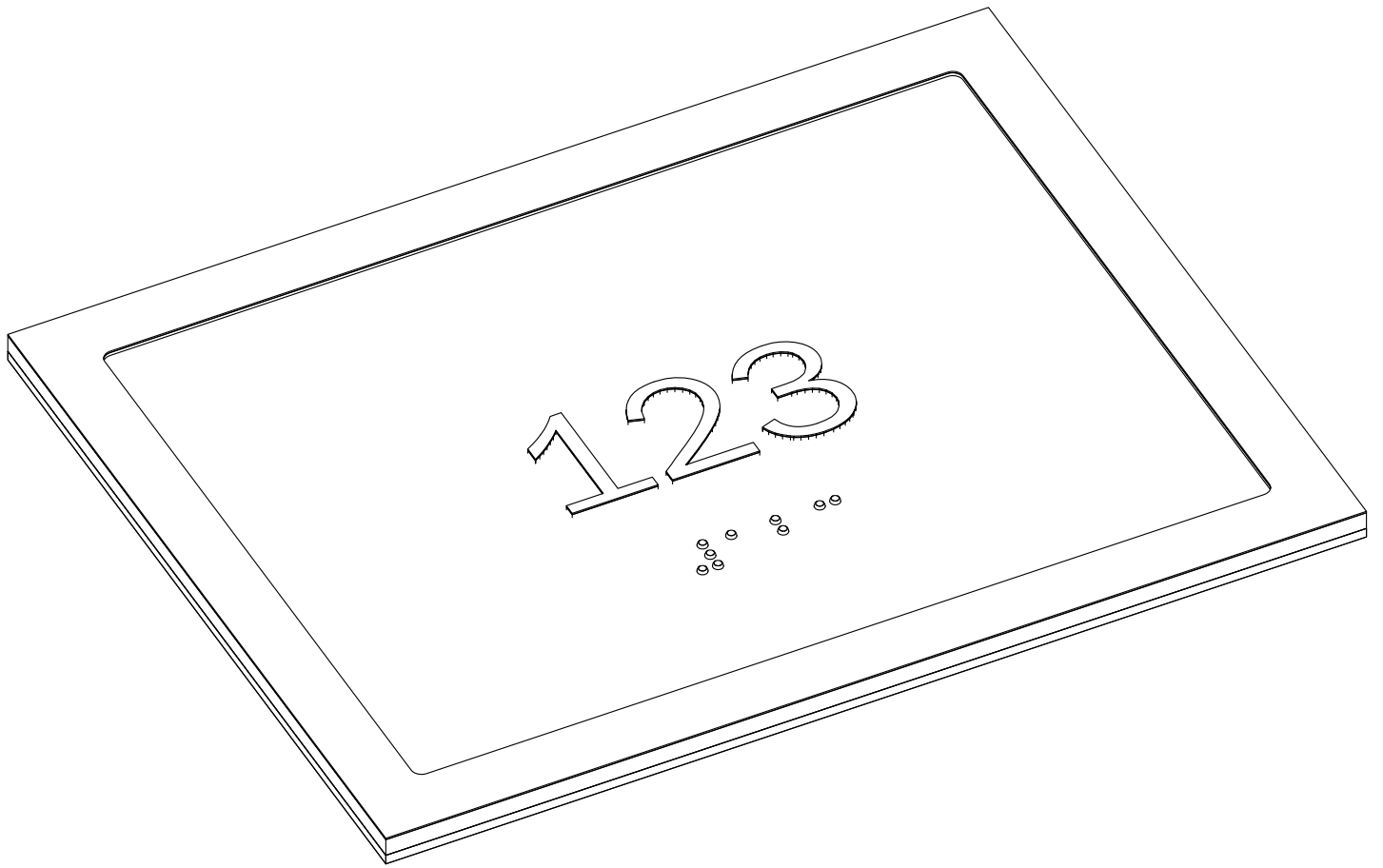
INTERIOR PANEL SIGN
TYPE: A1

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

A1-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009

10431
SPEC. SECTION

2007
DATE



INTERIOR PANEL SIGN
TYPE: A1

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

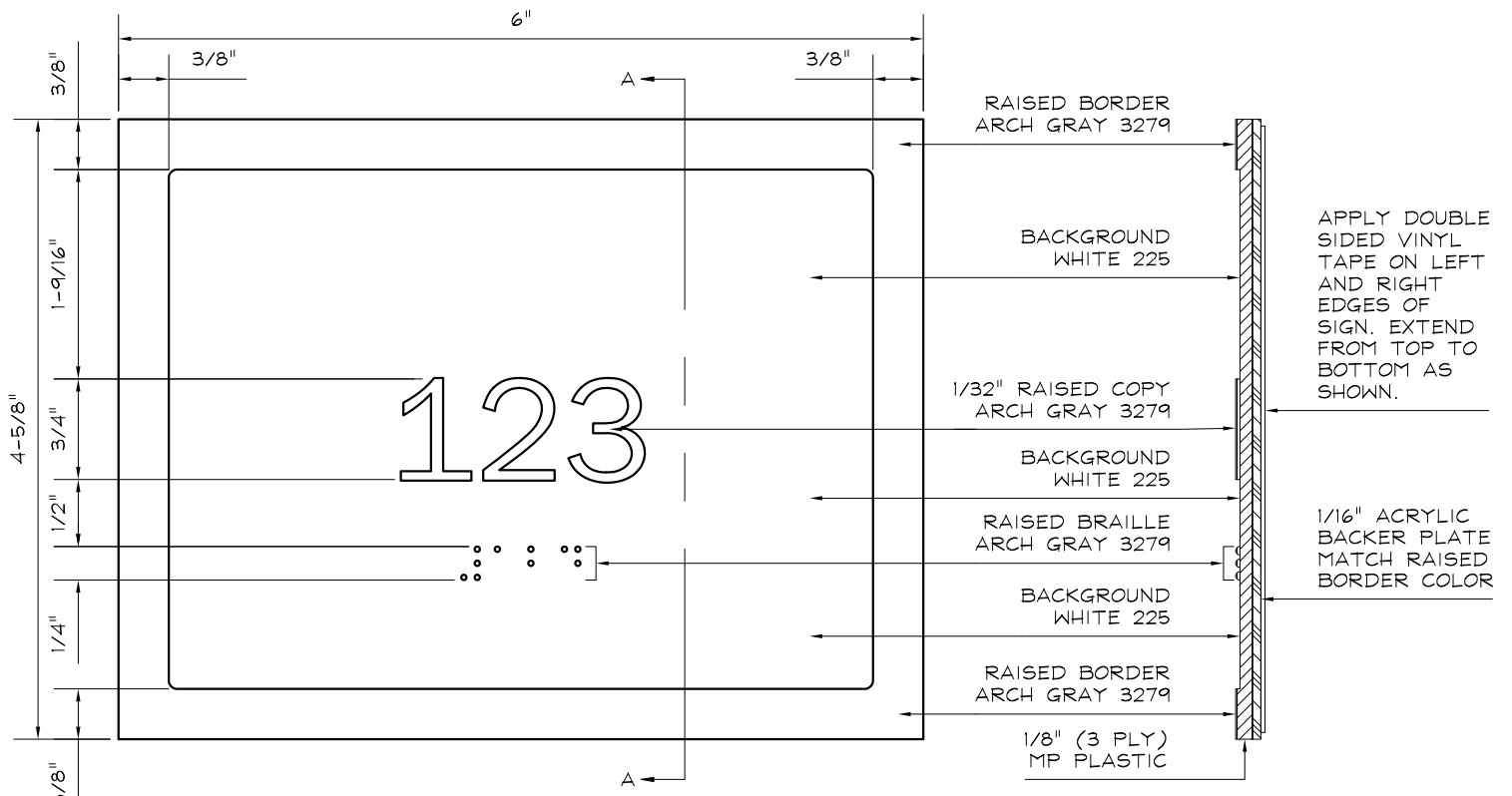
A1-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

10431

SPEC. SECTION

2007

DATE



NOTE: RAISED COPY LETTERING TO BE FRANKLIN GOTHIC BOOK.

NOTE: CORNER FILLETS TO BE 1/16" (TYPICAL).

SECTION A-A

0.7 x SCALE

INTERIOR PANEL SIGN
TYPE: A1

10431
SPEC. SECTION

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

2007

A1-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

DATE



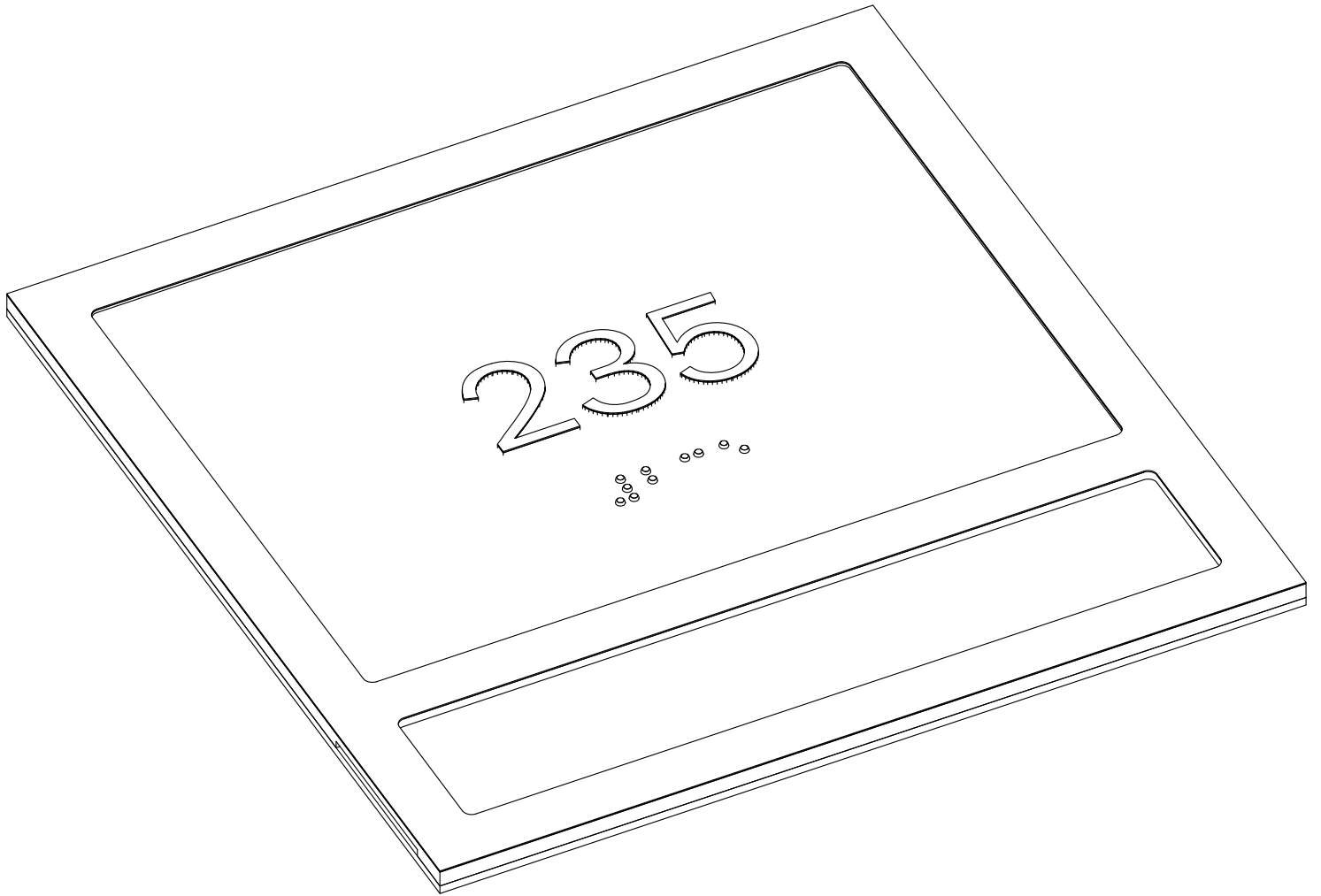
INTERIOR PANEL SIGN
TYPE: A2

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

A2-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009

10431
SPEC. SECTION

2007
DATE



0.95 x SCALE

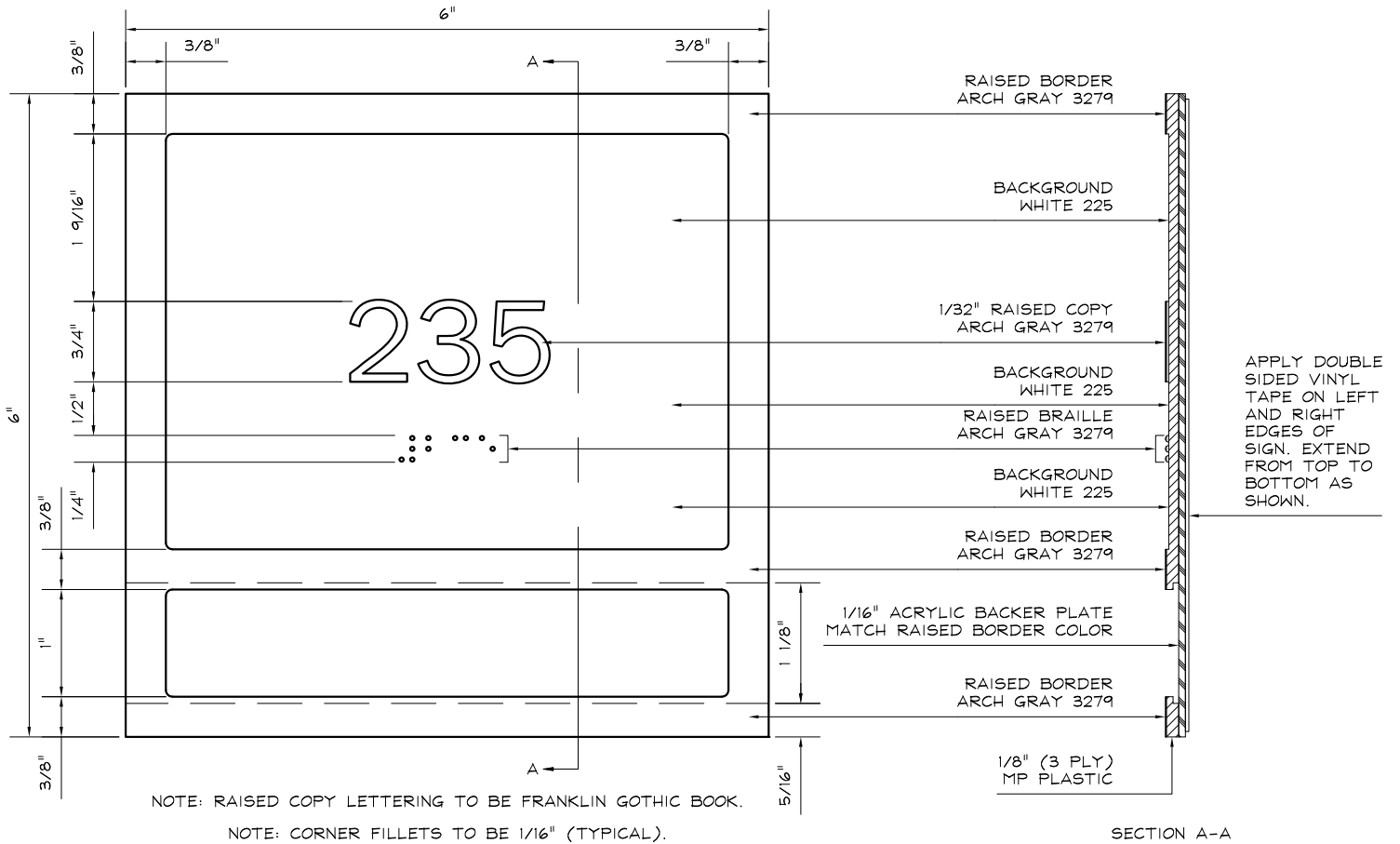
**INTERIOR PANEL SIGN
TYPE: A2**

10431
SPEC. SECTION

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

2007
DATE

A2-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.6 x SCALE

INTERIOR PANEL SIGN
TYPE: A2

10431
SPEC. SECTION

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

2007
DATE

A2-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



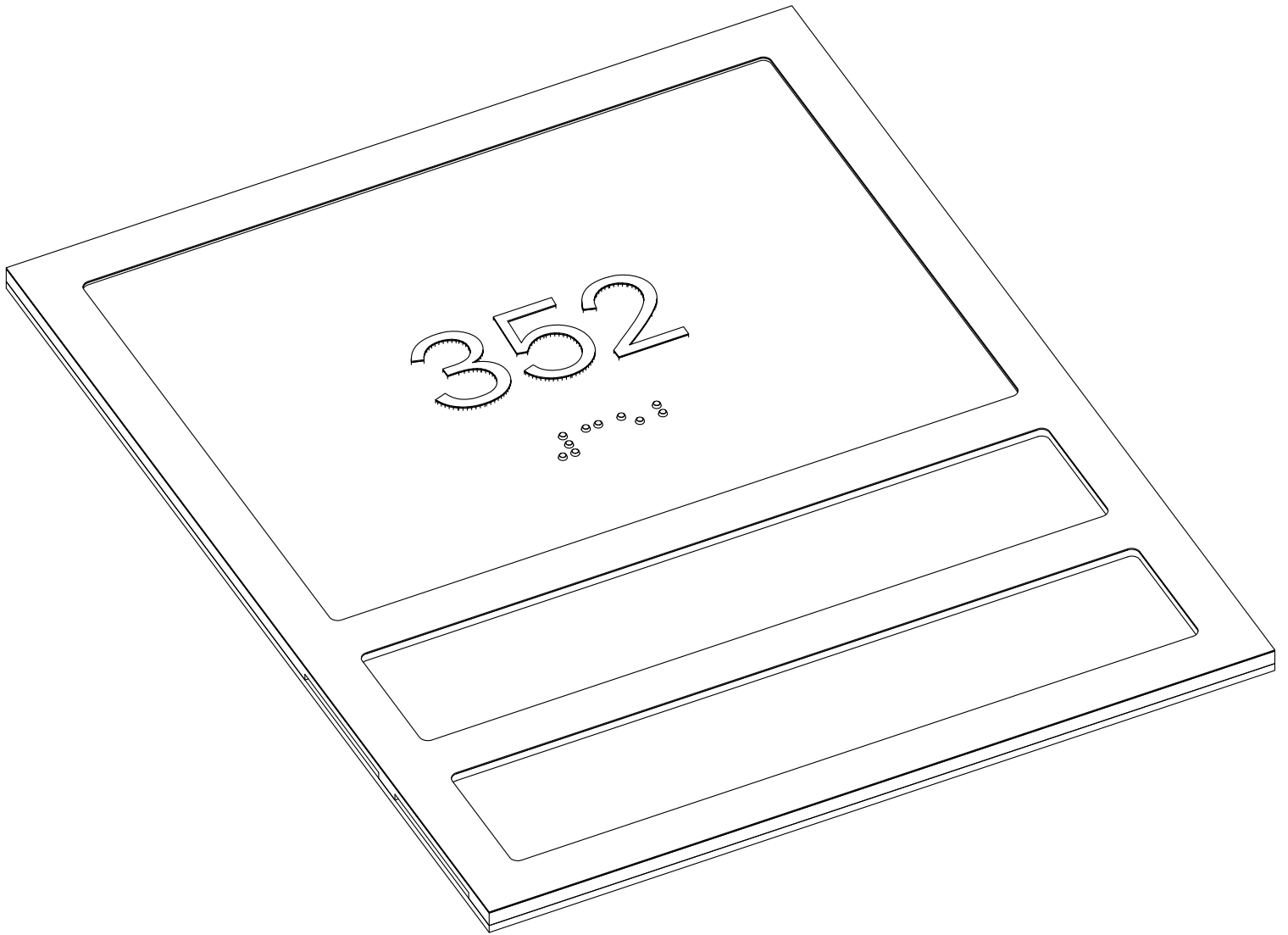
INTERIOR PANEL SIGN
TYPE: A3

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A3-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009

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0.9 x SCALE

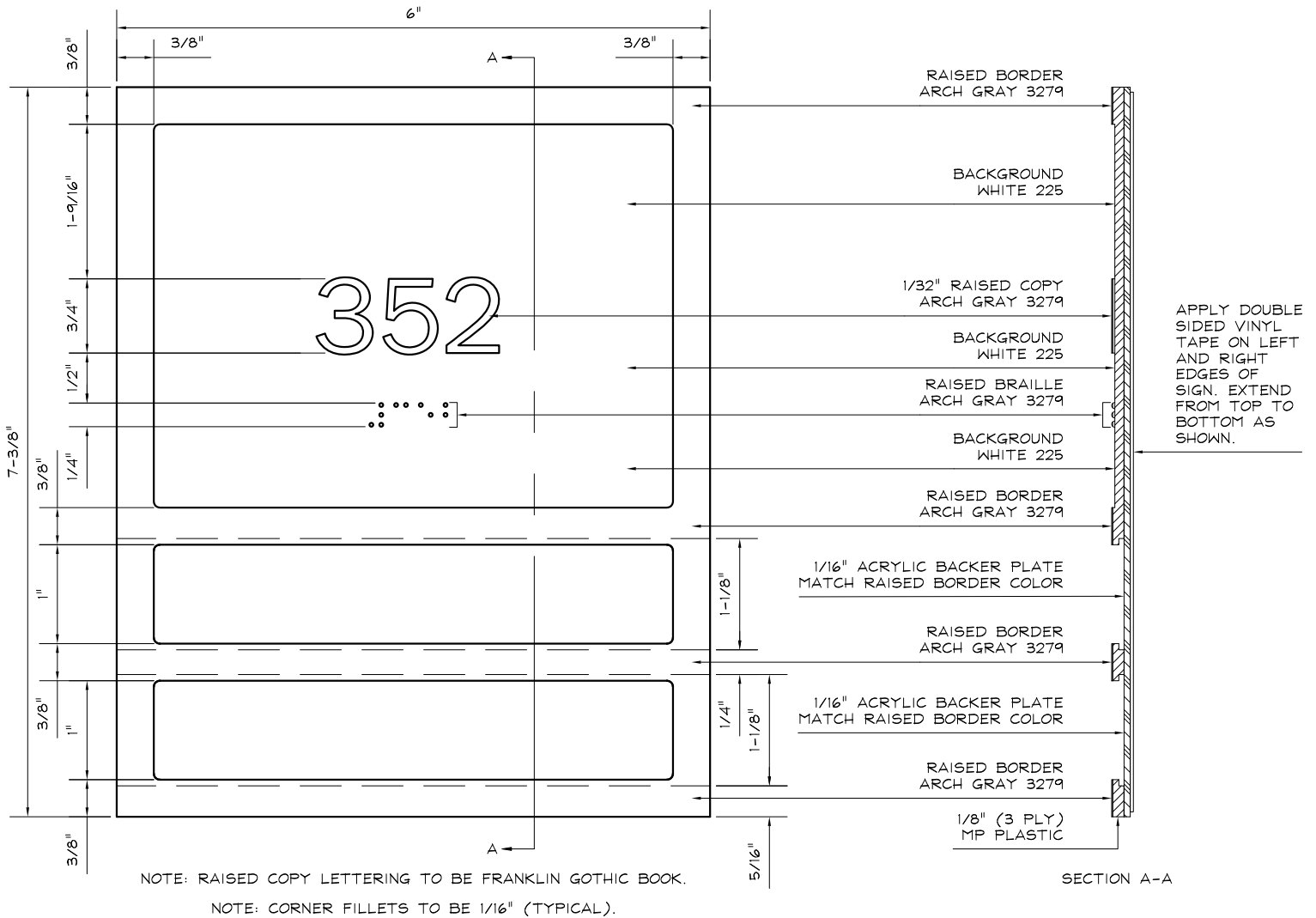
**INTERIOR PANEL SIGN
TYPE: A3**

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A3-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.6 x SCALE

INTERIOR PANEL SIGN
TYPE: A3

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

A3-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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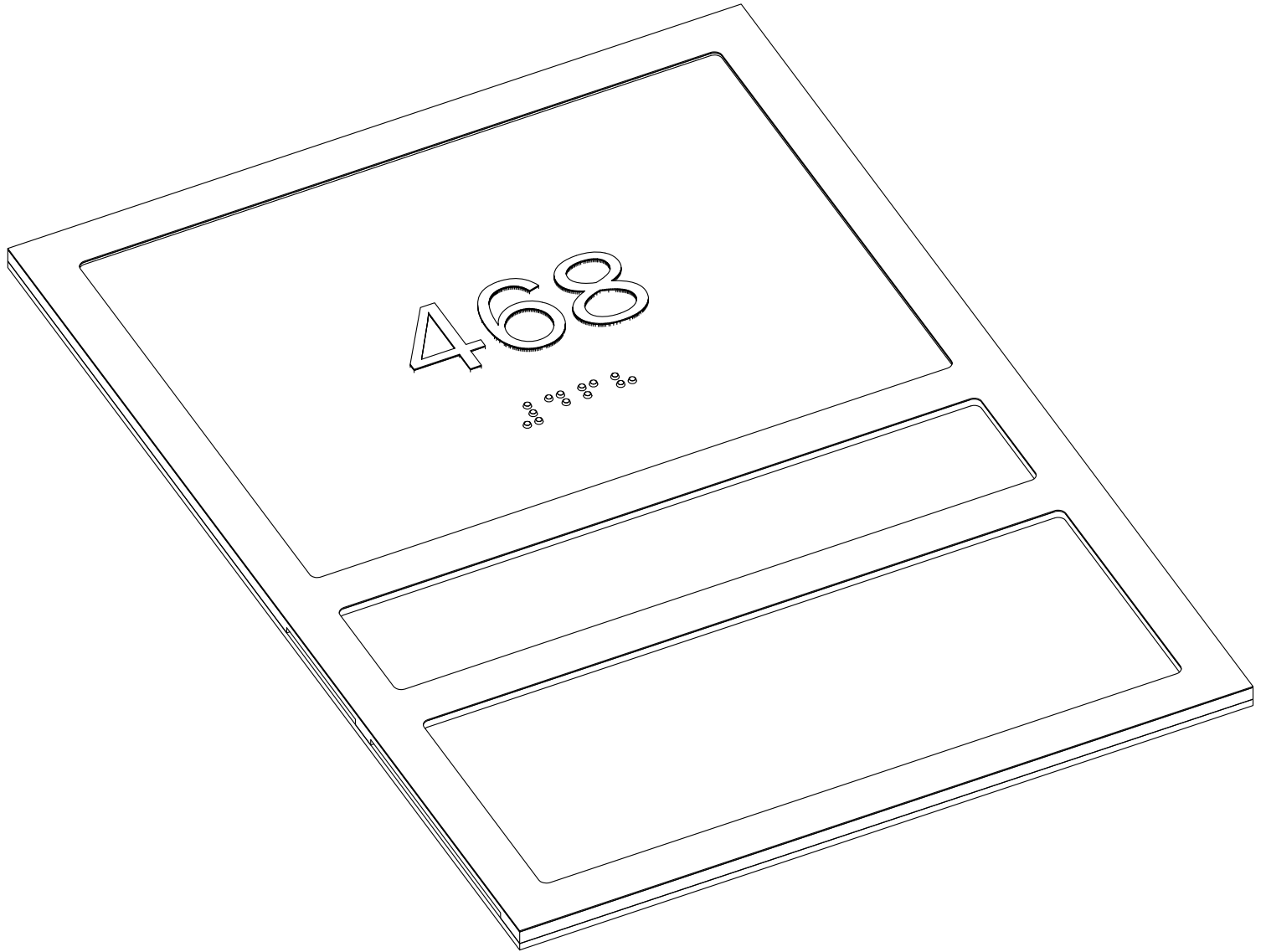
INTERIOR PANEL SIGN
TYPE: A4

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

A4-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009

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0.85 x SCALE

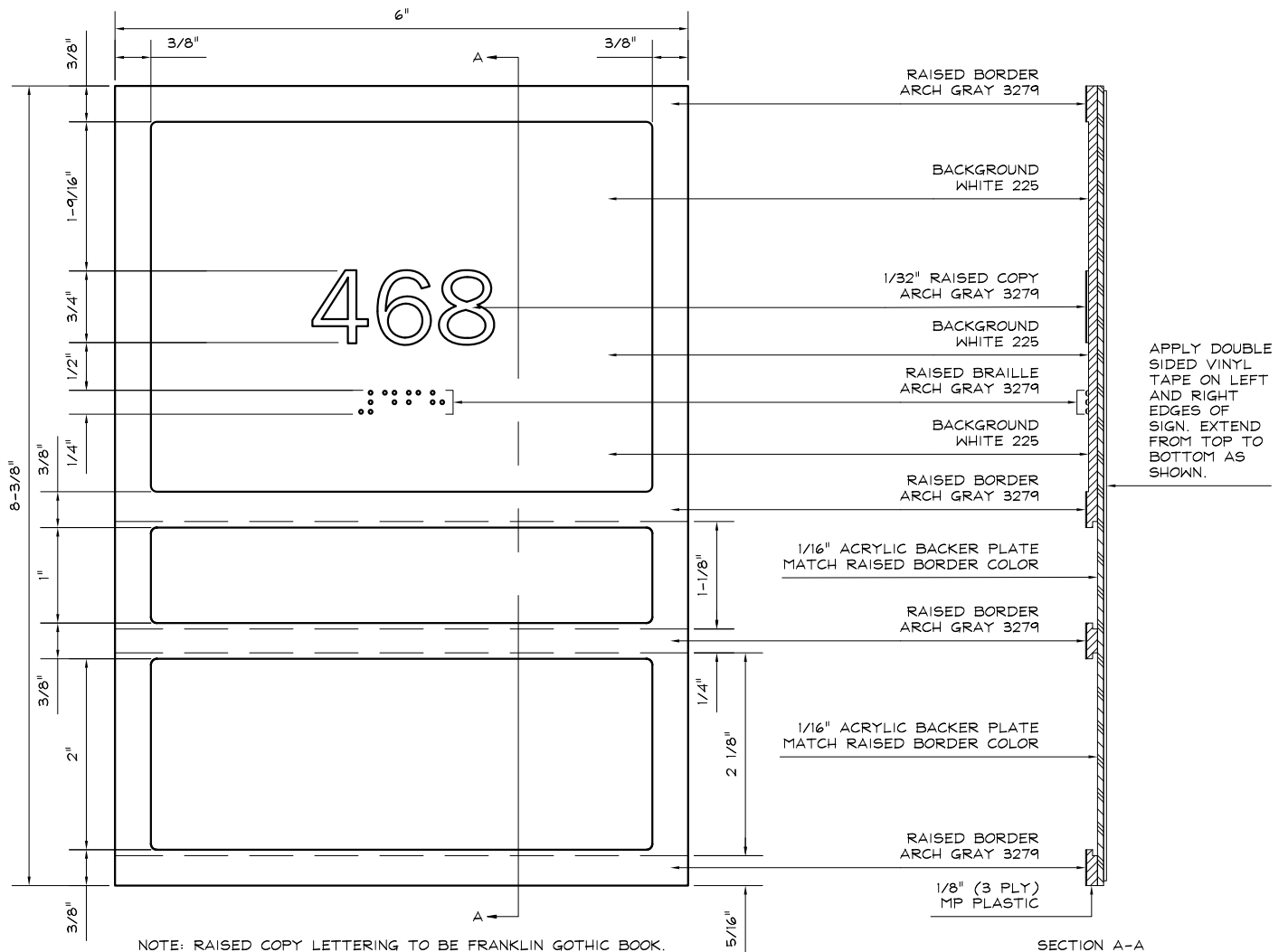
**INTERIOR PANEL SIGN
TYPE: A4**

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

A4-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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NOTE: CORNER FILLETS TO BE 1/16" (TYPICAL).

0.55 x SCALE

INTERIOR PANEL SIGN
TYPE: A4

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A4-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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532



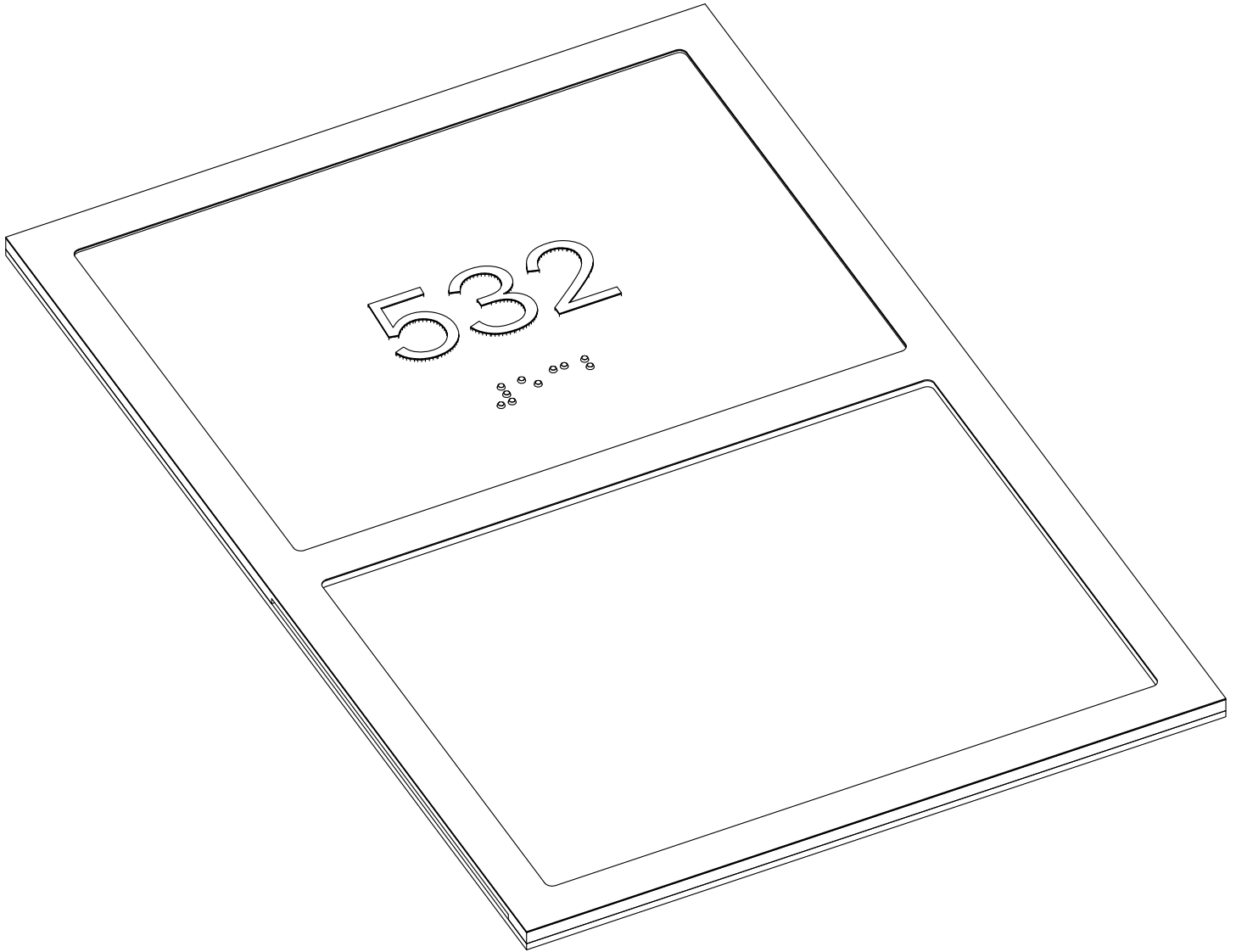
INTERIOR PANEL SIGN
TYPE: A5

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

A5-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009

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0.8 x SCALE

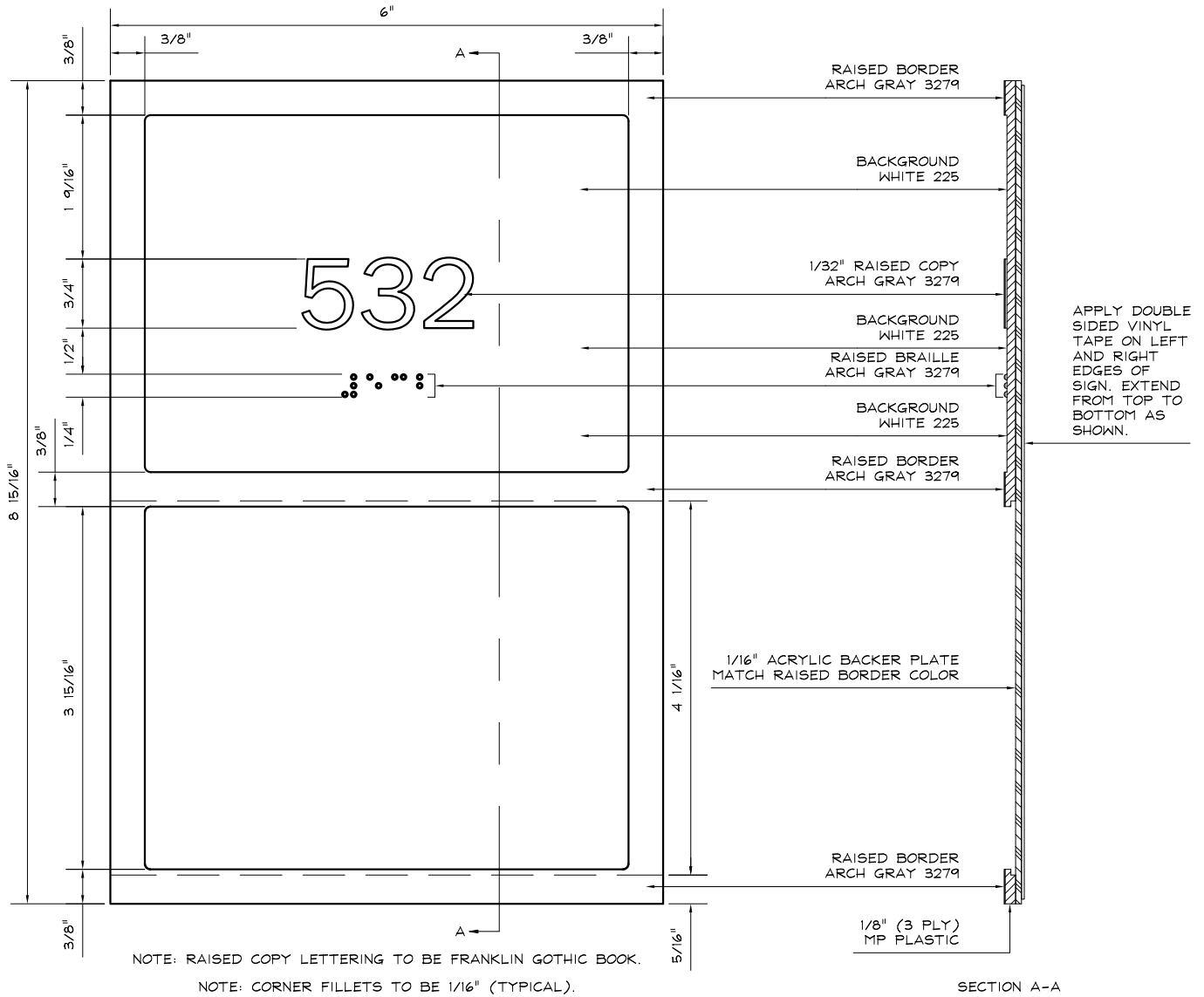
**INTERIOR PANEL SIGN
TYPE: A5**

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

A5-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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0.55 x SCALE

INTERIOR PANEL SIGN
TYPE: A5

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DATE

648



0.9 x SCALE

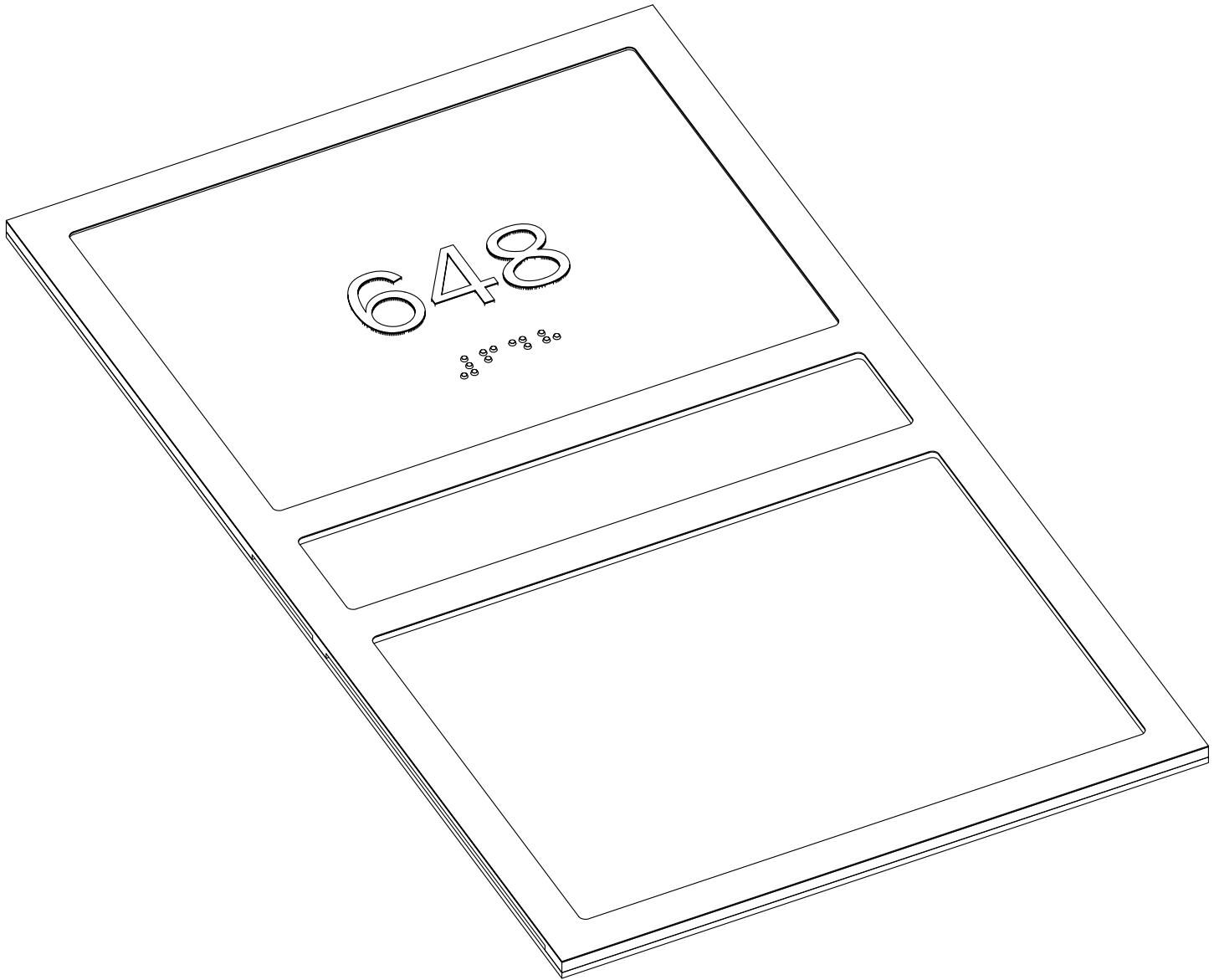
INTERIOR PANEL SIGN
TYPE: A6

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A6-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009



0.75 x SCALE

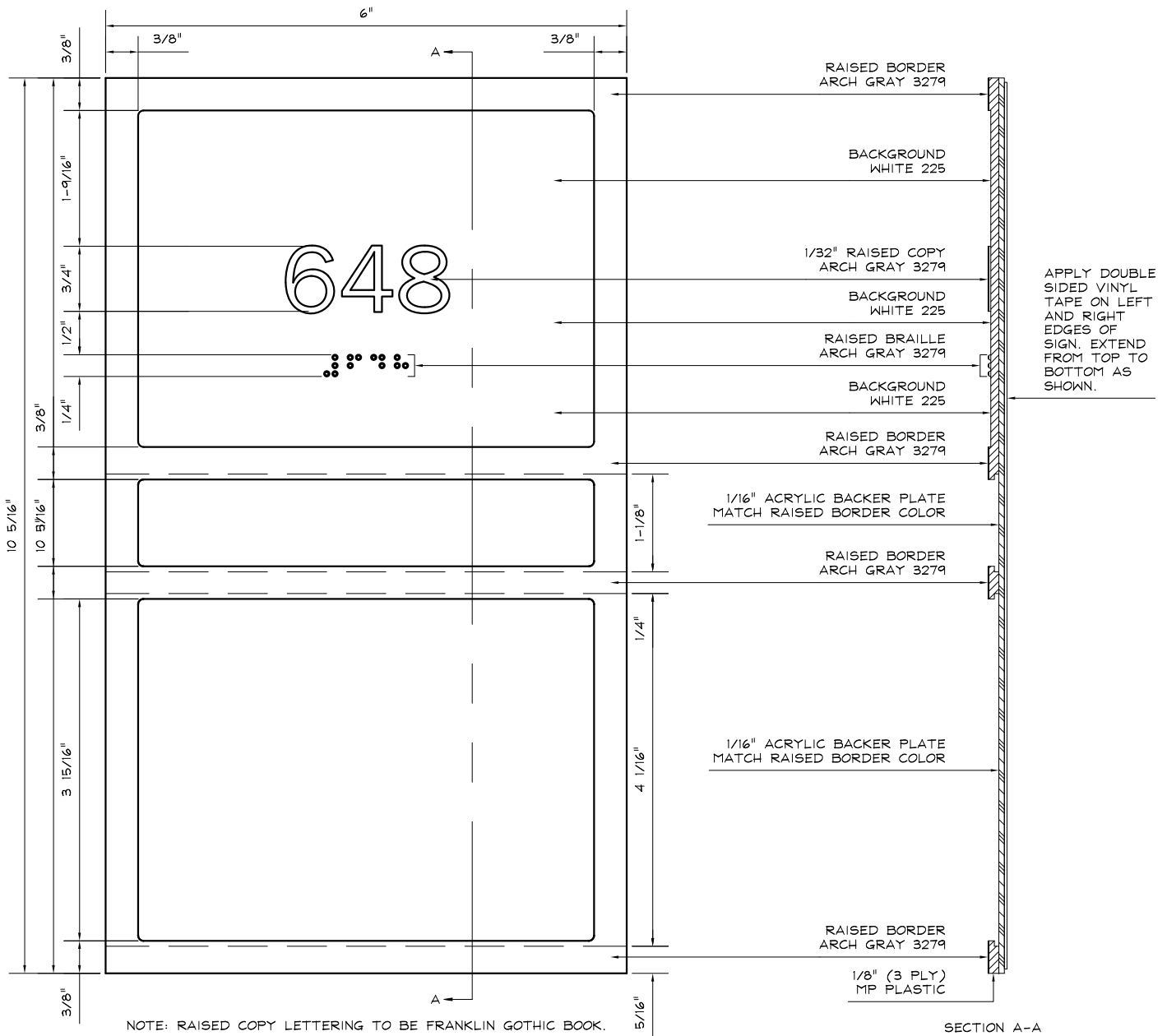
INTERIOR PANEL SIGN
TYPE: A6

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A6-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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DATE



INTERIOR PANEL SIGN
TYPE: A6

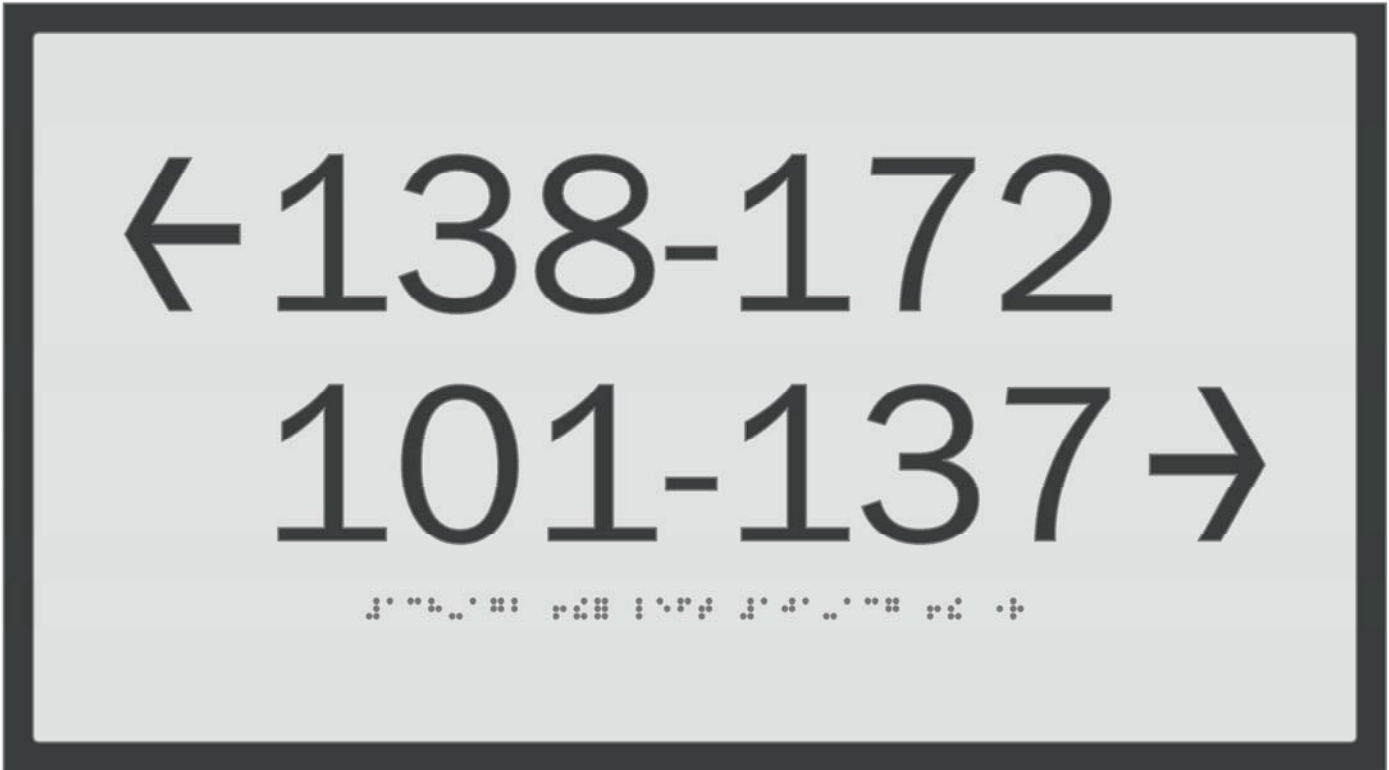
FACILITIES PLANNING, DESIGN AND CONSTRUCTION

A6-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

0.55 x SCALE

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0.4 x SCALE

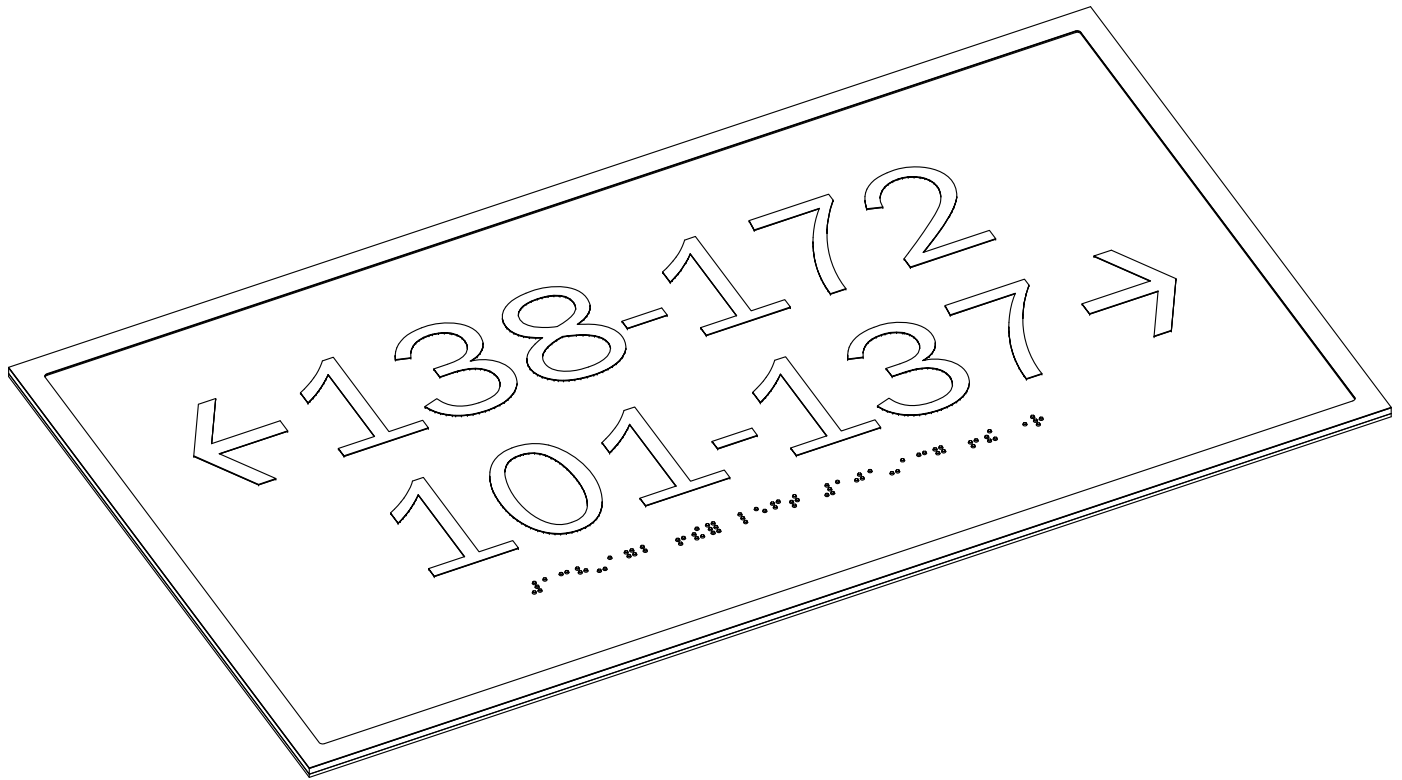
INTERIOR PANEL SIGN
TYPE: A7

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DATE

A7-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009



0.35 x SCALE

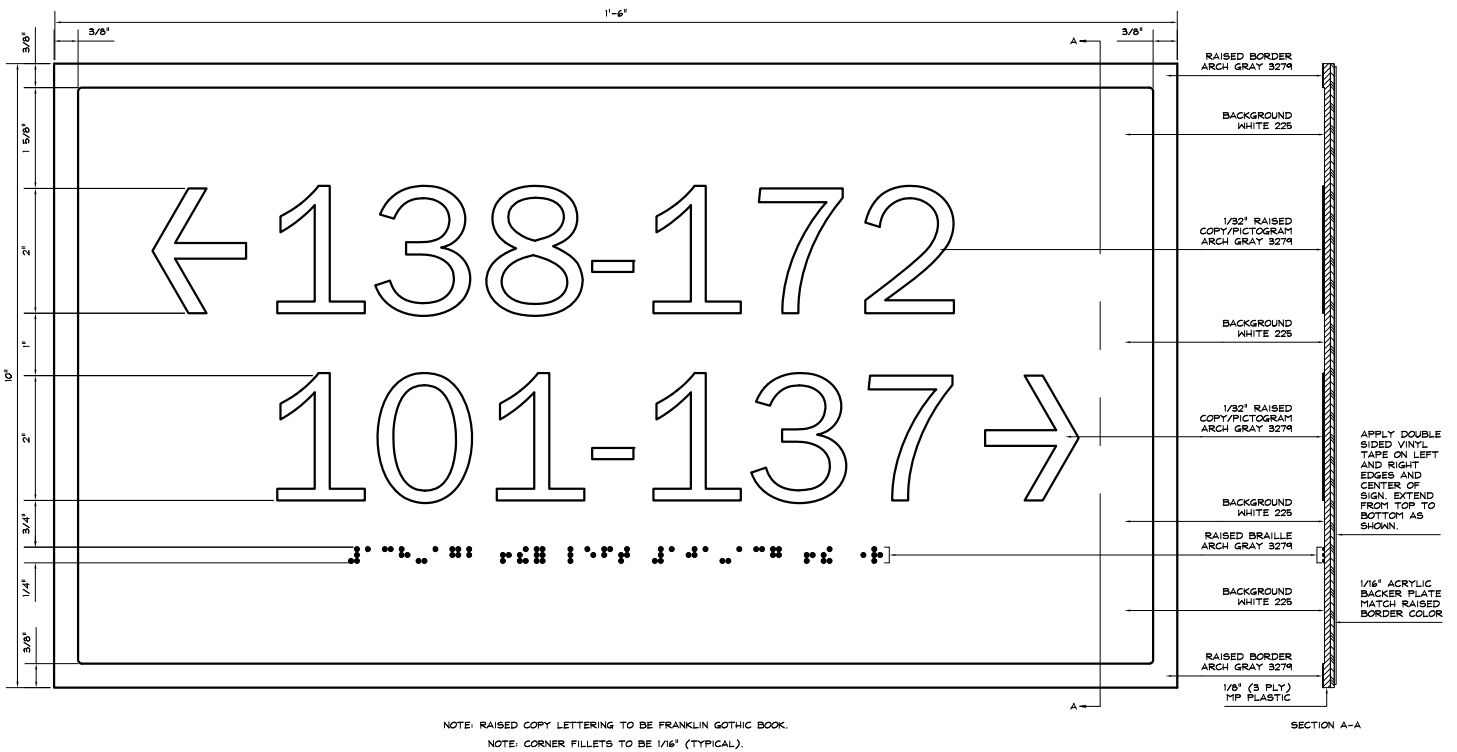
INTERIOR PANEL SIGN
TYPE: A7

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0.325 x SCALE

INTERIOR PANEL SIGN
TYPE: A7

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BALLROOM A



0.7 x SCALE

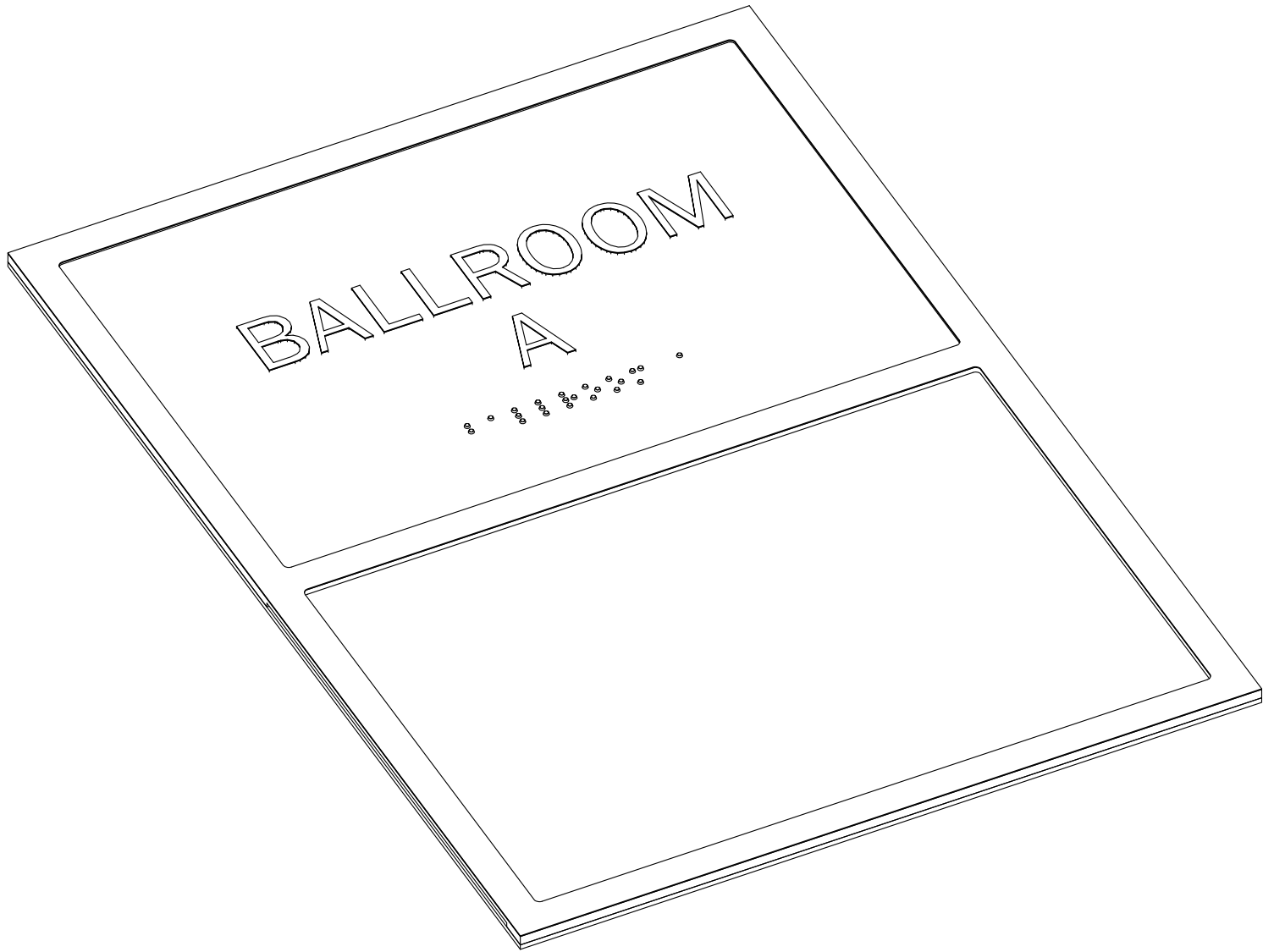
**INTERIOR PANEL SIGN
TYPE: A8**

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A8-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009



0.6 x SCALE

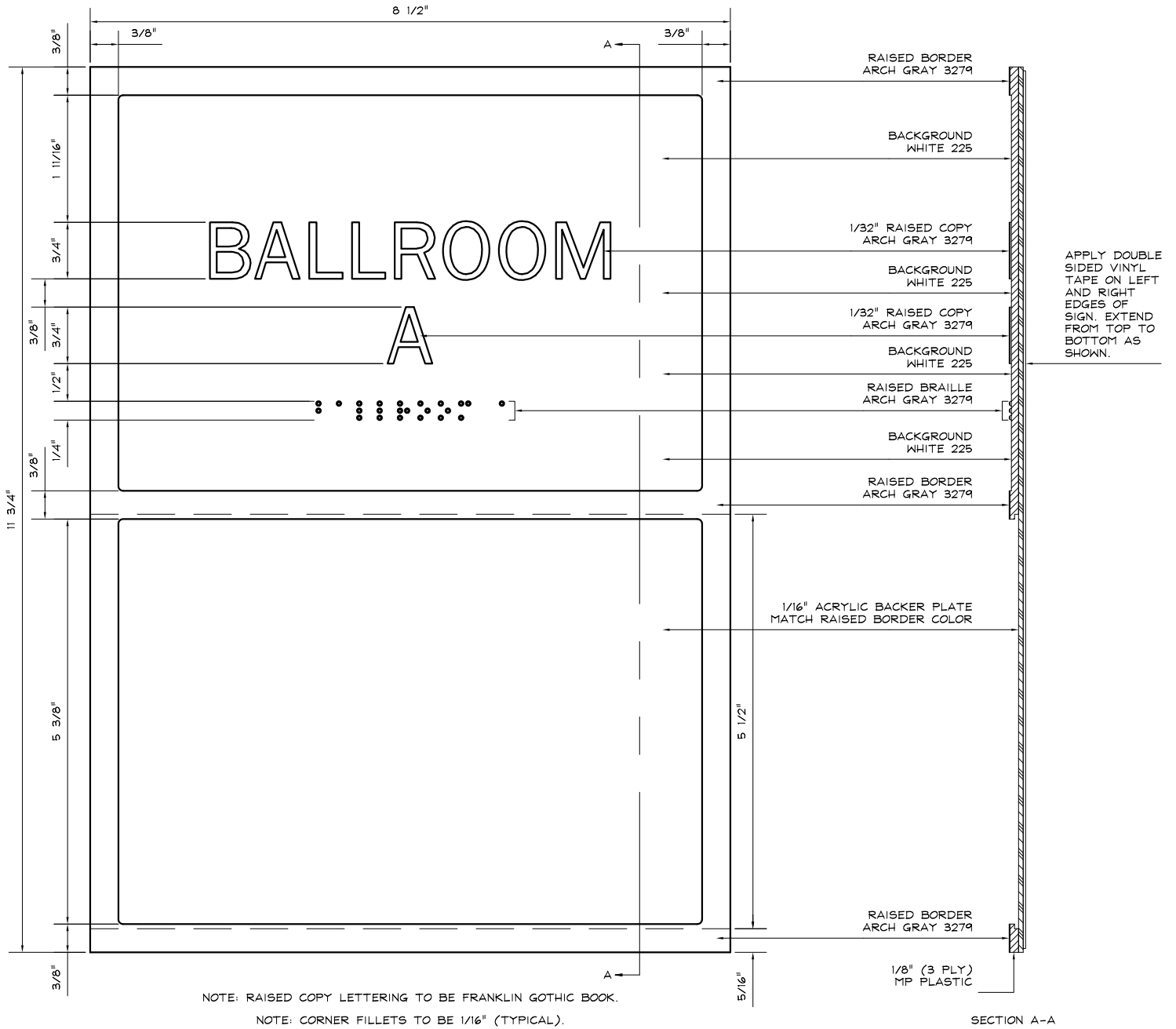
**INTERIOR PANEL SIGN
TYPE: A8**

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A8-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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0.5 x SCALE

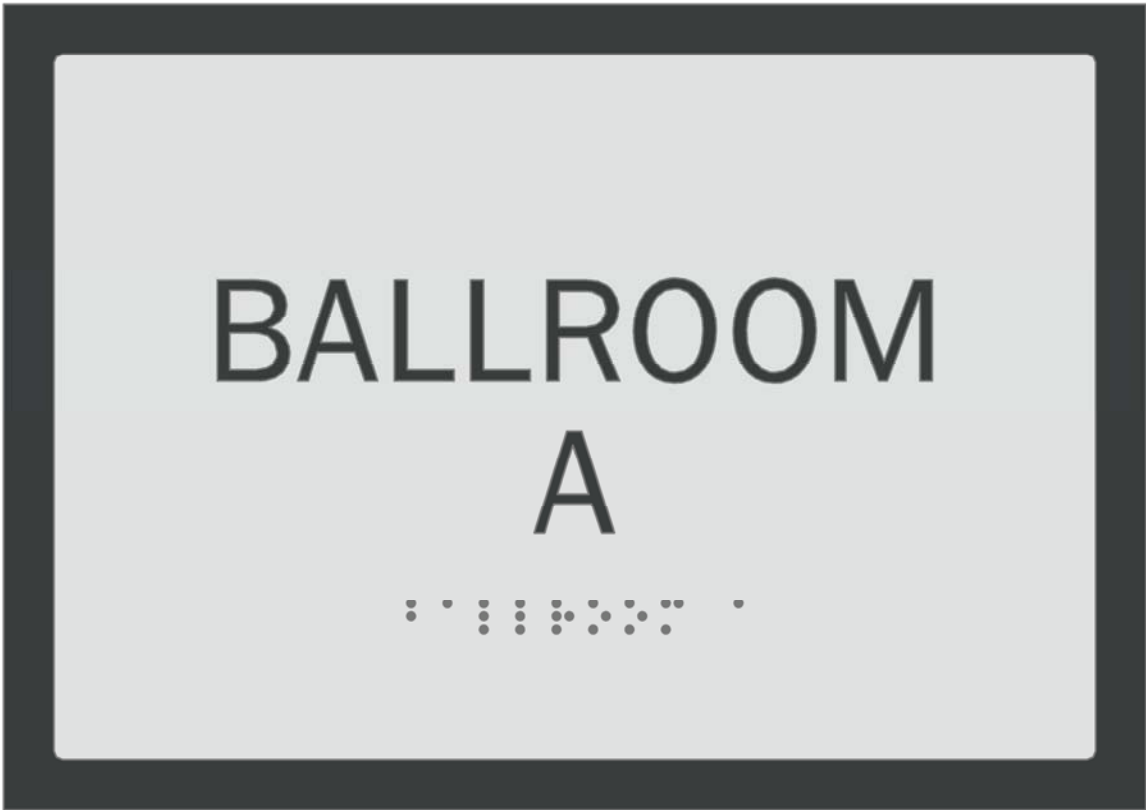
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TYPE: A8**

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A8-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.7 x SCALE

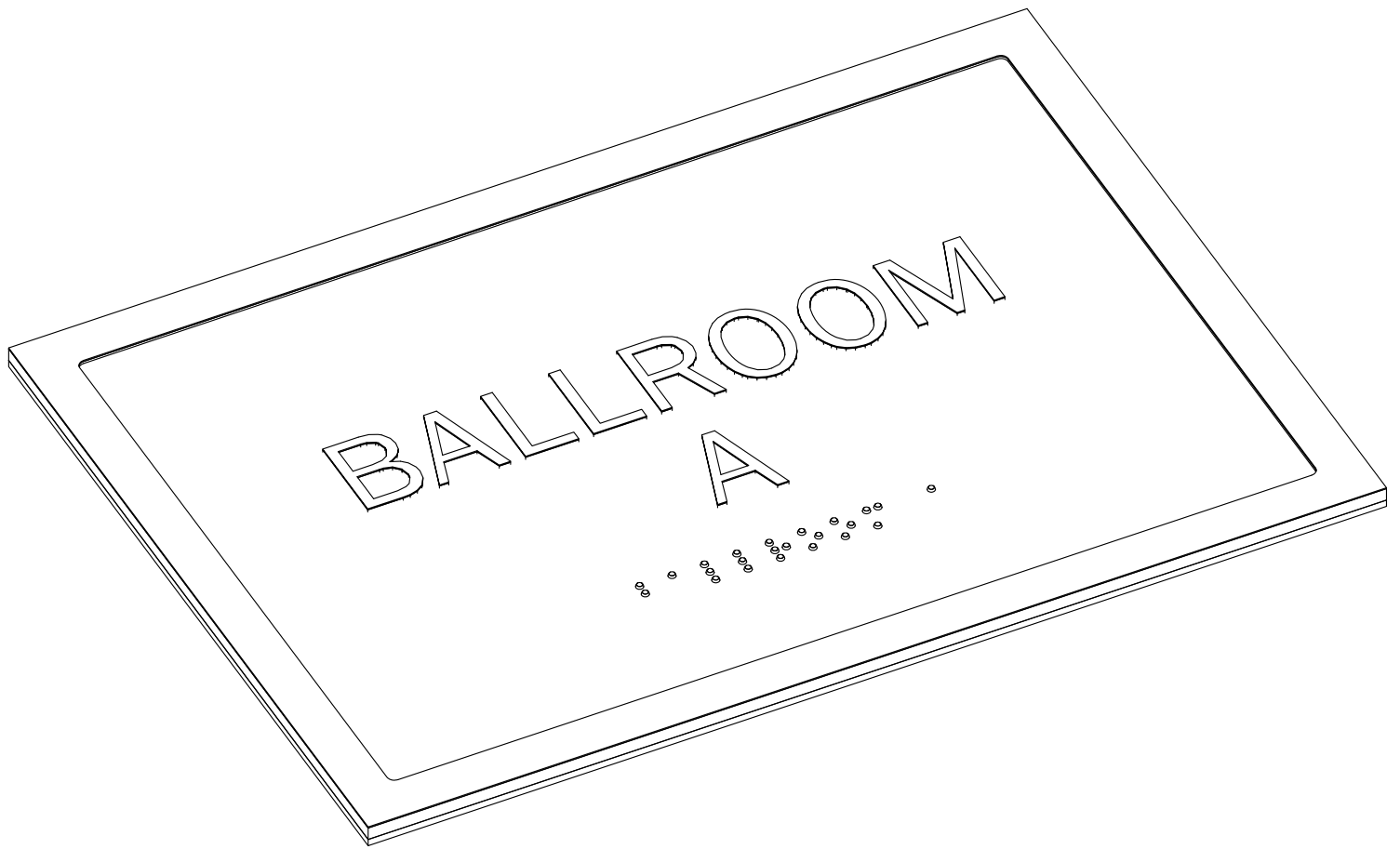
INTERIOR PANEL SIGN
TYPE: A9

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DATE

A9-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009



0.75 x SCALE

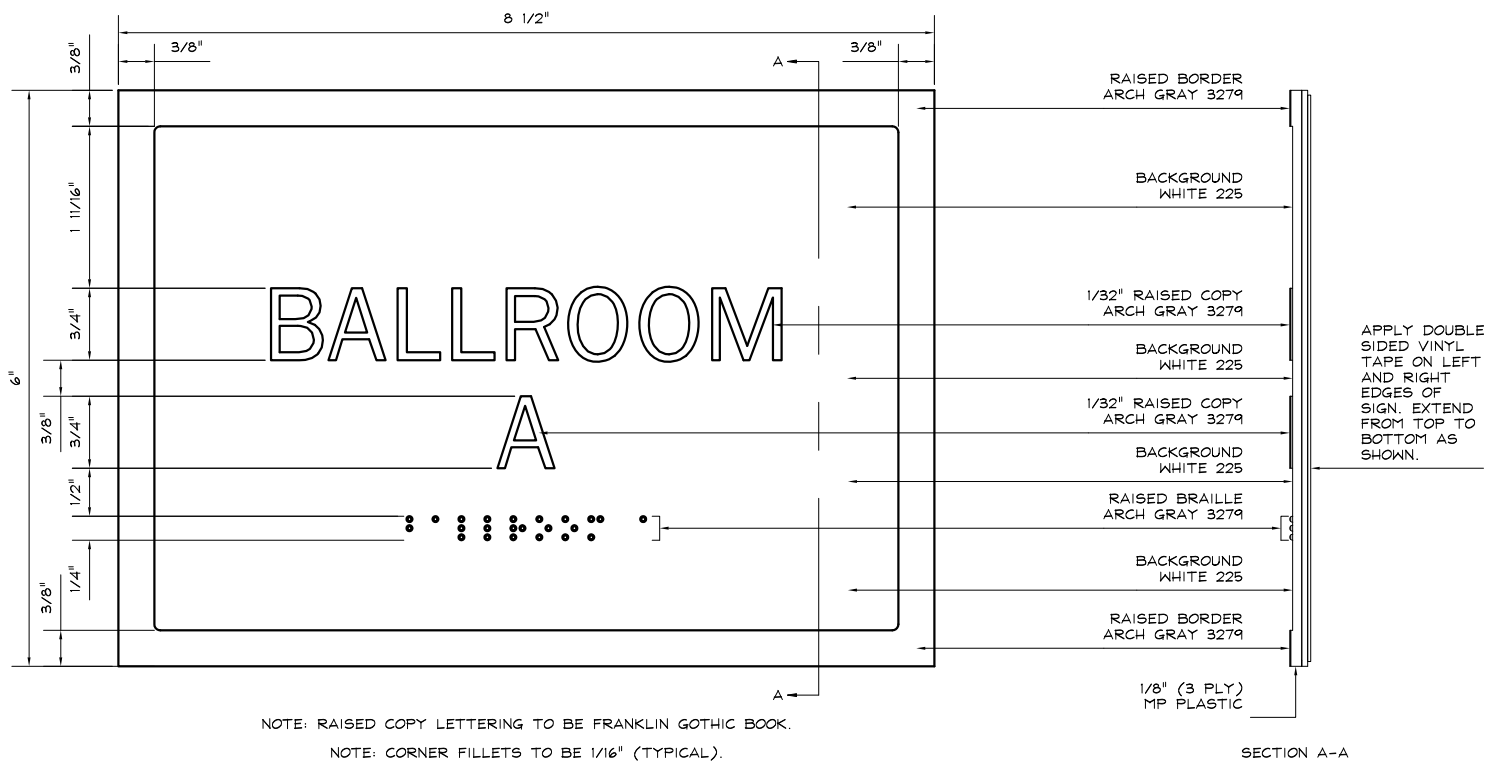
**INTERIOR PANEL SIGN
TYPE: A9**

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0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: A9

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0.7 x SCALE

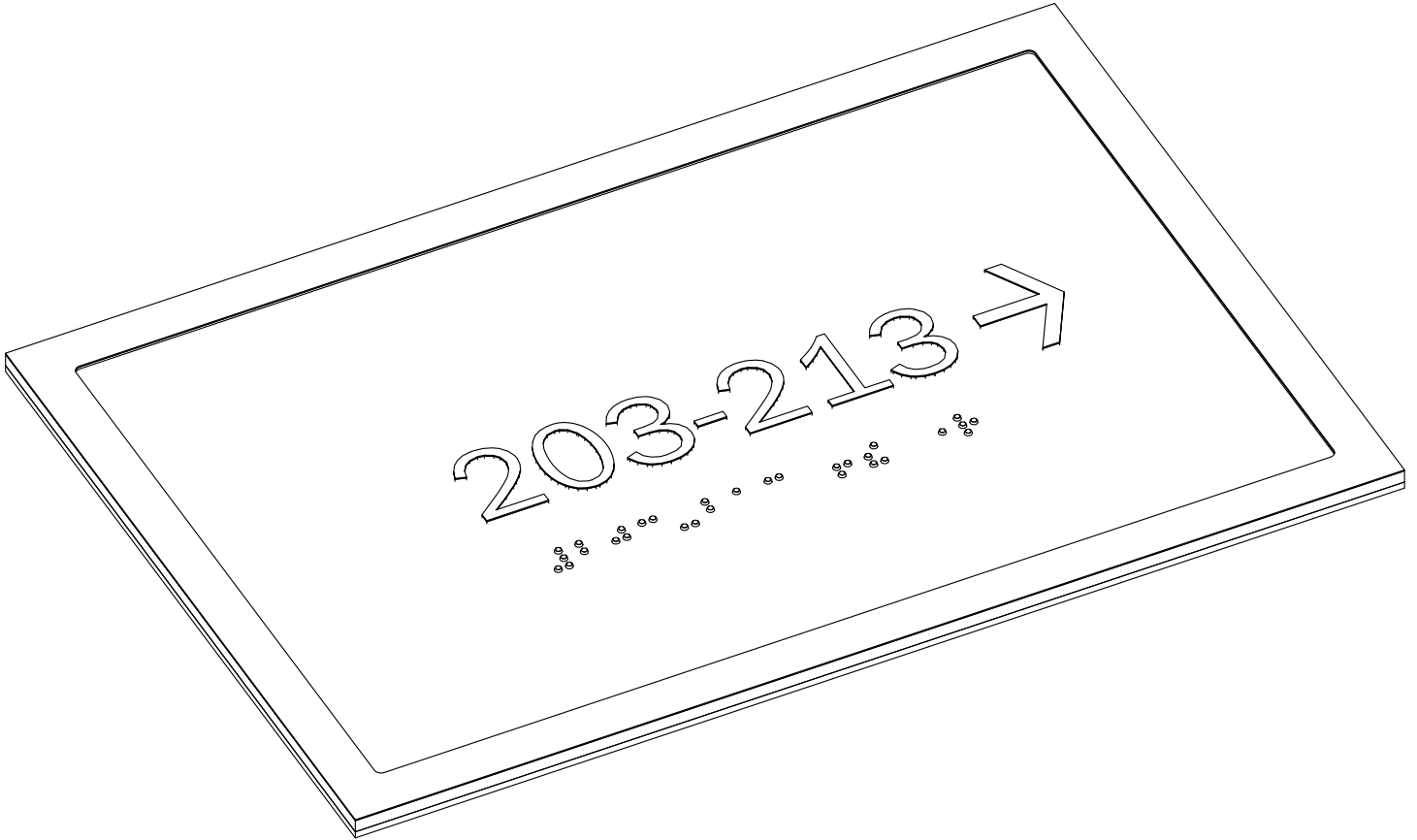
**INTERIOR PANEL SIGN
TYPE: A10**

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A10-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009



0.7 x SCALE

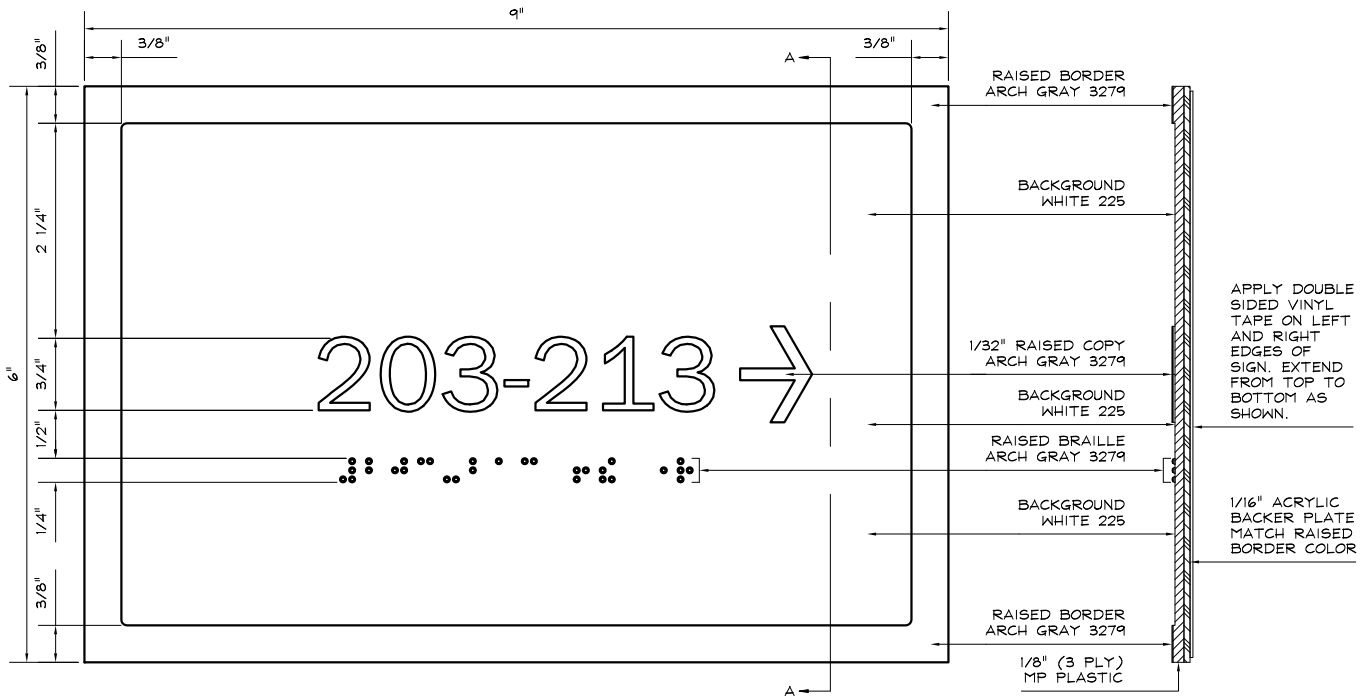
**INTERIOR PANEL SIGN
TYPE: A10**

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DATE

A10-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: A10

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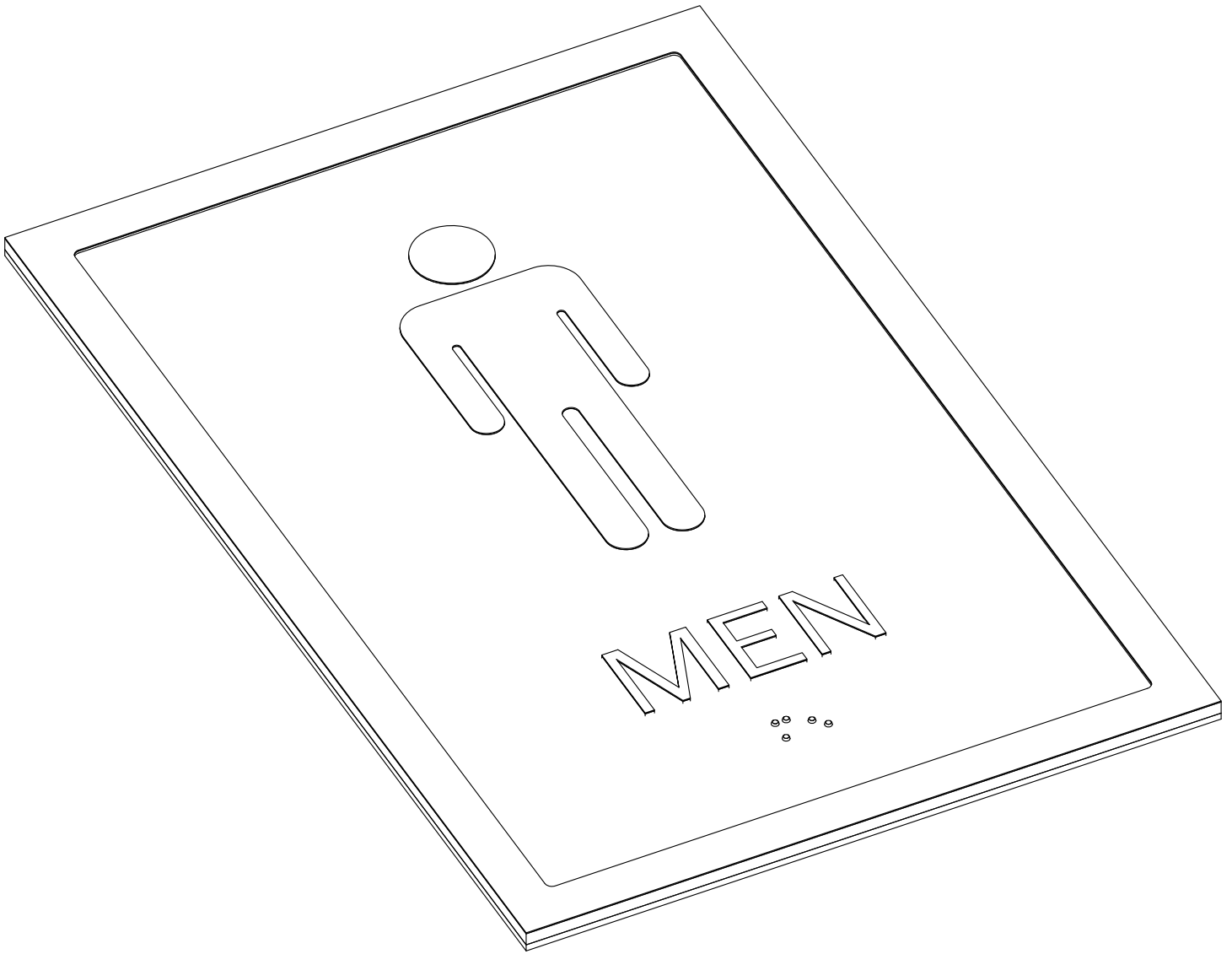
INTERIOR PANEL SIGN
TYPE: B1

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0.8 x SCALE

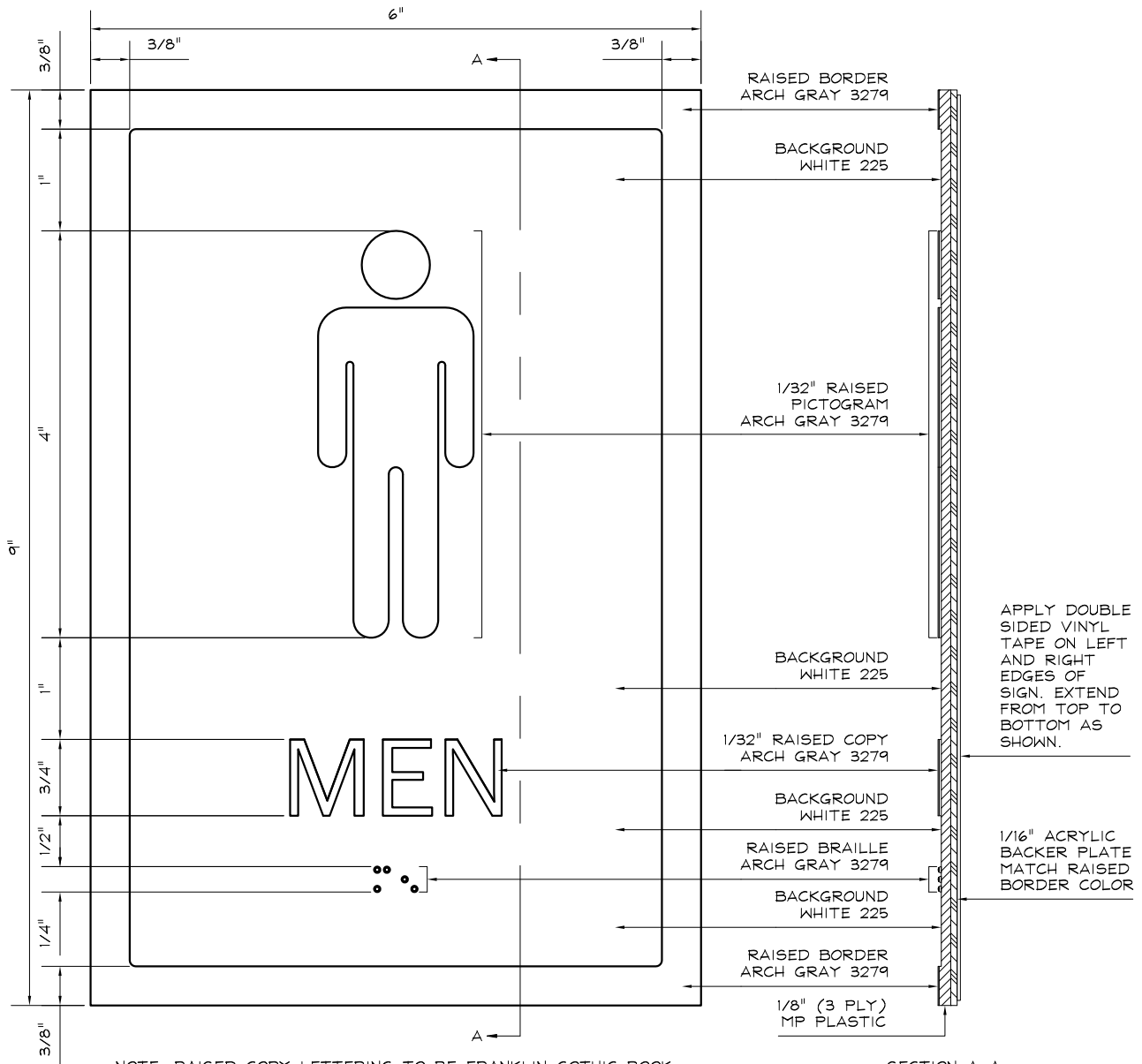
**INTERIOR PANEL SIGN
TYPE: B1**

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2007
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B1-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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0.6 x SCALE

INTERIOR PANEL SIGN
TYPE: B1

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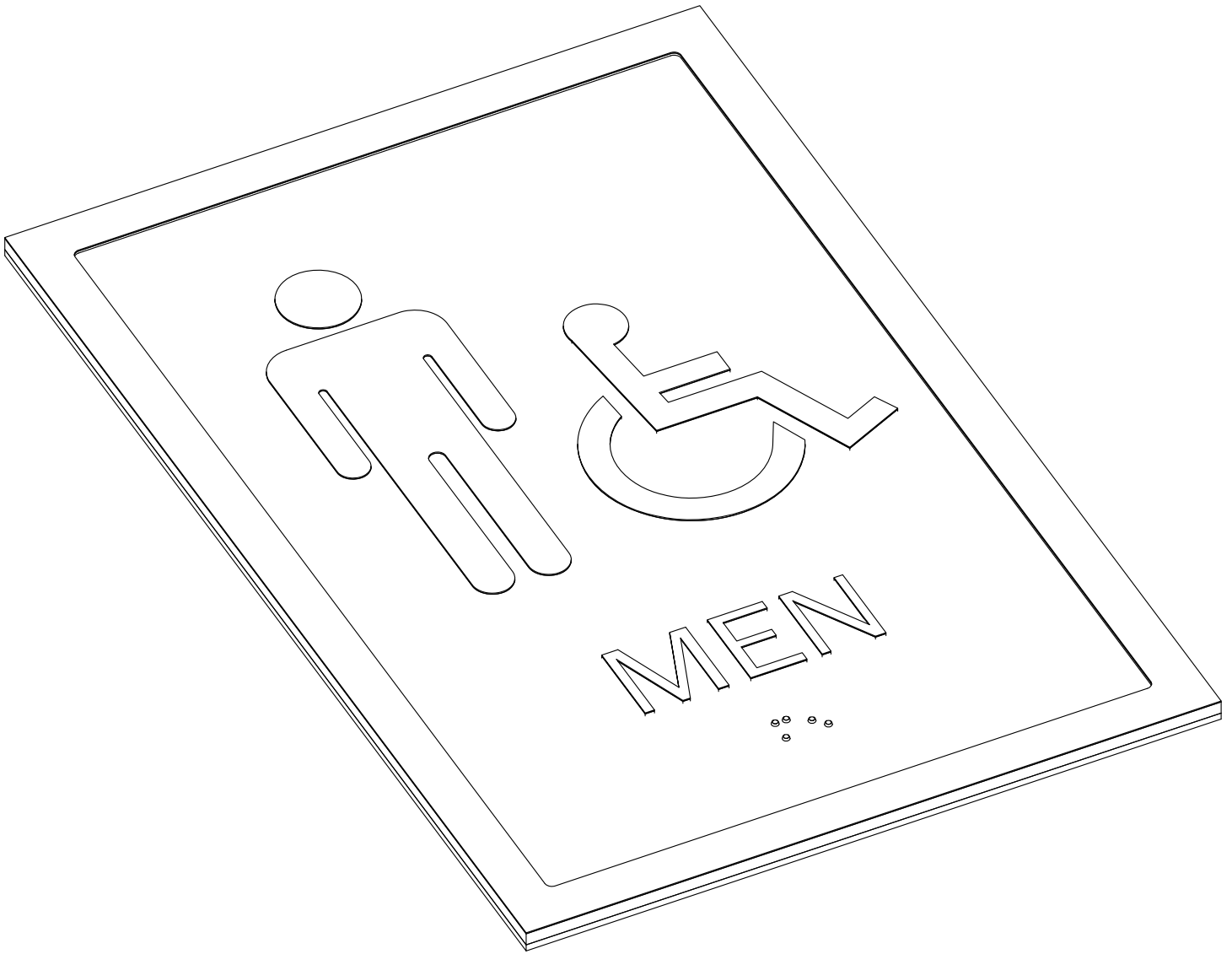
INTERIOR PANEL SIGN
TYPE: B2

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0.8 X SCALE

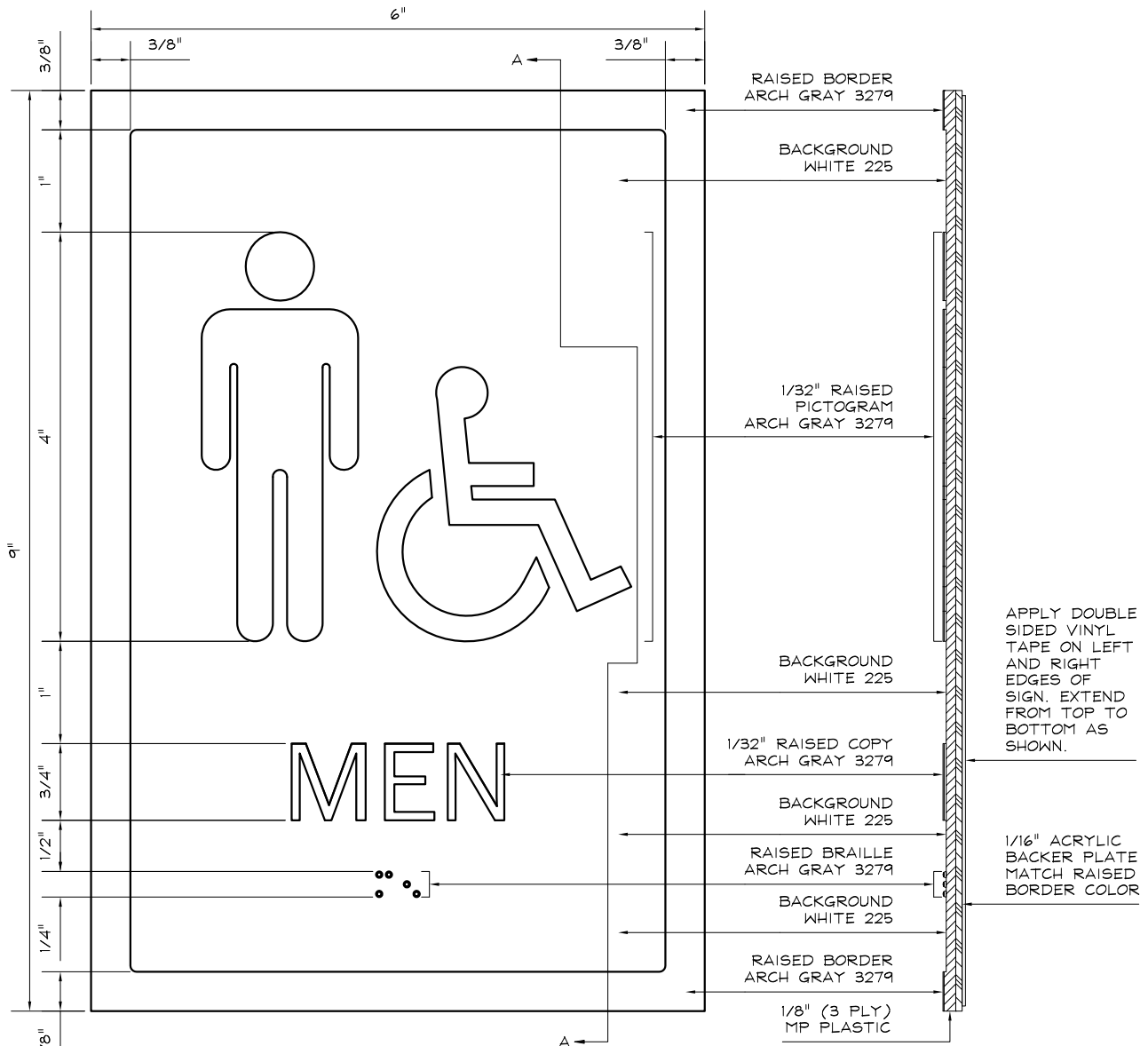
**INTERIOR PANEL SIGN
TYPE: B2**

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0.6 x SCALE

**INTERIOR PANEL SIGN
TYPE: B2**

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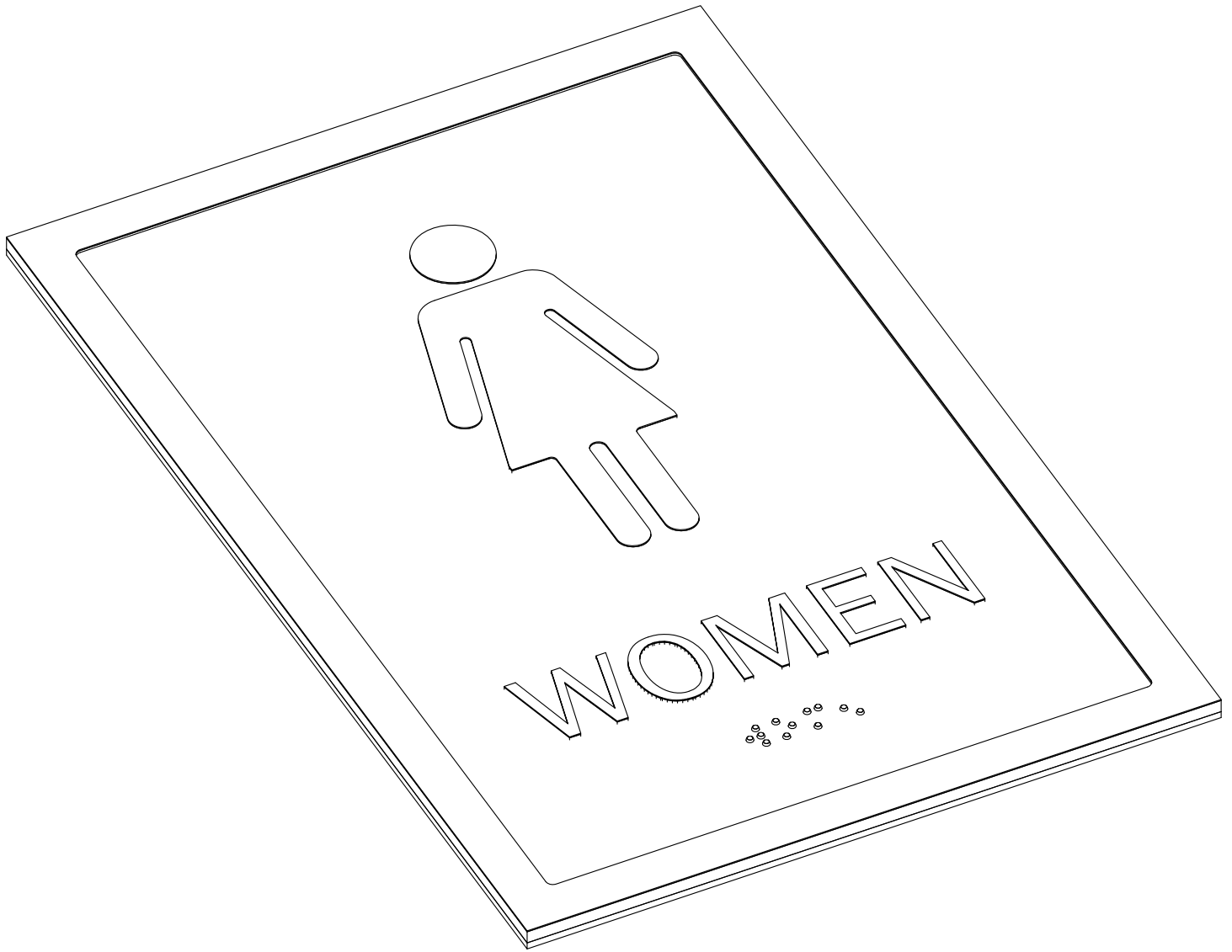
INTERIOR PANEL SIGN
TYPE: B3

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

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0.8 x SCALE

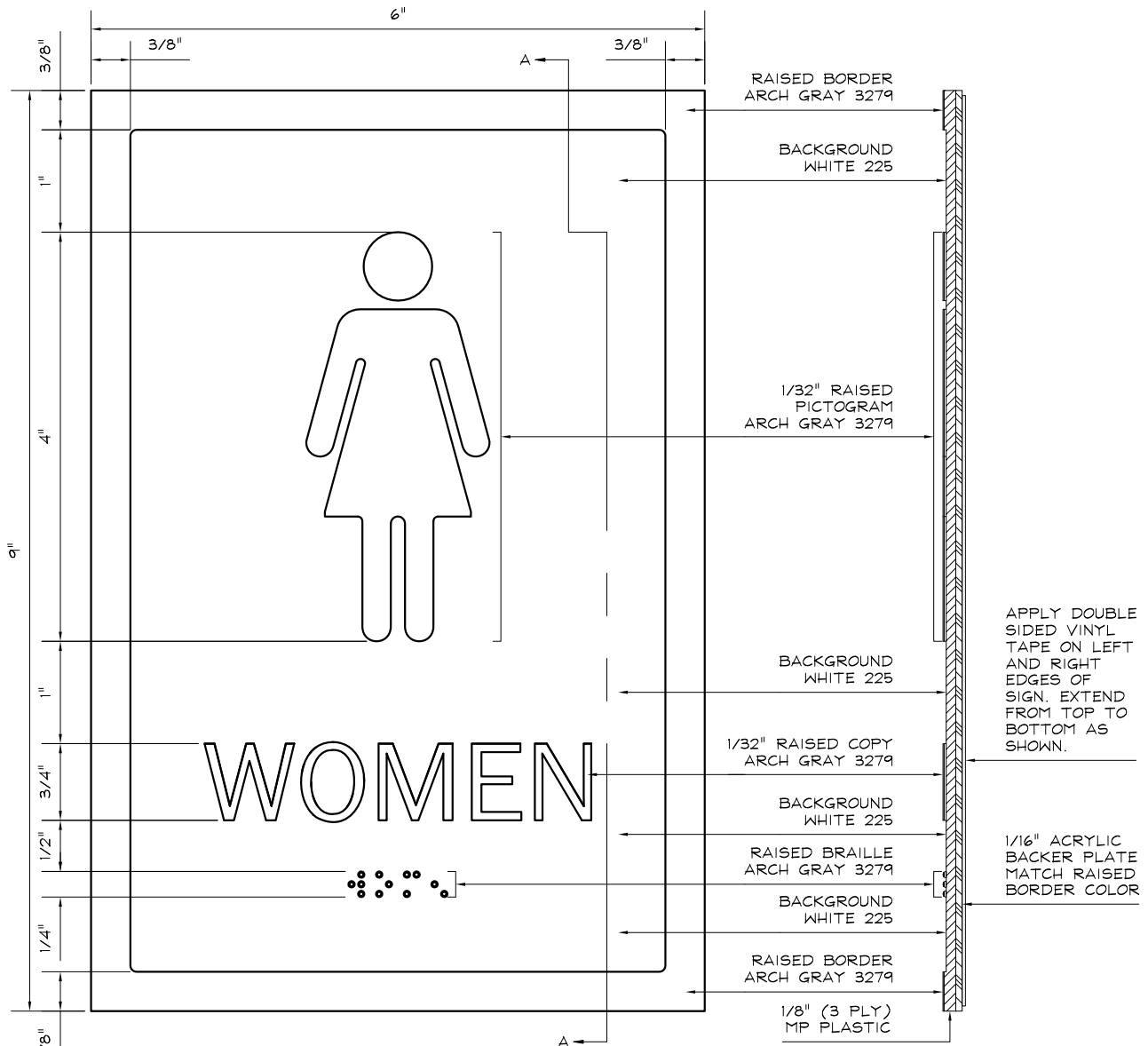
**INTERIOR PANEL SIGN
TYPE: B3**

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B3-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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0.6 x SCALE

INTERIOR PANEL SIGN
TYPE: B3

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B3-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



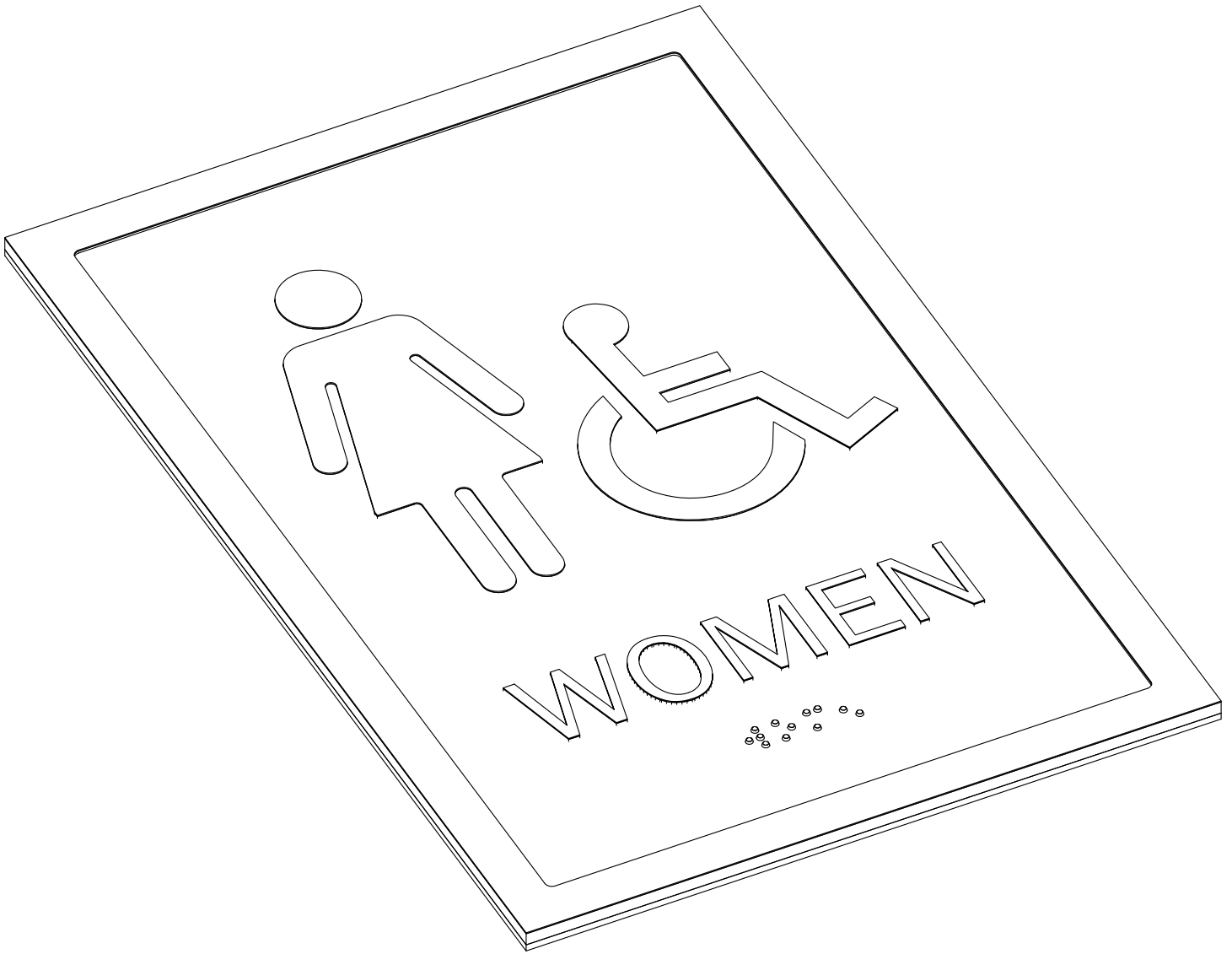
INTERIOR PANEL SIGN
TYPE: B4

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B4-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009

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0.8 x SCALE

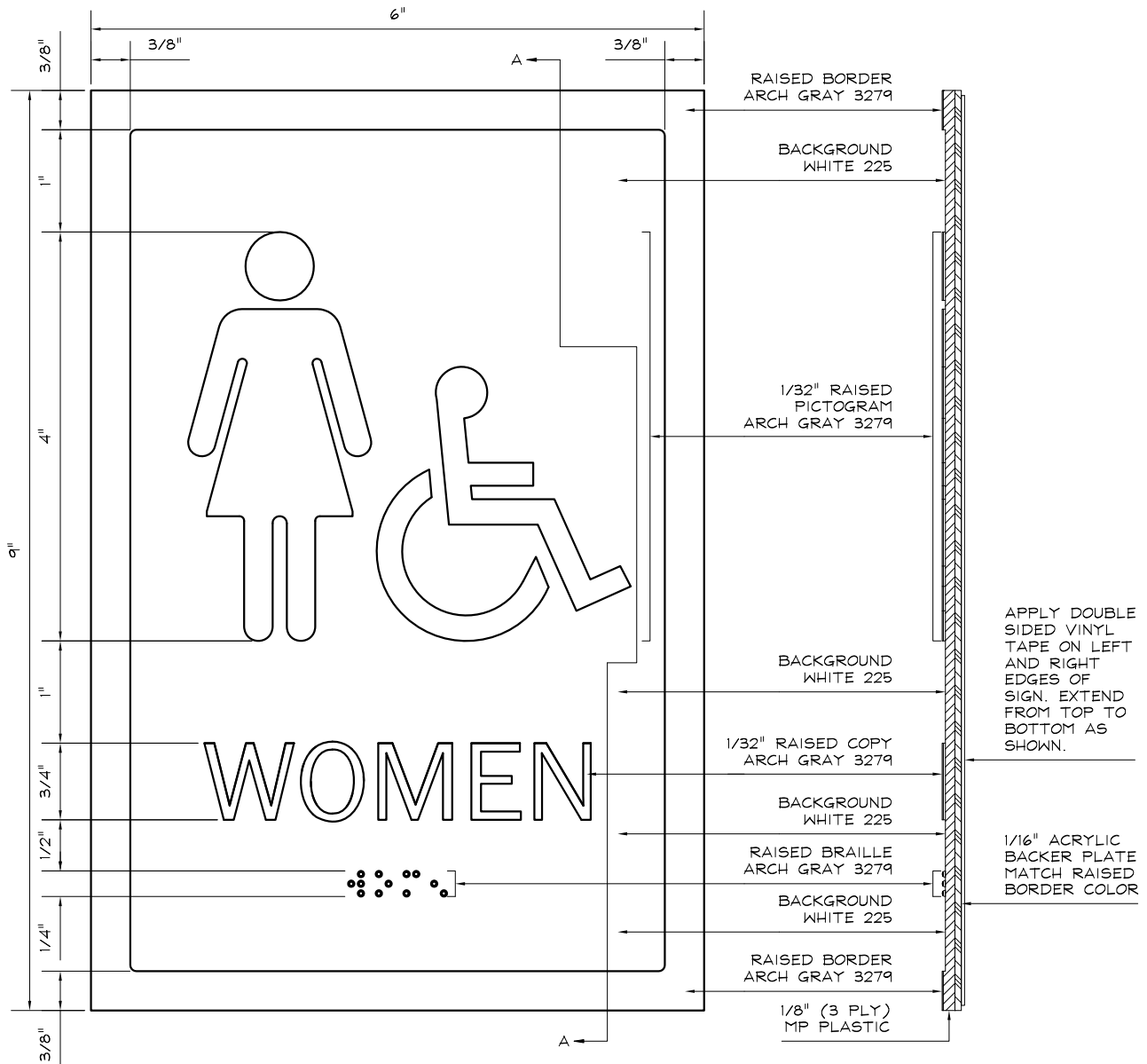
**INTERIOR PANEL SIGN
TYPE: B4**

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B4-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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0.6 x SCALE

INTERIOR PANEL SIGN
TYPE: B4

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RESTROOM



.85 x SCALE

INTERIOR PANEL SIGN
TYPE: B5

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0.6 x SCALE

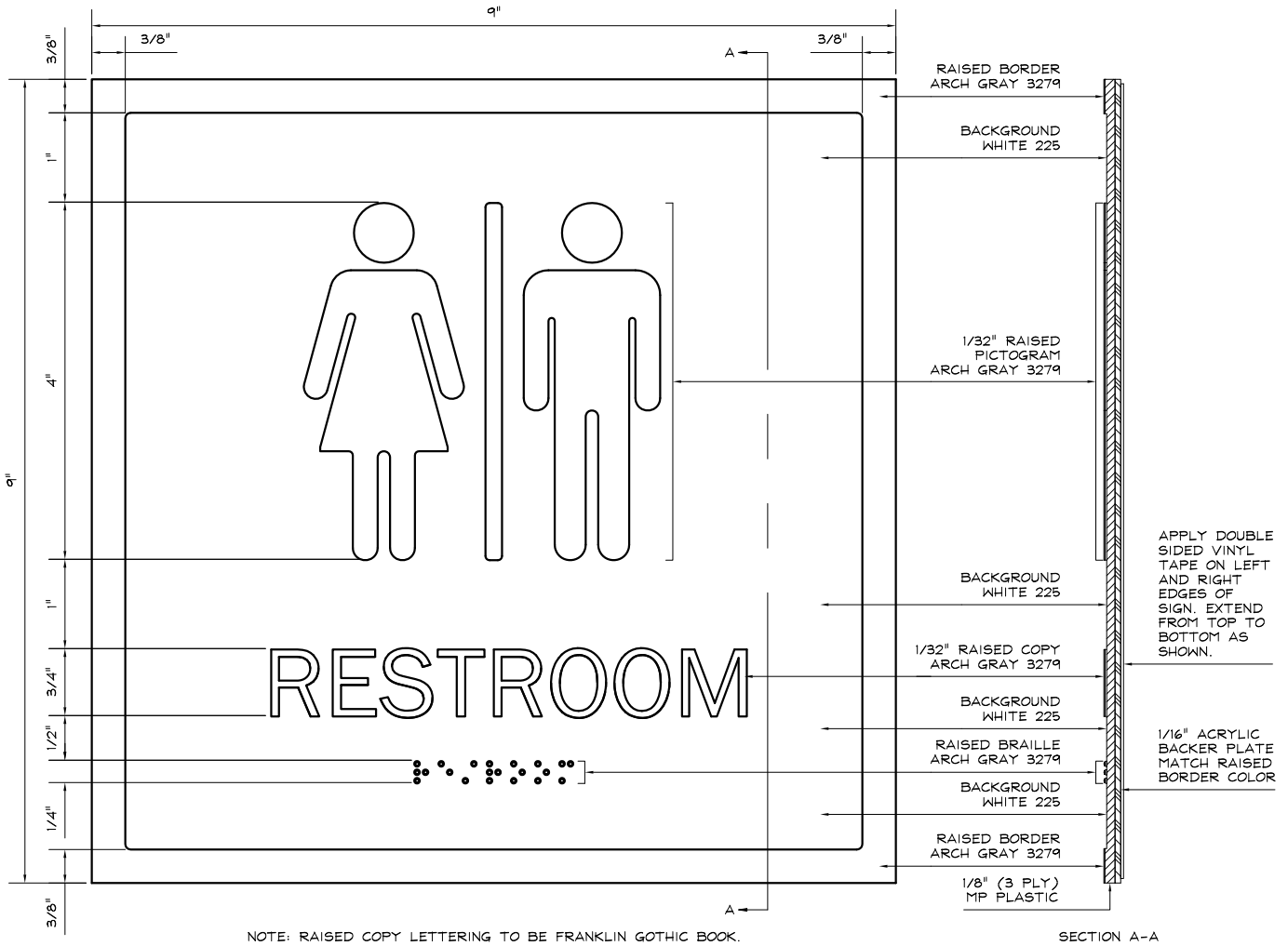
**INTERIOR PANEL SIGN
TYPE: B5**

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B5-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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0.5 x SCALE

**INTERIOR PANEL SIGN
TYPE: B5**

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RESTROOM



INTERIOR PANEL SIGN
TYPE: B6

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.85 x SCALE

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0.6 x SCALE

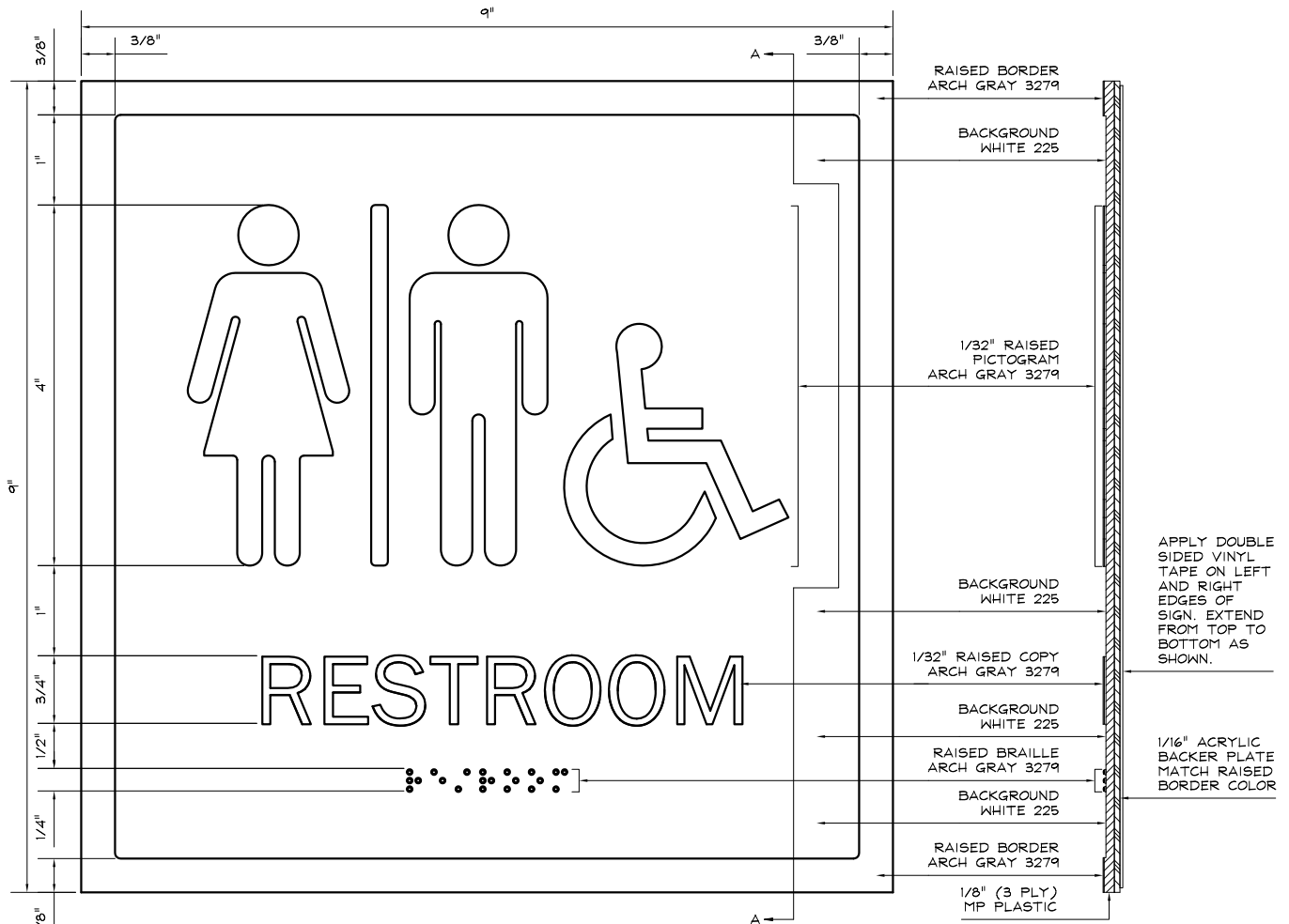
**INTERIOR PANEL SIGN
TYPE: B6**

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NOTE: CORNER FILLETS TO BE 1/16" (TYPICAL).

SECTION A-A

0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: B6

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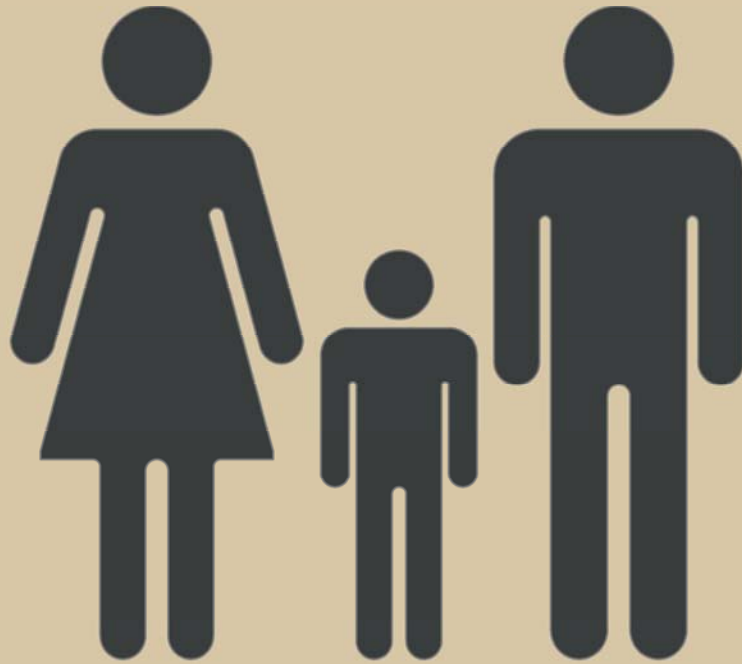
SPEC. SECTION

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RESTROOM



INTERIOR PANEL SIGN
TYPE: B7

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.85 x SCALE

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0.6 x SCALE

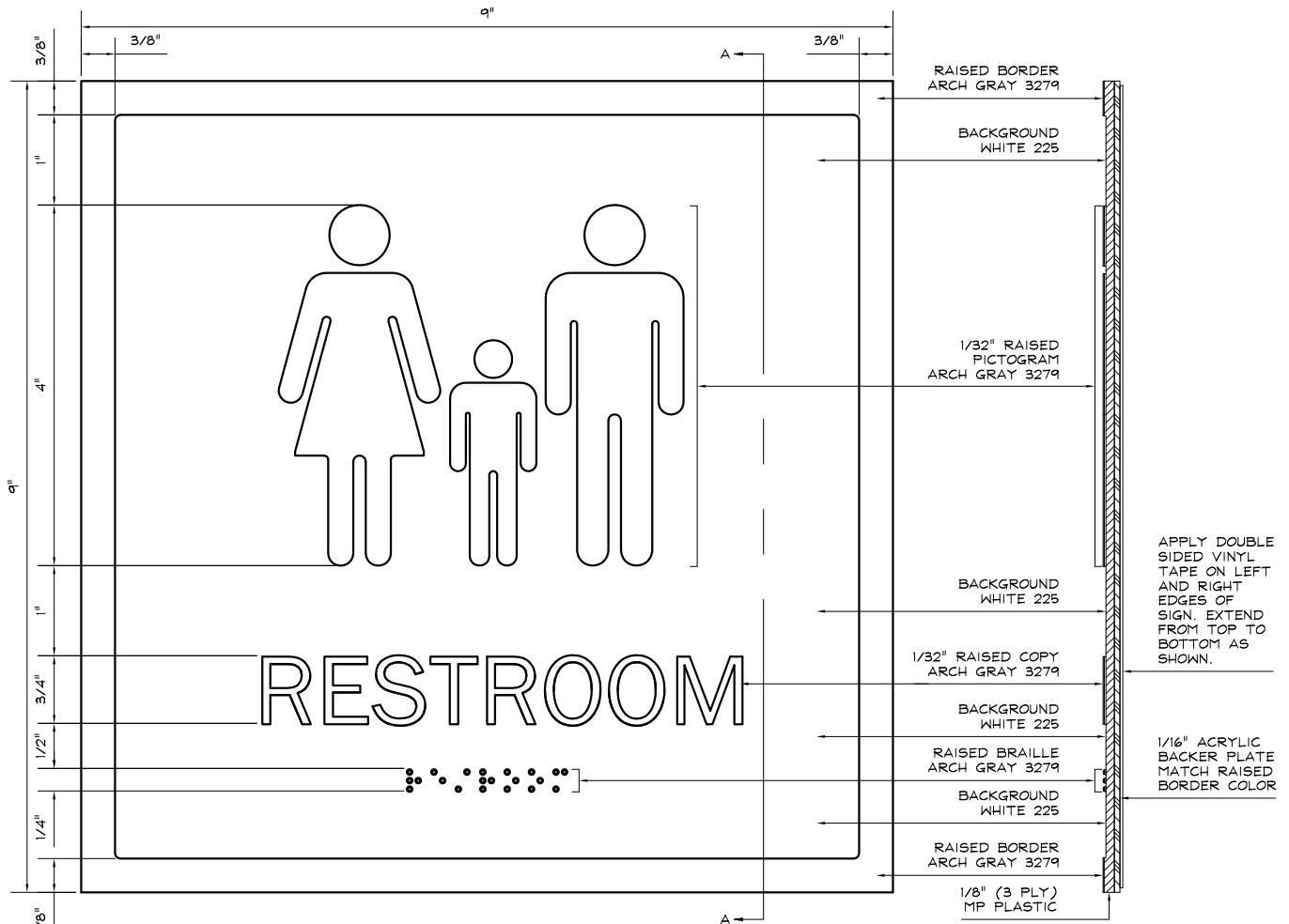
**INTERIOR PANEL SIGN
TYPE: B7**

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0.5 x SCALE

**INTERIOR PANEL SIGN
TYPE: B7**

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RESTROOM



INTERIOR PANEL SIGN
TYPE: B8

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.85 x SCALE

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0.6 x SCALE

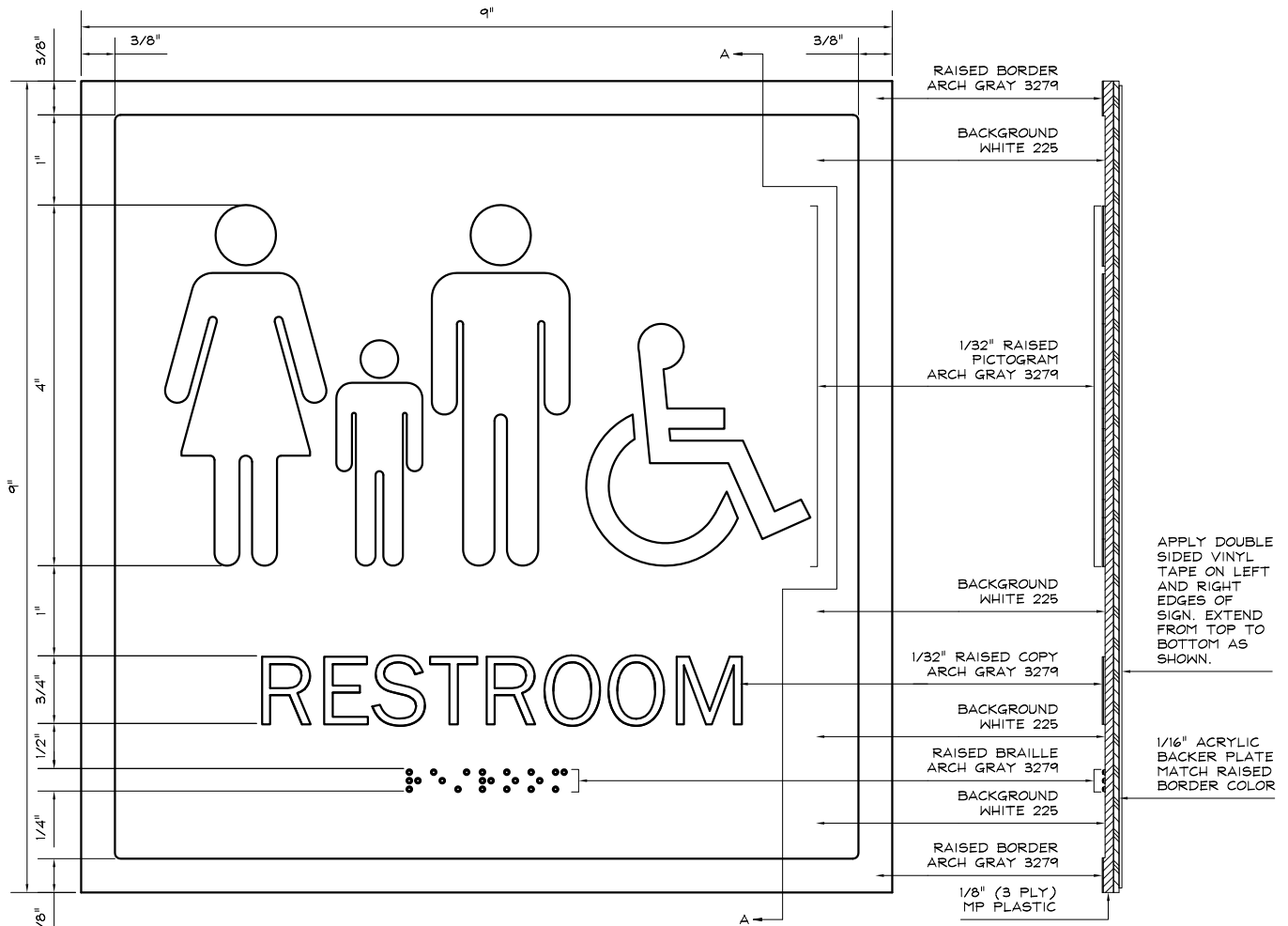
**INTERIOR PANEL SIGN
TYPE: B8**

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B8-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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NOTE: CORNER FILLETS TO BE 1/16" (TYPICAL).

SECTION A-A

0.5 x SCALE

**INTERIOR PANEL SIGN
TYPE: B8**

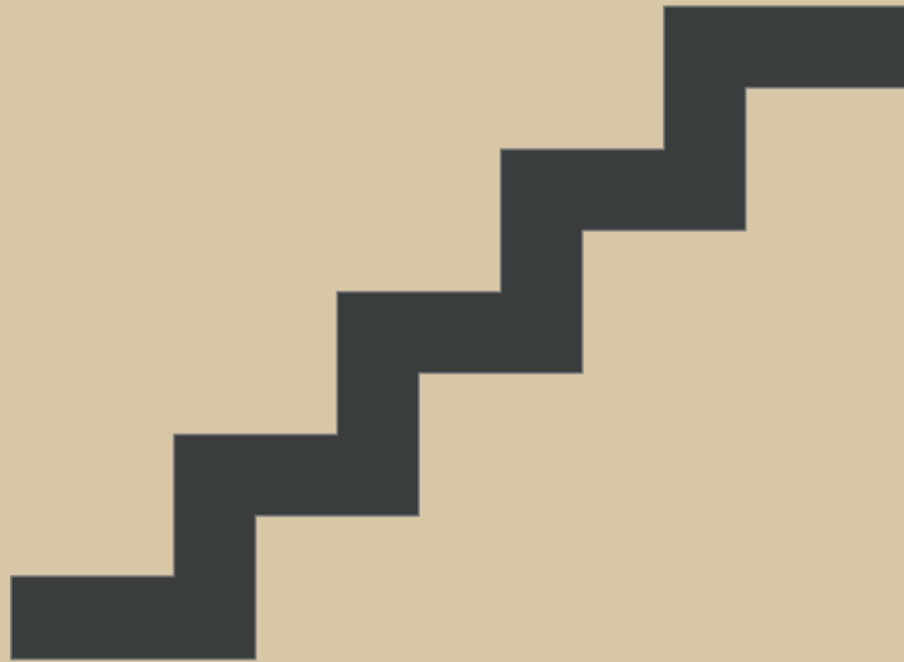
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STAIR S1



.85 x SCALE

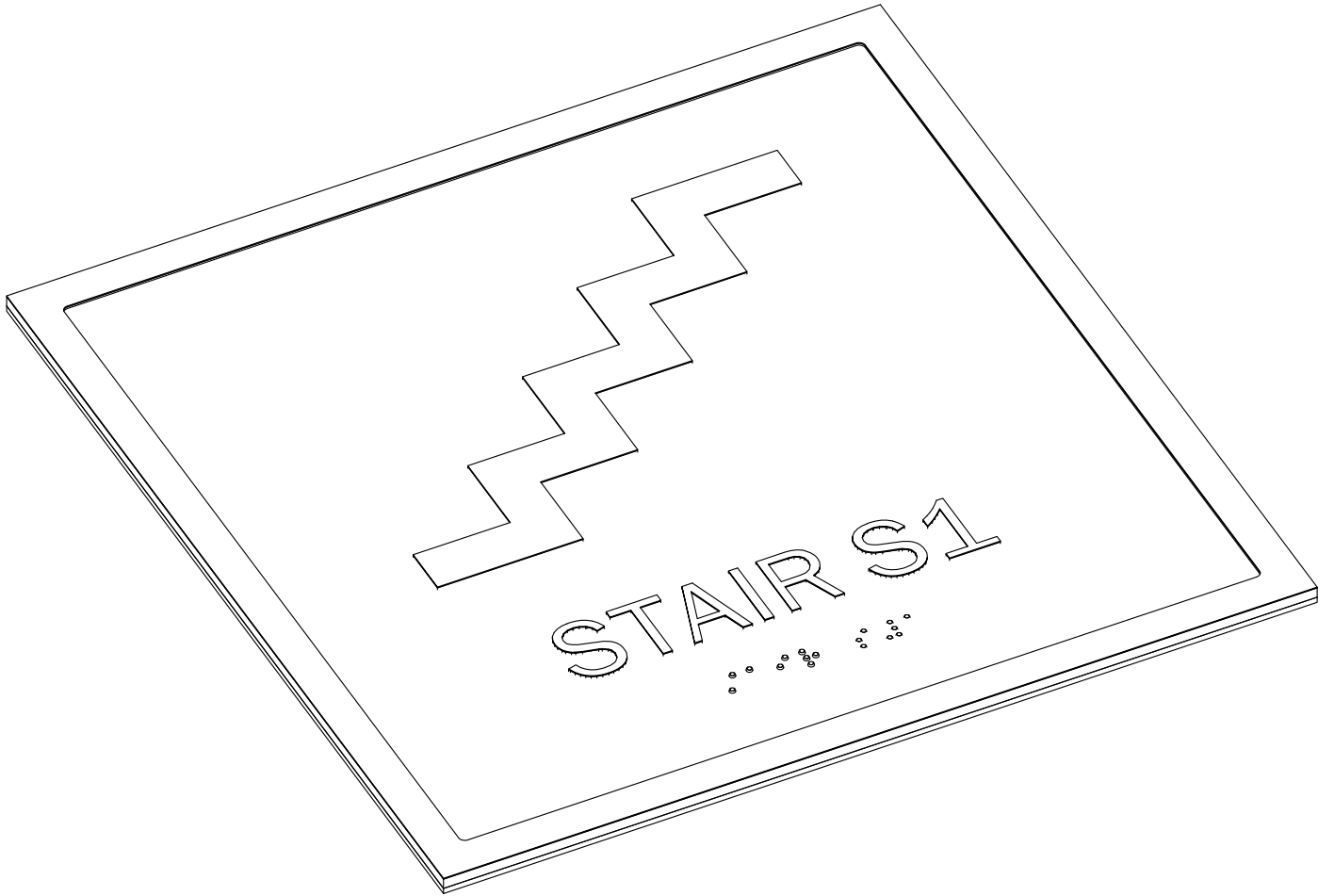
INTERIOR PANEL SIGN
TYPE: C1

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C1-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.6 x SCALE

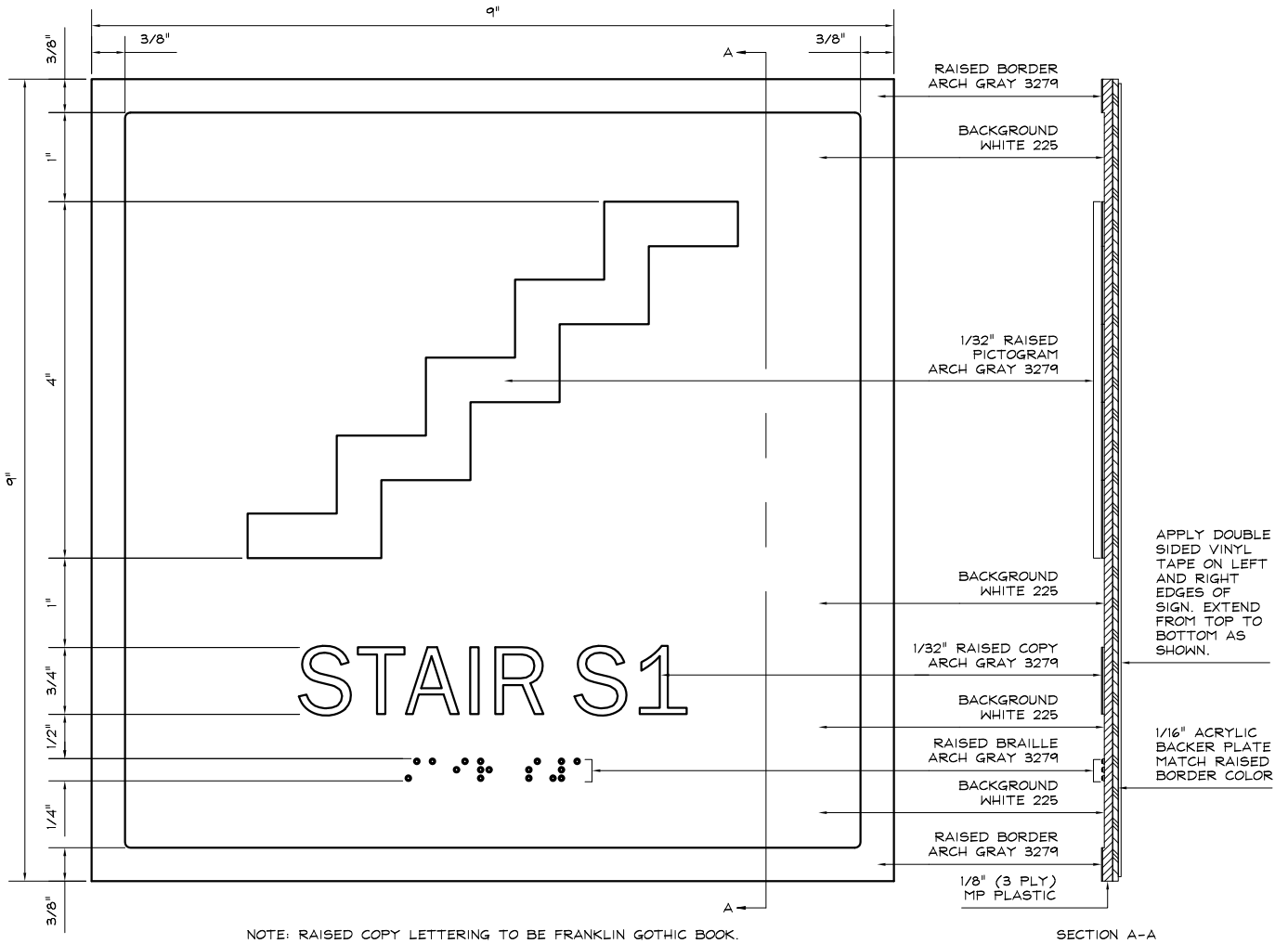
**INTERIOR PANEL SIGN
TYPE: C1**

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SPEC. SECTION

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C1-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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NOTE: CORNER FILLETS TO BE 1/16" (TYPICAL).

0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: C1

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STAIR LEVEL 1



.85 x SCALE

**INTERIOR PANEL SIGN
TYPE: C2**

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0.7 x SCALE

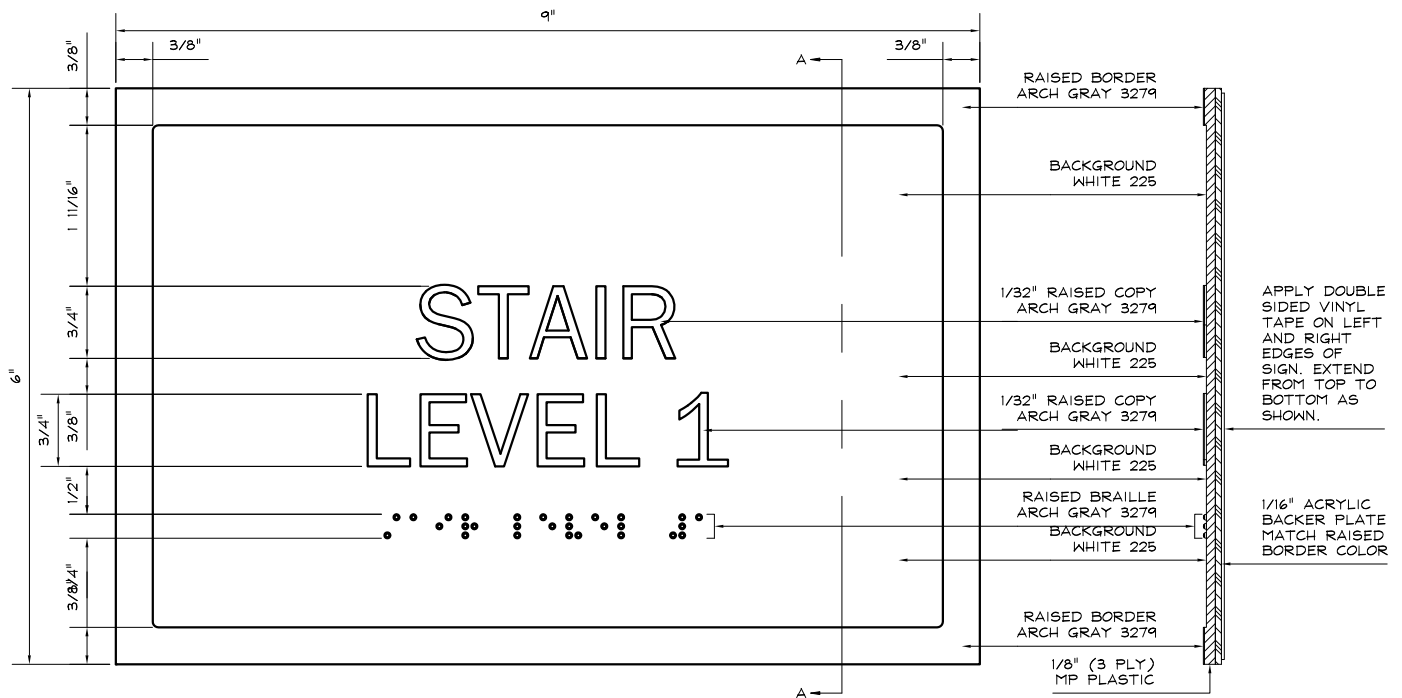
**INTERIOR PANEL SIGN
TYPE: C2**

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SECTION A-A

0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: C2

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LEVEL 1



.85 x SCALE

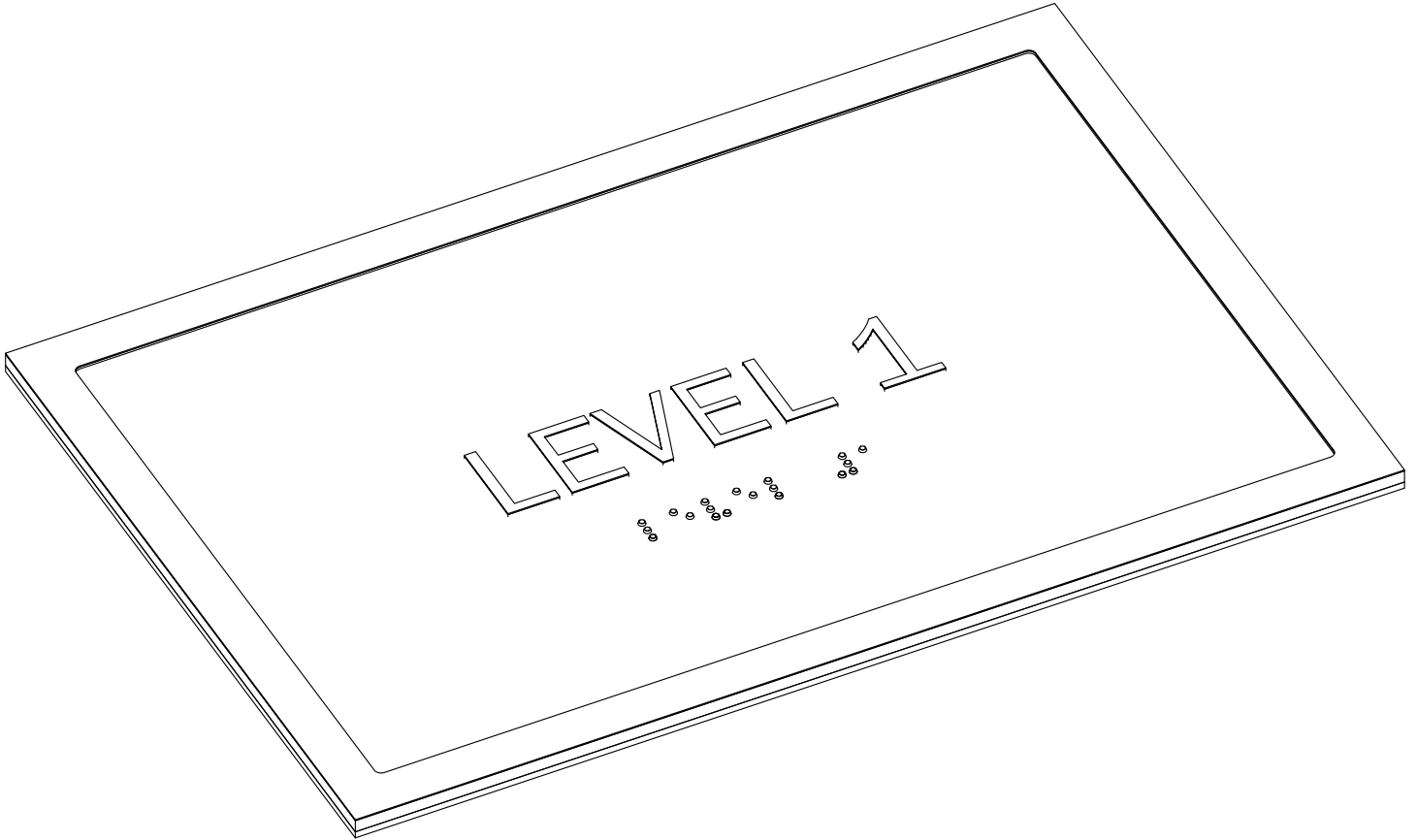
INTERIOR PANEL SIGN
TYPE: C3

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SPEC. SECTION

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DATE

C3-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.7 x SCALE

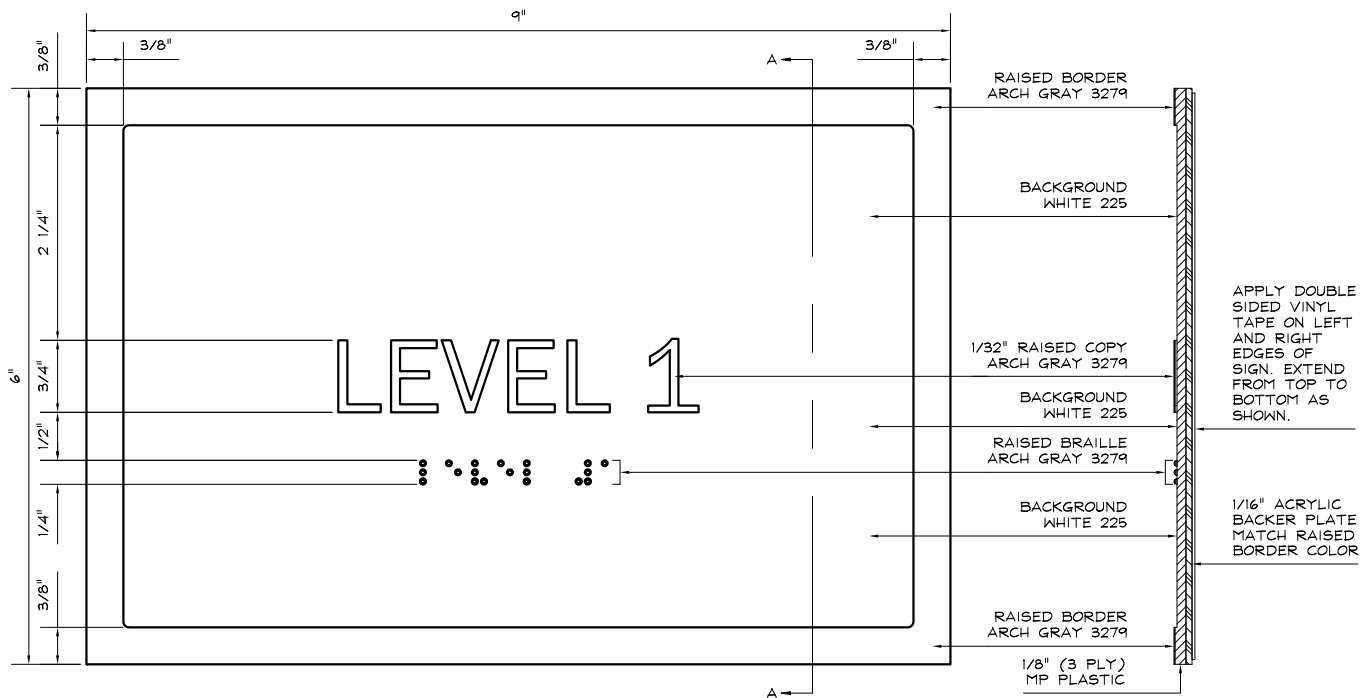
**INTERIOR PANEL SIGN
TYPE: C3**

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SPEC. SECTION

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

2007
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C3-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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 NOTE: CORNER FILLETS TO BE 1/16" (TYPICAL).

0.5 x SCALE

**INTERIOR PANEL SIGN
 TYPE: C3**

**10431
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C3-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

STAIR S1
(BASEMENT TO LEVEL 9)

3

PROCEED DOWN TO
LEVEL 1 TO EXIT BUILDING

FIREMAN'S ROOF ACCESS

STAIR S1
PROCEED DOWN TO
LEVEL 1 TO EXIT BUILDING
FIREMAN'S ROOF ACCESS

.5 x SCALE

INTERIOR PANEL SIGN
TYPE: C4

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DATE

C4-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.4 x SCALE

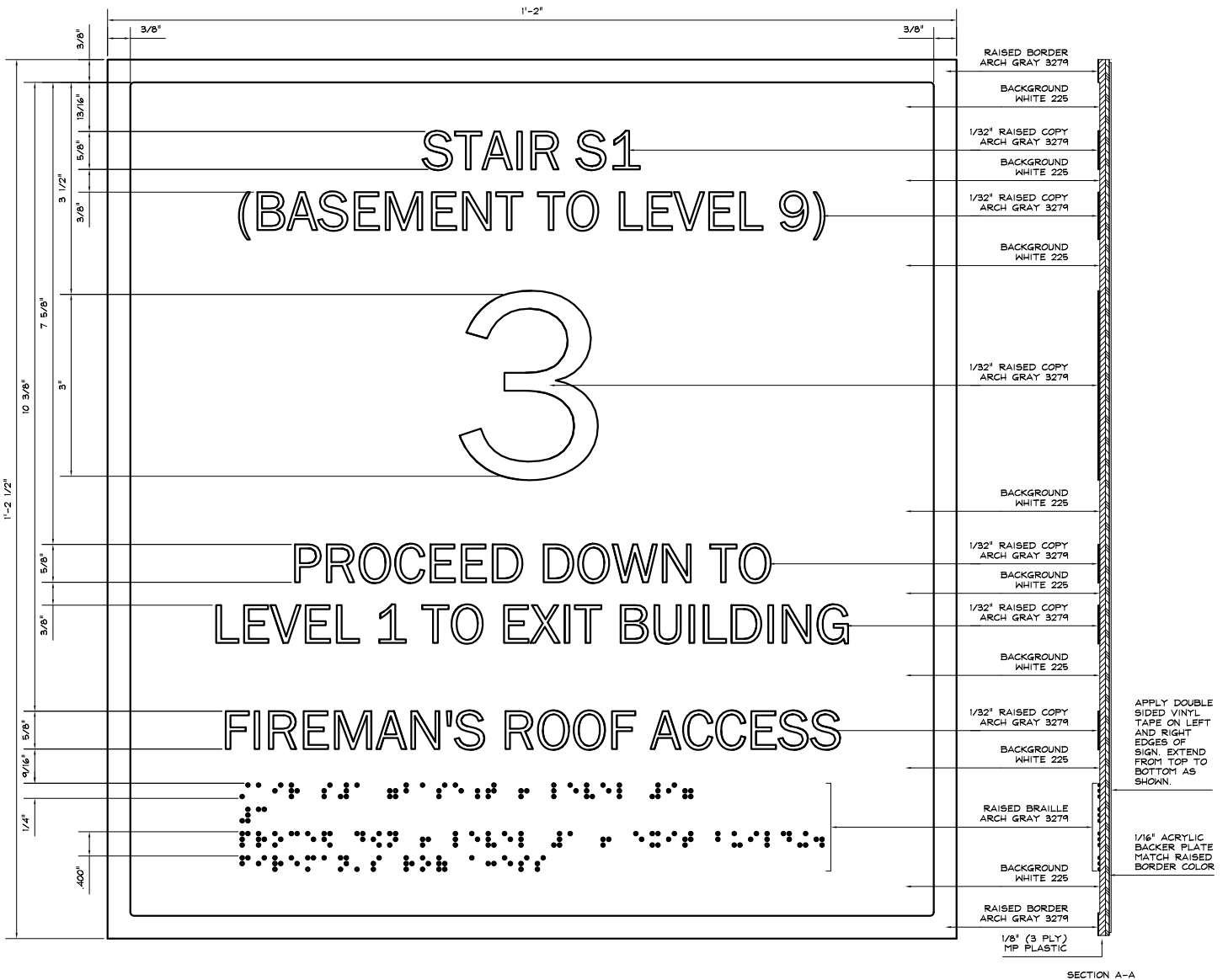
INTERIOR PANEL SIGN
TYPE: C4

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2007
DATE

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0.375 x SCALE

INTERIOR PANEL SIGN
TYPE: C4

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2007

C4-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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.6 x SCALE

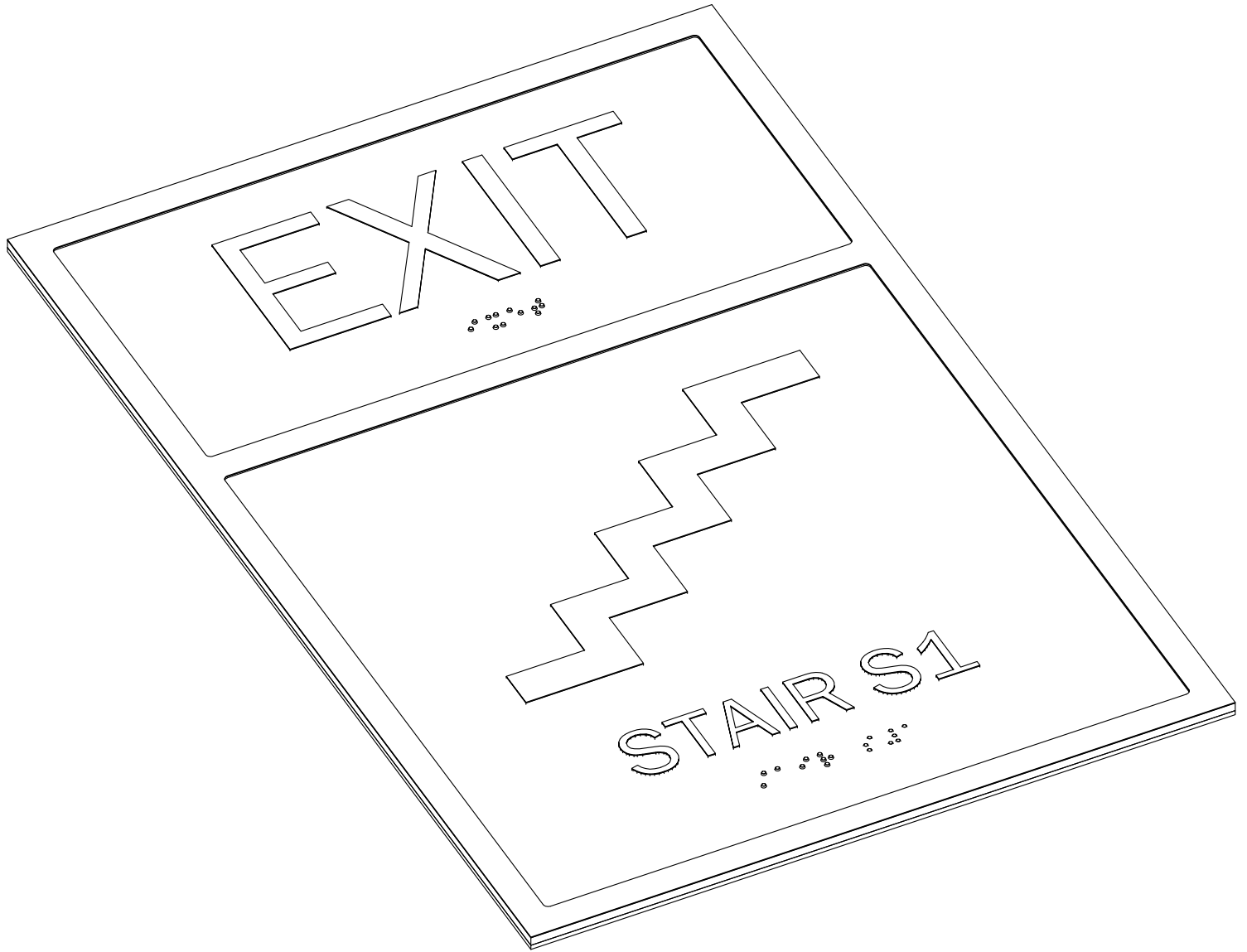
INTERIOR PANEL SIGN
TYPE: C5

10431
SPEC. SECTION

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2007
DATE

C5-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.55 x SCALE

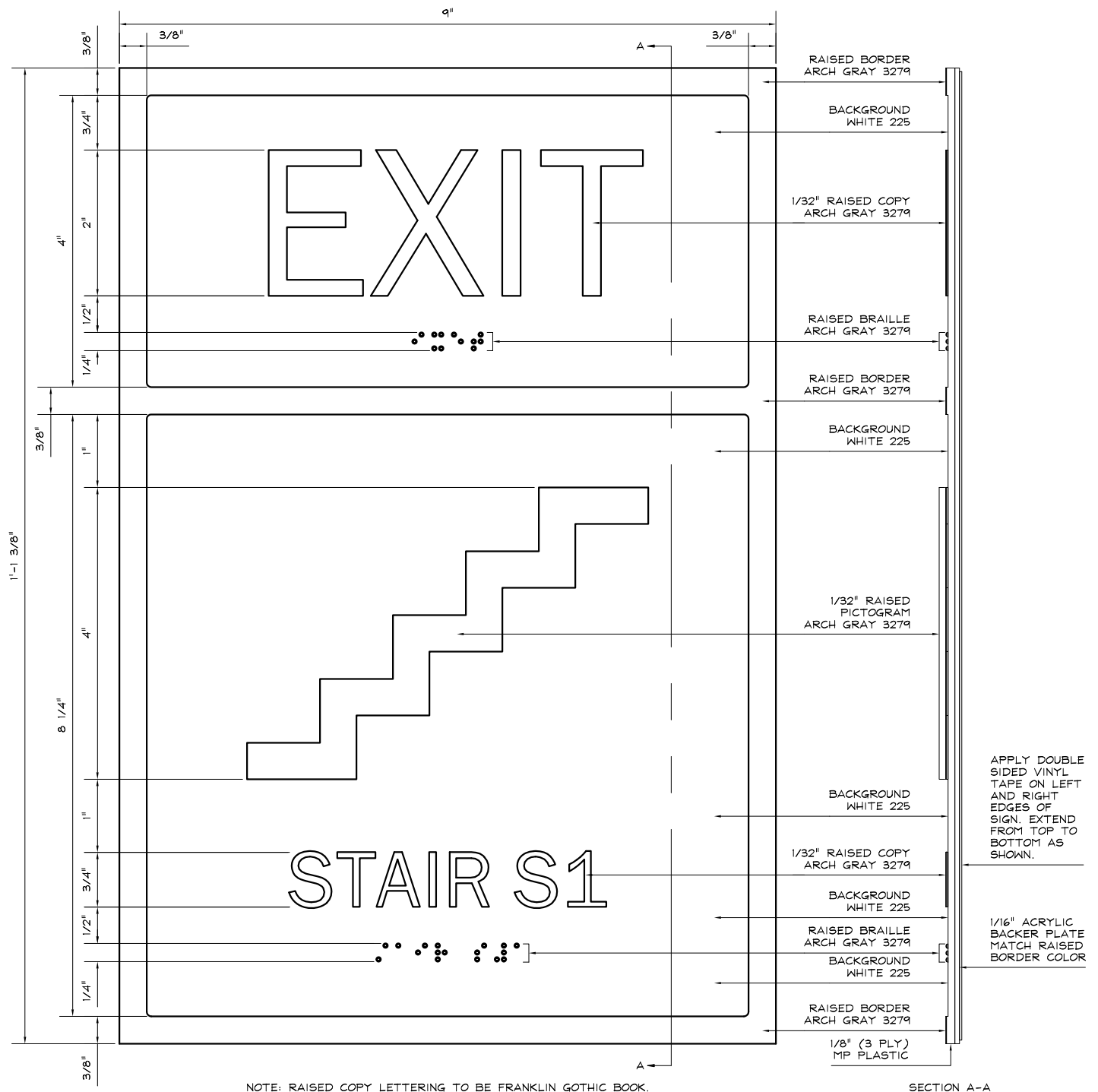
**INTERIOR PANEL SIGN
TYPE: C5**

10431
SPEC. SECTION

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DATE

C5-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: C5

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EXIT

**EMERGENCY
USE ONLY**



.85 x SCALE

**INTERIOR PANEL SIGN
TYPE: C6**

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**2007
DATE**

C6-PLAN - Interior Panel Signs - Master Set.dwg - Issued Feb 12, 2010



0.65 x SCALE

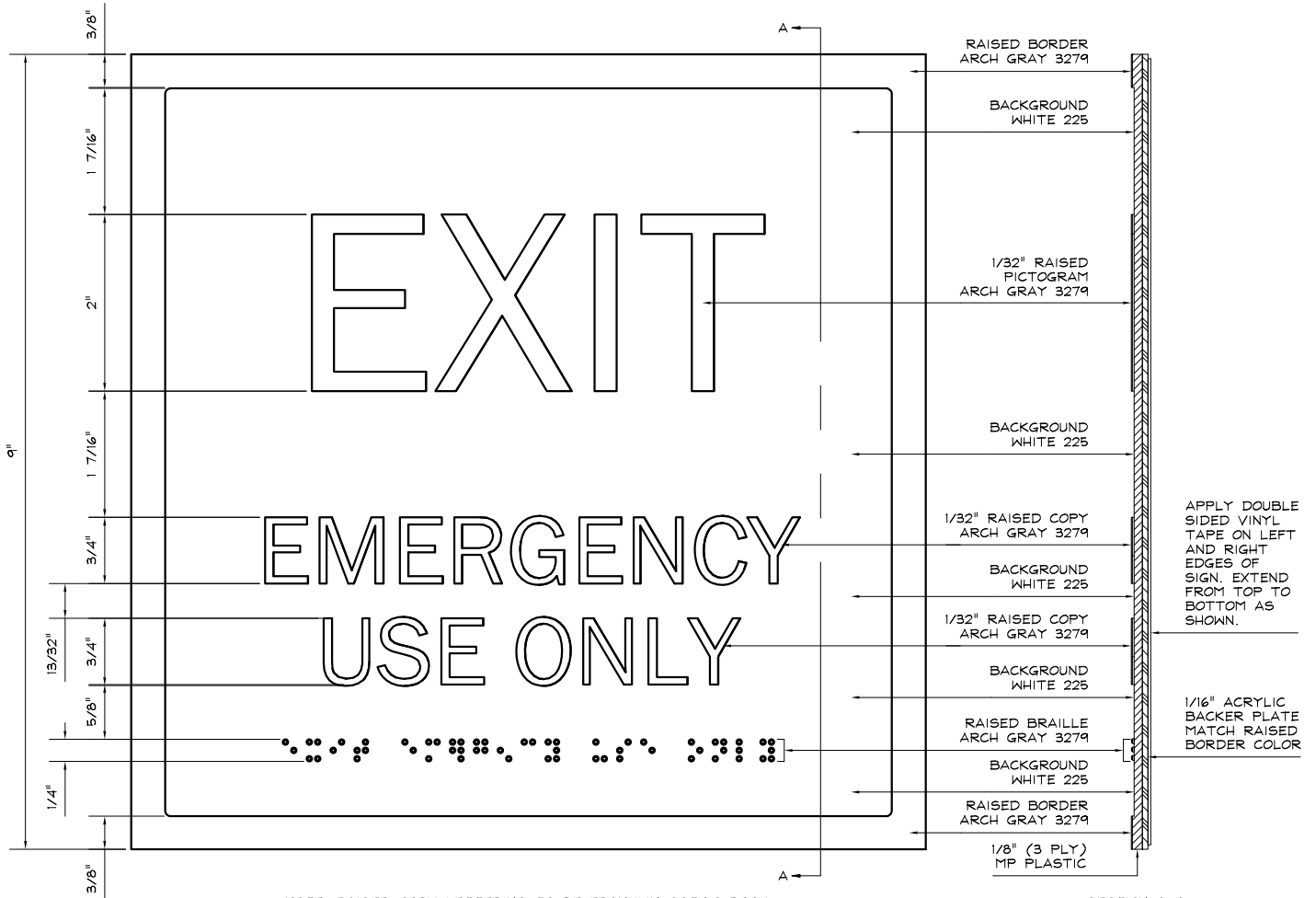
**INTERIOR PANEL SIGN
TYPE: C6**

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C6-ISO - Interior Panel Signs - Master Set.dwg - Issued Feb 12, 2010



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0.5 x SCALE

**INTERIOR PANEL SIGN
TYPE: C6**

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**AUTHORIZED
PERSONNEL
ONLY**



.85 x SCALE

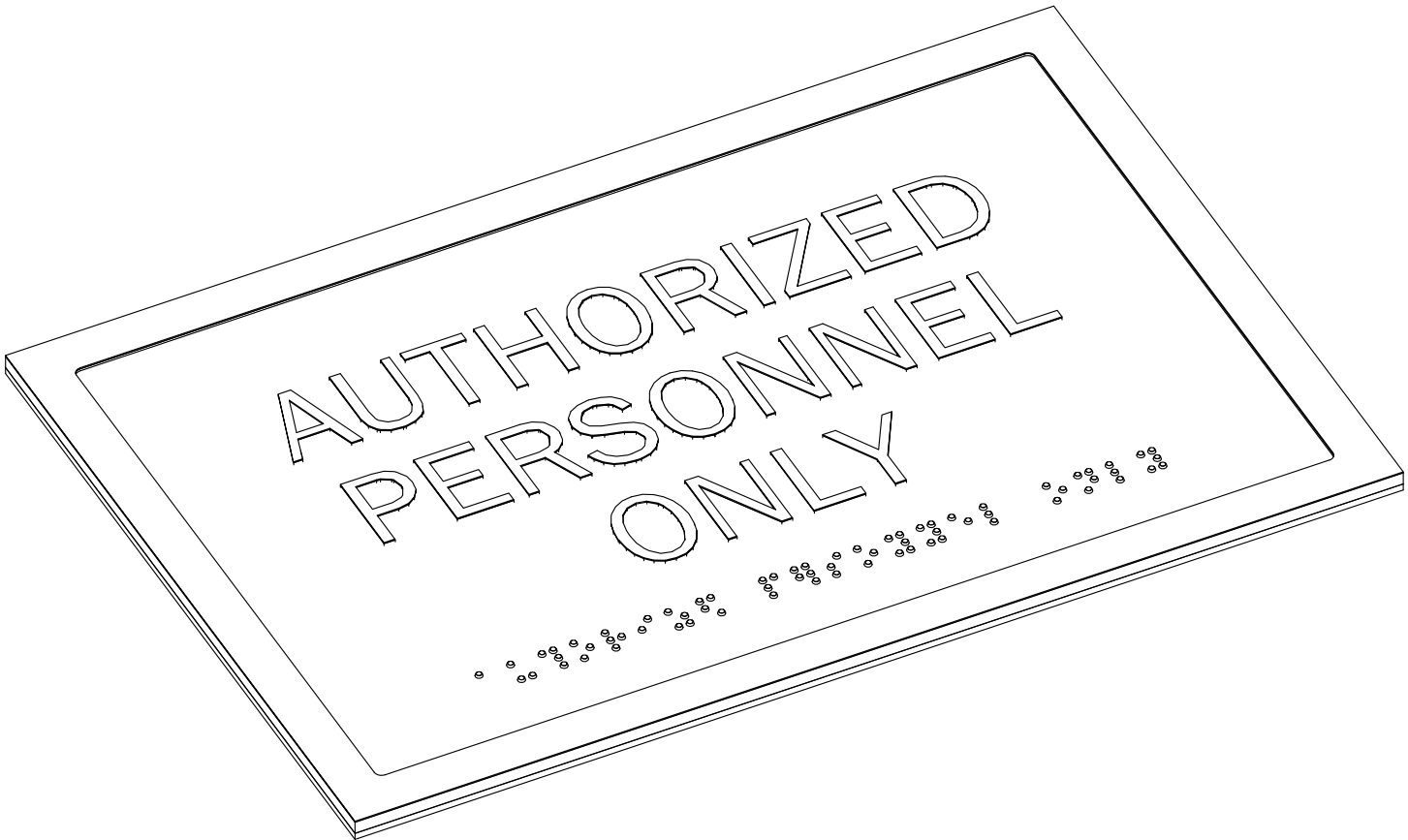
**INTERIOR PANEL SIGN
TYPE: C7**

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DATE**

C7-PLAN - Interior Panel Signs - Master Set.dwg - Issued Feb 12, 2010



0.7 x SCALE

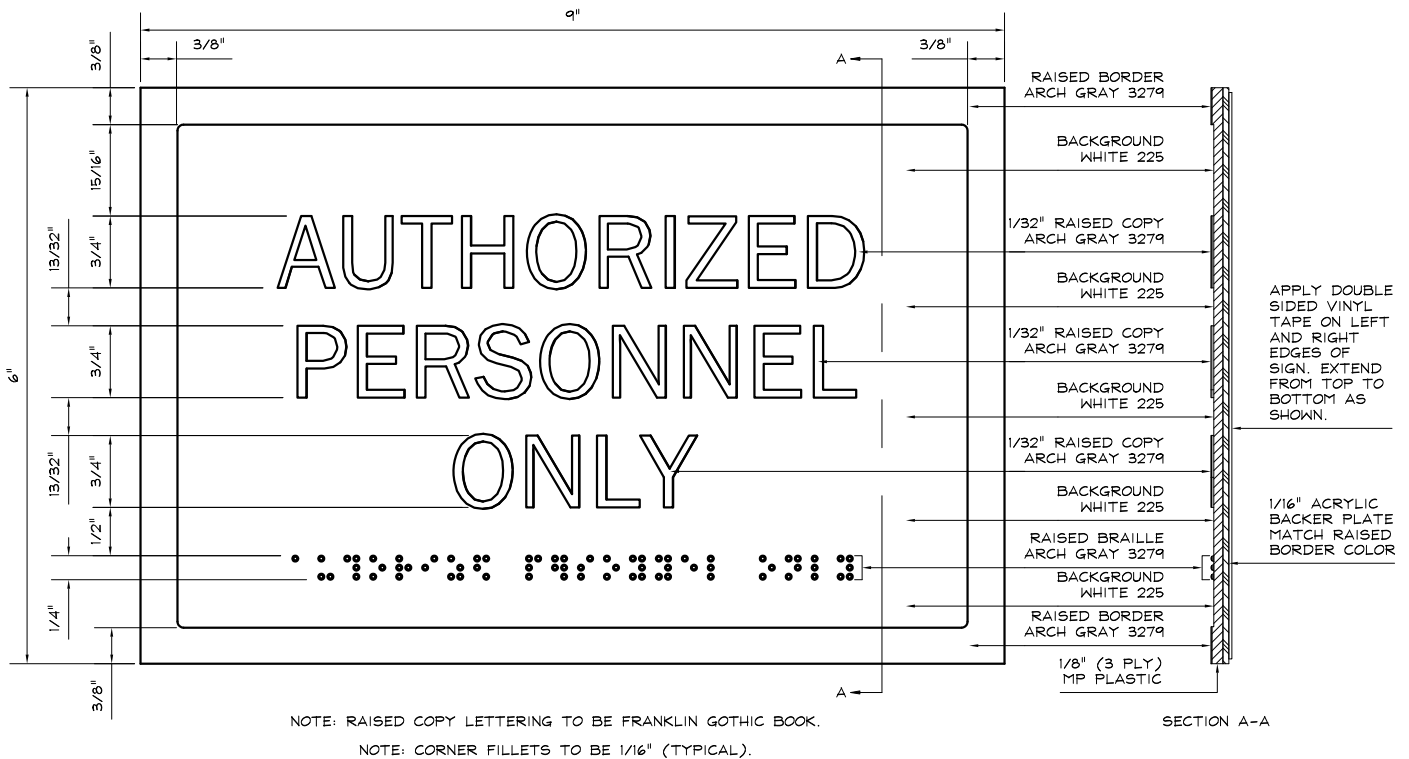
**INTERIOR PANEL SIGN
TYPE: C7**

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SPEC. SECTION

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2007
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C7-ISO - Interior Panel Signs - Master Set.dwg - Issued Feb 12, 2010



0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: C7

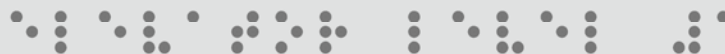
10431
SPEC. SECTION

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ELEVATOR LEVEL 1



.85 x SCALE

**INTERIOR PANEL SIGN
TYPE: D1**

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D1-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.7 x SCALE

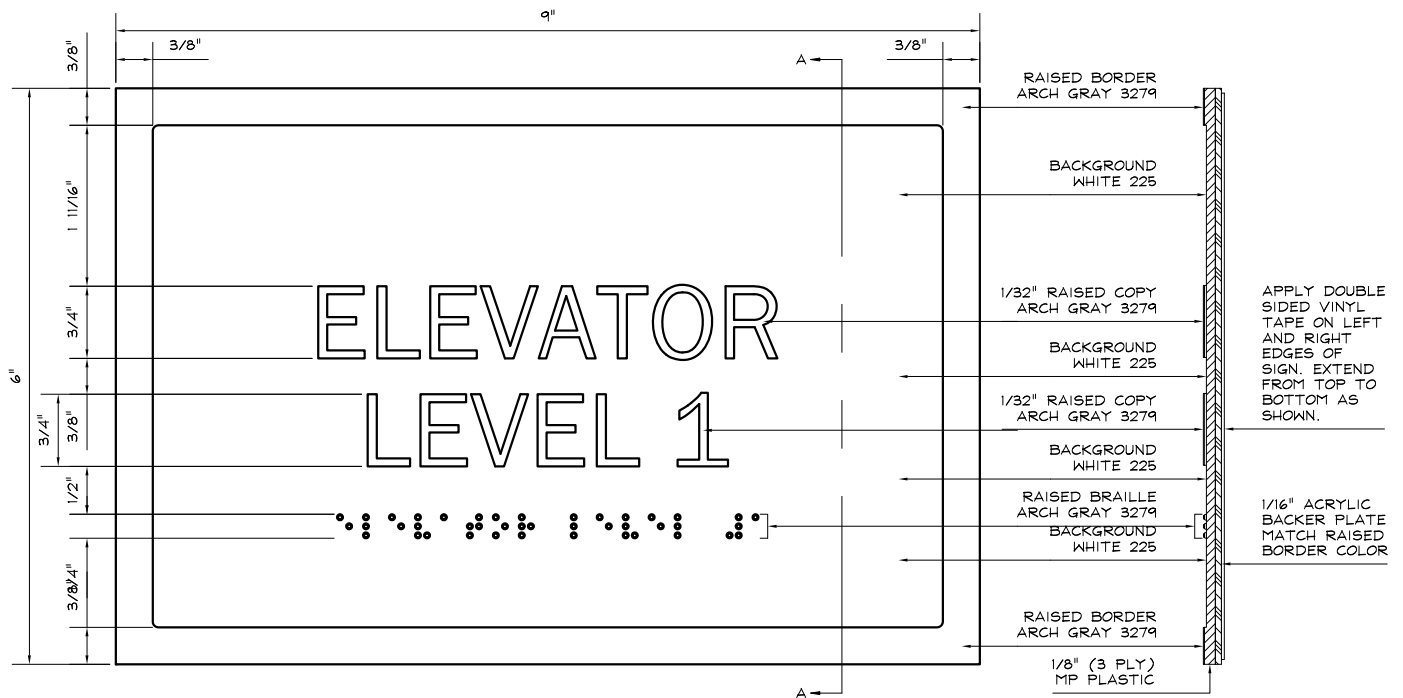
**INTERIOR PANEL SIGN
TYPE: D1**

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D1-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: D1

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INTERIOR PANEL SIGN
TYPE: D2

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

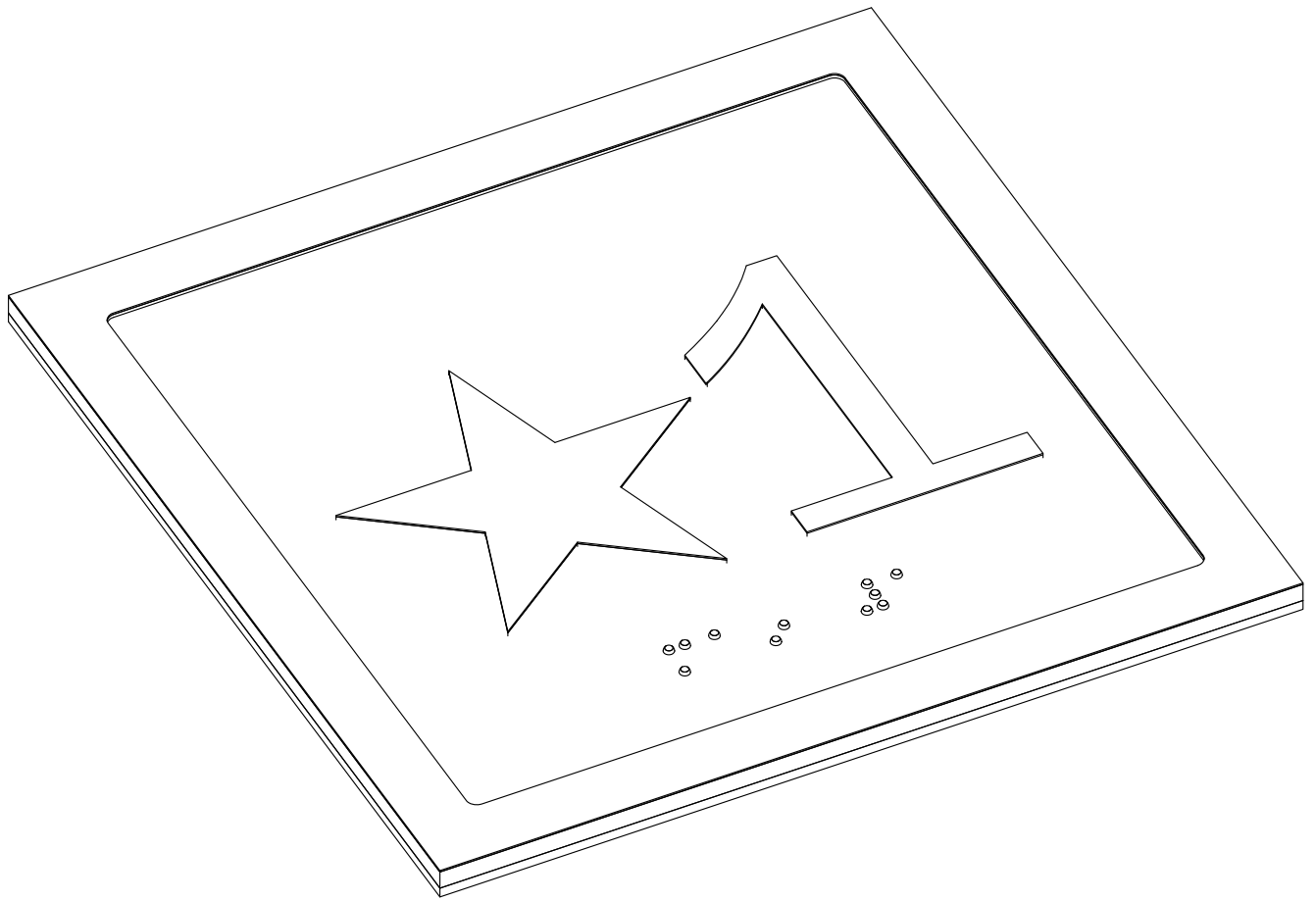
D2-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

10431

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INTERIOR PANEL SIGN
TYPE: D2

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

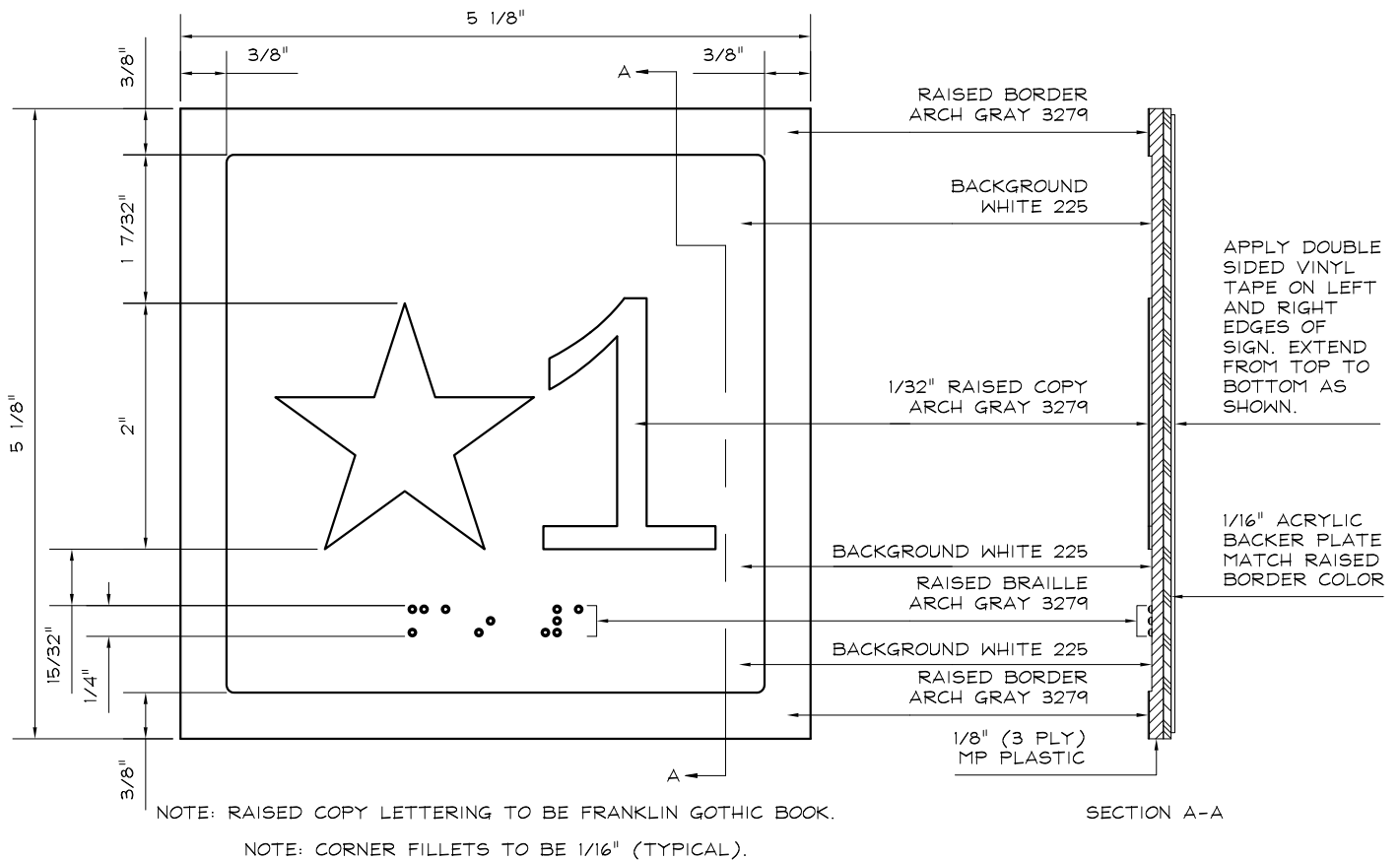
D2-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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0.65 x SCALE

INTERIOR PANEL SIGN
TYPE: D2

10431
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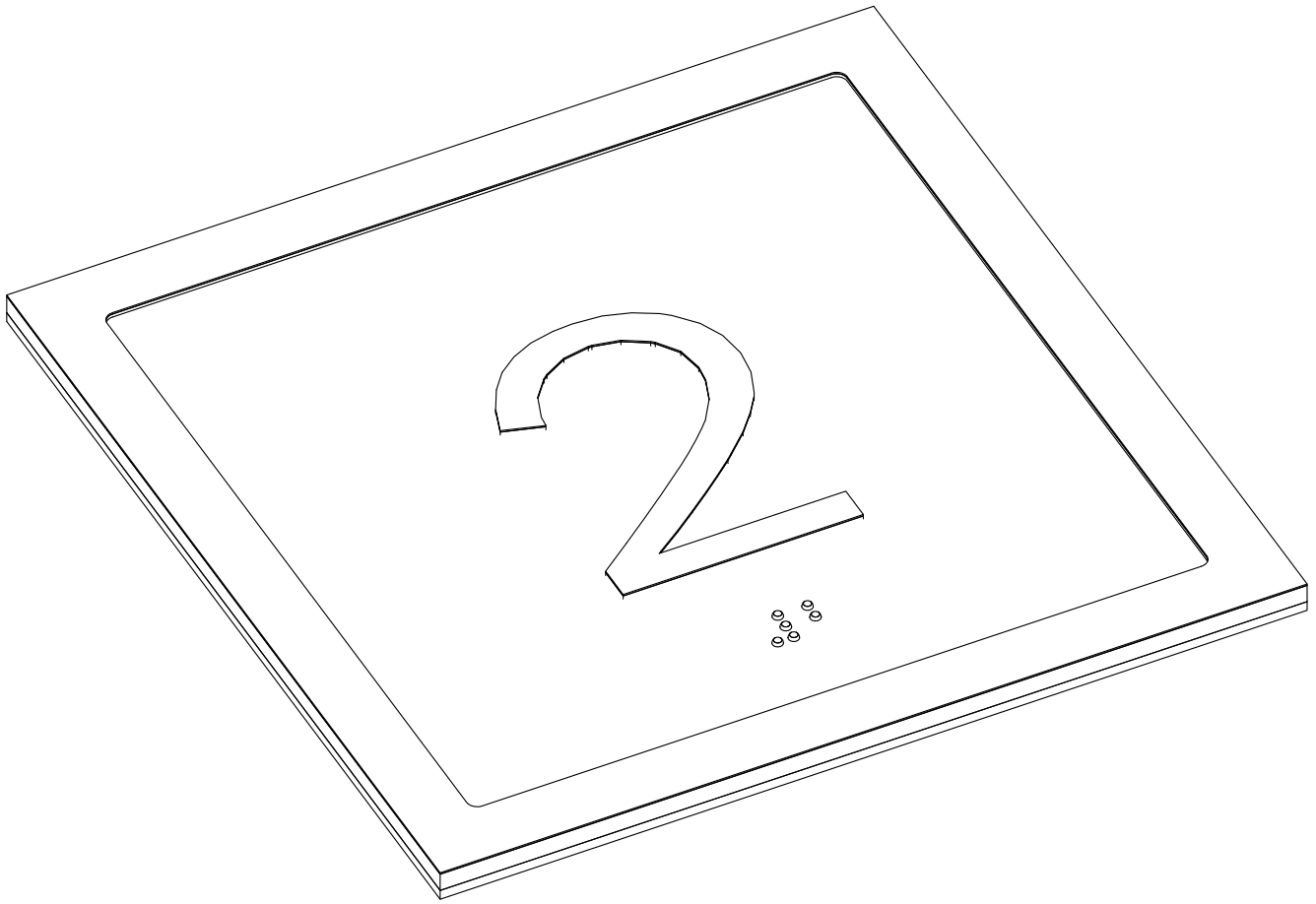
INTERIOR PANEL SIGN
TYPE: D3

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

D3-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

10431
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DATE



INTERIOR PANEL SIGN
TYPE: D3

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

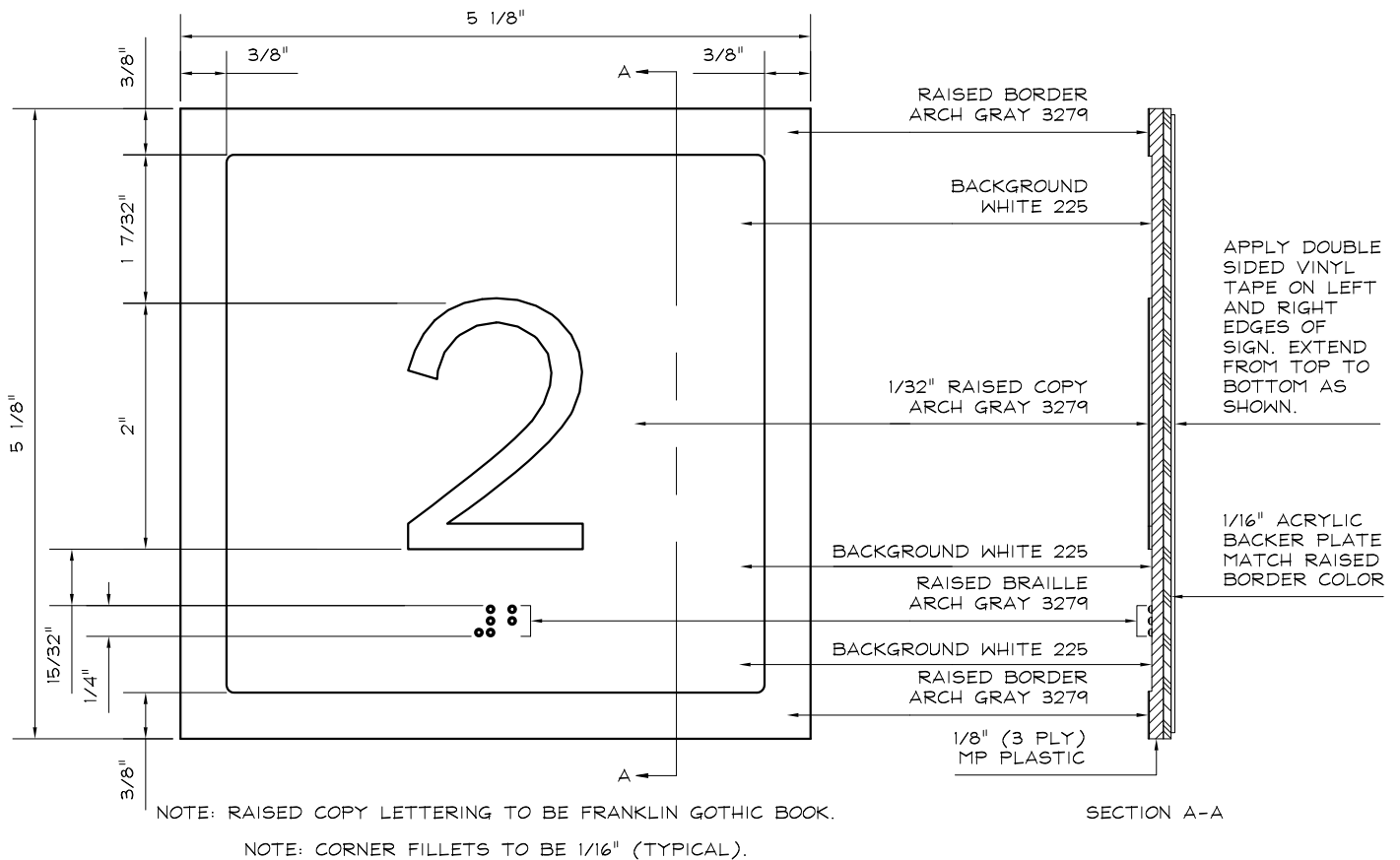
D3-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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0.65 x SCALE

INTERIOR PANEL SIGN
TYPE: D3

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MACHINE ROOM



.85 x SCALE

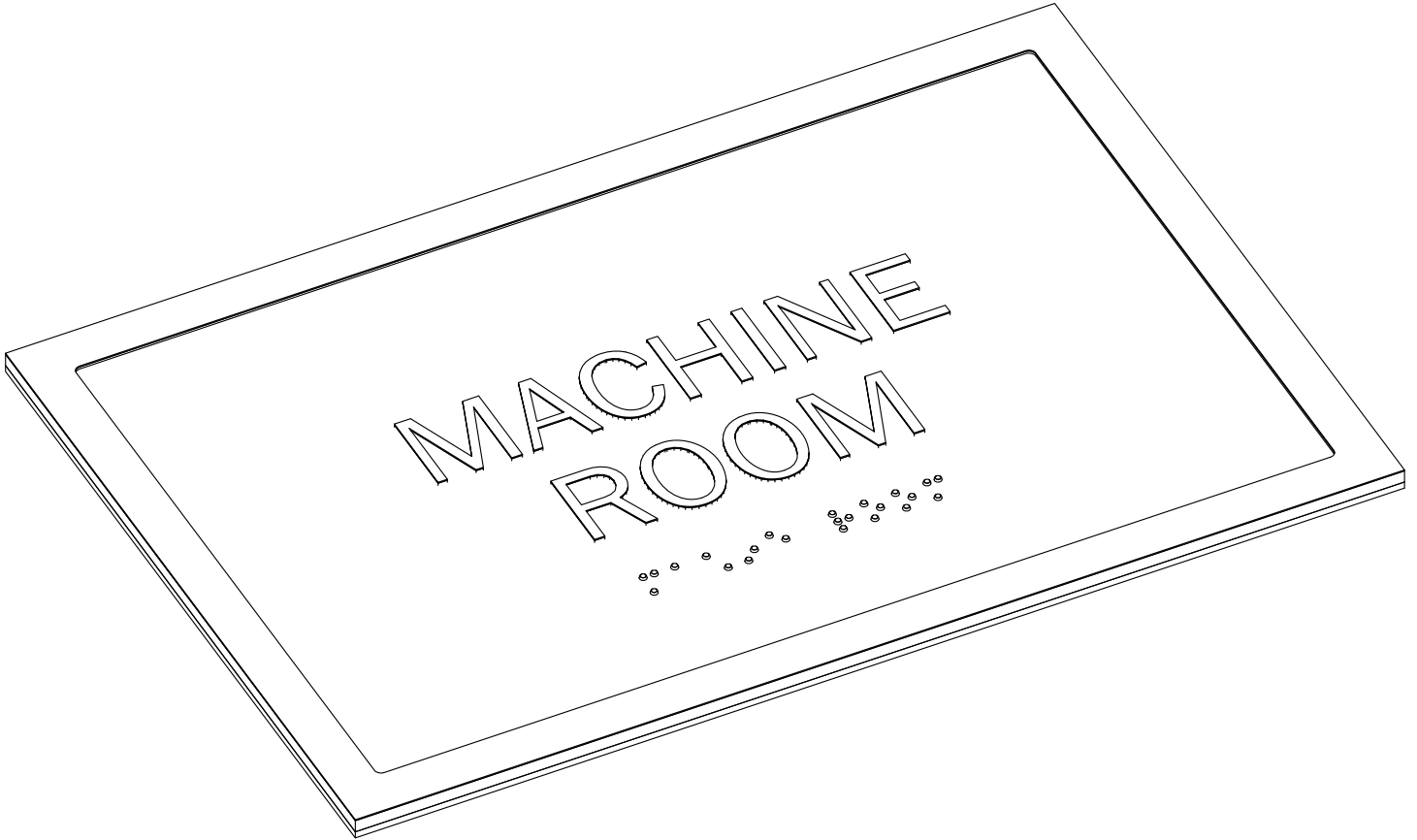
**INTERIOR PANEL SIGN
TYPE: D4**

**10431
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DATE**

D4-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



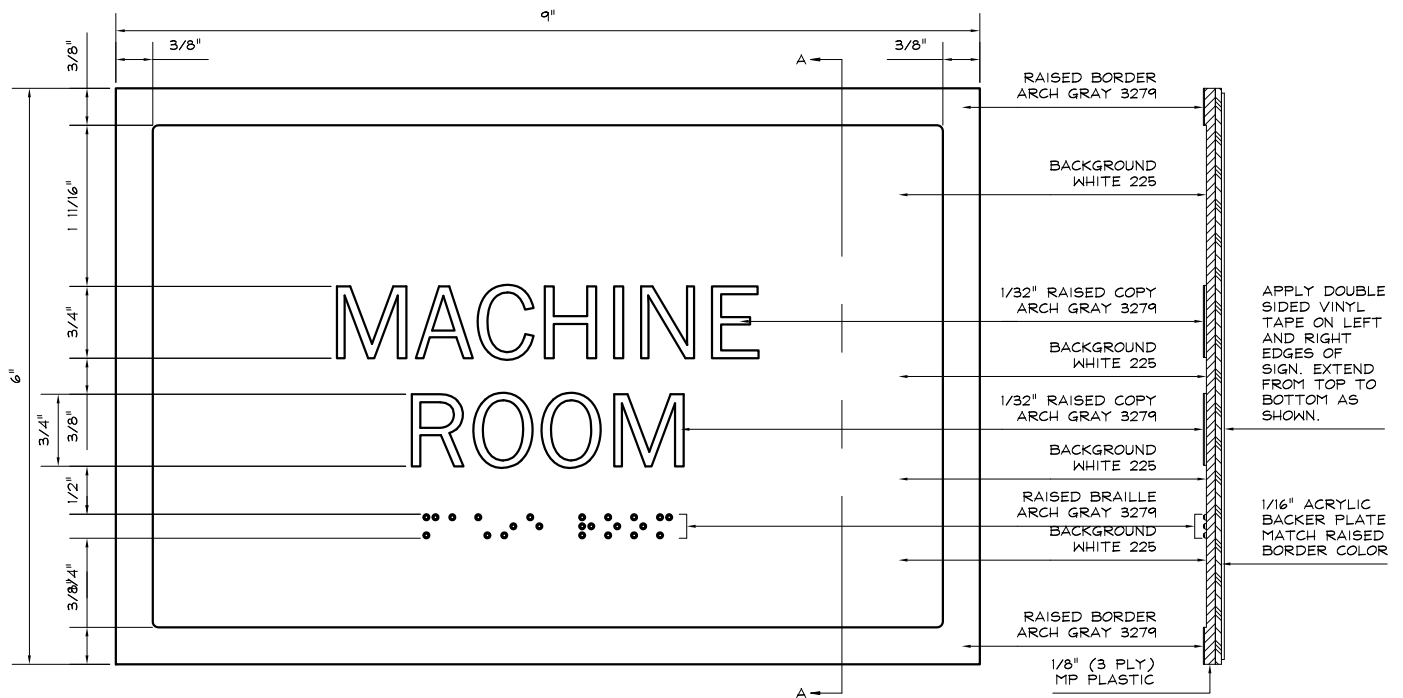
0.7 x SCALE

**INTERIOR PANEL SIGN
TYPE: D4**

10431
SPEC. SECTION

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NOTE: CORNER FILLETS TO BE 1/16" (TYPICAL).

SECTION A-A

0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: D4

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D4-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

DATE

CUSTODIAN



.85 x SCALE

INTERIOR PANEL SIGN
TYPE: E1

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FACILITIES PLANNING, DESIGN AND CONSTRUCTION

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E1-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.7 x SCALE

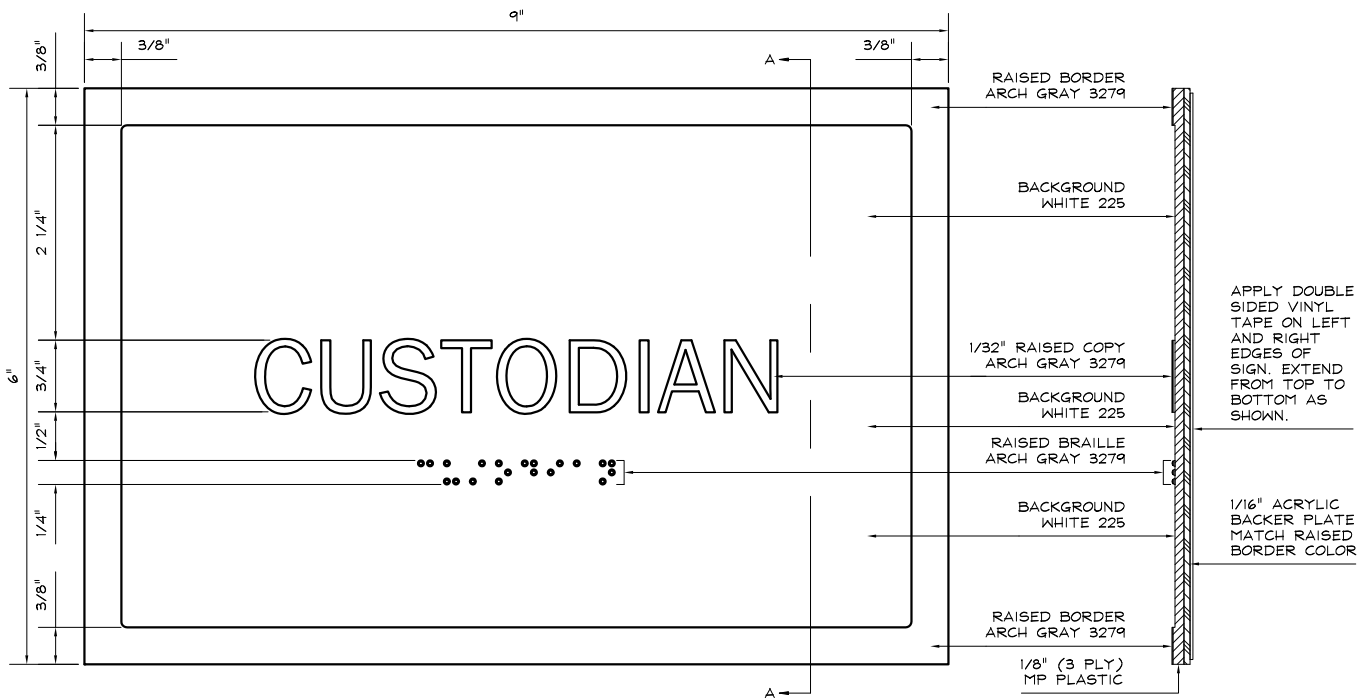
**INTERIOR PANEL SIGN
TYPE: E1**

10431
SPEC. SECTION

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

2007
DATE

E1-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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NOTE: CORNER FILLETS TO BE 1/16" (TYPICAL).

SECTION A-A

0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: E1

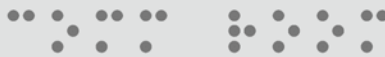
FACILITIES PLANNING, DESIGN AND CONSTRUCTION

E1-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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2007
DATE

COMM ROOM



.85 x SCALE

INTERIOR PANEL SIGN
TYPE: E2

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SPEC. SECTION

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

2007
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E2-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.7 x SCALE

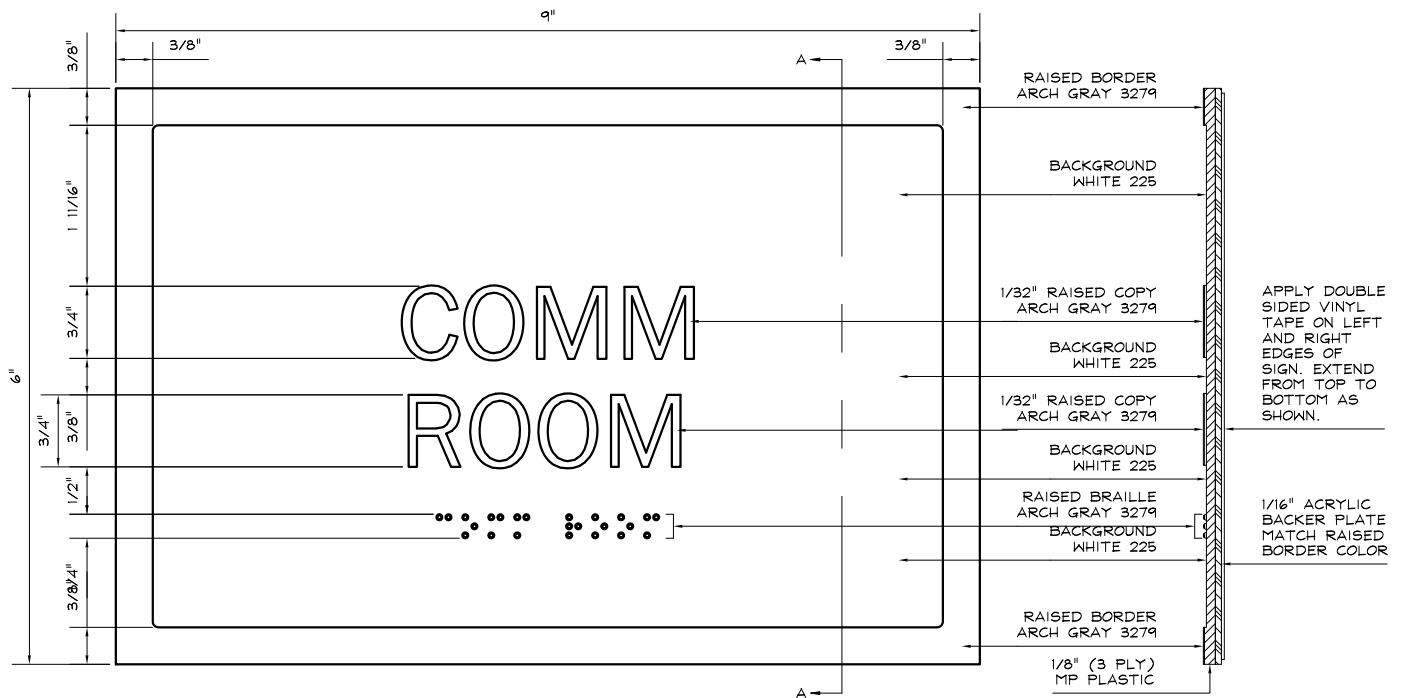
**INTERIOR PANEL SIGN
TYPE: E2**

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SPEC. SECTION

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E2-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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SECTION A-A

0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: E2

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DATE

PLUMBING ACCESS



.85 x SCALE

**INTERIOR PANEL SIGN
TYPE: E3**

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SPEC. SECTION**

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**2007
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E3-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.7 x SCALE

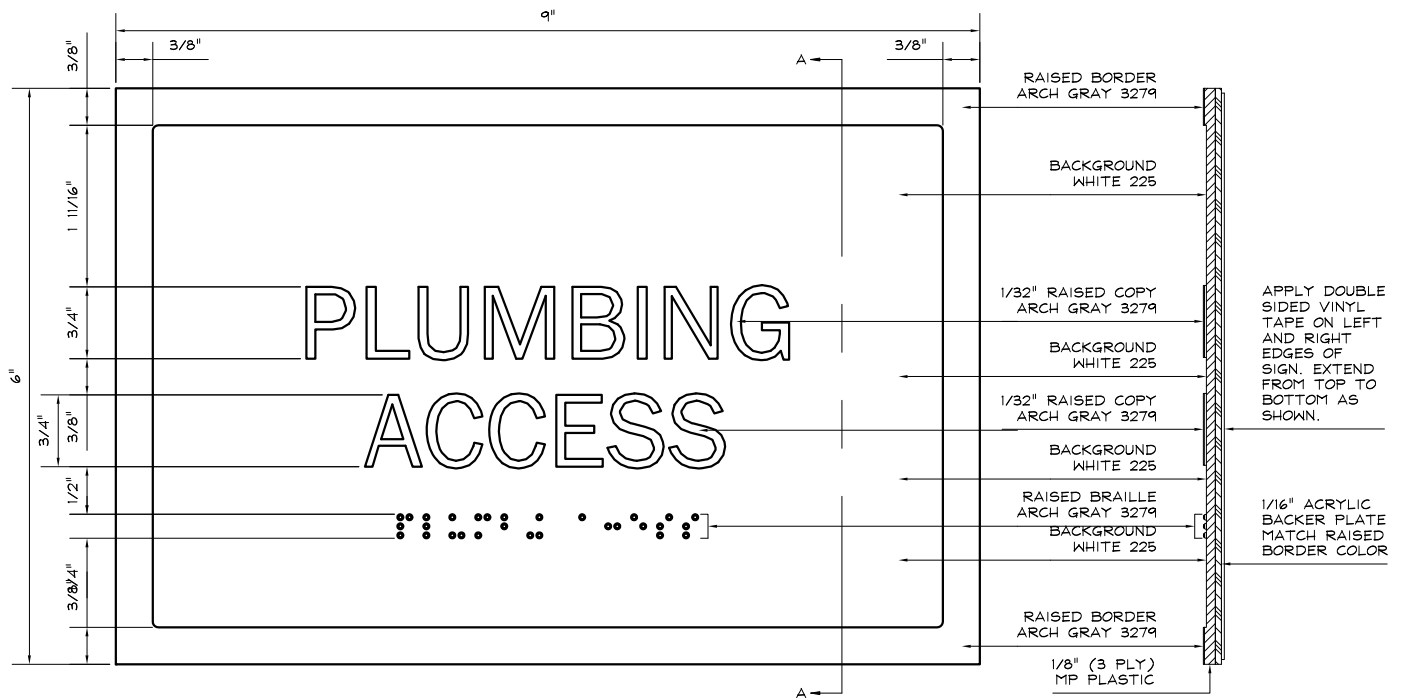
**INTERIOR PANEL SIGN
TYPE: E3**

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SPEC. SECTION

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DATE

E3-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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NOTE: CORNER FILLETS TO BE 1/16" (TYPICAL).

SECTION A-A

0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: E3

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MECHANICAL



.85 x SCALE

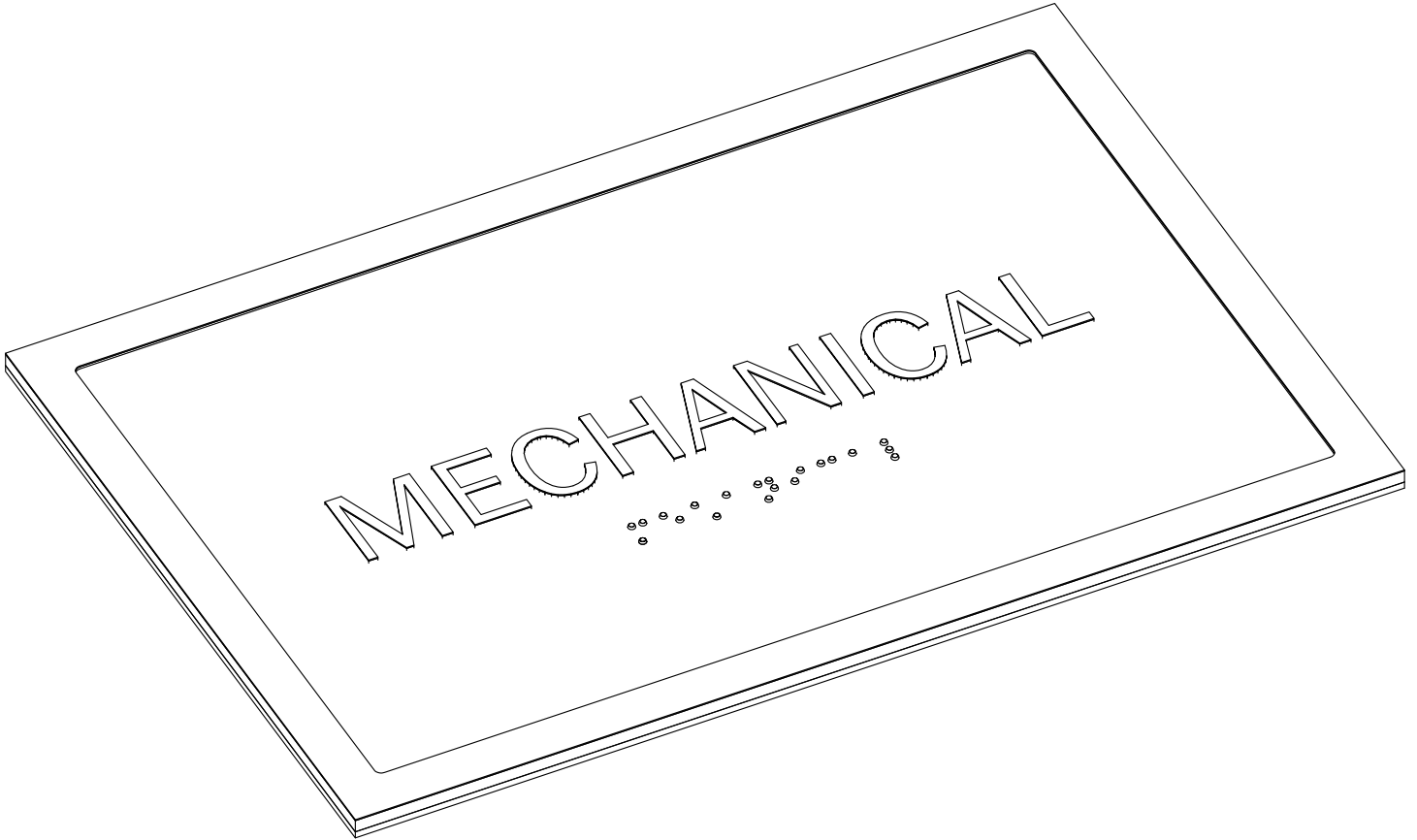
INTERIOR PANEL SIGN
TYPE: F1

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SPEC. SECTION

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

2007
DATE

F1-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.7 x SCALE

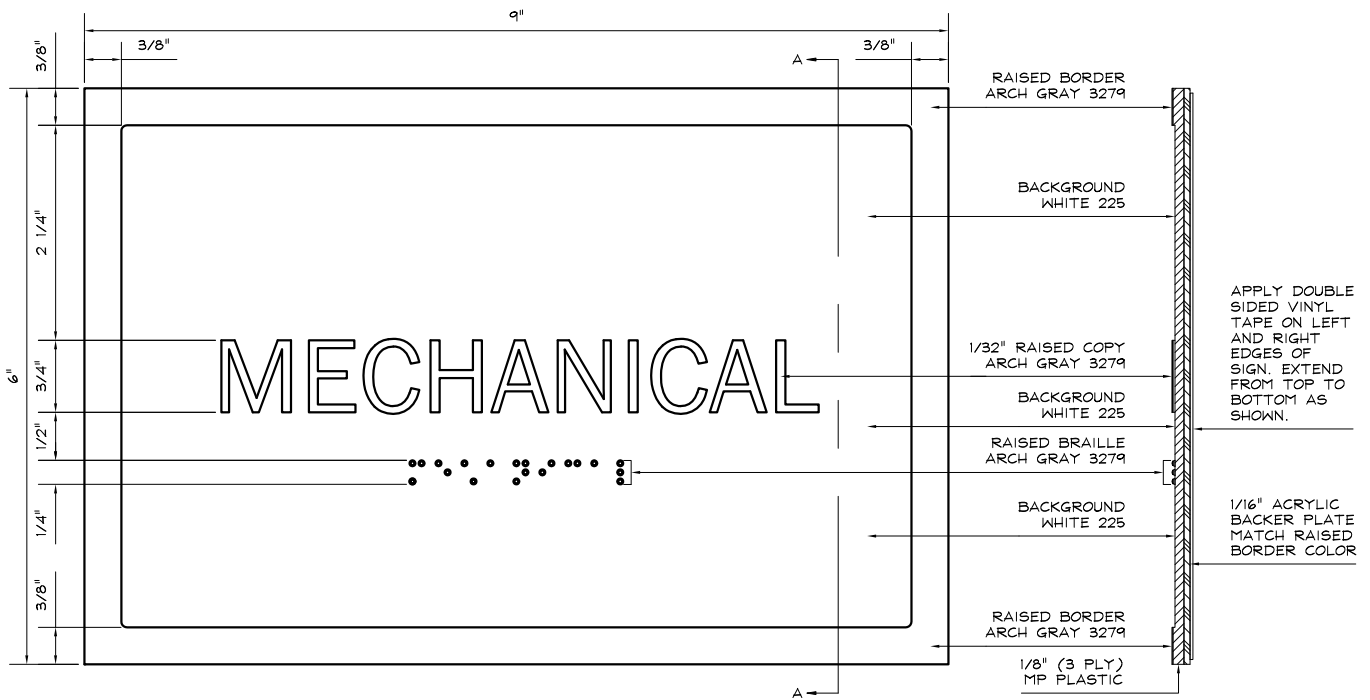
**INTERIOR PANEL SIGN
TYPE: F1**

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SPEC. SECTION

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F1-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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SECTION A-A

0.5 x SCALE

**INTERIOR PANEL SIGN
 TYPE: F1**

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F1-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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ELECTRICAL



.85 x SCALE

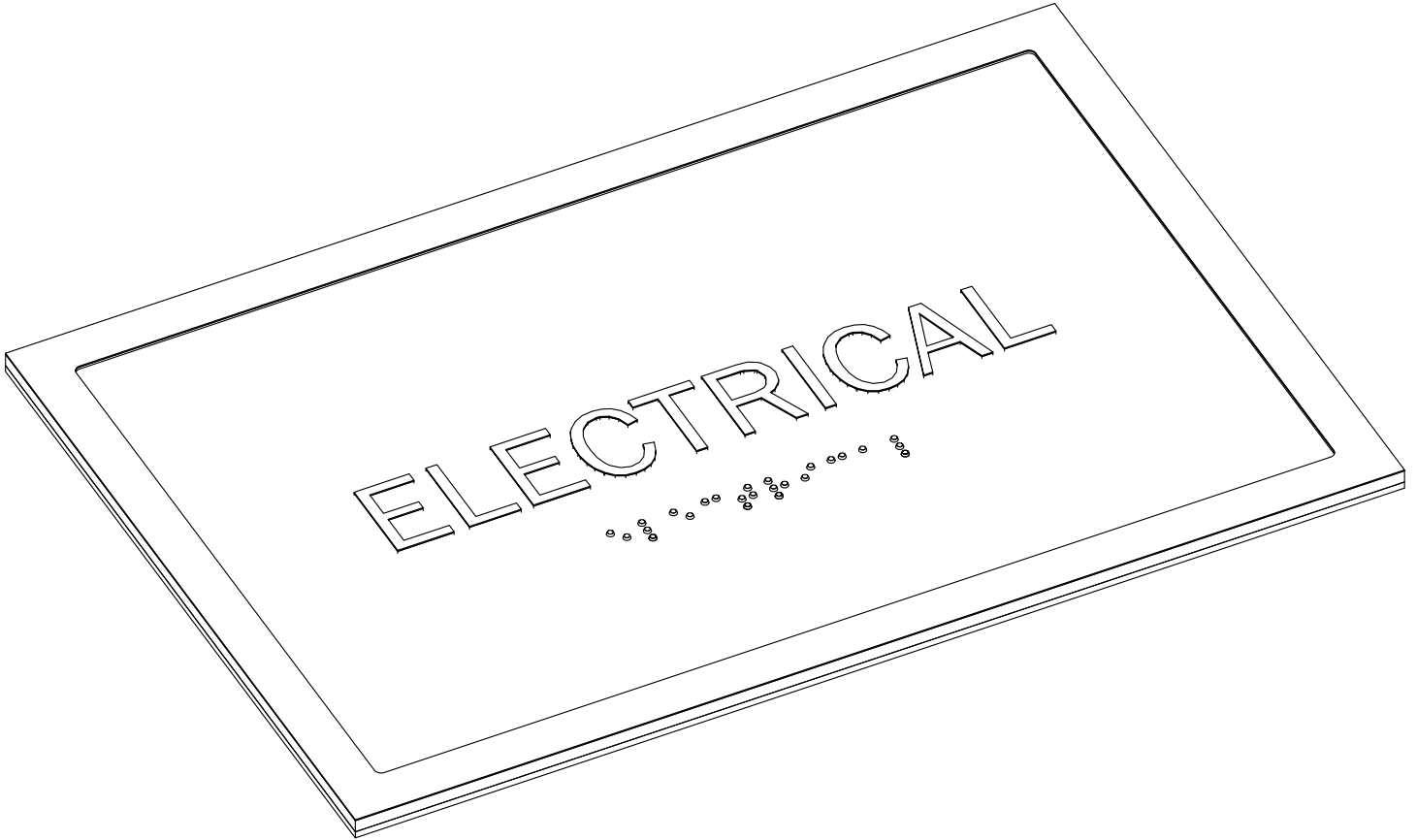
INTERIOR PANEL SIGN
TYPE: F2

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SPEC. SECTION

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DATE

F2-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.7 x SCALE

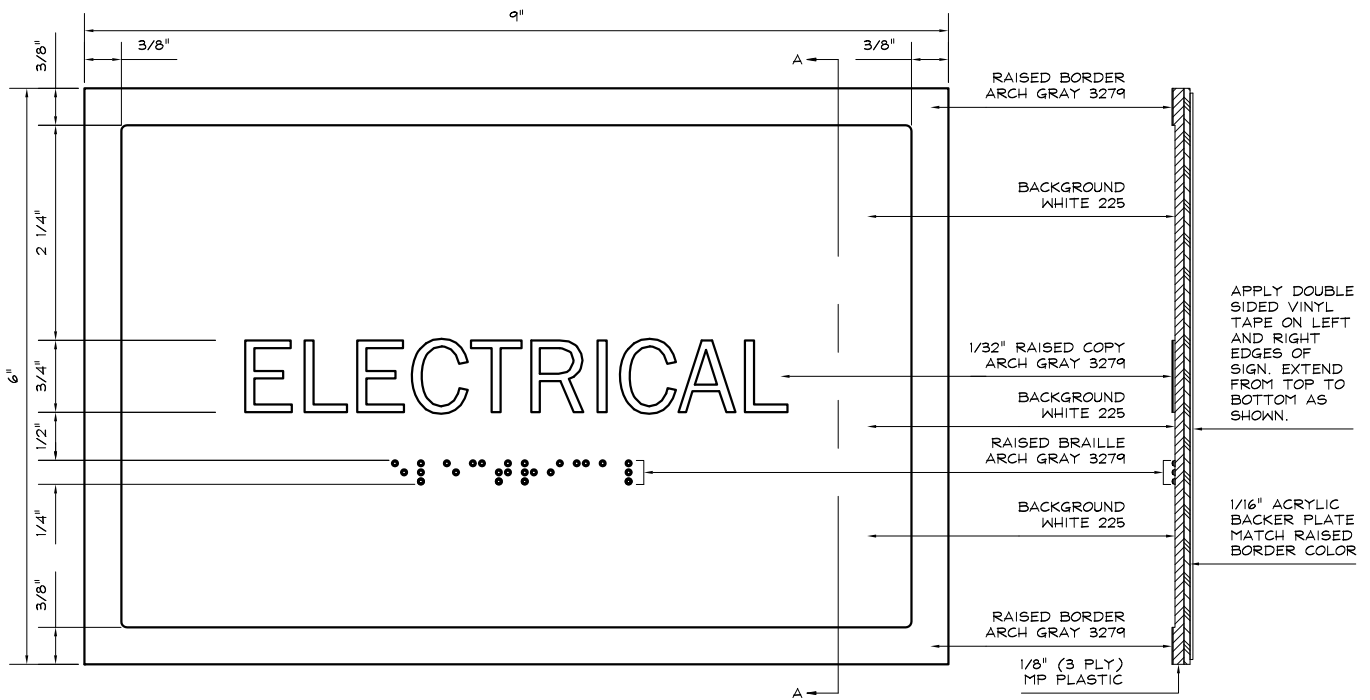
**INTERIOR PANEL SIGN
TYPE: F2**

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SPEC. SECTION

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F2-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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SECTION A-A

0.5 x SCALE

INTERIOR PANEL SIGN
TYPE: F2

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

F2-SHOP - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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.85 x SCALE

**INTERIOR PANEL SIGN
TYPE: G1**

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G1-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.75 x SCALE

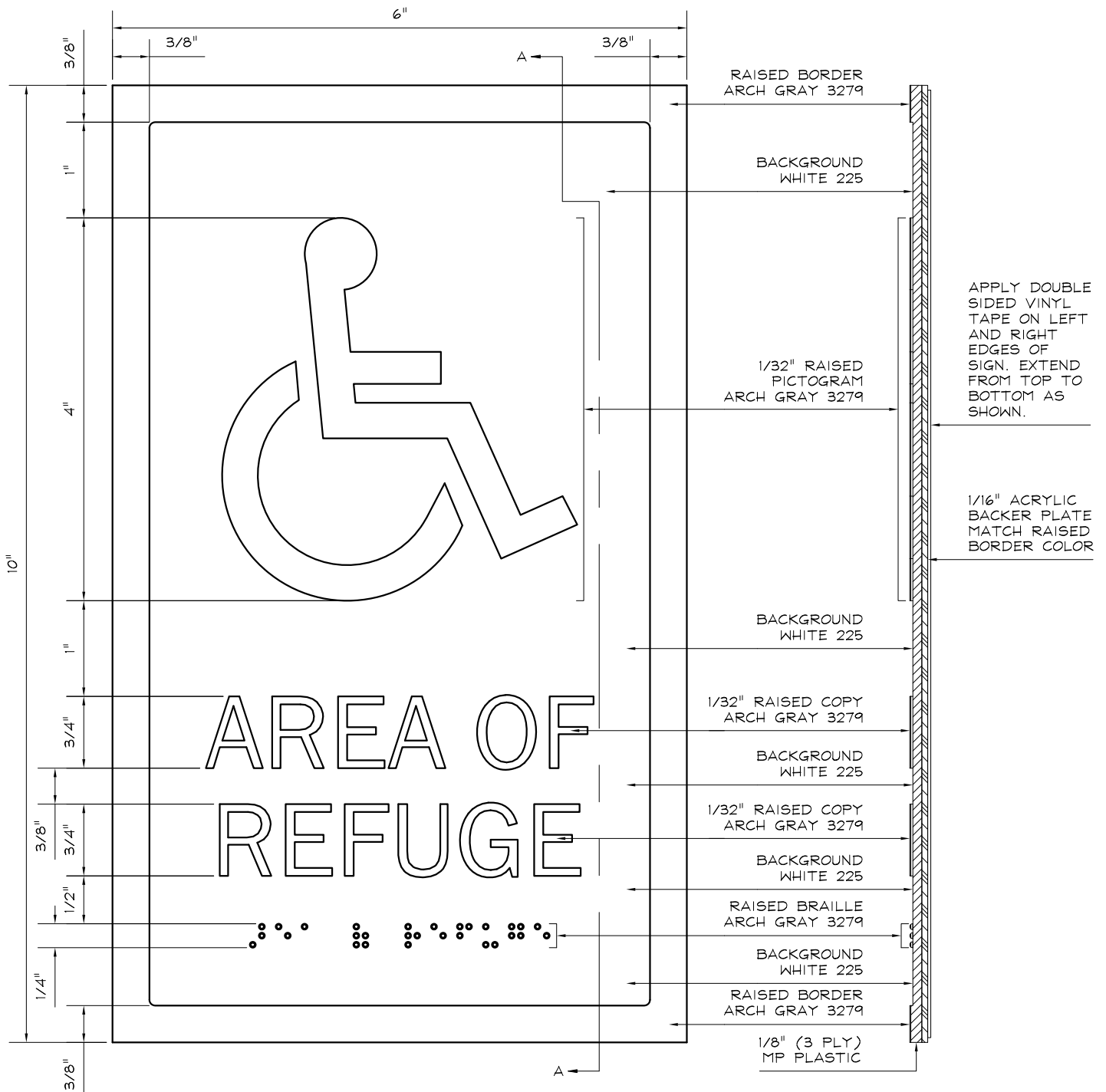
**INTERIOR PANEL SIGN
TYPE: G1**

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G1-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



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NOTE: CORNER FILLETS TO BE 1/16" (TYPICAL).

SECTION A-A

0.65 x SCALE

**INTERIOR PANEL SIGN
TYPE: G1**

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.60 x SCALE

**INTERIOR PANEL SIGN
TYPE: G2**

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FACILITIES PLANNING, DESIGN AND CONSTRUCTION

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G2-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.50 x SCALE

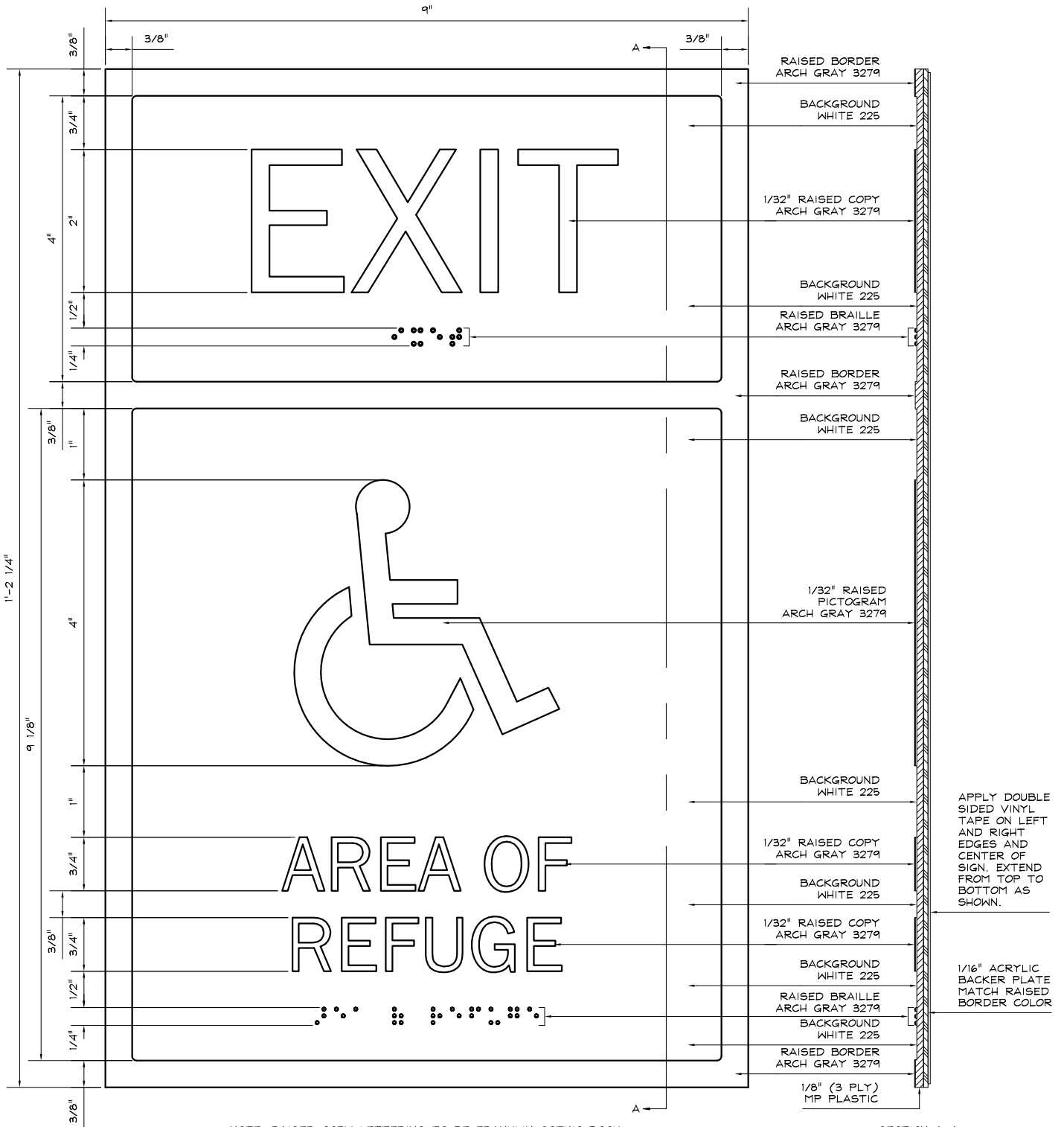
INTERIOR PANEL SIGN
TYPE: G2

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0.50 x SCALE

INTERIOR PANEL SIGN
TYPE: G2

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AREA OF REFUGE INSTRUCTIONS

1. FOR AN ALTERNATE EXIT ROUTE, PROCEED TO THE EAST EXIT ON THIS LEVEL.
2. PERSONS ABLE TO USE THE EXIT STAIRWAY SHOULD DO SO IMMEDIATELY, UNLESS ASSISTING OTHERS.
3. TO SUMMON ASSISTANCE, LIFT HANDSET ON PHONE. MSU POLICE WILL RESPOND.
4. RESCUE PERSONNEL WILL ASSIST IN USE OF STAIRS UPON ARRIVAL.

Braille representation of the instructions above.

.35 x SCALE

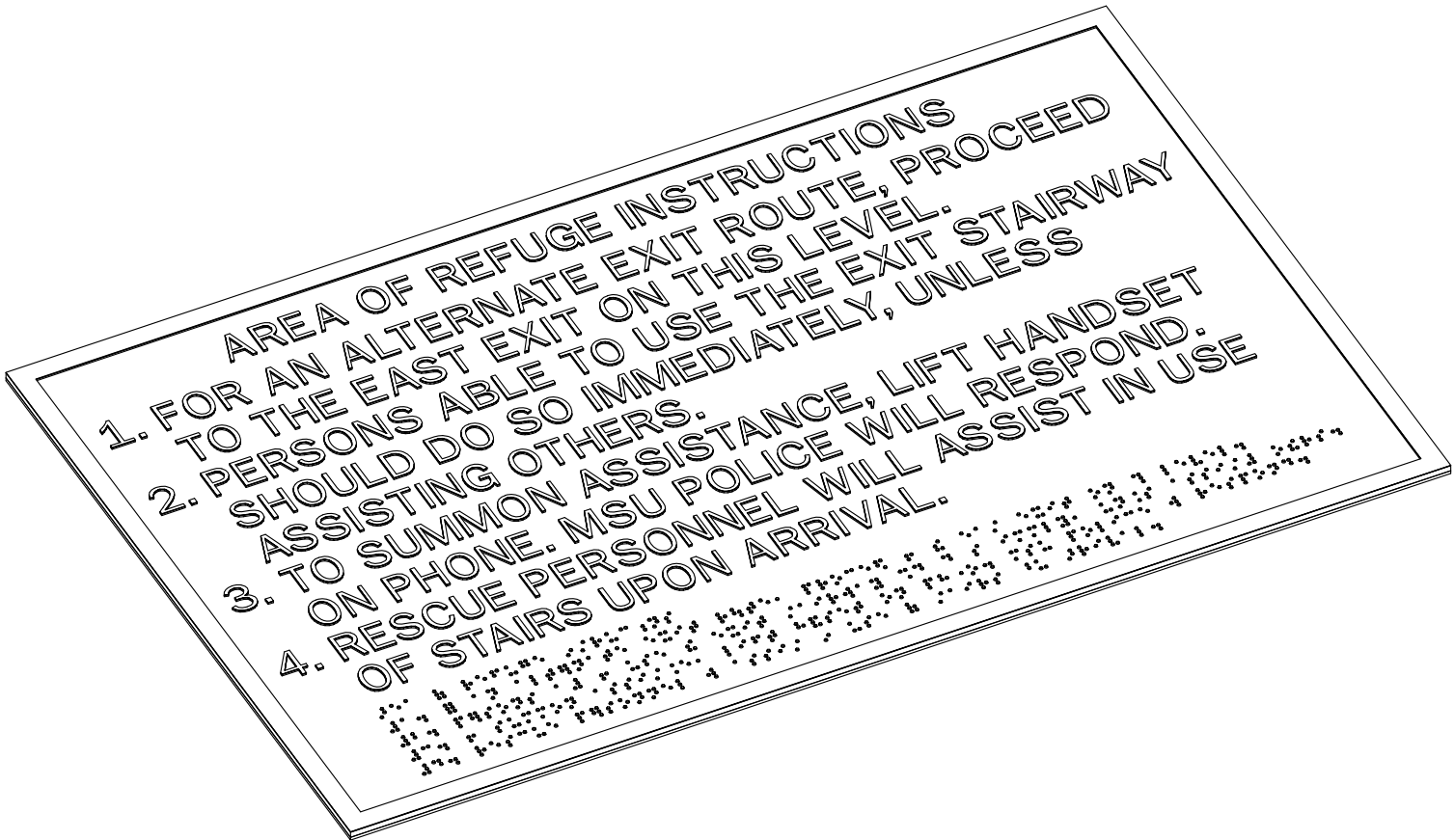
INTERIOR PANEL SIGN TYPE: G3

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

G3-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009

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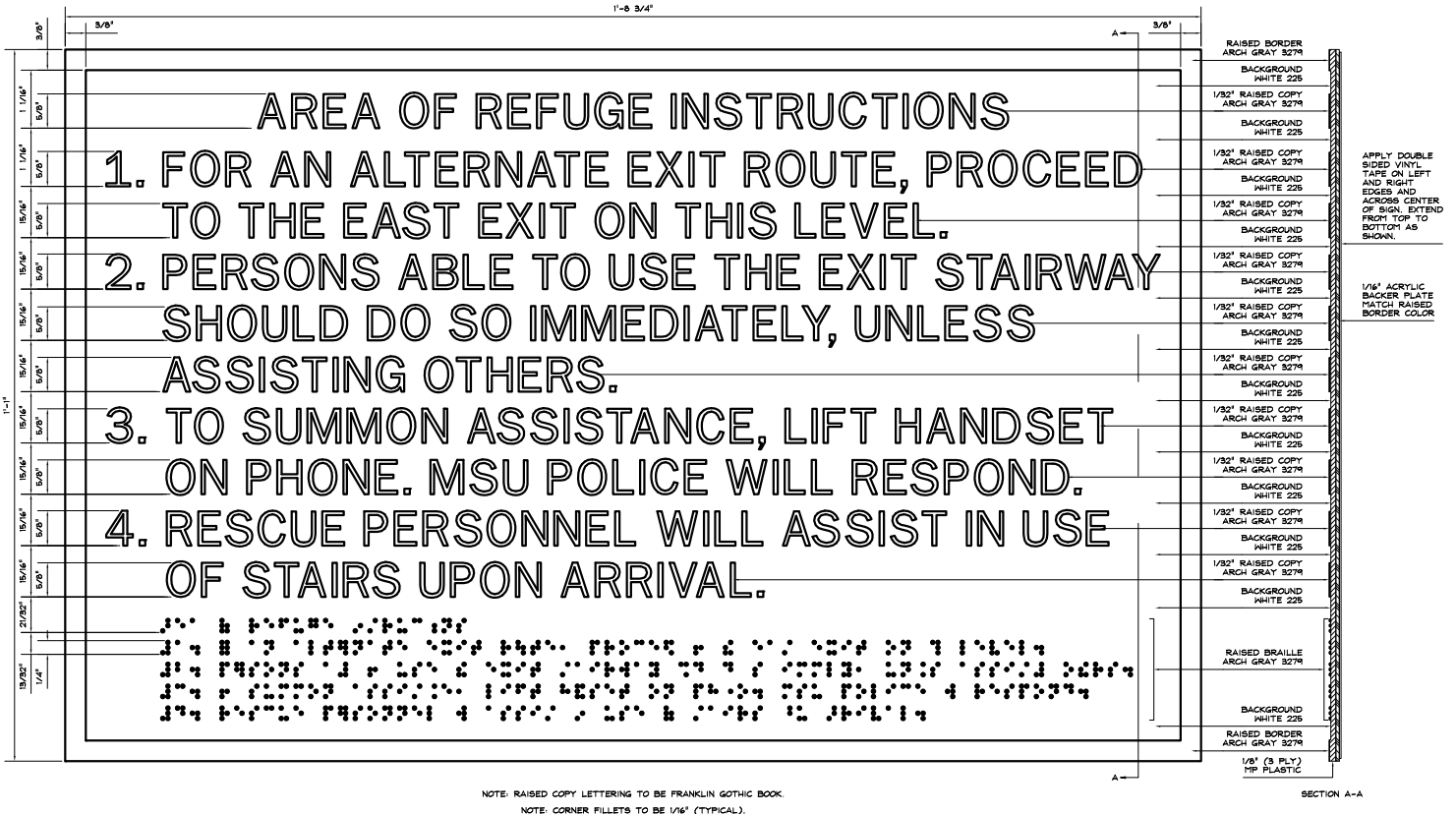
0.32 x SCALE

INTERIOR PANEL SIGN
TYPE: G3

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0.29 x SCALE

INTERIOR PANEL SIGN
TYPE: G3

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**MAXIMUM
OCCUPANCY
250 PERSONS**

0.7 x SCALE

**INTERIOR PANEL SIGN
TYPE: H1**

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H1-PLAN - Interior Panel Signs - Master Set.dwg - Issued Mar 03, 2010



0.75 x SCALE

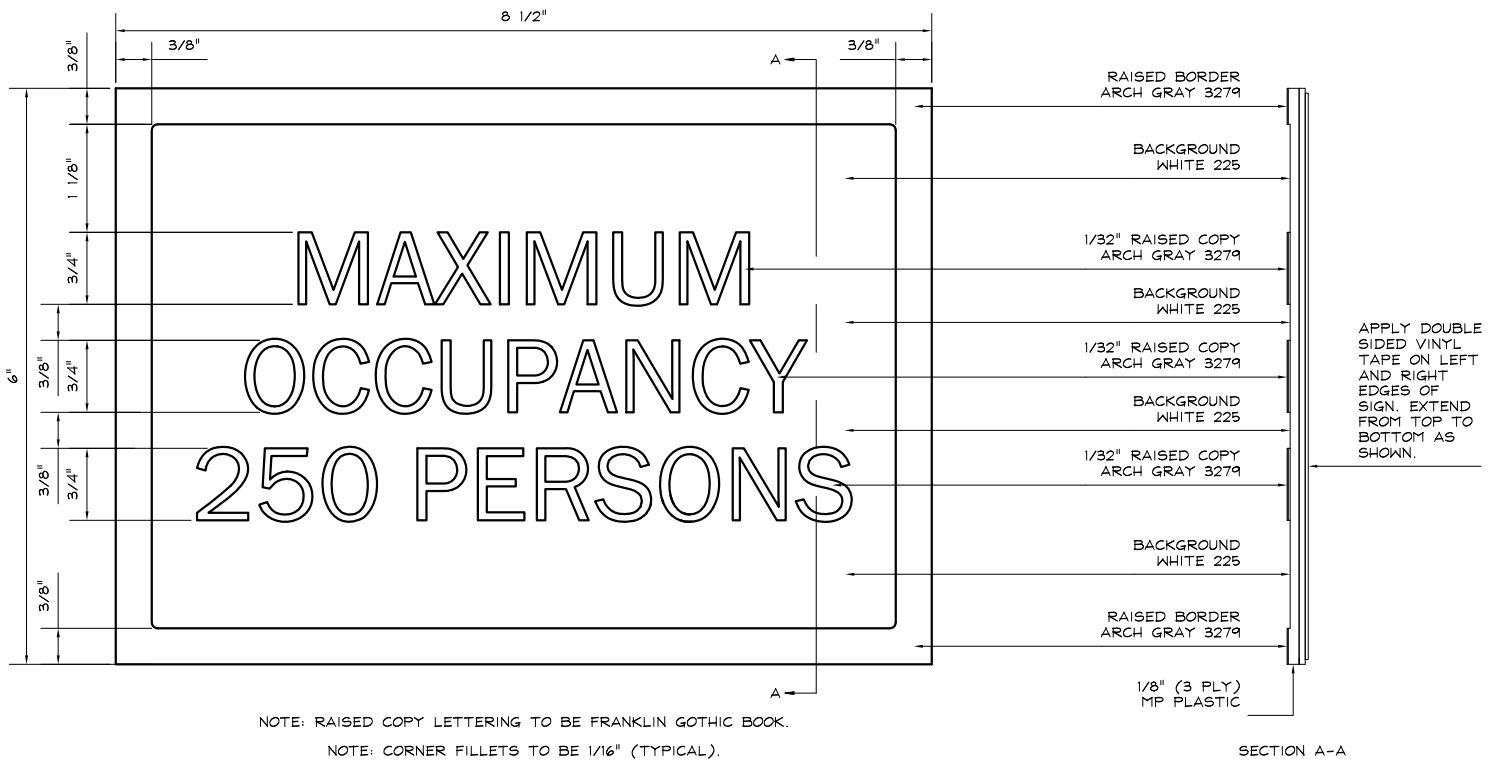
**INTERIOR PANEL SIGN
TYPE: H1**

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0.5 x SCALE

**INTERIOR PANEL SIGN
TYPE: H1**

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SPEC. SECTION**

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FAMILY CARE



INTERIOR PANEL SIGN
TYPE: I1

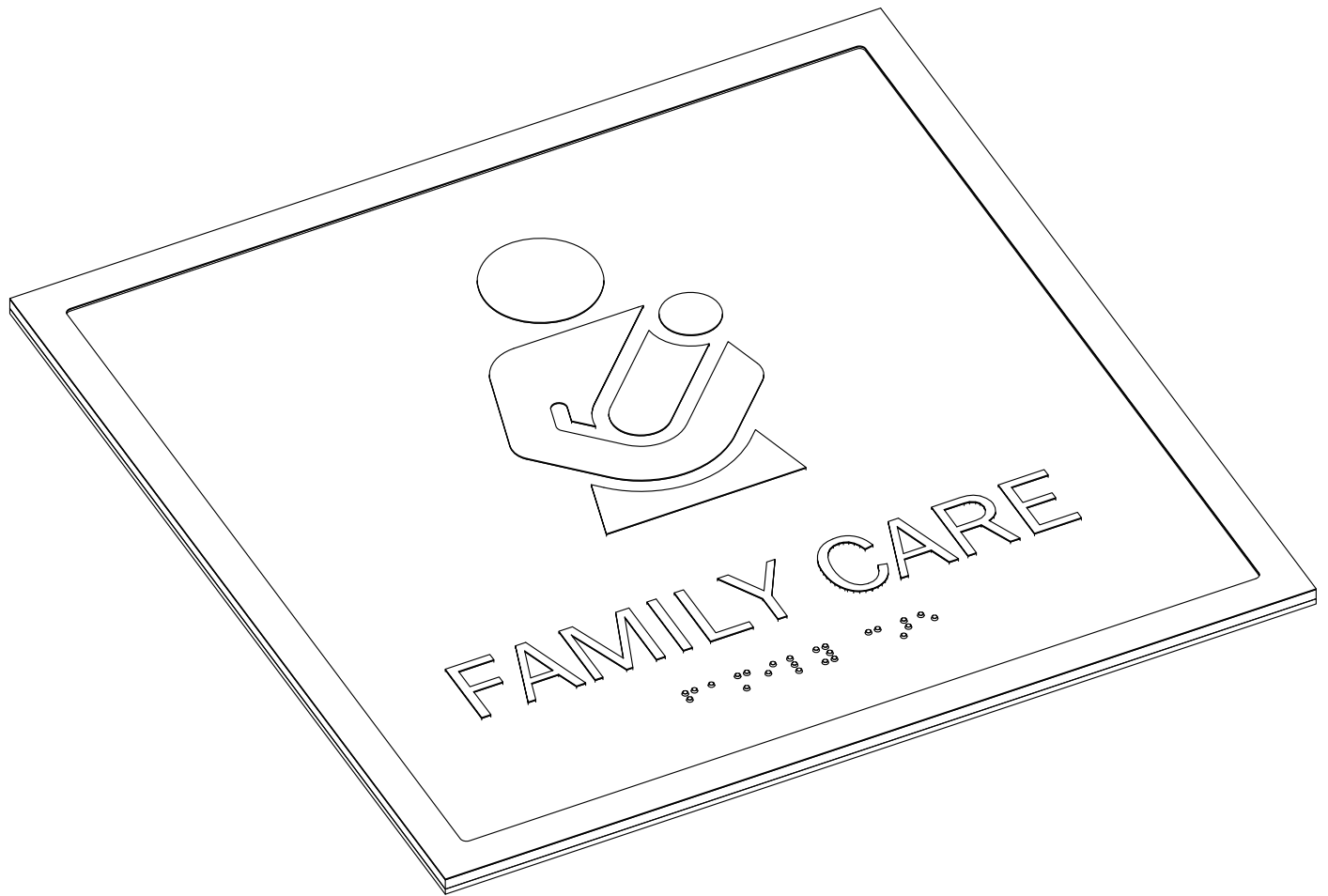
FACILITIES PLANNING, DESIGN AND CONSTRUCTION

I1-PLAN - Interior Panel Signs - Master Set.dwg - Issued Sep 21, 2009

.85 x SCALE

10431
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0.6 x SCALE

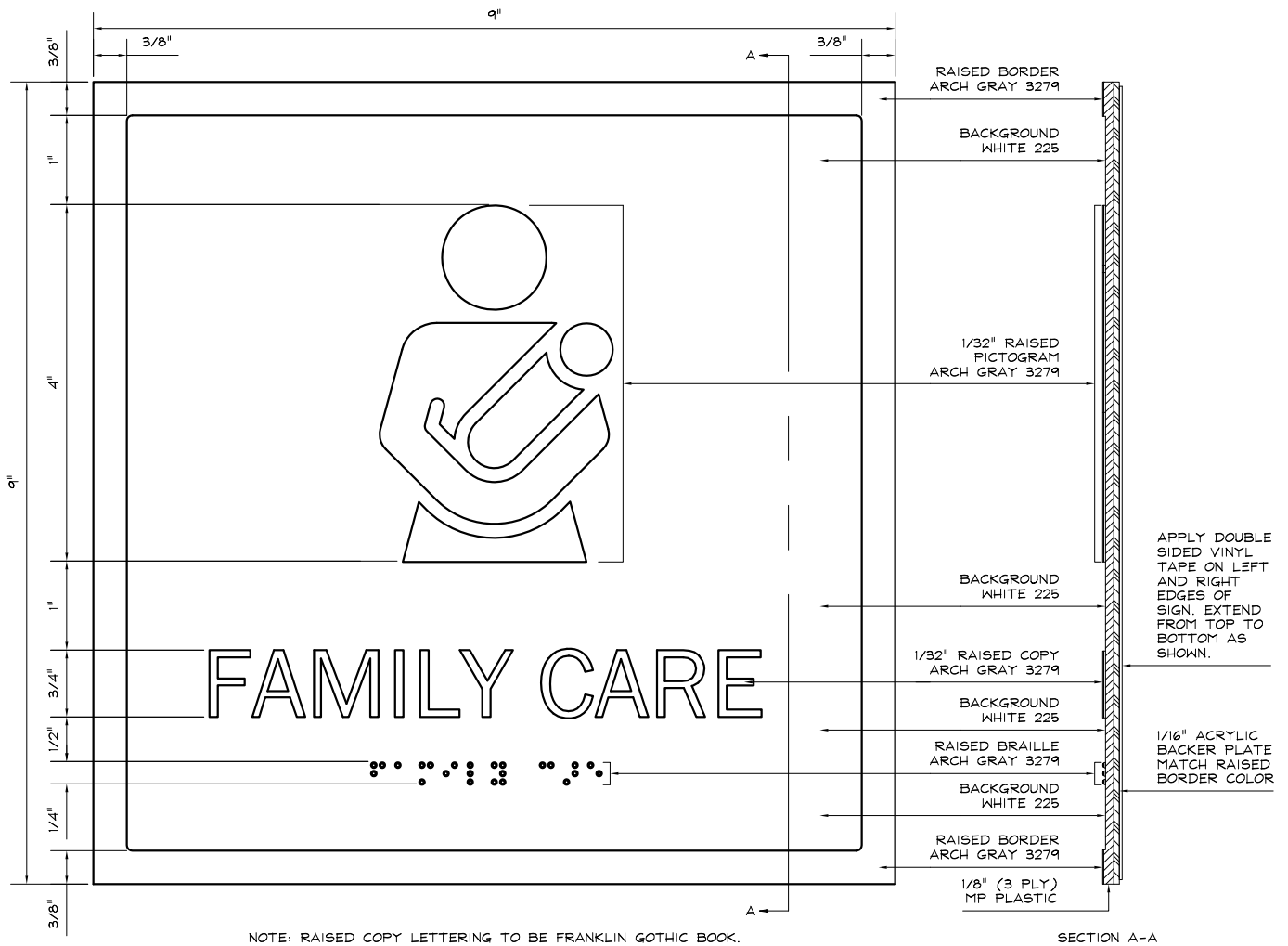
**INTERIOR PANEL SIGN
TYPE: I1**

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SPEC. SECTION

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I1-ISO - Interior Panel Signs - Master Set.dwg - Issued Sep 22, 2009



0.5 x SCALE

**INTERIOR PANEL SIGN
TYPE: I1**

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RECYCLING



.85 x SCALE

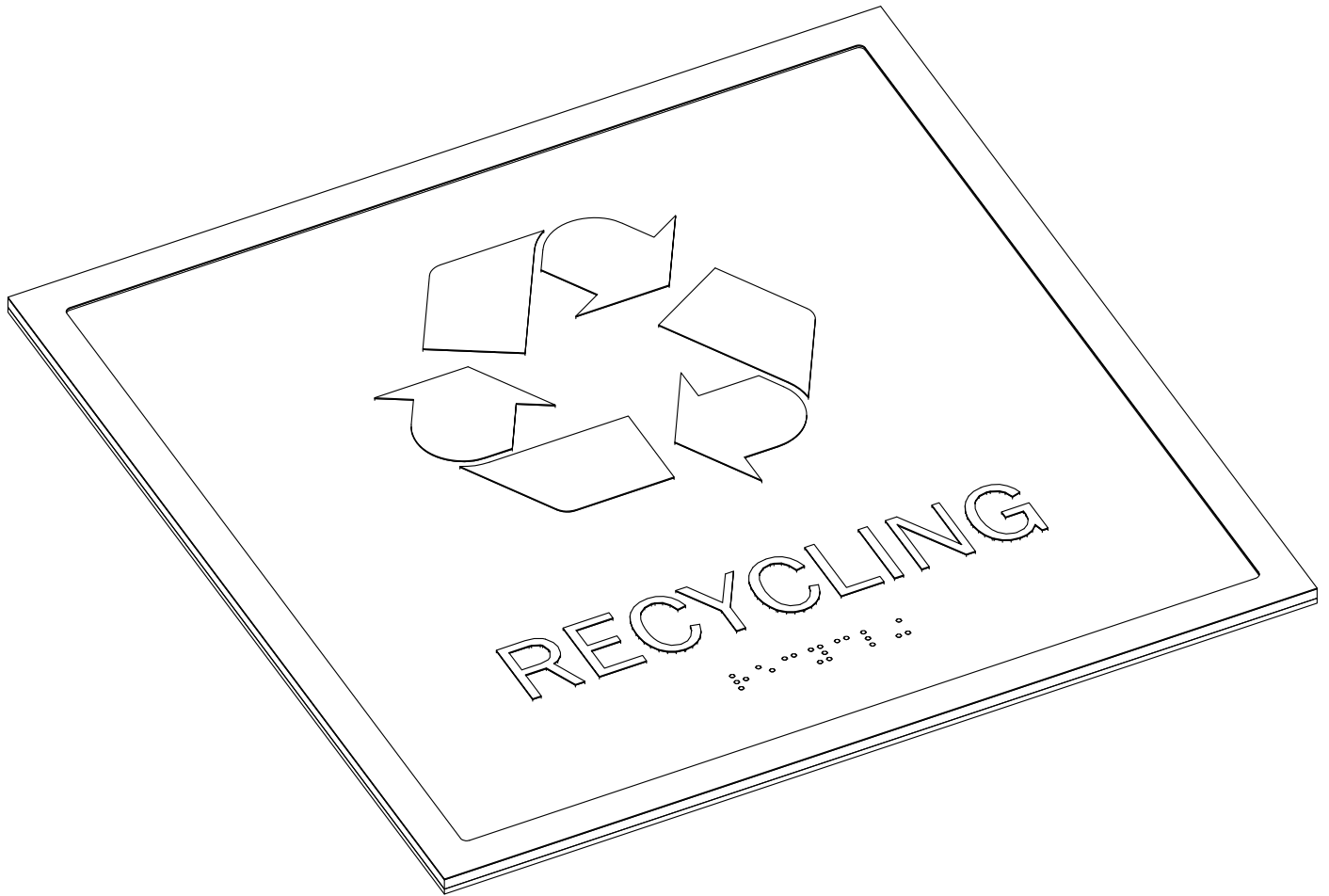
**INTERIOR PANEL SIGN
TYPE: J1**

**10431
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J1-PLAN - Interior Panel Signs - Master Set.dwg - Issued Feb 12, 2010



0.6 x SCALE

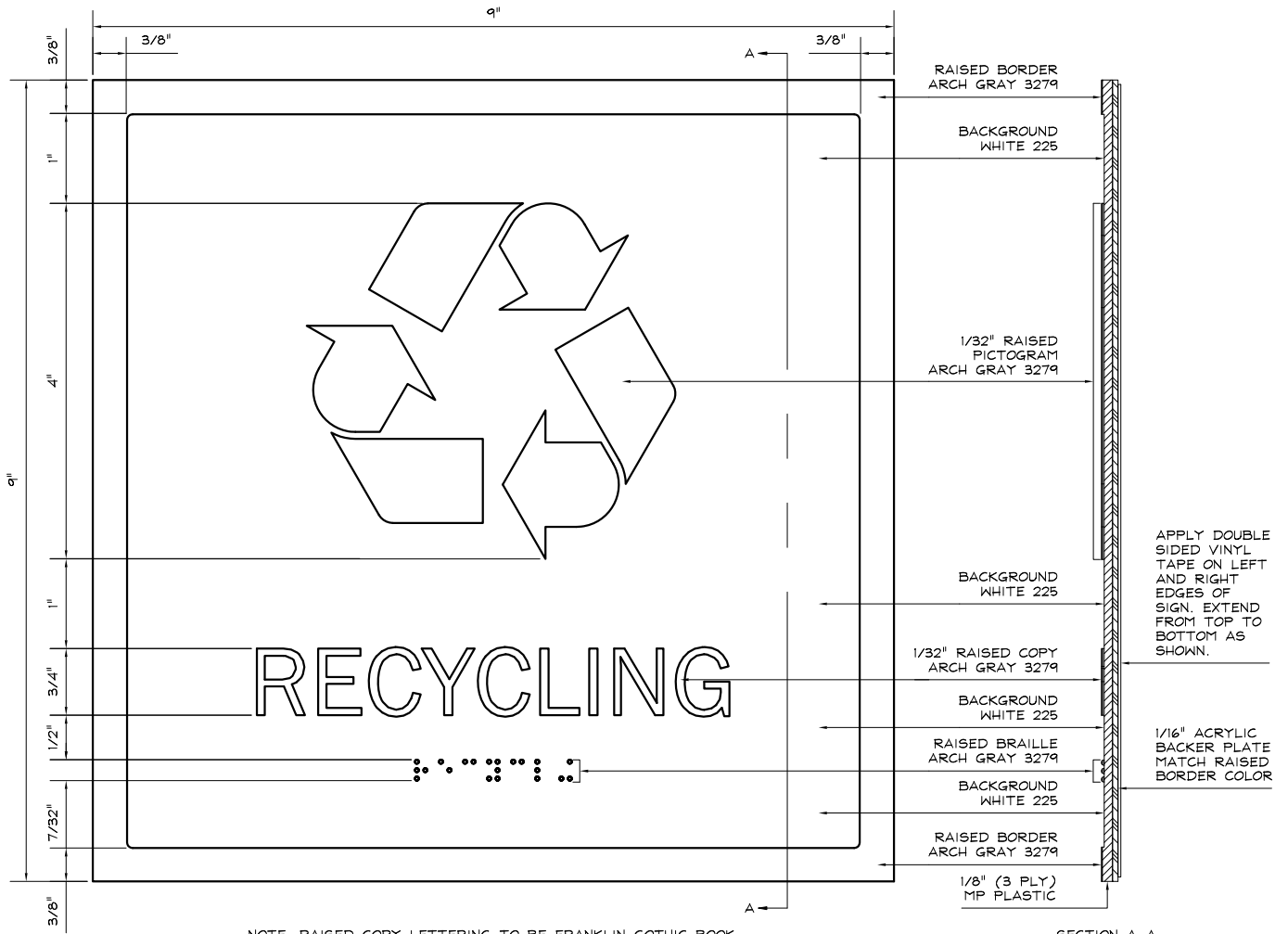
**INTERIOR PANEL SIGN
TYPE: J1**

10431
SPEC. SECTION

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

2007
DATE

J1-ISO - Interior Panel Signs - Master Set.dwg - Issued Feb 12, 2010



NOTE: RAISED COPY LETTERING TO BE FRANKLIN GOTHIC BOOK.
NOTE: CORNER FILLETS TO BE 1/16" (TYPICAL).

0.5 x SCALE

**INTERIOR PANEL SIGN
TYPE: J1**

**10431
SPEC. SECTION**

FACILITIES PLANNING, DESIGN AND CONSTRUCTION

**2007
DATE**

J1-SHOP - Interior Panel Signs - Master Set.dwg - Issued Feb 12, 2010

SECTION 10 2613 - WALL PROTECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Corner Guards and Wall End Caps.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 – Rough Carpentry: Blocking and Supports.
- B. Section 09 2116 – Gypsum Board Assemblies, Coordination with Blocking.

1.3 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product data for each system component and installation accessory required, including installation methods for each type of substrate.
- C. Shop drawings showing locations, extent and installation details of corner guards. Show methods of attachment to adjoining construction
- D. Samples for verification purposes: Submit the following samples, as proposed for this work, for verification of guard:
 - 1. 12" (304.8mm) long sample of each model specified.
- E. Maintenance data for wall protection system components for inclusion in the operating and maintenance manuals specified in Division 1.

1.5 QUALITY ASSURANCE

- A. Installer qualifications: Engage an installer who has no less than 3 years experience in installation of systems similar in complexity to those required for this project.
- B. Manufacturer's qualifications: Not less than 5 years experience in the production of specified products and a record of successful in-service performance.
- C. Fire performance characteristics: Provide metal components tested in accordance with ASTM E84 for Class A/1 fire characteristics.
- D. Single source responsibility: Provide all components of the wall protection system manufactured by the same company to ensure compatibility of color, texture and physical properties.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the project site in unopened original factory packaging clearly labeled to show manufacturer.
- B. Material must be stored flat.

1.7 PROJECT CONDITIONS

- A. Installation areas must be enclosed and weatherproofed before installation commences.
- B. Deliver and store materials in unopened factory packaging to the jobsite

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. All products of each type by the same manufacturer.
 - 1. InPro Corporation
 - 2. C-S Group
 - 3. Wallguard.com
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.2 MATERIALS

- A. Stainless steel: To be type 304 alloy with #4 satin finish for models CO-8 and CO-8M; minimum strength and durability properties as specified in ASTM A276.
 - 1. All necessary fasteners to be supplied by the manufacturer.

2.3 CORNER GUARDS (IDENTIFIED AS 'CG' IN THE DRAWINGS)

- A. Stainless steel corner guards to be surface mounted.

1. 16 gauge stainless steel.
2. 3/16" radius and 2 1/2" legs.
3. Length: 4'-0"
4. Mounted with stainless steel screws.

2.4 WALL CAPS

- A. Stainless wall caps to be surface mounted.
 1. 16 gauge stainless steel.
 2. 3/16" radius and 2 1/2" legs.
 3. Length to match existing stainless steel wall caps in adjacent corridor.
 4. Mounted with stainless steel screws.

2.5 FABRICATION

- A. General: Fabricate wall protection systems to comply with requirements indicated for design, dimensions, detail, finish and member sizes.
- B. Preassemble components in shop as much as possible to minimize field assembly.

2.6 FINISHES

- A. General: Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applications and designations of finishes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
- B. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface preparation: Prior to installation, clean substrate to remove dirt, debris and loose particles. Perform additional preparation procedures as required by manufacturer's instructions.
- B. Protection: Take all necessary steps to prevent damage to material during installation as required in manufacturer's installation instructions.

3.3 INSTALLATION

- A. Install the work of this section in strict accordance with the manufacturer's recommendations, using only approved mounting hardware, and locating all components firmly into position, level and plumb.
- B. Temperature at the time of installation must be between 65°-75°F (18°-24°C) and be maintained for at least 48 hours after the installation.

3.4 CLEANING

- A. General: Immediately upon completion of installation, clean guards in accordance with manufacturer's recommended cleaning method.
- B. Remove surplus materials, rubbish and debris resulting from installation as work progresses and upon completion of work.

3.5 PROTECTION

- A. Protect installed materials to prevent damage by other trades. Use materials that may be easily removed without leaving residue or permanent stains.

END OF SECTION 10 2613

SECTION 10 2800 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Accessories for handwash sinks.

1.2 RELATED REQUIREMENTS

- A. Section 01 2300 – Alternates: Accessory items are associated with Alternate 1.
- B. Section 09 3000 - Tiling.
- C. Section 10 2113 – Toilet Compartments

1.3 1.03 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities; Final Rule; current edition; (ADA Standards for Accessible Design).
- B. ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip; 1999 (Reapproved 2009).
- C. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2010.
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.
- E. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2011e1.
- F. ASTM C1036 - Standard Specification for Flat Glass; 2011e1.
- G. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2008.
- H. ASTM F2285 - Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use; 2004 (Reapproved 2010).

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with the placement of internal wall reinforcement to receive anchor attachments.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.
- C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Toilet Accessories:
 - 1. Ecolab, www.ecolab.com
 - 2. Draco Hygienic Products Inc., www.draco.com
 - 3. Substitutions: Section 01 6000 - Product Requirements.

2.2 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Stainless Steel Sheet: ASTM A666, Type 304.
- C. Stainless Steel Tubing: ASTM A269, Type 304 or 316.
- D. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof, security type.
- E. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.3 FINISHES

- A. Stainless Steel: No. 4 satin brushed finish, unless otherwise noted.

- B. Chrome/Nickel Plating: ASTM B456, SC 2, satin finish, unless otherwise noted.

2.4 TOILET ROOM ACCESSORIES

- A. Furnish type of accessories for each room as scheduled. Furnish all items with chrome plated or stainless steel finish unless specifically noted otherwise. Furnish scribe filler strips at all mirror installations where overlapping ceramic tile wainscot.
- B. Paper Towel Dispenser (**PTD**): Draco 5400-5; color: white.
- C. Soap dispenser (**SD**): EcoLab Nexa Classic Manual Dispenser (1250 ml), white, 9202-3093

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install all accessories in accordance with published standard specifications and manufacturer's
- B. recommendations. Verify required installation variations with Architect before proceeding with
- C. the work.
- D. Verify that walls and surfaces to which accessories are to be mounted are reinforced or provided
- E. with backing or blocking for solid anchorage. Provide fasteners long enough to penetrate into solid anchorage. Fastening with toggle bolts, molly screws, or similar fittings not permitted.

3.2 ADJUSTING

- A. Damaged Items: Bent, dented, and racked items are not acceptable. Field repairs not permitted.
- B. Refinish scratched and abraded finishes equal to original finish and indistinguishable from adjacent surfaces.

END OF SECTION 10 2800

SECTION 10 5600 - STORAGE ASSEMBLIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Storage Shelves

1.2 RELATED REQUIREMENTS

- A. Section 01 2300 – Alternates: Items are associated with Alternate 1.
- B. Section 09 2116 - Gypsum Board Assemblies

1.3 1.03 REFERENCE STANDARDS

- A. ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip; 1999 (Reapproved 2009).
- B. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2010.
- C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with the placement of internal wall reinforcement to receive anchor attachments.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.
- C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Storage Assemblies:
 - 1. Eagle Group
 - 2. Regency
 - 3. Advance Tabco
 - 4. Metro
 - 5. Substitutions: Section 01 6000 - Product Requirements.

2.2 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Stainless Steel Sheet: ASTM A666, Type 304.
- C. Stainless Steel Tubing: ASTM A269, Type 304 or 316.

2.3 FINISHES

- A. Stainless Steel: No. 4 satin brushed finish, unless otherwise noted.

2.4 WALL MOUNTED SHELVES

- A. Furnish type of accessories for each room as shown on drawings.
- B. 48" Stainless Steel Shelf:
 - 1. Basis of Design: Eagle Group WS1248
 - a. Fabricated from 16ga type 304 stainless steel.
 - b. 1 ½" roll on front
 - c. 1 ½" upturn on rear and ends
 - d. Die formed stainless steel mounting brackets stud-welded to shelf
- C. 48" Wire Shelf:
 - 1. Basis of Design: Eagle Group GSB 1448C

- a. Wire Wall Shelf Kit with Chrome Finish. Open grid wire shelf and two stationary wire wall mounts.
- D. Epoxy Peg Board Drying Rack:
 - 1. Basis of Design: Inter Dyne System, Inc "EPB Epoxy Pegboard".
 - a. Fabricated from 1" thick black epoxy.
 - b. Dimension: 18"w x 24"h.
 - c. (21) 6 1/2" long 3/8" diameter black polypropylene pegs.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install all accessories in accordance with published standard specifications and manufacturer's
- B. recommendations. Verify required installation variations with Architect before proceeding with
- C. the work.
- D. Verify that walls and surfaces to which accessories are to be mounted are reinforced or provided
- E. with backing or blocking for solid anchorage. Provide fasteners long enough to penetrate into solid anchorage. Fastening with toggle bolts, molly screws, or similar fittings not permitted.

3.2 ADJUSTING

- A. Damaged Items: Bent, dented, and racked items are not acceptable. Field repairs not permitted.
- B. Refinish scratched and abraded finishes equal to original finish and indistinguishable from adjacent surfaces.

END OF SECTION 10 5600

SECTION 12 3400 - LAMINATE CLAD CASEWORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Fixed modular laminate clad casework and components.
- B. Countertops.

1.2 RELATED REQUIREMENTS

- A. Section 01 2300 – Alternates: Casework items are associated with Alternates 1 & 2.
- B. Blocking within walls where indicated: Division 6.
- C. Base molding: Division 9.
- D. Sinks and service fixtures, service waste lines, connections, and vents: Division 15.

1.3 DEFINITIONS

- A. Identification of casework components and related products by surface visibility.
- B. Open Interiors: Any open storage unit without solid door or drawer fronts, units with full glass insert doors and/or acrylic doors, and units with sliding solid doors.
- C. Closed Interiors: Any closed storage unit behind solid door or drawer fronts.
- D. Exposed Ends: Any storage unit exterior side surface that is visible after installation.
- E. Other Exposed Surfaces: Faces of doors and drawers when closed, and tops of cabinets less than 72 inches above furnished floor.
- F. Semi-Exposed Surfaces: Interior surfaces which are visible, bottoms of wall cabinets and tops of cabinets 72 inches or more above finished floor.
- G. Concealed Surfaces: Any surface not visible after installation.

1.4 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.
- B. BHMA A156.9 - American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association; 2010 (ANSI/BHMA A156.9).
- C. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 - 1. Minimum Scale of Detail Drawings: 1-1/2 inch to 1 foot.
- C. Product Data: Provide data for hardware accessories.
- D. Samples: Submit actual samples of architectural cabinet finishes, minimum 6 inches square, illustrating proposed cabinet, countertop, and shelf unit finish.
- E. Samples: Submit actual sample items of proposed exposed hardware, grommets and pulls, demonstrating hardware design, quality, and finish.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum seven years of experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver completed laminate clad casework, countertops, and related products only after wet operations in building are completed, store in ventilated place, protected from the weather, with relative humidity range of 25 percent to 55 percent.
- B. Protect finished surfaces from soiling and damage during handling and installation with a protective covering.

1.8 JOB CONDITIONS

- A. Environmental Requirements: Do not install casework until permanent HVAC systems are operating and temperature and humidity have been stabilized for at least 1 week.
- B. Manufacturer/Supplier shall advise Contractor of temperature and humidity requirements for architectural casework installation areas.

- C. Conditions: Do not install casework until interior concrete work, masonry, plastering and other wet operations are complete.
- D. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Core Materials:
 - 1. Particleboard up to 7/8 inch thick: Industrial Grade average 45-pound density particleboard, ANSI A 208.1-2009, M-2 requirements.
 - 2. Particleboard 1 inch thick and thicker: Industrial Grade average 45-pound density particle-board, ANSI A 208.1-2009, M-2 requirements.
 - 3. Medium Density Fiberboard 1/4 inch thick: Minimum average density 45-50 lbs., ANSI A208.2-2009 requirements.
 - 4. MR Moisture Resistant Particleboard: Average 45-pound density particleboard, ANSI A208.1 1-2009, M-2 requirements.
- B. Decorative Laminates:
 - 1. High-pressure decorative laminate VGS (.028), NEMA Test LD 3-2005.
 - 2. High-pressure decorative laminate HGS (.048), NEMA Test LD 3-2005.
 - 3. High-pressure decorative laminate HGP (.039), NEMA Test LD 3-2005.
 - 4. High-pressure cabinet liner CLS (.020), NEMA Test LD 3-2005.
 - 5. High-pressure backer BKH (.048), (.039), (.028), NEMA Test LD3-2005.
 - 6. Thermally fused melamine TFM laminate, NEMA Test LD 3-2005. (TFM allowed on casework interiors only, as specified below. Utilization of TFM on any exterior casework surfaces, including door and drawer faces and finished ends, will not be permitted.)
 - 7. Laminate Color Selection: Maximum 1 color per unit face and 5 colors per project. (See Color Selection in section 3.05).
- C. Edging Materials:
 - 1. 1mm PVC banding, machine applied.
 - 2. 3mm PVC banding, machine applied and machine profiled to 1/8 inch radius.

2.2 CABINET HARDWARE

- A. Hinges:
 - 1. Five knuckle, epoxy powder coated, institutional grade, 2-3/4 inch overlay type with hospital tip. 0.095 inch thick. ANSI-BHMA standard A156.9, Grade 1.
 - 2. Doors 48 inches and over in height have 3 hinges per door.
 - 3. Magnetic door catch with maximum 5 pound pull provided, attached with screws and slotted for adjustment.
- B. Drawer and Door Pulls: "U" shaped wire pull, steel with chrome finish, 4 inch centers.
 - 1. Projection: 1-7/8 inch minimum, comply with ADA guidelines.
- C. Drawer Slides:
 - 1. Regular, kneespace and pencil: 100-pound load rated epoxy coated steel, bottom corner mounted with smooth and quiet nylon rollers. Positive stop both directions with self-closing feature. Paper storage, 150-pound load rated epoxy coated steel slides.
- D. Adjustable Shelf Supports:
 - 1. Injection molded transparent polycarbonate friction fit into cabinet end panels and vertical dividers, adjustable on 32mm centers. Each shelf support has 2 integral support pins, 5mm diameter, to interface pre-drilled holes, and to prevent accidental rotation of support. The support automatically adapts to 3/4 inch or 1 inch thick shelving and provides non-tip feature for shelving. Supports may be field fixed if desired. Structural load to 1200 pounds (300 pounds per support) without failure.

2.3 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; chrome-plated finish in concealed locations and chrome-plated finish in exposed locations.

2.4 FABRICATION

- A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI Architectural Woodwork Standards for Premium Grade.
- B. Assembly: Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.
- C. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- D. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- E. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
- F. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.
- G. Finish all exposed surfaces, no unexposed surfaces will be accepted.
- H. Cabinet Body Construction: Meeting requirements of AWS for Grade specified, unless noted otherwise.
 - 1. Fixed base and tall units have an individual factory-applied base, constructed of 3/4 inch thick plywood. Base is 102mm (nominal 4 inch) high unless otherwise indicated on the drawings.
 - 2. Side panels and vertical dividers shall receive adjustable shelf hardware at 32mm line boring centers. Mount door hinges, drawer slides and pull-out shelves in the line boring for consistent alignment.
 - 3. Exposed and semi exposed edges.
 - a. Edging: 1mm PVC machine applied.
- I. Adjustable Shelves in Cabinets
 - 1. Core: Particleboard.
 - 2. Core Thickness: 3/4 inch up to 30 inches wide, 1 inch over 30 inches wide.
 - 3. Edge: 1mm PVC on Front Edge Only.
- J. Interior finish, units with closed Interiors:
 - 1. Top, bottom, back, sides, horizontal and vertical members, and adjustable shelving faces with TFM Thermally Fused Melamine laminate.
- K. Exposed ends:
 - 1. Faced with high-pressure decorative VGS laminate.
- L. Wall unit bottom:
 - 1. Faced with high-pressure decorative VGS laminate.
- M. Balanced construction of all laminated panels is mandatory. Unfinished core stock surfaces, even on concealed surfaces (excluding edges), are not permitted.
- N. Drawers:
 - 1. Sides, back and sub front: Minimum 1/2 inch thick particleboard, laminated with TFM Thermally Fused Melamine, doweled and glued into sides. Top edge banded with 1mm PVC.
 - 2. Drawer bottom: Minimum 1/2 inch thick particleboard laminated with TFM Thermally Fused Melamine, screwed directly to the bottom edges of drawer box.
- O. Door/Drawer Fronts:
 - 1. Core: 3/4 inch thick particleboard.
 - 2. High-pressure decorative VGS laminate exterior, balanced with high-pressure cabinet liner CLS.
 - 3. Edges: 3mm PVC, machine applied, external edges and outside corners machine profiled to 1/8 inch radius.
 - 4. Provide double doors in opening in excess of 24 inches wide.

2.5 DECORATIVE LAMINATE COUNTERTOPS:

- A. Core:
 - 1. All countertops except at sink elevations: 1-1/8 inch thick ANSI A208.1-1993 M-2 particleboard.
 - 2. Countertops at sink elevations: 1-1/8 inch thick ANSI A208.1-1993 M-3 moisture resistant (MR) particleboard.
- B. Surface: High-pressure decorative HGS/HGP laminate with balanced backer sheeting.
- C. Edges, including applied backsplash: 3mm PVC, exposed edges and corners machine profiled to 1/8 inch radius. Edges are machine applied with water based low Volatile Organic Compound (VOC),

non-toxic, PVA adhesive.

- D. All countertop joints must be dry fit at the factory to check for consistency in color from one panel to the other and overall finished panel thickness, resulting in a high quality product easy to install.

2.6 STAINLESS STEEL COUNTERTOPS (STST COUNTERTOPS)

- A. Provide and install stainless steel countertops where indicated on drawings and backsplashes where countertop is adjacent to wall surface.
- B. Stainless steel material:
 - 1. gauge: 16
 - 2. Stainless steel finish: 304
- C. Countertops: 1" thick countertop of stainless steel material, bent to desired profiles and sizes having edge details as indicated. Provide countertops complete with backsplashes of size shown on Drawings.
 - 1. Front edge: square, 1" face
 - 2. Height of back and and splashes: 4 ½"
 - 3. Top support: marine-grade plywood or stainless steel hat channels.
- D. Fabrication:
 - 1. Fabricate components in shop to greatest extent practical to sizes and shapes indicated, in accordance with approved Shop Drawings and stainless steel countertop manufacturer requirements.
 - 2. Fabricate backsplashes from continuous material with radius cove where counter and backsplashes meet as indicated on Drawings.
 - 3. Fabricate joints between components using manufacturer's standard joint methods. Ensure joints are inconspicuous in appearance and without voids.
 - 4. Provide holes and cutouts for plumbing accessories as indicated on Drawings.
 - 5. Finish component edges to a smooth, uniform finish. Repair or reject defective or inaccurate work.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions and proceed with work in accordance with Section 01 7000.
- B. Verify adequacy of backing and support framing.
- C. Verify location and sizes of utility rough-in associated with work of this section.

3.2 INSTALLATION

- A. Set and secure custom casework in place, assuring that they are rigid, plumb, and level.
- B. Use fixture attachments in concealed locations for wall mounted components.
- C. Use concealed joint fasteners to align and secure adjoining cabinet units.
- D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- E. Secure casework to floor and wall using appropriate angles and anchorages.
- F. Secure and seal backsplash to countertop by pressing into full and continuous bed of silicone adhesive sealant. Carefully clean away all excess sealant, leaving smooth, uniform, minimally exposed joint without gaps.

3.3 ADJUSTING

- A. Adjust installed work to adjacent surfaces, fixtures and equipment.
- B. Adjust moving or operating parts to function smoothly and correctly.

3.4 CLEANING AND PROTECTIONS

- A. Protect casework from marring, defacement, or other damage until final completion.
- B. Clean casework, counters, shelves, hardware, fittings, and fixtures. Leave in ready use condition.

3.5 LAMINATE COLOR AND FINISH SCHEDULE

- A. Plastic Laminate Color Schedule: Basis of Design colors
 - 1. PL-1: Wilsonart, Architect to select color from standard color and texture selection.
 - 2. PL-2: Wilsonart, Architect to select color from standard color and texture selection.

END OF SECTION 06 4100