BACHAND HALL (formerly the Health & Human Services Bldg.) & PIONEER HALL CLASSROOM RENOVATIONS 2023

DECEMBER 6, 2022

Bid #23010

Pre-Bid Meeting Date: Tuesday, December 13, 2022 at 11:00 a.m.

Pre-Bid Meeting Location: Meet in the lobby of Bachand Hall – see Campus Map for directions.

Bid Due Date: Tuesday, January 3, 2023 at 2:00 p.m.

Facilities Planning & Construction Department
7400 Bay Road
University Center, Michigan 48710
Tel. (989) 964-4074
Fax (989) 964-4096

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

DRAWINGS & SPECIFICATIONS (CONTINUED)

Pioneer Hall – P119 Lab Renovation

INSTRUCTIONS TO BIDDERS

OWNER:

Saginaw Valley State University
7400 Bay Road
University Center, MI 48710

PROJECT:

Bachand Hall (HHS) & Pioneer Hall - Classroom Renovations 2023
SVSU Bid No. 23010

DESIGNER / ENGINEER:

SSOE, Inc.
1050 Wilshire Dr., Ste. #260 ◊ Troy, MI 48084
Ph: (248) 643-6222

PRE-BID MEETING/TOUR:

Date: Tuesday, December 13, 2022
Time: 11:00 a.m.
Contact: Mike Pazdro, SVSU

BID DUE DATE:

Date: Tuesday, January 3, 2023
Time: 2:00 p.m.

Note: Bids will be publicly opened and read aloud.

BID LOCATION:

Saginaw Valley State University
Facilities Planning & Construction Office (SCC-A 153)
7400 Bay Road, University Center, MI

Note: Bids must be received in the Facilities Planning & Construction Office prior to above due date and time. Bids delivered to any other office or location will be rejected. Late bids will not be accepted and will not be opened. Faxed bids will not be accepted.

PROJECT TIMEFRAME:

Bachand Hall (HHS) – May 1, 2023 to August 4, 2023
Pioneer Hall – January 30, 2023 to March 31, 2023

1. LOCATION OF PROJECT

Bachand Hall (HHS) & Pioneer Hall - Classroom Renovations 2023
7400 Bay Rd.
University Center, Michigan 48710

2. PROPOSALS AND SCOPE

A. BIDDING IS BY INVITATION ONLY. Proposals shall be accepted only from those firms that have been pre- qualified and invited to bid on this project. Sub-Contractors, if used, shall be from the pre-qualified list.

B. Proposals are invited for work in accordance with these specifications and the accompanying drawings prepared by Architect.

C. The Bidder is to fill out completely and submit in duplicate two (2) sets of the Proposal Form furnished with the documents. The forms must be filled out in ink, typewritten or by word processing, with signature in longhand. Proposal amounts must be stated in writing and figures. In case of a discrepancy between the written statement and the figures, the written statement will govern. Proposals submitted in any other form will not be considered.

D. Proposals must be delivered in a sealed envelope, properly addressed and labeled as follows:

Address to: Facilities Planning & Construction
Saginaw Valley State University
7400 Bay Road
University Center, MI 48710

Label as Follows: **SEALED BID ENCLOSED FOR:**
Bachand Hall (HHS) & Pioneer Hall - Classroom Renovations 2023
SVSU Bid #23010
Submitted by: Company Name

E. The Owner's Standard General Conditions, Supplemental Conditions and any other amendments, included herein, by reference or by addendum, govern all operations that are to be conducted in the performance of any contract entered into for the Work.

3. REQUIREMENTS FOR SIGNING PROPOSALS

A. Corporations: Signature of official shall be accompanied by a certified copy of the resolution of the Board of Directors authorizing the individual signing to bind the corporation.

B. Partnerships: Signature of one partner shall be accompanied by a certified copy of the power of attorney authorizing the individual signing to bind all partners. If bid is signed by all partners, no authorization is required.

C. Individual: No authorization is needed.

D. Each signature must be witnessed.

4. MODIFICATIONS

A. Modifications to a bid previously submitted will be accepted only if received prior to official bid opening time and properly identified with the proposal name, signed and dated. Indicate only amount of change in bid. Do not reveal original bid price. No oral modifications will be considered. Modifications shall be scanned & e-mailed, faxed or hand delivered.

5. EXAMINATION OF SITE

A. It is necessary for bidders to inform themselves of the conditions under which work is to be performed, the site of the work, the structures, the obstacles that may be encountered and all other relevant matters concerning the work to be performed. The Bidder, if awarded the contract, shall not be allowed any extra compensation by reason of any matter or thing concerning which such Bidder might have become fully self-informed, because of a failure to have informed self prior to the bidding.

6. TAXES

A. The Contractor shall include and be deemed to have included in his bid and contract price all Michigan Sales and Use Taxes currently imposed by Legislative enactment and as administered by the Michigan Department of Treasury, Revenue Division, on the bid date.

If the Contractor is not required to pay or bear the burden, or obtains a refund or drawback in whole or in part of any Michigan Sales or Use Tax, interest or penalty thereon, which was required to be and was deemed to have been included in the bid and contract price, the contract price shall be reduced by the amount thereof and the amount of such reduction, whether as a refund or otherwise, shall ensure solely to the benefit of the State of Michigan.

7. CONSIDERATION OF BIDS

A. The bidder acknowledges the right of the Owner to reject any or all bids and to waive any informality or irregularity in any bid received. In addition, the bidder recognizes the right of the Owner to reject a bid if the bidder failed to furnish any required bid security, or awardability or to submit the data required by the bidding documents, or if the bid is in any way incomplete, irregular or conditional.

B. It is the intent of the Owner to award a contract to the lowest responsible bidder provided the bid has been submitted in accordance with the requirements of the bidding documents, and does not exceed the funds available.

C. The University reserves the right to award to other than the low bidder if, in the opinion of the University, it is in their best interest to do so.

8. BID BOND

A. A Bid Bond is not required.

9. MICHIGAN PRODUCTS

A. All prime bidders and their subcontract bidders and suppliers shall utilize Michigan made products whenever possible where price, quality and performance are equal to or better than non-Michigan products.

10. INTERPRETATION OF DOCUMENTS AND ADDENDA

A. Before the Owner makes the award, neither the Owner nor the Designer/Engineer will give verbal answers to inquiries regarding the meaning of drawings and specifications, or verbal instructions. Any such verbal statements by any persons, prior to the award, are invalid.

B. Any explanation desired by bidders must be requested of the Designer/Engineer in writing, and if explanation is necessary, a reply will be made in the form of an addendum, a copy of which will be forwarded to each bidder who has received a set of the Contract Documents and to such other prospective bidders as have requested a copy of each addenda.

C. Any addenda issued to bidders prior to the date of receipt of proposals become a part of the Contract Documents and all proposals are to include the work described in the addenda. Each proposal submitted must list all addenda which have been received before the bid due date.

11. EQUAL EMPLOYMENT OPPORTUNITY CLAUSE

A. Saginaw Valley State University is an equal opportunity employer and is non-discriminatory in its policies and practices.

B. In the performance of any contract or purchase order resulting herefrom, the bidder, contractor, subcontractor or vendor agrees and covenants not to discriminate against an employee or applicant for employment for any reason directly or indirectly related to employment because of race, color, religion, national origin, sex, handicap, or disabled veteran or Vietnam era veteran status. The provisions of section 202 of Executive Order 11246, as amended, section 503 of the Rehabilitation Act of 1973 as amended, and 38USC2012, the Vietnam Era Readjustment Assistance Act of 1974 as amended are incorporated herein by specific reference.

C. The bidder, contractor, subcontractor, or vendor agrees to and is in compliance with other Federal, State, and Local laws, published rules, regulations, directives and orders that govern equal opportunity in matters related to employment.

12. UNFAIR LABOR PRACTICE

A. Public Act No. 278 of 1980 prohibits the State of Michigan from awarding a Contract or Subcontract to an employer who has been found in contempt of court by a Federal Court of Appeals, on not less than three (3) occasions involving different violations during the preceding seven (7) years, for failure to correct an unfair labor practice as prohibited by Section 8 of Chapter 372 of the National Labor Relations Act, 29 U.S.C. 158.

B. An employer who has a Contract with the State of Michigan may not, in relation to that Contract, Subcontract with such as employer.

C. The State of Michigan may rescind the Contract if the name of the employer or the name of a subcontractor, manufacturer, or supplier of the employer subsequently appears in the register of such employers which will be compiled by Michigan's Department of Labor pursuant to Section 2 of Public Act No. 278 of 1980.

END OF SECTION

PROPOSAL FORM

OWNER: Saginaw Valley State University
7400 Bay Road
University Center, MI 48710

PROJECT: Bachand Hall (HHS) & Pioneer Hall
Classroom Renovations 2023
SVSU Bid No. 23010

DESIGNER / ENGINEER: SSOE, Inc.
1050 Wilshire Dr., Ste. #260, Troy, MI 48084

CONTRACT: General Construction

Name of Bidder: _____

Address: _____

_____

_____

Telephone #: _____ **Fax #:** _____

TO: Saginaw Valley State University
Facilities Planning & Construction Office
7400 Bay Road, University Center, MI

PROPOSAL: Pursuant to and in compliance with your Invitation to Bid and the Contract Documents relating to the above named project, the Undersigned agrees to enter into an Agreement with the Owner for the Stipulated Sum of:

Total Base Sum of _____

_____ Dollars ($_____)

INDIVIDUAL PROJECT COSTS:

The Projects will be awarded based on the Total Base Sum on the previous page. SVSU will be tracking the projects separately. Please provide the cost for each project:

Bachand Hall (HHS) Cost ($_____)

Pioneer Hall Cost ($_____)

VOLUNTARY ALTERNATES:

Voluntary Alternate

_____

_____

Add / Subtract ($_____) to the base Proposal.

ADDENDA:

The undersigned has included in the Proposal the modifications to the work described in the following addenda issued subsequent to the Invitation to Bid and received prior to this submission.

Addendum No. _____ Date: _____

Addendum No. _____ Date: _____

Addendum No. _____ Date: _____

AMERICAN MADE PRODUCTS & SERVICES:
Saginaw Valley State University endeavors to buy products made in the United States of America whenever an American made* product is available that meets or exceeds the specifications requested and the price is equal to or lower than a foreign made product. Vendors are requested to bid American made products and/or service whenever available. Vendors may bid foreign made products or services when:

1. They are specified.
2. As an alternate as long as they are technically acceptable.

Each vendor must check the appropriate box for the products and/or services proposed. IF NOT CHECKED YOUR PROPOSAL MAY BE CONSIDERED INVALID.

_____Yes, meets the definition of American made products or services.

_____Are foreign made and/or foreign services.

*More than 50% of the product is manufactured or assembled in the United States.

PROPOSAL SIGNATURE:

The undersigned agrees to execute a contract for the Work covered by this proposal provided he is notified of its acceptance with sixty (60) days of the opening of proposals.

Date: _____ Name of Company_____

Signature _____

Print name_____

Title_____

Witnessed in Presence of: Signature_____

Print name_____

Date: _____ Title_____

Submit two (2) copies.

END OF SECTION

PRE-QUALIFIED CONTRACTORS

COMPANY NAME & ADDRESS	TELEPHONE	FAX
Access Construction & Design (Small ADA Projects) 3960 Tittabawassee Rd., Saginaw, MI 48604	989.793.9300	989.921.2825
ATI Group 3419 Pierson Place, Flushing, MI 48433	810.230.6202	810.230.6208
Beckering Advisor Incorporated 650 – 44th St. SE, Grand Rapids, MI 49548	616.532.8191	616.532.8193
Blue Spader Contractors, Inc. 30375 Northwestern Hwy., Farmington Hills, MI 48334	734.394.0923	
Braun Construction Group 39395 W. 12 Mile Rd., Ste. 100, Farmington Hills, MI 48331	248.848.0567	248.848.1039
C.D. Barnes Associates 3437 Eastern Ave. SE, Grand Rapids, MI 49508	616.241.4491	616.241.1177
The Christman Company 208 N. Capitol Ave., Lansing, MI 48933-1357	517.482.1488	517.482.3520
Colasanti Construction Services, Inc. 672 Woodbridge, Ste. 100, Detroit, MI 48226	313.567.0060	313.567.7713
Conquest Construction Co., Inc. (General Trades Only) 11805 Mayfield, Livonia, MI 48150	734.458.1800	734.458.2060
DCC Construction 9100 Lapeer Rd., Davison, MI 48423	810.658.4322	810.658.4320
D & D Building, Inc. 3264 Union, SE, Wyoming, MI 49548	616.243.5633	616.243.2010
DeMaria Building Company, Inc. 3031 W. Grand Blvd., Ste. 624, Detroit, MI 48202	313.870.2800	313.870.2810
DeShano Companies, Inc. 325 Commerce Court, Gladwin, MI 48624	989.426.2521	989.426.0526
E & L Construction Group, Inc. 3040 Airpark Dr. S., Flint, MI 48507	810.744.4300	810.744.1735
Elkhorn Construction Co. Inc. 6072 N. Birch Hill Dr., Smiths Creek, MI 48074	810.367.7460	810.367.7462
EV Construction. 86 East Sixth Street, Holland, MI 49423	616.392.2383	616.392.3752
Eurich Home Improvement Inc. 3734 Fortune Blvd., Saginaw, MI 48603	989.799.5645	989.799.3279

PRE-QUALIFIED CONTRACTORS

COMPANY NAME & ADDRESS	TELEPHONE	FAX
Frank Rewold and Son Inc. 333 E. Second St., Rochester, MI 48307	248.651.7242	248.651.5174
George H. Pastor & Sons, Inc. 34018 Beacon, Livonia, MI 48150	734.522.3800	734.458.1988
Gerace Construction Company, Inc. 4055 S. Saginaw Rd., Midland, MI 4864	989.496.2440	989.496.2465
Gerald G. Bergman, Inc. 515 N. Woodbridge St., Saginaw, MI 48602	989.754.6545	989.754.5775
Gilmour Construction, Inc. 1305 Weiss St., Frankenmuth, MI 48734	989.652.2015	989.652.8224
Graham Construction Corp. 3399 Fashion Square Blvd., Saginaw, MI 48603	989.921.3030	989.921.3031
Granger Construction Company 6267 Aurelius Rd., P.O. Box 22187, Lansing, MI 48909	517.393.1670	517.393.1382
J. Perez Construction, Inc. 2232 Davison Rd., Flint, MI 48506	810.233.8555	810.233.8558
J.R. Heineman & Sons 1224 N. Niagara St., Saginaw, MI 48602	989.753.8483	989.753.9644
Kasco Inc. 226 E. Hudson, Royal Oak, MI 48067	248.547.1210	248.546.1276
LaSalle Group Inc. 30375 Northwestern Hwy., Farmington Hills, MI 48334	734.394.0650	734.394.0730
Moltus Building Group, LLC 3200 James Savage Rd., Ste. #4, Midland, MI 48642	989.486.9330	888.886.4523
The Monahan Company 21321 Kelly Rd., Eastpointe, MI 48021	586.774.3800	586.774.2530
Oliver / Hatcher Construction (do not self perform) 27333 Meadowbrook Rd., Ste. 100, Novi, MI 48377	248.374.1100	248.374.1110
Pumford Construction, Inc. 1674 Champagne Dr. N., Saginaw, MI 48604	989.754.6262	989.754.6263
R. C. Hendrick & Son, Inc. 2885 S. Graham Rd., Saginaw, MI 48609	989.781.8116	989.781.9512
R. L. White Development, Corp. 8240 Embury Rd., P.O. Box 4, Grand Blanc, MI 48480	810.695.2330	810.695.6377

PRE-QUALIFIED CONTRACTORS

COMPANY NAME & ADDRESS	TELEPHONE	FAX
Roncelli, Inc. 6471 Metro Parkway, Sterling Heights, MI 48312	586.264.2060	586.979.3190
Schonsheck, Inc. 51331 W. Pontiac Trail, Wixom, MI 48393	248.669.8800	248.669.0850
Sorensen Gross Construction Services, LLC 3407 Torrey Rd., Flint, MI 48507	810.767.4821	810.238.6222
Spence Brothers 417 McCoskry, Saginaw, MI 48601	989.752.0400	989.752.8769
Sugar Construction, Inc. 2968 Venture Dr., Midland, MI 48640	989.631.4154	989.631.7012
Three Rivers Corporation 3069 Vantage Point Dr., P.O. Box 1467, Midland MI 48641	989.631.9726	989.631.7402
Triangle Associates, Inc. 3769 Three Mile Rd. NW, Grand Rapids, MI 49534	616.453.3950	616.453.5952
Walbridge 777 Woodward Ave., Ste. 300, Detroit, MI 48226	313.963.8000	313.234.0434
Walsh Construction Company 3011 W. Grand Blvd., Ste. 2300, Detroit, MI 48202	313.873.6600	313.873.6633
Wieland (do not self perform) 4162 English Oak Dr., Lansing, MI 48911	517.372.8650	517.372.8961
Wm. Bronner & Son Contractors, Inc. 393 List St., Frankenmuth, MI 48734	989.652.3229	989.652.3646
Wobig Construction Co., Inc. 527 N. Woodbridge, Saginaw, MI 48602	989.752.1294	989.752.9535
Wolgast Corporation 4835 Towne Centre Rd., Ste. 203, Saginaw, MI 48604	989.790.9120	989.790.9053
Wolverine Building Group 4045 Barden Dr. SE, Grand Rapids, MI 49512	616.949.3360	616.949.6211

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Site Demolition

Company Name & Address	Phone #	Fax #
Bierlein Companies, Inc. 2000 Bay City Rd., Midland, MI 48642	989.496.0066	989.496.0144
Champagne & Marx Excavating, Inc. 1445 Liberty Rd., Saginaw, MI 48604	989.755.8971	989.755.0033
Dore & Associates Contracting, Inc. 900 Harry S. Truman Pkwy., Bay City, MI 48706	989.684.8358	989.684.6663
Jack Fick Excavating, Inc. (site demolition) 2500 S. Elms Rd., Swartz Creek, MI 48473	810.635.9708	810.635.2861
LaSalle Construction Services 30375 Northwestern Hwy., Farmington Hills, MI 48334	734.394.0650	734.394.0730
Reese Contracting, LLC 3050 Union Lake Rd., Ste. 8F, Commerce Twp., MI 48382	248.779.4040	248.779.4041

Concrete

Company Name & Address	Phone #	Fax #
A. J. Rehmus & Son Inc. 3702 Patterson Rd., P.O. Box 611, Bay City, MI 48706	989.686.8101	989.686.8168
Amalio Corporation 6655 Cotter Ave., Sterling Heights, MI 48314	586.731.6804	586.731.3732
Baruzzini Construction Co. (Pool Experts) 1281 S. Old US Hwy. 23, Brighton, MI 48114	810.229.8996	810.229.1874
Choice Concrete Construction Inc. 3227 Union Ave. S.E., Grand Rapids, MI 49548	616.538.5677	616.452.5424
Contek, Inc. 3753 Oakridge Ct., Ann Arbor, MI 48105	734.222.0977	734.222.1490
Eastlund Concrete Construction Inc. 3929 E. Holt Road, Holt, MI 48842	517.694.0204	517.694.2055
Fessler & Bowman, Inc. 4099 Eagle's Nest Ct., Flushing, MI 48433	810.733.1313	810.733.7883
Graham Construction Corp. 3399 Fashion Square Blvd., Saginaw, MI 48603	989.921.3030	989.921.3031
Grand River Construction, Inc. 5210 36th Ave., Hudsonville, MI 49426	616.669.5611	616.669.3466

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Concrete (continued)

Company Name & Address	Phone #	Fax #
Kasco Inc. 226 E. Hudson, Royal Oak, MI 48067	248.547.1210	248.546.1276
LaSalle Construction Services 30375 Northwestern Hwy., Farmington Hills, MI 48334	734.394.0650	734.394.0730
Michigan Mudjacking 1699 N. Huron Rd., Pinconning, MI 48650	989.324.1658	989.879.2165
Pumford Construction, Inc. 1674 Champagne Dr. N., Saginaw, MI 48604	989.754.6262	989.754.6263
RAM Construction Services of Michigan, Inc. 13800 Eckles Rd., Livonia, MI 48150	734.464.3800	734.437.6206
R. C. Hendrick & Son, Inc. 2885 S. Graham Rd., Saginaw, MI 48609	989.781.8116	989.781.9512
Roe Roe's Concrete Liftng 19821 Gratiot Rd., Merrill, MI 48637	989.578.2257	
Spence Brothers 203 S. Washington Ave., Ste. 360, Saginaw, MI 48607	989.752.0400	989.752.8769
Sugar Construction, Inc. 2968 Venture Dr., Midland, MI 48640	989.631.4154	989.631.7012
Superior Concrete Construction 3272 E. Townline Lk., P.O. Box 859, Harrison, MI 48625	989.539.4390	989.539.3456
TerCon Systems 3555 Jewell Rd., Howell, MI 48843	248.709.8515	
Three Rivers Corporation 3069 Vantage Point Dr., P.O. Box 1467, Midland MI 48641	989.631.9726	989.631.7402
Wobig Construction Co., Inc. 527 N. Woodbridge, Saginaw, MI 48602	989.752.1294	989.752.9535

Masonry

Company Name & Address	Phone #	Fax #
Akins Construction, Inc. 6565 East Nevada, Detroit, MI 48234	586.254.0992	586.254.2989
Brend Contracting Co., Inc. 13120 23 Mile Rd., Shelby Twp., MI 48315	586.997.1320	586.997.1370

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Masonry (continued)

Company Name & Address	Phone #	Fax #
Davenport Masonry, Inc. P.O. Box 188, Holt, MI 48842	517.699.6157	517.699.6141
Edgar Boettcher Mason Contractor Inc. 3803 N. Euclid Ave., Bay City, MI 48706	989.684.4807	989.684.4824
Kasco Inc. 226 E. Hudson, Royal Oak, MI 48067	248.547.1210	248.546.1276
Leidal & Hart Mason Contractors 32225 Schoolcraft Rd., Livonia, MI 48150	734.522.2400	734.522.8650
McMath Masonry, Inc. 6210 Hackett Road, Freeland, MI 48623	989.695.2612	989.695.2652
Mid-Michigan Masonry, Inc. 3045 E. Mercantile Dr., Midland, MI 48642	989.631.1860	989.631.1874
Pumford Construction, Inc. 1674 Champagne Dr. N., Saginaw, MI 48604	989.754.6262	989.754.6263
Schiffer Mason Contractors, Inc. 2190 Delhi NE St., P.O. Box 250, Holt, MI 48842	517.694.2566	517.694.1936
Straus Masonry, Inc. 2580 N. Johnson Rd., Weidman, MI 48893	989.644.2090	989.644.3758

Steel

Company Name & Address	Phone #	Fax #
Alloy Construction Service 401 Balsam, P.O. Box 197, Carrollton, MI 48724	989.752.1922	989.752.6162
B & A Steel Co., Inc. 50775 Richard W. Blvd., Chesterfield, MI 48051	586.948.2220	586.948.2221
Bristol Steel & Conveyor Corp. 4416 N. State Rd., Davision, MI 48423	810.658.9510	810.653.5749
Cadillac Iron, Inc. 2271 X-Celsior Dr., Osford, MI 48371	248.236.9200	248.236.9282
Casadei Structural Steel 40675 Mound Rd., P.O. Box 70, Sterling Heights, MI 48311	586.698.2898	586.698.2871
Davis Iron Works, Inc. 1166 Benstein Rd., Walled Lake, MI 48390	248.624.5960	248.624.7030

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Steel (continued)

Company Name & Address	Phone #	Fax #
Delta Steel Inc. 1410 Webber Street, Saginaw, MI 48601	989.752.5129	989.752.7195
Dobson Industrial Inc. 3660 N. Euclid Ave., Bay City, MI 48706	989.684.7131	989.684.7141
Douglas Steel Fabricating Corporation 1312 South Waverly Rd., Lansing, MI 48917	517.322.2050	517.322.0050
Howard Structural Steel, Inc. 807 Veterans Memorial Pkwy., Saginaw, MI 48601	989.752.3000	989.752.3048
Kirby Steel, Inc. 4072 Flint Asphalt Dr., Burton, MI 48529	810.743.3360	810.743.8058
Men of Steel Inc. 2920 Municipal Dr., Marlette, MI 48453	989.635.4866	989.635.4868
Rohmann Iron Works, Inc. 201 Kelso St., Flint, MI 48506	810.233.5611	810.233.6049
Service Iron Works, Inc. 245 S. Mill St., South Lyon, MI 48178	248.446.9750	248.446.9610
Steel Supply & Engineering Co. 2020 Newark St. SE, Grand Rapids, MI 49507	616.452.3281	616.452.8493
Structural Standards, Inc. 465 Applejack Ct., Sparta, MI 49345	616.887.7171	616.887.7249
Valley Steel Company 1322 King St., Saginaw, MI 48602	989.799.2600	989.799.1752
VanDellen Steel 6945 Dutton Industrial Park, Caledonia, MI 49316	616.698.9950	616.698.7832
Wolverine Building Group 4045 Barden Dr. SE, Grand Rapids, MI 49512	616.949.3360	616.949.6211

Roofing & Sheet Metal

Company Name & Address	Phone #	Fax #
Ann Arbor Roofing Co. 328 East Six Mile Rd., P.O. Box 347, Whitmore Lake, MI 48189	734.449.9400	734.449.1135
Beyer Roofing Company, Inc. 6241 Sherman Rd., Saginaw, MI 48604	989.754.7741	989.754.8971

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Roofing & Sheet Metal (continued)

Company Name & Address	Phone #	Fax #
Bloom Roofing Systems, Inc. 12238 Emerson Dr., Brighton, MI 48116	248.264.7200	248.587.5068
Bornor Restoration, Inc. 525 Filley St., Lansing, MI 48906-2975	517.482.1625	517.482.4840
Brandle Roofing & Sheet Metal 3400 Centennial Dr., Midland, MI 48642	989.496.2076	989.496.3960
Bri-Car Roofing & Sheet Metal 4597 S. Garfield Rd., Auburn, MI 48611	989.662.4532	989.662.4601
Buchinger Roofing Inc. 1888 N. Gera Rd., P.O. Box 131, Reese, MI 48757	989.868.3621	989.868.3660
CEI Michigan LLC 2140 Industrial St., P.O. Box 200, Howell, MI 48843	517.548.0039	517.548.0182
Gerald G. Bergman, Inc. 515 N. Woodbridge St., Saginaw, MI 48602	989.754.6545	989.754.5775
Great Lakes Roofing & Insulation Systems, Inc. 19022 S. M-129, Sault Ste. Marie, MI 49783	906.647.2916	906.647.2206
Herbert Roofing & Insulation 5411 Dixie Hwy., Saginaw, MI 48601	989.777.6440	989.777.6552
Kawkawlin Roofing Company 2924 Old Kawkawlin Rd., P.O. Box 538, Kawkawlin, MI 48631	989.684.0561	989.684.6120
Lutz Roofing Company, Inc. 4721 22 Mile Rd., Shelby Township, MI 48317	586.739.1148	586.739.7678
McDonald Roofing 3960 Ann Arbor Rd., Jackson, MI 49202	517.764.1336	517.764.3286
Mid Michigan Roofing, LLC 3232 Enterprise Dr., Saginaw, MI 48603	989.793.5834	989.799.8234
National Roofing & Sheet Metal Co., Inc. G-4130 Flint Asphalt Dr., Burton, MI 48529	810.742.7373	810.742.8726
Royal Roofing Company, Inc. 2445 Brown Rd., Orion, MI 48359	248.276.7663	248.276.9170
Streng Construction Inc. 7481 Chesaning Rd., Chesaning, MI 48616	989.845.6365	989.845.5118

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Roofing & Sheet Metal (continued)

Company Name & Address	Phone #	Fax #
Thos. Brown & Son Roofing Co. 700 Third St., Bay City, MI 48708	989.892.0069	989.892.2560
Tri-Star Roofing & Sheet Metal LLC 2273 Wadhams Rd., Kimball, MI 48074	810.937.2756	810.937.2687
Universal Roofing, Inc. 1455 N. Huron Rd., P.O. Box 399, Linwood, MI 48634	989.697.4449	989.697.4211
Valley Roofing Co., Inc. 408 Woodside Ave., Bay City, MI 48708	989.892.2412	989.892.0181
Vondette Roofing Inc. 5386 Garfield Rd., Saginaw, MI 48603	989.239.3870	
Wendling Sheet Metal, Inc. 2633 Carrollton Rd., Saginaw, MI 48604	989.753.5286	989.753.8375
Wolverine Building Group 4045 Barden Dr. SE, Grand Rapids, MI 49512	616.949.3360	616.949.6211

Windows and Glazing

Company Name & Address	Phone #	Fax #
American Glass and Metals Corporation 15100 Keel St., P.O. Box 701511, Plymouth, MI 48170	734.459.0760	734.459.0238
Architectural Glass & Metals, Inc. 604 S. 8th St., Kalamazoo, MI 49009	269.375.6165	269.375.4765
Architectural Glazing Systems, Inc. 7384 N. Clio Rd., Mt. Morris, MI 48458	810.687.8871	810.687.8873
Bay Glass Company 1209 N. Madison Ave., Bay City, MI 48708	989.894.2866	
Calvin & Company Inc. 5076 Pilgrim Rd., Flint, MI 48507	810.239.3524	810.239.3534
Curtis Glass Company 1900 E. Maple, Troy, MI 48083	248.744.4480	248.744.4485
Glazing Solutions Inc. 402 N. Main St., P.O. Box 131, Morrice, MI 48857	517.625.1011	517.625.1013
Hewett Co., Inc. 210 Orchard Lake Rd., Pontiac, MI 48341	248.334.9200	248.334.3327

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Windows and Glazing (continued)

Company Name & Address	Phone #	Fax #
Lansing Glass Company 330 Baker St., Lansing, MI 48910	517.374.2888	517.374.9727
Madison Heights Glass Company Inc. 2020 Burdette, Ferndale, MI 48220	248.544.4334	248.544.7499
Midland Glass Company 3057 E. Mercantile Dr., Midland, MI 48642-7833	989.835.6715	989.835.7536
Universal Glass and Metals, Inc. 3000 Vinewood, Detroit, MI 48216	313.898.8225	313.898.8226
Valley Glass Company 2424 Midland Rd., Saginaw, MI 48603	989.790.9342	989.790.3013

Drywall / Ceilings

Company Name & Address	Phone #	Fax #
Acoustical Arts, Inc. 3601 Mertz Rd., Caro, MI 48723	989.672.2467	989.672.2133
Bouma Corporation, The 1933 Northern Star Dr., Traverse City, MI 49686	231.947.2811	231.947.3112
Central Interiors, Inc. 5490 Nasser St., Flint, MI 48505	810.785.3548	810.785.6970
City Renovation & Trim, Inc. 2685 Paldan Dr., Auburn Hills, MI 48326	248.276.8900	248.276.8909
Conquest Construction Co., Inc. 11805 Mayfield, Livonia, MI 48150	734.458.1800	734.458.2060
Integrity Interiors, Inc. 622 East Cesar E. Chavez Ave., Lansing, MI 48906	517.332.8457	517.332.8458
J.M. Petrie Acoustical, Inc. 603 S. Niagara St., Saginaw, MI 48602-1536	989.799.8511	989.799.0772
Kasco Inc. 226 E. Hudson, Royal Oak, MI 48067	248.547.1210	248.546.1276
Matric Company 4412 Ace Commercial Ct., Bay City, MI 48706	989.684.2950	989.684.4487
Metal Arts Construction, Inc. 1700 Gover Pkwy., P.O. Box 157, Mt. Pleasant, MI 48804	989.772.0782	989.779.0017

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Drywall / Ceilings (continued)

Company Name & Address	Phone #	Fax #
Pumford Construction, Inc. 1674 Champagne Dr. N., Saginaw, MI 48604	989.754.6262	989.754.6263
Ramar Construction 2621 Carrollton Rd., Saginaw, MI 48604	989.753.6971	989.753.5195
Ritsema Associates 3000 Dormax SW, Grandville, MI 49418	616.538.0120	616.538.9695
Saylor's, Inc. 8751 Whiteford Rd., Ottawa Lake, MI 49267	734.856.4979	734.856.6099
Sobie Company, Inc. 3276 Industrial Dr. SE, Dutton, MI 49316	616.698.9800	616.698.0994
Tri-City Acoustical, Inc. 421 W. Morley Dr., Saginaw, MI 48601	989.752.9301	989.752.8831
Turner-Brooks, Inc. 28811 John R., Madison Heights, MI 48071	248.548.3400	248.548.9213
William Reichenbach Company 4216 Legacy Pkwy., Lansing, MI 48909	517.882.3404	517.882.3726
Wobig Construction Co., Inc. 527 N. Woodbridge, Saginaw, MI 48602	989.752.1294	989.752.9535

Flooring

Company Name & Address	Phone #	Fax #
Artisan Tile Inc. 9864 E. Grand River, Ste 110-132, Brighton, MI 48116	810.220.2370	810.220.3762
A. T. Frank Co., Inc. 3135 Boardwalk, Saginaw, MI 48603	989.497.1900	989.497.8230
Bay Area Specialty Flooring LLC 7870 Webster Rd., P.O. Box 280, Freeland, MI 48623	989.695.5363	989.695.9394
Bouma Corporation, The 1933 Northern Star Dr., Traverse City, MI 49686	231.947.2811	231.947.3112
Central Tile & Terrazzo Co., Inc. 5180 South 9th St., Kalamazoo, MI 49009	269.375.1660	269.375.4522
Gehrke's Commercial Flooring 4890 Curve Rd., Freeland, MI 48623	989.781.0879	989.781.1756

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Flooring (continued)

Company Name & Address	Phone #	Fax #
Integrity Interiors, Inc. 622 East Cesar E. Chavez Ave., Lansing, MI 48906	517.332.8457	517.332.8458
Kasco Inc. 226 E. Hudson, Royal Oak, MI 48067	248.547.1210	248.546.1276
Mike's Custom Tile Co. 206 B East Grove St., Kawkawlin, MI 48631	989.686.5975	
MIS Corporation - Michigan. 3515 Janes Ave., Saginaw, MI 48601	989.753.5599	989.753.3119
NBS (National Business Supply, Inc.) 2595 Bellingham, Troy, MI 48083	248.823.5400	248.823.5401
Northeastern Paint Supply, Inc. 2883 McCarty Rd., Saginaw, MI 48603	989.799.8190	989.799.8195
O'Connors Carpet One 5355 Gratiot Rd., Saginaw, MI 48638	989.793.0960	989.793.8494
Ritsema Associates 3000 Dormax SW, Grandville, MI 49418	616.538.0120	616.538.9695
Seelye Group LTD 1411 Lake Lansing Rd., Lansing, MI 48912	888.297.1838	517.485.2692
Sobie Company, Inc. 3276 Industrial Dr. SE, Dutton, MI 49316	616.698.9800	616.698.0994
Solution Planning & Contract Environment, Inc. (SPACE) 3142 Vantage Point Dr., Midland, MI 48642	989.835.5151	989.835.5357
Superior Floor Coverings LLC 5154 M-21, Corunna, MI 48817	989-472-4445	N/A
Supreme Floor Covering, Inc. 1392 S. Valley Center Dr., Bay City, MI 48706	989.684.8888	989.684.9255
TerCon Systems 3555 Jewell Rd., Howell, MI 48843	248.709.8515	
Valley Carpet Inc. 3450 S. Huron Rd., Bay City, MI 48706	989.684.6065	989.684.0909
Wolverine Stone Company 27270 Gloede, Warren, MI 48088	586.777.7788	586.777.7853

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Painting

Company Name & Address	Phone #	Fax #
Akins Construction, Inc. 6565 East Nevada, Detroit, MI 48234	586.254.0992	586.254.2989
Detail Painting Inc. 62 Elder Ave., Grant, MI 49327	231.834.1400	231.834.1413
Hock Painting Inc. 1995 W. Greenwood Rd., Alger, MI 48610	989.345.7650	810.564.9880
Kasco Inc. 226 E. Hudson, Royal Oak, MI 48067	248.547.1210	248.546.1276
Larkin's Painters, Inc. 614 S. Fayette St., Saginaw, MI 48602	989.793.8077	989.793.4673
Metal Arts Construction, Inc. 1700 Gover Pkwy., P.O. Box 157, Mt. Pleasant, MI 48804	989.772.0782	989.779.0017
Murray Painting Co. 6078 Hackett Rd., Freeland, MI 48623	989.695.8152	989.695.8199
Niles Construction Services, Inc. 5048 Pilgrim Rd., Flint, MI 48507	810.238.9100	810.736.0473
Niles Industrial, LLC 201 S. Alloy Dr., Fenton, MI 48430	810.593.7000	810.593.7001
Northern Bay Painting LLC 780 N. Gavord Rd., Sterling, MI 48659	989.225.1220	989.654.2951
Ritsema Associates 3000 Dormax SW, Grandville, MI 49418	616.538.0120	616.538.9695
Seaway Painting L.L.C. 31801 Schoolcraft, Livonia, MI 48150	734.522.2440	734.522.6022
Seven Brothers Painting, Inc. 50805 Rizzo Dr., Shelby Twp., MI 48312	586.977.5906	586.412.0368
Signature Painting 211 First St., P.O. Box 535, Breckenridge, MI 48615	989.842.5984	989.463.6945
T & M Painting, Inc. 215 Hayden St., Saginaw, MI 48607	989.754.0099	989.754.6728
Thermico, Inc. 3405 Centennial Dr., Ste. 2, Midland, MI 48642	989.496.2927	989.496.7220

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Casework

Company Name & Address	Phone #	Fax #
Architectural Systems Group, LLC 92 Veterans Dr., Holland, MI 49423	616.396.9993	616.396.1362
Case Systems Inc. 2700 James Savage Rd., Midland, MI 48642	989.496.9510	989.496.9928
Detroit Technical Equipment Company 55 E. Long Lake Rd. #433, Troy, MI 48085	248.232.8894	248.232.8895
Eyewood Design Inc. 1954 N. Betsie River Rd., Interlochen, MI 49643	231.275.5457	231.275.2214
Farnell Contracting 3355 Lahring Rd., Linden, MI 48451	810.714.3421	810.714.3628
Farnell Equipment Co. 2950 Todd Rd., Troy, MI 48084	248.643.8890	248.643.9472
Graham Construction Corp. (Swanstone Approved) 3399 Fashion Square Blvd., Saginaw, MI 48603	989.921.3030	989.921.3031
KJP Sales, Inc. 915 E. Isabella Rd., Midland, MI 48640	989.835.4500	989.835.3366
Owens Cabinet 1928 Stark Rd., Midland MI 48642	989.835.1293	989.835.2096
Phoenix Casework Inc. (Swanstone Approved) 1407 Woodside Ave., Essexville, MI 48642	989.295.9811	989.892.3154
Stonecreek Interior Systems, LLC 7603 Green Meadows Dr., Lewis Center, OH 43035	740.548.2451	740.548.2351
Strata Design, Inc. 1645 Park Dr., Traverse City, MI 48686 P.O. Box 6250, Traverse City, MI 49696-6250	231.929.2140	231.929.4958
Three Rivers Corporation (Swanstone Approved) 3069 Vantage Point Dr., P.O. Box 1467, Midland MI 48641	989.631.9726	989.631.7402
Wobig Construction Co., Inc. (Swanstone Approved) 527 N. Woodbridge, Saginaw, MI 48602	989.752.1294	989.752.9535

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Water-Based Fire-Suppression Systems

Company Name & Address	Phone #	Fax #
Bay Line Fire Protection 5913 North Huron Rd., Pinconning, MI 48650	989.879.4639	989.879.7126
Beck Fire Protection, Inc. 5370 W. Vienna Rd., P.O. Box 496, Clio, MI 48420	810.687.7770	810.687.9990
Brigade Fire Protection, Inc. 5701 Safety Dr., Belmont, MI 49306	800.886.1614	616.784.1140
Dependable Fire Protection Inc. 13360 White Creek Ave. NE, Cedar Springs, MI 49319	616.696.8000	616.696.8511
Dynamic Piping Co., Inc. 14816 Gratiot Rd., P.O. Box 590, Hemlock, MI 48626	989.642.5257	989.642.5258
Great Lakes Fire Protection Inc. 14033 N. Saginaw Rd., P.O. Box 278, Clio, MI 48420	810.687.1414	810.686.9292
Interstate Fire Protection, Inc. 28807 Reilly Rd., New Hudson, MI 48165	248.667.9180	248.667.9175
John E. Green Company 778 Bridgeview South, Saginaw, MI 48604	989.752.5100	989.752.0424
S.A. Comunale Company, Inc. 23042 Commerce Dr., Farmington Hills, MI 48335	248.427.0724	248.427.0750
Total Fire Protection Inc. 5062 Kendrick Court SE, Grand Rapids, MI 49512	616.735.2300	616.735.2330
Winninger Fire Protection, Inc. 244 Cherry St., P.O. Box 283, Frankenmuth, MI 48734	989.652.4438	989.652.8570
Wolverine Fire Protection Co. 8067 N. Dort Hwy., P.O. Box 219, Mt. Morris, MI 48458	810.686.4630	810.686.0440

Plumbing

Company Name & Address	Phone #	Fax #
Advantage Mechanical Group, LLC 5394 Corunna Rd., Flint, MI 48532	810.484.2990	
ATI Group 3419 Pierson Place, Flushing, MI 48433	810.230.6202	810.230.6208
Beauchamps Heating & Cooling, LLC 1376 E. Prairie Rd, Midland, MI 48640	989.486.9505	

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Plumbing (continued)

Company Name & Address	Phone #	Fax #
Contrast Mechanical, Inc. 15825 Leone Dr., Macomb Twp., MI 48042	586.786.1200	586.786.1205
Dickerson Mechanical, Inc. 415 W. Rising St., P.O. Box 250, Davison, MI 48423	810.653.7290	810.653.1415
Dunbar Mechanical, Inc. 9282 General Dr., Plymouth, MI 48170	248.675.9456	419.537.8840
Goyette Mechanical Co., Inc. 3842 Gorey Ave., Flint, MI 48506	810.743.6883	810.743.9114
Hayes Mechanical 318 N. 25th St., Saginaw, MI 48601	989.401.5599	989.401.5590
J. E. Johnson, Inc. 1550 E. Virginia Dr., Midland, MI 48642	989.835.6671 800.646.2690	989.835.7147
John E. Green Company 778 Bridgeview South, Saginaw, MI 48604	989.752.5100	989.752.0424
Johnson & Wood LLC 1745 N. Outer Dr., Saginaw, MI 48601	989.401.8390	989.401.8392
M.A.P. Mechanical Contractors, Inc. 2000 Austin, Midland, MI 48640	989.496.3456	989.496.7444
Monarch Welding 1566 Tech Park Dr., Bay City, MI 48706	989.684.3400	989.684.0344
Pleune Service Co. 750 Himes S.E., Grand Rapids, MI 49548	616.243.6374	616.243.5387
Remer Plumbing, Heating & Air Conditioning, Inc. 5565 State Street, P.O. Box 1569, Saginaw, MI 48605	989.792.8738	989.793.7312
S & D Mechanical Services, Inc. 1921 Howard Ave., Flint, MI 4850	810.238.9333	810.238.9338
Smillie Plumbing & Heating, Inc. 10270 Pierce Rd., Freeland, MI 48623	989.695.5133	989.695.2226
W. Soule & Company 7125 S. Sprinkle Rd., Portage, MI 49002	269.324.7001	269.324.7950
William E. Walter, Inc. 1917 Howard Ave., Flint, MI 48503	810.232.7459	810.232.8698
Wirtz Plumbing & Heating, Inc. 7876 N. River Rd., Freeland, MI 48623	989.692.0655	989.692.0891

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

HVAC

Company Name & Address	Phone #	Fax #
Advantage Mechanical Group, LLC 5394 Corunna Rd., Flint, MI 48532	810.484.2990	
ATI Group 3419 Pierson Place, Flushing, MI 48433	810.230.6202	810.230.6208
Beauchamps Heating & Cooling, LLC 1376 E. Prairie Rd, Midland, MI 48640	989.486.9505	
Contrast Mechanical, Inc. 15825 Leone Dr., Macomb Twp., MI 48042	586.786.1200	586.786.1205
Dickerson Mechanical, Inc. 415 W. Rising St., P.O. Box 250, Davison, MI 48423	810.653.7290	810.653.1415
Dunbar Mechanical, Inc. 9282 General Dr., Plymouth, MI 48170	248.675.9456	419.537.8840
Goyette Mechanical Co., Inc. 3842 Gorey Ave., Flint, MI 48506	810.743.6883	810.743.9114
Hayes Mechanical 318 N. 25th St., Saginaw, MI 48601	989.401.5599	989.401.5590
J. E. Johnson, Inc. 1550 E. Virginia Dr., Midland, MI 48642	989.835.6671 800.646.2690	989.835.7147
John E. Green Company 778 Bridgeview South, Saginaw, MI 48604	989.752.5100	989.752.0424
Johnson & Wood LLC 1745 N. Outer Dr., Saginaw, MI 48601	989.401.8390	989.401.8392
M.A.P. Mechanical Contractors, Inc. 2000 Austin, Midland, MI 48640	989.496.3456	989.496.7444
Monarch Welding 1566 Tech Park Dr., Bay City, MI 48706	989.684.3400	989.684.0344
Pleune Service Co. 750 Himes S.E., Grand Rapids, MI 49548	616.243.6374	616.243.5387
Remer Plumbing, Heating & Air Conditioning, Inc. 5565 State Street, P.O. Box 1569, Saginaw, MI 48605	989.792.8738	989.793.7312
S & D Mechanical Services, Inc. 1921 Howard Ave., Flint, MI 4850	810.238.9333	810.238.9338

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

HVAC (continued)

Company Name & Address	Phone #	Fax #
Smillie Plumbing & Heating, Inc. 10270 Pierce Rd., Freeland, MI 48623	989.695.5133	989.695.2226
W. Soule & Company 7125 S. Sprinkle Rd., Portage, MI 49002	269.324.7001	269.324.7950
William E. Walter, Inc. 1917 Howard Ave., Flint, MI 48503	810.232.7459	810.232.8698
Wirtz Plumbing & Heating, Inc. 7876 N. River Rd., Freeland, MI 48623	989.692.0655	989.692.0891

Testing & Balancing

Company Name & Address	Phone #	Fax #
All American Balancing, LLC 10157 Lake Rd., Otisville, MI 48463	810.569.4152 (cell)	810.631.6649
Ener-Tech (Dee Cramer Inc.) 4221 E. Baldwin Rd., Holly, MI 48442	810.579.5000	810.579.2664
Enviro-Aire, Inc. 28915 Harper Ave., St. Clair Shores, MI 48081	586.779.6200	586.779.8312
Hi-Tech Test & Balance 10270 Pierce Rd., P.O. Box 512, Freeland, MI 48623	989.695.5498	989.695.2226
International Test & Balance, Inc. 17135 W. 10 Mile Road, Ste. 112, Southfield, MI 48075	248.559.5864	248.559.6241
Pro-MEC Engineering Services, Inc. 480 Promec Dr., P.O. Box 513, Grand Ledge, MI 48837	517.627.8532	517.627.2562

HVAC Ducts & Casings

Company Name & Address	Phone #	Fax #
A. C. Klopf, Inc. 524 S. Franklin Street, Saginaw, MI 48607	989.754.0403	989.754.5082
Answer Heating & Cooling, Inc. 8490 Midland Road, Freeland, MI 48623	989.695.9461	989.695.9789
Applegate, Inc. 485 E. South St., Jackson, MI 49203	517.783.2646	517.783.1219

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

HVAC Ducts & Casings (continued)

Company Name & Address	Phone #	Fax #
Custom Design & Manufacturing P.O. Box 190, 3673 Carrollton Rd., Carrollton, MI 48724	989.754.9962	989.754.9964
Custom Engineering, Inc. 990 S. Huron Rd., P.O. Box 367, Linwood, MI 48634	989.697.3444	989.697.4400
Dee Cramer, Inc. 4221 E. Baldwin Rd., Holly, MI 48442	810.579.5000	810.579.2664
Goyette Mechanical Co., Inc. 3842 Gorey Ave., Flint, MI 48506	810.743.6883	810.743.9114
J. E. Johnson, Inc. 2298 N. Eastman Rd., Midland, MI 48642	989.835.6671 800.646.2690	989.835.7147
MJ Mechanical, Inc. 11787 Prior Rd., St. Charles, MI 48655	989.865.9633	989.865.9632
National Roofing & Sheet Metal Co., Inc. G-4130 Flint Asphalt Dr., Burton, MI 48529	810.742.7373	810.742.8726
Pleune Service Co. 750 Himes S.E., Grand Rapids, MI 49548	616.243.6374	616.243.5387
S&Z Sheetmetal, Inc. 5237 Commerce Rd., Flint, MI 48507	810.230.0200	810.230.0201
Smillie Plumbing & Heating, Inc. 10270 Pierce Rd., Freeland, MI 48623	989.695.5133	989.695.2226
U. S. Sheet Metal, Inc. 3200 Enterprise Dr., Saginaw, MI 48603	989.799.4850	989.799.9672
Wendling Sheet Metal, Inc. 2633 Carrollton Rd., Saginaw, MI 48604	989.753.5286	989.753.8375

Temperature Controls

Company Name & Address	Phone #	Fax #
Johnson Controls Inc. 1080 Tittabawassee Rd., Saginaw, MI 48604	989.245.6103	989.759.4407
Trane 5335 Hill 23 Drive, Flint, MI 48507	810.767.7800	810.767.9058

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Electrical

Company Name & Address	Phone #	Fax #
Amcomm Telecommunications Inc. 12482 Emerson Dr., Brighton, MI 48116	248.698.8868	248.698.8869
ATI Group 3419 Pierson Place, Flushing, MI 48433	810.230.6202	810.230.6208
Bierlein Trombley Electric 378 N. Tuscola Rd., Bay City, MI 48708	989.778.2500	
Block Electric Company 2580 N. Johnson Rd., P.O. Box 63, Weidman, MI 48893	989.644.8883	989.644.8885
Bock Electric Inc. 3510 Rhodes Rd., Rhodes, MI 48652-9731	989.879.4256	989.879.6565
Clements Electric Inc. 204 S. Dean, Bay City, MI 48706	989.892.4780	989.892.4776
Consumers Energy Corporation 1 Energy Plaza, Jackson, MI 49201	616.260.9640	
ESCON Group, Inc. 6 Johnson Court, Bay City, MI 48708	989.893.4541	989.893.4542
F.D. Hayes Electric Company 2301 Beal Avenue, Lansing, MI 48910	517.482.0608	517.482.4110
Feyen Zylstra, LLC 2396 Hillside Drive NW, Grand Rapids, MI 49544	616.224.7707	616.224.7799
Great Lakes Power & Lighting, Inc. 9646 Marine City Hwy., Casco, MI 48064	586.716.4000	586.716.4770
Halligan Electric, Inc. 705 Kelso St., Flint, MI 48506	810.238.8581	810.238.1493
Helm Electric, Inc. 2375 Maple Rd., Frankenmuth, MI 48734	989.652.8779	989.652.8778
JAG Electric, LLC 1250 W. Vassar Rd., Reese, MI 48757	989.868.9853	989.596.0806
J. Ranck Electric, Inc. 1993 Gover Parkway, Mt. Pleasant, MI 48858	800.792.3822	989.775.8830
Ken David Electric 3195 Christy Way S., Ste. 8, Saginaw, MI 48603	989.793.6100	989.793.2775

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Data Communications

Company Name & Address	Phone #	Fax #
Amcomm Telecommunications Inc. 12482 Emerson Dr., Brighton, MI 48116	248.698.8868	248.698.8869
Feyen Zylstra LLC 2396 Hillside Dr. NW, Grand Rapids, MI 49544	616.224.7115	
Master Electric, Inc. 2350 West M-61, Gladwin, MI 48624	989.426.9860	989.426.9862
Moss 561 Century SW, Grand Rapids, MI 49503	616.451.9933	616.451.8187
Motor City Electric Technologies Inc. 9440 Grinnell St., Detroit, MI 48213	313.957.3459	313.957.3559
Pro-Tech Cabling Systems, Inc. 1805 E. Maple Rd., Clare, MI 48617	989.386.3722	989.386.4996
The DataCom Group, Inc. 3979 Holt Rd., Holt, MI 48842	517.699.5000	517.699.5076

Audio Visual

Company Name & Address	Phone #	Fax #
Advanced Lighting & Sound Inc. 1026 Maplelawn Dr., Troy, MI 48084	248.817.2092	248.817.2093
Ann Arbor Audio 10489 E. Grand River Rd., Ste. 1, Brighton, MI 48116	810.220.1000	810.220.1010
Audio Visual Innovations (AVI-SPL) 6295 136th Ave., Holland, MI 49424	616.399.6550	616.399.6504
BlueWater Technologies Group, Inc. 24050 Northwestern Hwy., Southfield, MI 48075	248.356.4399	248.351.2227
Center Line Technologies, Inc. 26560 Liberal, Ave., Center Line, MI 48015	586.754.0309	586.759.1297
I.COMM G12157 N. Saginaw, Clio, MI 48420	810.686.4990	810.686.5980
Innovative Communications Inc. 789 Bridgeview North, Saginaw, MI 48604	989.754.5040	989.754.6955
NBS (National Business Supply, Inc.) 5160 Alliance Dr, Bay City Mi 48706	989-414-4202	989-895-8545

PRE-QUALIFIED SUBCONTRACTORS

(Pre-Qualified Subcontractors are to submit their cost to companies on the Pre-Qualified Contractors list.)

Audio Visual (continued)

Company Name & Address	Phone #	Fax #
ProVideo Systems, Inc. 26471 SouthPoint Rd., Perrysburg, OH 43551	419.874.2850	419.874.8056
*Simoni Systems Inc. 4470 N. Michigan Rd., Saginaw, MI 48604	989.755.1111	989.755.1055
Sound Engineering, Inc. 12933 Farmington Rd., Livonia, MI 48150	734.522.2910	734.522.1222
Thalner Electronic Labs 7235 Jackson Rd., Ann Arbor, MI 48103	734.761.4506	734.761.9776

GENERAL CONDITIONS

Article 1. Definitions

(a) The Contract Documents consist of the Agreement, the General Conditions of the Contract, the Drawings and Specifications including all modifications thereof incorporated in the documents before their execution. These form the Contract.

(b) The Owner, Saginaw Valley State University, and the Contractor are those mentioned as such in the agreement. They are treated throughout the Contract Documents as if each were of the singular number and masculine gender.

(c) Designer / Engineer – The firm undertaking the execution of the design, bid documents and general construction review for design conformity.

(d) The term "work" of the Contractor or Subcontractor includes labor, materials or both, transportation, equipment or other facilities necessary to complete the Contract.

(e) Bidder - Any individual, firm or corporation, submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.

(f) Contractor - The individual, firm or corporation undertaking the execution of the work under the terms of the Contract and acting directly or through a duly authorized representative.

(g) Subcontractor - As employed herein, includes only those having a direct contract with the Contractor and it includes one who furnished material worked to a special design according to the plans or specifications of this work, but does not include one who merely furnished material not so worked.

(h) Inspector - The authorized representative of the Owner assigned to make detailed inspection of any or all portions of the work or materials thereof.

Article 2. Execution of Documents

The Contract Documents are complimentary and what is called for by any one shall be as binding as if called for by all. The intentions of the documents are to include all labor and materials, equipment and transportation necessary for the proper execution of the work.

Article 3. Copies of Drawings Furnished

The Owner will furnish to the Contractor, free of charge, all copies of drawings and specifications reasonably necessary for the execution of the work. He shall also furnish additional instructions by means of drawings or otherwise, necessary for the proper execution of the work.

Article 4. Materials and Workmanship

Discrepancies: In all cases of discrepancies between the drawings and specifications, the Owner shall be notified. If Work proceeds without obtaining proper interpretation of the conflicting drawings and specifications from the Owner, the installed Work which is not in accordance with the design and best practices must be replaced at no additional cost to the Owner.

Omissions: The drawings and specifications are intended to include all Work and materials necessary for completion of the Work. Any incidental item of material, labor or detail required for the proper execution and completion of the Work and omitted from either the drawings and specifications or both, but obviously required by governing codes, local regulations, trade practices, operational functions, and good workmanship, shall be provided as a part of the Contract Work without extra charge, even though not specifically detailed or mentioned.

Article 5. Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, tools, equipment, light, power, transportation and other facilities necessary for the execution of the work. Unless otherwise specified, all materials shall be new and both workmanship and materials shall be of a good quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials. The Contractor shall enforce strict discipline and good order among his employees and shall not employ any unfit person or one not skilled in the work assigned to him.

Article 6. Royalties and Patents

The Contractor shall pay royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has information that the process or article specified is an infringement of a patent he shall be responsible for such loss unless he promptly gives such information to the Owner.

Article 7. Permits & Regulations

The Contractor shall obtain and pay for all permits necessary for the proper execution of the work. He shall comply with all laws and regulations bearing on the conduct of the work and shall notify the Owner if the drawings and specifications are at variance therewith.

Article 8. Use Of Site

The Contractor shall coordinate with the Owner to maintain uninterrupted operations of University business throughout the Work. The Contractor shall also confine operations at the site to areas permitted by law, ordinances, and permits and shall not unreasonably encumber the site with any materials for equipment.

Article 9. Safety Regulations

The Contractor shall conform to the "General Safety Rules and Regulations" for the Construction Industry, as prescribed by the Construction Safety Commission, Department of Labor, Bureau of Safety and Regulations, Lansing, Michigan, and the Occupational Safety and Health Standards of the United States Department of Labor. This shall be made a condition of each subcontract entered into pursuant to the Contract.

Article 10. Storage and Protection

All materials and equipment delivered to and used in the Work shall be suitably stored and protected from the elements. The areas used for storage shall only be those approved by the Owner's. The Owner assumes no responsibility for stored material. The Ownership and title to materials will not be vested in the Owner before materials are incorporated in the Work. After delivery, before and after installation, the Contractor shall protect materials and equipment against theft, injury or damage from all causes.

Bulk materials subject to deterioration because of dampness, the weather or contamination shall be covered and protected while in storage. Materials in containers shall be kept in original sealed containers, unopened, with labels plainly indicating manufacturer's name, brand, type and grade of material. Containers that are broken, opened, watermarked and/or contain caked, lumpy or otherwise damaged materials are unacceptable and shall be immediately removed from the work site.

Equipment stored outdoors shall be kept from contact with the ground, away from areas subject to flooding and covered with weatherproof plastic sheeting or tarpaulins.

Article 11. Protection of Work, Property & Persons

The Contractor shall continuously maintain adequate protection of his work, the Owner's and adjacent property, and public from damage, injury, or loss arising in connection with this Contract. Any damage caused by the Contractor's operation shall be repaired, replaced or compensated for by the Contractor.

The Contractor shall furnish and install all temporary facilities, dust barriers and controls required by the Work, shall remove them from Owner's property upon completion of the Work and the grounds and existing facilities shall be restored to their original condition.

The Contractor shall furnish, install and maintain as long as necessary and remove when no longer required adequate barrier, warning signs or lights at all dangerous points throughout the Work for protection of property, workmen and the public. The Contractor shall hold Saginaw Valley State University harmless from damage or claims arising out of any injury or damage that may be sustained by any person or persons as a result of the Work under the Contract. All construction aids shall conform to federal, state and local codes or laws for protection of workmen and the public.

Article 12. Inspection of Work

The Owner and his representatives shall at all times have access to the work wherever it is in preparation of progress and the Contractor shall provide proper facilities for such access and for inspection. If the specifications, the Owner's instructions, laws, ordinances or any public authority require any work to be specially tested or approved, the Contractor shall give the Owner timely notice of its readiness for inspection, and if the inspection is by another authority than the Owner of the date fixed for such inspection. Inspections by the Owner shall be promptly made, and where practicable at the source of supply. If any work should be covered up without approval or consent of the Owner, it must, if required by the Owner, be uncovered for examination at the Contractor's expense.

Article 13. Superintendence: Supervision

The Contractor shall keep on his work a competent superintendent and other necessary assistants, all satisfactory to the Owner. The superintendent shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor.

If the Contractor, in the course of the work, finds any discrepancy between the drawings and the physical conditions of the locality, or any errors or omissions in drawings or in the layout as given by points and instructions, it shall be his duty to immediately inform the Owner and the Owner shall promptly verify the same.

Article 14. Changes in the Work

The Owner without invalidating the contract, may, in writing, order extra work or make changes by altering, adding to or deducting from the work, the Contract Sum being adjusted accordingly. All such work shall be executed under the conditions of the original contract.

Article 15. Correction of the Work

The Contractor shall remedy any defects due to faulty materials or workmanship which appear within a period of one year from the date of completion of the contract. The provisions of this article apply to work done by subcontractors as well as to work done by direct employees of the Contractor.

Article 16. Claims for Extra Cost

If the Contractor claims that any instructions by drawings or otherwise, involve extra cost, he shall give the Owner written notice thereof within a reasonable time after the receipt of such instructions, and in any event before proceeding to execute the work and the procedure then shall be as provided for changes in the work. No such claim shall be valid unless so made.

Article 17. Deductions for Uncorrected Work

If the Owner deems it inexpedient to correct work injured or done not in accordance with the contract, an equitable deduction from the Contract price shall be made therefore.

Article 18. Correction of Work Before Final Payment

The Contractor shall promptly remove and correct all work condemned by the Owner as failing to conform to the Contract. The Contractor shall promptly replace and re-execute his own work in accordance with the contract and without expense to the Owner. He shall bear the expense of making good all work of other contractors destroyed or damaged by such replacement.

Article 19. Delays and Extension of Time

If the Contractor should be delayed at any time in the progress of the work by any act or neglect of the Owner, or of any employee of the Owner, or by any separate Contractor employed by the Owner, or by changes ordered in the work, or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any causes beyond the Contractor's control, or by delay authorized by the Owner pending arbitration, or by any cause which the Owner shall decide to justify the delay, then the time of completion shall be extended for such reasonable times as the Owner may decide.

No such extension shall be made for delay occurring more than seven days before claim therefore is made in writing to the Owner. In the case of a continuing cause of delay, only one claim is necessary.

If no schedule or agreement stating the dates upon which drawings shall be furnished is made, then no claim for delay shall be allowed on account of failure to furnish drawings until two weeks after demand for such drawings and not then unless such claim be reasonable.

Article 20. Owner's Right to Terminate Contract

The Owners may terminate the Contract when the approved progress schedule is not met because of failure of the Contractor to exercise diligence and effectively perform all required Work or when the progress of the Work is unacceptable to the Designer/Engineer.

If the Contractor should be adjudged as bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided to supply enough properly skilled workmen or proper materials, or if he should fail to make prompt payment to subcontractors or for material or labor, or persistently disregard laws, ordinances or the instructions of the Owner, or otherwise be guilty of a substantial violation of any provision of the contract then, upon the certificate of the Owner that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor seven days written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools and appliances thereon and finish the work by whatever method he may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price shall exceed the expense of finishing the work including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner as herein provided, and the damage incurred through the Contractor's detail, shall be certified by the Owner.

Article 21. Contractor's Right to Stop or Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of three months through no act or fault of the Contractor or of anyone employed by him, or if the Owner should fail to issue any certificate for payment within seven days after it is due, or if the Owner should fail to pay to the Contractor within seven days of its maturity and presentation, any sum certified by the Owner or awarded by arbitrators, then the Contractor may, upon seven days written notice to the Owner, stop work or terminate this contract and recover from the Owner payment for all work executed and any loss sustained upon any plant or materials and reasonable profit and damages.

Article 22. Insurance

No work connected with the contract shall be started until the Contractor has submitted evidence to the University Facilities Planning & Construction Department, that:

(1) the Contractor shall carry Worker's Compensation Insurance in the amounts required by Michigan Statute, upon all of its employees engaged in the work and shall be responsible to ensure that all subcontractors maintain equal Worker's Compensation Coverage, and the Worker's Compensation policy should also provide Employers Liability Insurance with minimum limit requirements of at least $500,000 Bodily Injury By Accident, $500,000 Bodily Injury By Disease, and $500,000 Policy Limit By Disease.

(2) Contractor is to carry Commercial General Liability Insurance with minimum limit requirements of $1 Million each occurrence, $1 Million Personal Injury and Advertising Injury, $2 Million Products and Completed Operations Aggregate and $2 Million General Aggregate. Coverage should include Premises and Operations, Products and Complete Operation, Blanket Contractual and Broad Form Property Damage Liability.

(3) The Contractor shall carry Automobile Liability Insurance with minimum limit requirements of $1 Million each accident. All of this insurance shall be maintained during the life of this Order and/or Contract. **Saginaw Valley State University shall be endorsed as an additional insured to the Commercial General Liability Policy and Automobile Liability Policy.**

Contractor shall advise their carrier to provide a Certificate of Insurance for this insurance coverage to the University Facilities Planning & Construction Department and this Certificate of Insurance shall contain a provision that should any of the above described policies be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.

Contractor further agrees to indemnify, save and hold harmless the University, its employees, its agents, its President, and its Board of Trustees from any and all suits, claims, liability, damages, loss, cost and expenses of every kind of nature, including attorney fees, which may be asserted against the University, its employees or agents, its President or its Board of Trustees by another or others resulting from the performance of the work herein described.

Article 23. Performance & Payment Bonds

If the bid amount is equal to or greater than $50,000, the Contractor shall provide a Performance Bond and a Payment Bond, each in the value of 100% of the Contract Sum.

Article 24. Separate Contracts

The Owner reserves the right to let other contracts in connection with this work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs.

Article 25. Subcontracts

The Contractor shall, as soon as practicable after the execution of the contract, notify the Owner in writing of the names of subcontractors proposed for the principal parts of the work and for such others as the Owner may direct and shall not employ any that the Owner may within a reasonable time object to as incompetent or unfit.

If the Contractor has submitted before execution of the contract a list of subcontractors and the change of any name on such list is required in writing by the Owner after such execution, the contract once shall be increased or diminished by the difference in cost occasioned by such change.

The Owner shall, on request, furnish to any subcontractor, wherever practicable, evidence of the amounts certified on his account.

The Contractor agrees that he is as fully responsible to the Owner for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the Owner.

Article 26. Owner's Status

The Owner has authority to stop the work whenever such stoppage may be necessary to insure the proper execution of the contract. He shall also have authority to reject all work and materials that do not conform to the contract, to direct the application of forces to any portion of the work, as in his judgment is required, and to order the forces increased or diminished, and to decide questions which arise in the execution of the work.

Article 27. Payment

Payment for the work will be made in one sum at the completion of the contract except that partial payments of the completed work may be made at monthly intervals. If Contractor expects to request partial payments he shall submit a Schedule of Values of the various parts of the work aggregating the total contract sum. This schedule of values shall include a 10% line item for close-out which encompasses as-builts, punch lists, warranties, operation and maintenance manuals, owner training, etc. When applying for payments, Contractor shall submit a statement based upon this schedule, itemized and supported as the Owner may require, including a 10% line item for close-out. Payment request to be submitted on a modified form similar to AIA G702 and submitted to the Designer/Engineer for approval.

Contract will not be considered complete until the work has been finally accepted by the Owner and the following close-out documents have been furnished:

(a) Required warranties
(b) Satisfactory evidence that all subcontractors, material bills and other indebtedness connected with work have been paid
(c) Record drawings
(d) Operation and maintenance manuals
(e) Owner Training
(f) Signed and completed punchlist
(g) Sworn statement
(h) Unconditional waivers from all subcontractors and major suppliers

Article 28. Shop Drawings
Submit three (3) copies of shop drawings to Designer/Engineer for review.

Article 29. Field Measurements
The accompanying drawings show the arrangement, general design and extent of the Work and are more or less diagrammatical with materials and equipment shown in their general locations. The Contractor shall make field measurements to verify or supplement dimensions indicated, and assume full responsibility for accurate fit of all Work.

Article 30. Clean-Up
(a) The Contractor shall keep the premises free of accumulation of waste materials or rubbish caused by his operations. If the Contractor fails to keep the area clean during the course of the work and upon completion, the Owner may have the area of the work cleaned properly and the cost thereof shall be charged to the Contractor.

(b) The Contractor shall legally dispose of all empty material containers, spent items, rubbish, etc. off campus property.

Article 31. Substantial Completion
The Contractor shall notify the Owner when the Work will be substantially complete and ready for inspection and preparation of a list minor replacement, correction and adjustment items. The Contractor shall be represented on the job site at the time this inspection is made thereafter shall complete all Work by the date set for final acceptance by the Owner.

Article 32. Project Close-Out Documents
The Contractor shall provide three (3) hard copies of all record documents, operation and maintenance data, testing data, sworn statement and waivers with the final pay request.

Contractor shall include all operation and maintenance data and/or record Drawings required by Contract Documents.

END OF GENERAL CONDITIONS

Section 00510

OWNER/CONTRACTOR AGREEMENT

I. DATE, OWNER AND CONTRACTOR

A. Date of Agreement: _____

B. The Parties To This Agreement:

B1. The Owner: Saginaw Valley State University
7400 Bay Road, University Center, MI 48710

B2. The Contractor: _____

II. THE PROJECT, LOCATION AND DESCRIPTION OF WORK

A. Project Name: _____

B. Project Location: _____

C. Description of Work: _____

III. PAYMENT FOR WORK

The Owner shall pay the Contractor for the performance of the Work, subject to the provisions of the Contract Documents, and subject to additions and deductions by Change Order, as provided in the General Conditions of the Contract for Construction, in current funds, the Contract Sum of:

_____ and $^{00}/_{100}$ _____ Dollars
($___)

IV. CONTRACTOR'S ASSIGNED PERSONNEL

The Contractor has assigned the following personnel to the Project in the capacities designated, and shall not change these assignments without the concurrence of the Owner in the form of an Amendment to the Contract. Additionally, the Contractor agrees to remove personnel assigned to the project, listed here or otherwise, at the request of the Owner, in the event such personnel are shown not to be acting consistently in the Owner's best interests.

Name	Title	Responsibility
_____	, Manager	Overall Project Control
_____	, Superintendent	Field Supervision
_____	, Safety Officer	All Safety Related Issues

V. THE OWNER/CONTRACTOR AGREEMENT

A. CONTRACT DOCUMENTS

A1. DOCUMENTS

The Contract Documents include this Agreement and the following documents:

A1.1 General Conditions of the Contract for Construction:
As Noted in Specification

A1.2 Supplementary Conditions of the Contract for Construction:
As Noted in Specification

A1.3 Additional Conditions, consisting of:
_____

A1.4 Drawings, dated: _____

A1.5 Specifications, dated: _____

A1.6 Addenda,: _____

A1.7 Modifications issued during construction.

A2. CONTRACT

All Contract documents are a part of this Agreement as if attached to or repeated in this Agreement. All references to "Contractors" in the Contract Documents apply specifically and individually to the Contractor identified in and party to this Agreement. The Plural, "Contractors", always applies individually to the Contractor and each contractor, and shall not be interpreted collectively, as if it applied to all contractors as a group.

A3. DEFINITIONS

The definitions of terms used throughout the Contract Documents are those standard to the construction industry, or as used in the General Conditions of the Contract for Construction.

A4. OTHER DOCUMENTS

If the provisions of this Agreement conflict with any provisions of other documents, the provisions of this Agreement shall control.

B. CONTRACTOR PERFORMANCE

B1. CONTRACTOR PERFORMANCE

The Contractor agrees to perform all Work, as identified in Provision V of this Agreement, in accord with, as required by and as set forth in the Contract Documents.

B2. REPRESENTATION

The Contractor, by executing this Agreement, represents that he fully understands the requirements of the Contract Documents with respect to scope and content, and will expeditiously complete the Work in conformance to the Contract Documents. He agrees to provide his best skills and judgment, and to cooperate with others involved in the Project, and at all times to protect the Owner's interests.

B3. STARTING THE WORK

The Contractor shall commence the Work in such a manner and at such a time as to expeditiously pursue the Work diligently to completion. The Contractor shall work in a cooperative manner with other contractors.

B3.1 The execution of this Agreement by both parties constitute a Notice to Proceed with the Work, unless the Owner issues a separate Notice to Proceed designating a different starting time. The Contractor shall promptly provide timely performance according to the immediate progress requirements of the Project.

B3.2 The Contractor shall commence the Work prior to the execution of this Agreement if a Letter of Intent containing a Notice to Proceed is issued by the Owner.

B3.3 Upon receipt of a Notice to Proceed, the Contractor shall pursue and complete the Work without voluntary interruption for any reason, as long as the Work can be performed, at a pace consistent with good industry practice regardless of pending or current claims or disputes in connection with the Contract Documents.

B4. TIMELY PERFORMANCE

B4.1 It is the Owner's intent to complete the Project as soon as possible. The Contractor agrees to cooperate in scheduling and performing the Work to achieve completion of the Project as soon as possible.

B4.2 The Contractor acknowledges and accepts the prospects of such delays, interferences and interruptions to the progress of the Project and to the Work as are inherent in the construction industry. The Contractor represents that he has included compensation for such delays, interferences and interruptions in the Contract Sum.

B4.3 The Owner does not guarantee that delays, interferences and/or interruptions to the Work will not occur. The Owner expressly disclaims any responsibilities or obligations resulting from delays, interferences or interruptions.

B4.4 The Contractor shall not be entitled to additional compensation or damages due to delays, interferences or interruptions to the Work or the Project, but shall be entitled only to an appropriate extension of time in accord with the General Conditions of the Contract for Construction.

C. OWNER'S PERFORMANCE

C1. PAYMENT FOR WORK

C1.1 As stated in provision III on page 00510 – 1.

C2. UNIT PRICES

C2.1 In Addition to the Contract Sum, or as a part thereof if it is so stipulated in this Agreement, the Owner shall pay the Contractor an amount computed from the quantity of Work performed as determined by the Project Team. The unit prices for such work shall be:

Type of Work	Unit	Unit Price

C2.2 If actual quantities differ from the quantities contemplated by more than 25%, and it is shown that a substantial inequity will result either to the Contractor or to the Owner if these unit prices are used, the applicable unit prices shall be mutually adjusted.

C3. PROGRESS PAYMENTS

The Owner shall pay the Contractor periodically for Work performed according to the provisions of the General Conditions of the Contract for Construction. Payment request shall be submitted on a modified form similar to AIA G702 and submitted to the Designer for approval.

C4. FINAL PAYMENT

Final Payment, constituting the entire unpaid balance of the adjusted Contract Sum, shall be paid by the Owner to the Contractor within thirty (30) days of receipt by the Owner of certification of Final Completion as stipulated in the General Conditions of the Contract for Construction.

C5. CONTRACT ADMINISTRATION

The Owner shall administer the provisions of the Contract Documents through the Project Team.

C6. CONSTRUCTION SUPPORT ITEMS

The Owner shall provide certain Construction Support Items to be used by all contractors in a cooperative manner. The list of these items appears in the General Conditions of the Contract for Construction.

D. CHANGES

D1. PRICING

Unless otherwise agreed in writing by the Owner and the Contractor, Modifications resulting in Change Orders shall be priced by the Contractor in the following manner:

D1.1 Cost shall be the estimated actual, direct cost of the labor, material and equipment involved plus an overhead charge of 15% for the work done by Contractor's own personnel and shall not exceed 10% for work done under subcontract, sub-subcontract, etc.

D1.2 Labor shall be calculated at standard hourly rates.

D1.3 Material shall be calculated at the Contractor's invoice cost.

D1.4 Equipment shall be calculated at the least period rate applicable for the duration of use, and based on a published rate schedule currently in use.

D1.5 The Contractor shall provide the Owner with back-up information substantiating all costs.

D1.6 Supervision labor above the level of Foreman shall be included in the charge for overhead, per paragraph D1.1 above.

D1.7 Unit prices where given by proposal shall be used where applicable.

E. RISK MANAGEMENT

E1. BONDS

If required by the bidding documents, the Contractor shall provide a Performance Bond and a Labor and Material Bond, each in the value of 100% of the Contract Sum. The Contractor represents that the cost of the bonds, if required, has been included in the Contract Sum.

E2. UNANTICIPATED CONDITIONS

This Contract shall be equitably adjusted by Change Order to the extent that such conditions increase or decrease the cost of Work if, during the performance of the Work, the Contractor encounters either of the following:

E2.1 Concealed conditions below the surface of the ground which are at variance with conditions indicated by the Contract Documents and with available soil investigation data.

E2.2 Previously unknown conditions of an unusual nature below the surface of the ground, which differ materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract.

A substantiated written claim for such an adjustment shall be made by the Contractor or the Owner within fifteen days after first observance of any such condition.

VI. EXECUTION

The Owner and the Contractor have executed this Agreement as of the day and year stated in provision I.A. above.

A. THE OWNER:

Saginaw Valley State University

Signature: _____

Printed Name: James G. Muladore

Title: Executive Vice President for Administration & Business Affairs

Date: _____

B. THE CONTRACTOR:

_____

Signature: _____

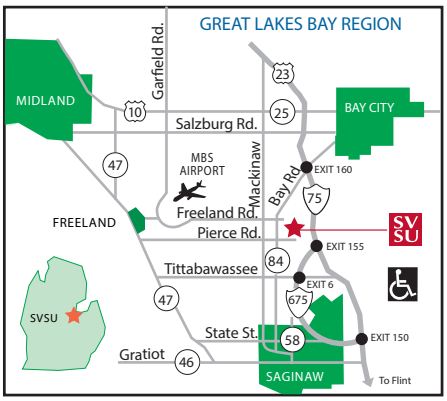
Printed Name: _____

Title: _____

Date: _____

SAGINAW VALLEY STATE UNIVERSITY

7400 Bay Road • University Center, MI 48710 • svsu.edu



1. Arbury Fine Arts Center
2. Archery Range
3. Art Studio
4. Bachand Hall
5. Baseball Field
6. Basketball Intramural Courts
7. Bookstore
8. Brown Hall
9. Campus Recreation Center
10. Carmona College of Business
11. Convenience Store
12. Curtiss Hall
13. Discus Throw
14. Doan Center (Marketplace)
15. Fieldhouse
16. Football Practice Field
17. Founders Hall
18. Marshall M. Fredericks Sculpture Museum & Gardens
19. Gilbertson Hall
20. Great Lakes Residence Halls (First Year Suites A-E)
21. Groening Commons
22. Grounds Building
23. Information Kiosk
24. Intramural Fields (East & West)
25. Living Center South
26. Living Center Southwest
27. Ming Chuan University
28. MJ Brandimore House (LC North)
29. Morley Field
30. Non-Motorized Pathway
31. Observatory
32. Owsley Grove
33. Performing Arts Center
    A. Malcolm Field Theatre for Performing Arts
    B. Rhea Miller Recital Hall
34. Pine Grove Apartments
35. Pioneer Hall
36. Ryder Center (Gerstacker Aquatics Center, Hamilton Gymnasium, O'Neill Arena)
37. Dow Doan Science Building East
38. Dow Doan Science Building West
39. South Campus Complex (Buildings A, B & C)
40. Soccer Fields
41. Softball Fields
42. Student Center
43. Tennis Courts
44. Tranquil Residence Halls (First Year Suites F & G)
45. University Health Center
46. University Police/Parking Services
47. University Village East
48. University Village West
49. VIP Athletic Parking
50. Wickes Hall (Admissions & Financial Aid)
51. Wickes Memorial Stadium
52. Yien International Garden
53. Zahnow Amphitheatre
54. Zahnow Library (Center for Academic Innovation, Center for Academic Achievement, Academic Tutoring, Information Technology, The Testing Center, and The Writing Center)

SYMBOL KEY

- Annual Ring Sculpture
- Power-Assist Door 1st Floor
- Power-Assist Door 2nd Floor
- Edwards Bell Tower
- Food/Dining
- Emergency Blue Telephone
- Gateway Entrance
- Gazelle Fountain
- Handicapped Parking
- Metered Parking
- Wetland Preserve
- Native Plantings

COLOR KEY

- Faculty/Staff Reserved Parking: Permit Required in Shaded Portions of F, G1, L, and J4 Lots until 6:45 p.m.
- Roadways and Open Parking Lots
- Student Housing
- Educational Buildings
- Outdoor Sports Locations
- VR Student Resident Parking (VR permit required)
- UR Student Resident Parking (UR permit required)
- Free, Resident (UR permit required) & Overnight
- P Student Resident Parking (P permit required)

Smoking is permissible only in lettered and residential parking lots, at least 25 ft. from any building.

February 2020

HHS CLASSROOM RENOVATION

UNIVERSITY CENTER, MICHIGAN

SAGINAW VALLEY STATE UNIVERSITY

ISSUE FOR CONSTRUCTION

SSOE | S&W

SVSU BID NO. 23010

12-02-2022

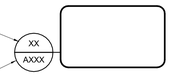
SSOE, Inc.
1050 Wilshire Drive, Suite 260
Troy, MI 48084
T. (248) 643-6222

REFERENCE SYMBOLS

DETAIL IDENTIFICATION

DETAIL OR ENLARGED PLAN IDENTIFICATION NUMBER

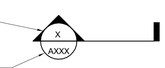
SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE DETAIL IS DRAWN.)



SECTION IDENTIFICATION

SECTION OR ENLARGED PLAN IDENTIFICATION NUMBER

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE SECTION IS DRAWN.)



PLAN, SECTION AND DETAIL IDENTIFICATION

PLAN, SECTION AND DETAIL IDENTIFICATION NUMBER (SAME NUMBER ON SHEET WHERE DRAWN OR CUT)

H5 — FLOOR PLAN

A101 — SCALE: 1/8" = 1'-0"

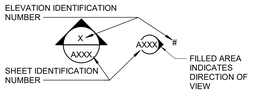
ON SHEET WHERE DETAIL IS DRAWN, INDICATES SHEET NUMBER WHERE DETAIL IS CUT

ELEVATION LOCATION IDENTIFICATION

ELEVATION IDENTIFICATION NUMBER

SHEET IDENTIFICATION NUMBER

FILLED AREA INDICATES DIRECTION OF VIEW



MATERIAL OR WORK DIVISION INDICATION

EXISTING MATERIAL | NEW MATERIAL

WALL TYPE INDICATION

XX X — WALL TYPE IDENTIFICATION AS NOTED IN PARTITION SCHEDULE

NORTH INDICATION

BULLETIN / ADDENDUM IDENTIFICATION

BULLETIN (NUMBER)

ADDENDUM (LETTER)

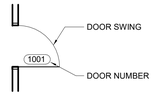
WORK POINT

ROOM NAME AND NUMBER INDICATION

RM NAME
XXXX

NOTE LEADER INDICATION

DOOR NUMBER INDICATION

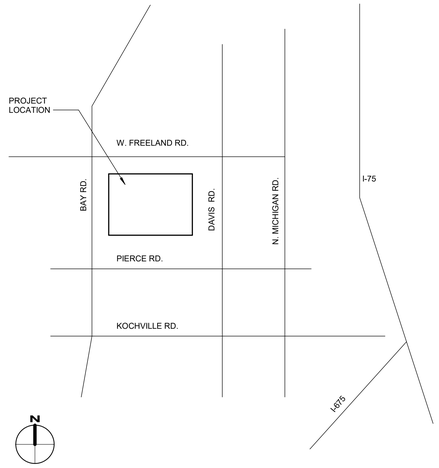


COLUMN IDENTIFICATION

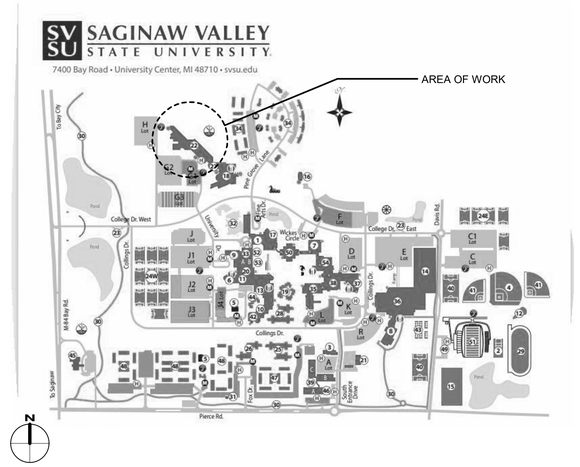
XX — EXISTING COLUMN IDENTIFICATION BUBBLE

REFER TO MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR ADDITIONAL SYMBOLS

VICINITY MAP



CAMPUS MAP



DRAWING LIST

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SSOE | S&W

PROFESSIONAL SEALS:

SUBMITTAL/REVISION SCHEDULE:

NO.	DATE	DESCRIPTION
0	12-02-2022	ISSUE FOR CONSTRUCTION

■ APPROVED FOR CONSTRUCTION
□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:

SAGINAW VALLEY STATE UNIVERSITY

SAGINAW VALLEY STATE UNIVERSITY

7400 BAY ROAD
UNIVERSITY CENTER, MICHIGAN
48710

PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

UNIVERSITY CENTER, MICHIGAN

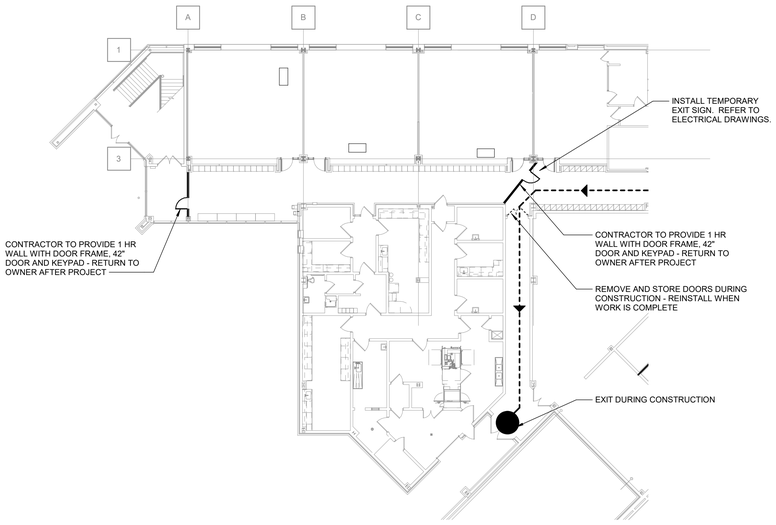
SSOE/SW PROJECT #: 022-00568-00

SSOE/SW MANAGER: R. SIEBENALLER

SSOE | STEVENS & WILKINSON
1050 Wilshire Drive, Suite 260
Troy, MI 48084-1526
T. (248) 643-6222

COVER SHEET

GI-000



A3
GI-001

FIRST FLOOR - TEMPORARY WALL PLAN

SCALE: 1/16" = 1'-0"

CODE SUMMARY

OCCUPANCY: BUSINESS
NO. OF STORIES: TWO AND PENTHOUSE
CONSTRUCTION CLASS: MBC TYPE IIB, LSC II(000)
OWNER: SAGINAW VALLEY STATE UNIVERSITY

GOVERNING CODES:

BUILDING CODE: 2015 MICHIGAN BUILDING CODE

LIFE SAFETY CODE: 2012 NFPA 101 LIFE SAFETY CODE

MECHANICAL CODE: 2015 MICHIGAN MECHANICAL CODE

PLUMBING CODE: 2018 MICHIGAN PLUMBING CODE

ELECTRICAL CODE: 2017 NATIONAL ELECTRIC CODE (NFPA 70)

ACCESSIBILITY: ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES 2009 OF MICHIGAN WITH ANSI A117.1, 2009 AMENDMENTS

BASIC BUILDING INFORMATION:

CONSTRUCTION TYPE: MBC TYPE IIB TO MATCH EXISTING

FIRE PROTECTION: THE EXISTING BUILDING IS FULLY SPRINKLERED AND WILL BE MAINTAINED AS SUCH. AREA OF RENOVATION IS FULLY SPRINKLERED.

ACTUAL HEIGHT: 2 STORIES ABOVE GRADE WITH ROOF PENTHOUSE

AREA OF RENOVATION AT EXISTING BUILDINGS:

FIRST FLOOR: 882 SQ.FT.

ACTUAL AREA:	***EXISTING***
FIRST FLOOR	57,020 SF
SECOND FLOOR	33,403 SF
PENTHOUSE	5,552 SF
TOTAL:	***95,975 SF***

MEANS OF EGRESS:

NOTE: AREAS WITHIN THE BUILDING THAT ARE NOT WITHIN THE SCOPE OF THE PROJECT ARE PRESUMED TO BE IN COMPLIANCE WITH THE MEANS-OF-EGRESS REQUIREMENTS WHICH WERE ENFORCED AT THE TIME OF CONSTRUCTION.

EXITS REQUIRED BASED ON OCCUPANT LOAD:
FOR OCCUPANT LOADS LESS THAN 50: 1
FOR OCCUPANT LOADS BETWEEN 50 AND 500: 2
FOR OCCUPANT LOADS BETWEEN 500 AND 1000: 3

TWO EXITS ARE REQUIRED AT EACH FLOOR

EXIT CAPACITY
DOORS: .2-INCHES PER OCCUPANT
STAIRS: .3-INCHES PER OCCUPANT

STAIR CHECK AT MOST HEAVILY OCCUPIED FLOOR (NOT AT GRADE)
EXISTING STAIRS ARE AT LEAST 4'-0" WIDE. NO CHANGE

STAIR DOOR CHECK:
EXISTING STAIR EXIT DOORS ARE MINIMUM 36 INCHES WIDE. NO CHANGE

TRAVEL DISTANCE:
200 FEET PER MBC-2015 TABLE 1017.2

20 FEET MAXIMUM DEAD END CORRIDOR

LEGEND

EXISTING SMOKE RESISTANT PARTITION
EXISTING 1 HOUR FIRE RATED
EXISTING 2 HOUR FIRE RATED
EXIT
Occupant Load
Exit Direction
F.E. FIRE EXTINGUISHER
EXIT
NOT IN SCOPE

LIFE SAFETY MEASURES

THIS PROJECT REQUIRES THAT THE FOLLOWING LIFE SAFETY MEASURES ARE TO BE IMPLEMENTED AND ENFORCED AT ALL CONSTRUCTION AREAS. CONTRACTORS AND THEIR SUBCONTRACTORS ARE TO BE AWARE OF AND FOLLOW THESE REQUIREMENTS.

ASSURE THAT EXITS PROVIDE FREE AND UNOBSTRUCTED EGRESS, AND THAT PERSONNEL RECEIVE TRAINING IF ALTERNATIVE EXITS ARE DESIGNATED. BUILDINGS OR AREAS UNDER CONSTRUCTION SHALL MAINTAIN ESCAPE FACILITIES FOR CONSTRUCTION WORKERS AT ALL TIMES. MEANS OF EGRESS IN CONSTRUCTION AREAS ARE TO BE INSPECTED DAILY.

MAINTAIN MEANS OF EGRESS ROUTES THROUGHOUT THE PERIODS WHEN THE BUILDING IS OCCUPIED. EGRESS ROUTES ARE TO BE CLEARLY MARKED WITH SIGNS, LIGHTING, AND PROPER FLOOR SURFACES.

ASSURE FREE AND UNOBSTRUCTED ACCESS FOR EMERGENCY PERSONNEL AND EMERGENCY RESPONSE FORCES.

ASSURE THAT FIRE ALARM DETECTION AND SUPPRESSION SYSTEMS ARE NOT IMPAIRED WITHIN OCCUPIED AREAS OF THE BUILDING. PROVIDE TEMPORARY, EQUIVALENT SYSTEMS WHEN ANY SYSTEM NEEDS TO BE INOPERATIVE DURING CONSTRUCTION. INSPECT AND TEST TEMPORARY SYSTEMS MONTHLY.

PROVIDE 1 HOUR RATED TEMPORARY CONSTRUCTION PARTITIONS (UL # U309) THAT ARE AIR AND SMOKE TIGHT. WHERE PART OF EXTERIOR PARTITIONS, PROVIDE MINIMUM R-11 INSULATION.

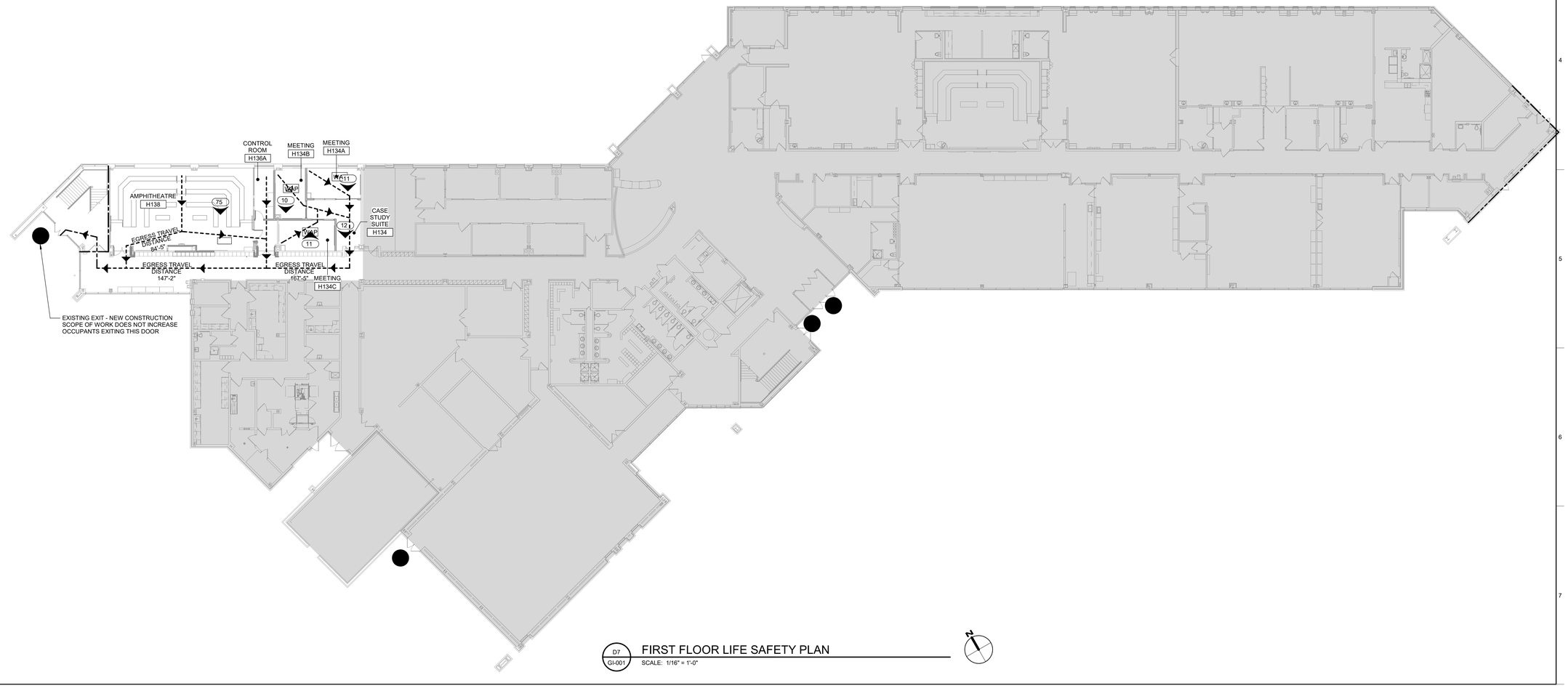
PROHIBIT SMOKING IN, OR ADJACENT TO, ALL CONSTRUCTION AREAS.

DEVELOP AND ENFORCE STORAGE, HOUSEKEEPING, AND DEBRIS REMOVAL PRACTICES THAT REDUCE THE FLAMMABLE AND COMBUSTIBLE FIRE LOAD OF THE BUILDING TO THE LOWEST LEVEL REQUIRED FOR DAILY OPERATION.

PROVIDE INCREASED HAZARD SURVEILLANCE OF BUILDINGS, GROUNDS AND EQUIPMENT, WITH SPECIAL ATTENTION TO THE EXCAVATIONS, CONSTRUCTION AREAS, CONSTRUCTION STORAGE AND FIELD OFFICES. PROVIDE APPROVED BARRIERS AT ALL HAZARDOUS AREAS.

CONDUCT ORGANIZATION-WIDE SAFETY EDUCATION PROGRAMS TO ASSURE AWARENESS OF ANY LIFE SAFETY CODE DEFICIENCIES, CONSTRUCTION HAZARDS, AND THESE REQUIREMENTS.

PROVIDE EXHAUST AIR FLOW SUFFICIENT TO MAINTAIN NEGATIVE AIR PRESSURE IN THE CONSTRUCTION ZONES, RELATIVE TO ALL OCCUPIED ADJACENT AREAS.



D7
GI-001

FIRST FLOOR LIFE SAFETY PLAN

SCALE: 1/16" = 1'-0"

PROFESSIONAL SEALS:

SUBMITTAL/REVISION SCHEDULE:

NO.	DATE	DESCRIPTION
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SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

SSOE | STEVENS & WILKINSON
1050 Wilshire Drive, Suite 260
Troy, MI 48084-1526
T. (248) 643-6222

CODE SUMMARY AND FIRST FLOOR LIFE SAFETY PLAN

GI-001

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SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY
- A. Section Includes:
  1. Demolition and removal of selected portions of building or structure.
  2. Salvage of existing items to be reused or recycled.

1.2 MATERIALS OWNERSHIP
- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
  1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.3 INFORMATIONAL SUBMITTALS (FOR OWNER REVIEW)
- A. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control, and for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of selective demolition activities with starting and ending dates for each activity.

1.4 CLOSEOUT SUBMITTALS (FOR OWNER REVIEW)
- A. Inventory of items that have been removed and salvaged.

1.5 FIELD CONDITIONS
- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect through the Construction Manager of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  1. If suspected hazardous materials are encountered, do not disturb; immediately notify Owner through the Construction Manager. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  1. Maintain fire-protection facilities in service during selective demolition operations.
- G. Arrange selective demolition schedule so as not to interfere with Owner's/Tenant's operations.

1.7 WARRANTY
- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.
- C. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.

PART 3 - EXECUTION

3.1 EXAMINATION
- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
- C. Inventory and record the condition of items to be removed and salvaged.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS
- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
  1. Arrange to shut off utilities with utility companies.
  2. 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.
  3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
     - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
     - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
     - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
     - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
     - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
     - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
     - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION
- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- C. Remove temporary barricades and protections where hazards no longer exist.
- D. Protect work area and surrounding areas from dust. Block off portion of HVAC in work area during construction.

3.5 SELECTIVE DEMOLITION
- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
  2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  4. Maintain fire watch during and for at least 48 hours after flame-cutting operations.
  5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  6. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
  7. Utilize negative air machine ducted to exterior for dust mitigation.
- B. 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.
- C. Removed and Salvaged Items:
  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 designated by Owner.
  5. Protect items from damage during transport and storage.
- D. 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.
- E. 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.

3.6 CLEANING
- A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."
  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."
- B. Burning: Do not burn demolished materials.
- C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 033053 - MISCELLANEOUS CAST-IN-PLACE CONCRETE (INTERIOR LOCATIONS ONLY)

PART 1 - GENERAL

1.1 SUMMARY
- A. Section includes cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete mixture.

1.3 QUALITY ASSURANCE
- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.

2.2 CONCRETE, GENERAL
- A. Comply with ACI 301 (ACI 301M).

2.3 STEEL REINFORCEMENT
- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.4 CONCRETE MATERIALS
- A. Cementitious Materials:
  1. Portland Cement: ASTM C 150/C 150M, Type I/II.
- B. Normal-Weight Aggregate: ASTM C 33/C 33M, 1-inch nominal maximum aggregate size.
- C. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
  6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- D. Water: ASTM C 94/C 94M.

2.5 RELATED MATERIALS
- A. Vapor Retarder: Plastic sheet, ASTM E 1745, Class A or B.
- B. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

2.6 CURING MATERIALS
- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth or cotton mats.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.

2.7 CONCRETE MIXTURES
- A. Normal-Weight Concrete:
  1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
  2. Maximum W/C Ratio: 0.45.
  3. Slump Limit: 4 inches (100 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).

2.8 CONCRETE MIXING
- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and furnish batch ticket information.
  1. When air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION
- A. Design, construct, erect, brace, and maintain formwork according to ACI 301 (ACI 301M).

3.2 EMBEDDED ITEM INSTALLATION
- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR-RETARDER INSTALLATION
- A. Install, protect, and repair vapor retarders according to ASTM E 1643; place sheets in position with longest dimension parallel with direction of pour.
  1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended adhesive or joint tape.

3.4 STEEL REINFORCEMENT INSTALLATION
- A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
  1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.5 JOINTS
- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness

3.6 CONCRETE PLACEMENT
- A. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 (ACI 301M).
- B. Do not add water to concrete during delivery, at Project site, or during placement.
- C. Consolidate concrete with mechanical vibrating equipment according to ACI 301 (ACI 301M).

3.7 FINISHING FORMED SURFACES
- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections exceeding 1/2 inch (13 mm).
  1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch (3 mm).
  1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.
- C. Rubbed Finish: Apply the following rubbed finish, defined in ACI 301 (ACI 301M), to smooth-formed-finished as-cast concrete where indicated:
  1. Smooth-rubbed finish.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING UNFORMED SURFACES
- A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.
  1. Do not further disturb surfaces before starting finishing operations.
- C. Scratch Finish: Apply scratch finish to surfaces indicated and surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes unless otherwise indicated.
- D. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.
  1. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for trafficked floor surface:
     - a. Specified overall values of flatness, Ff 25; and of levelness, FI20; with minimum local values of flatness Ff 15; and of leveness FI 12.
- E. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thinset methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

3.9 CONCRETE PROTECTING AND CURING
- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 (ACI 301M) for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:
  1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
     - a. Water.
     - b. Continuous water-fog spray.
     - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.
  2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
  3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.10 FIELD QUALITY CONTROL
- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Tests: Perform according to ACI 301 (ACI 301M).
  1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.

END OF SECTION 033053

SECTION 035413 - GYPSUM CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.1 SUMMARY
- A. Section includes self-leveling, gypsum cement underlayment for application below interior floor coverings.

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
- A. Product Data: For each type of product.

1.3 QUALITY ASSURANCE
- A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.

1.4 FIELD CONDITIONS
- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.
  1. Place gypsum cement underlayments only when ambient temperature and temperature of substrates are between

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.

2.2 GYPSUM CEMENT UNDERLAYMENTS
- A. Gypsum Cement Underlayment: Self-leveling, gypsum cement product that can be applied in minimum uniform thickness of 1/8 inch (3 mm) or as recommended by manufacturer for substrate, to match adjacent floor elevations.
  1. Cement Binder: Gypsum or blended gypsum cement as defined by ASTM C 219.
  2. Compressive Strength: Not less than 4000 psi (27.6 MPa) at 28 days when tested according to ASTM C 472.
  3. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.
- B. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm); or coarse sand as recommended by underlayment manufacturer.
  1. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.
- C. Water: Potable and at a temperature of not more than 70 deg F (21 deg C).
- D. Reinforcement: For underlayment applied to wood substrates, provide galvanized metal lath or other corrosion-resistant reinforcement recommended in writing by underlayment manufacturer.
- E. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.
- F. Surface Sealer: Designed to reduce porosity as recommended by manufacturer for type of floor covering to be applied to underlayment.

PART 3 - EXECUTION

3.1 PREPARATION
- A. General: Prepare and clean substrate according to manufacturer's written instructions.
  1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
  2. Fill substrate voids to prevent underlayment from leaking.
- B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.
  1. Moisture Testing: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/100 sq. m) in 24 hours.
- C. Wood Substrates: Mechanically fasten loose boards and panels to eliminate substrate movement and squeaks. Sand to remove coatings that might impair underlayment bond and remove sanding dust.
  1. Install underlayment reinforcement recommended in writing by manufacturer.
- D. Nonporous Substrates: For ceramic tile, quarry tile, and terrazzo substrates, remove waxes, sealants, and other contaminants that might impair underlayment bond; prepare surfaces according to manufacturer's written instructions.
- E. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

3.2 APPLICATION
- A. General: Mix and apply underlayment components according to manufacturer's written instructions.
  1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
  2. Coordinate application of components to provide optimum adhesion to substrate and between coats.
  3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply underlayment to produce uniform, level surface.
  1. Apply a final layer without aggregate to product surface.
  2. Feather edges to match adjacent floor elevations.
- D. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.
- E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.
- F. Apply surface sealer at rate recommended by manufacturer.
- G. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

END OF SECTION 035413

SECTION 042223 - ARCHITECTURAL CONCRETE MASONRY

PART 1 - GENERAL

1.1 SUMMARY
- A. Architectural concrete masonry exterior wall veneer facing.

1.2 DESIGN / PERFORMANCE REQUIREMENTS
- A. Concrete Unit Masonry Construction: Comply with the following:
  1. TMS 602-18 - Building Code Requirements for Masonry Structures.
  2. TMS 602-18 - Specification for Masonry Structures.
  3. National Concrete Masonry Association (NCMA) TEK Bulletins.

1.2 ACTION SUBMITTALS
- A. Product Data:
  1. Manufacturer's data sheets on each product to be used:
  2. Installation methods including written plan for cold and hot weather construction and masonry cleaning procedures.
- B. Selection Samples: Submit three full size units of each type/color of exposed architectural concrete masonry unit for review of color and texture to verify compliance with products specified. Provide the maximum color and texture variation range expected in the finished work. Production orders may be released after submittals are approved.

1.3 QUALITY ASSURANCE
- A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.

1.4 FIELD CONDITIONS
- A. Deliver architectural concrete masonry units to the job site on wood pallets with manufacturer's recommended unit protective covers.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL CONCRETE MASONRY UNITS
- A. Burnished masonry veneer unit
- B. Color: To match existing
  - a. As selected by Architect and Owner from manufacturer's colors.
  - b. Match existing CMU texture and polish.

2.2 MASONRY Accessories:
- A. Mortar and grout:
  1. Utilize Spec-Mix Mortar silos or premix 80 lb. bags to ensure mortar consistency. Pre- Mix silo mortar shall comply with ASTM C-1714. Contractor must keep delivery tickets from supplier recording batch numbers.
  2. Mortar Type: Match existing color.
  3. Type N for all anchored masonry veneers

PART 3 - EXECUTION

3.1 EXAMINATION
- A. Examine substrates, structure and installation conditions. Do not proceed with architectural concrete masonry work until unsatisfactory conditions have been corrected.
- B. Verify items provided by other Sections of work are properly sized and located.
- C. Verify that items to be built in are in proper location, and ready for roughing into masonry work.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION
- A. Clean substrate surfaces thoroughly prior to installation.
- B. Establish lines, levels and coursing. Verify anchors and flashings are correctly located and installed.
- C. Furnish temporary bracing as required during installation of masonry work. Maintain in place until building structure provides permanent support.
- D. Do not wet concrete masonry units except as per TMS 402/602
- E. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION
- A. Layout walls in advance for accurate spacing of surface bond patterns, with uniform joint widths and to properly locate openings, movement type joints, returns and offsets. Whenever possible, avoid the use of less than half-size units at corners, jambs and other locations. Notify Design Professional when split masonry coursing at heads and sills of openings and cut concrete masonry coursing less than 4 inches in height not permitted.
- B. Lay-up walls plumb and true to comply with specified tolerances. Provide square corners, except as otherwise indicated, with courses level, accurately spaced and coordinated with other work. Use double lines at multiple wythe walls.
- C. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings, load bearing walls, all courses of piers, columns and pilasters and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. Maintain 3/8 inch nominal joint widths, except as necessary at first course bed joints, and except for minor variations required to maintain bond alignment
- D. Lay solid concrete masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints
- E. Compress and cut joints flush for masonry walls that are below grade, concealed or covered by other materials.
- F. Tool joints in all exposed masonry work to a concave joint when thumb print hard, unless plans indicate otherwise.
- G. Remove masonry units disturbed after laying; clean and reset in fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.
- H. Step back unfinished work adjoining new work. Rack back 1/2 unit length in each course; do not tooth. Clean exposed surfaces of set masonry and remove loose masonry units and mortar before laying fresh masonry.
- I. Veneer walls:
  1. Concrete walls: Tie exterior masonry veneer wythe to concrete back-up with individual metal ties secured to dovetail anchor slots cast in concrete back-up.
  2. Wood framed walls: Tie exterior masonry veneer wythe to back-up with individual metal ties nailed to wood stud wall framing.
  4. Metal framed walls: Tie exterior masonry veneer wythe to back-up with individual metal ties screwed to metal wall framing.
  5. Space ties 16 inches on center vertically and horizontally.
  6. Place horizontal joint reinforcing in the masonry veneer as follows:
     - a. For nominal 4" high concrete masonry veneer units, place the horizontal joint reinforcement at no greater than 12" vertical spacing.
     - b. For nominal 8" high concrete masonry veneer units, place the horizontal joint reinforcement at no greater than 16" vertical spacing.

END OF SECTION 042223

SECTION 057300 - ORNAMENTAL RAILINGS

PART 1 - GENERAL

1.1 SUMMARY
- A. Section includes ornamental stainless steel railing system.

1.2 SUBMITTALS
- A. Product Data: Manufacturer's specifications and technical data including the following:
  1. Detailed specification of construction and fabrication.
  2. Manufacturer's installation instructions.
- B. Shop Drawings: Submit shop drawings for fabrication and installation. Include the following:
  1. Plans, elevations, and detail sections.
  2. Indicate materials, methods, finishes, and types of joinery, fasteners, anchorages, and accessory items.
  3. Where materials or fabrications are indicated to comply with certain design loadings, include structural computations, material properties, and other information needed for structural analysis.

PART 2 - PRODUCTS

1.1 STAINLESS STEEL RAILING SYSTEMS
- A. Stainless Steel Railing System
  4. Fabrication: Factory welded components. Verify dimensions on site prior to shop fabrication.
     - a. Mill joints to a tight, hairline fit.
     - b. Miter corner joints.
  5. Structural Requirements: Fabricate integral railings and component connections to meet or exceed the requirements as set forth in the current, adopted ICC International Building Code (IBC), International Residential Code (IRC), or governing local code as applicable.
- B. Posts:
  1. Post Material: ASTM A 554, Type A316 stainless steel, minimum Fy=40 ksi.
  2. Post Size: 1-1/2 inch (38.1 mm) x 1-1/2 inch (38.1 mm).
  3. Post Mounting Configuration: As indicated on Drawings.
- C. Top Rails:
  1. Top Rail Material: ASTM A 554, Type A316 stainless steel, minimum Fy=40 ksi.
  2. Top Rail Shape, Size: Round, As indicated on drawings.
  3. Top Rail: As indicated on Drawings

PART 3 - EXECUTION

1.1 EXAMINATION AND PREPARATION
- A. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
- B. Do not proceed with installation until substrates have been properly prepared and deviations from manufacturer's recommended tolerances are corrected. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Commencement of installation constitutes acceptance of conditions.

1.2 INSTALLATION
- A. Install railing system plumb, level, and true and in accordance with manufacturer's installation instructions and recommendations.
- B. Do not tighten the cables more than what is necessary to eliminate any sag.
- C. Provide anchorage devices and fittings to secure to in-place construction to adjacent construction. Separate dissimilar materials with bushings, grommets or washers to prevent electrolytic corrosion.
- D. Do not cut components, except for cable as required for installation, or abrade component finishes. Field touch-up of finishes only acceptable if done as per manufacturer's recommendations. Return components with damaged finishes to shop for required alterations according to manufacturer's return policy, followed by complete refinishing or provide new components.
- E. Secure mounting brackets to building structure in a positive manner using manufacturer recommended reinforcement and anchorage methods for substrate conditions. Locate brackets and hardware at spacing required to support structural loads.
- F. Installation of railing system shall be rigid and secure, installed by mechanics experienced in erection of architectural metal. Mounting hardware shall be drawn up tightly. Rails shall be set plumb and aligned.

END OF SECTION 057300

SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY
- A. Section Includes:
  1. Wood blocking and nailers.
  2. Plywood backing panels.

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
- A. Product Data: For each type of process and factory-fabricated product.

1.3 INFORMATIONAL SUBMITTALS (FOR OWNER REVIEW)
- A. Evaluation Reports: For the following, from ICC-ES:
  1. Fire-retardant-treated wood.
  2. Power-driven fasteners.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.

2.2 WOOD PRODUCTS, GENERAL
- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  1. Factory mark each piece of lumber with grade stamp of grading agency.
  2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.3 FIRE-RETARDANT-TREATED MATERIALS
- A. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
  1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
  2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
  3. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664, and design value adjustment factors shall be calculated according to ASTM D 6841
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.
- C. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- D. Application: Treat all miscellaneous carpentry unless otherwise indicated.

2.4 MISCELLANEOUS LUMBER
- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
  1. Blocking.
  2. Nailers.
- B. Dimension Lumber Items: Construction or No. 2 grade lumber of any species.

2.5 PLYWOOD BACKING PANELS
- A. Equipment Backing Panels: Plywood, DOC PS 1, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.

2.6 FASTENERS
- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M of Type 304 stainless steel.
- B. Screws for Fastening to Metal Framing: ASTM C 1002, length as recommended by screw manufacturer for material being fastened.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

2.7 MISCELLANEOUS MATERIALS
- A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL
- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry accurately to other construction. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.
- D. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
  2. ICC-ES evaluation report for fastener.

3.2 PROTECTION
- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061053

SECTION 064000 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY
- A. Provide interior architectural woodwork complete; as indicated on drawings, as specified, and as required for proper completion of work.

1.2 DEFINITIONS
- A. In addition to cabinetry, countertops, miscellaneous trim, and items indicated on drawings, interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.3 SUBMITTALS
- A. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
  1. Show details full size.
  2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
  3. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, and other items installed in architectural woodwork.
- B. Samples for verification:
  1. Plastic laminates.

1.4 QUALITY ASSURANCE
- A. Fabricator Qualifications: AWI/QCP certified fabricator/installer. 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 performace.
- B. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork.
- C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

1.5 DELIVERY, STORAGE, AND HANDLING
- A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored n other than installed areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.6 PROJECT CONDITIONS
- A. Environmental Limitations: Do not deliver woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg. F and relative humidity between 25 and 55 percent during the remainder of the construction period.
- B. Field Measurments: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 MATERIALS
- A. General: Provide materials that comply with requirements of AWI's quality standard (Custom-Grade) for each type of woodwork and quality grade specified, unless otherwise indicated.
- B. Wood Products: Comply with the following:
  1. Hardboard: AHA A135.4
  2. Medium-Density Fiberboard: ANSI A208.2, Grade MD.
  3. Particleboard: ANSI A208.1, Grade M-2
  4. Particleboard: Straw-based particleboard complying with requriements in ANSI A208.1, Grade M-2, except for density.
  5. Plywood: Marine grade ply.
  6. Melamine: white
- C. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, malamine-impregnated decorative paper complying with LMA SAT-1.
  1. Provide 0.5mm PVC edge banding in case edge, shelf edges, and drawer box edge.
  2. Provide 3mm PVC edge banding at drawer front edge and door front edge.
- D. High- Pressure Decorative Laminate: NEMA LD 3, HDPL standard grade as indicated on the Finish Legend.
  1. Provide at exposed cabinet exteriors, door/drawer interior materal, exposed surfaces, and finished ends.
  2. Any exposed cabinet edge to be clad with laminate. Field verify casework in conjunction with windows, doors, sills, etc. prior to manufacturing.

2.2 CABINET HARDWARE AND ACCESSORIES
- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 8 Section "Door Hardware."
- B. Hinges: Blum 120-degree hinge system, press in without plate 73T5580/175H9100; nickel plated.
  1. 120° Opening Capacity.
  2. Provide one pair per door to 48" in height, one and one-half pair per door over 48" unless noted otherwise.
- C. Wire Pulls: Back mounted, Epco 4-inch wire pull, satin finish, model # MC402-4-SS.
- D. Catches: Magnetic catches, BHMA A156.9, B03141.
- E. Drawer Slides: Accuride Zinc plated, side mount, full extension, soft close, LD model #3832EC; nickel plate.
- F. Door Locks:

CABINET LOCK DOUBLE DOOR	COMPX TIMBERLINE	CB-250 C700LP-15 C700BZ-15 C2575P-19 C1015P-19	250 SERIES DOOR LOCK BODY LOCK PLUG BEZEL STRIKE PLATE (DOOR) STRIKE PLATE (CASE)	SATIN NICKEL
CABINET LOCK SINGLE DOOR	COMPX TIMBERLINE	CB-240 C700LP-15 C700BZ-15 C1015P-19	240 SERIES DOOR LOCK BODY LOCK PLUG BEZEL STRIKE PLATE	SATIN NICKEL
CABINET LOCK DRAWER	COMPX TIMBERLINE	CB-230 C700LP-15 C700BZ-15 C1015P-19	230 SERIES DRAWER LOCK BODY LOCK PLUG BEZEL STRIKE PLATE	SATIN NICKEL

- G. Shelf rest: Hafele shelf pin spoon 5mm x 19mm nickel plated model #282.04.711.
- H. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with product class requirements in BHMA A156.9.
- I. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

SECTION 064000 CONTINUED ON SHEET GI-003

SSOE® S&W

PROFESSIONAL SEALS:

CONSULTANTS:

KEYPLAN

SUBMITTAL/REVISION SCHEDULE:

NO.	DATE	DESCRIPTION
0	12-02-2022	ISSUE FOR CONSTRUCTION

■ APPROVED FOR CONSTRUCTION
□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:

SAGINAW VALLEY STATE UNIVERSITY

7400 BAY ROAD
UNIVERSITY CENTER, MICHIGAN
48710

PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #:	022-00568-00
SSOE/SW MANAGER:	R. SIEBENALLER

SSOE | STEVENS & WILKINSON
1001 Madison Avenue
Toledo, OH 43604
T. (419) 255-3830

SPECIFICATIONS

GI-002

SECTION 064000 - INTERIOR ARCHITECTURAL WOODWORK - CONTINUED FROM SHEET GI-002

2.3 MICELLANEOUS MATERIALS
A. Furring, Blocking, Shims, and Hanging Strips:
B. Anchors: Select material, type, size, and finish requrired for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as requried for corrosion resistance. Proved toothed-steel or lead expansion sleeves for drilled-in-place anchors.
C. Adhesives, General: Dc not use adhesives that contain urea formaldehyde.
D. Adhesives and Glues: Type 1 (waterproof).
E. Adhesive for Bonding Plastic Laminate and Bonding Edges: As recommended by manufacturer of plastic laminate.
2.4 FABRICATION, GENERAL
A. Interior Woodwork Grade: Unless otherwise indicated, provide Custom-grade interior woodwork complying with referenced quality standars.
B. Install laminated plastic in single pieces up to the limits of the sheet sizes; small patches will not be accepted.
C. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in realtion to ambient relative humidity during fabrication and in installation areas.
D. Fabricate woodwork to dimensions, profiles, and detials indicated.
E. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
2. Trail fit assemlies at fabrication shop that cannot be shipped completely assembled. Install dowles, screw, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.
F. Shop-cut openings to maxium extent possible to receive hardware, appliances, plumbing fixtures, electical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
1. Seal edges of openings in countertops with a coat of varnish.
2.5 PLASTIC-LAMINATE CABINETS
A. Grade: Custom.
B. AWI Type of Cabinet Construction: Frameless/Flush Overlay.
C. AWI Construction Type: Type 1, multiple self-supporting units rigidly jointed together.
D. AWI Door and Drawer Front Style: Flush overlay.
E. Reveal: per the drawings.
F. Adhesive type: Type 1 (waterproof).
G. Backing: 0.020 minimum material thickness.
H. Spreader at base: 1/2" from wall.
I. Door and Drawer Silencers: BHMA A156.16, L03011.
J. Materials:
1. Door/Drawer Thicknesses
a. Back and sides: 1/2"
b. Fronts: 3/4"
2. Cabinet Thicknesses
a. Bottom: 3/4"
b. Sides: 3/4"
c. Wall Cabinet Tops: 3/4"
d. Sub-Tops: 1/2"
e. Backs: 3/8"
3. Shelves: 3/4"
K. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL.
L. Integral Bases of cabinets to be individual bases and doweled into cabinet sides.
M. Filler and scribes to be covered with vertical grade laminate.
N. Drawer Construction: Fabricate with exposed fronts fastened to sub-front with mounting screws from interior of body.
1. Join sub-fronts, back , and sides, with glued dovetail joints.
2. Drawer box: 5-piece box of 5/8" IPB core melamine.
2.6 SOLID-SURFACING -MATERIAL COUNTERTIOPS
A. Manufacturer: Swanstone.
B. Countertop and back end splashes: Solid-Surfacing-Material Thickness: 3 cm slab thickness.
B. Edge: Eased edge. Provide 1/2 inch radius at all outside edges.
C. Colors, Patterns, and Finishes as indicated on Finish Legend.
D. Fabricate tops and component in one piece, unless otherwise indicated. Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.
PART 3 - EXECUTION
3.1 PREPARATION
A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as requried, including removal of packing and backpriming.
3.2 INSTALLATION
A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 of fabrication of type of woodwork involved.
B. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.
1. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
2. Scribe and cut interior finish carpentry to fit adjoining work.
3. Countersink fasteners, fill surface flush, and sand where face fastening is unavoidable.
4. Install to tolerance of 1/8 inch in 96 inches (3mm in 2438mm) for level and plum. Install adjoining interior finish carpentry with 1/32 inch (0.8-mm) maximum offset.
C. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
D. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installations of hardware and accessory items as indicated.
1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
2. Maintain veneer sequence matched of cabinets with transparent finish.
3. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c.
E. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
3. Secure backsplashes to tops with concealed metal brackets at 16 inches o.c.
4. Caulk space between backsplash and wall with sealant specified in Division 7 Section "Joint Sealants."
G. Touch up finishing work specified in this Section after installation of woodwork. Fill Nail holes with matching filler where exposed.
3.3 ADJUSTING AND CLEANING
A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
B. Clean, lubricate, and adjust hardware.
C. Clean woodwork on exposed and semiexposed surfaces.
D. Protect countertop substrates during construction with 30-mil protection paper or greater. Tape underside of countertop at a minimum of 48 inches (1200 mm) o.c.

END OF SECTION 064000

SECTION 072100 - BUILDING INSULATION
PART 1 - GENERAL
1.1 SUMMARY
A. Section Includes:
1. Sound Attenuation Mineral-wool blanket.
1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
A. Product Data: For each type of product.
1.3 INFORMATIONAL SUBMITTALS (FOR OWNER REVIEW)
A. Product test reports.
B. Research reports.
PART 2 - PRODUCTS
2.1 PERFORMANCE REQUIREMENTS
A. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.
2.2 MINERAL-WOOL BLANKETS
A. Mineral-Wool Blanket, Unfaced:ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
2.3 ACCESSORIES
A. Insulation Anchors, Spindles, and Standoffs: As recommended by manufacturer.
PART 3 - EXECUTION
3.1 INSTALLATION, GENERAL
A. Comply with insulation manufacturer's written instructions applicable to products and applications.
B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.
3.2 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION
A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
4. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
1. Mineral Wool Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).

END OF SECTION 072100

SECTION 079200 - ACOUSTICAL JOINT SEALANTS
PART 1 - GENERAL
1.1 SUMMARY
Only tested acoustic systems shall be used in specific locations as follows:
A.Top-of-Wall, Wall-to-Wall, Bottom-of-Wall Joints in gypsum board partitions.
B.Through-penetrations in gypsum and masonry walls and floors.
PART 2 - PRODUCTS
2.1 ACOUSTICAL SEALANTS
A. Acoustical/Curtainwall Sealant: Single-component, non-hardening, non-sag, paintable synthetic rubber-tested to reduce airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing of similar assemblies according to ASTM E 90.
1. Basis of Design Product: Sherwin Williams Powerhouse Sealant.
2. Volatile Organic Compound (VOC) Content: 160 g/L maximum.
3. Color: White, paintable.
PART 3 - EXECUTION
3.1 EXAMINATION
A. Do not begin installation until substrates have been properly constructed and prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
3.2 PREPARATION
A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Acoustical Sealant installation: Sound-rated assemblies and as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations on both sides of assemblies with a continuous bead of acoustical sealant. Comply with ASTM C919 and manufacturer's written recommendations.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL FRAMES
PART 1 - GENERAL
1.1 SUMMARY
A. Section includes:
1. Interior standard steel frames.
1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
A. Product Data: For each type of product.
1.3 INFORMATIONAL SUBMITTALS (FOR OWNER REVIEW)
A. Product test reports.
PART 2 - PRODUCTS
2.1 PERFORMANCE REQUIREMENTS
A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
1. Smoke-Control Assemblies: Provide assemblies with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.
B. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.
2.2 INTERIOR STANDARD STEEL FRAMES
A. Construct hollow-metal frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
B. Heavy-Duty Frames: SDI A250.8, Level 2; SDI A250.4, Level B.
1. Frames:
a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
b. Construction: Face welded
2. Doors:
a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches (44.5 mm).
c. Face: Uncoated, cold-rolled steel sheet, minimum thickness of 0.053 inch (1.3 mm).
d. Edge Construction: Model 1, Full Flush.
e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's discretion.
C. Extra-Heavy-Duty Frames: SDI A250.8, Level 3; SDI A250.4, Level A. Provide at X-Ray.
1. Frames:
a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
b. Construction: Full profile welded
2.3 FRAME ANCHORS
A. Jamb Anchors:
1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches (610 mm) of frame height above 7 feet (2.1 m).
3. Postinstalled Expansion Anchor: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.
B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
C. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch (51-mm) height adjustment. Terminate bottom of frames at top of underlayment.
D. Material: ASTM A 879/A 879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M; hot-dip galvanized according to ASTM A 153/A 153M, Class B.
2.4 MATERIALS
A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
C. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
D. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
E. Glazing: Comply with requirements in Section 088000 "Glazing."
2.5 FABRICATION
A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
B. Hardware Preparation: Factory prepare hollow-metal frames to receive templated mortised hardware, and electrical wiring: include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
1. Reinforce frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal frames for hardware.
2.6 STEEL FINISHES
A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
PART 3 - EXECUTION
3.1 PREPARATION
A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
3.2 INSTALLATION
A. Hollow-Metal Frames: Comply with SDI A250.11
1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
b. Install frames with removable stops located on secure side of opening.
2. Fire-Rated Openings: Install frames according to NFPA 80.
3. Floor Anchors: Secure with postinstalled expansion anchors.
a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved.
4. Solidly pack mineral-fiber insulation inside frames.
5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.
3.3 CLEANING AND TOUCHUP
A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
B. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS
PART 1 - GENERAL
1.1 SUMMARY
A. Section Includes:
1. Factory veneer-faced flush wood doors.
2. Factory fitting flush wood doors to frames and factory machining for hardware.
1.2 ACTION SUBMITTALS
A. Product Data: For each type of door. Include factory-finishing specifications.
B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:
1. Dimensions and locations of blocking.
2. Dimensions and locations of mortises and holes for hardware.
3. Dimensions and locations of cutouts.
4. Undercuts.
5. Requirements for veneer matching.
6. Doors to be factory finished and finish requirements.
7. Fire-protection ratings for fire-rated doors.
C. Samples: For factory-finished doors.
1.3 INFORMATIONAL SUBMITTALS (FOR OWNER REVIEW)
A. Quality Standard Compliance Certificates: AWI Quality Certification or WI Certified Compliance Program certificates.
PART 2 - PRODUCTS
2.1 PERFORMANCE REQUIREMENTS
A. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.
2.2 FLUSH WOOD DOORS, GENERAL
A. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, "Architectural Wood Flush Doors."
1. Provide AWI Quality Certification or WI Certified Compliance Labels indicating that doors comply with requirements of grades specified.
B. WDMA I.S.1-A Performance Grade:
1. Heavy Duty unless otherwise indicated.
C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
1. Cores: Provide core specified or mineral core as needed to provide fire-protection rating indicated.
2. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed edges.
D. Smoke-Control Door Assemblies: Listed and labeled for smoke-control, based on testing according to UL 1784.
E. Structural-Composite-Lumber-Core Doors:
1. Structural Composite Lumber: WDMA I.S.10.
a. Screw Withdrawal, Face: 700 lbf (3100 N).
b. Screw Withdrawal, Edge: 400 lbf (1780 N).
F. Mineral-Core Doors:
1. Core: Noncombustible mineral product complying with requirements of referenced quality standard and testing and inspecting agency for fire-protection rating indicated.
2. Blocking: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated as needed to eliminate through-bolting hardware.
3. Edge Construction: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
2.3 VENEER-FACED DOORS FOR TRANSPARENT FINISH
A. Interior Solid-Core Doors - Match existing color and finish
1. Grade: Custom (Grade A faces)
2. Core: Structural composite lumber or mineral core as required for fire rating.
3. Construction: Five or seven plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering. Faces are bonded to core using a hot press.
2.4 LIGHT FRAMES
A. Match existing style and finish.
B. Wood-Veneered Beads for Light Openings in Fire-Rated Doors: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in doors of fire-protection rating indicated. Include concealed metal glazing clips where required for opening size and fire-protection rating indicated.
C. Metal Frames for Light Openings in Fire-Rated Doors: Manufacturer's standard frame formed of 0.048-inch- (1.2-mm-) thick, cold-rolled steel sheet; baked-enamel- or powder-coated finish; and approved for use in doors of fire-protection rating indicated.
2.5 FABRICATION
A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
1. Comply with NFPA 80 requirements for fire-rated doors.
B. Factory machine doors for hardware that is not surface applied.
C. Openings: Factory cut and trim openings through doors.
1. Light Openings: Trim openings with moldings of material and profile indicated.

2.6 FACTORY FINISHING
A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.
B. Factory finish doors that are indicated to receive transparent finish.
C. Transparent Finish:
1. Grade: Custom.
2. Finish: WDMA TR-4 conversion varnish or WDMA TR-6 catalyzed polyurethane
3. Sheen: Semigloss.
PART 3 - EXECUTION
3.1 INSTALLATION
A. Hardware: For installation, see Section 087100 "Door Hardware."
B. Manufacturer's written instructions and referenced quality standard, and as indicated.
1. Install fire-rated doors according to NFPA 80.
2. Install smoke- and draft-control doors according to NFPA 105.
C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

END OF SECTION 081416

SECTION 084213 - ALUMINUM-FRAMED ENTRANCES
PART 1 - GENERAL
1.1 SUMMARY
A. Section Includes:
1. Interior window frame units.
1.2 ACTION SUBMITTALS
A. Product Data: For each type of product.
B. Shop Drawings: Include plans, elevations, sections, full-size details, and attachments to other work.
1. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
C. Samples: For each exposed finish required.
1.3 INFORMATIONAL SUBMITTALS
A. Energy Performance Certificates: Where required, NFRC-certified energy performance values for each aluminum-framed entrance.
B. Product test reports.
C. Field quality-control reports.
D. Sample warranties.
1.4 CLOSEOUT SUBMITTALS (FOR OWNER REVIEW)
A. Maintenance data.
1.5 QUALITY ASSURANCE
A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
B. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated and accredited by IAS or ILAC Mutual Recognition Arrangement as complying with ISO/IEC 17025.
1.6 WARRANTY
A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
1. Warranty Period: 10 years from date of Substantial Completion.
B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.
1. Warranty Period: 10 years from date of Substantial Completion.
PART 2 - PRODUCTS
2.1 PERFORMANCE REQUIREMENTS
A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
B. Structural Loads: Interior assembly shall withstand design loads within limits determined according to the International Building Code.
C. Air Infiltration: Where required, test according to ASTM E 283 for infiltration.
D. Energy Performance: Where required, certify and label energy performance according to NFRC as follows:
1. Thermal Transmittance (U-factor): As indicated on drawings, fixed glazing and framing areas shall have U-factor as determined according to NFRC 100.
2. Solar Heat Gain Coefficient: As indicated on drawings, fixed glazing and framing areas shall have a solar heat gain coefficient as determined according to NFRC 200.
3. Condensation Resistance: As indicated on drawings, fixed glazing and framing areas shall have an NFRC-certified condensation resistance rating as determined according to NFRC 500.
E. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:
1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
F. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.
2.2 GLAZING
A. Glazing: Comply with Section 088000 "Glazing."
B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.
C. Glazing Sealants: As recommended by manufacturer.
2.3 FABRICATION
A. Form or extrude aluminum shapes before finishing.
B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
C. Fabricate components that, when assembled, have the following characteristics:
1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
D. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.
2.4 ALUMINUM FINISHES
A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.
PART 3 - EXECUTION
3.1 INSTALLATION
A. General:
1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.
B. Metal Protection:
1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
C. Set continuous sill members and flashing in full sealant bed to produce weathertight installation per manufacturers' recommendation.
D. Install components plumb and true in alignment with established lines and grades.
E. Install glazing as specified in Section 088000 "Glazing."
3.2 FIELD QUALITY CONTROL
A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
B. Field Quality-Control Testing: Perform the following test on aluminum-framed entrances.
1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.
C. Aluminum-framed entrances will be considered defective if they do not pass tests and inspections.
D. Prepare test and inspection reports.

END OF SECTION 084213

SECTION 084243 - SLIDING ENTRANCE DOORS
PART 1 - GENERAL
1.1 SUMMARY
A. This section includes the following types of intensive care unit/critical care unit (ICU/CCU) entrance doors:
1. Manually operated sliding ICU/CCU entrances.
1.2 REFERENCES
A. References: Refer to the version year adopted by the Authority Having Jurisdiction.
1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 101 - Life Safety Code.
1.3 SUBMITTALS
A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, fabrication, operational descriptions and finishes.
B. Shop Drawings: Submit manufacturer's shop drawings, including elevations, sections and details, indicating dimensions, materials, and fabrication of doors, frames, sidelites, anchors, hardware, finish, options and accessories.
1.4 PROJECT CONDITIONS
A. Field Measurements: Verify actual dimensions of openings to receive ICU/CCU entrances by field measurements before fabrication and indicate on shop drawings.
1.5 WARRANTY
A. ICU/CCU entrances shall be free of defects in material and workmanship for a period of one (1) year from the date of substantial completion.
PART 2 - PRODUCTS
2.2 MANUFACTURER
A. Manufacturer: Besam ASSA ABLOY Entrance Systems. Match existing building standard.
2.2 INTENSIVE CARE UNIT/CRITICAL CARE UNIT (ICU/CCU) ENTRANCES
A. ICU/CCU entrances including the following:
1. Sliding panels, sidelites and aluminum frame.
2. Entrance header, guide system and carrier assemblies.
B. Besam ASSA ABLOY VersaMax® 2.0 ICU/CCU Sliding Door Package (Basis of Design):
2. Single slide, fixed sidelite, ICU/CCU door system.
a. Operation: Manually operated.
b. Configuration: Single slide, two equal panel unit with one operable leaf and one fixed sidelite.
c. Minimum Clear Door Opening Width: 41-1/2 inches for 8'-0" unit width.
d. Breakaway Capability: Sliding leaf only.
e. Mounting: Overhead header installed between jambs.
f. Trackless
2.3 ENTRANCE COMPONENTS
A. Stile and Rail Sliding Panels and Sidelites:
1. Material: Extruded Aluminum, Alloy 6063-T5 or 6063-T6.
2. Door panels shall have a minimum .125 inch (3.2 mm) structural wall thickness including adjoining perimeter frames where applicable.
a. Aluminum extrusions shall allow for a factory installed, slide-in type gasket.
3. Door construction shall be by means of an integrated corner clip with 3/8 inch diameter all-thread through bolt from each stile.
a. Face of door stiles shall be flush with adjacent rails and muntin.
4. Glass stops shall be .062 inch (15.8 mm) wall thickness and shall provide security function as a standard by means of a fixed non-removable exterior section with glazing to be performed from the interior only.
5. Vertical Stiles shall be medium stile 4 inch.
6. Bottom Rails shall be 7 inch.
7. Intermediate Muntin shall be 4 inch.
8. Gasketing: Slide-in type, replaceable pile mohair seals.
a. Bottom rails shall be provided with a concealed adjustable sweep gasket.
9. Glass: Glazing shall comply with ANSI Z97.1, thickness as indicated.
a. Glazing Sliding Panels and Sidelite Panels: 1/4" tempered glass, unless otherwise specified.
2.4 HARDWARE
A. Provide manufacturer's standard hardware as required for operation indicated.
1. Breakaway arms and bottom pivot assembly shall allow panels to breakout to 90 degrees. Force to breakout sliding panel adjustable to maximum 50 lbf (222 N).
2. Door pulls shall be provided as indicated.
a. Manufacturer's recessed pull installed on breakout side and surface-mounted, 10" C-shaped door pull installed on non-breakout side of active door leaves. Door pull mounting shall not decrease clear opening width.
3. Guide Track/Threshold: Manufacturer's threshold as indicated.
a. Full Breakout Trackless Design: Floor mounted guide track and threshold not allowed.
1) Breakout from a full open position only.
2.5 ALUMINUM FINISHES
A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
B. Anodized Finish:
1. AAMA 611, Clear, AA- M12C22A41, Class I, 0.018 mm.
PART 3 - EXECUTION
3.1 EXAMINATION
A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance.
B. Proceed only after such discrepancies or conflicts have been resolved.
3.2 INSTALLATION
A. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.
B. Install intensive care unit/critical care unit (ICU/CCU) entrances plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.
1. Install surface mounted hardware using concealed fasteners to greatest extent possible.
2. Set headers, carrier assemblies, tracks, operating brackets and guides level and true to location with anchorage for permanent support.
3. Where aluminum will contact dissimilar metals, concrete, or masonry, protect against galvanic action and corrosion.
C. Sealants: Seal perimeter of framing members with sealant.
3.3 ADJUSTING
A. Adjust alignment of entrances and hardware for smooth, safe operation with minimum air infiltration.
B. Verify installation and alignment of all entrance gasketing as required for minimum air infiltration and compliance with specified standards.
3.4 CLEANING AND PROTECTION
A. Clean adjacent surfaces soiled by door installation.
B. Clean glass and metal surfaces promptly after installation. Remove excess sealants, compounds, dirt and other substances. Repair damages to match original finish.
3.5 DEMONSTRATION
A. Engage a factory-authorized representative to train Owner's maintenance personnel to adjust, operate, and maintain safe operation of the door.

END OF SECTION 084243

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0	12-02-2022	ISSUE FOR CONSTRUCTION

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□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:
SAGINAW VALLEY STATE UNIVERSITY
7400 BAY ROAD
UNIVERSITY CENTER, MICHIGAN
48710
PROJECT INFORMATION:
HHS CLASSROOM RENOVATION
UNIVERSITY CENTER, MICHIGAN
SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

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1001 Madison Avenue
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SPECIFICATIONS
GI-003

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY
- A. Section Includes:
  - 1. Mechanical door hardware for the following:
    - a. Swinging doors.

1.2 ACTION SUBMITTALS
- A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS
- A. Sample warranty.

1.4 CLOSEOUT SUBMITTALS
- A. Maintenance data.

1.5 QUALITY ASSURANCE
- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers who is available during the course of the Work to consult Construction Manager about door hardware and keying.

1.6 WARRANTY
- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
  - **1. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated.**

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- B. Accessibility Requirements: For door hardware on doors in an accessible route, comply with agency having jurisdiction and as indicated on Drawings.
- C. Provide products for each door that comply with requirements indicated in Part 2 and door hardware schedule.
  - 1. Door hardware is scheduled on Drawings.

2.2 LOCK CYLINDERS
- A. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.
- B. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.3 KEYING
- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide as indicated on Drawings.
- B. Keys: Nickel silver or Brass.
  - 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
    - a. Notation: "DO NOT DUPLICATE."

2.4 FINISHES
- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

PART 3 - EXECUTION

3.1 INSTALLATION
- A. Mounting Heights: Mount door hardware units at heights required to comply with governing regulations.
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
  - 1. Replace construction cores with permanent cores as directed by Construction Manager.

3.2 ADJUSTING
- A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY
- A. Section includes:
  - 1. Glass for windows, doors and storefront framing.
  - 2. Glazing sealants and accessories.

1.2 COORDINATION
- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.3 ACTION SUBMITTALS (FOR OWNER REVIEW)
- A. Product Data: For each type of product.
- B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches (300 mm) square.
- C. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS (FOR OWNER REVIEW)
- A. Preconstruction adhesion and compatibility test report.

1.5 QUALITY ASSURANCE
- A. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

1.6 PRECONSTRUCTION TESTING
- A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
  - 1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.

1.7 WARRANTY
- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
  - 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
  - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design glazing.
- B. Structural Performance: Glazing shall withstand design loads within limits and under conditions indicated determined according to the International Building Code and ASTM E 1300.
- C. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- D. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
  - 1. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
  - 2. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
  - 3. Visible Reflectance: Center-of-glazing values, according to NFRC 300.
- E. Sustainable Design Requirements: As indicated on drawings.

2.2 GLASS PRODUCTS, GENERAL
- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
  - 1. GANA Publications: "Glazing Manual."
  - 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.
- E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.3 GLASS PRODUCTS
- A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.
- B. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

2.4 GLAZING SEALANTS
- A. General:
  - 1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
  - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
  - 3. Colors of Exposed Glazing Sealants: As indicated by manufacturer's designations.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
- C. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
- D. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use NT.

2.6 GLAZING TAPES
- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
  - 1. AAMA 804.3 tape, where indicated.
  - 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
  - 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
  - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
  - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS
- A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- B. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- C. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- D. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- E. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

PART 3 - EXECUTION

3.1 GLAZING, GENERAL
- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

3.2 TAPE GLAZING
- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Apply heel bead of elastomeric sealant.
- F. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.3 GASKET GLAZING (DRY)
- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.4 SEALANT GLAZING (WET)
- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.5 CLEANING AND PROTECTION
- A. Immediately after installation remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
  - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.

END OF SECTION 088000

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY
- A. Section Includes:
  - 1. Non-load-bearing steel framing systems for interior partitions.
  - 2. Suspension systems for interior ceilings and soffits.

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
- A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS (FOR OWNER REVIEW)
- A. Product Certificates: For each type of code-compliance certification for studs and tracks.
- B. Evaluation reports for firestop tracks, post-installed anchors, and power-actuated fasteners.

1.4 QUALITY ASSURANCE
- A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association, or the Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
- C. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY
- A. Section Includes:
  - 1. Non-load-bearing steel framing systems for interior partitions.
  - 2. Suspension systems for interior ceilings and soffits.

1.2 QUALITY ASSURANCE
- A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association, or the Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 FRAMING SYSTEMS
- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
  - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
  - 2. Protective Coating: Coating with equivalent corrosion resistance of ASTM A 653/ A 653M, G40 (Z120), hot-dip galvanized unless otherwise indicated.
- B. Studs and Tracks: ASTM C 645.
  - 1. Steel Studs and Tracks:
    - a. Minimum Base-Metal Thickness: 0.0296 inch (0.752 mm).
    - b. Depth: As indicated on Drawings.
- C. Slip-Type Head Joints: Where indicated, provide one of the following:
  - 1. Single Long-Leg Track System: ASTM C 645 top track with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top track and with continuous bridging located within 12 inches (305 mm) of the top of studs to provide lateral bracing.
  - 2. Double-Track System: ASTM C 645 top outer tracks, inside track with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs and fastened to studs, and outer track sized to friction-fit over inner track.
  - 3. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- D. Firestop Tracks: Top track manufactured to allow partition heads to expand and contract with movement of structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
  - 1. Minimum Base-Metal Thickness: 0.0296 inch (0.752 mm).
- F. Cold-Rolled Channel Bridging: Steel, 0.0538-inch (1.367-mm) minimum base-metal thickness, with minimum 1/2-inch- (13-mm-) wide flanges.
  - 1. Depth: 1-1/2 inches (38 mm)
  - 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches (38 by 38 mm), 0.068-inch- (1.72-mm-) thick, galvanized steel.
- G. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
  - 1. Minimum Base-Metal Thickness: 0.0296 inch (0.752 mm)
  - 2. Depth: As indicated on Drawings.
- H. Resilient Furring Channels: 1/2-inch- (13-mm-) deep, steel sheet members designed to reduce sound transmission.
  - 1. Configuration: Asymmetrical or hat shaped.
- I. Cold-Rolled Furring Channels: 0.053-inch (1.34-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges.
  - 1. Depth: As indicated on Drawings.
  - 2. Furring Brackets: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of 0.0329 inch (0.8 mm).
  - 3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.
- J. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (32 mm), wall attachment flange of 7/8 inch (22 mm), minimum uncoated-metal thickness of 0.0179 inch (0.455 mm), and depth required to fit insulation thickness indicated.

2.3 SUSPENSION SYSTEMS
- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.
- B. Hanger Attachments to Concrete:
  - 1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 or AC308 as appropriate for the substrate.
    - a. Uses: Securing hangers to structure.
    - b. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.
- C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch (4.12 mm) in diameter.
- D. Flat Hangers: Steel sheet, 1 by 3/16 inch (25 by 5 mm) by length indicated.
- E. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.0538 inch (1.367 mm) and minimum 1/2-inch- (13-mm-) wide flanges.
  - 1. Depth: As indicated on Drawings.
- F. Furring Channels (Furring Members):
  - 1. Cold-Rolled Channels: 0.0538-inch (1.367-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges, 3/4 inch (19 mm) deep.
  - 2. Steel Studs and Tracks: ASTM C 645.
    - a. Minimum Base-Metal Thickness: 0.0296 inch (0.752 mm)
    - b. Depth: As indicated on Drawings
  - 3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22 mm) deep.
    - a. Minimum Base-Metal Thickness: 0.0296 inch (0.752 mm)
  - 4. Resilient Furring Channels: 1/2-inch- (13-mm-) deep members designed to reduce sound transmission.
    - a. Configuration: Asymmetrical or hat shaped.

2.4 AUXILIARY MATERIALS
- A. General: Provide auxiliary materials that comply with referenced installation standards.
  - 1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide one of the following:
  - 1. Asphalt-Saturated Organic Felt: ASTM D 226/D 226M, Type I (No. 15 asphalt felt), nonperforated.
  - 2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL
- A. Installation Standard: ASTM C 754.
  - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.
- E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.2 INSTALLING FRAMED ASSEMBLIES
- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.
  - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
  - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
    - a. Install two studs at each jamb unless otherwise indicated.
    - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
    - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
  - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
  - 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
    - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
  - 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- E. Z-Shaped Furring Members:
  - 1. Erect insulation where indicated, specified in Section 072100 "Thermal Insulation," vertically and hold in place with Z-shaped furring members spaced 24 inches (610 mm) o.c.
  - 2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.
  - 3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches (305 mm) from corner and cut insulation to fit.
- F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

3.3 INSTALLING CEILING SUSPENSION SYSTEMS
- A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
  - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
    - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
    - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
  - 3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  - 4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  - 5. Do not attach hangers to steel roof deck.
  - 6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
  - 7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
  - 8. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Seismic Bracing: Sway-brace suspension systems with hangers used for support.
- F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY
- A. Section Includes:
  - 1. Interior gypsum board.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
- B. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.

2.2 GYPSUM BOARD, GENERAL
- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD
- A. Gypsum Wallboard: ASTM C 1396/C 1396M.
  - 1. Thickness: 5/8 inch (15.9 mm).
  - 2. Long Edges: Tapered

2.6 TRIM ACCESSORIES
- A. Interior Trim: ASTM C 1047.
  - 1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
  - 2. Shapes:
    - a. Cornerbead.
    - b. Bullnose bead.
    - c. LC-Bead: J-shaped; exposed long flange receives joint compound.
    - d. L-Bead: L-shaped; exposed long flange receives joint compound.
    - e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
    - f. Expansion (control) joint.

2.7 JOINT TREATMENT MATERIALS
- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
  - 1. Interior Gypsum Board: Paper.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
  - 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
  - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
    - a. Use setting-type compound for installing paper-faced metal trim accessories.
  - 3. Fill Coat: For second coat, use setting-type, sandable topping compound.
  - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.
  - 5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound

2.8 AUXILIARY MATERIALS
- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.
  - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
  - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- D. Sound-Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
- E. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

PART 3 - EXECUTION

3.1 APPLYING AND FINISHING PANELS
- A. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- B. Comply with ASTM C 840.
- C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- D. For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- E. Prefill open joints and damaged surface areas.
- F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
  - 1. Level 1: Ceiling plenum areas, concealed areas, and where required for fire-resistance rated assemblies land sound rated assemblies.
  - 3. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.

3.2 PROTECTION
- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1. SUMMARY
- A. Section Includes: rubber base and accessories

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
- A. Product Data: For each type of product, being provided.
- B. Maintenance data for close out booklet.

PART 2 - PRODUCTS

2.1 RUBBER BASE (RB-1 AND RB-2)
- A. See Finish Legend on Sheet IN-110.
- B. Product Standard: ASTM F 1861
  - 1. Type TP (thermoplastic rubber)
  - 2. Style and Location:
    - a. Style A, Cove.
  - 3. Minimum Thickness: 0.125 inch (3.2 mm).
  - 4. Height: 4 inches (102 mm)
  - 5. Length: Coils in manufacturer's standard length
  - 6. Outside corners: Preformed
  - 7. Inside corners: job formed or preformed

2.3 MOLDING ACCESSORY
- A. Description: Provide reducer strip/transition strips for resilient floor covering change to other surfaces.
- B. Profile and Dimensions wheeled for ADA transitions between materials.

2.4 INSTALLATION MATERIALS
- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 PREPARATION
- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates Accessories: Prepare horizontal surfaces according to ASTM F710.
  - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
  - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
  - 4. Moisture /Relative Humidity Testing: as recommended by manufacturer.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient products until materials are the same temperature as space where they are to be installed.
- E. Immediately before installation, clean substrates to be covered by resilient products.

3.2 RESILIENT BASE INSTALLATION
- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. Preformed Corners: Install preformed corners before installing straight pieces.
- G. Job-Formed Corners:
  - 1. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches (76 mm) in length.
    - a. Miter or cope corners to minimize open joints.

3.3 RESILIENT ACCESSORY INSTALLATION
- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.4 CLEANING AND PROTECTION
- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

SECTION 096516 - RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 SUMMARY
- A. Section Includes:
  - 1. Installation of Owner provided vinyl sheet flooring.

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
- A. Product Data: For each type of product being provided.
- B. Samples: For each exposed product being provided and for each color, texture, and pattern specified.
- C. Maintenance data for close out booklet.

1.3 QUALITY ASSURANCE
- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for resilient sheet flooring installation and seaming method indicated.
  - 1. Engage an installer who employs workers for this Project who are trained or certified by resilient sheet flooring manufacturer for installation techniques required.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Fire-Test-Response Characteristics: For resilient sheet flooring, as determined by testing identical products according to ASTM E648 or NFPA253 by a qualified testing agency.
  - 1. Critical Radiant Flux Classification: Class I, not less than 0.45W/sq. cm.
- B. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.

2.2 VINYL SHEET FLOORING (SHT-1) Refer to Finsh Schedule A101.
- A. Product: Tarkett IQ
- B. Product Standard: ASTM F 1913.
- C. Thickness: 0.080 inch (2.0 mm).
- D. Wearing Surface: Smooth.
- E. Sheet Width: 6 feet 6 inches.
- F. Seamless-Installation Method: Heat welded.
- G. Description: An unbacked, non-layered, homogeneous sheet vinyl flooring. Protected by a diamond-infused UV-cured polyurethane finish, the colors and pattern detail are dispersed uniformly throughout the thickness of the product. Color pigments are insoluble in water and resistant to cleaning agents and light.
- H. Homogeneous sheet flooring shall conform to the requirements of ASTM F1913 Standard Specification for Vinyl Sheet Floor Covering Without Backing
- I. Provide (1) full roll for owner stock per color.

2.3 INSTALLATION MATERIALS
- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient sheet flooring manufacturer for applications indicated.
- B. Seamless-Installation Accessories:
  - 1. Heat-Welding Bead: Manufacturer's solid-strand product for heat welding seams.
    - a. Colors to: match flooring.

PART 3 - EXECUTION

3.1 PREPARATION
- A. Prepare substrates according to resilient sheet flooring manufacturer's written instructions to ensure adhesion of resilient sheet flooring.
- B. Concrete Substrates: Prepare according to ASTM F710.
  - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by resilient sheet flooring manufacturer. Do not use solvents.
  - 3. Alkalinity and Adhesion Testing: Perform tests recommended by resilient sheet flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 lbs./1000 sq. ft./24 hrs for standard adhesive; provide high-moisture adhesive (approved by manufacturer) for slab with greater moisture.
  - 4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq.m)] [1000 sq. ft. (304.8 sq.m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
    - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq.m) in 24 hours.
    - b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humdity level measurement.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient sheet flooring until materials are the same temperature as space where they are to be installed.
  - 1. At least 48 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient sheet flooring.

3.2 RESILIENT SHEET FLOORING INSTALLATION
- A. Comply with manufacturer's written instructions for installing resilient sheet flooring.
- B. Unroll resilient sheet flooring and allow it to stabilize before cutting and fitting.
- C. Lay out resilient sheet flooring as follows.
  - 1. Maintain uniformity of flooring direction.
  - 2. Minimize number of seams, place seams in inconspicuous and low-traffic areas, at least 6 inches (152 mm) away from parallel joints in flooring substrates.
  - 3. Match edges of flooring for color shading at seams.
  - 4. Avoid cross seams.
- D. Scribe and cut resilient sheet flooring to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinents, pipes, outlets and door frames.
- E. Extend resilient sheet flooring into toe spaces, door reveals, closets, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on resilient sheet flooring as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Install resilient sheet flooring on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of flooring installed on covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.
- H. Adhere resilient sheet flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- I. Seamless Installation:
  - 1. Heat-Welded Seams: Comply with ASTM F1516. Rout joints and heat weld with welding bead to fuse sections permanently into a seamless flooring installation. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.

END OF SECTION 096516

PROFESSIONAL SEALS:

CONSULTANTS:

KEYPLAN

SUBMITTAL/REVISION SCHEDULE:

NO.	DATE	DESCRIPTION
0	12-02-2022	ISSUE FOR CONSTRUCTION

■ APPROVED FOR CONSTRUCTION
□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:

SAGINAW VALLEY STATE UNIVERSITY

7400 BAY ROAD
UNIVERSITY CENTER, MICHIGAN
48710

PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

SSOE | STEVENS & WILKINSON
1001 Madison Avenue
Toledo, OH 43604
T. (419) 255-3830

SPECIFICATIONS

GI-004

SECTION 096816 - SHEET CARPETING

PART 1 - GENERAL

1.1 SUMMARY
A. Section includes installation of rolled sheet carpet.

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
A. Product Data: For each type of product.
1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
2. Include manufacturer's written installation recommendations for each type of substrate.
B. For close-out booklet provide Maintenance data.

1.3 QUALITY ASSURANCE
A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

1.4 DELIVERY, STORAGE, AND HANDLING
A. Comply with CRI's "CRI Carpet Installation Standard."

1.5 FIELD CONDITIONS
A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.
B. Environmental Limitations: Do not deliver or install carpet until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

1.6 WARRANTY
1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
A. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.

2.2 CARPET (CPT-1)
1. Tarkett 6' wide, Powerbond
A. Colors and Patterns: As indicated on the Room Finish Legend.
B. Fiber Type: 100% solution dyed, needlebond hair tile..
C. Surface Pile Weight: .185"
D. Backing/Backcoating: Ecowox synthetic backed
E. Size: 6' wide
F. Performance Characteristics:
1. Appearance Retention Rating: Heavy traffic, 3.0 minimum according to ASTM D 7330.
2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm according to NFPA 253.
3. Dry Breaking Strength: Not less than 100 lbf (445 N) according to ASTM D 2646.
4. Delamination: Not less than 3.5 lbf/in. (0.6 N/mm) according to ASTM D 3936.
5. Dimensional Tolerance: Within 1/32 inch (0.8 mm) of specified size dimensions, as determined by physical measurement.
6. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
7. Noise Reduction Coefficient (NRC): according to ASTM C 423.
8. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.
9. Colorfastness to Light: Not less than 4 after 40AFU (AATCC fading units) according to AATCC 16, Option E.
10. Electrostatic Propensity: Less than 3.5kV according to AATCC 134.

2.3 INSTALLATION ACCESSORIES
A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.
C. Metal Edge/Transition Strips: Extruded aluminum with mill finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

2.4 Provide (1) roll of each color for owner stock.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet performance. Examine carpet for type, color, pattern, and potential defects.
B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet manufacturer.
2. Subfloor finishes comply with requirements specified in Division 3 Section "Cast-in-Place Concrete" for slabs receiving carpet.
3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.
C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION
A. General: Comply with CRI 104, Section 7.3, "Site Conditions; Floor Preparation," and with carpet manufacturer's written installation instructions for preparing substrates.
B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm), unless the manufacturer's written instructions include more stringent requirements. In case of conflict, the more stringent requirement shall govern unless otherwise approved by the Architect.
C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet manufacturer.
D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

3.3 INSTALLATION
A. Installation Method: Tactile or equal no glue installations; according to manufacturer's recommendations if approved by Owner.
B. Comply with CRI 104 and carpet manufacturer's written installation instructions for the following:
1. Direct-Glue-Down Installation: Comply with CRI 104, Section 9, "Direct Glue-Down Installation."
C. Comply with carpet manufacturer's written recommendations for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. No seams in doorways or thresholds, traffic areas, or main aisle ways.
D. Do not bridge building expansion joints with carpet.
E. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.
F. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.
H. Install pattern parallel to walls and borders to comply with CRI 104, Section 15, "Patterned Carpet Installations" and with carpet manufacturer's written recommendations.
I. Heat weld all seams.

3.4 CLEANING AND PROTECTING
A. Perform the following operations immediately after installing carpet:
1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
2. Remove yarns that protrude from carpet surface.
3. Vacuum carpet using commercial machine with face-beater element.
B. Protect installed carpet to comply with CRI 104, Section 16,"Protection of Indoor Installations."
C. Protect carpet against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet manufacturer and carpet adhesive manufacturer.

END OF SECTION 096816

SECTION 098433 - SOUND-ABSORBING WALL UNITS

PART 1 - GENERAL

1.1 SUMMARY
A. Provide acoustical wall panels.

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. MDC Interior Solutions

2.2 Refer to Room Finish schedule for colors and locations.

END OF SECTION 098433

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY
A. Provide per drawings and to meet or exceed the University's Design + Construction Standards.
B. This Section includes surface preparation and the application of paint systems on the following interior substrates:
1. Steel.
2. Gypsum board.

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
A. Product Data: For each type of product indicated.
B. Virtual sample showing corresponding paint code number.

1.3 QUALITY ASSURANCE
A. MPI Standards:
1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated and design + construction standards.

1.4 DELIVERY, STORAGE, AND HANDLING
A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.5 PROJECT CONDITIONS
A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. The Glidden Company/PPG speedhide interior zero VOC latex

2.2 PAINT, GENERAL
A. Material Compatibility:
1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicate.
B. Chemical Components of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions; these requirements do not apply to primers or finishes that are applied in a fabrication or finishing shop:
1. Flat Paints and Coatings: VOC content of not more than 50 g/L.
2. Nonflat Paints and Coatings: VOC content of not more than 150 g/L.
3. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
4. Restricted Components: Paints and coatings shall not contain any of the following:
a. Acrolein.
b. Acrylonitrile.
c. Antimony.
d. Benzene.
e. Butyl benzyl phthalate.
f. Cadmium.
g. Di (2-ethylhexyl) phthalate.
h. Di-n-butyl phthalate.
i. Di-n-octyl phthalate.
j. 1,2-dichlorobenzene.
k. Diethyl phthalate.
l. Dimethyl phthalate.
m. Ethylbenzene.
n. Formaldehyde.
o. Hexavalent chromium.
p. Isophorone.
q. Lead.
r. Mercury.
s. Methyl ethyl ketone.
t. Methyl isobutyl ketone.
u. Methylene chloride.
v. Naphthalene.
w. Toluene (methylbenzene).
x. 1,1,1-trichloroethane.
y. Vinyl chloride.
C. Colors: As indicated on the Room Finish Legend See Sheet IN-100.

2.3 PRIMERS/SEALERS
A. Interior Latex Primer/Sealer: MPI #50.
1. VOC Content: E Range of E2.
B. Interior Alkyd Primer/Sealer: MPI #45.
1. VOC Content: E Range of E2.

2.4 METAL PRIMERS
A. Rust-Inhibitive Primer (Water Based): MPI #107.
1. Environmental Performance Rating: EPR 2.
B. Waterborne Galvanized-Metal Primer: MPI #134.
1. Environmental Performance Rating: EPR 2.

2.5 LATEX PAINTS
A. Institutional Low-Odor/VOC Latex (Flat): MPI #143 (Gloss Level 1).
1. Environmental Performance Rating: EPR 4.
B. Institutional Low-Odor/VOC Latex (Low Sheen): MPI #144 (Gloss Level 2).
1. Environmental Performance Rating: EPR 4.5.
C. Institutional Low-Odor/VOC Latex (Semigloss): MPI #147 (Gloss Level 5).
1. Environmental Performance Rating: EPR 3.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Gypsum Board: 12 percent.
C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION
A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulates.
1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
D. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.
E. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 APPLICATION
A. Apply paints according to manufacturer's written instructions.
1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION
A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE
A. Steel Substrates:
1. Institutional Low-Odor/VOC Latex System: MPI INT 5.1S.
a. Prime Coat: Rust-inhibitive primer (water based).
b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
c. Topcoat: Institutional low-odor/VOC interior latex (semigloss).
B. Gypsum Board and Plaster Substrates:
1. Institutional Low-Odor/VOC Latex System: MPI INT 9.2M.
a. Prime Coat: Interior latex primer/sealer.
b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
c. Topcoat: Institutional low-odor/VOC interior latex (flat, low sheen, and semigloss, where indicated).
C. Concrete Sealer: MPI #104 Comply with section 2.6

END OF SECTION 099123

SECTION 10100 - VISUAL DISPLAY BOARDS

PART 1 - GENERAL

1.1 SUMMARY
A. Polymer Fused surface markerboards

1.2 DELIVERY, STORAGE, AND HANDLING
A. Store and protect in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

PART 2 - PRODUCTS

2.1 MATERIALS
A. Polymer Fused™ surface markerboards: Intense heat permanently fused your graphic design with a sheet of 28 ga steel to produce a durable, dry-erase whiteboard surface. Accent lines and grid pattern designs are also permanently included in this process unless whiteboard adhesive lining tape is requested. The above steel sheet is to be laminated to a 3/8" particleboard or MDF back whose back surface will be covered by a .005 aluminum foil sheet. Panels are to framed in satin finish aluminum trim or solid wood framing. System to be magnetically receptive.

PART 3 - EXECUTION

3.1 INSTALLATION
A. Install per manufacturer's supplied installation instructions.

3.2 CLEANING
A. Clean panel surface per manufacturer's supplied instructions. Use of cleaning solutions other than specified whiteboard cleaner or abrasive cleaners of any kind is prohibited.

END OF SECTION 10100

SECTION 102530- MEDICAL HEADWALLS

PART 1 - GENERAL

1.1 SUMMARY
A. Patient room headwalls.

1.2 ACTION SUBMITTALS
A. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Source quality certificates.
2. Preparation instructions and recommendations.
3. Storage and handling requirements and recommendations.
4. Installation methods.
5. Maintenance and operations data.
B. Shop Drawings: Include system components, utility requirements and connections, relationship with adjacent construction. Include required clearances and access for servicing.
1. Communications wire labeling schedules.
2. Communications wiring diagrams.
3. Plans and elevations of telecommunications equipment and structured cabling.
a. Pathways.
b. Access points.
c. Grounding.
d. MEP systems, including medical gases.

1.3 DELIVERY, STORAGE, AND HANDLING
A. Store and protect in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

PART 2 - PRODUCTS

2.1 MANUFACTURER
A. Product: Modular Services, Profile unit, Surface mount
B. Refer to interior elevations

2.7 FINISHES
A. To be selected from manufacturers standard range of colors.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Verification of Conditions: Examine areas and conditions under which products are to be used to assure products will perform as specified and identify conditions that may be detrimental to proper performance.
B.Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION
A.General: Install per manufacturer's written instructions and in proper relationship with adjacent construction.
B.Testing: Test per manufacturer's written instructions. Adjust until satisfactory results are obtained.

3.3 CLEANING AND PROTECTION
A. Protect from damage during construction operations. Promptly repair any damaged surfaces. Remove and replace work which cannot be satisfactorily repaired.
B. Clean products, prior to Substantial Completion, using materials recommended by the manufacturer.

END OF SECTION 102530

SECTION 102600 - WALL PROTECTION

PART 1 - GENERAL

1.1 SUMMARY
A. Section Includes: Wall protection per the drawings.

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
A. Product Data: For each type of product.
1. Include construction details, material descriptions, impact strength, dimensions of individual components and profiles, and finishes.
B. Samples for Verification: For each type of exposed finish on the following products, prepared on Samples of size indicated below:
1. Provide manufacturer's standard sampling size: 6 by 6 inches (150 by 150 mm) or greater.
C. For close-out booklet provide Maintenance data.

1.3 DELIVERY, STORAGE, AND HANDLING
A. Store wall and door protection in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
1. Maintain room temperature within storage area at not less than 70 deg F (21 deg C) during the period plastic materials are stored.
2. Keep plastic materials out of direct sunlight.
3. Store plastic wall- and door-protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F (21 deg C).
a. Store corner-guard covers in a vertical position.
b. Store wall-guards covers in a horizontal position.

PART 2 - PRODUCTS

2.1 MANUFACTURER
A. Product: C/S Specialites Acrovyn, as reflected in the Finish Legend sheet A102.

2.2 PERFORMANCE REQUIREMENTS
A. Surface Burning Characteristics: Comply with ASTM E 84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 450 or less.
B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities.

2.3 WALL PANEL
A. 3/8" thick Wall Panel with Wrapped Square Edge
1. Product: CS Acrovyn
2. Butt Joint
3. Install per manufacturer's written instructions for permanent adhesive mount.
4. Color: Woodgrain TBD

2.4 WALL PANEL
A. 3/4" thick Wall Panel with Wrapped Square Edge - 4" and 2" wide shown on drawings
1. Product: CS Acrovyn
2. Butt Joint
3. Install per manufacturer's written instructions for permanent adhesive mount.
4. Color: Woodgrain TBD

2.5 MATERIALS
A. Plastic Materials: Chemical- and stain-resistant, high-impact-resistant plastic with integral color throughout; extruded and sheet material as required, thickness as indicated.
B. Adhesive: As recommended by protection product manufacturer.

2.6 FABRICATION
A. Fabricate wall protection according to requirements indicated for design, performance, dimensions, and member sizes, including thicknesses of components.
B. Quality: Fabricate components with uniformly tight seams and joints and with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

2.7 FINISHES
A. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, fire rating, and other conditions affecting performance of the Work.
B. Examine walls to which wall protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION
A. Complete finishing operations, including painting, before installing wall and door protection.
B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION
A. Installation Quality: Install wall and door protection according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
B. Mounting Heights: Install wall protection in locations and at mounting heights indicated.
C. Accessories: Provide splices, mounting hardware, anchors, trim, joint moldings, and other accessories required for a complete installation.
1. Provide anchoring devices and suitable locations to withstand imposed loads.
2. Where splices occur in horizontal runs of more than 20 feet (6.1 m), splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches (305 mm) apart.
3. Adjust end and top caps as required to ensure tight seams.

3.4 CLEANING
A. Immediately after completion of installation, clean plastic covers and accessories using a standard ammonia-based household cleaning agent.
B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION 102600

SECTION 113213 - FRONT PROJECTION SCREENS

PART 1 - GENERAL

1.1 SECTION INCLUDES
A. Electrically operated, ceiling recessed, front projection screens.
B. Front projection screen controls.

1.2 ACTION SUBMITTALS
A. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
B. Wiring diagram for electrically operated units.
C. Shop Drawings: Shop drawings showing layout and types of projection screens. Show the following:
1. Location of screen centerline.
2. Location of wiring connections.
3. Seams in viewing surfaces.
4. Detailed drawings for concealed mounting.
5. Connections to suspension systems.
6. Anchorage details.
7. Accessories.

1.3 QUALITY ASSURANCE
A. Single Source Responsibility: Obtain each type of projection screen required from a single manufacturer as a complete unit, including necessary mounting hardware and accessories.
B. Coordination of Work: Coordinate layout and installation of projection screens with other construction supported by, or penetrating through, ceilings, including light fixtures, HVAC equipment, fire-suppression system, and partitions.

1.4 DELIVERY, STORAGE, AND HANDLING
A. Do not deliver projection screens until building is enclosed and other construction where screens will be installed is substantially complete.
B. Store products in manufacturer's unopened packaging until ready for installation.
C. Protect screens from damage during delivery, handling, storage, and installation.

1.5 COORDINATION
A. Coordinate work with installation of ceilings, walls, electric service power characteristics, and location.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
A. Draper Inc.

1.2 MOTORIZED, CEILING RECESSED, FRONT PROJECTION SCREENS
A. Access Fit E: Electric motor operated, steel case. Ceiling-recessed, 18-gauge steel headbox, 5-11/16 inches high x 7-1/16 inches deep (145 mm high x 164 mm deep) including trim flanges with white paint finish and stamped 13-gauge steel end caps. UL approved "Suitable for use in environmental air space." Bottom closure panel forms slot for passage of viewing surface and can be released to hang down or be removed for access to operating mechanism and viewing surface. Bottom perimeter flange provides support and trim for acoustical ceiling panels and trim for gypsum board ceiling. Access Fit case may be ordered in advance and screen installed later to eliminate field damage. Housing is symmetrical allowing for left and right hand motor locations and for viewing surface to unroll off front or back of roller. Steel mounting brackets slide in extruded aluminum mounting system along top of case. Brackets supporting roller/fabric assembly slide in tracks inside top of the case, allowing viewing surface to be centered in case. Steel leveling brackets are attached to case to prevent deflection. Housing designed with internal junction box and plug-in wiring connections to allow housing to be installed and connected to building power supply separately from motor and viewing surface.
1. Motor mounted inside screen roller on rubber isolation insulators. Motor UL certified, rated 110-120V AC, 60 Hz, three wire, instantly reversible, lifetime lubricated with pre-set accessible limit switches.
2. Motor Location:
a. Left is standard.
3. Projection Viewing Surface:
a. Matt White XT1000E - On Axis gain of 1.0. 180 degree viewing cone. Washable surface. GREENGUARD Gold certified. 4K ready.
4. Viewing Area H x W.
a. 16:10 Format. Black masking borders standard.
5. Refer to drawings for location and additional information.

1.3 FRONT PROJECTION SCREEN CONTROLS
A. General: All controls are UL Certified.
1. Single station control rated 115V AC, 60 Hz with 3-position rocker switch with cover plate to stop or reverse screen at any point.
2. Coordinate location of controls in drawings.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Do not begin installation until substrates have been properly prepared.
B. Verify rough-in openings are properly prepared.
C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION
A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Install front projection screens with screen cases in position and relationship to adjoining construction as indicated, securely anchored to supporting substrate, and in manner that produces a smoothly operating screen with plumb and straight vertical edges and plumb and flat viewing surfaces when screen is lowered.
C. Test electrically operated units to verify that screen, controls, limit switches, closure and other operating components are in optimum functioning condition.

1.4 PROTECTION
A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 115213

NO.	DATE	DESCRIPTION
0	12-02-2022	ISSUE FOR CONSTRUCTION

■ APPROVED FOR CONSTRUCTION
□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:

SAGINAW VALLEY STATE UNIVERSITY

7400 BAY ROAD
UNIVERSITY CENTER, MICHIGAN
48710

PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

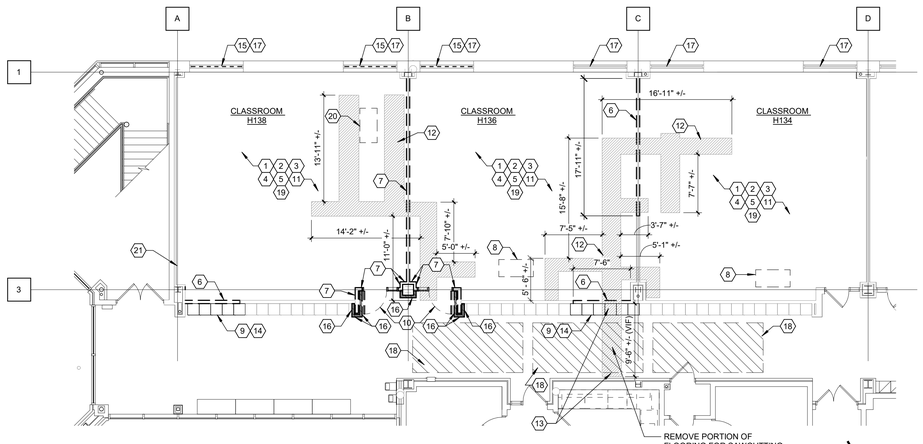
UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

SSOE | STEVENS & WILKINSON
1001 Madison Avenue
Toledo, OH 43604
T. (419) 255-3830

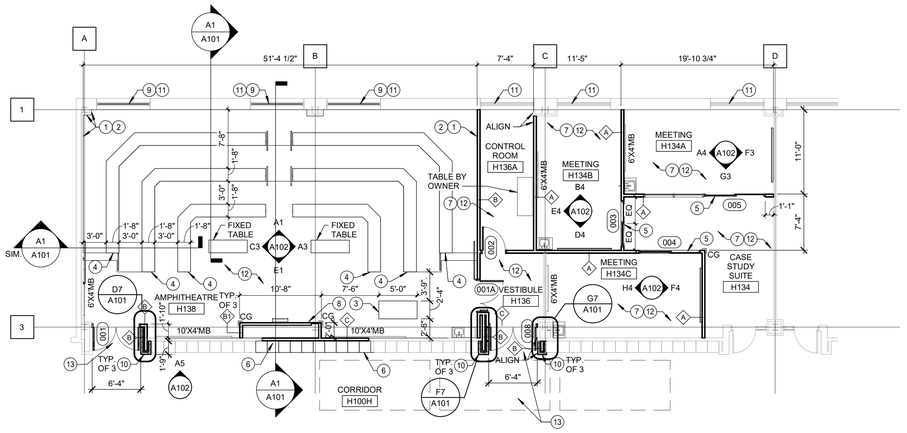
SPECIFICATIONS

GI-005



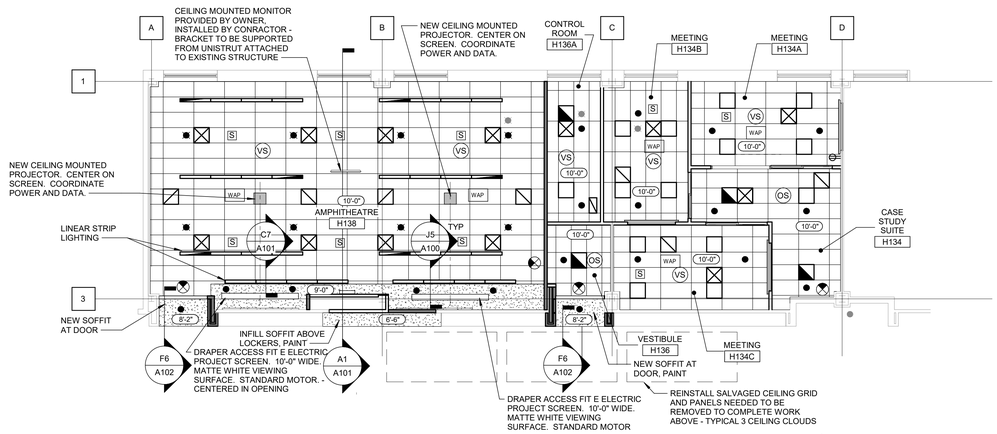
A3 / A100 PARTIAL FIRST FLOOR DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



A5 / A100 PARTIAL FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"



A7 / A100 PARTIAL FIRST FLOOR REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"

DEMOLITION KEYNOTES

1. REMOVE EXISTING FLOOR FINISHES, AND WALL BASE. PATCH/REPAIR SLAB, PROVIDE LEVEL SLAB AS REQUIRED BY FLOORING MANUFACTURER FOR NEW FINISH.
2. REMOVE EXISTING CEILING SYSTEM. SALVAGE FULL CEILING TILES FOR OWNERS STORAGE.
3. REMOVE EXISTING LIGHTING & RETURN TO OWNERS STORAGE.
4. REMOVE EXISTING MECHANICAL AS REQUIRED TO COMPLETE NEW WORK.
5. REMOVE ALL WALL MOUNTED ITEMS AND TURN OVER TO OWNER. PATCH/REPAIR WALL TO RECEIVE NEW FINISH.
6. REMOVE PORTION OF WALL INCLUDING CONCEALED UTILITIES WITHIN WALL REQUIRED FOR NEW WORK - REFER TO DRAWINGS FOR SCOPE OF DEMOLITION.
7. REMOVE EXISTING PARTITION IN ITS ENTIRETY. REMOVE CONCEALED UTILITIES WITHIN WALL BACK TO THE MAIN.
8. REMOVE SMART PODIUM / AV EQUIPMENT - RETURN TO OWNER.
9. REMOVE LOCKERS AND SALVAGE FOR REINSTALLATION - ALL LOCKERS TO BE RENUMBERED.
10. REMOVE EXISTING DOORS, FRAMES, GLAZING AND HARDWARE. SALVAGE AND RETURN TO OWNERS STORAGE.
11. REMOVE FIRE PROTECTION AS REQUIRED FOR NEW LAYOUT. EXISTING BUILDING TO REMAIN FUNCTIONAL.
12. REMOVE PORTION OF EXISTING CONCRETE FLOOR REQUIRED TO TIE IN NEW SANITARY TO SOUTH SIDE OF CORRIDOR. VERIFY IN FIELD - DIMENSIONS FOR REFERENCE ONLY.
13. REMOVE PORTION OF EXISTING CORRIDOR CEILING AS REQUIRED FOR NEW WATER TIE-IN FOR SINKS.
14. REMOVE PORTION OF SOFFIT ABOVE EXISTING LOCKERS THAT ARE BEING RELOCATED.
15. REMOVE EXISTING GLAZING AND PREPARE WINDOW FOR NEW GLAZING TO BE INSTALLED.
16. REMOVE EXISTING CMU.
17. REMOVE EXISTING BLINDS AND SALVAGE FOR REINSTALLATION.
18. EXISTING CEILING CLOUDS. REMOVE CEILING GRID AND PANELS FOR WORK ABOVE. SALVAGE FOR REINSTALLATION.
19. REMOVE AND SALVAGE ALL CEILING MOUNTED EQUIPMENT. RETURN TO OWNER.
20. REMOVE AND SALVAGE EXISTING PODIUM FOR REINSTALLATION - RETURN AV EQUIPMENT TO OWNERS STORAGE.
21. REMOVE PORTION OF WALL REQUIRED TO INSTALL BLOCKING FOR NEW MARKERBOARD - PATCH AND REPAIR TO MATCH EXISTING.

PLAN KEYNOTES

1. NEW LAMINATE WAINSCOTING - REFER TO ELEVATIONS.
2. NEW ACOUSTICAL WALL PANELS ABOVE WAINSCOTING - REFER TO ELEVATIONS.
3. REINSTALL SALVAGED PODIUM WITH NEW AV EQUIPMENT.
4. NEW FIXED POWERED SEATING BY OWNER. - COORDINATE POWER WITH VENDOR.
5. NEW GLASS SLIDING DOORS W/ VINYL GRAPHICS.
6. RELOCATED LOCKERS TO BE RENUMBERED. ALL EXISTING LOCKERS TO BE RENUMBERED. NUMBERS SHOULD BE IN SEQUENTIAL ORDER STARTING AT DOOR 001.
7. NEW AV SYSTEM - REFER TO ELECTRICAL DRAWINGS
8. NEW HEAD WALL UNIT WITH POWER, AIR AND VAC - REFER TO INTERIOR ELEVATIONS AND MECHANICAL DRAWINGS.
9. NEW 1" INSULATED TEMPERED GLASS.
10. NEW 4" CMU WALL - PROVIDE NEW 4" CMU TO MATCH EXISTING.
11. REINSTALL SALVAGED BLINDS.
12. ROOM TO RECEIVE NEW PAINT, WALL BASE AND FLOORING - REFER TO FINISH SCHEDULE.
13. PATCH EXISTING CORRIDOR CARPET. MATCH ADJACENT - COORDINATE WITH OWNER.

REFLECTED CEILING PLAN LEGEND

SYMBOL	DESCRIPTION
(X'-X")	CEILING HEIGHT A.F.F.
	DOWNLIGHT - REFER TO ELECTRICAL DRAWINGS
	LIGHTING FIXTURE - REFER TO ELECTRICAL DRAWINGS
	EXIT LIGHT - REFER ELECTRICAL DRAWINGS
	2'x2' SUPPLY DIFFUSER - REFER TO MECHANICAL DRAWINGS
	RETURN GRILL - REFER TO MECHANICAL DRAWINGS
OS	OCCUPANCY SENSOR - REFER TO ELECTRICAL DRAWINGS
VS	VACANCY SENSOR - REFER TO ELECTRICAL DRAWINGS
	2'x2' SUSPENDED ACOUSTICAL TILE CEILING SYSTEM
	5/8" GYPSUM BOARD CEILING ON 3 5/8" METAL STUDS
	SPINKLER HEAD - REFER TO FIRE PROTECTION DRAWINGS

REFLECTED CEILING PLAN NOTES:

1. CONTRACTOR SHALL ADJUST CEILING GRIDS TO CENTER THEM IN ROOMS AND CREATE EQUAL TILE SPACING AT ENDS OF ROOMS.
2. ALL TECHNOLOGY EQUIPMENT LOCATIONS ARE DIAGRAMMATIC. REFER TO THE TECHNOLOGY DRAWINGS. COORDINATE FINAL LOCATION OF CEILING MOUNTED EQUIPMENT WITH ALL TRADES.
3. ALL LIGHT FIXTURE, MECHANICAL DIFFUSER LOCATIONS, AND TECHNOLOGY ITEMS ARE DIAGRAMMATIC IN NATURE OR ONLY SHOW TYPICAL ROOM LAYOUTS AND SOME ITEMS MAY NOT BE SHOWN FOR CLARITY. REFER TO THE MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL ITEMS TO BE PROVIDED. COORDINATE FINAL LOCATION OF CEILING MOUNTED EQUIPMENT WITH ALL TRADES.

GENERAL DEMOLITION NOTES

1. PROVIDE DEMOLITION WORK SHOWN ON THE DRAWINGS AND RELATED AND INCIDENTAL DEMOLITION WORK REQUIRED TO COMPLETE NEW CONSTRUCTION WORK. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION SCOPE AND REQUIREMENTS.
2. REMOVE ENTIRE WALL ASSEMBLY INDICATED TO BE DEMOLISHED, INCLUDING CONCEALED ELEMENTS WITHIN PARTITIONS AND ABOVE-CEILING CONSTRUCTION (UNO)
3. FIELD VERIFY EXISTING CONDITIONS, PRIOR TO THE START OF DEMOLITION OPERATIONS. BRING ANY DISCREPANCIES WHICH MAY SIGNIFICANTLY AFFECT DEMOLITION OR NEW CONSTRUCTION WORK TO THE ATTENTION OF THE ARCHITECT FOR REVIEW.
4. PROTECT EXISTING CONSTRUCTION TO REMAIN FROM DAMAGE DURING DEMOLITION AND/OR NEW CONSTRUCTION OPERATIONS. CONDUCT DEMOLITION OPERATIONS SO AS TO MINIMIZE THE DEVELOPMENT AND SPREAD OF DUST.
5. REMOVE DEMOLITION MATERIALS FROM SITE PROMPTLY AND DISPOSE OF LEGALLY OFF SITE.
6. DO NOT ALTER THE STRUCTURAL INTEGRITY OF THE EXISTING BUILDING OR ITS ASSEMBLIES UNLESS SPECIFICALLY NOTED OTHERWISE.
7. UPON REMOVAL OF FINISH MATERIALS INDICATED OR REQUIRED, PREPARE SUBSTRATE TO RECEIVE NEW FINISH. REFER ALSO TO ROOM FINISH SCHEDULE FOR NEW MATERIAL(S). REPAIR ANY EXISTING DAMAGE, OR DAMAGE ARISING FROM DEMOLITION OPERATIONS, TO MATCH EXISTING AND AS NEEDED FOR INSTALLATION OF NEW FINISH(S).
8. PATCH AND REPAIR DAMAGE ARISING FROM DEMOLITION OPERATIONS TO FLOOR, WALL AND CEILING SURFACES, TO MATCH EXISTING. PATCH CHIPPED OR SPALLED CONCRETE CAUSED BY PARTITION REMOVAL. REMOVE ANY EXTRANEOUS MATERIAL AND PATCH TO MATCH ADJACENT SURFACES.
9. PROVIDE 1 HOUR FIRE-RESISTANT RATED DUST PROOF BARRIERS (U.L. DESIGN U309) TO SEPARATE DEMOLITION AREA FROM THE REST OF THE FACILITY. PROVIDE TEMPORARY FILTERS AS REQUIRED TO PREVENT THE SPREAD OF DUST THROUGH THE BUILDING VIA THE RETURN AIR SYSTEM. UPON COMPLETION OF DEMOLITION OPERATIONS, REMOVE BARRIERS AND REPAIR DAMAGE CAUSED BY THEIR INSTALLATION OR PRESENCE TO "LIKE NEW" CONDITION.
10. MAINTAIN MEANS OF EGRESS, AND KEEP FULLY SEPARATE FROM CONSTRUCTION AREA AT ALL TIMES.
11. PATCH AND REPAIR OPENINGS IN AND/OR PENETRATIONS THROUGH EXISTING FIRE RATED ASSEMBLIES AND SMOKE BARRIER ASSEMBLIES.
12. AT UNEVEN AREAS AND DEPRESSIONS IN EXISTING CONCRETE FLOOR CONSTRUCTION, PROVIDE CEMENTITIOUS UNDERLAYMENT AS REQUIRED TO PROVIDE SUITABLE BASE CONDITION FOR NEW FINISH(ES) AND NEW CONSTRUCTION.
13. COORDINATE TIMING AND HOURS OF DEMOLITION OPERATIONS WITH OWNER'S SCHEDULE.
14. MINIMIZE NOISE FROM DEMOLITION OPERATIONS PARTICULARLY WHEN CONDUCTED DURING REGULAR OPERATING HOURS.
15. SAWCUT SLABS ON GRADE WHERE REQUIRED TO INSTALL NEW CONDUIT, PIPING, ETC. REFER ALSO TO MECHANICAL AND ELECTRICAL DRAWINGS. PATCH AND REPAIR SLABS TO MATCH EXISTING.
16. CORE EXISTING FLOOR SLAB CONSTRUCTION WHERE REQUIRED FOR INSTALLATION OF REQUIRED CONDUIT, PIPING, ETC. REFER ALSO TO MECHANICAL AND ELECTRICAL DRAWINGS. PROVIDE UL RATED FIRE SAFING ASSEMBLIES AT ALL SUCH CONDITIONS.
17. CONDUCT DEMOLITION OPERATIONS TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT BUILDING AREAS. ENSURE SAFE PASSAGE OF PEOPLE AROUND SELECTIVE DEMOLITION AREA.
    A. PROTECT WALLS, CEILINGS, FLOORS AND OTHER FINISH WORK THAT ARE TO REMAIN AND ARE EXPOSED DURING SELECTIVE DEMOLITION OPERATIONS.
    B. COVER AND PROTECT FURNISHINGS AND EQUIPMENT THAT HAVE NOT BEEN REMOVED.
    C. DO NOT BLOCK ANY EXITS DURING CONSTRUCTION OPERATIONS.
18. CLEAN ADJACENT STRUCTURES AND IMPROVEMENTS OF DUST, DIRT AND DEBRIS CAUSED BY SELECTIVE DEMOLITION AND NEW CONSTRUCTION OPERATIONS.
19. IN WALLS TO BE REFINISHED; REMOVE EXISTING MISCELLANEOUS ACCESSORIES TO FACILITATE INSTALLATION OF NEW FINISHES. PATCH, REPAIR, AND PREP WALLS TO RECEIVE NEW FINISHES. ITEMS REMOVED TO BE SALVAGED AND GIVEN BACK TO THE OWNER.
20. EXISTING CONSTRUCTION MAY CONTAIN ASBESTOS CONTAMINATED PRODUCTS. MATERIALS THOUGHT TO CONTAIN ASBESTOS MUST BE INSPECTED BY AN EPA CERTIFIED INSPECTOR CAPABLE OF SAMPLING FOR THE EXISTENCE OF ASBESTOS. WORK SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT OSHA REGULATIONS AND DISPOSED OF IN ACCORDANCE WITH CURRENT EPA REGULATIONS.
21. EXISTING CONSTRUCTION MAY CONTAIN LEAD CONTAMINATED PRODUCTS. MATERIALS THOUGHT TO CONTAIN LEAD MUST BE INSPECTED BY AN EPA CERTIFIED INSPECTOR CAPABLE OF SAMPLING FOR THE EXISTENCE OF LEAD. WORK SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT OSHA/EPA REGULATIONS AND DISPOSED OF IN ACCORDANCE WITH CURRENT EPA REGULATIONS.

LEGEND

- EXISTING TO BE REMOVED
- EXISTING TO REMAIN
- EXISTING DOOR & FRAME TO BE REMOVED. (U.N.O.)
- AREA OF SLAB TO BE REMOVED. COORDINATE EXTENT WITH MECHANICAL AND ELECTRICAL

GENERAL CONSTRUCTION NOTES

1. COORDINATE SCHEDULE OF OVERALL CONSTRUCTION AND DAY-TO-DAY CONSTRUCTION OPERATIONS WITH OWNER'S SCHEDULE REQUIREMENTS.
2. FLOOR PLAN DRAWINGS ARE COMPOSITES OF EXISTING CONSTRUCTION TO REMAIN AND NEW CONSTRUCTION. EXISTING CONSTRUCTION IS SHOWN IN LIGHTER, OUTLINE FORM. NEW CONSTRUCTION IS INDICATED WITH HEAVIER LINEWORK AND SHADED AND ADDITIONALLY MAY BE IDENTIFIED BY NOTE, KEYNOTE, LARGER SCALE DETAIL REFERENCE, OR MATERIAL PATTERN (REFER ALSO TO LEGEND).
3. DIMENSIONS ARE TO FINISH FACE OF WALL OR CASEWORK UNLESS NOTED OTHERWISE (UNO).
4. FIELD VERIFY PROJECT CONDITIONS PRIOR TO THE START OF, AND AS NEEDED DURING THE COURSE OF CONSTRUCTION. BRING DISCREPANCIES WHICH MAY SIGNIFICANTLY AFFECT CONSTRUCTION TO THE ATTENTION OF THE ARCHITECT FOR REVIEW.
5. KEEP MEANS OF EGRESS OPEN, PROPERLY ILLUMINATED, AND FREE OF OBSTRUCTIONS.
6. WHERE NEW WALL CONSTRUCTION ABUTS EXISTING, WALL DIRECTLY ALIGN NEW FINISH SURFACES(S) WITH EXISTING.
7. KEEP CONSTRUCTION NOISE TO A MINIMUM, PARTICULARY DURING DAYTIME OPERATIONAL HOURS.
8. SMOKING AND SMOKELESS USE OF TOBACCO PRODUCTS ARE PROHIBITED ON PROJECT SITE
9. PATCH AND REPAIR DENTS, CRACKS, HOLES, AND/OR OTHER UNEVEN SURFACE OPERATIONS.
10. VERIFY THE DIMENSIONS, LOCATIONS, ELEVATION AND ARRANGEMENT OF INFRASTRUCTURE ASSOCIATED WITH INSTALL OF EQUIPMENT AND RELATED MECHANICAL AND ELECTRICAL WORK.

PLAN LEGEND

- EXISTING CONSTRUCTION TO REMAIN
- NEW WALL CONSTRUCTION
- XX — INTERIOR WALL TYPE - REFER TO THIS SHEET FOR WALL TYPES
- FEC / FE — FIRE EXTINGUISHER AND CABINET RE: SPECIFICATION
- CG — CORNER GUARD

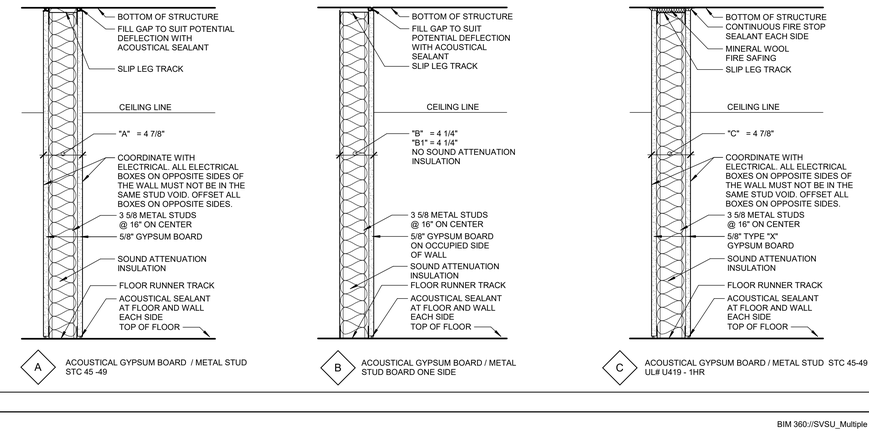
MB = MARKER BOARD

NOTES:
1. SEE SPECIFICATIONS AND DRAWINGS FOR PROJECTION SCREEN INFORMATION AND LOCATIONS.

J5 / A100 PROJECTION SCREEN DETAIL

SCALE: 1 1/2" = 1'-0"

WALL TYPES



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7400 BAY ROAD
UNIVERSITY CENTER, MICHIGAN
48710

PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

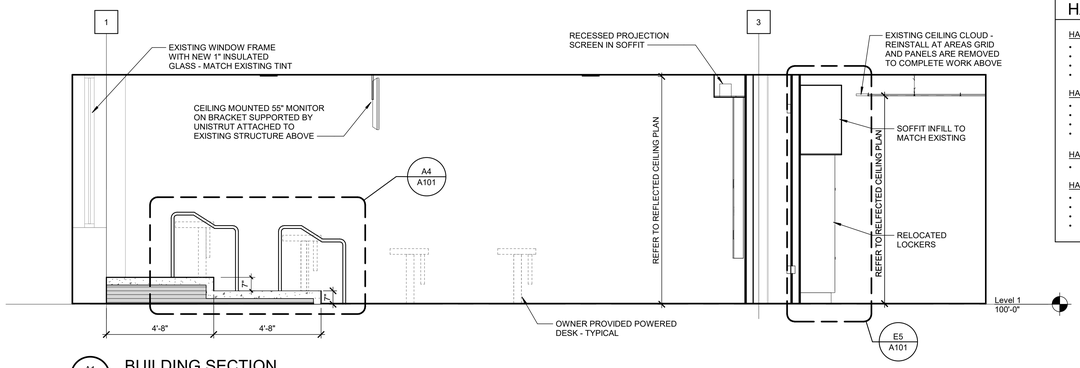
UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #:	022-00568-00
SSOE/SW MANAGER:	R. SIEBENALLER

SSOE | STEVENS & WILKINSON
1050 Wilshire Drive, Suite 260
Troy, MI 48084-1526
T. (248) 643-6222

PARTIAL FIRST FLOOR, DEMO AND CEILING PLAN

A100



A1 / A101 BUILDING SECTION

SCALE: 3/8" = 1'-0"

HARDWARE SETS

HARDWARE SET #1
- HINGES
- WALL MOUNTED DOOR HOLDER
- CLASSROOM LOCKSET
- MANUAL FLUSH BOLT

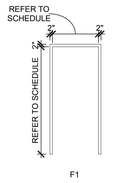
HARDWARE SET #2
- HINGES
- HOLD OPEN
- STORAGE LOCKSET
- MANUAL FLUSH BOLT

HARDWARE SET #3
- RECESSED DOOR HANDLE BY MANUFACTURER

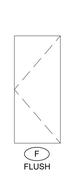
HARDWARE SET #4
- HINGES
- HOLD OPEN
- PASSAGE LOCKSET
- MANUAL FLUSH BOLT

DOOR SCHEDULE

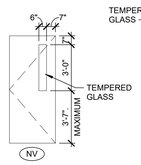
NO.	DOOR SIZE WIDTH	SIZE HEIGHT	SIZE THK	DOOR MATL	DOOR TYPE	DOOR FIRE RATING	FRAME MATL	FRAME TYPE	FRAME DETAILS HEAD	FRAME DETAILS JAMB	FRAME DETAILS SILL	HARDWARE SET	REMARKS
001	6'-0"	8'-0"	1 3/4"	WD	NV	45	HM	F1	H1	J1	S1	1	
001A	4'-0"	7'-0"	1 3/4"	WD	NV2	--	HM	F1	H1	J1	S1	1	(2) LEAFS - 3'-0" AND 1'-0"
002	3'-0"	7'-0"	1 3/4"	WD	F	--	HM	F1	H1	J1	S1	2	
003	6'-0"	7'-0"	1 3/4"	ALUM	--	--	ALUM	--	H2	J2	S2	3	BESAM BREAKAWAY TRACKLESS SYSTEM DOOR - MANUAL
004	8'-0"	7'-0"	1 3/4"	ALUM	--	--	ALUM	--	H2	J2	S2	3	BESAM BREAKAWAY TRACKLESS SYSTEM DOOR - MANUAL
005	8'-0"	7'-0"	1 3/4"	ALUM	--	--	ALUM	--	H2	J2	S2	3	BESAM BREAKAWAY TRACKLESS SYSTEM DOOR - MANUAL
008	6'-0"	8'-0"	1 3/4"	WD	NV	45	HM	F1	H1	J1	S1	4	



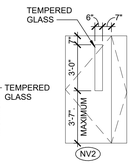
F1



F FLUSH



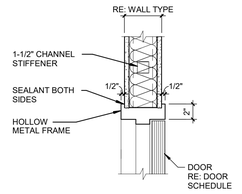
NV



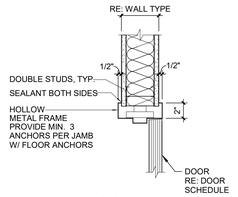
NV2

DOOR FRAME TYPES

SCALE: 1/4" = 1'-0"



H-1



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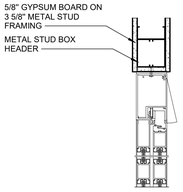
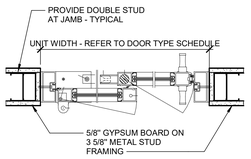


H-2

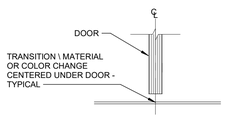


J-2

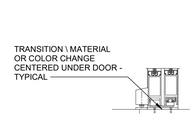
DOOR TYPES

SCALE: 1/4" = 1'-0"

NOTE:
INCLUDE MISCELLANEOUS SUPPORT STEEL FOR OVERHEAD TRACKS



S-1



S-2

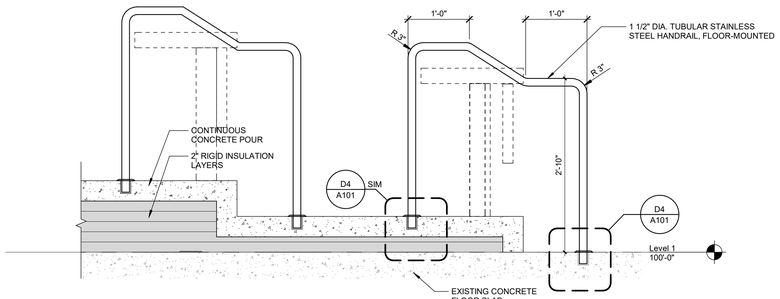
DOOR DETAILS

SCALE: 1 1/2" = 1'-0"

ROOM FINISH SCHEDULE

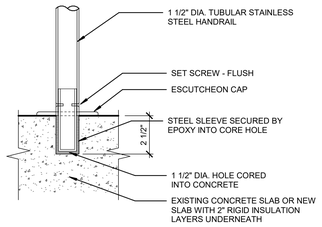
NO	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH NORTH	WALL FINISH EAST	WALL FINISH SOUTH	WALL FINISH WEST	CEILING HEIGHT	CEILING MATL	CEILING FINISH	REMARKS
H100H	CORRIDOR	CPT-1	RB-1	PT-1	PT-1	PT-1	PT-1	10'-0"	ACP	MATCH	
H134	CASE STUDY SUITE	CPT-1	RB-1	PT-1	PT-1	PT-1	PT-1	10'-0"	ACP	MATCH	
H134A	MEETING	CPT-1	RB-1	PT-1	PT-1	PT-1	PT-1	10'-0"	ACP	MATCH	
H134B	MEETING	CPT-1	RB-1	PT-1	PT-1	PT-1	PT-1	10'-0"	ACP	MATCH	
H134C	MEETING	CPT-1	RB-1	PT-1	PT-1	PT-1	PT-1	10'-0"	ACP	MATCH	
H136	VESTIBULE	CPT-1	RB-1	PT-1	PT-1	PT-1	PT-1	10'-0"	ACP	MATCH	
H136A	CONTROL ROOM	CPT-1	RB-1	PT-1	PT-1	PT-1	PT-1	10'-0"	ACP	MATCH	
H138	AMPHITHEATRE	SHT-1	RB-1/RB-2	PT-1	PT-1	PT-1	PT-1	10'-0"	ACP	MATCH	

PT-1: PPG SPEEDHIDE ZERO VOC, COLOR: 414-1 COLONIAL WHITE (TO MATCH EXISTING) SOFFIT TO RECEIVE PT-1
ACP: MATCH EXISTING CEILING TILES AND GRID
COUNTERTOP: SWANSTONE, COLOR: TBD
COVE BASE: RB -1 ROPPE 4", COLOR: (123) CHARCOAL, ROLL COVE BASE.
; RB - 2 ROPPE 4" COMMERCIAL STAIR NOSING AT TIERS IN AMPHITHEATER, COLOR: (123) CHARCOAL
FLOORING: CPT-1 TARKETT POWERBOND 6' ROLLED GOODS, STYLE: 11471 BLOCKADE, COLOR: 54606 NIGHTTIME (HEAT WELD ALL SEAMS)
SHT-1 TARKETT iQ OPTIMA, COLOR: 866 BELUGA (HEAT WELD ALL SEAMS)
ACOUSTICAL PANELS: (M) MAIN COLOR: GREIGE
(A) ACCENT COLOR : MALACHITE
WAINSCOTING: COLOR: CLASSIC MAPLE (SUEDE TEXTURE)



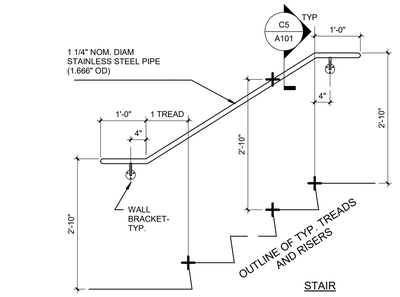
A4 / A101 SECTION DETAIL - AMPHITHEATRE

SCALE: 1" = 1'-0"



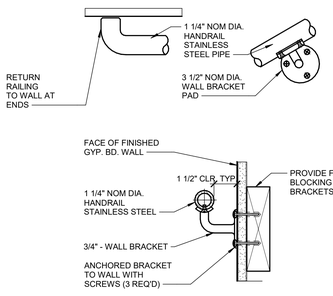
D4 / A101 HANDRAIL DETAIL

SCALE: 3" = 1'-0"



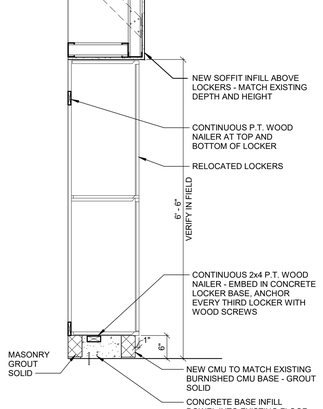
A5 / TYP. ELEVATION- HANDRAIL DETAIL

SCALE: 3/4" = 1'-0"



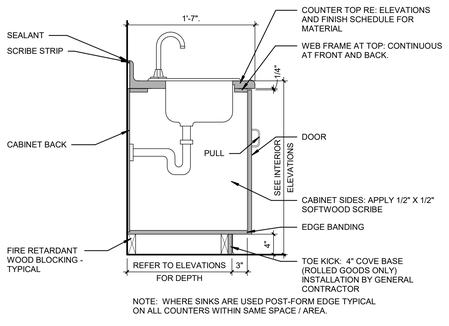
C5 / A101 HANDRAIL ATTACHMENT DETAIL

SCALE: 3" = 1'-0"



E5 / A101 RELOCATED LOCKER DETAIL

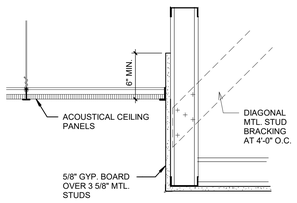
SCALE: 3/4" = 1'-0"



NOTE: WHERE SINKS ARE USED POST-FORM EDGE TYPICAL ON ALL COUNTERS WITHIN SAME SPACE / AREA.

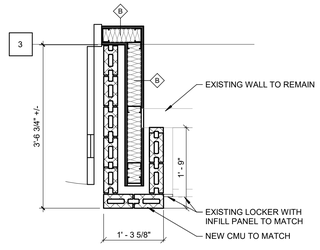
A7 / A102 BASE CABINET W/ SINK SB01

SCALE: 1" = 1'-0"



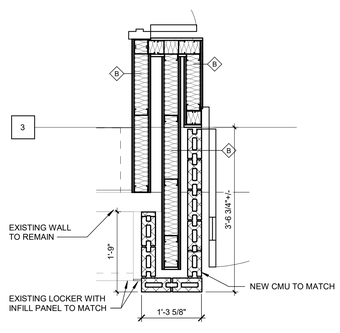
C7 / A100 CEILING TRANSITION

SCALE: 1 1/2" = 1'-0"



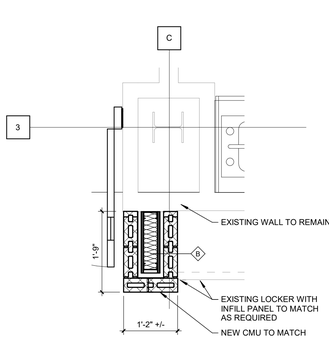
D7 / A100 ENLARGED PLAN DETAIL

SCALE: 3/4" = 1'-0"



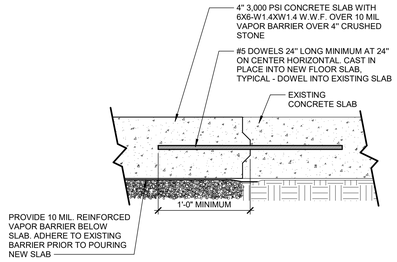
F7 / A100 ENLARGED PLAN DETAIL

SCALE: 3/4" = 1'-0"



G7 / A100 ENLARGED PLAN DETAIL

SCALE: 3/4" = 1'-0"



H7 / TYP. TYPICAL SLAB CONNECTION DETAIL

SCALE: 1 1/2" = 1'-0"

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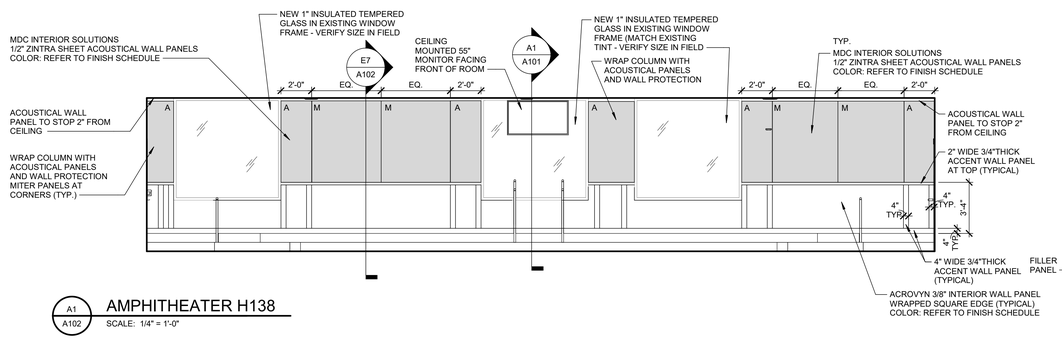
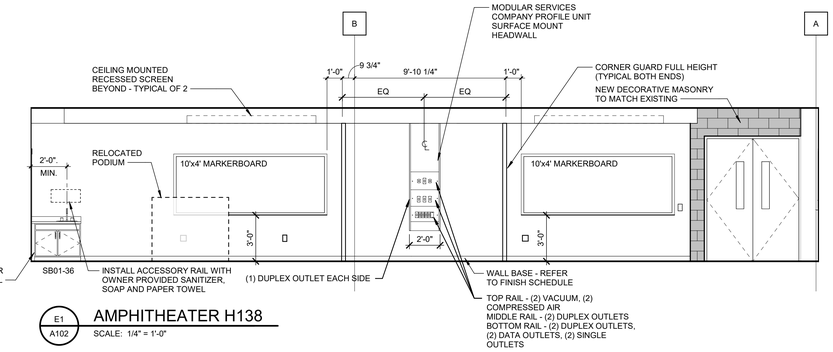
BUILDING SECTION, DOOR SCHEDULE AND DETAILS

A101



A1 / A102 AMPHITHEATER H138
SCALE: 1/4" = 1'-0"



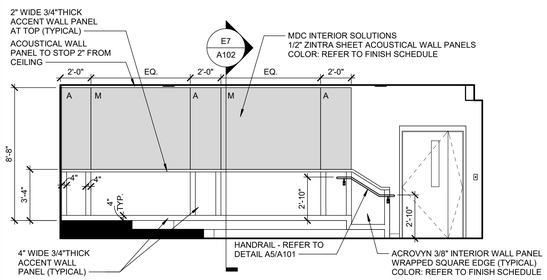
E1 / A102 AMPHITHEATER H138
SCALE: 1/4" = 1'-0"

INTERIOR ELEVATION NOTES

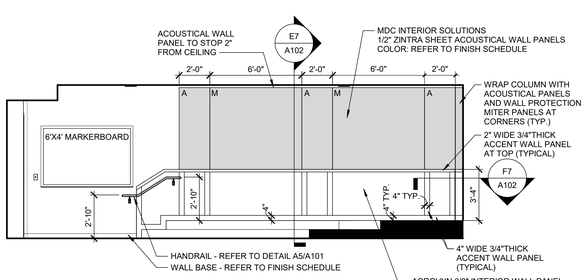
1. PLASTIC LAMINATE - BULLNOSE EDGE COUNTERTOP W/4" BACKSPLASH - PROVIDE GROMMETS 40" O/C. CUT BACKSPLASH AROUND WINDOW WHEN REQUIRED. USE SUPPORTS AS REQUIRED.
2. SEE FLOOR PLAN FOR LOCATION AND SIZES OF MARKERBOARDS, TACKBOARDS, TACKSTRIPS AND METAL SHELVING.
3. RUBBER BASE TO GO UNDER AND AROUND ALL CABINETS (CUT TO FIT AS NECESSARY)
4. ALL APPLIANCES - BY GENERAL CONTRACTOR, EXCEPT APPLIANCES NOTED TO BE BY THE OWNER.

CASEWORK TAG KEY:

B01 : 24
- 24 — CABINET WIDTH
- B01 — CABINET DETAIL REFERENCE



A3 / A102 AMPHITHEATER H138
SCALE: 1/4" = 1'-0"



C3 / A102 AMPHITHEATER H138
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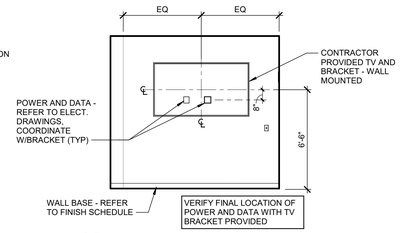
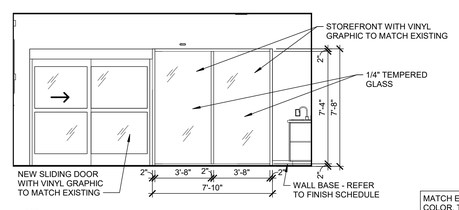


F3 / A102 MEETING H134A
SCALE: 1/4" = 1'-0"



MATCH EXISTING VINYL GRAPHIC COLOR, TRANSPARENCY, AND DESIGN. TYPICAL ALL SLIDING GLASS DOORS.

G3 / A102 MEETING H134A
SCALE: 1/4" = 1'-0"

A4 / A102 MEETING H134A
SCALE: 1/4" = 1'-0"

B4 / A102 MEETING H134B
SCALE: 1/4" = 1'-0"

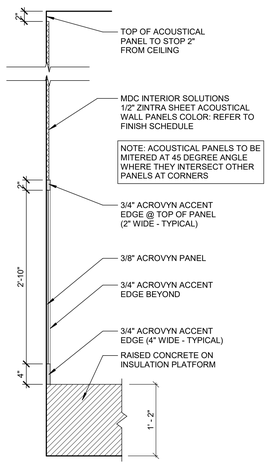
D4 / A102 MEETING H134B
SCALE: 1/4" = 1'-0"

E4 / A102 MEETING H134B
SCALE: 1/4" = 1'-0"

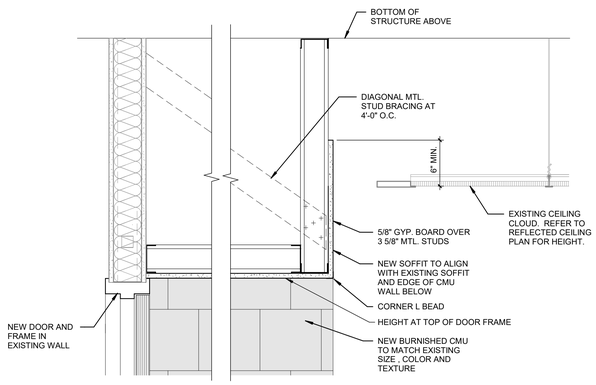
F4 / A102 MEETING H134C
SCALE: 1/4" = 1'-0"

H4 / A102 MEETING H134C
SCALE: 1/4" = 1'-0"

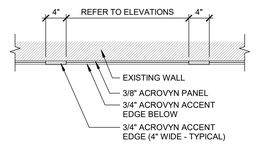
A5 / A100 CORRIDOR
SCALE: 1/4" = 1'-0"



E7 / A102 WALL PROTECTION DETAIL
SCALE: 1" = 1'-0"



F6 / A100 SOFFIT ABOVE DOOR DETAIL
SCALE: 1 1/2" = 1'-0"



F7 / A102 WALL PROTECTION PLAN DETAIL
SCALE: 1" = 1'-0"

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1050 Wilshire Drive, Suite 260
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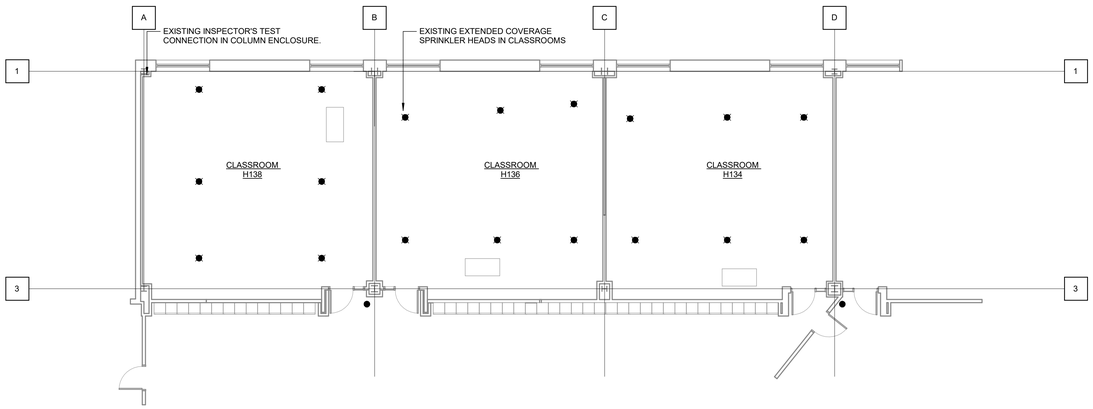
T. (248) 643-8222

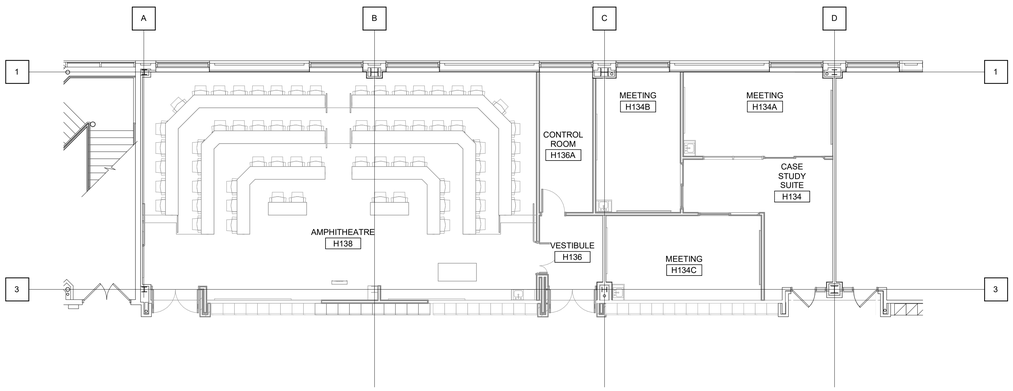
INTERIOR ELEVATIONS

A102



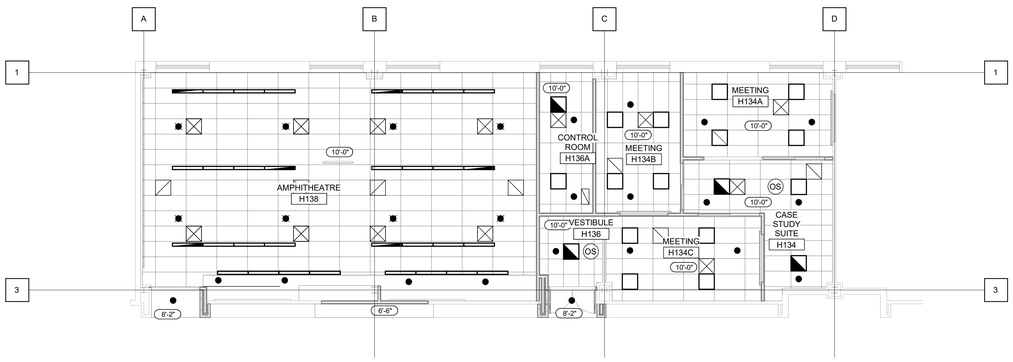
FIRST FLOOR DEMOLITION PLAN-FIRE PROTECTION

SCALE: 1/8" = 1'-0"



PARTIAL FIRST FLOOR PLAN - FIRE PROTECTION

SCALE: 1/8" = 1'-0"



PARTIAL FIRST FLOOR CEILING PLAN - FIRE PROTECTION

SCALE: 1/8" = 1'-0"

GENERAL FIRE PROTECTION DEMO NOTES

1. FIRE PROTECTION CONTRACTOR SHALL VISIT THE SITE AND GET FAMILIARIZED WITH THE LOCATION AND PIPE SIZE OF EXISTING FIRE SPRINKLER SYSTEM. ALL THE NECESSARY RE-ROUTING, RELOCATING AND ADD/OR REMOVAL OF EXISTING PIPING, SPRINKLER HEADS SHALL BE INCLUDED IN THE SCOPE OF WORK.
2. REFER TO ARCHITECTURAL DEMOLITION PLANS FOR MORE INFORMATION ON THE EXTENT OF DEMOLITION.
3. FIRE PROTECTION CONTRACTOR IS RESPONSIBLE TO COORDINATE THE SPRINKLER SYSTEM DEMOLITION WORK WITH OTHER TRADES.
4. FIRE PROTECTION CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH OWNER FOR DRAINING AND TAKING THE SYSTEM OUT OF SERVICE DURING DEMOLITION. AT NO TIME, THE SYSTEM IS ALLOWED TO REMAIN OUT OF SERVICE OVERNIGHT. SYSTEM MUST BE PUT BACK TO SERVICE AT THE END OF EACH DAILY WORK SHIFT.
5. FIRE SPRINKLER CONTRACTOR SHALL NOT RE-INSTALL ANY REMOVED SPRINKLER HEADS, PIPE OR PIPE FITTINGS. FOR NEW WORK, ALL SYSTEM COMPONENTS MUST BE NEW.

GENERAL FIRE PROTECTION DESIGN NOTES

1. FIRE PROTECTION CONTRACTOR SHALL FURNISH MATERIAL AND EQUIPMENT AS REQUIRED FOR A COMPLIANT SPRINKLER PROTECTION THROUGHOUT THE AREA OF WORK IN ACCORDANCE WITH NFPA 13-2016 EDITION, 2015 MICHIGAN BUILDING CODE, LOCAL AND STATE OF MICHIGAN REQUIREMENTS AND SUBMITTED TO THE BUREAU OF FIRE SAFETY.
2. SCOPE OF FIRE PROTECTION WORK SHALL INCLUDE THE ADD AND RELOCATE OF SPRINKLER HEADS IN THE RENOVATED SPACE WITHIN AREAS OF WORK IN COMPLIANCE WITH BUILDING / FIRE CODES, AND NFPA STANDARDS. SPRINKLER LAYOUT REPRESENTS THE INTENT OF THE SCOPE OF WORK. CONTRACTOR IS RESPONSIBLE TO MODIFY AS NEEDED BASED ON COORDINATION WITH CEILING MOUNTED FIXTURES WHILE COMPLYING WITH NFPA-13 AND BUREAU OF FIRE SAFETY REQUIREMENTS
3. FIRE SPRINKLER SYSTEM SHALL BE DESIGNED BASED ON LIGHT HAZARD OCCUPANCY WITH THE EXCEPTION OF THE STORAGE ROOM TO BE ORDINARY HAZARD GROUP 1.
4. FIRE PROTECTION CONTRACTOR IS RESPONSIBLE TO SUBMIT A COMPLETE SET OF SHOP DRAWINGS, HYDRAULIC CALCULATIONS AND MATERIAL SUBMITTALS PRIOR TO PIPE FABRICATION AND INSTALLATION.
5. FIRE PROTECTION CONTRACTOR SHALL BASE THE HYDRAULIC CALCULATIONS ON A HYDRANT FLOW TEST WITHIN 12 MONTHS OF THE SHOP DRAWINGS SUBMITTALS. THE HYDRAULIC CALCULATIONS SHALL INCLUDE A MINIMUM OF 10% SAFETY MARGIN.
6. FIRE PROTECTION CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY EXISTING CONDITIONS AND COORDINATE WITH OTHER TRADES FOR PIPE ROUTING AND SPRINKLER HEADS LOCATION IN CEILING
7. FIRE SPRINKLER PIPE SHALL BE CARBON STEEL. SCHEDULE 10 FOR ROLL GROOVED PIPE AND SCHEDULE 40 FOR THREADED PIPE. ALL PIPE 2" AND SMALLER SHALL BE SCHEDULE 40 PIPE. ALL MATERIAL SHALL BE UL LISTED AND/OR FM APPROVED. PIPE HANGER MATERIAL AND METHODS OF ATTACHMENT TO STRUCTURE SHALL BE IN COMPLIANCE WITH NFPA #13.
8. FIRE SPRINKLER HEADS SHALL BE OF THE QUICK RESPONSE AND TO MATCH EXISTING. SPRINKLER HEADS SHALL BE LOCATED IN THE CENTER OF CEILING TILE.
9. ANY REMOVED SPRINKLER HEAD SHALL NOT BE RE-INSTALLED.
10. FIRE SPRINKLER CONTRACTOR SHALL PERFORM ALL APPLICABLE SYSTEM ACCEPTANCE TESTS IN ACCORDANCE WITH CHAPTER 25 OF NFPA 13, 2016 EDITION.

● SEMI-RECESSED QUICK RESPONSE EXTENDED COVERAGE PENDENT HEAD, ORDINARY TEMPERATURE RATING, CHROME PLATED, MIN K=5.6.

● SEMI-RECESSED QUICK RESPONSE STANDARD COVERAGE PENDENT HEAD, ORDINARY TEMPERATURE RATING, CHROME PLATED, MIN K=5.6.

ssoe

S&W

PROFESSIONAL SEALS:

SUBMITTAL/REVISION SCHEDULE:

NO.	DATE	DESCRIPTION
0	12-02-2022	ISSUE FOR CONSTRUCTION

■ APPROVED FOR CONSTRUCTION
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CLIENT INFORMATION:

SAGINAW VALLEY STATE UNIVERSITY

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7400 BAY ROAD
UNIVERSITY CENTER, MICHIGAN
48710

PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

SSOE STEVENS & WILKINSON
1050 Wilshire Drive, Suite 260
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FIRST FLOOR PLAN - FIRE PROTECTION

FP100

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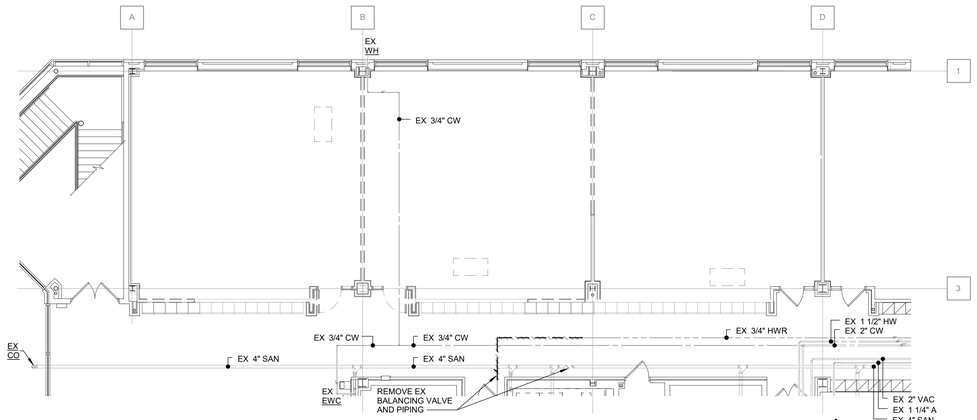
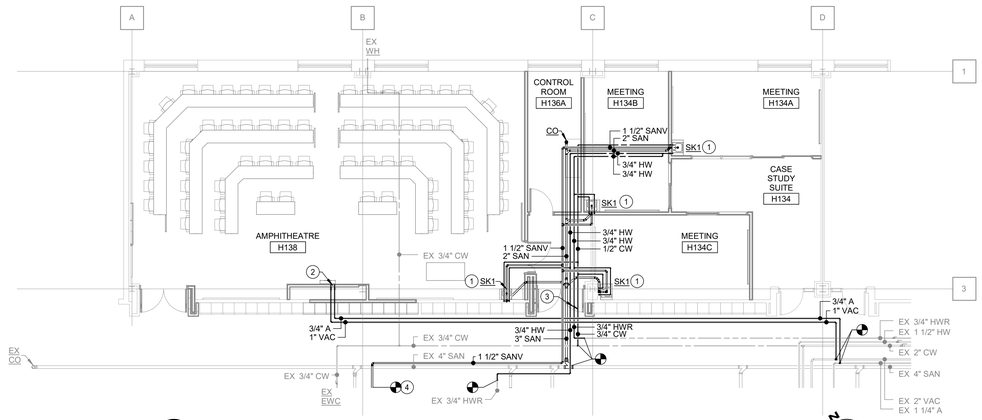


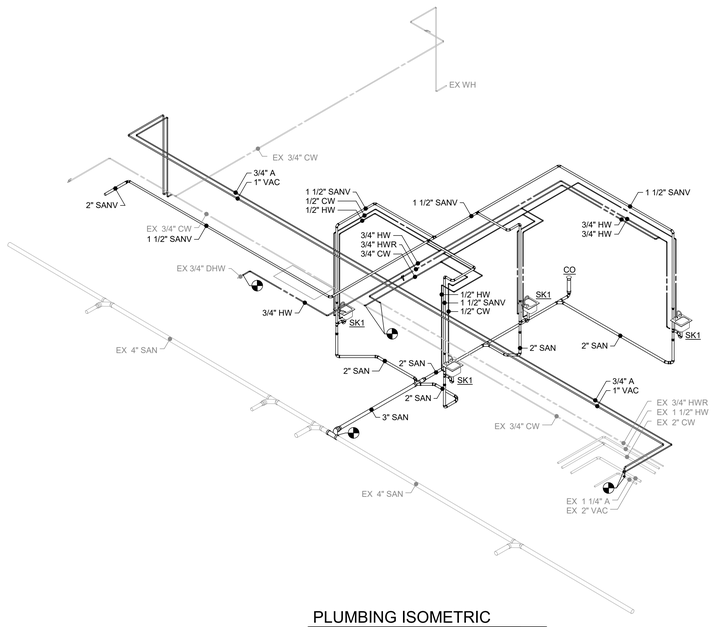
1 P100 PARTIAL FIRST FLOOR DEMOLITION PLAN - PLUMBING

SCALE: 1/8" = 1'-0"



2 P100 PARTIAL FIRST FLOOR PLAN - PLUMBING

SCALE: 1/8" = 1'-0"



PLUMBING ISOMETRIC

SCALE: NOT TO SCALE

PLUMBING SPECIFICATIONS

1. CONTRACTOR TO VERIFY ALL EXISTING UNDER FLOOR PIPING IN FIELD PRIOR TO BEGINNING WORK & PROVIDE ALL REQUIRED NEW WORK FOR COMPLETE INSTALLATION PER GOVERNING CODE AUTHORITIES.
2. OBTAIN PERMITS AND NOTIFY AUTHORITIES FOR INSPECTIONS.
3. PROVIDE 1 YEAR WARRANTY ON ALL WORK.
4. PROVIDE RECORD "AS-BUILT" PRINTS TO THE OWNER.
5. INSTALL FIRE-STOPPING FOR PENETRATIONS OF ALL RATED WALLS.
6. REPAIR ALL AREAS DAMAGED BY PERFORMING OR REMOVING WORK UNDER THIS CONTRACT.
7. PERFORM WORK ACCORDING TO:
   A. INTERNATIONAL MECHANICAL CODE (IMC) 2003
   B. INTERNATIONAL PLUMBING CODE (IPC) 2003
   C. MANUFACTURER'S STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, INC. (MSS)
   D. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 90A)
8. PLUMBING SPECIALTIES:
   PROVIDE ONE-PIECE SELF-LATCHING ACCESS DOORS IN WALLS AS NEEDED TO ALLOW ACCESS TO VALVES.
9. PLUMBING PIPING:

   DOMESTIC WATER PIPING
   1. WATER PIPING TYPE "L" HARD TEMPER COPPER, ASTM B-88
   2. FITTINGS SHALL BE WROUGHT COPPER, SOLDER TYPE, ASTM B-75, ANSI B16.22.

   SANITARY, WASTE AND VENT PIPING
   1. BELOW GROUND SANITARY WASTE AND VENT PIPING SHALL BE SCHEDULE 40 PVC-DWV ASTM D-2665 SOIL PIPE USING SOLVENT CEMENT ASTM D2564

   UNIONS
   1. SOLDER UNIONS SHALL BE WROT COPPER, WITH COPPER GROUND JOINT. ASTM B75, ANSI B16.22. DIELECTRIC, EPSO, 250 LB. WOG.
   2. SOLDER METAL SHALL CONFORM TO ASTM B32-ALLOY GRADE 95TA: 95 PERCENT TIN, 5 PERCENT ANTIMONY. JOINTS SHALL BE MADE WITH APPROVED SOLDER CONTAINING NOT MORE THAN 0.2 PERCENT LEAD.

   VALVES
   1. BALL VALVES SHALL BE EQUAL TO NIBCO T-585-70, FULL PORT WITH BRONZE BODY, CHROME PLATED BALL, BRONZE STEM, THREADED ENDS. 600 WOG OR NIBCO S-111 IN COPPER LINES.

   TESTING
   1. DOMESTIC WATER PIPING SYSTEM SHALL BE TESTED WITH POTABLE WATER AT A PRESSURE OF 25 PSIG ABOVE DESIGN WORKING PRESSURE. TEST SHALL BE CONDUCTED WITH PLUMBING INSPECTOR UNLESS APPROVED OTHERWISE IN WRITING.
   2. WATER DISTRIBUTION PIPING SHALL BE DISINFECTED PRIOR TO SYSTEM START-UP WITH A CHLORINE SOLUTION 50 PPM, ALLOW SYSTEM TO STAND FOR SIX HOURS MINIMUM, THEN EXERCISE ALL VALVES TO ENSURE TREATMENT OF ALL BRANCHES AND COMPONENTS. SYSTEM SHALL BE FLUSHED WITH POTABLE WATER AFTER DISINFECTION AND PRIOR TO PLACEMENT INTO SERVICE.
   3. SANITARY WASTE AND VENT PIPING SHALL BE TESTED IN ACCORDANCE WITH WATER AND AIR TESTS AS SPECIFIED IN THE 2003 INTERNATIONAL PLUMBING CODE, IN ADDITION TO ANY TESTS REQUIRED BY THE LOCAL PLUMBING OFFICIAL. (10 FEET OF HEAD WITH NO APPARENT LEAKS. HOLD FOR 30 MINUTES MINIMUM). FLUSH ALL GRAVITY PIPING INCLUDING FLOOR DRAINS PRIOR TO TURNING OVER TO THE OWNER.
10. INSULATION:
    1. INSULATE DOMESTIC COLD WATER PIPING WITH ONE LAYER OF 3/4 INCH THICK ELASTOMERIC CLOSED CELL TUBULAR OR 1/2 INCH FIBERGLASS INSULATION.
    2. INSULATE DOMESTIC HOT WATER PIPING WITH ONE LAYER OF 1 INCH FIBERGLASS INSULATION.
    3. DOMESTIC HOT WATER PIPING 1 INCH AND SMALLER MAY BE INSULATED WITH 3/4 INCH THICK ELASTOMERIC CLOSED CELL INSULATION IN LIEU OF FIBERGLASS.

LEGEND

- EXISTING TO BE REMOVED
- EXISTING TO REMAIN
- AREA OF PIPING TO BE REMOVED

PLUMBING GENERAL NOTES:

1. MAINTAIN FUNCTIONALITY FOR RESTROOMS SYSTEMS (HOT/COLD WATER AND SANITARY WASTE) DURING TIMES OF CONSTRUCTION.

PLUMBING NEW WORK KEYNOTES:

1. SK-1, 1/2" CW, 1/2" HW, NEW 3/4" BALANCING VALVE, 1-1/2" SAN, AND 1-1/2" V TO SINK.
2. NEW HEAD WALL UNIT BY CONTRACTOR, ROUGH-IN AND FINAL CONNECTION BY PLUMBING CONTRACTOR. ROUTE 1/2" AIR AND 3/4" VAC DOWN IN CHASE TO NEW HEAD WALL UNIT.
3. NEW 3/4" HWR BALANCING VALVE.
4. CONNECT NEW 2" V TO NEAREST EXISTING SANITARY MAIN.

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	MODEL NUMBER	CW	HW	SANITARY	VENT	MISCELLANEOUS TRIM
SK-1	DROP-IN SINK	ELKAY #LRAD151740	1/2"	1/2"	1 1/2"	1 1/2"	STAINLESS STEEL, 3-HOLE SINGLE BOWL DROP-IN, ADA SINK. PROVIDE CHICAGO FAUCET 786-E2805-SABCP MANUAL DECK MOUNT FAUCET AND 4" WRISTBLADE HANDLES; ELKAY LKAD35 WITH REMOVABLE BASKET STRAINER. MCGUIRE ST02LK 1/2" X 3/8" QTR TURN SUPPLY WITH LOOSE-KEY STOP. P-TRAP AND ESCUTCHEONS

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SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

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PARTIAL FIRST FLOOR PLANS - PLUMBING

P100

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ABBREVIATIONS FOR DRAWINGS

ABBREV.	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
AD	ACCESS DOOR
AD/PR	ACCESS DOOR/ PRESSURE RELIEF
ACP	ACCESS PANEL
AHU	AIR HANDLING UNIT
ACCH	AIR COOLED CHILLER
APD	AIR PRESSURE DROP
AS	AIR SEPARATOR
AP	ALARM PANEL
AUX	AUXILLIARY
B	BOILER
BACNET	BUILDING AUTOMATION & CONTROLS NETWORK
BFP	BOILER FEED PUMPS
BF	BOOSTER FAN
BOT	BOTTOM
BOD	BOTTOM OF DUCT
BOI	BOTTOM OF INSULATION
BOP	BOTTOM OF PIPE
CAD	COMPRESSED AIR DRYER
CUH	CABINET UNIT HEATER
CLG	CEILING
CD	CEILING DIFFUSER
CHWP	CHILLED WATER PUMP
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CONC	CONCRETE
COND	CONDENSATE
CRU	CONDENSATE RETURN UNIT
CU	CONDENSING UNIT
CONT.	CONTINUATION
CONTR.	CONTRACTOR
CV	CONTROL VALVE
CC	COOLING COIL
CT	COOLING TOWER
CTP	COOLING TOWER PUMP
DER	DEARATOR
DB	DECIBEL
DIA.	DIAMETER
D	DIFFUSER
DX	DIRECT EXPANSION
DG	DOOR GRILLE
DH	DOOR HEATER
DN	DOWN
DWG.	DRAWING
DC	DUCT COIL
DF	DUCT FURNACE(GAS FIRED)
ELECT	ELECTRICAL
EBR	ELECTRIC BASEBOARD RADIATION
EDH	ELECTRIC DUCT HEATER
EHC	ELECTRIC HEATING COIL
EH	ELECTRIC HOOD
EUH	ELECTRIC UNIT HEATER
EL.	ELEVATION
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB
EWT	ENTERING WATER TEMP.
EWB	ENTERING WET BULB
EWH	ELECTRIC WATER HEATER
EA	EXHAUST AIR
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EL	EXHAUST LOUVER
ER	EXHAUST REGISTER
EP	EXHAUST PLENUM
EJ	EXPANSION JOINT
ET	EXPANSION TANK
ESP	EXTERNAL STATIC PRESSURE
FCU	FAN COIL UNIT
F	FILTER
FAT	FINAL AIR TEMPERATURE
FFE	FINISHED FLOOR ELEVATION
FT	FINNED TUBE RADIATION
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FL	FLOOR
FD	FLOOR DRAIN
FO	FLOOR OPENING
FM	FLOW METER
FS	FREEZE STAT
FOP	FUEL OIL PUMP
GAP	GAUGE ALARM PANEL
GV	GRAVITY VENTILATOR
HD	HEAT DETECTOR
HTEXC	HEAT EXCHANGER
HV	HEATING AND VENTILATING UNIT
HVAC	HEATING,VENTILATING & AIR CONDITIONING UNIT
HC	HEATING COIL
HCU	HEATING & COOLING UNIT
HWP	HEATING WATER PUMP
HHWS	HEATING HOT WATER SUPPLY
HHWR	HEATING HOT WATER RETURN
HRC	HEAT RECOVERY COIL
HRP	HEAT RECOVERY PUMP
HRU	HEAT RECOVERY UNIT
HX	HEAT RECOVERY UNIT
HZ	BLOWDOWN HERTZ
HORIZ	HORIZONTAL
HUH	HOT WATER UNIT HEATER
HUM	HUMIDIFIER

ABBREV.	DESCRIPTION
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
KW	KILOWATT
LAT	LATENT
LDB	LEAVING DRY BULB
LWT	LEAVING WATER TEMP.
LWB	LEAVING WET BULB
LD	LINEAR DIFFUSER
L	LOUVER
MAU	MAKE-UP AIR UNIT
MAX.	MAXIMUM
MID	MIDDLE
MIN.	MINIMUM
MB	MIXING BOX
MCC	MOTOR CONTROL CENTER
MOD	MOTOR OPERATED DAMPER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAIH	OUTSIDE AIR INTAKE HOOD
OAIL	OUTSIDE AIR INTAKE LOUVER
OD	OUTSIDE DIAMETER
PH	PHASE
PC	PLUMBING CONTRACTOR
PHC	PREHEAT COIL
PRV	PRESSURE REDUCING VALVE
P	PUMP
RCP	RADIANT CEILING PANEL
RAD	REFRIGERATED AIR DRYER
RCMP	REFRIGERANT COMPRESSOR
%RH	RELATIVE HUMIDITY
RH	RELIEF HOOD
RV	RELIEF VALVE
RA	RETURN AIR
RF	RETURN FAN
RG	RETURN GRILLE
ROW	REVERSE OSMOSIS WATER
SST	SATURATED SUCTION TEMP.
SM	SHEET METAL
SDI	SMOKE DETECTOR IONIZATION
SN	SUPPLY NOZZLE
SPEC	SPECIFICATIONS
SQ	SQUARE
SSF	SIDE STREAM FILTER
SS	STAINLESS STEEL
SP	STATIC PRESSURE
SUMPP	SUMP PUMP
SA	SUPPLY AIR
SD	SUPPLY DIFFUSER
SF	SUPPLY FAN
SR	SUPPLY REGISTER
TEMP	TEMPERATURE
TD	TEMPERATURE DIFFERENCE
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TOS	TOP OF STEEL
TSP	TOTAL STATIC PRESSURE
TA	TRANSFER AIR
TG	TRANSFER GRILLE
TYP.	TYPICAL
UH	UNIT HEATER
VB	VALVE BOX
V/V	VARIABLE AIR VOLUME
VEL	VELOCITY
VP	VELOCITY PRESSURE
VU	VENTILATING UNIT
VTR	VENT THRU ROOF
VERT	VERTICAL
WO	WALL OPENING
WC	WATER CHILLER
WPD	WATER PRESSURE DROP
WS	WATER SOFTENER
WTD	WATER TEMP DROP
W	WIDTH
WMS	WIRE MESH SCREEN

DUCTWORK LEGEND

RECTANGULAR DUCT

DOUBLE LINE		SINGLE LINE
12X6	DUCT SIZE (INSIDE DIMENSIONS) FIRST FIGURE IS SIDE SHOWN	
24x12	SUPPLY DUCT	
24x12	RETURN OR EXHAUST DUCT	
12X6	ACOUSTICAL LINING - SIZES INDICATED ARE ACTUAL SHEET-METAL SIZES AND INCLUDE ALLOWANCE FOR LINING	
DN	INCLINED DROP, WITH RESPECT TO AIRFLOW	DN
UP	INCLINED RISE, WITH RESPECT TO AIRFLOW	UP
	FLEXIBLE CONNECTION IN DUCTWORK	
	DUCT INDICATION FOR STACKING	
	SUPPLY DUCT TURNING TOWARD VIEWER RECTANGULAR ELBOW	
	SUPPLY DUCT TURNING TOWARD VIEWER RADIUS ELBOW	
	SUPPLY DUCT TURNING AWAY VIEWER RECTANGULAR ELBOW	
	SUPPLY DUCT TURNING AWAY VIEWER RADIUS ELBOW	
	RETURN/EXHAUST TURNING TOWARD VIEWER RECTANGULAR ELBOW	
	RETURN/EXHAUST TURNING TOWARD VIEWER RADIUS ELBOW	
	RETURN/EXHAUST TURNING AWAY VIEWER RECTANGULAR ELBOW	
	RETURN/EXHAUST TURNING AWAY VIEWER RADIUS ELBOW	
	DUCT ELBOWS	
	ELBOW WITH TURNING VANES	
	RADIUS ELBOW W/VANES	
20°MAX. 30°MAX.	TRANSITION IN DIRECTION OF AIR FLOW	DN UP
	SPLITTER DAMPER AT DUCT BRANCH	
M	VOLUME DAMPER	
M	M - MOTORIZED DAMPER	M
	FLEXIBLE DUCT	
C/C	COIL WITHIN DUCT	C/C
	AIR EXTRACTOR AT DUCT BRANCH	
45° L W	BOOT TYPE CONNECTION = 1/2W, 6" MINIMUM	
	CEILING DIFFUSERS ARROWS INDICATE THROW PATTERNS	
	INDICATES BLANKED-OFF SECTION	
	SUPPLY REGISTER (SR-000) W/NECK SIZE AND AIR QUANTITY	
	EXHAUST REGISTER (ER-000) W/NECK SIZE AND AIR QUANTITY	
	ER - EXHAUST REGISTER EG - EXHAUST GRILLE RG - RETURN GRILLE TG - TRANSFER GRILLE WMS - WIRE MESH GRILLE	
T	AIR FLOW, TRANSFER	T
	AIR FLOW, SUPPLY, OUTSIDE AIR	
	AIR FLOW, EXHAUST, RETURN	
L	LOUVER IN DOOR	L
U	UNDERCUT DOOR	U
	LINDIF	
	INLET VANES	
	NEW DUCTWORK - DARK	
	EXISTING DUCTWORK - LIGHT	
	DUCTWORK OR HVAC EQUIPMENT TO BE REMOVED	
C	CARBON DIOXIDE LEVEL SENSOR	
H	HUMIDISTAT - WALL MOUNTED	
T	THERMOSTAT - WALL MOUNTED	
T	THERMOSTAT - UNIT MOUNTED	
F▲	VERTICAL FIRE DAMPER - 1 1/2 HOUR RATING	
F◆	HORIZONTAL FIRE DAMPER - 1 1/2 HOUR RATING	

ROUND DUCT

DOUBLE LINE		SINGLE LINE
12"Ø	DUCT SIZE (DIAMETER)	12"Ø
	FLEXIBLE DUCT	
	DUCT INDICATION FOR STACKING	
	DUCT TURNING TOWARD VIEWER	
	DUCT TURNING AWAY FROM VIEWER	
	ROUND ELBOW	
	MITER ELBOW	
	MITER ELBOW W/TURNING VANES	
	VOLUME DAMPER	
M	M - MOTORIZED DAMPER	
	BG - BLAST GATE	
C/C	COIL WITHIN DUCT	C/C
20°MAX.	TRANSITION	
	SQUARE TO ROUND TRANSITION	
	INCLINED DROP, WITH RESPECT TO AIRFLOW	
	INCLINED RISE, WITH RESPECT TO AIRFLOW	
	FLEXIBLE CONNECTION	
	BELLMOUTH CONNECTION	
	TEE CONNECTION	
	Y CONNECTION	
	Y-SPLIT (EQUAL SIZE ONLY)	
FLOW	HEEL TAP CONNECTION	FLOW
	CEILING DIFFUSERS ARROWS INDICATE THROW PATTERNS	
	INDICATES BLANKED-OFF SECTION	
	SUPPLY REGISTER (SR-000) W/NECK SIZE AND AIR QUANTITY	
	EXHAUST REGISTER (ER-000) W/NECK SIZE AND AIR QUANTITY	
	ER - EXHAUST REGISTER EG - EXHAUST GRILLE RG - RETURN GRILLE TG - TRANSFER GRILLE WMS - WIRE MESH GRILLE	
T	AIR FLOW, TRANSFER	T
	AIR FLOW, SUPPLY, OUTSIDE AIR	
	AIR FLOW, EXHAUST, RETURN	
L	LOUVER IN DOOR	L
U	UNDERCUT DOOR	U
	LINDIF	
	INLET VANES	
	NEW DUCTWORK - DARK	
	EXISTING DUCTWORK - LIGHT	
	DUCTWORK OR HVAC EQUIPMENT TO BE REMOVED	

PIPING LEGEND

UTILITY PIPING SYMBOLS

SYMBOL	ABBREV.	DESCRIPTION
	ANC	ANCHOR
	AV	ANGLE VALVE
	AAV	AUTOMATIC AIR VENT W/HOSE END
M	CV-3	AUTO.CONTROL VALVE 3-WAY W/ELECTRIC OPERATOR
M	CV-2	AUTO.CONTROL VALVE 2-WAY W/ELECTRIC OPERATOR
	BCKVA	BALL CHECK VALVE
	BV	BALL VALVE
	BKSTR	BASKET STRAINER
	BF	BLIND FLANGE
	BFV	BUTTERFLY VALVE
	BFV N.C.	BUTTERFLY VALVE NORMALLY CLOSED
	CV	CHECK VALVE
	CBV	CALIBRATED BALANCING VALVE
	CON RED	CONCENTRIC REDUCER OR INCREASER
	DPOC	DIRT POCKET
DPT	DPT	DIFFERENTIAL PRESSURE TRANSMITTER
	CSTR	CONSTRUCTION OR SAFETY STRAINER
	DV	DRAIN VALVE W/HOSE END
	DRPAN	DRIP PAN ELBOW
	2BKSTR	DUPLEX BASKET STRAINER
	EC RED	ECCENTRIC REDUCER OR INCREASER
		90° ELBOW DOWN
		90° ELBOW UP
	GUIDE	EXPANSION GUIDE
	FT	FINTUBE
	FC	FLEXIBLE CONNECTOR
	FH	FLEXIBLE HOSE
OR Y	FD	FLOOR DRAIN
	FL ARR	FLOW ARROW
	FMO	FLOW MEASURING ORIFICE
	GCK	GAGE COCK
	IVLV	ISOLATION VALVE (SEE SPECIFICATIONS FOR TYPE)
	GA	GAUGE
		PIPING OR EQUIPMENT TO BE REMOVED
		GAUGE GLASS
	MAV	MANUAL AIR VENT W/HOSE END
M		METER

UTILITY PIPING SYMBOLS

SYMBOL	ABBREV.	DESCRIPTION
	ORI	ORIFICE
		OUTLET
		OUTLET (TEE) DOWN
		OUTLET (TEE) UP
	CAP	PIPE CAP
	FLS	PIPE FLANGES
		PIPE OFFSETTING UP IN RESPECT TO ARROW
	P/T	PRESSURE/TEMPERATURE PLUG
	PV	PLUG VALVE
	PI	PRESSURE GAUGE W/ GAUGE COCK
	PI	PRESSURE GAUGE W/SIPHON & GAUGE COCK
	PRV	PRESSURE REDUCING VALVE PILOT OPERATED
	PRV	PRESSURE REDUCING VALVE SELF CONTAINED
	PRVV	PRESSURE REGULATING VALVE W/VENT
PS	PS	PRESSURE SENSOR
	RPBFP	REDUCED PRESSURE BACKFLOW PREVENTER
	SV	RELIEF OR SAFETY VALVE
S	SOL-3	SOLENOID VALVE 3-WAY
S	SOL-2	SOLENOID VALVE 2-WAY
T OR T	F&T OR BUT	STEAM TRAP
	STR	STRAINER (WYE TYPE)
	STR	STRAINER (WYE TYPE) W/GATE VALVE BLOW DOWN & HOSE END
		SUCTION DIFFUSER
		TEE BRANCH
T	TI	TEMPERATURE INDICATOR
	TC	TEST CONNECTION
	THERM	THERMOMETER
T	TAV	THERMOSTATIC AIR VENT W/HOSE END
TS	TS	TEMPERATURE SENSOR
	TW	THERMOWELL
	TVLV	THROTTLING VALVE
	UN	UNION
	VB	VACUUM BREAKER
	VABX	VALVE BOX
		VALVE IN PIPING RISE
	WCKVA	WAFER CHECK VALVE

GENERAL NOTES:

1. REFER TO SPECIFICATION SECTIONS FOR SPECIFIC MATERIAL AND INSTALLATION DATA.
2. COORDINATE THIS WORK WITH WORK BY OTHER CONTRACTORS.
3. COORDINATE ALL WALL AND ROOF PENETRATIONS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.
4. DO NOT DRILL OR CUT ANY TRUSS MEMBERS WITHOUT THE PERMISSION OF THE STRUCTURAL ENGINEER. DO NOT WELD TO TRUSSES WITHOUT THE PERMISSION OF THE STRUCTURAL ENGINEER UNLESS SPECIFICALLY DETAILED ON THE DRAWINGS.
5. EQUIPMENT LOCATIONS AND DIMENSIONS ON DRAWINGS ARE APPROXIMATE. SEE EQUIPMENT CERTIFIED DRAWINGS FOR EXACT DIMENSIONS.
6. PROVIDE FIRE STOPPING AROUND ALL PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS AND ROOFS.
7. MODIFICATIONS IN DUCT OR PIPE ROUTINGS MUST BE APPROVED BY OWNER'S REPRESENTATIVE.
8. COORDINATE AIR DEVICE PLACEMENT WITH LIGHTS AND CEILINGS.
9. INSTALL VOLUME DAMPERS AT ALL AIR DEVICE BRANCH CONNECTIONS IF NOT SPECIFIED IN THE AIR DEVICE SCHEDULE. COORDINATE WITH TEST AND BALANCE CONTRACTOR TO ENSURE PROPER PLACEMENT OF VOLUME DAMPERS.
10. PROVIDE ACCESS DOORS AT ALL FIRE AND/OR SMOKE DAMPERS AND OUTSIDE AIR FLOW MEASURING STATIONS.
11. DUCTWORK SHALL BE GALVANIZED SHEET METAL, CONSTRUCTED PER LATEST EDITION OF THE SMACNA AND ASHRAE STANDARDS. ALL DUCTWORK JOINTS AND LONGITUDINAL SEAMS SHALL BE SEALED SMACNA CLASS "A". INSULATED, CLASS 1 FLEXIBLE DUCTWORK SHALL BE USED FOR CONNECTIONS FROM LOW AND MEDIUM PRESSURE TRUNK DUCTWORK TO ALL VARIABLE AIR VOLUME UNITS, FAN TERMINAL UNITS, AND DIFFUSERS.
    a. PROVIDE END CAPS, AS REQUIRED, NOT SPECIFICALLY CALLED OUT ON DRAWINGS.
    b. ALL DUCT SIZES ARE IN INCHES.
    c. ALL DUCT DIMENSIONS ARE CLEAR INSIDE
12. DUCT ELBOWS:
    RECTANGULAR DUCT ELBOWS MAY BE RADIUS OR MITERED AND SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE", FIGURE 4-2, "RECTANGULAR ELBOWS". ROUND DUCT ELBOWS MAY VARY IN RADIUS-TO-DIAMETER RATIO, BUT MUST COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE", FIGURE 3-4, "ROUND DUCT ELBOWS"
    REFER TO SPECIFICATION SECTION 233113 "METAL DUCTS" FOR MORE DETAIL.
13. COORDINATE AND FIELD VERIFY LOCATION AND SIZES OF DUCTWORK. LOUVER AND DUCT ACCESSORIES WITH ACTUAL OPENINGS PROVIDED BY OTHERS.
14. VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OF PLENUMS, DUCTWORK, DUCT HANGERS/SUPPORTS.
15. ALL DUCT HANGERS AND SPACING TO COMPLY WITH SMACNA GUIDELINES BUT SHALL NOT EXCEED 10'-0" C/C UNLESS NOTED OTHERWISE.
16. PROVIDE MULTIPLE BLADE BALANCE DAMPERS FOR DUCT LARGER THAN 24" DIA.
17. LINE ALL SUPPLY AND RETURN DUCT FOR THE FIRST 15' FROM THE AIR HANDLER.
18. LINE ALL TRANSFER AIR DUCT FROM TRANSFER GRILLE.
19. COORDINATE LOCATION OF THERMOSTATS, HUMIDISTATS AND C02 SENSORS WITH LIGHT SWITCHES. LOCATE THERMOSTAT ON SAME WALL AS SWITCH. MOUNT AT 4'-0" AFF.
20. RUN-OUTS TO DIFFUSERS TO BE SAME SIZE AS NECK UNLESS OTHERWISE NOTED.
21. MAXIMUM LENGTH OF FLEXIBLE DUCT RUN-OUTS IS 5'-0".
22. FIELD ROUTE FULL SIZE CONDENSATE FROM ROOFTOP AHU COOLING COIL CONDENSATE DRAIN TO NEAREST ROOF DRAIN.
23. VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OF PIPING, HANGERS/SUPPORTS.
24. ALL PIPE HANGERS AND SPACING TO COMPLY WITH MSS SP-58 GUIDELINES.
25. INSULATE CONNECTIONS BETWEEN PIPE, FITTINGS, HANGERS OF DISSIMILAR METAL AGAINST DIRECT CONTACT. USE DIELECTRIC INSULATING MATERIAL. FOR PIPING AND FITTINGS, USE NON- DEZINCIFIABLE FLANGES AND UNIONS. THIS INCLUDES INSULATION BETWEEN GALVANIZED HANGERS (CLEVIS, TRAPEZE, ETC.) AND CARBON STEEL PIPE.
26. UNISTRUT SUPPORT IS ALLOWED ONLY FOR PIPING 2" OR LESS TO BE HUNG. FOLLOW SPANS & MAX. LOAD CARRYING CAPACITY OF UNISTRUT LOADING TABLES FOR P2001 (3 1/4" HIGH SIZE).
27. ALL HANGER RODS SHALL HAVE DOUBLE NUTS.
28. WHEN DOUBLE-NUTTING, THE OUTER NUT REQUIRES A LOCKING AGENT TO BE APPLIED GENEROUSLY TO THREADS UNDER NUT. BEFORE NUT IS TORQUED, APPLY LOCTITE QUICK STIX 268 THREADLOCKER (COLOR RED).
29. LOCKING TYPE NUT REFERS TO FRICTION TYPE OR DEFORMED- THREAD LOCKNUT. ACCEPTABLE BRANDS: CONICAL TOP, TOPLOCK, CENTERLOCK, NYLON INSERT TYPE OR ANY APPROVED EQUIVALENT.
30. PROVIDE AUTOMATIC AIR VENTS AT ALL HIGH POINTS OF PIPING. PROVIDE DRAIN VALVES AT ALL LOW POINTS OF PIPING.
31. INSTALL ALL BASE MOUNTED EQUIPMENT ON HOUSEKEEPING PAD.

HVAC SYMBOLS AND ABBREVIATIONS

SCALE: 1/8" = 1'-0"

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PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

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MECHANICAL SYMBOLS & ABBREVIATIONS

MH001

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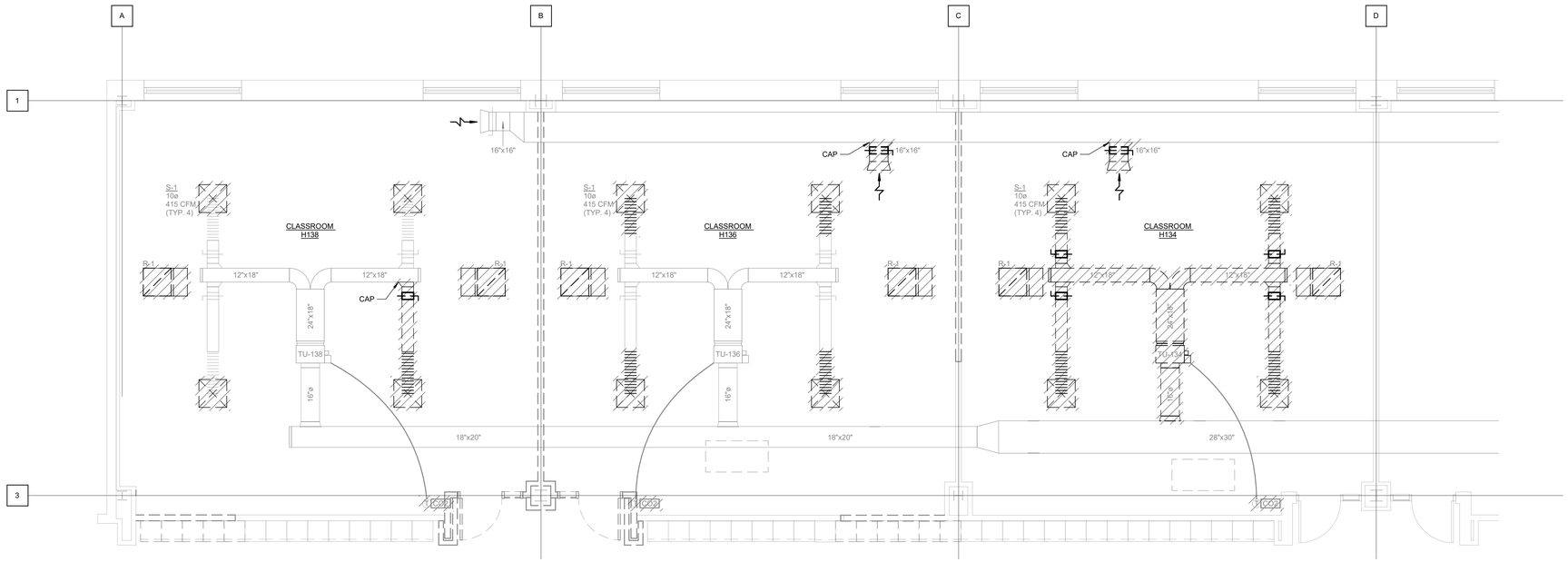
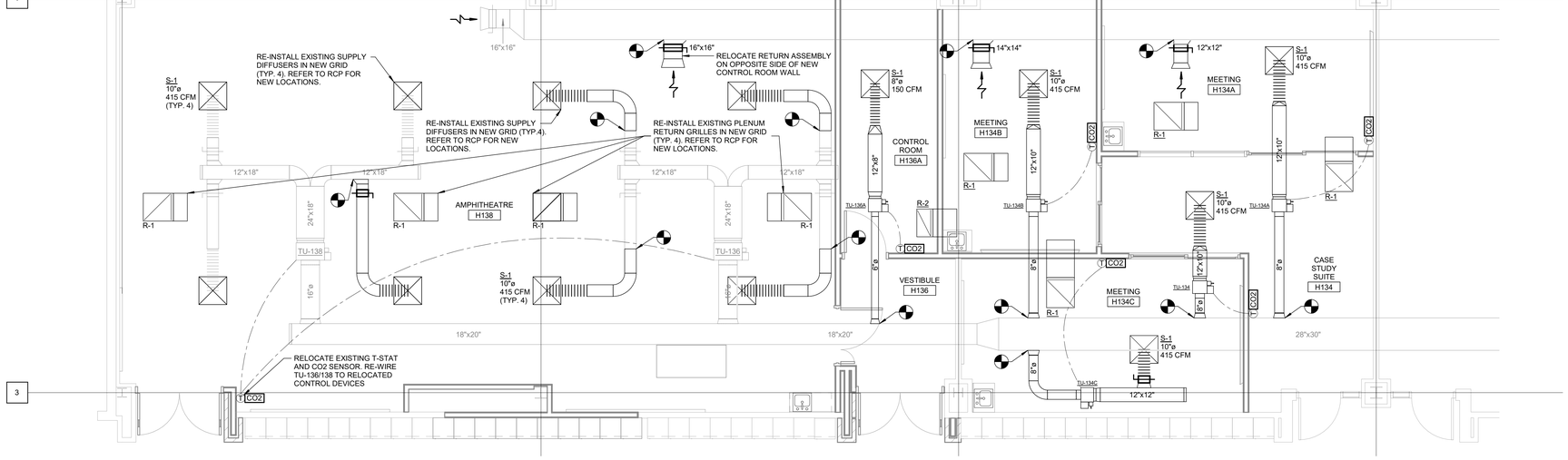


FIRST FLOOR DEMOLITION PLAN - HVAC

SCALE: 1/4" = 1'-0"



FIRST FLOOR NEW WORK PLAN - HVAC

SCALE: 1/4" = 1'-0"

VARIABLE AIR VOLUME TERMINAL BOX SCHEDULE

MARK	MFG	MODEL	UNIT SIZE	DISCHARGE SIZE (IN)	AREA SERVED	UNIT SERVED FROM	INLET SIZE (IN)	AIRFLOW (CFM)	HEATING COIL									REMARKS
									HEATING CFM	CAPACITY MBH	NUMBER ROWS	AIR			WATER					
												E.D.B.	L.D.B.	MAX A.P.D IN WG	GPM	E.W.T.	L.W.T.	MAX W.P.D FT. HEAD	CONTROL VALVE TYPE	
TU-134	TITUS	ESV	08	12"x10"	H134	ERU-1	8	415	200	23.9	2	55	166	0.40	2.4	130	110	1.0	2-WAY	1
TU-134A	TITUS	ESV	08	12"x10"	H134A	ERU-1	8	415	200	23.9	2	55	166	0.40	2.4	130	110	1.0	2-WAY	1
TU-134B	TITUS	ESV	08	12"x10"	H134B	ERU-1	8	415	200	23.9	2	55	166	0.40	2.4	130	110	1.0	2-WAY	1
TU-134C	TITUS	ESV	08	12"x10"	H134C	ERU-1	8	415	200	23.9	2	55	166	0.40	2.4	130	110	1.0	2-WAY	1
TU-136A	TITUS	ESV	06	12"x8"	H136A	ERU-1	6	150	110	4.8	2	55	96	0.25	0.5	180	160	1.0	2-WAY	1

1. INTEGRATE NEW VAV CONTROLS WITH BUILDING'S EXISTING BMS SYSTEM.

GRILLES, REGISTERS, & DIFFUSERS SCHEDULE

MARK	SERVICE	MAKE & MODEL NO.	MOUNTING	CFM	NECK SIZE	TYPE	REMARKS
S-1	SUPPLY	TITUS, TMS	24"x24", LAY-IN	SEE PLAN	8"ø/10"ø	4-WAY	W/ DAMPER
R-1	RETURN	TITUS, PAR	24"x24", LAY-IN	---	22"x22"	PERFORATED	---
R-2	RETURN	TITUS, PAR	12"x12", LAY-IN	---	10"x10"	PERFORATED	---

GENERAL NOTES

1. ALL CONTRACTORS INCLUDING, BUT NOT LIMITED TO, MECHANICAL, ELECTRICAL, PLUMBING, AND CONTROLS SHALL NOT INSTALL HARDWARE, ELECTRICAL CONDUITS, EQUIPMENT, ETC. THAT OBSTRUCTS THE ACCESSIBILITY OF EQUIPMENT EITHER ABOVE CEILING OR BELOW IT.
2. COORDINATE CEILING AIR DEVICE LOCATIONS WITH LIGHTING PLAN AND RCP. WHERE DEVICE LOCATIONS SHOWN ON RCP ARE DIFFERENT FROM MECHANICAL DRAWINGS, CONFLICT SHOULD BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND MECHANICAL ENGINEER FOR REVIEW.
3. SPACE ABOVE CEILING MAY BE LIMITED. CAREFUL FIELD COORDINATION BY THE CONTRACTORS WITH LIGHTING, ELECTRICAL, PLUMBING, STRUCTURAL, AND ARCHITECTURAL IS CRITICAL TO DUCTWORK INSTALLATION.
4. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
5. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL DETAILS NOR CHANGES IN DUCTWORK ELEVATIONS NECESSARY FOR COMPLETE INSTALLATION.
6. PROVIDE NECESSARY OFFSETS IN DUCTWORK AS REQUIRED TO ACCOMODATE INSTALLATION. CONTRACTOR SHALL ALLOW FOR ANY CONFLICTS ENCOUNTERED.
7. PROVIDE ALL CLEARANCES, AS REQUIRED BY CODE AND MANUFACTURER'S INSTRUCTIONS, FOR ALL MECHANICAL EQUIPMENT.
8. MOUNT THERMOSTATS 48" TO TOP OF THERMOSTAT ABOVE FINISHED FLOOR. COORDINATE EXACT LOCATION WITH ARCHITECT.
9. PROVIDE 1 YEAR WARRANTY ON ALL WORK.
10. INSTALL FIRE-STOPPING FOR PENETRATIONS OF ALL RATED WALLS AND FLOORS.
11. REPAIR ALL AREAS DAMAGED BY PERFORMING OR REMOVING WORK UNDER THIS CONTRACT.
12. CONTRACTOR RESPONSIBLE FOR VERIFYING, PRIOR TO CONSTRUCTION, ALL EXISTING CONDITIONS, EQUIPMENT CLEARANCES, FITS AND NOTIFYING ENGINEER OF ANY CONFLICTS.
13. ALL WORK SHALL BE FIRST CLASS WITH EMPHASIS ON NEATNESS AND WORKSMANSHIP.
14. SYSTEM SHALL BE BALANCED TO WITHIN 10% OF THE AIR QUANTITIES SPECIFIED ON THE DRAWINGS.
15. SEAL ALL DUCT OPENINGS AND ANNULAR SPACE AT NON-RATED SMOKE "RESISTIVE" PARTITIONS (TYP.)
16. ALL RECTANGULAR AND FLAT OVAL MITERED ELBOWS SHALL INCLUDE INTERNAL TURNING VANES.
17. ALL RELOCATED AIR DEVICES SHALL BE REMOVED AND CLEANED PRIOR TO RE-INSTALLATION.
18. HVAC REVISIONS ARE BASED ON EXISTING 2009 DRAWINGS WITH THE ASSUMPTION OF NO FIELD MODIFICATIONS DURING INSTALLATION. CONTRACTOR TO CONFIRM CURRENT CONDITIONS BEFORE STARTING WORK.

LEGEND

- EXISTING TO BE REMOVED
- EXISTING TO REMAIN
- NEW WORK

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FLOOR PLAN - MECHANICAL

MH110

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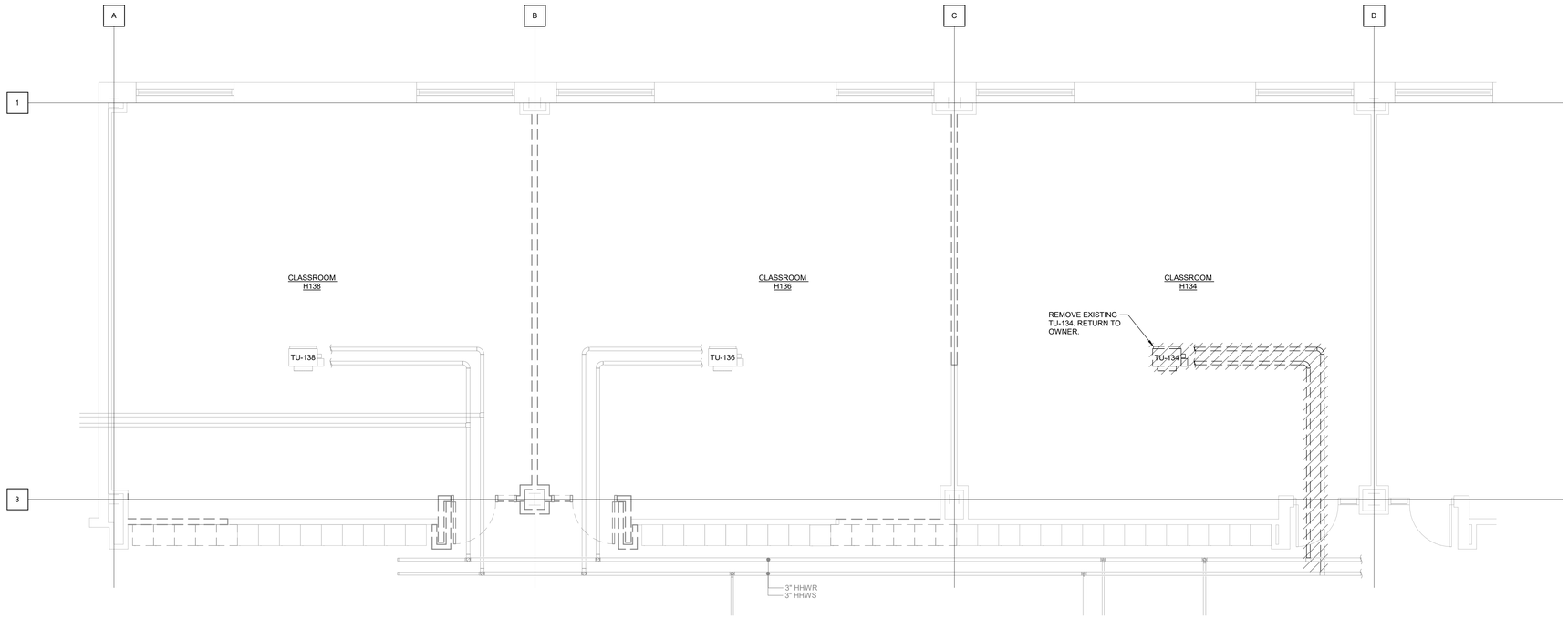
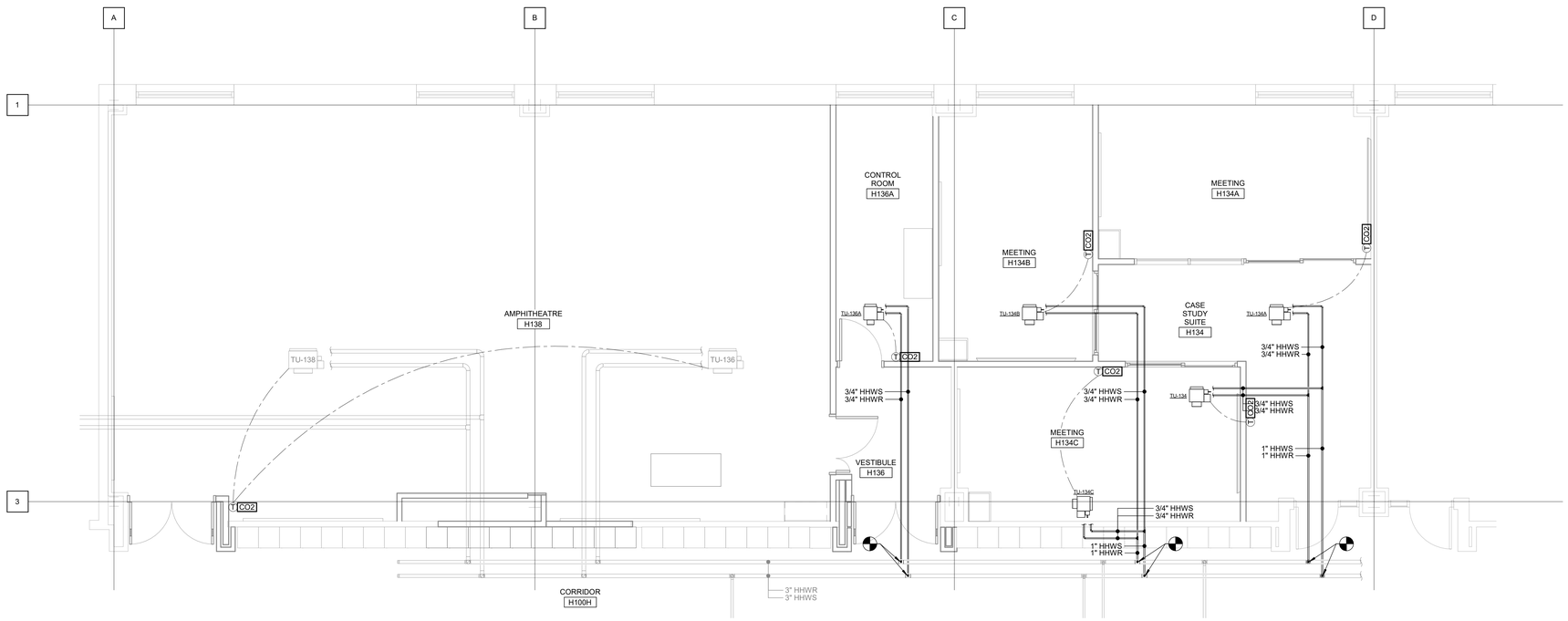


FIRST FLOOR DEMOLITION PLAN - PIPING

SCALE: 1/4" = 1'-0"



FIRST FLOOR NEW WORK PLAN - PIPING

SCALE: 1/4" = 1'-0"

LEGEND

- EXISTING TO BE REMOVED
- EXISTING TO REMAIN
- NEW WORK

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SSOE/SW MANAGER: R. SIEBENALLER

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FLOOR PLAN - MECHANICAL

MP110

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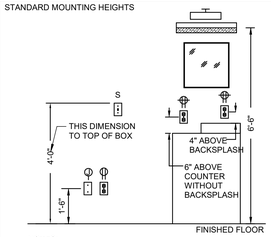
LIGHTING SYMBOLS SCHEDULE

(NOT ALL SYMBOLS USED)

- XXX — LIGHT FIXTURE TYPE, REFER TO LIGHT FIXTURE SCHEDULE
- SURFACE OR PENDANT LIGHT FIXTURE, CHEVRON INDICATED WALL WASH AIMING, SHADING INDICATES EMERGENCY EGRESS LIGHT FIXTURE
- RECESSED LIGHT FIXTURE, CHEVRON INDICATED WALL WASH AIMING, HALF-SHADING INDICATES EMERGENCY EGRESS LIGHT FIXTURE
- SURFACE OR PENDANT LIGHT FIXTURE, HALF-SHADING INDICATES EMERGENCY EGRESS LIGHT FIXTURE
- RECESSED LIGHT FIXTURE, HALF-SHADING INDICATES EMERGENCY EGRESS LIGHT FIXTURE
- RECESSED ARCHITECTURAL LIGHT FIXTURE, HALF-SHADING INDICATES EMERGENCY EGRESS LIGHT FIXTURE
- SURFACE OR CHAIN HUNG STRIP LIGHT FIXTURE, HALF-SHADING INDICATES EMERGENCY EGRESS LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE, HALF-SHADING INDICATES EMERGENCY EGRESS LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE, HALF-SHADING INDICATES EMERGENCY EGRESS LIGHT FIXTURE
- TRACK MOUNTED LIGHT FIXTURE
- EXIT SIGN, PROVIDE ARROWS/CHEVRONS AS INDICATED ON PLANS, SHADED AREA INDICATES FACE, FOOT ON SYMBOL INDICATES WALL MOUNTED, LIGHT HEADS INDICATE COMBINATION EXIT/BATTERY POWERED EMERGENCY LIGHTING UNIT
- BATTERY POWERED EMERGENCY LIGHTING UNIT, LIGHT HEADS ON SIDES OF UNIT INDICATES CEILING MOUNTED
- S_{Xa} — SINGLE POLE SWITCH - 20A, 125/277V UON,
  - 'a' INDICATES WHICH FIXTURES/DEVICES ARE CONTROLLED VIA SWITCH
  - 'X' DENOTES TYPE:
    - BLANK - SINGLE POLE
    - 2 - DOUBLE POLE
    - 3 - THREE WAY
    - 4 - FOUR WAY
    - D - DIMMER
    - K - KEY OPERATED
    - I - ILLUMINATED (ILLUMINATED IN 'OFF' POSITION)
    - P - WITH PILOT LIGHT (LIGHT ON IN 'ON' POSITION)
    - T - TIME SWITCH
    - L - LOW VOLTAGE
    - C - MOMENTARY CONTACT
    - O - WALL BOX OCCUPANCY SENSOR - PASSIVE INFRARED
    - V - WALL BOX VACANCY SENSOR - PASSIVE INFRARED
- (OS)Xa (VS)Xa / (OS)Xa (VS)Xa — OCCUPANCY/VACANCY SENSOR, FOOT ON SYMBOL INDICATES WALL MOUNTED,
  - 'a' INDICATES WHICH FIXTURES ARE CONTROLLED VIA SENSOR
  - 'X' DENOTES TYPE:
    - A - 180° DUAL TECHNOLOGY OCCUPANCY SENSOR
    - B - 360° DUAL TECHNOLOGY OCCUPANCY SENSOR
    - C - 180° PASSIVE INFRARED OCCUPANCY SENSOR
    - D - 360° ULTRASONIC OCCUPANCY SENSOR
- (DS)a (DS)a — DAYLIGHT SENSOR, FOOT ON SYMBOL INDICATES WALL MOUNTED,
  - 'a' INDICATES WHICH FIXTURES ARE CONTROLLED VIA SENSOR
- C — LIGHTING CONTACTOR, SIZE AS INDICATED ON DRAWINGS/DETAIL
- ELTD, GTD — EMERGENCY LOAD/GENERATOR TRANSFER DEVICE
- TC — TIME CLOCK

STANDARD MOUNTING HEIGHTS



NOTES:

1. MOUNTING HEIGHTS SHOWN ARE FROM FINISHED FLOOR TO CENTERLINE OF DEVICE/OUTLET/FIXTURE, UNLESS OTHERWISE NOTED.
2. MOUNTING HEIGHTS, WHERE INDICATED, ON FLOOR PLANS, SHALL TAKE PRECEDENCE OVER THESE MOUNTING HEIGHTS. LOCATIONS OF OUTLETS SHOWN ON ARCHITECTURAL ELEVATIONS SHALL TAKE PRECEDENCE OVER THESE MOUNTING HEIGHTS. FIELD LOCATE OUTLETS WITH ARCHITECT DURING ROUGH-IN.
3. INSTALL OUTLETS THAT ARE IN CLOSE PROXIMITY ON THE SAME CENTERLINE. OUTLETS THAT ARE WITHIN 2'-0" HORIZONTALLY AND WITHIN 1'-0" VERTICALLY SHALL BE INSTALLED ON THE SAME HORIZONTAL CENTERLINE LOCATED HALF WAY BETWEEN THE HEIGHTS SHOWN. OUTLETS THAT ARE MORE THAN 1'-0" APART VERTICALLY SHALL BE INSTALLED ON THE SAME VERTICAL CENTERLINE.
4. MAXIMUM MOUNTING HEIGHT FOR SWITCHES ABOVE A COUNTER TOP 20" DEEP OR LESS IS 48" AFF TO TOP OF BOX. SWITCHES MOUNTED ABOVE COUNTER TOPS DEEPER THAN 20" SHALL BE INSTALLED AT NO MORE THAN 44" ABOVE FINISHED FLOOR TO TOP OF BOX. NOTIFY ARCHITECT WHERE COUNTERTOP PROHIBITS SWITCH INSTALLTION.

POWER SYMBOLS SCHEDULE

(NOT ALL SYMBOLS USED)

- SIMPLEX RECEPTACLE - NEMA 5-20R, HORIZONTAL LINE INDICATES MOUNTED AFC UON, SHADING INDICATES CIRCUITED TO GENERATOR/UPS POWER
- DUPLEX RECEPTACLE - NEMA 5-20R, HORIZONTAL LINE INDICATES MOUNTED AFC UON, SHADING INDICATES CIRCUITED TO GENERATOR/UPS POWER
- DUPLEX RECEPTACLE - NEMA 5-20R, GROUND FAULT INTERRUPTING, HORIZONTAL LINE INDICATES MOUNTED AFC UON, SHADING INDICATES CIRCUITED TO GENERATOR/UPS POWER
- DUPLEX RECEPTACLE - NEMA 5-20R, TAMPER RESISTANT, HORIZONTAL LINE INDICATES MOUNTED AFC UON, SHADING INDICATES CIRCUITED TO GENERATOR/UPS POWER
- SPLIT-WIRED DUPLEX RECEPTACLE - NEMA 5-20R, HORIZONTAL LINE INDICATES MOUNTED AFC UON, SHADING INDICATES CIRCUITED TO GENERATOR/UPS POWER
- COMBINATION DUPLEX RECEPTACLE (NEMA 5-20R)/USB (TYPE A, 2.0), TWO CHARGING USB PORTS, HORIZONTAL LINE INDICATES MOUNTED AFC UON, SHADING INDICATES CIRCUITED TO GENERATOR/UPS POWER
- QUADPLEX RECEPTACLE - NEMA 5-20R, HORIZONTAL LINE INDICATES MOUNTED AFC UON, SHADING INDICATES CIRCUITED TO GENERATOR/UPS POWER (ALL OTHER NEMA 5-20R QUAD RECEPTACLE SYMBOLS FOLLOW SAME STACKED DUPLEX PATTERN)
- SPECIAL RECEPTACLE
  - 'X' DENOTES TYPE:
    - A - (NEMA L5-30R) 125V, 30A, SINGLE PHASE, TWIST-LOCK RECEPTACLE 2 POLE, 3 WIRE
    - B - (NEMA L6-20R) 250V, 20A, SINGLE PHASE, TWIST-LOCK RECEPTACLE 2 POLE, 3 WIRE
    - C - (NEMA L6-30R) 250V, 30A, SINGLE PHASE, TWIST-LOCK RECEPTACLE, 2 POLE, 3 WIRE
    - D - (NEMA L15-20R) 250V, 20A, THREE PHASE, TWIST-LOCK RECEPTACLE 3 POLE, 4 WIRE
    - E - (NEMA L15-30R) 250V, 30A, THREE PHASE, TWIST-LOCK RECEPTACLE, 3 POLE, 4 WIRE
    - F - (NEMA L21-30R) 208Y/120V, 30A, THREE PHASE, TWIST-LOCK RECEPTACLE 4 POLE, 5 WIRE
    - G - (NEMA 14-30R) 125/ 250V SINGLE PHASE RECEPTACLE 3 POLE, 4 WIRE
    - H - (NEMA 14-50R) 125/ 250V SINGLE PHASE RECEPTACLE 3 POLE, 4 WIRE
- CEILING MOUNTED SIMPLEX RECEPTACLE - NEMA 5-20R, SHADING INDICATES CIRCUITED TO GENERATOR/UPS POWER
- CEILING MOUNTED DUPLEX RECEPTACLE - NEMA 5-20R, SHADING INDICATES CIRCUITED TO GENERATOR/UPS POWER
- CEILING MOUNTED SPECIAL RECEPTACLE
  - 'X' DENOTES TYPE:
    - REFER TO WALL MOUNTED SPECIAL RECEPTACLE TYPES ABOVE
- MULTI-OUTLET SURFACE RACEWAY
- SINGLE POINT ELECTRICAL CONNECTION OR AS INDICATED IN CIRCUITING/EQUIPMENT SCHEDULE
- J — JUNCTION BOX, LEG INDICATES WALL/EQUIPMENT MOUNTING IS REQUIRED, SQUARE INDICATES FLOOR MOUNTED
- S_M — MANUAL MOTOR STARTER/DISCONNECT SWITCH WITH THERMAL OVERLOAD PROTECTION
- ENCLOSED DISCONNECT SWITCH, SHADING INDICATES SWITCH IS FUSIBLE
- CB — ENCLOSED CIRCUIT BREAKER
- COMBINATION MAGNETIC MOTOR CONTROLLER/STARTER, SHADING INDICATES STARTER IS FUSIBLE
- MAGNETIC MOTOR CONTROLLER
- VFD — VARIABLE FREQUENCY DRIVE (FURNISHED BY OTHERS)
- PUSHBUTTON STATION
- MOTOR
- ATS — AUTOMATIC TRANSFER SWITCH
- MTS — MANUAL TRANSFER SWITCH
- M — UTILITY METER
- T — TRANSFORMER
- DISTRIBUTION PANEL
- BRANCH CIRCUIT PANELBOARD
- MOTOR CONTROL CENTER
- CP — CONTROL PANEL/CONTROL POWER PANEL (FURNISHED BY OTHERS)
- PS — POWER SUPPLY
- GA — GENERATOR ANNUNCIATOR
- BMS — BUILDING MANAGEMENT SYSTEM PANEL (FURNISHED BY OTHERS)
- FACP — FIRE ALARM CONTROL PANEL (FURNISHED BY OTHERS)
- FAA — FIRE ALARM ANNUNCIATOR (FURNISHED BY OTHERS)
- FNAC — FIRE ALARM NOTIFICATION APPLIANCE CIRCUIT PANEL (FURNISHED BY OTHERS) EDIT ITEMS IN () TO SUIT PROJECT
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- RP1-1,3,5 — INDICATES CIRCUITS TO PANEL, 'RP1' INDICATES PANEL DESIGNATION AND '1,3,5' INDICATED POLE POSITION(S)
- X#FY, X#FYG., Z"C. — 'X' INDICATES QUANTITY AND 'Y' INDICATES SIZE OF CONDUCTORS, Z INDICATES CONDUIT SIZE
- RP1 — PANEL TAG, i.e. CIRCUITS WITHIN AREA WHERE TAG IS LOCATED ON PLAN ARE CIRCUITED TO PANEL 'RP1' UON

FIRE ALARM SYMBOL SCHEDULE

(NOT ALL SYMBOLS USED)

- FACP — FIRE ALARM CONTROL PANEL, MH=6'-0" AFF TO TOP OF PANEL UNO
- F — FIRE ALARM MANUAL STATION, MH=4'-0" AFF UNO
- FIRE ALARM SMOKE DETECTOR, CEILING MOUNTED
- FIRE ALARM SPEAKER WITH STROBE, MH=6'-8" AFF UNO
- FIRE ALARM SPEAKER WITH STROBE, CEILING MOUNTED
- FIRE ALARM SPEAKER, MH=10'-0" AFF UNO
- C — FIRE ALARM SPEAKER, CEILING MOUNTED
- FIRE ALARM STROBE, MH=6'-8" AFF UNO
- FIRE ALARM STROBE, CEILING MOUNTED

DATA SYMBOL SCHEDULE

(NOT ALL SYMBOLS USED)

- W — TELEPHONE OUTLET, FLUSH MOUNTED, MH=5'-0" AFF UNO
- # — TELEPHONE OUTLET, FLUSH MOUNTED, # = QUANTITY OF CABLES, MH=1'-4" AFF UNO
- # — TELEPHONE AND DATA OUTLET, FLUSH MOUNTED, # = QUANTITY OF CABLES, MH=1'-4" AFF UNO
- # — DATA OUTLET, FLUSH MOUNTED, # = QUANTITY OF CABLES, MH=1'-4" AFF UNO
- # — TELEPHONE OUTLET, WIREWAY MOUNTED, # = QUANTITY OF CABLES, MH=3'-6" AFF UNO
- # — TELEPHONE AND DATA OUTLET, WIREWAY MOUNTED, # = QUANTITY OF CABLES, MH=3'-6" AFF UNO
- # — DATA OUTLET(S), WIREWAY MOUNTED, # = QUANTITY OF CABLES, MH=3'-6" AFF UNO
- # — DATA FLOORBOX, # = QUANTITY OF CABLES, 1-1/4" CONDUIT STUBBED TO ABOVE ACCESSIBLE CEILING UNO WHERE APPLICABLE, STUB CONDUIT UP TO TV LOCATION.
- TV — TV AND MOUNTING BRACKET, ONE CAT-6 DATA CABLE FROM IT ROOM. MH=70" AFF UNO.
- AV — AUDIO/VISUAL SYSTEM CONTROL PANEL. ONE CAT-6 DATA CABLE FROM IT ROOM. MH=48" AFF UNO.

ABBREVIATION SYMBOLS SCHEDULE

(NOT ALL SYMBOLS USED)

A, AMP	AMPERES
AF	AMP FRAME - CIRCUIT BREAKER; AMP FUSE - FUSED SWITCH
AFC	ABOVE FINISHED CABINET/COUNTER
AFI	ARC FAULT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AT	AMPERES TRIP
ATS	AUTOMATIC TRANSFER SWITCH
C	CONDUIT
CM	COFFEE MAKER/MACHINE
CP	COPIER
CPT	CONTROL POWER TRANSFORMER
CR	CRITICAL / CRITICAL BRANCH EMERGENCY
CT	CURRENT TRANSFORMER
CU	COPPER
DW	DISHWASHER
(E)	EXISTING TO REMAIN
EC	ELECTRICAL CONTRACTOR
EG	EQUIPMENT GROUND
EM	EMERGENCY
EPO	EMERGENCY POWER OFF
EO	ELECTRICALLY OPERATED
EQ	EQUIPMENT BRANCH EMERGENCY
EWC	ELECTRIC WATER COOLER
FLA	FULL LOAD AMPERES
G, GND	GROUND
GD	GARBAGE DISPOSAL
GFI	GROUND FAULT INTERRUPTER
H	HORIZONTAL/HORIZONTALLY MOUNTED
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
IM	ICE MACHINE
KV	KILOVOLT
KVA	KILOVOLT-AMPERES
KW	KILOWATT
KWH	KILOWATT-HOURS
LTS	LIGHTS
LS	LIFE SAFETY BRANCH EMERGENCY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MECHANICAL CONTROL POWER
MLO	MAIN LUGS ONLY
MW	MICROWAVE
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT - FIXTURE CONTROLLED AT BRANCH CIRCUIT BREAKER
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
P	POLE
PH	PHASE
PT	POTENTIAL TRANSFORMER
(R)	RELOCATED
RECEPT	RECEPTACLE
REF	REFRIGERATOR
(RR)	REMOVE AND RELOCATE
TR	TAMPER-RESISTANT
TYP	TYPICAL OF LIKE DEVICES IN SAME AREA
UON, UNO	UNLESS OTHERWISE NOTED
UPS	UNINTERUPTABLE POWER SUPPLY
V	VOLTS
VB	VIEWBOX
VD	VENDING
W	WIRE
WP	WEATHERPROOF WHILE IN USE COVER/ENCLOSURE, NEMA 3R UON
XFMR	TRANSFORMER
XP, EP	EXPLOSION PROOF
(XRP)	EXISTING, REMOVE AND REPLACE WITH NEW IN SAME LOCATION

DRAWING CONVENTIONS

- NEW WORK
- (E) EXISTING TO REMAIN
- EXISTING TO REMOVE (DEMOLISHED)

FLOOR BOX SCHEDULE

DEVICE	DESCRIPTION
FB1	FULLY ADJUSTABLE ALUMINUM AND APPROVED FOR USE IN CONCRETE FLOOR APPLICATIONS AS REQUIRED. TUNNEL COMPARTMENT WITH RECEPTACLE BRACKETS. GRAY DIE-CAST ALUMINUM FLANGED COVER. FOUR INDEPENDANT WIRING COMPARTMENTS THAT ALLOW CAPACITY FOR UP TO (4) FOUR DUPLEX RECEPTACLES, COMMUNICATIONS SERVICES OR COMBINATION OF DEVICES. PROVIDE (2) 5-20R SPECIFICATION GRADE RECEPTACLE. ROUTE (1) 3/4"C.TO FLOOR BOX FOR POWER. ROUTE (3) 1" CONDUIT WITH NYLON BUSHING ENDS FOR DATA/AV PROVISIONS. PROVIDE BLANK COVER PLATES FOR UNUSED OPENINGS. COORDINATE COMMUNICATION PROVISIONS WITH SPECIAL SYSTEMS CONTRACTOR AND OWNER FOR ADDITIONAL REQUIREMENTS. WIREMOLD RFB4 SERIES. COORDINATE WITH ARCHITECTURAL TRADES AND OWNER FOR COVER STYLE AND FINISH. PROVIDE FIRE RATED BOX ON UPPER FLOORS AS REQUIRED.
FB2	FULLY ADJUSTABLE 3-GANG NON-METALIC FLOOR BOX FOR FURNITURE FEED. APPROVED FOR USE IN CONCRETE FLOOR APPLICATIONS AS REQUIRED. ROUTE (1) 3/4"C.TO FLOOR BOX FOR POWER PROVISION, AND (2) 1" CONDUITS WITH NYLON BUSHING ENDS FOR COMMUNICATION PROVISIONS. COORDINATE WITH SPECIAL SYSTEMS CONTRACTOR AND OWNER FOR ADDITIONAL REQUIREMENTS. WIREMOLD 800MP SERIES. COORDINATE WITH ARCHITECTURAL TRADES AND OWNER FOR COVER STYLE AND FINISH. PROVIDE FIRE RATED BOX ON UPPER FLOORS AS REQUIRED.
FB3	FULLY ADJUSTABLE 4-GANG NON-METALIC FLOOR BOX FOR FURNITURE FEED. APPROVED FOR USE IN CONCRETE FLOOR APPLICATIONS AS REQUIRED. ROUTE (1) 3/4"C.TO FLOOR BOX FOR POWER PROVISION, AND (3) 1" CONDUITS WITH NYLON BUSHING ENDS FOR COMMUNICATION PROVISIONS. COORDINATE WITH SPECIAL SYSTEMS CONTRACTOR AND OWNER FOR ADDITIONAL REQUIREMENTS. WIREMOLD 800MP SERIES. COORDINATE WITH ARCHITECTURAL TRADES AND OWNER FOR COVER STYLE AND FINISH. PROVIDE FIRE RATED BOX ON UPPER FLOORS AS REQUIRED.

ELECTRICAL NOTES

1. THESE DRAWINGS ARE A PART OF A COMPLETE SET OF ARCHITECTURAL/ENGINEERING CONTRACT DOCUMENTS. ELECTRICAL CONTRACTOR SHOULD REFER TO THE ARCHITECTURAL PLANS FOR WALL DEFINITIONS, ELEVATIONS, CASEWORK, REFLECTED CEILING PLAN, ETC.
2. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH THE NEC AND LOCAL ORDINANCES INCLUDING ALL REQUIREMENTS OF APPLICABLE CODES. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS.
3. ALL BRANCH CIRCUIT CONDUIT SHALL BE GALVANIZED EMT, JOINED AND TERMINATED WITH STEEL SET SCREW FITTINGS, 3/4" CONDUIT MINIMUM.
4. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION JOINT FITTINGS.
5. VERIFY LOCATION OF ALL FLOOR OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.
6. ALL WALL OUTLETS NOT PROVIDED WITH A DEVICE BY THIS CONTRACTOR SHALL BE PROVIDED WITH BLANK WALL PLATES.
7. MULTI-WIRE BRANCH CIRCUITS ARE PROHIBITED UNLESS SPECIFICALLY NOTED OTHERWISE.
8. PRIOR TO BID, THE CONTRACTOR SHALL VISIT SITE TO SURVEY EXISTING CONDITIONS AFFECTING WORK. INCLUDE NECESSARY MATERIALS AND LABOR TO ACCOMPLISH THE ELECTRICAL WORK, INCLUDING RELOCATION OF EXISTING EQUIPMENT TO ALLOW FOR NEW CONSTRUCTION. ANY CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER AND RESOLVED PRIOR TO BID. WORK SHALL BE COORDINATED WITH ALL OTHER TRADES.
9. FINAL EQUIPMENT CONNECTIONS - THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR AND MATERIALS REQUIRED TO MAKE FINAL CONNECTIONS TO ALL EQUIPMENT FURNISHED BY THIS CONTRACTOR AND/OR EQUIPMENT FURNISHED BY OTHERS. VERIFY ALL REQUIREMENTS, CONDUCTOR SIZE, OVERCURRENT PROTECTION, PHASE, VOLTAGE, MOTOR ROTATION, ETC., WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN. PROVIDE FUSED DISCONNECT IF REQUIRED BY MANUFACTURER.
10. SEE STANDARD MOUNTING HEIGHT DETAIL, THIS SHEET, FOR TYPICAL MOUNTING HEIGHTS.
11. TYPE "ENT" ELECTRICAL NON-METALLIC CONDUIT SHALL NOT USED.
12. PROVIDE ACCESS PANELS IN GYPBOARD CEILINGS WHERE ACCESS TO JUNCTION BOXES IS REQUIRED.
13. PROVIDE A MINIMUM OF (1) 3/4"C. STUBBED TO ABOVE ACCESSIBLE CEILING FOR ALL AUXILIARY DEVICES, UON.
14. ALL 120V RECEPTACLE OUTLETS WITHIN 6FT OF A SINK SHALL BE GFCI PROTECTED.
15. VERIFY ALL DOOR SWINGS W/ ARCHITECT PRIOR TO ROUGH-IN OF SWITCHES.
16. ALL TRANSFORMERS ARE 480V, 3PH, 3W DELTA PRIMARY, 208Y/120V, 3PH, 4W WYE SECONDARY, UON. SEE WIRING DIAGRAM.

SSOE | S&W

PROFESSIONAL SEALS:

SUBMITTAL/REVISION SCHEDULE:

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□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:

SAGINAW VALLEY STATE UNIVERSITY

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7400 BAY ROAD
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48710

PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

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ELECTRICAL LEGEND, SYMBOLS, & NOTES

EA001

LIGHTING FIXTURE SCHEDULE

TYPE	LAMPS	LUMENS	VOLTAGE	MAX VA	DESCRIPTION	BOD MANUFACTURER	BOD MODEL	COMMENTS
LD4	LED, 3500K	3555 lm	277 V	32 VA	2'X2' GRID TROFFER WITH DIE-FORMED STEEL HOUSING, HIGH TRANSMISSION A12 ACRYLIC DIFFUSER, 0-10V, 10% DIMMABLE DRIVER.	LITHONIA	CPX 2X2 3200LM 80CRI 35K A12 MIN1ZT MVOLT	
LD4E	LED, 3500K	3555 lm	277 V	32 VA	SAME AS LD4 EXCEPT BATTERY BACK-UP, 1400 LUMENS.	LITHONIA	CPX 2X2 3200LM 80CRI 35K A12 MIN1ZT MVOLT	
LL1	LED 3500K	3104 lm	277 V	27 VA	4' X 5" RECESSED LINEAR LED LUMINAIRE SUITABLE FOR LAY IN GRID CEILINGS. EXTRUDED ALUMINUM TRIM AND SIDEWALL WITH 20-GUAGE STEEL TOP PLATE AND TEXTURED MATTE WHITE TRIM. FLUSH FROSTED WHITE SEAMLESS SATIN LENS DISTRIBUTION WITH LOW OUTPUT. LUMINAIRE COMPLETE WITH 0-10V DIMMING DRIVER DOWN TO 10% MIN.	FINELITE	H04-R RO 4' V 835 OPN 277V SC SE C2	
LL1E	LED 3500K	3104 lm	277 V	27 VA	SAME AS FIXTURE LL1 EXCEPT CONNECTED TO REMOTE EMERGENCY BATTERY EQUAL TO ISOLITE #EMO-25-TF-F2, INSTALL IN FIELD.	FINELITE	H04-R RO 4' V 835 OPN 277V SC SE C2	
XX1	LED RED		277 V	3 VA	SINGLE FACE SURFACE MOUNTED LED EDGE LIT EXIT SIGN. RED LETTERS ON MIRRORED BACKGROUND. LED'S MOUNTED ON PRINTED CIRCUIT BOARD. AC POWERED. LUMINAIARE SHALL NOT EXCEED 3 WATTS IN POWER.	SURE LITES	EU SERIES	

LIGHTING CONTROL SCHEDULE

ROOM NUMBER	CONTROL		AUTOMATIC ON/OFF CONTROL			BI-LEVEL CONTROL	DAYLIGHT			FULL OFF TIME	LIFE SAFETY LIGHTING CONTROL	COMMENTS
	SWITCH TYPE	SWITCH CONTROLS	TYPE	SENSOR	TURN LIGHITNG ON TO %		SIDE LIGHT	TOP LIGHT	MAINTAIN FC LEVEL			
H138, H134A, H134B, H134C	LOW VOLTAGE	ON/OFF/DIM	MOTION SENSOR	MANUAL ON/ AUTO OFF	50%	CONTINUOUS 0-10V	NA	N/A	-	30 MIN	UL924 DEVICE	WALL SWITCH SHALL BE PROGRAMMED TO TURN LIGHTS ON TO NO MORE THAN 50% POWER.
H134, H136A, H136	LINE VOLTAGE	ON/OFF	MOTION SENSOR	MANUAL ON/AUTO OFF	100%	NA	NA	NA	-	30 MIN	UL924 DEVICE	

NOTES:

1. LIGHTING CONTROLS HAVE BEEN DESIGNED TO MEET THE REQUIRMENTS OF ASHRAE 2010.
2. DAYLIGHT HARVESTING (WHERE APPLICABLE AT SIDE LIGHTING LOCATIONS) SHALL CONSIST OF TWO DIMMING CONTROL ZONES; A PRIMARY ZONE AND A SECONDARY ZONE, AT SIDELIGHT WINDOW LOCATIONS. THE PRIMARY ZONE OF DIMMING CONTROL SHALL BE ONE WINDOW HEAD HEIGHT INTO THE SPACE AND SHALL INCLUDE A TWO FOOT AREA ON EITHER SIDE OF THE SIDELIGHT WINDOWS. THE SECONDARY ZONE OF DIMMING CONTROL SHALL BE ONE ADDITIONAL WINDOW HEAD HEIGHT BEYOND THE PRIMARY ZONE.
3. LIGHTING CONTROLS SHALL BE WIRED, WIRELESS OR A COMBINATION OF BOTH, AS INDICATED IN THE ABOVE SCHEDULE. APPROVED MANUFACTURER SHALL SUBMIT LAYOUTS WITH DEVICES, TYPE, AND LOCATIONS SHOWN ON PLANS TO ENGINEER/LIGHTING DESIGNER FOR CONFIRMATION OF COVERAGE.
4. UNLESS OTHERWISE NOTED, PHOTOCELLS CONTROLLING DIMMING/DAYLIGHT HARVESTING SHALL BE CLOSED LOOP SENSORS.
5. PROVIDE ALL POWER PACKS AND WIRING AS REQUIRED FOR A COMPLETE INSTALLATION.
6. FLOOR PLANS ARE DIAGRAMMATIC IN NATURE, EXACT LAYOUTS AND QUANTITIES SHALL BE COORDINATED WITH LIGHTING CONTROLS VENDOR.

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SSOE/SW MANAGER: R. SIEBENALLER

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LUMINAIRE SCHEDULE & NOTES

EA002

COPPER CIRCUIT LENGTH TABLE. 480V 3PH
(NOTES 3,4,5)

OVERCURRENT DEVICE RATING	MAX. CIRCUIT LOAD (AMPS)	MINIMUM AMPERAGE RATING OF WIRE REQUIRED FOR LENGTH INDICATED																								ONE WAY MAXIMUM CIRCUIT LENGTH
		20A	30A	40A	50A	70A	80A	90A	100A	150A	175A	200A	225A	250A	300A	350A	400A	450A	500A	600A	700A	800A	1000A	1200A	1600A	2000A	
20A	16	250'	415'	645'	1025'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
30A	24	-	275'	425'	680'	1060'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
40A	32	-	-	320'	510'	800'	1000'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
50A	40	-	-	-	410'	640'	780'	960'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
70A	56	-	-	-	-	455'	560'	690'	840'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
80A	64	-	-	-	-	-	490'	600'	735'	950'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
90A	72	-	-	-	-	-	-	535'	655'	850'	990'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
100A	80	-	-	-	-	-	-	-	590'	755'	880'	1070'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
150A	120	-	-	-	-	-	-	-	-	505'	588'	710'	840'	-	-	-	-	-	-	-	-	-	-	-	-	-	
175A	140	-	-	-	-	-	-	-	-	-	500'	600'	710'	780'	-	-	-	-	-	-	-	-	-	-	-	-	
200A	160	-	-	-	-	-	-	-	-	-	-	525'	620'	685'	830'	-	-	-	-	-	-	-	-	-	-	-	
225A	180	-	-	-	-	-	-	-	-	-	-	-	550'	605'	750'	885'	-	-	-	-	-	-	-	-	-	-	
250A	200	-	-	-	-	-	-	-	-	-	-	-	-	530'	650'	770'	820'	-	-	-	-	-	-	-	-	-	
300A	240	-	-	-	-	-	-	-	-	-	-	-	-	-	540'	635'	685'	820'	-	-	-	-	-	-	-	-	
350A	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	545'	585'	705'	765'	-	-	-	-	-	-	-	
400A	320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	615'	670'	815'	-	-	-	-	-	-	
450A	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	550'	600'	725'	850'	-	-	-	-	-	
500A	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	535'	650'	765'	820'	-	-	-	-	
600A	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	545'	640'	680'	820'	-	-	-	
700A	560	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	550'	580'	750'	875'	-	-	
800A	640	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	650'	760'	1020'	-	
1000A	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	525'	610'	815'	1010'	
1200A	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	680'	850'	
1600A	1280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	680'	
2000A	1600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	510'	

COPPER FEEDER & BRANCH CIRCUIT SIZING SCHEDULE
(NOTES 1,2,6,7,8)

OVERCURRENT DEVICE RATING	SETS PER PHASE	AWG OR KCMIL		CONDUIT SIZE	
		PHASE & NEUTRAL	EG	3 WIRE (3W) (3PH)	4 WIRE (4W) (3PH & 1N)
20A	1	12	12	3/4"	3/4"
30A	1	10	10	3/4"	3/4"
40A	1	8	10	3/4"	3/4"
50A	1	6	10	3/4"	1"
60A	1	4	10	1"	1-1/4"
70A	1	4	8	1"	1-1/4"
100A	1	2	8	1-1/4"	1-1/4"
110A	1	2	6	1-1/4"	1-1/4"
125A	1	1	6	1-1/4"	1-1/2"
150A	1	1/0	6	1-1/2"	1-1/2"
175A	1	2/0	6	1-1/2"	2"
200A	1	3/0	6	2"	2"
225A	1	4/0	4	2"	3"
250A	1	250	4	2"	3"
300A	1	350	4	3"	3"
400A	1	500	2	3"	3"
450A	2	4/0	2	2"	3"
500A	2	250	2	2"	3"
600A	2	350	1	3"	3"
800A	2	500	1/0	3"	3"
1000A	3	500	2/0	3"	3"
1200A	3	600	3/0	3"	4"
1600A	4	600	4/0	3"	4"
2000A	5	600	250	3"	4"

SHEET NOTES

1. AMPACITIES BASED ON THHN/THWN, 90° , 600V., INSULATED, COPPER WIRE APPLIED AT 60° TERMINATIONS FOR CIRCUITS RATED 110A AND DOWN AND APPLIED AT 75° TERMINTATIONS FOR CIRCUITS RATED ABOVE 110A PER NEC 110.14(C)(1).
2. BASED ON WIRE OUTSIDE DIAMETERS AND NON-RIGID METALLIC CONDUIT INSIDE DIAMETERS AS PROVIDED IN THE NEC. REFER TO NEC FOR CONDUIT TYPES MORE RESTRICTIVE THAN NON-RIGID METALLIC. CONDUCTOR AND CONDUIT SIZES INDICATED ARE MINIMUM REQUIREMENTS. FOLLOW NEC REQUIRMENTS FOR DERATING AND PROVIDE LARGER CONDUCTORS AND CONDUIT WHERE APPLICABLE.
3. CIRCUIT MAXIMUM DISTANCE IS BASED ON NEC CHAPTER 9, TABLE 8 CONDUCTOR PROPERTIES FOR COATED COPPER AT 75 DEGREES CELSIUS. REFER TO NEXT LARGER OVERCURRENT DEVICE RATING IN THIS TABLE FOR OVERCURRENT DEVICES WITH RATINGS NOT INDICATED.
4. MAXIMUM CIRCUIT LOAD FOR DISTANCE IS BASED ON NEC 220-10.
5. REFER TO CIRCUIT SIZING SCHEDULE ON THIS SHEET FOR UPSIZING CONDUIT AND WIRING, E.G. SHALL BE INCREASED IN SIZE PROPORTIONATELY PER THE NEC. ONLY CONDUCTORS AND CONDUIT SHALL BE INCREASED IN SIZE. OVERCURRENT PROTECTION DEVICE SHALL REMAIN AS SPECIFIED.
6. WHERE OVERCURRENT DEVICE REQUIRED IS NOT LISTED IN TABLE, USE CONDUIT AND WIRE REQUIREMENTS LISTED FOR NEXT LARGER LISTED OVERCURRENT DEVICE.
7. TABLE IS NOT APPLICABLE FOR SERVICE ENTRANCE FEEDERS. REFER TO ELECTRICAL PLANS AND DIAGRAMS FOR SERVICE ENTRANCE FEEDER REQUIREMENTS.
8. REFER TO CIRCUIT SIZING SCHEDULE ON THIS SHEET FOR CONDUIT AND WIRING REQUIREMENTS ASSOCIATED WITH CIRCUIT SIZES NOTED IN THIS TABLE.

CIRCUIT LENGTH TABLE. 120V 1PH
(NOTES 3,4,5)

OVERCURRENT DEVICE RATING	MAX. CIRCUIT LOAD (AMPS)	CIRCUIT SIZE					ONE WAY CIRCUIT LENGTH
		20A	30A	40A	50A	70A	
20A	4	215'	360'	555'	880'	-	
	8	105'	180'	275'	440'	700'	
	12	70'	120'	185'	295'	465'	
	16	50'	90'	140'	220'	350'	
30A	24	-	60'	90'	145'	230'	
40A	32	-	-	70'	110'	175'	
50A	40	-	-	-	85'	140'	
60A	48	-	-	-	-	115'	

CIRCUIT LENGTH TABLE. 208V 1PH
(NOTES 3,4,5)

OVERCURRENT DEVICE RATING	MAX. CIRCUIT LOAD (AMPS)	CIRCUIT SIZE					ONE WAY CIRCUIT LENGTH
		20A	30A	40A	50A	70A	
20A	4	375'	625'	965'	-	-	
	8	185'	310'	480'	765'	-	
	12	125'	205'	320'	510'	810'	
	16	90'	155'	240'	380'	605'	
30A	24	-	100'	160'	255'	405'	
40A	32	-	-	120'	190'	300'	
50A	40	-	-	-	150'	240'	
60A	48	-	-	-	-	200'	

CIRCUIT LENGTH TABLE. 208V 3PH
(NOTES 3,4,5)

OVERCURRENT DEVICE RATING	MAX. CIRCUIT LOAD (AMPS)	CIRCUIT SIZE					ONE WAY CIRCUIT LENGTH
		20A	30A	40A	50A	70A	
20A	4	435'	720'	1115'	-	-	
	8	215'	360'	555'	880'	-	
	12	145'	240'	370'	590'	935'	
	16	105'	180'	275'	440'	700'	
30A	24	-	120'	185'	295'	465'	
40A	32	-	-	135'	220'	350'	
50A	40	-	-	-	175'	275'	
60A	48	-	-	-	-	230'	

CIRCUIT LENGTH TABLE. 277V 1PH
(NOTES 3,4,5)

OVERCURRENT DEVICE RATING	MAX. CIRCUIT LOAD (AMPS)	CIRCUIT SIZE					ONE WAY CIRCUIT LENGTH
		20A	30A	40A	50A	70A	
20A	4	500'	830'	1290'	-	-	
	8	250'	415'	645'	1010'	-	
	12	165'	275'	430'	675'	1065'	
	16	125'	205'	320'	510'	805'	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	

PROFESSIONAL SEALS:

SUBMITTAL/REVISION SCHEDULE:

NO.	DATE	DESCRIPTION
0	12-02-2022	ISSUE FOR CONSTRUCTION

■ APPROVED FOR CONSTRUCTION
□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:

SAGINAW VALLEY STATE UNIVERSITY

7400 BAY ROAD
UNIVERSITY CENTER, MICHIGAN
48710

PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

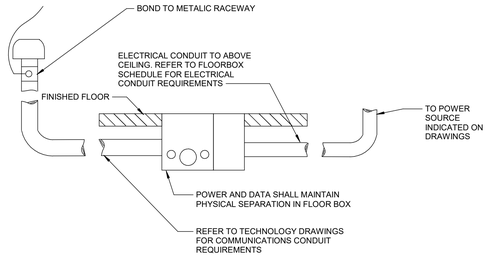
UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

SSOE | STEVENS & WILKINSON
1050 Wilshire Drive, Suite 260
Troy, MI 48084-1526
T. (248) 643-6222

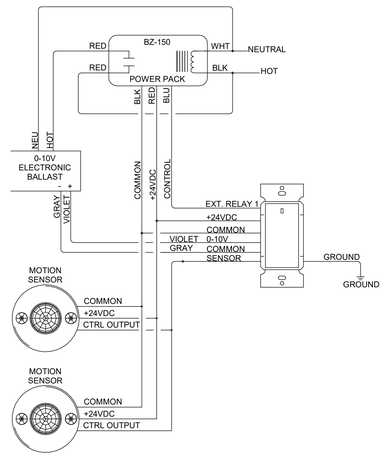
ELECTRICAL CIRCUIT & CONDUIT SIZING SCHEDULES

EA003



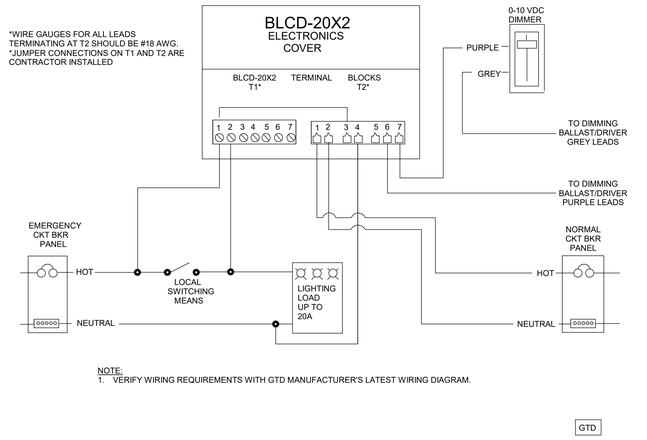
1 EP110 **FLOOR BOX MOUNT**

SCALE: NOT TO SCALE



2 EL110 **MOTION SENSOR - 0-10V SINGLE LOAD**

SCALE: NOT TO SCALE



3 EL110 **EMERGENCY LIGHTING GENERATOR TRANSFER DEVICE WIRING (GTD)**

SCALE: NOT TO SCALE

4 EL110 **RECESSED GRID TROFFER LIGHT FIXTURE INSTALLATION**

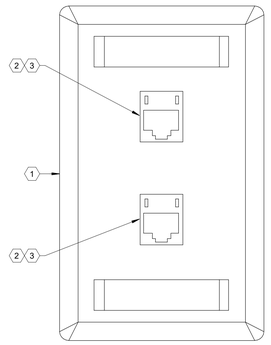
SCALE: NOT TO SCALE

6 EP110 **ELECTRICAL/COMMUNICATION BACKBOX**

SCALE: NOT TO SCALE

CAT-6 JACK COLOR CODING:

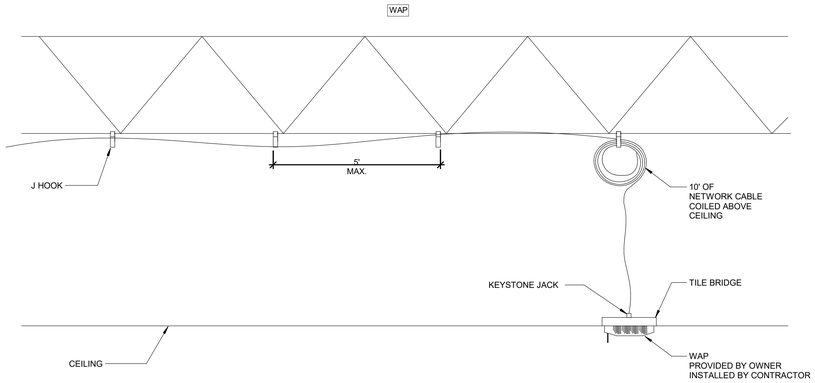
WORK AREA OUTLETS = ORANGE
SECURITY AND CAMERAS = GREEN
WIRELESS ACCESS POINTS = RED
OTHER SYSTEMS (AV & BMS) = GREY



ITEM	QTY	DESCRIPTION
1	1	SINGLE GANG FACEPLATE "BELDEN GRAY MEDIAFLEX"
2	AS INDICATED	CAT6, JACK - BELDEN MEDIAFLEX - COLOR AS INDICATED
3	AS INDICATED	CAT6, PLENUM CABLE - BELDEN 3600 CAT6 BLUE

8 **FACEPLATE DETAIL - 2 PORT FLUSH**

SCALE: NOT TO SCALE



9 **WIRELESS ACCESS POINT DETAIL**

SCALE: NOT TO SCALE

PROFESSIONAL SEALS:

SUBMITTAL/REVISION SCHEDULE:

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0	12-02-2022	ISSUE FOR CONSTRUCTION

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ELECTRICAL DETAILS

EA004

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ELECTRICAL GENERAL REQUIREMENT:

A. SCOPE OF WORK: ALL MATERIAL SHALL BE NEW UNLESS OTHERWISE INDICATED. FURNISH ALL LABOR, EQUIPMENT, TECHNICAL SUPERVISION, AND INCIDENTAL SERVICES REQUIRED TO COMPLETE, TEST AND LEAVE READY FOR OPERATION THE ELECTRICAL SYSTEMS AS SPECIFIED AND AS INDICATED ON DRAWINGS.

B. ORDINANCES AND CODES: PERFORM ALL WORK IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL ORDINANCES AND REGULATIONS, THE RULES AND REGULATIONS OF NFPA, NECA, AND UL UNLESS OTHERWISE INDICATED.

C. UNLESS OTHERWISE INDICATED, ALL REQUIRED PERMITS, LICENSES, INSPECTIONS, APPROVALS AND FEES FOR ELECTRICAL WORK SHALL BE SECURED AND PAID FOR BY THE CONTRACTOR. ALL WORK SHALL CONFORM TO ALL APPLICABLE CODES, RULES AND REGULATIONS.

D. THE DRAWINGS SHOW THE LOCATION AND GENERAL ARRANGEMENT OF EQUIPMENT, ELECTRICAL SYSTEMS AND RELATED ITEMS. THEY SHALL BE FOLLOWED AS CLOSELY AS ELEMENTS OF NEW CONSTRUCTION WILL PERMIT.

E. EXAMINE THE DRAWINGS OF OTHER TRADES AND VERIFY THE CONDITIONS GOVERNING THE WORK ON THE JOB SITE. ARRANGE WORK ACCORDINGLY, PROVIDING LABOR AND MATERIALS AS MAY BE REQUIRED TO MEET SUCH CONDITIONS.

F. COORDINATE ARRANGEMENT, MOUNTING AND SUPPORT OF ELECTRICAL EQUIPMENT WITH OTHER TRADES.

G. VISIT THE SITE, EXAMINE AND VERIFY THE CONDITIONS UNDER WHICH THE WORK MUST BE CONDUCTED BEFORE SUBMITTING PROPOSAL THE SUBMISSION OF A PROPOSAL IMPLIES THAT THE CONTRACTOR HAS VISITED THE SITE AND UNDERSTANDS THE CONDITIONS UNDER WHICH THE WORK MUST BE CONDUCTED. NO ADDITIONAL CHARGES WILL BE ALLOWED BECAUSE OF FAILURE TO MAKE THIS EXAMINATION OR TO INCLUDE ALL MATERIALS AND LABOR TO COMPLETE THE WORK.

H. BIDS SHALL BE BASED UPON MANUFACTURED EQUIPMENT SPECIFIED. VOLUNTARY ALTERNATES MAY BE SUBMITTED FOR CONSIDERATION, WITH LISTED ADDITION OR DEDUCTION TO THE BID.

I. WARRANTY: CONTRACTOR SHALL WARRANTY THAT THE ELECTRICAL INSTALLATION IS FREE FROM DEFECTS AND AGREES TO REPLACE OR REPAIR, TO THE OWNER'S SATISFACTION, ANY PART OF THIS ELECTRICAL INSTALLATION WHICH BECOMES DEFECTIVE WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION FOLLOWING FINAL ACCEPTANCE, PROVIDED THAT SUCH FAILURE IS DUE TO DEFECTS IN THE EQUIPMENT, MATERIAL WORKMANSHIP OR FAILURE TO FOLLOW THE CONTRACT DOCUMENTS.

J. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY TEMPORARY SERVICES INCLUDING EQUIPMENT AND INSTALLATION REQUIRED TO MAINTAIN OPERATION AS A RESULT OF ANY EQUIPMENT FAILURE OR DEFECT DURING WARRANTY PERIOD.

K. FILE WITH THE OWNER ANY AND ALL WARRANTIES FROM THE EQUIPMENT MANUFACTURERS INCLUDING THE OPERATING CONDITIONS AND PERFORMANCE CAPACITIES THEY ARE BASED ON.

L. IN GENERAL DEMOLITION WORK IS INDICATED ON THE DRAWINGS. HOWEVER, THE CONTRACTOR SHALL VISIT THE JOB SITE TO DETERMINE THE FULL EXTENT AND CHARACTER OF THIS WORK.

M. UNLESS SPECIFICALLY NOTED TO THE CONTRARY, REMOVED MATERIALS SHALL NOT BE REUSED IN THE WORK. SALVAGED MATERIALS THAT ARE TO BE REUSED SHALL BE STORED SAFE AGAINST DAMAGE AND TURNED OVER TO THE APPROPRIATE TRADE FOR REUSE. SALVAGED MATERIALS OF VALUE THAT ARE NOT TO BE REUSED SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS SUCH OWNERSHIP IS WAIVED. ITEMS ON WHICH THE OWNER WAIVES OWNERSHIP SHALL BECOME THE PROPERTY OF THE CONTRACTOR, WHO SHALL REMOVE AND LEGALLY DISPOSE OF SAME, AWAY FROM THE PREMISES.

N. CONSULT WITH THE OWNER'S REPRESENTATIVE AS TO THE METHODS OF CARRYING ON THE WORK SO AS NOT TO INTERFERE WITH THE OWNER'S OPERATION ANY MORE THAN ABSOLUTELY NECESSARY. ACCORDINGLY, ALL SERVICE LINES SHALL BE KEPT IN OPERATION AS LONG AS POSSIBLE AND THE SERVICES SHALL ONLY BE INTERRUPTED AT SUCH TIME AS WILL BE DESIGNATED BY THE OWNER'S REPRESENTATIVE.

O. ALL CUTTING, PATCHING AND REPAIR WORK SHALL BE PERFORMED BY THE CONTRACTOR THROUGH APPROVED, QUALIFIED SUBCONTRACTORS. CONTRACTOR SHALL INCLUDE FULL COST OF SAME IN BID.

P. PROVIDE ALL EXCAVATION, TRENCHING, TUNNELING, DEWATERING AND BACKFILLING REQUIRED FOR THE ELECTRICAL WORK. COORDINATE THE WORK WITH OTHER EXCAVATING AND BACKFILLING IN THE SAME AREA.

Q. INSPECT THE INSTALLATION OF ALL EQUIPMENT PER THE MANUFACTURER'S RECOMMENDATION AND APPLICABLE CODES.

R. PROVIDE UL APPROVED FIRE-STOPPING SYSTEM FOR ALL PENETRATIONS PASSING THROUGH FIRE RATED ASSEMBLES.

S. COMPLY WITH NECA 1.

T. PROVIDE COMPLETE OPERATION AND MAINTENANCE INSTRUCTIONAL MANUALS COVERING ALL ELECTRICAL EQUIPMENT HEREIN SPECIFIED, TOGETHER WITH PARTS LISTS.

U. CONTRACTOR SHALL SUBMIT TO THE ARCHITECT/ENGINEER, RECORD DRAWINGS ON ELECTRONIC MEDIA OR BLACK LINE REPRODUCTIONS WHICH HAVE BEEN NEATLY MARKED TO REPRESENT AS-BUILT CONDITIONS FOR ALL NEW ELECTRICAL WORK.

V. SUBMIT FOR APPROVAL SHOP DRAWINGS FOR ALL ELECTRICAL SYSTEMS OR EQUIPMENT BUT NOT LIMITED TO THE ITEMS LISTED BELOW:
1. WIRING DEVICES
7. LIGHTING FIXTURES
8. LIGHTING CONTROL SYSTEMS AND DEVICES

LIGHTING CONTROL DEVICES

A. INSTALL LIGHTING CONTROL DEVICES AS INDICATED ON PLAN. INSTALL AT ACCESSIBLE LOCATIONS MOUNT PHOTOCELL ON ROOF OR PARAPET TO 1/2" GRS CONDUIT, SUPPORTED TO BUILDING STRUCTURE BELOW. COORDINATE ROOF PENETRATION WITH ROOFING CONTRACTOR.

B. COORDINATE OCCUPANCY/VACANCY SENSOR LOCATIONS, COVERAGE AND REQUIRED QUANTITIES WITH MANUFACTURER'S RECOMMENDATIONS. COVERAGE AREAS INDICATED ON THE DRAWINGS ARE FOR MINOR MOTION (6 TO 8 INCHES OF HAND MOVEMENT). PROVIDE ADDITIONAL OCCUPANCY SENSORS AND CONTROL UNITS AS REQUIRED TO ACHIEVE COMPLETE MINOR MOTION COVERAGE OF THE SPACE INDICATED.

C. OCCUPANCY/VACANCY SENSOR ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING SENSORS TO SUIT ACTUAL OCCUPIED CONDITIONS PROVIDE UP TO TWO VISITS TO SITE OUTSIDE NORMAL OCCUPANCY HOURS FOR THIS PURPOSE.

D. OCCUPANCY/VACANCY SENSOR:
1. 360° CEILING MOUNTED DUAL TECHNOLOGY SENSOR: WATTSTOPPER DT-300 OR EQUAL
6. 110° WALL MOUNTED DUAL TECHNOLOGY SENSOR: WATTSTOPPER DT-200 OR EQUAL
7. 360° CEILING MOUNTED PASSIVE INFRARED SENSOR. WATTSTOPPER CI-200 OR EQUAL
8. 110° WALL MOUNTED PASSIVE INFRARED SENSOR: WATTSTOPPER CX-100 OR EQUAL

E. OCCUPANCY/VACANCY SENSOR CONTROL UNITS:
1. DESCRIPTION: TRANSFORMER AND RELAY COMBINED IN SINGLE UNIT TO PROVIDE 24DC POWER TO SENSORS AND PROVIDE 20A CONTACT(S) FOR CONTROL OF LIGHTING LOADS AT 120 OR 277V. CONTROL UNIT INPUT POWER SHALL BE FROM UNSWITCHED LEG OF LIGHTING CIRCUIT IT IS CONTROLLING.
   a. CONTROL UNITS SHALL BE PROVIDED AS REQUIRED TO POWER CEILING MOUNTED OCCUPANCY SENSORS, CONTROL LIGHTING LOADS AND PROVIDE A MINIMUM OF ONE AUXILIARY CONTACT.
   b. OCCUPANCY SENSOR CONTROL UNITS SHALL MOUNT EXTERNAL TO 4-INCH SQ JUNCTION BOX IN THE CEILING SPACE. ALL WIRING BETWEEN CONTROL UNIT AND OCCUPANCY SENSOR SHALL BE PLENUM RATED.
   c. LOCATE CONTROL UNIT IN ACCESSIBLE LOCATION IN GYP-BOARD CEILINGS, ADJACENT TO RETURN AIR GRILLES, OR PROVIDE ACCESS PANEL
   d. ADDITIONAL AUXILIARY RELAY MODULES SHALL BE PROVIDED AS REQUIRED TO PROVIDE CONTROL OF ALL LIGHTING CIRCUITS AND ADDITIONAL AUXILIARY CONTACTS AS REQUIRED.
   e. IT IS ACCEPTABLE TO PROVIDE CONTROLS AND AUXILIARY CONTACTS AS REQUIRED INTEGRAL TO NEW CEILING SENSOR, PROVIDED ALL REQUIRED CONTACTS ARE PROVIDED.
   f. MAXIMUM OF 3 SENSORS PER POWER PACK. VERIFY EXACT QUANTITIES REQUIRED WITH MANUFACTURER.

IDENTIFICATION

A. COMPLY WITH ANSI A13.1, ANSI C2, NFPA 70, AND 29 CFR 1910.145.

B. COORDINATE IDENTIFICATION NAMES, ABBREVIATIONS, COLORS, AND OTHER FEATURES WITH REQUIREMENTS IN THE CONTRACT DOCUMENTS, SHOP DRAWINGS, MANUFACTURER'S WIRING DIAGRAMS, AND THE OPERATION AND MAINTENANCE MANUAL AND WITH THOSE REQUIRED BY CODES, STANDARDS, AND 29 CFR 1910.145. USE CONSISTENT DESIGNATIONS THROUGHOUT PROJECT.

C. COORDINATE INSTALLATION OF IDENTIFYING DEVICES WITH COMPLETION OF COVERING AND PAINTING OF SURFACES WHERE DEVICES ARE TO BE APPLIED, WITH LOCATION OF ACCESS PANELS AND DOORS.

D. INSTALL IDENTIFYING DEVICES BEFORE INSTALLING ACOUSTICAL CEILINGS AND SIMILAR CONCEALMENT.

E. WIRING DEVICES: USE ADHESIVE LABEL WITH BLACK, FILM LETTERING ON FACE OF WALL PLATE [ON THE REAR OF THE FACEPLATE] AND DURABLE WIRE MARKERS OR TAGS INSIDE OUTLET BOXES. LABELS SHALL BE CLEAR POLYESTER WITH BLACK LETTER, FONT SIZE OF 7. IDENTIFY PANELBOARD AND CIRCUIT NUMBER FROM WHICH SERVED.

F. USE THE COLORS USED BELOW FOR UNGROUNDED SERVICE, FEEDER, AND BRANCH-CIRCUIT CONDUCTORS.
1. COLOR SHALL BE FACTORY APPLIED OR, FOR SIZES LARGER THAN NO. 10 AWG IF AUTHORITIES HAVING JURISDICTION PERMIT, FIELD APPLIED.
2. COLORS FOR 208/120-V CIRCUITS
   a. PHASE A BLACK
   b. PHASE B: RED
   c. PHASE C: BLUE
   d. NEUTRAL: WHITE
3. COLORS FOR 480/277-V CIRCUITS:
   a. PHASE A: BROWN
   b. PHASE B: ORANGE
   c. PHASE C: YELLOW
   d. NEUTRAL: GRAY
4. FIELD-APPLIED, COLOR-CODING CONDUCTOR TAPE APPLY IN HALF-LAPPED TURNS FOR A MINIMUM DISTANCE OF 6 INCHES FROM TERMINAL POINTS AND IN BOXES WHERE SPLICES OR TAPS ARE MADE. APPLY LAST TWO TURNS OF TAPE WITH NO TENSION TO PREVENT POSSIBLE UNWINDING. LOCATE BANDS TO AVOID OBSCURING FACTORY CABLE MARKINGS.

G. ACCESSIBLE RACEWAYS AND CABLES OF AUXILIARY SYSTEMS IDENTIFY THE FOLLOWING SYSTEMS WITH COLOR-CODED, SELF-ADHESIVE VINYL TAPE APPLIED IN BANDS OR PAINTED RACEWAY
1. FIRE ALARM SYSTEM: RED
2. SECURITY SYSTEM: BLUE AND YELLOW.
3. TELECOMMUNICATION SYSTEM: GREEN AND YELLOW.
4. CONTROL WIRING: GREEN AND RED.

WIRING DEVICES

A. STRAIGHT-BLADE-TYPE RECEPTACLES: HEAVY DUTY SPECIFICATION GRADE. COMPLY WITH NEMA ID 1, NEMA ID 6, DSCC W-C-596G, AND UL 498. CONFIGURATION 5-20R DUPLEX RECEPTACLE HUBBELL HBL5362X OR EQUAL BY PASS & SEYMOUR OR COOPER.

B. GFI RECEPTACLES: STRAIGHT BLADE NON-FEED-THROUGH TYPE, HEAVY DUTY SPECIFICATION GRADE. WITH INTEGRAL NEMA WD 6, CONFIGURATION 5-20R DUPLEX RECEPTACLE; COMPLYING WITH UL 498 AND UL 943. DESIGN UNITS FOR INSTALLATION IN A 2-3/4-INCH- (70-MM-) DEEP OUTLET BOX WITHOUT AN ADAPTER. HUBBELL GF20XL OR EQUAL BY PASS & SEYMOUR OR COOPER.

C. WALL SWITCHES: SINGLE AND DOUBLE-POLE SWITCHES COMPLY WITH DSCC W-C-896F AND UL 20. HUBBELL WIRING DEVICE, KELLEMS 1220 SERIES OR EQUAL BY PASS & SEYMOUR, COOPER OR LEVITON.

D. LED LAMP DIMMER SWITCHES: COOPER OR EQUAL, COMPATIBLE WITH LED DIMMING DRIVER SPECIFIED.

E. DIMMERS:
1. CONTROL: CONTINUOUSLY ADJUSTABLE PUSH BUTTON WITH PRE-SET; SINGLE-POLE OR THREE-WAY SWITCHING TO SUIT CONNECTIONS.
2. INSTALL WALL DIMMERS TO ACHIEVE FULL RATING SPECIFIED AND INDICATED AFTER DERATNG FOR GANGING ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS
3. INSTALL UNSHARED NEUTRAL CONDUCTORS ON LINE AND LOAD SIDE OF DIMMERS ACCORDING TO MANUFACTURERS' WRITTEN INSTRUCTIONS.

F. WIRING DEVICE/WALL PLATE COLOR AS SELECTED BY ARCHITECT UNLESS OTHERWISE INDICATED OR REQUIRED BY NFPA 70.

G. CONNECT WIRING DEVICE GROUNDING TERMINAL TO OUTLET BOX WITH BONDING JUMPER. USE OF QUICK GROUND STRAP OR SCREW IS NOT ACCEPTABLE.

GROUNDING AND BONDING

A. EQUIPMENT GROUNDING: COMPLY WITH NFPA 70, ARTICLE 250, FOR TYPES, SIZES, AND QUANTITIES OF EQUIPMENT GROUNDING CONDUCTORS, UNLESS SPECIFIC TYPES, LARGER SIZES, OR MORE CONDUCTORS THAN REQUIRED BY NFPA 70 ARE INDICATED.

B. PROVIDE EQUIPMENT GROUNDING CONDUCTORS IN EACH RACEWAY.

CONDUCTORS AND CABLES

A. CONDUCTOR MATERIAL: COPPER COMPLYING WITH NEMA WC: 70; STRANDED CONDUCTOR.

B. CONDUCTOR INSULATION TYPES: TYPE THHN-THWN, SO, COMPLYING WITH NEMA WC 70.

C. CONCEAL CABLES IN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.

D. USE CONDUCTOR NOT SMALLER THAN 12 AWG FOR POWER AND LIGHTING CIRCUITS. UNLESS INDICATED OTHERWISE, ALL 20A BRANCH CIRCUITS SHALL BE 2#12, 1#12G, 3/4"C.

E. USE CONDUCTOR NOT SMALLER THAN #14 AWG FOR CONTROL CIRCUITS PROVIDED BY ELECTRICAL CONTRACTOR.

F. SUPPORT COMMUNICATION CABLES ABOVE ACCESSIBLE CEILING, USING SPRING METAL CLIPS OR PLASTIC CABLE TIES TO SUPPORT CABLES FROM STRUCTURE DO NOT REST CABLE ON CEILING PANELS.

G. USE "STA-KON" CONNECTORS TO TERMINATE STRANDED CONDUCTORS #10 AWG AND SMALLER TO SCREW TERMINALS.

H. CONDUCTOR AND INSULATION APPLICATIONS:
1. FEEDERS: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY
2. BRANCH CIRCUITS, INCLUDING IN CRAWLSPACES: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAYR OR TYPE MC CABLE PROVIDE A DEDICATED NEUTRAL FOR EACH CIRCUIT.
3. CORD DROPS AND PORTABLE APPLIANCE CONNECTIONS: TYPE SO, HARD SERVICE CORD
4. CLASS I CONTROL CIRCUITS TYPE THHN -THWN IN RACEWAY
5. CLASS II CONTROL CIRCUITS: POWER LIMITED CABLE

LIGHTING

A. PROVIDE LIGHTING FIXTURES AS INDICATED ON DRAWINGS.

B. INSTALL DRIVERS/BALLASTS, AND SPECIFIED ACCESSORIES AT FACTORY. FOR FIXTURES CONTAINING LAMPS, INSTALL ON PROJECT SITE AFTER FIXTURE INSTALLATION.

C. FIXTURES SET LEVEL, PLUMB, AND SQUARE WITH CEILINGS AND WALLS. INSTALL LAMPS IN EACH FIXTURE WHERE REQUIRED.

D. SUPPORT LUMINARIES INDEPENDENT OF CEILING FRAMING. SUPPORT RECESSED GRID LUMINARIES FROM TWO OPPOSITE CORNERS DIRECTLY TO STRUCTURE. WIRE OR ROD SHALL HAVE BREAKING STRENGTH OF THE WEIGHT OF FIXTURE AT A SAFETY FACTOR OF 3.

E. INSTALL RECESSED LUMINARIES TO PERMIT REMOVAL FROM BELOW.

F. INSTALL RECESSED LUMINARIES USING ACCESSORIES AND FIRE STOPPING MATERIALS TO MEET REGULATORY REQUIREMENTS FOR FIRE RATING.

G. INSTALL SURFACE MOUNTED LUMINARIES AND EXIT SIGNS PLUMB AND ADJUST TO ALIGN WITH BUILDING LINES AND WITH EACH OTHER. SECURE TO PROHIBIT MOVEMENT.

H. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A AND UL 486B.

I. MAKE WIRING CONNECTIONS TO BRANCH CIRCUIT USING BUILDING WIRE WITH INSULATION SUITABLE FOR TEMPERATURE CONDITIONS WITHIN LUMINAIRE

J. BOND PRODUCTS AND METAL ACCESSORIES TO BRANCH CIRCUIT EQUIPMENT GROUNDING CONDUCTOR.

K. CONNECT LUMINARIES TO BRANCH CIRCUIT OUTLET BOXES PROVIDED UNDER RACEWAYS AND BOXES SECTION USING 1/2" FLEXIBLE CONDUIT OF NO MORE THAN 6'-0" IN LENGTH.

L. CLEAN ELECTRICAL PARTS TO REMOVE CONDUCTIVE AND DELETERIOUS MATERIALS.

M. REMOVE DIRT AND DEBRIS FROM ENCLOSURES AND LENSES.

N. CLEAN PHOTOMETRIC CONTROL SURFACES AS RECOMMENDED BY MANUFACTURER.

O. CLEAN FINISHES AND TOUCH UP DAMAGE.

P. EACH LED LUMINAIRE TYPE SHALL BE BINNED WITHIN A THREE-STEP MACADAM ELLIPSE TO ENSURE COLOR CONSISTENCY AMONG LUMINAIRES AND CONTAIN INTERNAL DRIVER UNLESS NOTED OTHERWISE.

Q. EMERGENCY LOAD TRANSFER DEVICE LOCALIZED LOAD TRANSFER SWITCH TO SENSE NORMAL PRESENCE OF NORMAL POWER FOR SWITCHED CIRCUITS AND SWITCH LUMINAIRE OVER TO EMERGENCY SOURCE UPON LOSS OF NORMAL SOURCE. DEVICE SHALL BE INSTALLED INTEGRAL TO LUMINAIRE OR MOUNTED REMOTELY AS APPLICATION REQUIRED. U.L 924 LISTED, INTEGRAL TEST SWITCH AND INDICATING LAMPS TO INDICATE STATUS: BODINE BLCD SERIES OR EQUAL BY LVS OR CHLORIDE.

R. EXIT SIGNS: COMPLY WITH UL 924; FOR SIGN COLORS AND LETTERING SIZE, COMPLY WITH AUTHORITIES HAVING JURISDICTION.
1. PROVIDE EXIT SIGNS WIN LIGHT-EMITTING DIODES, 70,000 HOURS MINIMUM OF RATED LAMP LIFE
2. AC-POWERED EXIT SIGNS.

RACEWAYS AND BOXES

A. SURFACE METAL RACEWAYS: GALVANIZED STEEL WITH SNAP-ON COVERS. FINISH WITH MANUFACTURER'S STANDARD PRIME COATING. WIREMOLD OR EQUAL SIZE/TYPE AS SHOWN ON DRAWINGS.

B. MINIMUM RACEWAY SIZE 3/4-INCH TRADE SIZE

C. INSTALL CONDUIT IN ACCORDANCE WITH NECA "NATIONAL ELECTRICAL INSTALLATION STANDARDS".

D. ROUTE CONDUITS IN FINISHED AREAS WITH EXPOSED CEILINGS AT UNDERSIDE OF STRUCTURAL DECK OR AS HIGH AS POSSIBLE. WHERE STEEL METAL DECK ON STEEL JOIST CONSTRUCTION, ROUTE CONDUITS ABOVE JOISTS. DO NOT SECURE CONDUIT TO BOTTOM OF JOISTS.

E. FITTINGS FOR EMT: STEEL COMPRESSION TYPE.

FIRE ALARM

A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE NEW FIRE ALARM DEVICES TO MATCH EXISTING SYSTEM BY SIMPLEX GRINNELL (FIELD VERIFY EXACT MANUFACTURER AND MODEL). VERIFY BATTERY CALCULATIONS WITH ANY NEW LOADS NOT REPLACING EXISTING DEVICES.

B. PERFORMANCE REQUIREMENTS:
1. DESIGN AND INSTALLATION OF NEW DEVICES ONTO AN EXISTING FIRE ALARM SYSTEM. THE COMPLETE FUNCTIONAL SYSTEM SHALL MEET THE REQUIREMENTS OF THIS SPECIFICATION, APPLICABLE CODES, AND AUTHORITIES HAVING JURISDICTION (AHJ) REQUIREMENTS.
2. COMPLY WITH NFPA 72.
3. PROVIDE DEVICE LOCATIONS AND RATINGS AS REQUIRED TO MEET THE REQUIREMENTS OF THE AHJ AND ALL APPLICABLE CODES.
4. FIRE ALARM SYSTEM VENDOR SHALL PROVIDE SOUND PRESSURE LEVEL CALCULATIONS DEMONSTRATING COMPLIANCE WITH NFPA 72 AND ESTABLISH QUANTITIES AND TAP SETTINGS OF AUDIBLE DEVICES.
5. NO ADDITIONAL CHARGE FOR FIRE ALARM DEVICES WILL BE ALLOWED UNLESS SPACE DEFINITION, USE OR CONSTRUCTION IS SUBSTANTIALLY REVISED.
6. SYSTEM FUNCTIONAL PERFORMANCE SHALL BE AS INDICATED ON THE FIRE ALARM MATRIX ON THE DRAWINGS.

C. NOTIFICATION APPLIANCES: EQUIPPED FOR MOUNTING AS INDICATED AND WITH SCREW TERMINALS FOR SYSTEM CONNECTIONS
1. COMBINATION DEVICES FACTORY-INTEGRATED AUDIBLE AND VISIBLE DEVICES IN A SINGLE-MOUNTING ASSEMBLY.
2. VISIBLE ALARM DEVICES XENON STROBE LIGHTS USED UNDER UL 1971, WITH CLEAR OR NOMINAL WHITE POLYCARBONATE LENS MOUNTED ON AN ALUMINUM FACEPLATE. THE WORD "FIRE" IS ENGRAVED IN MINIMUM 1-INCH- (25-MM-) HIGH LETTERS ON THE LENS.
   a. RATED LIGHT OUTPUT: 15, 30, 60, 75, 110, 135, 185 CANDELA AS REQUIRED TO MEET NFPA 72 REQUIREMENTS.
   a.a. STROBE LEADS: FACTORY CONNECTED TO SCREW TERMINALS.
7. VOICE/TONE SPEAKERS:
   a. UL 1480 LISTED.
   b. HIGH-RANGE UNITS: RATED 2 TO 15 W.
   c. LOW-RANGE UNITS: RATED 1 TO 2 W.
   d. MOUNTING: FLUSH, SEMIRECESSED, OR SURFACE MOUNTED; BIDIRECTIONAL AS INDICATED.
   e. MATCHING TRANSFORMERS TAP RANGE MATCHED TO THE ACOUSTICAL ENVIRONMENT OF THE SPEAKER LOCATION.
8. AUDIBLE ALARM-INDICATING DEVICES INSTALL AT 96" AFF OR 6 INCHES (150 MM) BELOW THE CEILING, WHICHEVER IS LESS. INSTALL BELLS AND HORNS ON FLUSH-MOUNTED BACK BOXES WITH THE DEVICE-OPERATING MECHANISM CONCEALED BEHIND A GRILLE.
9. VISIBLE ALARM-INDICATING DEVICES: INSTALL AT 96" AFF OR 6 INCHES (150 MM) BELOW THE CEILING, WHICHEVER IS LESS.

D. WIRE AND CABLE WIRE AND CABLE FOR FIRE ALARM SYSTEMS SHALL BE UL LISTED AND LABELED AS COMPLYING WITH NFPA 70, ARTICLE 760.
1. SIGNALING LINE CIRCUITS: TWISTED, SHIELDED PAIR, SIZE AS RECOMMENDED BY SYSTEM MANUFACTURER.
2. NON-POWER-LIMITED CIRCUITS: SOLID-COPPER CONDUCTORS WITH 600-V RATED, 75 DEG C. COLOR-CODED INSULATION. LOW-VOLTAGE CIRCUITS: NO. 16 AWG, MINIMUM. LINE-VOLTAGE CIRCUITS: NO. 12 AWG MINIMUM.
3. INSTALL WIRING ACCORDING TO NECA 1 AND TIA/EIA 568-A
4. FIRE ALARM CIRCUITS AND EQUIPMENT CONTROL WIRING ASSOCIATED WITH THE FIRE ALARM SYSTEM SHALL BE INSTALLED IN A DEDICATED RACEWAY SYSTEM IN AREAS OF EXPOSED CONSTRUCTION. [PLENUM RATED CABLE IS ALLOWED ABOVE CONCEALED, ACCESSIBLE CEILINGS.] (Not allowed in Priv.)

E. SUBMIT FIRE ALARM DRAWINGS AND DOCUMENTATION TO THE AUTHORITIES HAVING JURISDICTION AND THE ARCHITECT/ENGINEER.

F. INSTALLER QUALIFICATIONS: PERSONNEL CERTIFIED BY NICET AS FIRE ALARM LEVEL II

G. INTERRUPTION OF EXISTING FIRE ALARM SERVICE: DO NOT INTERRUPT FIRE ALARM SERVICE TO FACILITIES OCCUPIED BY OWNER OR OTHERS UNLESS PERMITTED UNDER THE FOLLOWING CONDITIONS AND THEN ONLY AFTER ARRANGING TO PROVIDE TEMPORARY GUARD SERVICE ACCORDING TO REQUIREMENTS INDICATED, NOTIFY ARCHITECT, OWNER OR CONSTRUCTION MANAGER NO FEWER THAN SEVEN DAYS IN ADVANCE OF PROPOSED INTERRUPTION OF FIRE ALARM SERVICE DO NOT PROCEED WITH INTERRUPTION OF FIRE ALARM SERVICE WITHOUT OWNER'S WRITTEN PERMISSION.

H. EXISTING FIRE ALARM EQUIPMENT: MAINTAIN FULLY OPERATIONAL UNTIL NEW EQUIPMENT HAS BEEN TESTED AND ACCEPTED. AS NEW EQUIPMENT IS INSTALLED, LABEL IT "NOT IN SERVICE" UNTIL IT IS ACCEPTED. REMOVE LABELS FROM NEW EQUIPMENT WHEN PUT INTO SERVICE AND LABEL EXISTING FIRE ALARM EQUIPMENT "NOT IN SERVICE" UNTIL REMOVED FROM THE BUILDING.

I. EQUIPMENT REMOVAL AFTER ACCEPTANCE OF THE NEW FIRE ALARM SYSTEM, REMOVE EXISTING DISCONNECTED FIRE ALARM EQUIPMENT.

J. FIRE ALARM SYSTEM AND COMPONENTS SHALL OPERATE AS AN EXTENSION OF AN EXISTING SYSTEM. ALL NEW DEVICES SHALL BE SUITABLE AND LISTED WITH EXISTING FIRE ALARM CONTROL PANEL.

K. CONNECTING TO EXISTING EQUIPMENT: VERIFY THAT EXISTING FIRE ALARM SYSTEM IS OPERATIONAL BEFORE MAKING CHANGES OR CONNECTIONS.

L. PERFORM BATTERY CALCULATIONS AND PROVIDE NECESSARY EQUIPMENT WHERE EXISTING BATTERIES WILL NOT SUPPORT ADDITION OF NEW DEVICES INDICATED ON DRAWINGS.

M. ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO INSPECT EST, AND ADJUST FIELD-ASSEMBLED COMPONENTS AND EQUIPMENT INSTALLATION, INCLUDING CONNECTIONS, AND TO ASSIST IN FIELD TESTING. REPORT RESULTS IN WRITING.

N. TEST AND INSPECTION RECORDS: PREPARE ACCORDING TO NFPA 72, INCLUDING DEMONSTRATION OF SEQUENCES OF OPERATION BY USING THE MATRIX-STYLE FORM IN APPENDIX A IN NFPA 7.

O. CERTIFY FIRE ALARM SYSTEM UPON COMPLETION OF INSTALLATION AND TESTING.

TELECOMMUNICATIONS

A. ALL INSTALLATIONS, EQUIPMENT AND MATERIALS SHALL BE PROVIDED IN COMPLIANCE WITH THE CURRENT LAWS AND REGULATIONS OF STATE COUNTY AND CITY FIRE MARSHALLS, BUILDING INDUSTRY CONSULTING SERVICES INTERNATIONAL (BIOS), NEC, THE INTERNATIONAL BUILDING CODE (IBC), COMMUNICMTIONS STANDARDS PUBLISHED BY TIA/EIA, AND ALL OTHER APPLICABLE CODES.

B. THE CONTRACTOR SHALL INSURE THAT THE MANUFACTURER PULL TENSIONS AND MINIMUM BENDING RADIUS OF THE CABLES BEING INSTALLED ARE NOT EXCEEDED AT ANY TIME DURING INSTALLATION.

C. 1" CONDUIT SHALL BE RUN TO THE CLOSEST CABLE TRAY IN THE DIRECTION OF THE IDF ROOM, FOR DEVICES WITH MORE THAN 3 CABLES, UTILIZE (1) 1-1/4" CONDUIT.

D. ALL BENDS WILL BE LONG, SWEEPING BENDS WITH A RADIUS NOT LESS THAN:
1. SIX TIMES THE INTERNAL DIAMETER OF CONDUITS 2 INCHES OR SMALLER.
2. TEN TIES THE INTERNAL DIAMETER OF CONDUITS LARGER THAN 2 INCHES.

E. ENSURE THAT THE HORIZONTAL CABLE BEND RADIUS IS NO LESS THAN FOUR (4) TIMES THE CABLE DIAMETER.

F. TELECOMMUNICATIONS JACKS SHALL MEET OWNER'S STANDARDS.

G. COLOR CODING SHALL MEET OWNER'S STANDARDS.

H. ALL ELECTRONICS HARDWARE WILL BE DESIGNED AND PROVIDED BY THE OWNER.

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UNIVERSITY CENTER, MICHIGAN
48710

PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

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1050 Wilshire Drive, Suite 260
Troy, MI 48084-1526
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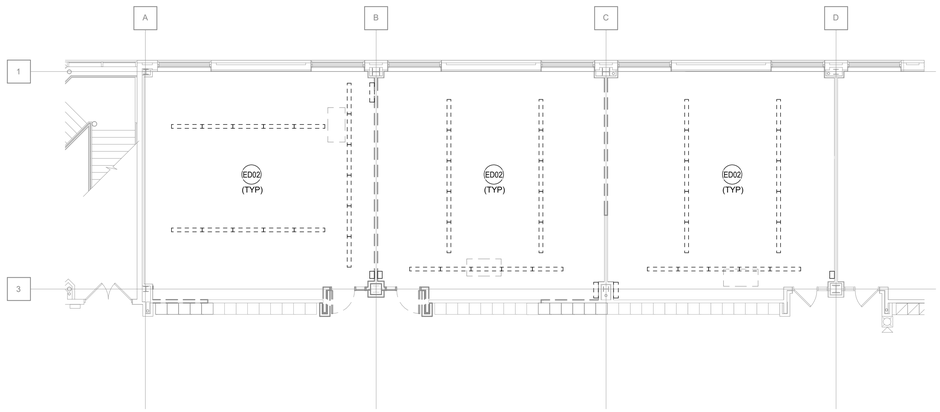
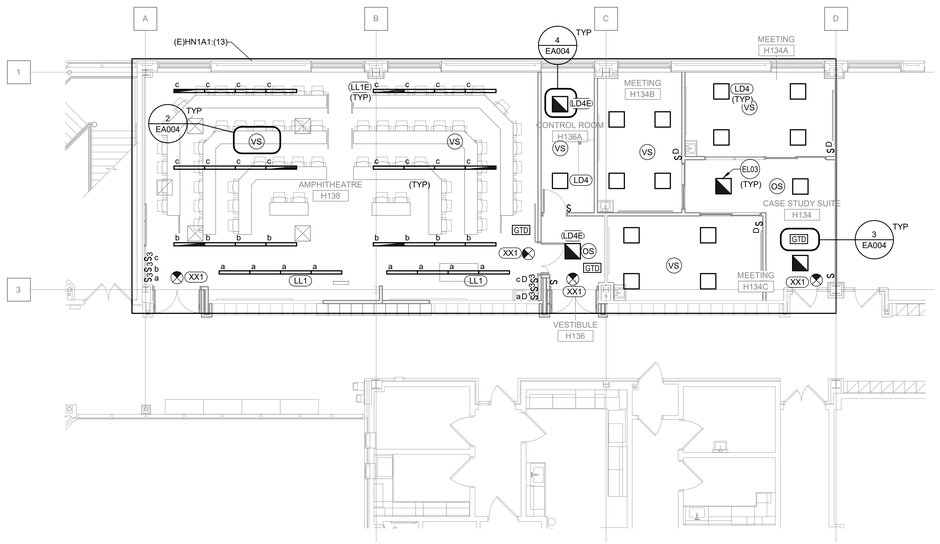
ELECTRICAL SPECIFICATIONS

EA005



2 EL110 PARTIAL FIRST FLOOR PLAN - DEMO LIGHTING

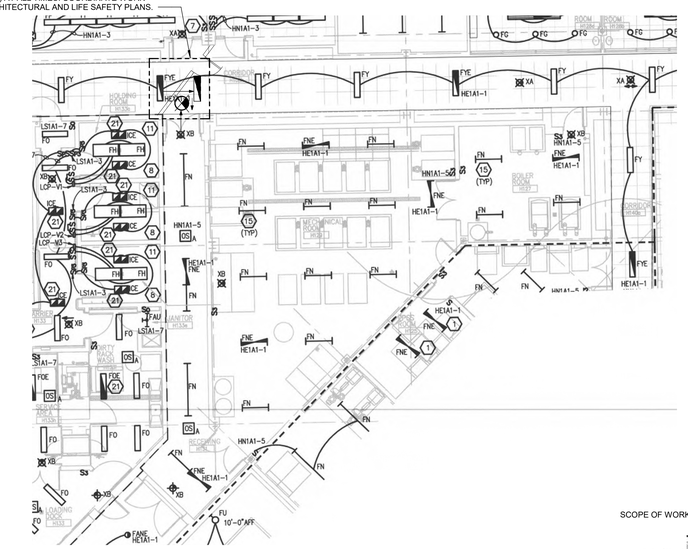
SCALE: 1/8" = 1'-0"



1 EL110 PARTIAL FIRST FLOOR PLAN - LIGHTING

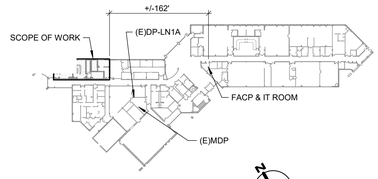
SCALE: 1/8" = 1'-0"

RELOCATE EXISTING EGRESS LIGHT FIXTURE AND EXIT SIGN TO ACCOMODATE NEW TEMPORARY CONSTRUCTION HALLWAY EGRESS PATH, AS REQUIRED BY CODE. ONCE CONSTRUCTION WALL IS REMOVED RELOCATE LIGHT FIXTURE AND EXIT SIGN TO THEIR ORIGINAL LOCATIONS. MAINTAIN CONTINUITY OF EXISTING EGRESS LIGHTING CIRCUIT(S) AT ALL TIMES. COORDINATE WORK WITH ARCHITECTURAL AND LIFE SAFETY PLANS.



3 EXISTING EGRESS LIGHTING

SCALE: NOT TO SCALE



KEYPLAN

GENERAL NOTES - DEMOLITION

A. SELECT DEMOLITION MAY BE REQUIRED FOR NEW CONSTRUCTION AND MAY NOT BE DELINEATED ON THIS DRAWING. CAREFULLY COORDINATE DEMOLITION WITH NEW CONSTRUCTION PLANS OF ALL DISCIPLINES TO VERIFY ACTUAL EXTENT OF DEMOLITION. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND FULLY UNDERSTAND THE EXTENT OF DEMOLITION WORK.

B. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.

C. QUANTITY AND LOCATION OF DEVICES SHOWN ON PLANS ARE APPROXIMATE. FIELD VERIFY DEVICES AND LOCATIONS.

D. ITEMS SHOWN HEAVY LINE WEIGHT DASHED LINES, HATCHED AND/OR NOTED SHALL BE DEMOLISHED AND ALL ASSOCIATED DEVICES, CONDUIT, AND WIRING SHALL BE REMOVED BACK TO THE NEAREST ACTIVE JUNCTION BOX OR SOURCE UNLESS NOTED OTHERWISE.

E. ALL EXISTING EQUIPMENT MAY NOT BE INDICATED. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING. EXISTING ITEMS SHALL REMAIN IN OPERATION. REVISE THE EXISTING CIRCUITRY TO MAINTAIN OPERATION OF ITEMS TO REMAIN.

F. PROVIDE PROPER SUPPORT FOR EXISTING TO REMAIN CONDUITS AND BOXES WHERE EXISTING SUPPORT IS TO BE REMOVED. RE-ROUTE BRANCH CIRCUIT CONDUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.

G. COORDINATE WITH NEW WORK PLANS FOR EXTENT OF DEMOLITION WORK.

H. CIRCUITING SHOWN IS BASED ON CASUAL FIELD OBSERVATIONS AND/OR AS-BUILT DRAWINGS. CONTRACTOR SHALL FIELD VERIFY CIRCUITING.

I. MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES, DEVICES AND EQUIPMENT THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM LOADS THAT ARE TO REMAIN.

J. RECYCLE OR DISPOSE OF ALL MATERIALS OFF SITE AND INCLUDE ALL ASSOCIATED COSTS IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING LEED REQUIREMENTS, TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.

K. FOR EXISTING CMU WALLS PROVIDE BLANK COVER PLATES WHERE DEVICES ARE REMOVED BUT EXISTING WALLS/CEILINGS REMAIN INTACT.

L. RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE" AND PLACE IN THE "OFF" POSITION.

M. VERIFY ALL UNDERGROUND AND IN SLAB UTILITY LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB.

N. OFFER OWNERS REPRESENTATIVE FIRST RIGHT OF REFUSAL OF ALL EQUIPMENT REMOVED FROM SPACE.

O. PROVIDE CODE-COMPLIANT SUPPORT TO EXISTING-TO-REMAIN UNSUPPORTED CONDUITS AND BOXES WHERE CEILINGS ARE TO BE REMOVED. RE-ROUTE BRANCH CIRCUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.

GENERAL NOTES - LIGHTING

A. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL LIGHTING FIXTURES UNLESS NOTED OTHERWISE.

B. REFER TO THE LUMINAIRE SCHEDULE LOCATED ON THE ELECTRICAL GENERAL INFORMATION DRAWING.

C. ELECTRICAL DEVICES INDICATED ON THIS PLAN SHALL BE NEW UNLESS NOTED OTHERWISE.

D. LIGHT SWITCHES SHALL BE GROUPED UNDER ONE COMMON FACEPLATE WHERE MORE THAN ONE LIGHT SWITCH IS INDICATED TO BE INSTALLED AT THE SAME LOCATION.

E. EXISTING LIGHTING INDICATED TO REMAIN SHALL BE RELAMPED AND CLEANED. REPAIR EXISTING FIXTURES THAT ARE MALFUNCTIONING WHERE FEASIBLE. OTHERWISE REPLACE WITH NEW. REVISE CIRCUITING AS INDICATED.

F. LIGHTING BRANCH CIRCUIT WIRING ASSOCIATED WITH NEW LIGHTING SHALL BE 2#12, 1#12GND IN 3/4"C UNLESS NOTED OTHERWISE.

G. EXISTING EQUIPMENT/DEVICES NOT SPECIFICALLY INDICATED TO BE DEMOLISHED SHALL REMAIN OPERATIONAL. REVISE EXISTING CIRCUITING TO MAINTAIN OPERATION TO SUCH EQUIPMENT/DEVICES AS REQUIRED.

H. REUSE THE EXISTING BRANCH CIRCUIT CONDUIT AND WIRING ASSOCIATED WITH THE LIGHTING FIXTURES REMOVED DURING DEMOLITION TO REFEED NEW LIGHTING FIXTURES UNLESS NOTED OTHERWISE. REWORK THE EXISTING CIRCUIT TO PROVIDE LIGHTING CONTROL AS INDICATED ON THIS DRAWING, UNLESS NOTED OTHERWISE.

I. CONNECT EXIT SIGNS AND EGRESS LIGHTING TO 277V LIFE SAFETY LIGHTING CIRCUIT SERVING SAME ROOM.

J. NIGHT LIGHT AND EXIT SIGNS SHALL BE UNCONTROLLED AND CONNECTED AHEAD OF THE LOCAL LIGHTING CONTROLS.

K. CONDUITS INSTALLED IN FINISHED AREAS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.

L. EXIT SIGN FIXTURES ARE TYPE 'X1' UNLESS NOTED OTHERWISE.

PLAN NOTES

ED02 DISCONNECT AND REMOVE EXISTING LUMINIARES, LIGHTING CONTROLS, ASSOCIATED CONDUIT AND WIRING. PREPARE EXISTING CIRCUIT FOR REUSE. REFER TO NEW WORK PLANS FOR ADDITIONAL REQUIREMENTS.

EL03 PROVIDE ISOLITE ELCD 1008 GENERATOR TRANSFER DEVICE (GTD) OR ENGINEER APPROVED EQUAL FOR EACH SWITCHED CIRCUIT FOR LOCAL CONTROL OF THE LIFE SAFETY LIGHTING. LOCATE DEVICE IN CEILING SPACE NEXT TO SWITCH. CONNECT NORMAL AND EMERGENCY SIDE OF THE TRANSFER DEVICE TO THE PANEL AND CIRCUIT INDICATED ON PLANS.

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FLOOR PLAN - DEMO & NEW WORK LIGHTING

EL110

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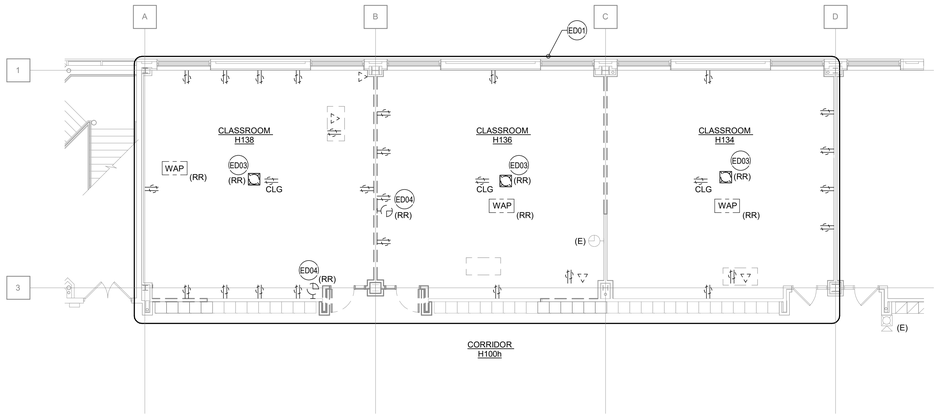
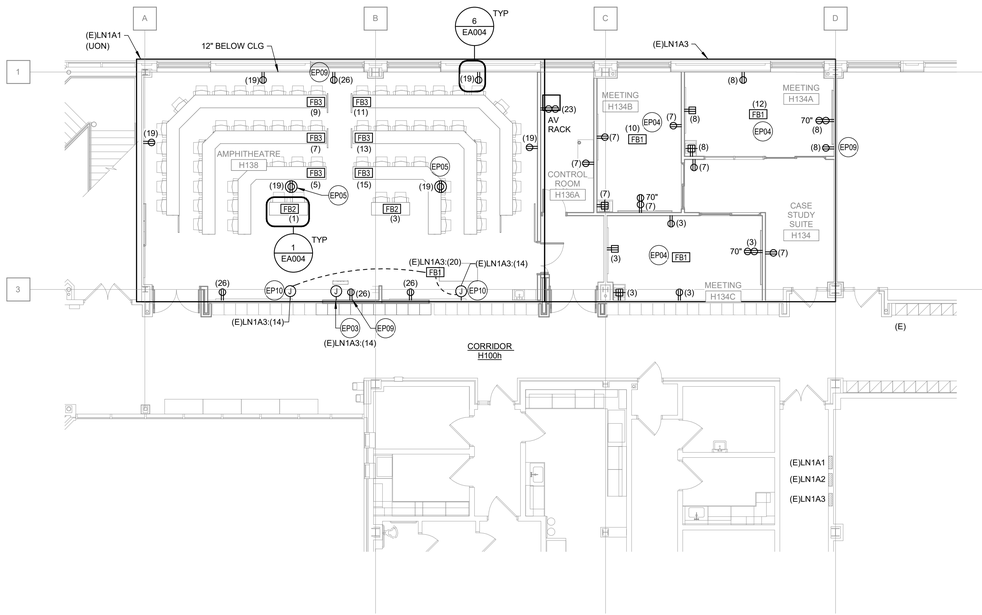


2 EP110 PARTIAL FIRST FLOOR PLAN - DEMO POWER

SCALE: 1/8" = 1'-0"



1 EP110 PARTIAL FIRST FLOOR PLAN - POWER

SCALE: 1/8" = 1'-0"

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A. SELECT DEMOLITION MAY BE REQUIRED FOR NEW CONSTRUCTION AND MAY NOT BE DELINEATED ON THIS DRAWING. CAREFULLY COORDINATE DEMOLITION WITH NEW CONSTRUCTION PLANS OF ALL DISCIPLINES TO VERIFY ACTUAL EXTENT OF DEMOLITION. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND FULLY UNDERSTAND THE EXTENT OF DEMOLITION WORK.

B. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.

C. QUANTITY AND LOCATION OF DEVICES SHOWN ON PLANS ARE APPROXIMATE. FIELD VERIFY DEVICES AND LOCATIONS.

D. ITEMS SHOWN HEAVY LINE WEIGHT DASHED LINES, HATCHED AND/OR NOTED SHALL BE DEMOLISHED AND ALL ASSOCIATED DEVICES, CONDUIT, AND WIRING SHALL BE REMOVED BACK TO THE NEAREST ACTIVE JUNCTION BOX OR SOURCE UNLESS NOTED OTHERWISE.

E. ALL EXISTING EQUIPMENT MAY NOT BE INDICATED. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING. EXISTING ITEMS SHALL REMAIN IN OPERATION. REVISE THE EXISTING CIRCUITRY TO MAINTAIN OPERATION OF ITEMS TO REMAIN.

F. PROVIDE PROPER SUPPORT FOR EXISTING TO REMAIN CONDUITS AND BOXES WHERE EXISTING SUPPORT IS TO BE REMOVED. RE-ROUTE BRANCH CIRCUIT CONDUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.

G. COORDINATE WITH NEW WORK PLANS FOR EXTENT OF DEMOLITION WORK.

H. CIRCUITING SHOWN IS BASED ON CASUAL FIELD OBSERVATIONS AND/OR AS-BUILT DRAWINGS. CONTRACTOR SHALL FIELD VERIFY CIRCUITING.

I. MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES, DEVICES AND EQUIPMENT THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM LOADS THAT ARE TO REMAIN.

J. RECYCLE OR DISPOSE OF ALL MATERIALS OFF SITE AND INCLUDE ALL ASSOCIATED COSTS IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING LEED REQUIREMENTS, TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.

K. FOR EXISTING CMU WALLS PROVIDE BLANK COVER PLATES WHERE DEVICES ARE REMOVED BUT EXISTING WALLS/CEILINGS REMAIN INTACT.

L. RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE" AND PLACE IN THE "OFF" POSITION.

M. VERIFY ALL UNDERGROUND AND IN SLAB UTILITY LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB.

N. OFFER OWNERS REPRESENTATIVE FIRST RIGHT OF REFUSAL OF ALL EQUIPMENT REMOVED FROM SPACE.

O. PROVIDE CODE-COMPLIANT SUPPORT TO EXISTING-TO-REMAIN UNSUPPORTED CONDUITS AND BOXES WHERE CEILINGS ARE TO BE REMOVED. RE-ROUTE BRANCH CIRCUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.

GENERAL NOTES - POWER

A. REFER TO ARCHITECTURAL FLOOR PLAN AND ELEVATIONS FOR EXACT LOCATION OF DEVICES WHERE INDICATED.

B. RECEPTACLE OUTLETS SHALL BE RATED 20A U.O.N..

C. DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE U.O.N..

D. PROVIDE GFCI PROTECTION WHERE REQUIRED BY THE NEC WHETHER INDICATED OR NOT.

E. BRANCH CIRCUIT JUNCTION BOXES SHALL BE LABELED WITH THE CIRCUITS ENCLOSED.

F. SINGLE PHASE 20A BRANCH CIRCUIT WIRING SHALL BE 2#12, 1#12GND IN 3/4"C UNLESS NOTED OTHERWISE.

G. EXISTING EQUIPMENT/DEVICES NOT SPECIFICALLY INDICATED TO BE DEMOLISHED SHALL REMAIN OPERATIONAL. REVISE EXISTING CIRCUITING TO MAINTAIN OPERATION TO SUCH EQUIPMENT/DEVICES AS REQUIRED.

H. CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.

PLAN NOTES

ED01 DISCONNECT AND REMOVE EXISTING RECEPTACLES, DATA OUTLETS, FIRE ALARM DEVICES, ASSOCIATED CONDUIT AND WIRING BACK TO NEAREST TO REMAIN JUNCTION BOX, DEVICE, OR SOURCE WITHIN THIS AREA UNLESS OTHERWISE NOTED. RETURN ALL UNUSED IT EQUIPMENT, CAMERAS, PATCH CABLES, SPEAKERS, MOUNTING EQUIPMENT, ETC. TO OWNER. REMOVE ALL EXISTING AV CABLING BACK TO AV RACK.

ED03 REMOVE AND RELOCATE FIRE ALARM DEVICE NOTED WITH (RR). REMOVE CABLING BACK TO EXISTING FIRE ALARM PANEL LOCATED IN ELEC ROOM H113. TEST DEVICE FOR FUNCTIONALITY PRIOR TO RELOCATING. REPAIR OR REPLACE ANY DAMAGED OR WORN PARTS. SEE NEW WORK PLANS FOR ADDITIONAL REQUIREMENTS AND NEW LOCATION NOTED WITH (R).

ED04 REMOVE AND RELOCATE WALL MOUNTED CLOCK NOTED WITH (RR). MAINTAIN CONTINUITY OF EXISTING POWER AND DATA. TEST DEVICE FOR FUNCTIONALITY PRIOR TO RELOCATING. REPAIR OR REPLACE ANY DAMAGED OR WORN PARTS. SEE NEW WORK PLANS FOR ADDITIONAL REQUIREMENTS AND NEW LOCATION NOTED WITH (R).

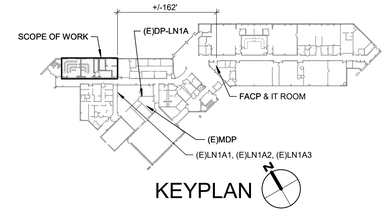
EP03 PROVIDE (1)20A, 120V POWER FOR OWNER PROVIDED HEADWALL.

EP04 REFER TO FLOOR BOX SCHEDULE SHOWN ON SHEET EA001. COORDINATE WITH LOW VOLTAGE CONTRACTOR FOR ADDITIONAL REQUIREMENTS. SAW CUT EXISTING SLAB TO ADJACENT WALL FOR CONDUITS. PATCH AND REPAIR TRENCH AND PREPARE FOR NEW FLOORING INSTALLATION.

EP05 MOUNT PROJECTOR RECEPTACLE IN SAME CEILING TILE AS PROJECTOR.

EP09 PROVIDE 20A, 120V. DUPLEX RECEPTACLE 12" BELOW CEILING FOR CAMERA POWER.

EP10 PROVIDE POWERED PROJECTOR SCREEN CONTROL CIRCUIT IN 1" CONDUIT FROM PODIUM PER SCREEN MANUFACTURER'S RECOMMENDATIONS. COORDINATE INSTALLATION WITH TECHNOLOGY INSTALLER.



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FIRST FLOOR PLAN - DEMO & NEW WORK POWER

EP110

Branch Panel: (E)LN1A3

Location: Electrical H131a
Supply From: DP-LN1A
Mounting: Flush
Enclosure: Type 1

Volts: 208Y/120V Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22,000
Mains Type: MLO
Mains Rating: 225 A

Notes:
FED FROM EXISTING 200A CIRCUIT BREAKER IN PANEL 'DP-LN1A'

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	RECEPT. RM H146, H133	20 A	1	800 1600			1	20 A	(2) UH-1 RM H133	2
3	**RECEPT. RM H134c**	20 A	1		1080 400		1	20 A	RECEPT. RM H133	4
5	RECEPT. RM H135d	20 A	1			400 720	1	20 A	**FLOOR BOX H134c**	6
7	**RECEPT. RM H134, H136a, H134b**	20 A	1	1440 1080			1	20 A	**RECEPT. RM H134a**	8
9	ACU-3/4 COND PUMP RM H125, H126	20 A	1		1600 720		1	20 A	**FLOOR BOX H134b**	10
11	(2) UH-1 RM H147	20 A	1			1200 720	1	20 A	**FLOOR BOX H134b**	12
13	LED LIGHTS W COORIDOR VIA LCP-1A	20 A	1	350 1080			1	20 A	**RECEPT. RM H138 PROJECTOR SCREENS**	14
15	UH-1 RM 146	20 A	1		1200					16
17	EF-7	20 A	1			200 1600	1	20 A	GLYCOL FILL PUMPS	18
19	PROJECTOR M.A.L.	20 A	1	500 720			1	20 A	**FLOOR BOX H138**	20
21	PROJECTOR M.A.L.	20 A	1		500 0		1	20 A	Spare	22
23	**AV RACK RECEPTACLE**	20 A	1			1360 0	1	20 A	Spare	24
25	Spare	20 A	1	0 1200			1	20 A	ACCU-6/ACU-6	26
27	Spare	20 A	1		0 1200		1	20 A	2-POLE	28
29	JOHNSON CONTROL	20 A	1			800 200	1	20 A	RECEPT ROOF	30
31	JOHNSON CONTROL	20 A	1	800 1200			1	20 A	ACCU-3/ACU-3	32
33	JOHNSON CONTROL	20 A	1		800 1200		1	20 A	2-POLE	34
35	JOHNSON CONTROL	20 A	1			800 1200	1	20 A	ACCU-4/ACU-4	36
37	JOHNSON CONTROL	20 A	1	800 1200			1	20 A	2-POLE	38
39	JOHNSON CONTROL	20 A	1		800 1200		1	20 A	ACCU-5/ACU-5	40
41	JOHNSON CONTROL	20 A	1			800 1200	1	20 A	2-POLE	42
		Total Load:		12770 VA	10700 VA	11200 VA				
		Total Amps:		107 A	89 A	94 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	1080 VA	100.00%	1080 VA		
Lighting	0 VA	0.00%	0 VA	**Total Conn. Load:**	34670 VA
Receptacle	7840 VA	100.00%	7840 VA	**Total Est. Demand:**	34670 VA
Spare	25750 VA	100.00%	25750 VA	**Total Conn.:**	96 A
				Total Est. Demand:	96 A

Notes:

Branch Panel: (E)HN1A1

Location: Main Electrical Room H126
Supply From: MSB
Mounting: Surface
Enclosure: Type 1

Volts: 480Y/277V Wye
Phases: 3
Wires: 4

A.I.C. Rating: 42000
Mains Type: MLO
Mains Rating: 100 A

Notes:
FED FROM EXISTING 100A CIRCUIT BREAKER IN SWITCHBOARD 'MSB'

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	LTG. RM 136, LCP1A-1,3,4	20 A	1	2280 0			1	20 A	Spare	2
3	LTG. RM 132,134,136	20 A	1		2720 0		1	20 A	Spare	4
5	LTG. RM 126, 127, 129, 131, 146, 147, LCP1A-17	20 A	1			3012 0	1	20 A	Spare	6
7	LTG. M.A.L.	20 A	1	3166 2100			1	20 A	SITE LIGHTING	8
9	LTG. 128, 128e-f, 130	20 A	1		3168 2100		1	20 A	SITE LIGHTING	10
11	LTG. RM. 118-20, 124-24a, 141-42, 144-44e,...	20 A	1			3024 2100	1	20 A	SITE LIGHTING	12
13	**LTG. 134,134a,134b,134c,136,136a,138**	20 A	1	1216 0			1	20 A	Spare	14
15	Spare	20 A	1		1158 0		1	20 A	Spare	16
17	LTG. M.A.L.	20 A	1			2976 0	1	20 A	Spare	18
19	LTG. M.A.L.	20 A	1	2232 0			1	20 A	Spare	20
21	LTG. M.A.L.	20 A	1		2232 0		1	20 A	Spare	22
23	Spare	20 A	1			0 0	1	20 A	Spare	24
25	Spare	20 A	1	0 0			1	20 A	Spare	26
27	Spare	20 A	1		0 0		1	20 A	Spare	28
29	Spare	20 A	1			0 0	1	20 A	Spare	30
31	Spare	20 A	1	0 0			1	20 A	Spare	32
33	Spare	20 A	1		0 0		1	20 A	Spare	34
35	Spare	20 A	1			0 0	1	20 A	Spare	36
37	Spare	20 A	1	0 0			1	20 A	Spare	38
39	Spare	20 A	1		0 0		1	20 A	Spare	40
41	Spare	20 A	1			0 0	1	20 A	Spare	42
		Total Load:		10994 VA	11378 VA	11112 VA				
		Total Amps:		40 A	41 A	40 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Existing	1216 VA	100.00%	1216 VA		
Spare	32268 VA	100.00%	32268 VA	**Total Conn. Load:**	33484 VA
				Total Est. Demand:	33484 VA
				Total Conn.:	40 A
				Total Est. Demand:	40 A

Notes:

Branch Panel: (E)LN1A1

Location: Electrical H131a
Supply From: DP-LN1A
Mounting: Flush
Enclosure: Type 1

Volts: 208Y/120V Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22,000
Mains Type: MLO
Mains Rating: 225 A

Notes:
FED FROM EXISTING 200A CIRCUIT BREAKER IN PANEL 'DP-LN1A'

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	**FLOOR BOX RM H138**	20 A	1	1200 1000			1	20 A	RECEPT. TV - RM H128e, H128c	2
3	**FLOOR BOX RM H138**	20 A	1		1200 500		1	20 A	RECEPT. TV - RM H128a	4
5	**FLOOR BOX RM H138**	20 A	1			1200 1000	1	20 A	RECEPT. TV - RM H128b, H128d	6
7	**FLOOR BOX RM H138**	20 A	1	1200 200			1	20 A	LCP1A-2	8
9	**FLOOR BOX RM H138**	20 A	1		1200 500		1	20 A	CHU-1	10
11	**FLOOR BOX RM H138**	20 A	1			1200 1800	1	20 A	GENERATOR JACKET HEATER	12
13	**FLOOR BOX RM H138**	20 A	1	1200 500			1	20 A	GENERATOR BATTERY CHARGER	14
15	**FLOOR BOX RM H138**	20 A	1		1200 1800		1	20 A	GENERATOR JACKET HEATER	16
17	RECEPT. RM H132	20 A	1			1200 500	1	20 A	GENERATOR BATTERY CHARGER	18
19	**RECEPT RM H138**	20 A	1	1080 200			1	20 A	TIME CLOCK RM H100g	20
21	RECEPT. RM H128	20 A	1		800 600		1	20 A	CP-26 SNOW MELT RM H100h	22
23	RECEPT. RM H128, H128f, H132	20 A	1			1000 1400	1	20 A	CEILING PROJECTOR RM H132	24
25	RECEPT. RM H128b, H128d	20 A	1	1200 1560			1	20 A	**RECEPT RM H138**	26
27	RECEPT. RM H128e, H128c	20 A	1		800 500		1	20 A	TEMPERATURE CONTROLS	28
29	RECEPT. RM H128a, H128c	20 A	1			1000 1500	1	20 A	RECEPT. RM H132a	30
31	FLOOR BOX RM 128a	20 A	1	800 500			1	20 A	TEMPERATURE CONTROLS	32
33	FLOOR BOX RM 128b	20 A	1		800 500		1	20 A	EWC RM H100h	34
35	FLOOR BOX RM 128c	20 A	1			800 1500	1	20 A	RECEPT. RM H130	36
37	FLOOR BOX RM 128d	20 A	1	800 500			1	20 A	SECURITY	38
39	FLOOR BOX RM 128e	20 A	1		800 500		1	20 A	ADA DOOR B1	40
41	RECEPT. RM H130	20 A	1			1500 1500	1	20 A	RECEPT. RM H130	42
		Total Load:		11940 VA	11700 VA	17100 VA				
		Total Amps:		100 A	98 A	143 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Existingcle	12240 VA	90.85%	11120 VA		
Spare	28500 VA	100.00%	28500 VA	**Total Conn. Load:**	40740 VA
				Total Est. Demand:	39620 VA
				Total Conn.:	113 A
				Total Est. Demand:	110 A

Notes:

GENERAL NOTES - PANEL SCHEDULES

A. PROVIDE UPDATED, TYPED CIRCUIT DIRECTORIES IN ALL ELECTRICAL PANELS WITH UPDATED CIRCUITS.

B. NEW WORK IN EXISTING PANELS IS NOTED IN BOLD TEXT.

PROFESSIONAL SEALS:

SUBMITTAL/REVISION SCHEDULE:

NO.	DATE	DESCRIPTION
0	12-02-2022	ISSUE FOR CONSTRUCTION

■ APPROVED FOR CONSTRUCTION
□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:

SAGINAW VALLEY STATE UNIVERSITY

SAGINAW VALLEY STATE UNIVERSITY

7400 BAY ROAD
UNIVERSITY CENTER, MICHIGAN
48710

PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

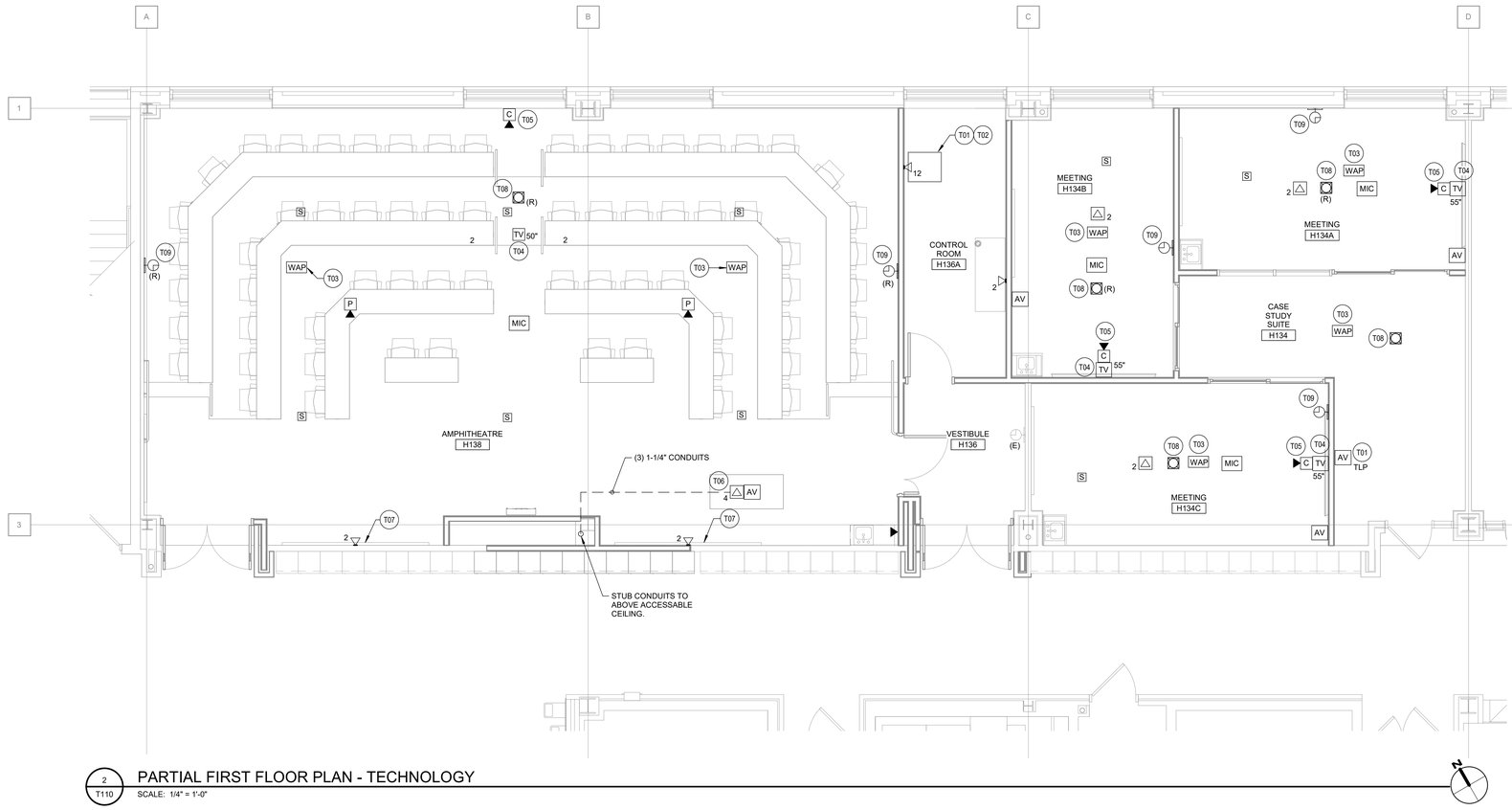
UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

SSOE | STEVENS & WILKINSON
1050 Wilshire Drive, Suite 260
Troy, MI 48084-1526
T. (248) 643-8222

PANEL SCHEDULES

EP502



2 T110 PARTIAL FIRST FLOOR PLAN - TECHNOLOGY

SCALE: 1/4" = 1'-0"

CONTRACTOR PROVIDED IT/AV EQUIPMENT

QTY	H138	Mfr. Part #
1	Extron TLP Pro 725T 7" Black TableTop Touchlink Pro TouchPanel	60-1562-02
1	DTP CrossPoint 84 IPCP MA 70	60-1515-93
P 2	Epson Powerlite L610U Standard Laser Projector, WUXGA, 6000 Lumens (V11H901020)	V11H901020
C 1	TT-12W STEM-CAM Visual Presenter	1379.00000
1	Sony BDP-S1700 Blu-ray Disc Player	BDP-S1700
1	Middle Atlantic Rack for Bluray	RSH4A2S SONY BDPS1700
TV 50" 1	50" LG UHD Commercial TV - CEILING MOUNT	
1	Extron DTP HDMI 4K 230 Tx HDMI Tx - 230 feet (70m)	60-1271-12
1	Extron DTP HDMI 4K 230 Rx HDMI Rx - 230 feet (70m)	60-1271-13
2	VADDIO RoboSHOT 30E HDBT OneLink HDMI System	999-99630-200
MIC 1	BIAMP Low profile Beamtracking ceiling microphone - White	TCM-X
MIC 1	BIAMP Low profile expansion Beamtracking ceiling microphone - White	TCM-XEX
1	BIAMP TesiraFORTE AVB VT4 Fixed I/O DSP with 4 analog inputs, 4 analog outputs, 8 channels configurable USB audio, 128x128 channels of AVB, AEC technology(all 4 inputs), 2 channel VoIP, and standard FXO telephone interface	AVB-VT4
2	iCreatin 48V35W Gigabit Power over Ethernet POE Injector Adapter	iCreatin
1	Echo360 POD	
1	Extron VLM 3001	42-266-01
1	Aux Plate	
S 6	ceiling speaker Exron FF 220T	
1	Surge X 1115-RT	
1	Relocated Podium Desk	

QTY	H136 Control room	Mfr. Part #
1	EXTRON XTP II Crosspoint 800 Frame 5U, 4-slot Frame	
1	EXTRON POE PI140	
S 4	Ceiling Speaker EXTRON FF 220T	
1	EXTRON XTP 11 CP 4i HD 4K PLUS Four input Board, 4K/60 HDMI w/ Stereo Audio	70-1112-01
1	EXTRON XTP CP 4o 4K Four Output Board, XTP - 26W Remote Power Capable	70-943-31
1	EXTRON XTP II CP 4o HD 8K Four Output Board, 8K HDMI w/ Stereo Audio	70-1263-01
1	BIAMP TesiraFORTE AVB CI Fixed 1/0 DSP with 12 analog inputs, 8 analog outputs, 8 channels configurable USB audio, 128 x 128 channels of AVB, and AEC technology (all 12 inputs	TesiraFORTE AVB CI
1	EXTRON XPA 2004	
1	EXTRON 17" Touch Panel: TLP Pro 1725TG	60-1792-02
1	IPCP Pro 250 xi	60-1911-01
1	BIAMP TesiraCONNECT TC-5 5-port expansion device	TesiraCONNECT TC-5
1	BIAMP TC-5 Bracket Mounting bracket for TesiraCONNECT TC-5	TC-5 Bracket
1	Liberty Rack Mounted HDMI	Liberty
2	Delvcam Broadcast 3GHD/SD Multiformat Dual 7-Inch Rackmount Video Monitor	DELV-2LCD7-3GHD
1	Push-to-talk Mic (Toa PM660U or equivilant)	
1	Lav mic, Shure Dual-Channel Wireless Cardioid Lavalier Microphone System Kit (H9: 512 to 542 MHz) confirm freq.	
3	Echo360 POD (installed rack, records each room)	
	Vaddio installed here (part below)	
	PC OFE	
1	SurgeX 1115 -RT	
1	Earpiece Sennheiser XSW IEM SET Stereo In-Ear Wireless Monitoring System (A: 476 to 500 MHz) confirm freq.	

QTY	Meeting Rooms	Mfr. Part #
3	EXTRON XTP R HD 4K HDMI Receiver 60-1524-13	60-1524-13
3	Liberty Single Gang HDMI Aux Plate	INNCO-WQ549986
MIC 3	BIAMP Low profile Beamtracking ceiling microphone,	TCM-X
TV 50" 3	55" LG UHD Commercial TV with wall bracket	999-99600-100W
3	VADDIO RoboSHOT 12E HDBT OneLINK HDMI System -White	999-2225-015
C 3	Thin Profile Wall Mount for RoboSHOT PTZ Cameras	535-2000-240W
3	Airtame w/ POE (rack)	
AV 3	EXTRON NBP 100 2-Gang, Black and White, 6 Button 60-1794-01	60-1794-01
S 3	ceiling speaker Exron FF 220T	

QTY	Hallway	Mfr. Part #
AV TLP 1	EXTRON TLP PRO 525M	60-1561-02

GENERAL NOTES - TECHNOLOGY:

A. UNLESS APPROVED BY THE OWNER OR ENGINEER, ALL NETWORK AND AV SYSTEM CABLING SHALL BE BELDEN.

PLAN NOTES

T01 ROUTE CAT-6 CABLE FROM CORRIOR MOUNTED EXTRON TLP TO CONTROL ROOM AV RACK.

T02 EXISTING SVSU RACK SHALL BE REUSED FOR CLASSROOM AV EQUIPMENT. INSTALL OWNER PROVIDED RACK AT SHOWN LOCATION. PROVIDE A 10'-0" COIL OF SLACK LOOP (COILED WITH VECRO STRAPS) ON ALL CABLES ABOVE AV RACK. INSTALL, TEREMINATE, AND TEST (12) NETWORK CABLES FROM BUILDING MAIN IT ROOM TO AV RACK. REFER TO KEYPLAN FOR IT ROOM LOCATION AND APPROXIMATE DISTANCE TO RENOVATION SPACE.

T03 CONTRACTOR SHALL RE-INSTALL OWNER PROVIDED WIRELESS ACCESS POINTS. REUSE EXISTING NETWORK CABLING. WHERE REQUIRED INSTALL NEW NETWORK CABLING TO WIRELESS ACCESS POINT.

T04 REFER TO ARCHITECTURAL ELEVATION FOR TV MOUNTION LOCATIONS.

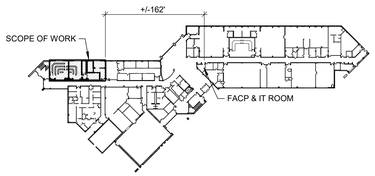
T05 WALL MOUNT OVER HEAD CAMERA AT 12" BELOW CEILING.

T06 REUSE EXISTING PODIUM EQUIPMENT IN NEW CLASSROOM SPACE.

T07 REFER TO ARCHITECTURAL FOR SPECFICATIONS OF PROJECTOR SCREENS. PER SVSU REQUEST, SCREENS TO HAVE 16:10 RATIO.

T08 NEW/RELOCATED FIRE ALARM DEVICE. MAKE ADJUSTMENTS TO CANDELA RATINGS OF RELOCATED APPLIANCE AND/OR ADD NEW APPLIANCE AS NEEDED FOR FULL COVERAGE OF AREA. CONNECT DEVICE TO EXISTING FIRE ALARM SYSTEM. PROVIDE NEW WIRING FROM ASSOCIATED FIRE ALARM PANEL LOCATED IN ELEC ROOM H113. NEW WIRING AND DEVICES SHALL MATCH EXISTING IN ALL FACETS. COORDINATE TESTING AND RECERTIFICATION OF RELOCATED FIRE ALARM DEVICES AND MODIFICATION OF SYSTEM WITH EHS-FIRE SAFETY, FIRE PROTECTION SHOP, ELECTRICAL INSPECTOR AND STATE INSPECTOR UPON COMPLETION.

T09 NEW/RELOCATED WALL MOUNTED CLOCK, IF NEW MATCH EXISTING MANUFACTURER AND MODEL. EXTEND DATA AS REQUIRED. COORDINATE WITH OWNER AND ARCHITECTURAL TRADES FOR FINAL LOCATION AND MOUNTING HEIGHT.



KEYPLAN

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PROFESSIONAL SEALS:

CONSULTANTS:

KEYPLAN

SUBMITTAL/REVISION SCHEDULE:

NO.	DATE	DESCRIPTION
0	12-02-2022	ISSUE FOR CONSTRUCTION

■ APPROVED FOR CONSTRUCTION
□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:

SAGINAW VALLEY STATE UNIVERSITY

7400 BAY ROAD
UNIVERSITY CENTER, MICHIGAN
48710

PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

SSOE | STEVENS & WILKINSON
1001 Madison Avenue
Toledo, OH 43604
T. (419) 255-3830

FIRST FLOOR PLAN - TECHNOLOGY

T110

SAGINAW VALLEY STATE UNIVERSITY

Scope of Project

SVSU will provide and install active electronics, access points, UPSs, and patch cables. Vendor will provide all Cat6 cable, jacks, faceplates, patch panels, wire management, AV components, J hooks, sleeves, firestop and all items need for a complete installation.

Section 27 00 00
Structured cabling

PART 1 GENERAL

1.01 SUMMARY

A. This division identifies the requirements for designing and installing the structured cabling systems at Saginaw Valley State University. Additionally, it contains requirements for equipment that connects to the structured cabling systems.

B. Specific requirements are organized by the subsections of this division.

C. Related Requirements:
1. Section 27 10 00 "Structured Cabling"
   a. Section 27 15 00 "Structured cabling Horizontal Cabling"
2. Section 27 20 00 "Data Structured cabling"

D. Subsections are bound by the definitions from the parent sections that enclose them; all parent sections must be consulted when implementing a specific section.

1.02 REFERENCES

A. Abbreviations, Acronyms, and Definitions
Every effort has been made to use industry standard terminology throughout this specification, but industry standard terminology is not used by all manufacturers and in many cases, industry standard terminology does not exist. Notify the IT and the Engineer to define terminology used in specifications if any ambiguity exists.

8P8C
Eight Position Eight Conductor

Cat6
Category 6

Category 6
A standardized twisted pair cable supporting maximum frequency of 250MHz and suitable for 1000BASE-T Gigabit Ethernet applications.

Category 6_A/Class E_A
A standardized twisted pair cable that augments and improves on the Category 6 (Cat6) standard, supporting a maximum frequency of 500MHz and suitable for 10GBASE-T 10-Gigabit Ethernet applications. The specific variant used in this document is the ISO/IEC 11801 Edition 2 Amendments 1 and 2 standards, which differs from (and is more stringent than) the ANSI/TIA-568-B.2-10 standard.

CATV
Cable Television

CDF
Core Distribution Facility

Core Distribution Facility
A point on the network where connections from multiple buildings are combined together. Saginaw Valley State University currently has a single CDF in its Library that hosts all core networking equipment and servers. The CDF may also act as an MDF and IDF.

Eight Position Eight Conductor
A plug (male) or jack (female) termination used with Category 6 wiring. Often referred to as RJ45.

Equipment Room
A generic name for an IDF, MDF, or Core Distribution Facility (CDF).

ER
Equipment Room

Ethernet
A local-area network protocol used worldwide by millions of devices. The IEEE 802.3 family of standards describe the protocol. Additionally, the 802.11 family of standards (Wireless LAN, or "Wi-Fi") can be considered to implement wireless Ethernet. Thus, the term "Ethernet" may refer to either 802.3 or 802.11 unless qualified by "wired" or "wireless".

IDF
Intermediate Distribution Frame

Inside Plant
Refers to cabling run entirely inside of a building. Typically has less protection against weather and damage, and is also cheaper and easier to work with.

Intermediate Distribution Frame
A secondary Structured cabling closet located inside a building. Used to connect premise equipment to the distribution portion of the network.

Internet of Things
Typically refers to embedded electronics that communicate automatically over the Internet to provide real-time data or control. Examples include thermostats, sensors, automation controls.

Internet Protocol
A networking protocol used worldwide by millions of Structured cabling devices. Two major versions exist: Internet Protocol, version 4 (IPv4) and Internet Protocol, version 6 (IPv6). Unless a specific version is noted, "IP" includes both versions.

Internet Protocol, version 4
The traditional version of Internet Protocol (IP). Addresses are represented as a 32-bit integer in "dotted quad" format with an optional slash and CIDR net mask.

Internet Protocol, version 6
The latest version of IP. Addresses are represented as a 128-bit integer in hexadecimal format, separated by colons, with an optional slash and net mask.

IoT
Internet of Things

IP
Internet Protocol

IPv4
Internet Protocol, version 4

IPv6
Internet Protocol, version 6

ISP
Inside Plant

jack
Jack (Drop, Port) a single physical connection point to the network or phone system. Saginaw Valley State University typically does *not* distinguish between network and phone connection jacks at the faceplate, so a particular jack may be patched to any available network in the MDF/IDF.

Light Interface Unit
An enclosure for breaking out and terminating optical fiber cabling. Also called Fiber Enclosures, Fiber Patch Panels, Fiber Cabinets, Fiber Distribution Panels.

LIU
Light Interface Unit

MAC address
Medium Access Control Address

Main Distribution Frame
The primary structured cabling closet in a building. Typically, responsible for terminating connections from the outside plant to the inside plant equipment, either via an IDF or directly. In the latter case, the MDF acts as an IDF.

may
Indicates optional compliance for a requested action (or inaction if used with "not"). If provided in the context of a choice of possible actions, the implementer may select whichever action they prefer.

MDF
Main Distribution Frame

Medium Access Control Address
A 48-bit integer address uniquely identifying a station on an Ethernet network. Applies to both wired and wireless networks. Typically formatted as a 12-digit hexadecimal number, separated by colons or dashes. Example: fa:ca:de:01:23:45

MMF
Multimode Fiber

Multimode Fiber
Fiber-optic cabling where light may take different paths through the same fiber. Typically used for short-length or lower-bandwidth structured cabling. Saginaw Valley State University no longer installs multimode fiber

must
Indicates mandatory compliance for a requested action (or inaction if used with "not"). **Items marked "must" are mandatory unless an exception is granted in writing.**

OSP
Outside Plant

Outlet
A single location consisting of one or more jacks. Typically a wall faceplate, but may also be a floor box, above-ceiling box, or a box for mounting a AP.

Outside Plant
Refers to cabling run outside or between buildings. Typically has more protection from weather and damage than cabling intended for indoor use, but can be more expensive or difficult to work with.

Rack Unit
A unit of measure describing the height of equipment mounted in a standard 19-inch rack. Equivalent to 1.75 inches (44.45 mm). Sometimes abbreviated as "U".

RU
Rack Unit

IT
Saginaw Valley State University Information Technology Department

Single-Mode Fiber
Fiber-optic cabling where light only takes a single path through the fiber. Typically used for longer-haul and high-bandwidth Structured cabling.

SMF
Single-Mode Fiber

UPS
Uninterruptable Power Supply

Voice Over IP
Transmitting voice calls via an IP network instead of via a traditional analog phone line.

VoIP
Voice Over IP

AP
Wireless Access Point

Wireless Access Point
A physical piece of equipment connected to the physical network that provides wireless services.

END OF SECTION

Section 27 10 00
Structured Cabling

This section last revised 2017-01-17 02:33:55 UTC (revision 2849)

PART 1 GENERAL

1.01 SUMMARY

A. This section describes the physical infrastructure requirements for the Saginaw Valley State University Structured cabling network.

B. Section includes common requirements that apply to all related subsections listed below: Refer to Section 27 00 00 "Structured cabling" for general requirements that also apply to this section (and those below it).

C. Related Requirements:
1. Section 27 15 00 "Structured cabling Horizontal Cabling"

D. The work covered by this Section and subsections consists of furnishing all materials, accessories, connectors, supports, electrical protection, equipment, tools, setup, preparation, labor, supervision, incidentals, transportation, storage, and related items, and performing all operations necessary to complete the structured cabling work as indicated in the project drawings and specified herein. It is the intent and purpose of this specification to have, upon completion of the project, a "turn-key" Structured cabling system designed, built, coordinated, and integrated with the existing structured cabling systems and complete and operable in all respects. Completely install, connect, and test all systems, equipment, devices, shown or noted or required to final connections and leave ready for satisfactory operation. Provide any minor items omitted from the design, but obviously necessary to accomplish the above intent.

1.02 REFERENCES

A. Reference Standards: work must conform to all applicable national, state, and local standards:
1. ANSI American National Standards Institute
2. EIA Electronic Industries Association
3. TIA TeleStructured cabling Industries Association
   a. ANSI/TIA-568-*C.0, Generic TeleStructured cabling Cabling for Customer Premises*
   b. ANSI/TIA-568-*C.1, Commercial Building TeleStructured cabling Cabling Standard*
   c. ANSI/TIA-568-*C.2, Balanced Twisted-Pair TeleStructured cabling Cabling and Components Standard*
   d. ANSI/TIA-568-*C.3, Optical Fiber Cabling Components Standard*
   e. ANSI/TIA-568-*C.4, Broadband Coaxial Cabling and Components Standard*
   f. ANSI/TIA-569-*C, TeleStructured cabling Pathways and Spaces*

   g. ANSI/TIA-606-B, *Administration Standard for TeleStructured cabling Infrastructure*
4. ISO International Organization for Standardization
   a. ISO/IEC DIS 11801-1, *Information technology – Generic cabling for customer premises – Part 1: General requirements*
   b. ISO/IEC DIS 11801-2, *Information technology – Generic cabling for customer premises – Part 2: Office premises*
   c. ISO/IEC DIS 11801-3, *Information technology – Generic cabling for customer premises – Part 3: Industrial premises*
   d. ISO/IEC DIS 11801-4, *Information technology – Generic cabling for customer premises – Part 4: Homes*
   e. ISO/IEC DIS 11801-5, *Information technology – Generic cabling for customer premises – Part 5: Data centres*
   f. ISO/IEC DIS 11801-6, *Information technology – Generic cabling for customer premises – Part 6: Distributed Building Services*
5. BICSI Building Industry Consulting Services International
   a. Building Industries Consulting Services International (BICSI) *TeleStructured cabling Distribution Methods Manual* (TDMM)
6. ASTM American Society for Testing and Materials
7. FCC Federal Structured Cabling Commission
8. ICEA Insulated Cable Engineers Association
9. IEEE Institute of Electrical & Electronics Engineers
10. NEC National Electrical Code
11. NECA National Electrical Contractors Association
12. NEMA National Electrical Manufacturers Association
13. NESC National Electrical Safety Code
14. NETA National Electrical Testing Association
15. NFPA National Fire Protection Association
16. NIST National Institute of Standards & Technology
17. OSHA Occupational Safety and Health Administration
18. UL Underwriters Laboratories, Inc.

B. The contractor must determine and adhere to the most recent release of all applicable standards when developing the proposal for installation.

C. If the requirements of this document are in conflict with any governing codes or regulations, then the more stringent requirement applies. Nothing in this section shall be construed to permit work not conforming to all governing codes and regulations.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation Meetings. Schedule a walk-through meeting with the facilities prior to beginning installation.

B. Sequencing with others. Other installations requiring structured cabling network services depend on the work in this section. Before phone or network service can be provided, cabling must be:

1. Installed.
2. Terminated.
3. Tested.
4. Labelled.

This may affect services including (but not limited to):

1. Fire alarm dialers.
2. Elevator emergency phones.
3. Building automation and management.
4. Specialty lighting.
5. Audio-video components.

C. Sequencing with Owner. Sequence with work performed by the IT at the following project milestones:
1. Re-routing existing network services prior to beginning work.
2. Owner delivery of equipment to be installed by Contractor.
3. Owner providing access to facilities not at the work site.
4. Contractor providing interim drawings to the IT to configure network equipment

Additionally, request interim observations by the IT staff throughout the course of the project to avoid costly corrections at the end of the project:
1. Walk-through prior to beginning installation.
2. Confirm locations of equipment in the ER before final placement.
3. Observe initial testing on installed cables.

1.04 INFORMATIONAL SUBMITTALS

A. Samples, labels and documentation. Provide a mock-up demonstrating documentation and labelling in a completed system:
1. A section of the building plans showing a complete room, with all outlets labelled per 271000.1.05.A.
2. A physical faceplate representing an outlet from the room shown on the sample plan, labelled per 271500.3.05.
3. A physical patch panel, or a scale drawing of a patch panel, showing sample labels for the jacks on the sample outlet and plan, labelled per 271500.3.05.

Sample drawings are provided as attachments in 271500.3.07.

B. Samples, cable. Provide a three (3) foot section of each type and color of horizontal cable showing all markings.

C. Parts list. Provide a detailed list of all parts required for installation, including manufacturer and part number.

1.05 CLOSEOUT SUBMITTALS

A. Record Documentation. Provide drawings reflecting the details of the installed system ("as-builts"). Drawings must meet the following minimum requirements:
1. Computer-generated. Drawings must not be photographs, scans, or reproductions of handwritten information. All labels and cable information must be drawn using computer software and provided in electronic form. Drawings should be edits to the CAD files provided by the Architect (when such information is not already included on the drawings).
2. Locations and labels. Depict outlet locations on a scale drawing of the building. In close proximity to the outlet location, show on the drawing the label information as recorded at the physical outlet location.
3. Pathways. Depict cable routing and pathways from the ER to their termination points, along with bundle counts when cables servicing multiple locations are run together.
4. Formats. Provide drawings in both Portable Document Format (PDF) and editable CAD format (DWG or DXF). Drawing elements must be computer-generated, and not scans of handwritten or paper-based drawings.

B. Warranty Documentation. Contractor must apply for all manufacturer's warranties on behalf of Owner and furnish proof of warranty prior to acceptance.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Tools. Any non-industry-standard tools required for the access, maintenance, or operation of the installed product must be furnished to the Owner.

B. Training reference. Provide electronic copies of any training materials or sessions presented as described in 271000.3.03.A.

1.07 QUALITY ASSURANCE

A. Qualifications Installers:
   a. Installer must be normally employed in low-voltage cabling industry.
   b. Installer must be insured in the State of Michigan.
   c. Installer must furnish references for at least four (4) projects of similar size and scope completed in the last two (2) years.
   d. All technicians installing or testing cabling must be certified, through courses with hands-on training using actual tools and materials, in the type of cabling work they perform.
   e. All technicians onsite must have up-to-date training from Belden as qualify work performed for all manufacturer's warranties.
   f. Onsite project manager must have a minimum five years of verifiable project management and have verifiable current training from Belden and be a BICSI level 2 Installer or greater.

1.08 WARRANTY

A. Manufacturer Warranty. All materials of the structured cabling system must be backed by a manufacturer's warranty of at least twenty-five (25) years from the date of Owner acceptance.

B. Special Warranty. Notwithstanding any manufacturer warranties, the Installer must warranty that the structured cabling system will be free from defects in workmanship for a period of two (2) years from the date of Owner acceptance.

C. During any warranty period, all defects developing through materials or workmanship must be corrected or replaced immediately without expense to the Owner, including labor, materials, and re-testing and re-certification of replaced components.

PART 2 PRODUCTS

2.01 OWNER-FURNISHED PRODUCTS

A. New Products. The IT furnishes all active electronic devices that provide network and IT-related functions unless otherwise specified:
1. Wireless Access Points. Owner furnishes APs and patch cables as well as accessories to mount each AP to wall, ceiling or suspended ceiling T-rail. Contractor is responsible for mounting and connecting APs.
2. Active Electronics. Owner furnishes and installs all active electronic equipment such as patch cables, network switches, Uninterruptable Power Supply (UPS) units, servers, and desktop computers.
3. Data racks, cabinets, empty patch panel frames, horizontal and vertical wire management, fiber trays and inserts

2.02 EQUIPMENT

A. Cable bundling and support. Cables must be secured with plenum rated reusable ties (such as hook-and-loop closures). Tape, zip ties or tie wraps are not permitted as part of finish installation.

B. Cable markings. All cabling must be factory-marked on the outside jacket with the type of cable, manufacturer of cable, and footage markings. Space between markings must not exceed 40 inches.

C. Equipment not specified. Furnish additional equipment as necessary to install a complete, functioning, and standards-compliant system. Examples of parts needed for a complete installation include (but are not limited to):
1. Sleeves, bushings and firestop
2. Hooks, supports and fasteners, cable management.
3. Jacks, faceplates and blanks

PART 3 EXECUTION

3.01 INSTALLATION

A. General. Install cables and devices in accordance with industry and manufacturer standards. Install without damage to cable strands/fibers, cladding, or jacket. Install without violating recommended pulling tensions or bend radii.

B. Special Techniques, Cable Support. Cables, where not run in raceway, conduit, or cable tray, must be properly supported at recommended intervals through direct attachment to the structural building framing using J-hooks, cable slings, or other recognized supports. Cable must not be supported by ceilings, ceiling supports, mechanical piping, fire piping, or plumbing. Cable must be routed away from sources of EMI, heat, or environments that may cause damage to the cables or the signals carried in them.

C. Special Techniques, Service Loops. All cabling must have a minimum of ten (10) linear feet of slack in a service loop in the ER. Coil the cable neatly without violating any minimum bend radius for the cable and secure to the ladder rack or backboard. For cable runs between ERs, provide a service loop at each end.

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PROFESSIONAL SEALS:

CONSULTANTS:

KEYPLAN

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PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

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TECHNOLOGY SPECIFICATIONS

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E. Pathway sizing. Conduit and supports must be sized to accommodate future growth. Pathways must not be filled more that 40% unless an additional empty pathway along the same route is available. If a pathway will be filled more than 40%, it must be sized larger.

F. Conduit, pull string. All conduits must contain pull string or rope after installation for future use. Each segment of conduit to an accessible pull point or box should have its own string.

G. Conduit, boxes. A segment of conduit must contain an accessible box or pull point if the segment contains one-hundred-eighty (180) total degrees or more of bend in the segment, regardless of direction or distance between each bend.

H. Conduit, outside plant boxes. In addition to the bend requirements above, a pull point must be provided every 200 feet to facilitate cable installation.

I. Conduit, termination. Each section of conduit must be terminated with a bushing to prevent damage to cables pulled through the conduit.

3.02 SITE QUALITY CONTROL

A. Site Tests and Inspections. Installed cabling must be certified to meet the performance characteristics appropriate for the type of cable installed. Subsections of this document define the specific tests for different types of cable.

B. Testing, Conditions. Final tests of cables must take place after cables are terminated and their connectors attached in their housings in their final positions (patch panels, wall outlets, *etc.*).

C. Testing, Notification. The IT must be notified four (4) business days prior to any testing so initial testing may be witnessed. Contractor must not replace or correct any cable deficiencies found through testing prior to the notified date.

D. Testing, Equipment. All testing equipment must have documentation showing factory or third-party calibration within twelve (12) months prior to the start of testing. All testing equipment must have the latest stable software updates available.

E. Testing, Results Format. All test results must be stored and delivered electronically. Handwritten test results will not be accepted.

F. Testing, Failures. If any test failures are recorded, those results must be included along with any subsequent test results after the issue is fixed, along with a note explaining the corrective action taken.

H. **Inspections, Workmanship. Good workmanship and appearance are of equal importance with structured cabling operation. Lack of quality workmanship provides sufficient reason for rejection of a system in part or in its entirety, even if it passes performance testing. Carefully lay out all work in advance and install in a neat and workmanlike manner in accordance with recognized good practices and standards. Provide workmen who are skilled in their craft and a competent Project Manager who will oversee all work.**

I. Work Spaces, Cleanliness. Work in finished spaces must be in "broom clean" condition at the end of each work day. Remove trash from all work areas by the end of each work day.

3.03 CLOSEOUT ACTIVITIES

A. Training. If special tools or operating skills are required for the maintenance or operation of installed equipment, provide in-person training directly to members of the IT staff. Additionally, provide electronic copies of training materials or sessions for future reference.

3.04 PROTECTION

A. In unfinished spaces, protect installed cabling and equipment from dust, paint, or other hazards that may diminish the quality or performance of the installed product.

B. The Contractor must report any conditions or practices at the site that may impact the performance or warranty of the installed Structured cabling system, including those caused by other trades or called for in the project plans. Examples include (but are not limited to) excess dust, moisture, painting of cables, or routing of cables near potential sources of interference. Failure to report such conditions implies that the Contractor accepts responsibility for any issues with performance that may arise as a result of such conditions when the system is complete.

END OF SECTION

Section 27 15 00
Structured cabling Horizontal Cabling

This section last revised 2017-01-17 02:33:55 UTC (revision 2849)

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Pathways.
2. Twisted Pair cabling.
3. Cable connecting hardware, patch panels, and cross-connects.
4. Structured cabling outlets and connectors.
5. Cabling system identification products.
6. Cable management system.
7. Patch cables.
8. Wireless Access Points (APs).

B. This section discusses products necessary for a permanent link between an ER and outlet. Provide all components necessary for an industry-standard and code-compliant installation.

C. This section subsumes the specifications for the following subsections:
1. 27 15 13 Structured cabling Copper Horizontal Cabling
2. 27 15 43 Structured cabling Faceplates and Connectors
3. 27 16 00 Structured cabling Connecting Cords, Devices, and Adapters

Other subsections of this section not mentioned above are not used.

D. Refer to Section 27 00 00 "Structured cabling" and Section 27 10 00 "Structured Cabling" for common requirements that also apply to this section.

1.02 REFERENCES

A. Definitions
1. Category 6 (Cat6), when used in this section, refers to Class E / Category 6 wiring as defined in ISO/IEC 11801:2002.
2. Category 6_A/Class E_A ($Cat6_A$), when used in this section, refers to the augmented (500MHz) twisted pair wiring standard **as defined by ISO/IEC 11801 Edition 2 Amendment 2:2010**. Note that this standard is more stringent than the corresponding TIA-568-B.2-10 standard, and **the more stringent standard must be used**.

PART 2 PRODUCTS

2.01 OWNER-FURNISHED PRODUCTS

A. See Scope of Project

2.02 EQUIPMENT

A. Horizontal cable and its connecting hardware provide the means of transporting signals between the Structured cabling outlets and the horizontal cross-connect located in the ER. This cabling and its connecting hardware are called "permanent link", per the TIA and IEC standards.

B. Horizontal Cabling:
1. Category 6 Cable will be:
Belden DataTwist 3613 DI5U1000

2. Colors. Cable colors must be uniform throughout a building, and should be blue. Specific project requirements may influence color selection (e.g., cables run in exposed areas may need to be a certain color). Notify the IT and coordinate with Architect if other colors are used.

C. Design Criteria, Patch Panels:
1. Saginaw Valley State University does not distinguish between voice and data cabling at the outlet locations.
2. All cabling must terminate on 8PSC patch panels to retain maximum flexibility for later use.
3. Saginaw Valley State University does not use 66- or 110-style terminations for cross-connecting voice cables.
4. Patch panel connectors must be individual keystone type, with ratings meeting or exceeding the class and category of the cabling it terminates.
5. Patch panels must have space available to label:
   a. The port number (unless permanent numbers are stamped or etched into the panel).
   b. The room were the work area jack is terminated
6. Patch panels must have 48 ports, arranged in two even horizontal rows in 1RU or 2RU of rack space as indicated on rack elevation drawings. Numbering must begin at at the top-left of the panel (when facing the front), then proceed in a top-to-bottom.

D. Design Criteria, Jacks:
1. Performance. Jacks must be standard keystone inserts and meet or exceed the class and category noted on the project drawings.
2. Colors. Jacks must be available in the following colors:
   a. Orange used for work area and other all other
   b. Red used for access points
   c. Green used for cameras and access control

E. Design Criteria, Faceplates. All outlet shall be four port modular angled and gray in color.

PART 3 EXECUTION

3.01 INSTALLATION OF CABLES

A. Install cables in raceways and cable trays except within consoles, cabinets, desks, and counters. Conceal raceway and cables except in unfinished spaces.

B. Conceal conductors and cables in accessible ceilings, walls, and floors where possible.

C. Bundle, lace, and train cables to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

D. Terminate conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels.

3.02 INSTALLATION OF OUTLETS

All outlets in work areas shall have a minimum of two (2) jacks at any location except wall phones

3.03 INSTALLATION OF PATCH PANELS

A. Use keystone inserts to terminate horizontal cabling from outlet jacks. Colors must match the colors of the jacks terminated on the far end

B. Terminate jacks sequentially in the patch panel in a logical order corresponding to their physical location:
1. Locate jacks belonging to the same outlet sequentially on the panel in the order they appear in the outlet.
2. Locate outlet groups of jacks sequentially with other outlet groups in the same room by their outlet number.
3. Do not split jacks belonging to the same outlet between different panels in the same rack, or between different racks.

3.04 INSTALLATION OF PATCH CABLES

The contractor is not responsible for providing and connecting patch cables in the ER.

3.05 LABELLING

A. Project Drawings should show all designations; if not, use the scheme to generate designations and coordinate with IT.

B. Outlets in work areas shall be labeled as (Building)(Room number)-(Rack number)-(patch panel letter)(port number on patch panel) example: H101-1-A01

C. Patch Panels.
1. Label each panel with it's a letter number staring at top panel and letter A
2. Label each port with the room number where jack is terminated

3.06 SITE QUALITY CONTROL

A. Perform tests and inspections. See 271000.3.02 for general guidelines.

B. Site Tests

Performance Tests: for each outlet, perform all required tests as defined in ISO/IEC 11801, record details of all tests, including:
a. Name of vendor
b. Date and time of test
c. Project name
d. Test equipment model (Tx and Rx)
e. Test equipment serial number (Tx and Rx)
f. Test equipment software version (Tx and Rx)
g. Test equipment calibration date (Tx and Rx)
h. Cable ID under test
i. Length of cable under test
j. Measured transmission parameters (return loss, insertion loss, NEXT, PSNEXT, *etc.*, as mandated by standards)

END OF SECTION

PROFESSIONAL SEALS:

KEYPLAN

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PROJECT INFORMATION:

HHS CLASSROOM RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

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TECHNOLOGY SPECIFICATIONS

T602

PIONEER HALL P119 LAB RENOVATION

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SAGINAW VALLEY STATE UNIVERSITY

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SVSU BID #23010

11-09-2022

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PIONEER HALL P119
LAB RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #:	022-00568-00
SSOE/SW MANAGER:	R. SIEBENALLER

SSOE | STEVENS & WILKINSON

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Troy, MI 48084-1526
T. (248) 643-6222

COVER SHEET

GI-000

REFERENCE SYMBOLS

DETAIL IDENTIFICATION

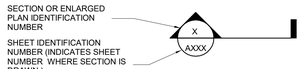
DETAIL OR ENLARGED PLAN IDENTIFICATION NUMBER

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE DETAIL IS DRAWN.)

SECTION IDENTIFICATION

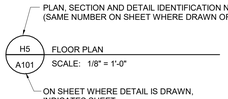
SECTION OR ENLARGED PLAN IDENTIFICATION NUMBER

SHEET IDENTIFICATION NUMBER (INDICATES SHEET NUMBER WHERE SECTION IS DRAWN.)



PLAN, SECTION AND DETAIL IDENTIFICATION

PLAN, SECTION AND DETAIL IDENTIFICATION NUMBER (SAME NUMBER ON SHEET WHERE DRAWN OR CUT)



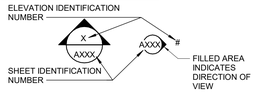
FLOOR PLAN

SCALE: 1/8" = 1'-0"

ON SHEET WHERE DETAIL IS DRAWN, INDICATES SHEET NUMBER WHERE DETAIL IS CUT

ELEVATION LOCATION IDENTIFICATION

ELEVATION IDENTIFICATION NUMBER



SHEET IDENTIFICATION NUMBER

FILLED AREA INDICATES DIRECTION OF VIEW

MATERIAL OR WORK DIVISION INDICATION

WALL TYPE INDICATION

WALL TYPE IDENTIFICATION AS NOTED IN PARTITION SCHEDULE

NORTH INDICATION

BULLETIN / ADDENDUM IDENTIFICATION

BULLETIN (NUMBER)

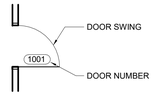
ADDENDUM (LETTER)

WORK POINT

ROOM NAME AND NUMBER INDICATION

NOTE LEADER INDICATION

DOOR NUMBER INDICATION



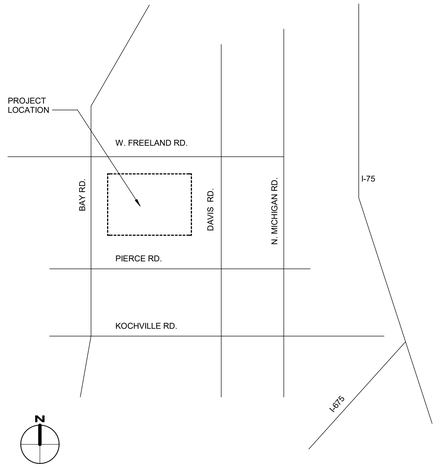
COLUMN IDENTIFICATION

EXISTING COLUMN IDENTIFICATION BUBBLE

NEW COLUMN IDENTIFICATION BUBBLE

REFER TO MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR ADDITIONAL SYMBOLS

VICINITY MAP



CAMPUS MAP

DRAWING LIST

GENERAL	
GI-000	COVER SHEET
GI-001	SPECIFICATIONS
ARCHITECTURAL	
AE-110	PARTIAL FLOOR PLANS
MECHANICAL	
MH-110	FLOOR PLAN - MECHANICAL

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SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY
- A. Section Includes:
  1. Demolition and removal of selected portions of building or structure.
  2. Salvage of existing items to be reused or recycled.

1.2 MATERIALS OWNERSHIP
- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
  1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.3 INFORMATIONAL SUBMITTALS (FOR OWNER REVIEW)
- A. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control, and for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of selective demolition activities with starting and ending dates for each activity.

1.4 CLOSEOUT SUBMITTALS (FOR OWNER REVIEW)
- A. Inventory of items that have been removed and salvaged.

1.5 FIELD CONDITIONS
- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect through the Construction Manager of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  1. If suspected hazardous materials are encountered, do not disturb; immediately notify Owner through the Construction Manager. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  1. Maintain fire-protection facilities in service during selective demolition operations.
- G. Arrange selective demolition schedule so as not to interfere with Owner's/Tenant's operations.

1.7 WARRANTY
- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.
- C. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.

PART 3 - EXECUTION

3.1 EXAMINATION
- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
- C. Inventory and record the condition of items to be removed and salvaged.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS
- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
  1. Arrange to shut off utilities with utility companies.
  2. 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.
  3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
     a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
     b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
     c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
     d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
     e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
     f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
     g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION
- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.5 SELECTIVE DEMOLITION
- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
  2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  4. Maintain fire watch during and for at least 48 hours after flame-cutting operations.
  5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  6. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
- B. 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.
- C. Removed and Salvaged Items:
  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 designated by Owner.
  5. Protect items from damage during transport and storage.
- D. 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.
- E. 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.

3.6 CLEANING
- A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."
  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."
- B. Burning: Do not burn demolished materials.
- C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 081113 - HOLLOW METAL FRAMES

PART 1 - GENERAL

1.1 SUMMARY
- A. Section includes:
  1. Interior standard steel frames.

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
- A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS (FOR OWNER REVIEW)
- A. Product test reports.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
  1. Smoke-Control Assemblies: Provide assemblies with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.
- B. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.

2.2 INTERIOR STANDARD STEEL FRAMES
- A. Construct hollow-metal frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Frames: SDI A250.8, Level 2; SDI A250.4, Level B.
  1. Frames:
     a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
     b. Construction: Face welded
  2. Doors:
     a. Type: As indicated in the Door and Frame Schedule.
     b. Thickness: 1-3/4 inches (44.5 mm).
     c. Face: Uncoated, cold-rolled steel sheet, minimum thickness of 0.053 inch (1.3 mm).
     d. Edge Construction: Model 1, Full Flush.
     e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's discretion.
- C. Extra-Heavy-Duty Frames: SDI A250.8, Level 3; SDI A250.4, Level A. Provide at X-Ray.
  1. Frames:
     a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
     b. Construction: Full profile welded

2.3 FRAME ANCHORS
- A. Jamb Anchors:
  1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
  2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches (610 mm) of frame height above 7 feet (2.1 m).
  3. Postinstalled Expansion Anchor: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.
- B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
- C. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch (51-mm) height adjustment. Terminate bottom of frames at top of underlayment.
- D. Material: ASTM A 879/A 879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
  1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M; hot-dip galvanized according to ASTM A 153/A 153M, Class B.

2.4 MATERIALS
- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- D. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- E. Glazing: Comply with requirements in Section 088000 "Glazing."

2.5 FABRICATION
- A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
  1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
  2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
     a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
- B. Hardware Preparation: Factory prepare hollow-metal frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
  1. Reinforce frames to receive nontemplated, mortised, and surface-mounted door hardware.
  2. Comply with BHMA A156.115 for preparing hollow-metal frames for hardware.

2.6 STEEL FINISHES
- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
  1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION
- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION
- A. Hollow-Metal Frames: Comply with SDI A250.11
  1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
     a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
     b. Install frames with removable stops located on secure side of opening.
  2. Fire-Rated Openings: Install frames according to NFPA 80.
  3. Floor Anchors: Secure with postinstalled expansion anchors.
     a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved.
  4. Solidly pack mineral-fiber insulation inside frames.
  5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
     a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
     b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
     c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
     d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

3.3 CLEANING AND TOUCHUP
- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- B. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY
- A. Section Includes:
  1. Factory veneer-faced flush wood doors.
  2. Factory fitting flush wood doors to frames and factory machining for hardware.

1.2 ACTION SUBMITTALS
- A. Product Data: For each type of door. Include factory-finishing specifications.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:
  1. Dimensions and locations of blocking.
  2. Dimensions and locations of mortises and holes for hardware.
  3. Dimensions and locations of cutouts.
  4. Undercuts.
  5. Requirements for veneer matching.
  6. Doors to be factory finished and finish requirements.
  7. Fire-protection ratings for fire-rated doors.
- C. Samples: For factory-finished doors.

1.3 INFORMATIONAL SUBMITTALS (FOR OWNER REVIEW)
- A. Quality Standard Compliance Certificates: AWI Quality Certification or WI Certified Compliance Program certificates.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Sustainable Design Requirements: Comply with Authorities Having Jurisdiction.

2.2 FLUSH WOOD DOORS, GENERAL
- A. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, "Architectural Wood Flush Doors."
  1. Provide AWI Quality Certification or WI Certified Compliance Labels indicating that doors comply with requirements of grades specified.
- B. WDMA I.S.1-A Performance Grade:
  1. Heavy Duty unless otherwise indicated.
- C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
  1. Cores: Provide core specified or mineral core as needed to provide fire-protection rating indicated.
  2. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed edges.
- D. Smoke-Control Door Assemblies: Listed and labeled for smoke-control, based on testing according to UL 1784.
- E. Structural-Composite-Lumber-Core Doors:
  1. Structural Composite Lumber: WDMA I.S.10.
     a. Screw Withdrawal, Face: 700 lbf (3100 N).
     b. Screw Withdrawal, Edge: 400 lbf (1780 N).
- F. Mineral-Core Doors:
  1. Core: Noncombustible mineral product complying with requirements of referenced quality standard and testing and inspecting agency for fire-protection rating indicated.
  2. Blocking: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated as needed to eliminate through-bolting hardware.
  3. Edge Construction: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.

2.3 VENEER-FACED DOORS FOR TRANSPARENT FINISH
- A. Interior Solid-Core Doors - Match existing color and finish
  1. Grade: Custom (Grade A faces)
  2. Species: Select white birch
  3. Cut: Plain sliced (flat sliced).
  4. Match between Veneer Leaves: Book match.
  5. Assembly of Veneer Leaves on Door Faces: Running match.
  6. Core: Structural composite lumber or mineral core as required for fire rating.
  7. Construction: Five or seven plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering. Faces are bonded to core using a hot press.

2.4 LIGHT FRAMES
- A. Wood-Veneered Beads for Light Openings in Fire-Rated Doors: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in doors of fire-protection rating indicated. Include concealed metal glazing clips where required for opening size and fire-protection rating indicated.
- B. Metal Frames for Light Openings in Fire-Rated Doors: Manufacturer's standard frame formed of 0.048-inch- (1.2-mm-) thick, cold-rolled steel sheet; baked-enamel- or powder-coated finish; and approved for use in doors of fire-protection rating indicated.

2.5 FABRICATION
- A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
  1. Comply with NFPA 80 requirements for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied.
- C. Openings: Factory cut and trim openings through doors.
  1. Light Openings: Trim openings with moldings of material and profile indicated.
  2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

2.6 FACTORY FINISHING
- A. Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
  1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors that are indicated to receive transparent finish.
- C. Transparent Finish:
  1. Grade: Custom.
  2. Finish: WDMA TR-4 conversion varnish or WDMA TR-6 catalyzed polyurethane
  3. Sheen: Semigloss.

PART 3 - EXECUTION

3.1 INSTALLATION
- A. Hardware: For installation, see Section 087100 "Door Hardware."
- B. Manufacturer's written instructions and referenced quality standard, and as indicated.
  1. Install fire-rated doors according to NFPA 80.
  2. Install smoke- and draft-control doors according to NFPA 105.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

END OF SECTION 081416

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY
- A. Section Includes:
  1. Mechanical door hardware for the following:
     a. Swinging doors.

1.2 ACTION SUBMITTALS
- A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS
- A. Sample warranty.

1.4 CLOSEOUT SUBMITTALS
- A. Maintenance data.

1.5 QUALITY ASSURANCE
- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers who is available during the course of the Work to consult Construction Manager about door hardware and keying.

1.6 WARRANTY
- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
  1. **Warranty Period: Three years from date of Substantial Completion unless otherwise indicated.**

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS
- A. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- B. Accessibility Requirements: For door hardware on doors in an accessible route, comply with agency having jurisdiction and as indicated on Drawings.
- C. Provide products for each door that comply with requirements indicated in Part 2 and door hardware schedule.
  1. Door hardware is scheduled on Drawings.

2.2 LOCK CYLINDERS
- A. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.
- B. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.3 KEYING
- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide as indicated on Drawings.
- B. Keys: Nickel silver or Brass.
  1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
     a. Notation: "DO NOT DUPLICATE."

2.4 FINISHES
- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

PART 3 - EXECUTION

3.1 INSTALLATION
- A. Mounting Heights: Mount door hardware units at heights required to comply with governing regulations.
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
  1. Replace construction cores with permanent cores as directed by Construction Manager.

3.2 ADJUSTING
- A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

END OF SECTION 087100

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY
- A. Provide per drawings and to meet or exceed the University's Design + Construction Standards.
- B. This Section includes surface preparation and the application of paint systems on the following interior substrates:
  1. Steel.
  2. Gypsum board.

1.2 ACTION SUBMITTALS (FOR OWNER REVIEW)
- A. Product Data: For each type of product indicated.
- B. Virtual sample showing corresponding paint code number.

1.3 QUALITY ASSURANCE
- A. MPI Standards:
  1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
  2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated and design + construction standards.

1.4 DELIVERY, STORAGE, AND HANDLING
- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
  1. Maintain containers in clean condition, free of foreign materials and residue.
  2. Remove rags and waste from storage areas daily.

1.5 PROJECT CONDITIONS
- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. The Glidden Company/PPG speedhide interior zero VOC latex

2.2 PAINT, GENERAL
- A. Material Compatibility:
  1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicate.
- B. Chemical Components of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions; these requirements do not apply to primers or finishes that are applied in a fabrication or finishing shop:
  1. Flat Paints and Coatings: VOC content of not more than 50 g/L.
  2. Nonflat Paints and Coatings: VOC content of not more than 150 g/L.
  3. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
  4. Restricted Components: Paints and coatings shall not contain any of the following:
     a. Acrolein.
     b. Acrylonitrile.
     c. Antimony.
     d. Benzene.
     e. Butyl benzyl phthalate.
     f. Cadmium.
     g. Di (2-ethylhexyl) phthalate.
     h. Di-n-butyl phthalate.
     i. Di-n-octyl phthalate.
     j. 1,2-dichlorobenzene.
     k. Diethyl phthalate.
     l. Dimethyl phthalate.
     m. Ethylbenzene.
     n. Formaldehyde.
     o. Hexavalent chromium.
     p. Isophorone.
     q. Lead.
     r. Mercury.
     s. Methyl ethyl ketone.
     t. Methyl isobutyl ketone.
     u. Methylene chloride.
     v. Naphthalene.
     w. Toluene (methylbenzene).
     x. 1,1,1-trichloroethane.
     y. Vinyl chloride.
- C. Colors: As indicated on the Room Finish Legend See Sheet IN-100.

2.3 PRIMERS/SEALERS
- A. Interior Latex Primer/Sealer: MPI #50.
  1. VOC Content: E Range of E2.
- B. Interior Alkyd Primer/Sealer: MPI #45.
  1. VOC Content: E Range of E2.

2.4 METAL PRIMERS
- A. Rust-Inhibitive Primer (Water Based): MPI #107.
  1. Environmental Performance Rating: EPR 2.
- B. Waterborne Galvanized-Metal Primer: MPI #134.
  1. Environmental Performance Rating: EPR 2.

2.5 LATEX PAINTS
- A. Institutional Low-Odor/VOC Latex (Flat): MPI #143 (Gloss Level 1).
  1. Environmental Performance Rating: EPR 4.
- B. Institutional Low-Odor/VOC Latex (Low Sheen): MPI #144 (Gloss Level 2).
  1. Environmental Performance Rating: EPR 4.5.
- C. Institutional Low-Odor/VOC Latex (Semigloss): MPI #147 (Gloss Level 5).
  1. Environmental Performance Rating: EPR 3.

PART 3 - EXECUTION

3.1 EXAMINATION
- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  1. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
  1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION
- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
  2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulates.
  1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- D. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.
- E. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 APPLICATION
- A. Apply paints according to manufacturer's written instructions.
  1. Use applicators and techniques suited for paint and substrate indicated.
  2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION
- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE
- A. Steel Substrates:
  1. Institutional Low-Odor/VOC Latex System: MPI INT 5.1S.
     a. Prime Coat: Rust-inhibitive primer (water based).
     b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
     c. Topcoat: Institutional low-odor/VOC interior latex (semigloss).
- B. Gypsum Board and Plaster Substrates:
  1. Institutional Low-Odor/VOC Latex System: MPI INT 9.2M.
     a. Prime Coat: Interior latex primer/sealer.
     b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
     c. Topcoat: Institutional low-odor/VOC interior latex (flat, low sheen, and semigloss, where indicated).
- C. Concrete Sealer: MPI #104 Comply with section 2.6

END OF SECTION 099123

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SSOE | S&W

PROFESSIONAL SEALS:

CONSULTANTS:

KEYPLAN

SUBMITTAL/REVISION SCHEDULE:

NO.	DATE	DESCRIPTION
0	11-09-2022	ISSUE FOR CONSTRUCTION

■ APPROVED FOR CONSTRUCTION
□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:

SAGINAW VALLEY STATE UNIVERSITY

7400 BAY ROAD
UNIVERSITY CITY, MICHIGAN
48710

PROJECT INFORMATION:

PIONEER HALL P119
LAB RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #:	022-00568-00
SSOE/SW MANAGER:	R. SIEBENALLER

SSOE | STEVENS & WILKINSON
1001 Madison Avenue
Toledo, OH 43604
T. (419) 255-3830

SPECIFICATIONS

GI-001

Branch Panel: (E)RP-L14

Location: BIOMATERIALS LAB P119 | **Volts:** 208Y/120V Wye | **A.I.C. Rating:** EXISTING
Supply From: DP-1A | **Phases:** 3 | **Mains Type:** MLO
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: Type 1

Notes: 20A, 120V CIRCUITING SHALL BE STRANDED COOPER CONDUCTOR, TYPE THHN-THWN 12 AWG. IN 3/4" CONDUIT, COMPLYING WITH NEMA WC 70.

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	**LAB EQUIPMENT**	**20 A**	**1**	1500	540					1	20 A	BIOMATERIALS LAB RECEPTS.	2
3	**LAB EQUIPMENT**	**20 A**	**1**			1500	900			1	20 A	BIOMATERIALS LAB CORD REELS	4
5	SPACE	--	--					0	900	1	20 A	BIOMATERIALS LAB CORD REELS	6
7	SPACE	--	--	0	720					1	20 A	BIOMATERIALS LAB RECEPTS.	8
9	SPACE	--	--			0	540			1	20 A	BIOMATERIALS LAB RECEPTS.	10
11	SPACE	--	--					0	360	1	20 A	PROJECTOR	12
13	SPACE	--	--	0	600					1	20 A	SMART PODIUM	14
15	SPACE	--	--			0	720			1	20 A	BIOMATERIALS LAB RECEPTS.	16
17	SPACE	--	--					0	0	--	--	SPACE	18
19	SPACE	--	--	0	0					--	--	SPACE	20
21	SPACE	--	--			0	0			--	--	SPACE	22
23	SPACE	--	--					0	0	--	--	SPACE	24
25	SPACE	--	--	0	0					--	--	SPACE	26
27	SPACE	--	--			0	0			--	--	SPACE	28
29	SPACE	--	--					0	0	--	--	SPACE	30
31				900	0					--	--	SPACE	32
33	HAMMER MILL	20 A	3			900	0			--	--	SPACE	34
35								900	0	--	--	SPACE	36
37	STAIRWAY LOBBY PLUGS	20 A	1	360	0					--	--	SPACE	38
39	UNLABELED LOAD	20 A	1			900	0			--	--	SPACE	40
41	UNLABELED LOAD	20 A	1					900	0	--	--	SPACE	42
			Total Load:	4620 VA		5460 VA		3060 VA					
			Total Amps:	41 A		48 A		26 A					

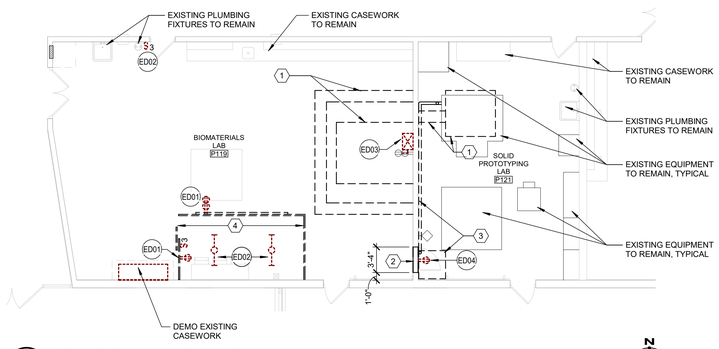
Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Equipment	3000 VA	100.00%	3000 VA	
Spare	10140 VA	100.00%	10140 VA	**Total Conn. Load:** 13140 VA
				Total Est. Demand: 13140 VA
				Total Conn.: 36 A
				Total Est. Demand: 36 A

Notes:
1. BOLD TYPE FONT INDICATES NEW WORK/EQUIPMENT IN EXISTING PANEL. NEW EQUIPMENT SHALL MATCH EXISTING IN ALL FACETS.

ELECTRICAL SYMBOLS SCHEDULE

- RECESSED LIGHT FIXTURE, HALF-SHADING INDICATES EMERGENCY EGRESS LIGHT FIXTURE
- SURFACE OR CHAIN HUNG STRIP LIGHT FIXTURE, HALF-SHADING INDICATES EMERGENCY EGRESS LIGHT FIXTURE
- QUADPLEX RECEPTACLE - NEMA 5-20R, HORIZONTAL LINE INDICATES MOUNTED AFC UON, SHADING INDICATES CIRCUITED TO GENERATOR/UPS POWER (ALL OTHER NEMA 5-20R QUAD RECEPTACLE SYMBOLS FOLLOW SAME STACKED DUPLEX PATTERN)
- DUPLEX RECEPTACLE - NEMA 5-20R, HORIZONTAL LINE INDICATES MOUNTED AFC UON, SHADING INDICATES CIRCUITED TO GENERATOR/UPS POWER
- JUNCTION BOX, LEG INDICATES WALL/EQUIPMENT MOUNTING IS REQUIRED, SQUARE INDICATES FLOOR MOUNTED
- BRANCH CIRCUIT PANELBOARD

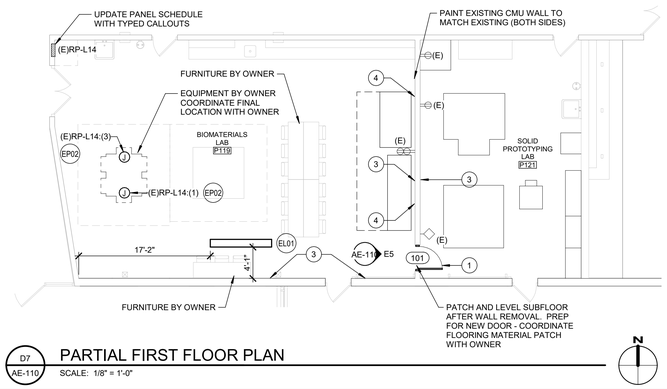


A7 / AE-110 — FIRST FLOOR DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

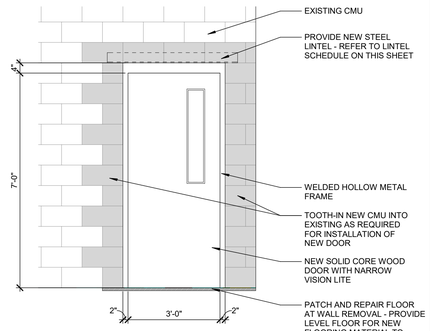
STEEL UNMARKED LINTEL SCHEDULE

MASONRY OPENING	STRUCTURAL STEEL MEMBER PER 4" OF WALL THICKNESS	BEARING EACH END
UP TO 4'-0"	L3 1/2 x 3 1/2 x 1/4	4"
4'-1" TO 7'-0"	L5 x 3 1/2 x 5/16	6"
7'-1" TO 10'-0"	L6 x 3 1/2 x3/8	8"

STEEL LINTELS MAY BE PROVIDED AT UNMARKED OPENINGS ONLY WHERE APPROVED BY ARCHITECT/ENGINEER. ALL STEEL LINTELS REQUIRE FIRE-PREVENTIVE COATING.



D7 / AE-110 — PARTIAL FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"



E5 / AE-110 — DOOR ELEVATION
SCALE: 1/2" = 1'-0"

ELECTRICAL PLAN NOTES

ED01 DISCONNECT AND REMOVE EXISTING RECEPTACLE AND ASSOCIATED CONDUIT AND WIRING BACK TO NEAREST TO REMAIN JUNCTION BOX, DEVICE OR SOURCE UNLESS OTHERWISE NOTED. COORDINATE WITH ARCHITECTURAL TRADES FOR ADDITIONAL REQUIREMENTS.

ED02 DISCONNECT AND REMOVE EXISTING LUMINIARES, ASSOCIATED INTERCONNECTING CONDUIT AND WIRING FROM EXISTING TO REMAIN LIGHTING IN THE SPACE. MAINTAIN CONTINUITY OF EXISTING LIGHTING CONTROLS AND PREPARE FOR CONNECTION TO NEW LIGHTING. REFER TO NEW WORK PLANS FOR ADDITIONAL REQUIREMENTS. RETURN FIXTURES TO OWNER.

ED03 ALTERNATE 1: DISCONNECT AND REMOVE EXISTING DISCONNECT SWITCH AND CONTROL PANEL(S) ASSOCIATED WITH REMOVED EXHAUST FAN. REMOVE EXISTING CONDUIT AND WIRING BACK TO SOURCE. COORDINATE WITH MECHANICAL TRADES FOR ADDITIONAL REQUIREMENTS.

ED04 DISCONNECT AND REMOVE EXISTING RECEPTACLE AND ASSOCIATED CONDUIT AND WIRING BACK TO NEAREST TO REMAIN JUNCTION BOX OR SOURCE. PREPARE EXISTING CIRCUIT FOR EXTENSION TO NEW RECEPTACLE. REFER TO NEW WORK PLANS FOR ADDITIONAL REQUIREMENTS.

EL01 CONNECT NEW LED LUMINAIRE TO EXISTING CIRCUIT CURRENTLY SERVING THE LAB SPACE VIA EXISTING CONTROLS. NEW LED LUMINARE SHALL MATCH EXISTING IN ALL FACETS. MOUNT LUMINAIRE TO MATCH EXISTING MOUNTING HEIGHT.

EP02 PROVIDE DEDICATED 120V, 20A, 1PH CIRCUIT TO OWNER PROVIDED LAB EQUIPMENT. COORDINATE WITH OWNER AND LAB EQUIPMENT MANUFACTURER FOR ADDITIONAL REQUIREMENTS, AND EXACT LOCATION PRIOR TO ROUGH IN. CIRCUIT AS INDICATED ON PLANS.

GENERAL CONSTRUCTION NOTES

1. COORDINATE SCHEDULE OF OVERALL CONSTRUCTION AND DAY-TO-DAY CONSTRUCTION OPERATIONS WITH OWNER'S SCHEDULE REQUIREMENTS.
2. FLOOR PLAN DRAWINGS ARE COMPOSITES OF EXISTING CONSTRUCTION TO REMAIN AND NEW CONSTRUCTION. EXISTING CONSTRUCTION IS SHOWN IN LIGHTER, OUTLINE FORM. NEW CONSTRUCTION IS INDICATED WITH HEAVIER LINEWORK AND SHADED AND ADDITIONALLY MAY BE IDENTIFIED BY NOTE, KEYNOTE, LARGER SCALE DETAIL REFERENCE, OR MATERIAL PATTERN (REFER ALSO TO LEGEND).
3. DIMENSIONS ARE TO FINISH FACE OF WALL OR CASEWORK UNLESS NOTED OTHERWISE (UNO).
4. FIELD VERIFY PROJECT CONDITIONS PRIOR TO THE START OF, AND AS NEEDED DURING THE COURSE OF CONSTRUCTION. BRING DISCREPANCIES WHICH MAY SIGNIFICANTLY AFFECT CONSTRUCTION TO THE ATTENTION OF THE ARCHITECT FOR REVIEW.
5. KEEP MEANS OF EGRESS OPEN, PROPERLY ILLUMINATED, AND FREE OF OBSTRUCTIONS.
6. WHERE NEW WALL CONSTRUCTION ABUTS EXISTING, WALL DIRECTLY ALIGN NEW FINISH SURFACES(S) WITH EXISTING.
7. KEEP CONSTRUCTION NOISE TO A MINIMUM, PARTICULARY DURING DAYTIME OPERATIONAL HOURS.
8. SMOKING AND SMOKELESS USE OF TOBACCO PRODUCTS ARE PROHIBITED ON PROJECT SITE
9. PATCH AND REPAIR DENTS, CRACKS, HOLES, AND/OR OTHER UNEVEN SURFACE OPERATIONS.
10. VERIFY THE DIMENSIONS, LOCATIONS, ELEVATION AND ARRANGEMENT OF INFRASTRUCTURE ASSOCIATED WITH INSTALL OF EQUIPMENT AND RELATED MECHANICAL AND ELECTRICAL WORK.

FLOOR PLAN LEGEND

- EXISTING CONSTRUCTION TO REMAIN
- FE — FIRE EXTINGUISHER AND CABINET RE: SPECIFICATION

FLOOR PLAN KEYNOTES

1. NEW DOOR- REFER TO LINTEL SCHEDULE. SOLID CORE WOOD DOOR WITH WELDED HOLLOW METAL FRAME. DOOR HARDWARE- BEST 7 PIN CORE. DOOR AND HARDWARE TO MATCH EXISTING AND CAMPUS STANDARD. PAINT FRAME TO MATCH EXISTING.
2. NOT USED.
3. NEW WALL FINISH AND WALL BASE. MATCH EXISTING BLOCK PAINT AND BASE
4. TOOTH-IN MASONRY AT EXISTING OPENING. COORDINATE WITH MECHANICAL.

DEMOLITION PLAN NOTES

1. REMOVE DUCTWORK, VENT HOOD, AND ALL ASSOCIATED HARDWARE AS INDICATED ON DEMOLITION DRAWING. REFER TO MECHANICAL FOR ENTIRE SCOPE OF WORK PATCH AND REPAIR ADJACENT SURFACES TO RECEIVE NEW FINISHES.
2. CUT AND REMOVE EXISTING BLOCK FOR NEW DOOR OPENING TO RECEIVE NEW STEEL LINTEL AND HM FRAME. RELOCATE ALL EXISTING ELECTRICAL WITHIN AREA OF CONSTRUCTION PER PLAN. FIELD VERIFY PRIOR TO DEMOLITION TO ENSURE ALL ELECTRICAL IS RELOCATED.
3. PROTECT AND REMOVE TABLE SAW AND FILTER EQUIPMENT AND ALL ASSOCIATED DUCTWORK AND HARDWARE. SALVAGE AND RETAIN FOR RELOCATION. COORDINATE WITH OWNER'S REPRESENTATIVE FOR RELOCATION INSTRUCTIONS. PATCH AND REPAIR WALL AND FLOOR SURFACES TO RECEIVE NEW FINISHES.
4. REMOVE SAFETY CAGE AND ALL ASSOCIATED HARDWARE. SALVAGE AND RETURN TO OWNER. PATCH AND REPAIR WALL AND FLOOR SURFACES.

GENERAL DEMOLITION NOTES

1. PROVIDE DEMOLITION WORK SHOWN ON THE DRAWINGS AND RELATED AND INCIDENTAL DEMOLITION WORK REQUIRED TO COMPLETE NEW CONSTRUCTION WORK. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION SCOPE AND REQUIREMENTS.
2. FIELD VERIFY EXISTING CONDITIONS, PRIOR TO THE START OF DEMOLITION OPERATIONS. BRING ANY DISCREPANCIES WHICH MAY SIGNIFICANTLY AFFECT DEMOLITION OR NEW CONSTRUCTION WORK TO THE ATTENTION OF THE ARCHITECT FOR REVIEW.
3. PROTECT EXISTING CONSTRUCTION TO REMAIN FROM DAMAGE DURING DEMOLITION AND/OR NEW CONSTRUCTION OPERATIONS. CONDUCT DEMOLITION OPERATIONS SO AS TO MINIMIZE THE DEVELOPMENT AND SPREAD OF DUST.
4. REMOVE DEMOLITION MATERIALS FROM SITE PROMPTLY AND DISPOSE OF LEGALLY OFF SITE.
5. DO NOT ALTER THE STRUCTURAL INTEGRITY OF THE EXISTING BUILDING OR ITS ASSEMBLIES UNLESS SPECIFICALLY NOTED OTHERWISE.
6. UPON REMOVAL OF FINISH MATERIALS INDICATED OR REQUIRED, PREPP SUBSTRATE TO RECEIVE NEW FINISH. REFER ALSO TO ROOM FINISH SCHEDULE FOR NEW MATERIAL(S). REPAIR ANY EXISTING DAMAGE, OR DAMAGE ARISING FROM DEMOLITION OPERATIONS, TO MATCH EXISTING AND AS NEEDED FOR INSTALLATION OF NEW FINISH(S).
7. PATCH AND REPAIR DAMAGE ARISING FROM DEMOLITION OPERATIONS TO FLOOR, WALL AND CEILING SURFACES, TO MATCH EXISTING. PATCH CHIPPED OR SPALLED CONCRETE CAUSED BY PARTITION REMOVAL. REMOVE ANY EXTRANEOUS MATERIAL AND PATCH TO MATCH ADJACENT SURFACES.
8. PROVIDE 1 HOUR FIRE-RESISTANT RATED DUST PROOF BARRIERS (U.L. DESIGN U309) TO SEPARATE DEMOLITION AREA FROM THE REST OF THE FACILITY. PROVIDE TEMPORARY FILTERS AS REQUIRED TO PREVENT THE SPREAD OF DUST THROUGH THE BUILDING VIA THE RETURN AIR SYSTEM. UPON COMPLETION OF DEMOLITION OPERATIONS, REMOVE BARRIERS AND REPAIR DAMAGE CAUSED BY THEIR INSTALLATION OR PRESENCE TO "LIKE NEW" CONDITION.
9. MAINTAIN MEANS OF EGRESS, AND KEEP FULLY SEPARATE FROM CONSTRUCTION AREA AT ALL TIMES.
10. PATCH AND REPAIR OPENINGS IN AND/OR PENETRATIONS THROUGH EXISTING FIRE RATED ASSEMBLIES AND SMOKE BARRIER ASSEMBLIES.
11. AT UNEVEN AREAS AND DEPRESSIONS IN EXISTING CONCRETE FLOOR CONSTRUCTION, PROVIDE CEMENTITIOUS UNDERLAYMENT AS REQUIRED TO PROVIDE SUITABLE BASE CONDITION FOR NEW FINISH(ES) AND NEW CONSTRUCTION.
13. COORDINATE TIMING AND HOURS OF DEMOLITION OPERATIONS WITH OWNER'S SCHEDULE.
14. MINIMIZE NOISE FROM DEMOLITION OPERATIONS PARTICULARLY WHEN CONDUCTED DURING REGULAR OPERATING HOURS.
15. SAWCUT SLABS ON GRADE WHERE REQUIRED TO INSTALL NEW CONDUIT, PIPING, ETC. REFER ALSO TO MECHANICAL AND ELECTRICAL DRAWINGS. PATCH AND REPAIR SLABS TO MATCH EXISTING.
16. CORE EXISTING FLOOR SLAB CONSTRUCTION WHERE REQUIRED FOR INSTALLATION OF REQUIRED CONDUIT, PIPING, ETC. REFER ALSO TO MECHANICAL AND ELECTRICAL DRAWINGS. PROVIDE UL RATED FIRE SAFING ASSEMBLIES AT ALL SUCH CONDITIONS.
17. CONDUCT DEMOLITION OPERATIONS TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT BUILDING AREAS. ENSURE SAFE PASSAGE OF PEOPLE AROUND SELECTIVE DEMOLITION AREA.
    A. PROTECT WALLS, CEILINGS, FLOORS AND OTHER FINISH WORK THAT ARE TO REMAIN AND ARE EXPOSED DURING SELECTIVE DEMOLITION OPERATIONS.
    B. COVER AND PROTECT FURNISHINGS AND EQUIPMENT THAT HAVE NOT BEEN REMOVED.
    C. DO NOT BLOCK ANY EXITS DURING CONSTRUCTION OPERATIONS.
18. CLEAN ADJACENT STRUCTURES AND IMPROVEMENTS OF DUST, DIRT AND DEBRIS CAUSED BY SELECTIVE DEMOLITION AND NEW CONSTRUCTION OPERATIONS.
19. IN WALLS TO BE REFINISHED; REMOVE EXISTING MISCELLANEOUS ACCESSORIES TO FACILITATE INSTALLATION OF NEW FINISHES. PATCH, REPAIR, AND PREP WALLS TO RECEIVE NEW FINISHES. ITEMS REMOVED TO BE SALVAGED AND GIVEN BACK TO THE OWNER.
20. EXISTING CONSTRUCTION MAY CONTAIN ASBESTOS CONTAMINATED PRODUCTS. MATERIALS THOUGHT TO CONTAIN ASBESTOS MUST BE INSPECTED BY AN EPA CERTIFIED INSPECTOR CAPABLE OF SAMPLING FOR THE EXISTENCE OF ASBESTOS. WORK SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT OSHA REGULATIONS AND DISPOSED OF IN ACCORDANCE WITH CURRENT EPA REGULATIONS.
21. EXISTING CONSTRUCTION MAY CONTAIN LEAD CONTAMINATED PRODUCTS. MATERIALS THOUGHT TO CONTAIN LEAD MUST BE INSPECTED BY AN EPA CERTIFIED INSPECTOR CAPABLE OF SAMPLING FOR THE EXISTENCE OF LEAD. WORK SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT OSHA/EPA REGULATIONS AND DISPOSED OF IN ACCORDANCE WITH CURRENT EPA REGULATIONS.

DEMOLITION PLAN LEGEND

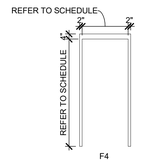
- EXISTING TO BE REMOVED
- EXISTING TO REMAIN
- EXISTING DOOR & FRAME TO BE REMOVED. (U.N.O.)

ROOM FINISH SCHEDULE

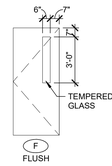
NO	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH NORTH	WALL FINISH EAST	WALL FINISH SOUTH	WALL FINISH WEST	CEILING HEIGHT	CEILING MATL	CEILING FINISH	REMARKS
Level 1											
P119	BIOMATERIALS LAB	REPAIR TO MATCH	MATCH	EXIST	MATCH	MATCH	EXIST				
P121	SOLID PROTOTYPING LAB	REPAIR TO MATCH	MATCH	EXIST	EXIST	EXIST	MATCH				

DOOR SCHEDULE

NO.	DOOR LEAF	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR SIZE THK	DOOR MATL	DOOR TYPE	FRAME MATL	FRAME TYPE	FRAME DETAILS HEAD	FRAME DETAILS JAMB	FRAME DETAILS SILL	HDWE SET	REMARKS	NO.
101	1	3'-0"	7'-0"	1 3/4"	SCW	F	HM	F4	--	--	--	1		101



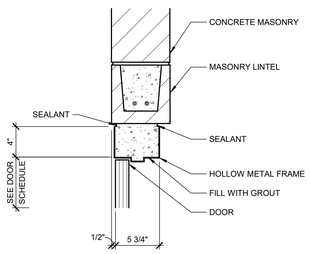
DOOR FRAME TYPES
SCALE: 1/4" = 1'-0"



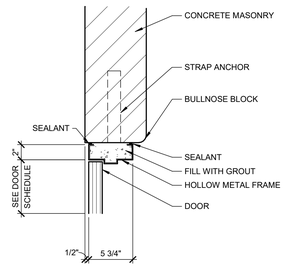
DOOR TYPES
SCALE: 1/4" = 1'-0"

HARDWARE SETS

HARDWARE SET #1
- HINGES
- WALL MOUNTED DOOR HOLDER
- CLASSROOM LOCKSET
- MANUAL FLUSH BOLT



MAN DOOR HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



MAN DOOR JAMB DETAIL
SCALE: 1 1/2" = 1'-0"

CODE SUMMARY

OCCUPANCY: BUSINESS
NO. OF STORIES: TWO
CONSTRUCTION CLASS: MBC TYPE IIB, LSC II(000)
OWNER: SAGINAW VALLEY STATE UNIVERSITY

GOVERNING CODES:

BUILDING CODE: 2015 MICHIGAN BUILDING CODE

LIFE SAFETY CODE: 2012 NFPA 101 LIFE SAFETY CODE

MECHANICAL CODE: 2015 MICHIGAN MECHANICAL CODE

PLUMBING CODE: 2018 MICHIGAN PLUMBING CODE

ELECTRICAL CODE: 2017 NATIONAL ELECTRIC CODE (NFPA 70)

ACCESSIBILITY: ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES 2009 OF MICHIGAN WITH ANSI A117.1, 2009 AMENDMENTS

BASIC BUILDING INFORMATION:

CONSTRUCTION TYPE: MBC TYPE IIB TO MATCH EXISTING

FIRE PROTECTION: THE EXISTING BUILDING IS FULLY SPRINKLERED AND WILL BE MAINTAINED AS SUCH. AREA OF RENOVATION IS FULLY SPRINKLERED.

ACTUAL HEIGHT: 2 STORIES ABOVE GRADE

AREA OF RENOVATION AT EXISTING BUILDINGS:

FIRST FLOOR: 615 SQ.FT.

ACTUAL AREA:	***EXISTING***
FIRST FLOOR	76,883 SF
SECOND FLOOR	57,363 SF

TOTAL: 134,246 SF

MEANS OF EGRESS:

NOTE: AREAS WITHIN THE BUILDING THAT ARE NOT WITHIN THE SCOPE OF THE PROJECT ARE PRESUMED TO BE IN COMPLIANCE WITH THE MEANS-OF-EGRESS REQUIREMENTS WHICH WERE ENFORCED AT THE TIME OF CONSTRUCTION.

EXITS REQUIRED BASED ON OCCUPANT LOAD:
FOR OCCUPANT LOADS LESS THAN 50: 1
FOR OCCUPANT LOADS BETWEEN 50 AND 500: 2
FOR OCCUPANT LOADS BETWEEN 500 AND 1000: 3

TWO EXITS ARE REQUIRED AT EACH FLOOR

EXIT CAPACITY
DOORS: .2-INCHES PER OCCUPANT
STAIRS: .3-INCHES PER OCCUPANT

STAIR CHECK AT MOST HEAVILY OCCUPIED FLOOR (NOT AT GRADE)
EXISTING STAIRS ARE AT LEAST 4'-0" WIDE. NO CHANGE

STAIR DOOR CHECK:
EXISTING STAIR EXIT DOORS ARE MINIMUM 36 INCHES WIDE. NO CHANGE

TRAVEL DISTANCE:
300 FEET PER MBC-2015 TABLE 1017.2

LIFE SAFETY MEASURES

THIS PROJECT REQUIRES THAT THE FOLLOWING LIFE SAFETY MEASURES ARE TO BE IMPLEMENTED AND ENFORCED AT ALL CONSTRUCTION AREAS. CONTRACTORS AND THEIR SUBCONTRACTORS ARE TO BE AWARE OF AND FOLLOW THESE REQUIREMENTS.

ASSURE THAT EXITS PROVIDE FREE AND UNOBSTRUCTED EGRESS, AND THAT PERSONNEL RECEIVE TRAINING IF ALTERNATIVE EXITS ARE DESIGNATED. BUILDINGS OR AREAS UNDER CONSTRUCTION SHALL MAINTAIN ESCAPE FACILITIES FOR CONSTRUCTION WORKERS AT ALL TIMES. MEANS OF EGRESS IN CONSTRUCTION AREAS ARE TO BE INSPECTED DAILY.

MAINTAIN MEANS OF EGRESS ROUTES THROUGHOUT THE PERIODS WHEN THE BUILDING IS OCCUPIED. EGRESS ROUTES ARE TO BE CLEARLY MARKED WITH SIGNS, LIGHTING, AND PROPER FLOOR SURFACES.

ASSURE FREE AND UNOBSTRUCTED ACCESS FOR EMERGENCY PERSONNEL AND EMERGENCY RESPONSE FORCES.

ASSURE THAT FIRE ALARM DETECTION AND SUPPRESSION SYSTEMS ARE NOT IMPAIRED WITHIN OCCUPIED AREAS OF THE BUILDING. PROVIDE TEMPORARY, EQUIVALENT SYSTEMS WHEN ANY SYSTEM NEEDS TO BE INOPERATIVE DURING CONSTRUCTION. INSPECT AND TEST TEMPORARY SYSTEMS MONTHLY.

PROVIDE 1 HOUR RATED TEMPORARY CONSTRUCTION PARTITIONS (UL # U309) THAT ARE AIR AND SMOKE TIGHT. WHERE PART OF EXTERIOR PARTITIONS, PROVIDE MINIMUM R-11 INSULATION.

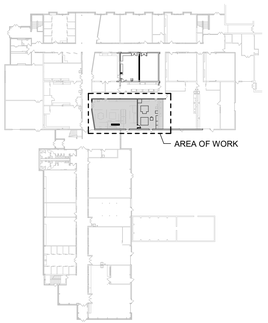
PROHIBIT SMOKING IN, OR ADJACENT TO, ALL CONSTRUCTION AREAS.

DEVELOP AND ENFORCE STORAGE, HOUSEKEEPING, AND DEBRIS REMOVAL PRACTICES THAT REDUCE THE FLAMMABLE AND COMBUSTIBLE FIRE LOAD OF THE BUILDING TO THE LOWEST LEVEL REQUIRED FOR DAILY OPERATION.

PROVIDE INCREASED HAZARD SURVEILLANCE OF BUILDINGS, GROUNDS AND EQUIPMENT, WITH SPECIAL ATTENTION TO THE EXCAVATIONS, CONSTRUCTION AREAS, CONSTRUCTION STORAGE AND FIELD OFFICES. PROVIDE APPROVED BARRIERS AT ALL HAZARDOUS AREAS.

CONDUCT ORGANIZATION-WIDE SAFETY EDUCATION PROGRAMS TO ASSURE AWARENESS OF ANY LIFE SAFETY CODE DEFICIENCIES, CONSTRUCTION HAZARDS, AND THESE REQUIREMENTS.

PROVIDE EXHAUST AIR FLOW SUFFICIENT TO MAINTAIN NEGATIVE AIR PRESSURE IN THE CONSTRUCTION ZONES, RELATIVE TO ALL OCCUPIED ADJACENT AREAS.



KEY PLAN
SCALE: 1/64" = 1'-0"

ssoe / S&W

PROFESSIONAL SEALS:

CONSULTANTS:

KEYPLAN

SUBMITTAL/REVISION SCHEDULE:

NO.	DATE	DESCRIPTION
0	11-09-2022	ISSUE FOR CONSTRUCTION

■ APPROVED FOR CONSTRUCTION
□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:

SAGINAW VALLEY STATE UNIVERSITY

SVSU SAGINAW VALLEY STATE UNIVERSITY

7400 BAY ROAD
UNIVERSITY CITY, MICHIGAN
48710

PROJECT INFORMATION:

PIONEER HALL P119
LAB RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

SSOE | STEVENS & WILKINSON
1050 Wilshire Drive, Suite 260
Troy, MI 48084-1526
T. (248) 643-8222

PARTIAL FLOOR PLANS

AE-110

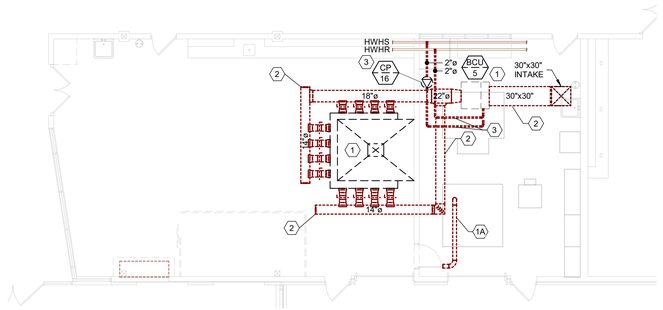
BIM 360://SVSU_Multiple Projects/0220056801_AMEP20_BDG_SSOE.rvt :**FILE PATH**
11/16/2022 2:34:21 PM :**PRINT DATE**

HVAC DEMOLITION NOTES

1. REMOVE EXISTING VENT HOOD, BLOWER COIL (BCU-5), AND EXHAUST FAN (EF-15) FROM ROOF.
2. REMOVE VENT HOOD AND BLOWER COIL DUCTWORK COMPLETE.
3. REMOVE INLINE PUMP (CP-16) AND HEATING HOT WATER PIPING FROM BLOWER COIL (BCU-5) BACK TO MAIN AND CAP.
4. PROVIDE WATER-TIGHT INSULATED CAPS FOR 30x30 INTAKE AND EXHAUST DUCT ROOF CURB.

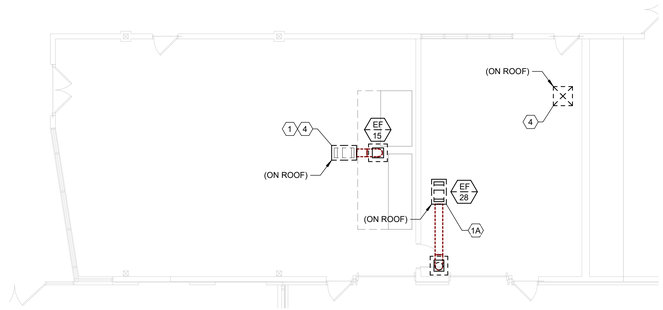
ALTERNATE 1

1A. REMOVE EXHAUST FAN (EF-28) AND ALL ASSOCIATED DUCTWORK. PROVIDE WATER-TIGHT INSULATED CAP FOR EXHAUST DUCT ROOF CURB.



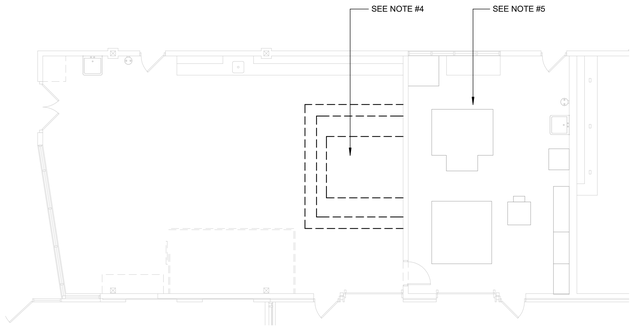
FIRST FLOOR DEMOLITION PLAN - HVAC

SCALE: 1/8" = 1'-0"



ROOF DEMOLITION PLAN - HVAC

SCALE: 1/8" = 1'-0"



FIRE PROTECTION FIRST FLOOR DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

FIRE PROTECTION DEMOLITION NOTES

1. REFER TO ARCHITECTURAL DEMOLITION PLANS FOR MORE INFORMATION ON THE EXTENT OF DEMOLITION.
2. FIRE PROTECTION CONTRACTOR IS RESPONSIBLE TO COORDINATE THE SPRINKLER SYSTEM DEMOLITION WORK WITH OTHER TRADES.
3. FIRE PROTECTION CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH OWNER FOR DRAINING AND TAKING THE SYSTEM OUT OF SERVICE DURING DEMOLITION. AT NO TIME, THE SYSTEM IS ALLOWED TO REMAIN OUT OF SERVICE OVERNIGHT. SYSTEM MUST BE PUT BACK TO SERVICE AT THE END OF EACH DAILY WORK SHIFT.
4. AS PART OF THE EXHAUST HOOD REMOVAL IN LAB P119, REMOVE FIRE SPRINKLER HEAD AND THE ASSOCIATED PIPE AND FITTINGS PROTECTING THE EXHAUST HOOD AND PLUG EXISTING ISOLATION VALVE OUTLET.
5. AS PART OF THE EXHAUST FAN REMOVAL IN LAB P121, REMOVE THE SPRINKLER HEAD AND PIPE UNDER THE EXHAUST FAN.

FP DEMO NOTES

SCALE: 1/8" = 1'-0"

PROFESSIONAL SEALS:

CONSULTANTS:

KEYPLAN

SUBMITTAL/REVISION SCHEDULE:

NO.	DATE	DESCRIPTION
0	11-09-2022	ISSUE FOR CONSTRUCTION

■ APPROVED FOR CONSTRUCTION
□ NOT APPROVED FOR CONSTRUCTION

CLIENT INFORMATION:

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48710

PROJECT INFORMATION:

PIONEER HALL P119
LAB RENOVATION

UNIVERSITY CENTER, MICHIGAN

SSOE/SW PROJECT #: 022-00568-00
SSOE/SW MANAGER: R. SIEBENALLER

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FLOOR PLAN - MECHANICAL

MH-110

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