MICHIGAN TECHNOLOGICAL UNIVERSITY
CHEM-SCI CLASSROOM RENOVATIONS

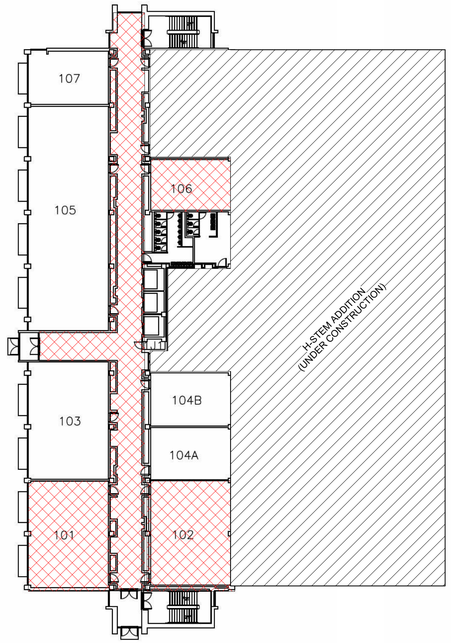
MTU PROJECT #19-23-03

ISSUED FOR BIDDING 03/14/2023

Michigan Technological University

AREAS OF WORK

- ROOM 101
- ROOM 102
- ROOM 106
- 1st FLOOR CORRIDOR

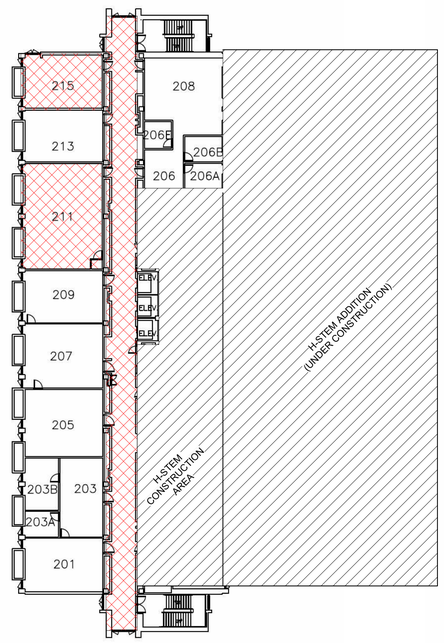


1st FLOOR KEY PLAN

NO SCALE

AREAS OF WORK

- ROOM 211
- ROOM 215
- 2nd FLOOR CORRIDOR

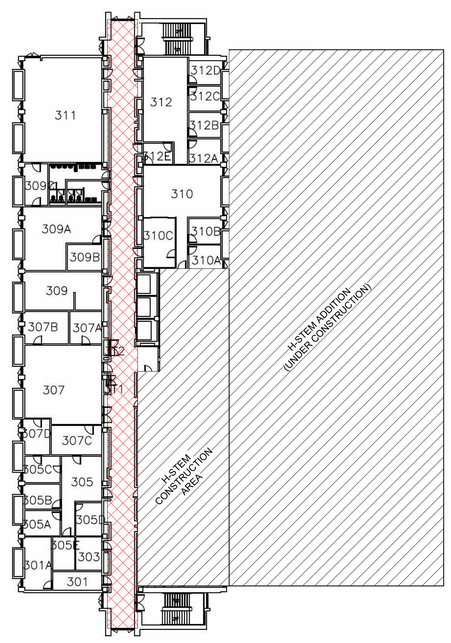


2nd FLOOR KEY PLAN

NO SCALE

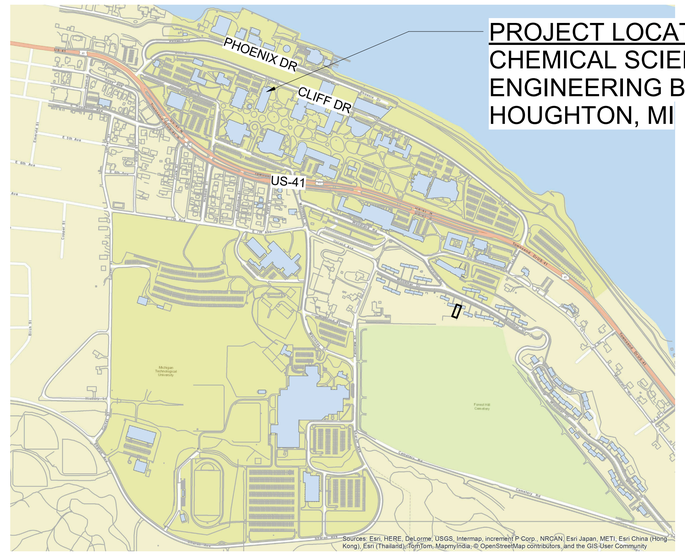
AREA OF WORK

- 3rd FLOOR CORRIDOR



3rd FLOOR KEY PLAN

NO SCALE



PROJECT LOCATION
CHEMICAL SCIENCES & ENGINEERING BLDG #19
HOUGHTON, MI

N

VICINITY MAP

NO SCALE

SHEET LIST

G001	COVER SHEET
AD101	CLASSROOM DEMOLITION PLANS
A101	FIRST FLOOR CLASSROOM RENOVATIONS
A102	SECOND FLOOR CLASSROOM RENOVATIONS
A103	FIRST FLOOR CORRIDOR RENOVATIONS
A104	SECOND FLOOR CORRIDOR RENOVATIONS
A105	THIRD FLOOR CORRIDOR RENOVATIONS
AF101	FINISH PLANS
AF102	INTERIOR FINISH DETAILS
AF103	INTERIOR FINISH DETAILS
E101	PROPOSED ELECTRICAL PLAN

ATTACHMENTS

- ENTERPRISE LIGHTING & CONTROL 'CONTROLS DRAWING PACKAGE' (9 PAGES) — FEBRUARY 21, 2023
- FIRST FLOOR LIGHT FIXTURE SCHEDULE AND LAYOUT — MARCH 13, 2023
- SECOND FLOOR LIGHT FIXTURE SCHEDULE AND LAYOUT — MARCH 13, 2023
- THIRD FLOOR LIGHT FIXTURE SCHEDULE AND LAYOUT — MARCH 13, 2023

19 - CHEMICAL SCIENCES BUILDING
P# 19-23-03

ISSUED FOR: BIDDING
DATE: 03/14/23

DRAWN BY: TRA
DESIGNED: JAG
CHECKED: JAG
APPRD: GRR

FACILITIES MANAGEMENT
1400 TOWNSEND DRIVE
HOUGHTON, MICHIGAN
(906) 487-2303 PH
(906) 487-3291 FX

Michigan Technological University

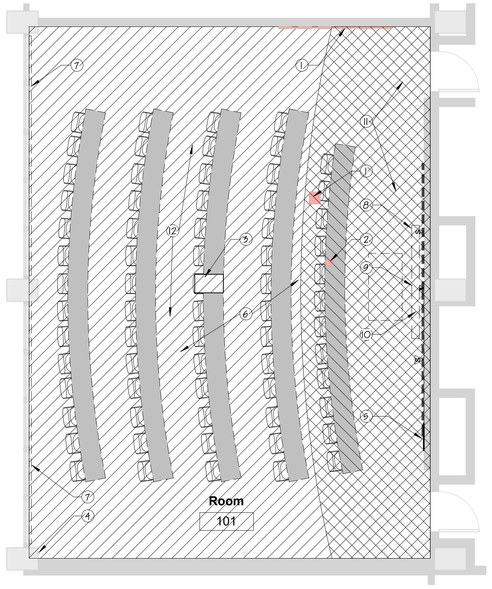
CHEM-SCI CLASSROOM RENOVATIONS
COVER SHEET

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

FILE: M:\fm\Drawings\2-Bldg Working Drawings\19-chem\19-23-03 Chem Sci Classroom Renovations\19-23-03 Chem Sci Classroom Renovations.rvt

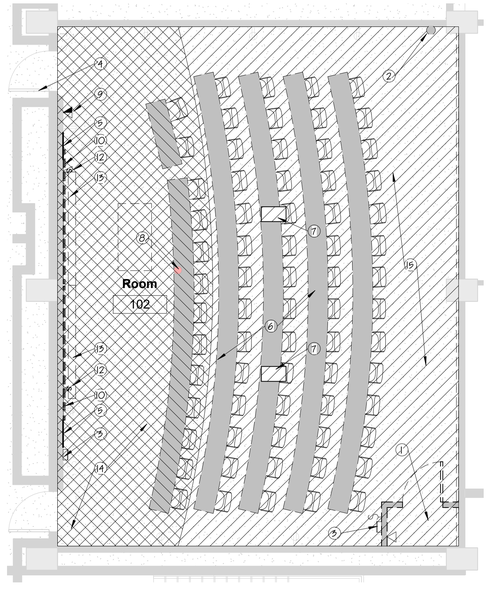
3/14/2023 8:30:01 AM

SHEET
G001



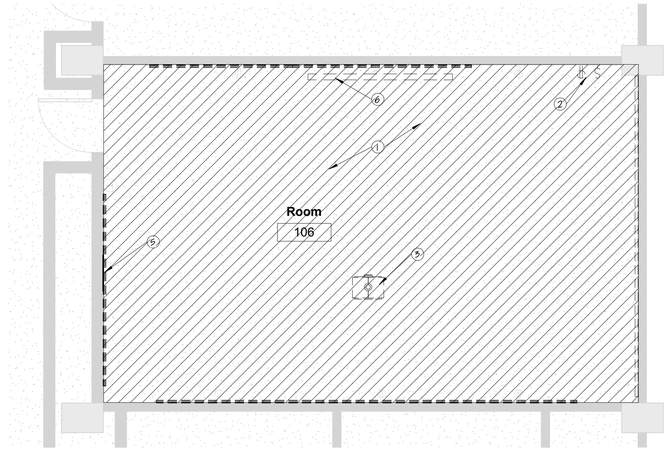
1 101 DEMO PLAN
3/16" = 1'-0"

ROOM 101 DEMOLITION KEY NOTES	
1	REMOVE EXISTING SCREEN AND PROJECTOR MOUNT.
2	REMOVE EXISTING FLOORBOX. POWER, A/V, AND NETWORK CONNECTIONS TO BE RELOCATED.
3	EXISTING PROJECTOR MOUNT TO REMAIN.
4	REMOVE EXISTING JUNCTION BOX AND WIREMOLD ON COLUMN.
5	REMOVE EXISTING RETURN AIR GRILLE.
6	EXISTING CEILING GRID AND TILES TO BE REMOVED BY ASBESTOS ABATEMENT CONTRACTOR.
7	REMOVE EXISTING RADIANT HEAT COVERS.
8	REMOVE SINGLE GANG SPEAKER MOUNT LOCATIONS.
9	REMOVE JACK LOCATION AND PULL UP TO CEILING, PHONE CONNECTION SHALL BE FISHED THROUGH WALL.
10	EXISTING PROJECTOR SCREEN TO REMAIN.
11	FLOORING IN THIS AREA TO BE REMOVED BY ASBESTOS ABATEMENT CONTRACTOR.
12	REMOVE EXISTING CARPET AND ALL WALL BASE IN AREAS NO REMOVED BY ASBESTOS ABATEMENT CONTRACTOR.



2 102 DEMO PLAN
3/16" = 1'-0"

ROOM 102 DEMOLITION KEY NOTES	
1	EXISTING TELECOMMUNICATIONS ROOM TO BE REMOVED; WALLS, DOOR, ETC. CUT/REMOVE THRU-FLOOR CONDUITS AND FILL HOLES WITH CONCRETE. REMOVE DROP CONDUITS TO NEAREST JOINT ABOVE NEW CEILING. RELOCATE DATA TO ABOVE CEILING. REMOVE LUTRON LIGHTING AND SCREEN CONTROLS.
2	REMOVE EXISTING BATTERY POWERED EMERGENCY LIGHT AND TURN OVER TO MTU.
3	REMOVE EXISTING FIRE EXTINGUISHER AND TURN OVER TO MTU.
4	REMOVE EXISTING AUTO DOOR OPERATOR.
5	REMOVE EXISTING RETURN AIR GRILLE.
6	EXISTING CEILING GRID AND TILES TO BE REMOVED BY ASBESTOS ABATEMENT CONTRACTOR.
7	EXISTING PROJECTOR MOUNT(S) TO REMAIN. PROJECTORS TO BE REMOVED BY MTU.
8	REMOVE EXISTING FLOORBOX. POWER, A/V, AND NETWORK CONNECTIONS TO BE RELOCATED.
9	RELOCATE DATA TO ABOVE CEILING. PHONE TO BE RELOCATED (REMOVE PHONE WIREMOLD). REMOVE DUPLEX OUTLET AND GANG BOX. PATCH WALL AS NEEDED.
10	SPEAKER WALL MOUNTS TO BE REMOVED. PATCH WALL AS NEEDED.
12	REMOVE SINGLE GANG SPEAKER MOUNT LOCATIONS.
13	EXISTING PROJECTOR SCREEN TO REMAIN.
14	FLOORING IN THIS AREA TO BE REMOVED BY ASBESTOS ABATEMENT CONTRACTOR.
15	REMOVE EXISTING CARPET AND ALL WALL BASE IN AREAS NO REMOVED BY ASBESTOS ABATEMENT CONTRACTOR.

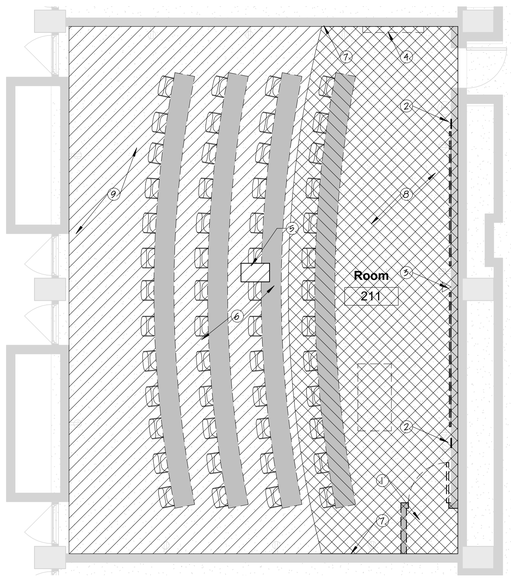


3 106 DEMO PLAN
1/4" = 1'-0"

ROOM 106 DEMOLITION KEY NOTES	
1	EXISTING CEILING GRID/TILES AND FLOORING TO BE REMOVED BY ASBESTOS ABATEMENT CONTRACTOR.
2	REMOVE EXISTING RACEWAY AND REMOVE AND DISPOSE OF ALL CABLES.
3	EXISTING PROJECTOR MOUNT TO BE REMOVED AND TURNED OVER TO MTU. PROJECTOR TO BE REMOVED BY MTU.
5	REMOVE & REPLACE EXISTING RETURN AIR GRILLE.
6	EXISTING SCREEN TO BE REMOVED.

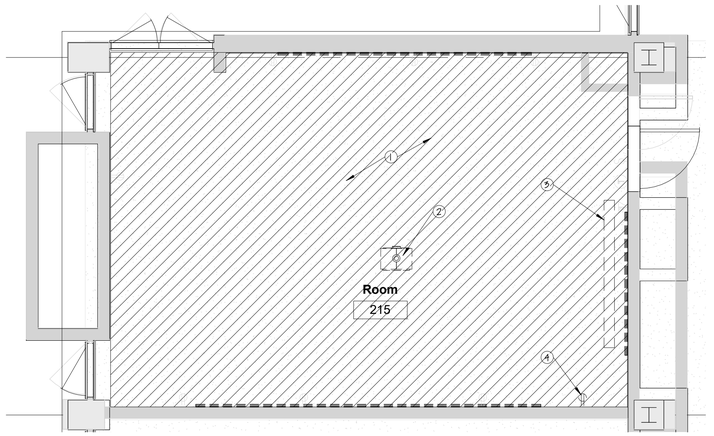
DEMOLITION LEGEND & GENERAL NOTES

1. COORDINATE ALL DEMO WORK WITH MTU AND ASBESTOS ABATEMENT CONTRACTOR.
2. COMPLETELY REMOVE ALL FIXED FURNISHINGS, LIGHTS, CHALKBOARDS, WHITEBOARDS, WINDOW BLINDS, AND EXISTING WALL COVERINGS.
3. WALL CLOCKS TO BE SALVAGED AND TURNED OVER TO MTU
4. ALL LOOSE FURNITURE TO BE REMOVED BY MTU.
5. EXISTING OVERHEAD PROJECTORS, 'WAP' DEVICES, AND PHONES TO BE REMOVED BY MTU.
6. EXISTING FIRE ALARM DEVICES SHALL BE SALVAGED FOR REINSTALLATION.
7. REMOVE ALL EXISTING CEILING SPEAKERS AND TURN OVER TO MTU.
8. REMOVE EXISTING ROOM OCCUPANCY SENSORS AND TURN OVER TO MTU.
9. REMOVE EXISTING ROOM 'EXIT' SIGNS.
10. REMOVED PROJECTOR MOUNTS AND SCREENS SHALL BE TURNED OVER TO MTU.
11. REMOVE AND DISPOSE OF ALL A/V CABLING.



4 211 DEMO PLAN
3/16" = 1'-0"

ROOM 211 DEMOLITION KEY NOTES	
1	DEMO EXISTING CLOSET WALLS AND CEILING. CAP COMPRESSED AIR LINES IN WALL AND COVER. REMOVE LIGHTING CONTROL BOX, LIGHT FIXTURE, AND CONDUITS TO ABOVE NEW CEILING. REMOVE DOOR HANDLE WALL PROTECTOR ON EAST WALL AND PATCH AS NEEDED.
2	DEMO EXISTING SPEAKERS AND PATCH WALL AS NEEDED.
3	REMOVE BLANK WALL PLATE AND RELOCATE DATA TO ABOVE CEILING. PATCH WALL AS NEEDED.
4	DEMO DISPLAY CASE.
5	EXISTING PROJECTOR MOUNT TO REMAIN. ADD ADDITIONAL CEILING HANGERS NEAR PROJECTOR AS NEEDED TO PREVENT CEILING SAG.
6	EXISTING CEILING GRID AND TILES TO BE REMOVED BY ASBESTOS ABATEMENT CONTRACTOR.
7	REMOVE EXISTING BLANK WALL PLATES ON THIS WALL AND PATCH AS NEEDED.
8	FLOORING IN THIS AREA TO BE REMOVED BY ASBESTOS ABATEMENT CONTRACTOR.
9	REMOVE EXISTING CARPET AND ALL WALL BASE IN AREAS NO REMOVED BY ASBESTOS ABATEMENT CONTRACTOR.



5 215 DEMO PLAN
1/4" = 1'-0"

ROOM 215 DEMOLITION KEY NOTES	
1	EXISTING CEILING GRID/TILES AND FLOORING TO BE REMOVED BY ASBESTOS ABATEMENT CONTRACTOR.
2	EXISTING PROJECTOR MOUNT TO BE REMOVED AND TURNED OVER TO MTU. EXISTING PROJECTOR TO BE REMOVED BY MTU.
3	EXISTING RECESSED PROJECTION SCREEN TO BE REMOVED AND TURNED OVER TO MTU.
4	DEMO EXISTING RACEWAY AND POWER OUTLET. REMOVE AND DISPOSE OF WIREMOUDS AND CABLING.

NOTE: FOR ALL ROOMS AND CORRIDORS IN THIS PROJECT, THE CEILING GRID AND TILES ALONG WITH FLOORING WILL BE REMOVED BY ASBESTOS ABATEMENT CONTRACTOR UNDER SEPARATE CONTRACT.

19 - CHEMICAL SCIENCES BUILDING
P# 19-23-03

ISSUED FOR: BIDDING DATE 03/14/23

DRAWN BY: TRA
DESIGNED: JAG
CHECKED: JAG
APPRD: GRR

FACILITIES MANAGEMENT
1400 TOWNSEND DRIVE
HOUGHTON, MICHIGAN
(906) 487-2303 PH
(906) 487-3291 FX

Michigan Technological University 1885

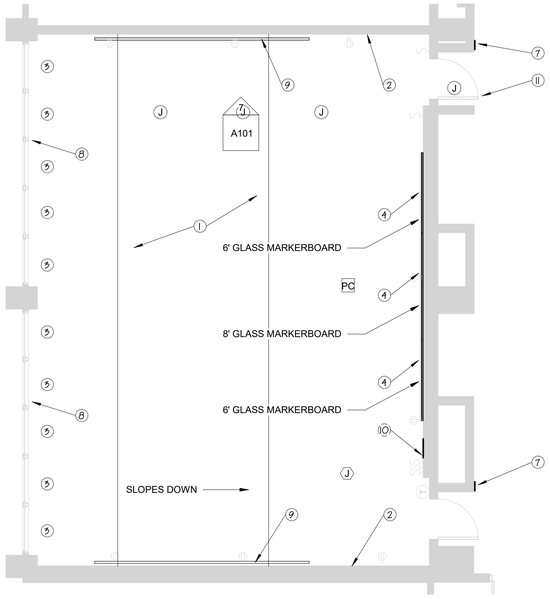
CHEM-SCI CLASSROOM RENOVATIONS
CLASSROOM DEMOLITION PLANS

SCALE: As indicated

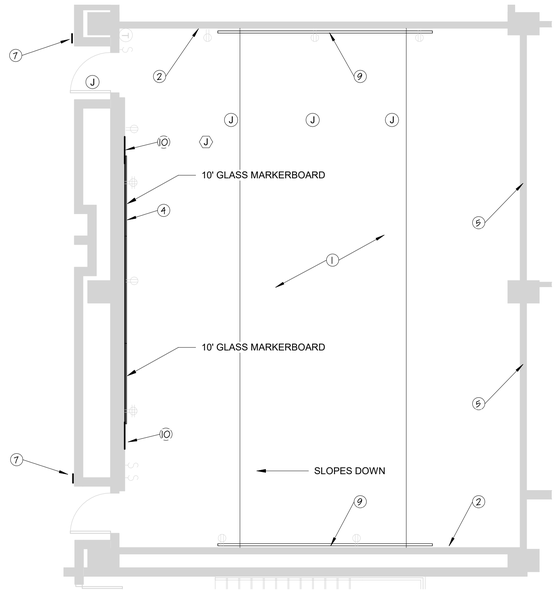
FILE: M:\tm\Drawings\2-Bldg Working Drawings\19-chem\19-23-03 Chem Sci Classroom Renovations\19-23-03 Chem Sci Classroom Renovations.rvt

3/10/2023 9:20:28 AM

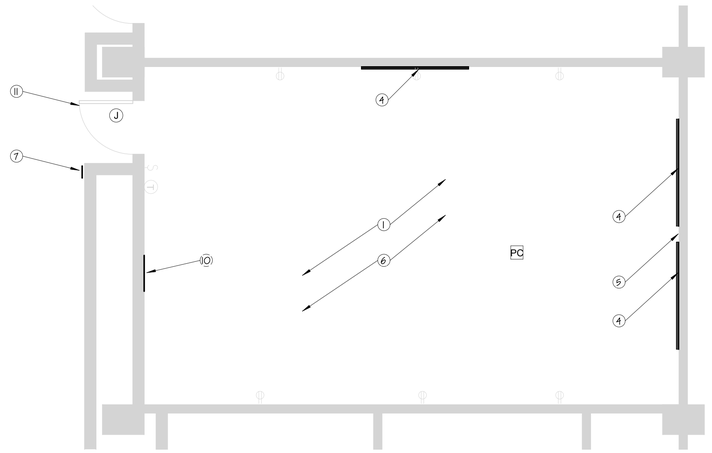
SHEET
AD101



1 101 PROPOSED FLOOR PLAN
3/16" = 1'-0"



2 102 PROPOSED FLOOR PLAN
3/16" = 1'-0"

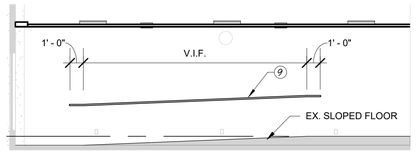


3 106 PROPOSED FLOOR PLAN
1/4" = 1'-0"

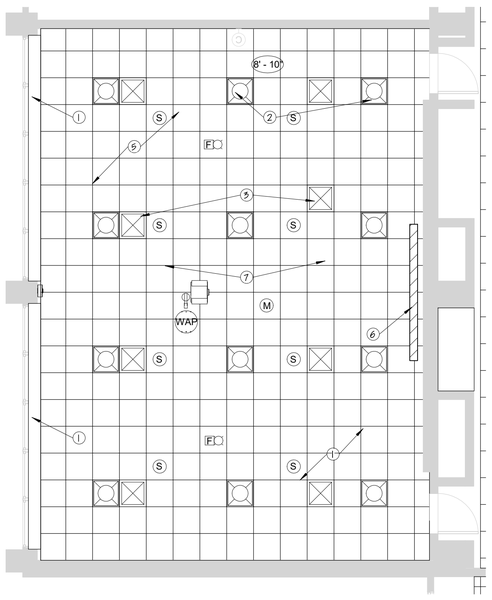
FIRST FLOOR PLAN KEY NOTES	
1	NEW FLOORING AND WALL BASE, SEE FINISH DRAWINGS.
2	REPAIR WALL COATING AS NECESSARY FOR NEW WALL FINISH AFTER REMOVAL OF WALL FABRIC. SEE FINISH DRAWINGS FOR NEW FINISH.
3	NEW WINDOW BLINDS TO BE FIELD MEASURED & INSTALLED BY CONTRACTOR, SEE FINISH DRAWINGS.
4	NEW MARKER BOARDS SUPPLIED AND INSTALLED BY FURNITURE CONTRACTOR.
5	NEW WALL BY OTHERS. PAINTING OF THE 'ROOM SIDE' OF WALL INCLUDED IN THIS CONTRACT.
6	ADHERE 1/2" GYP. BOARD TO EXISTING CMU WALLS IN ROOM 106.
7	NEW VISTA WALL SIGN.
8	REPLACE EXISTING FIN TUBE PEDESTAL ENCLOSURES.
9	NEW 1-1/4" DIAMETER STEEL PIPE HANDRAIL, POWDERCOATED. SEE ELEVATION VIEW ON THIS SHEET.
10	NEW RETURN AIR GRILLE AT EXISTING LOCATION. PAINT TO MATCH WALL.
11	INSTALL NEW AUTO DOOR OPERATOR ON THIS DOOR FOR BARRIER FREE ACCESS.

GENERAL NOTES

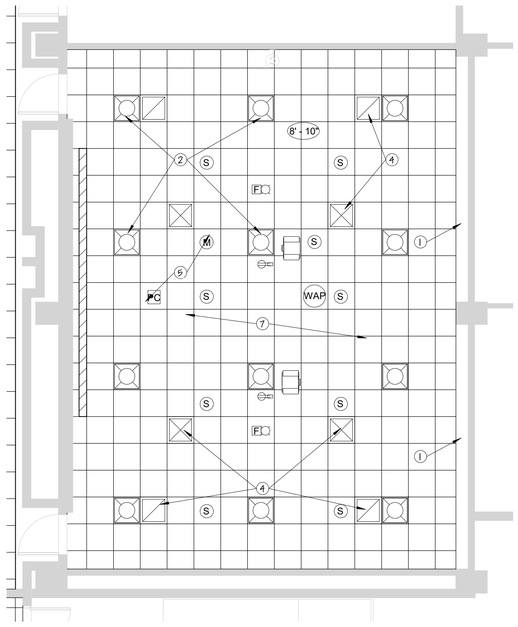
1. PREP ALL WALLS FOR LEVEL 4 PAINT FINISH. COORDINATE WITH FINISH SELECTIONS.
2. PRIME AND PAINT GWB COLUMN ENCLOSURES. COORDINATE WITH FINISH SELECTIONS.
3. ALL WALLS TO RECEIVE TWO COATS OF FINISH PAINT WHERE NEW WALL COVERING IS NOT SPECIFIED.
4. PREP EXISTING CONCRETE FLOOR AS NECESSARY FOR NEW FLOOR COVERING.



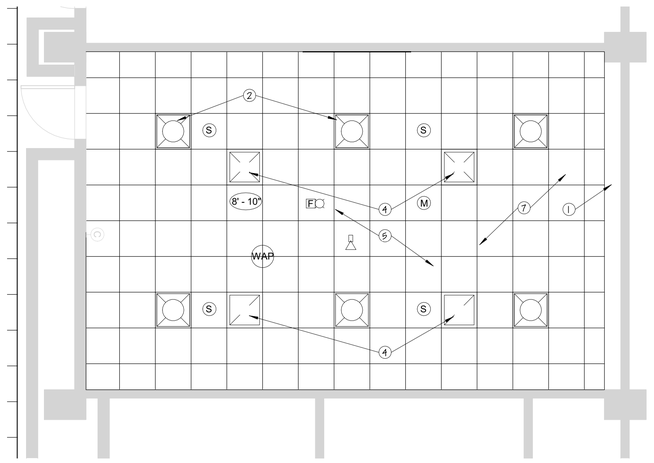
7 Elevation 1
3/16" = 1'-0"



4 101 PROPOSED CEILING PLAN
3/16" = 1'-0"



5 102 PROPOSED CEILING PLAN
3/16" = 1'-0"



6 106 PROPOSED CEILING PLAN
1/4" = 1'-0"

CEILING PLAN KEYNOTES	
1	PATCH, REPAIR, AND PAINT EXISTING CEILING SOFFIT.
2	NEW 2'x2' LIGHT FIXTURE, SEE LIGHTING PLAN FOR DETAILS.
3	RE-USE SUPPLY AIR DIFFUSERS FROM ROOM 102.
4	NEW SUPPLY & RETURN DIFFUSERS PROVIDED BY H-STEM MECHANICAL CONTRACTOR.
5	NEW 2'x2' CEILING TILE AND GRID TO BE: ARMSTRONG 'ULTIMA' 1941 WITH 15/16" PRELUDE GRID. NEW CEILING TO BE AT SAME HEIGHT AS EXISTING.
6	EXISTING SCREEN TO REMAIN.
7	APPLY NEW SPRAY-ON FIREPROOFING TO STRUCTURAL STEEL MEMBERS ABOVE CEILINGS IN THE REMODELED CLASSROOMS. AREA IS ESTIMATED TO BE 4,500 SF TOTAL (ALL ROOMS COMBINED).

19 - CHEMICAL SCIENCES BUILDING
P# 19-23-03

ISSUED FOR: BIDDING
DATE 03/14/23

DRAWN BY: TRA
DESIGNED: JAG
CHECKED: JAG
APPRD: GRR

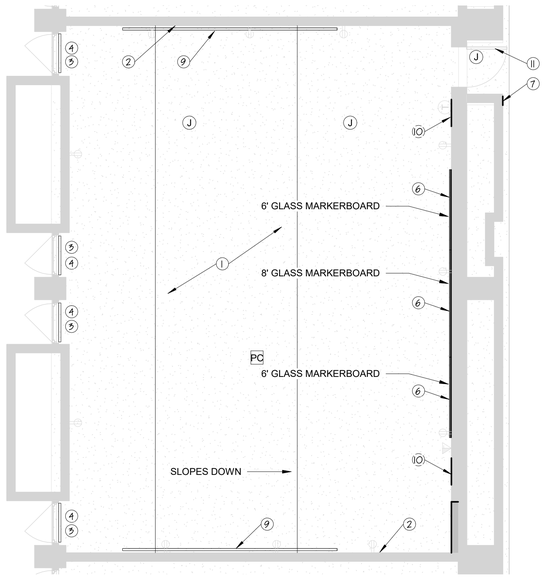
FACILITIES MANAGEMENT
1400 TOWNSEND DRIVE
HOUGHTON, MICHIGAN
(906) 487-2300 PH
(906) 487-3291 FX

Michigan Technological University
1885

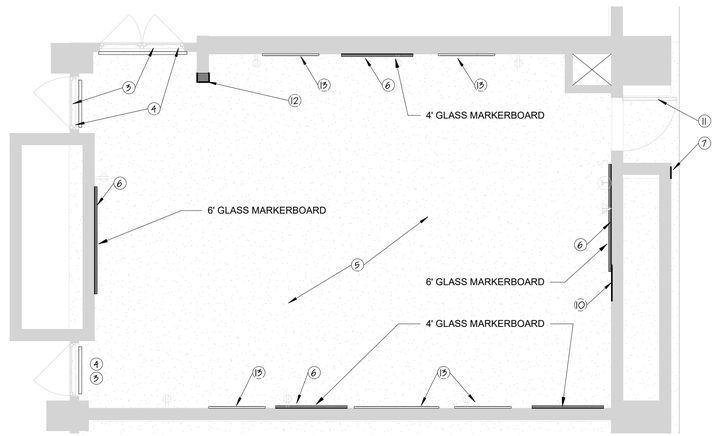
CHEM-SCI CLASSROOM RENOVATIONS
FIRST FLOOR CLASSROOM RENOVATIONS

SCALE: As indicated
FILE: M:\fm\Drawings\2-Bldg Working Drawings\19-chem\19-23-03 Chem Sci Classroom Renovations\19-23-03 Chem Sci Classroom Renovations.rvt
3/14/2023 8:22:21 AM

SHEET
A101

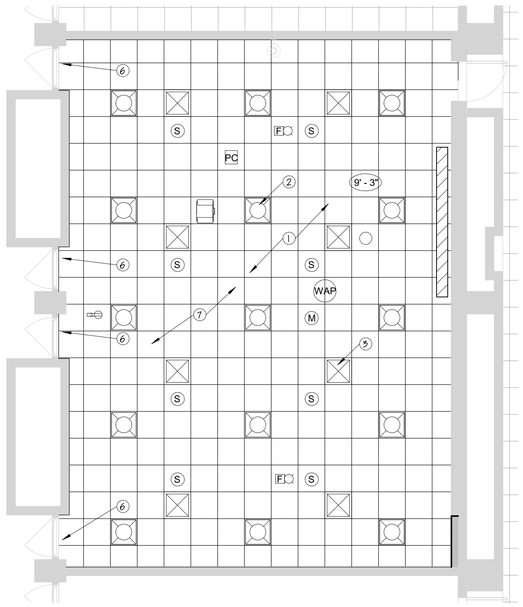


1 211 PROPOSED FLOOR PLAN
3/16" = 1'-0"

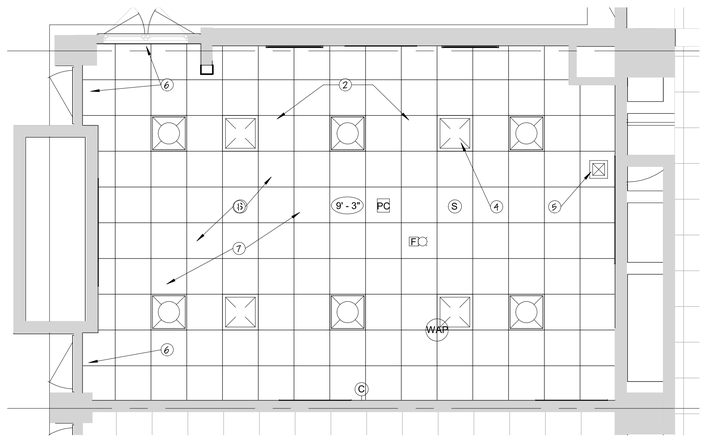


2 215 PROPOSED FLOOR PLAN
1/4" = 1'-0"

SECOND FLOOR PLAN KEY NOTES	
1	NEW FLOORING AND WALL BASE, SEE FINISH DRAWINGS.
2	REPAIR WALL COATING AS NECESSARY AFTER REMOVAL OF WALL FABRIC. SEE FINISH DRAWINGS FOR NEW FINISH.
3	NEW WINDOW BLINDS TO BE FIELD MEASURED BY CONTRACTOR, SEE FINISH DRAWINGS.
4	REMOVE AND POWDERCOAT AND REINSTALL EXISTING DIFFUSER COVERS. SEE FINISH DRAWINGS FOR COLOR.
5	ADHERE 1/2" GYP. BOARD TO EXISTING CMU WALLS IN ROOM 215.
6	NEW MARKER BOARDS SUPPLIED AND INSTALLED BY FURNITURE CONTRACTOR.
7	NEW VISTA WALL SIGN.
9	NEW 1-1/4" DIAMETER STEEL PIPE HANDRAIL, POWDERCOATED. SEE ELEVATION VIEW ON SHEET A101.
10	NEW RETURN AIR GRILLE AT EXISTING LOCATION. PAINT TO MATCH WALL.
11	INSTALL NEW AUTO DOOR OPERATOR ON THIS DOOR FOR BF ACCESS.
12	FUR OUT WALL AS NEEDED TO RUN NEW POWER, NETWORK, AND A/V.
13	NEW TV MONITOR INSTALLED BY CONTRACTOR, COORDINATE FINAL LOCATIONS WITH MTU.



3 211 PROPOSED CEILING PLAN
3/16" = 1'-0"



4 215 PROPOSED CEILING PLAN
1/4" = 1'-0"

SECOND FLOOR CEILING PLAN KEYNOTES	
1	NEW 2'x2' CEILING TILE AND GRID TO BE: ARMSTRONG 'ULTIMA' 1941 WITH 15/16" PRELUDE GRID. NEW CEILING TO BE AT SAME HEIGHT AS EXISTING.
2	NEW 2'x2' LIGHT FIXTURE, SEE LIGHTING PLAN FOR DETAILS.
3	EXISTING SUPPLY DIFFUSERS IN ROOM 211 TO BE RE-USED.
4	NEW SUPPLY AIR DIFFUSERS, MATCH DIFFUSERS THAT ARE IN ROOM 211. PROVIDE BALANCING DAMPER.
5	NEW RETURN AIR GRILLE IN CEILING, CONNECT TO EXISTING DUCTWORK.
6	REPAIR/REPLACE AND PAINT WOOD HEADER AT WINDOW BLINDS.
7	APPLY NEW SPRAY-ON FIREPROOFING TO STRUCTURAL STEEL MEMBERS ABOVE CEILINGS IN THE REMODELED CLASSROOMS. AREA IS ESTIMATED TO BE 4,500 SF TOTAL (ALL ROOMS COMBINED).

19 - CHEMICAL SCIENCES BUILDING
P# 19-23-03

ISSUED FOR: BIDDING DATE 03/14/23

DRAWN BY: TRA
DESIGNED: JAG
CHECKED: JAG
APPRD: GRR

FACILITIES MANAGEMENT
1400 TOWNSEND DRIVE
HOUGHTON, MICHIGAN
(906) 487-2303 PH
(906) 487-3291 FX

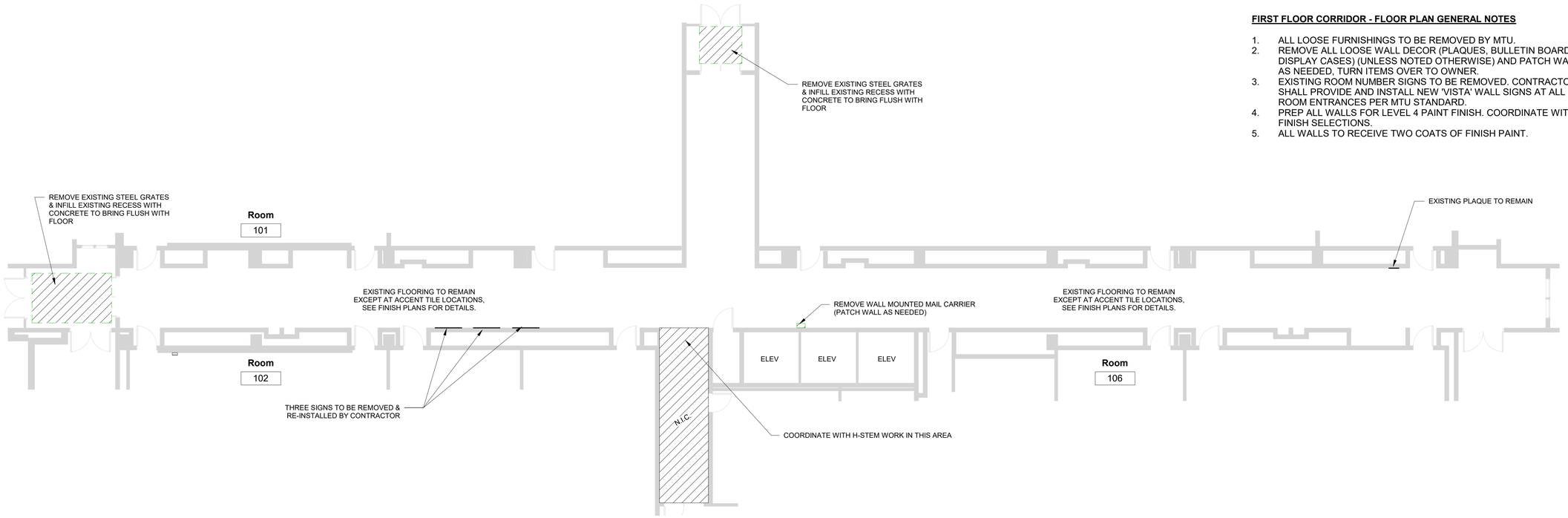
Michigan Technological University
1885

CHEM-SCI CLASSROOM RENOVATIONS
SECOND FLOOR CLASSROOM RENOVATIONS

SCALE: As indicated

SHEET
A102

3/14/2023 8:22:48 AM FILE: M:\tm\Drawings\2-Bldg Working Drawings\19-chem\19-23-03 Chem Sci Classroom Renovations\19-23-03 Chem Sci Classroom Renovations.rvt

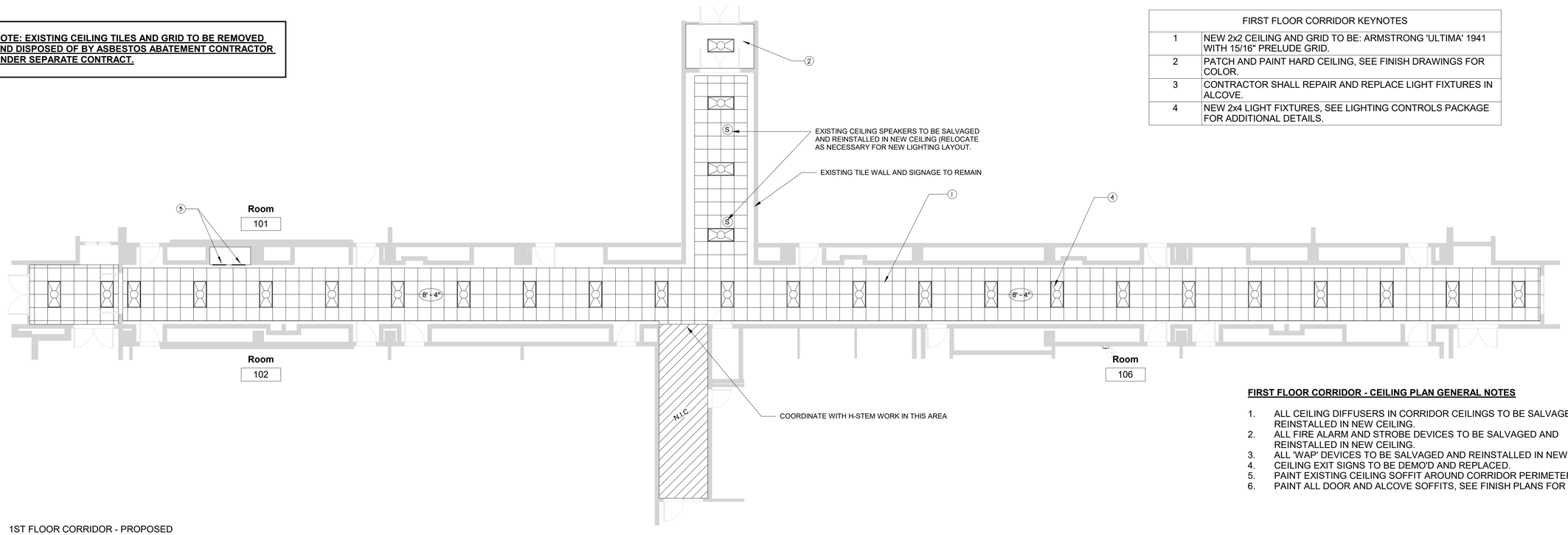


1 1ST FLOOR CORRIDOR - DEMO
1/8" = 1'-0"

FIRST FLOOR CORRIDOR - FLOOR PLAN GENERAL NOTES

1. ALL LOOSE FURNISHINGS TO BE REMOVED BY MTU.
2. REMOVE ALL LOOSE WALL DECOR (PLAQUES, BULLETIN BOARDS, DISPLAY CASES) (UNLESS NOTED OTHERWISE) AND PATCH WALLS AS NEEDED, TURN ITEMS OVER TO OWNER.
3. EXISTING ROOM NUMBER SIGNS TO BE REMOVED. CONTRACTOR SHALL PROVIDE AND INSTALL NEW 'VISTA' WALL SIGNS AT ALL ROOM ENTRANCES PER MTU STANDARD.
4. PREP ALL WALLS FOR LEVEL 4 PAINT FINISH. COORDINATE WITH FINISH SELECTIONS.
5. ALL WALLS TO RECEIVE TWO COATS OF FINISH PAINT.

NOTE: EXISTING CEILING TILES AND GRID TO BE REMOVED AND DISPOSED OF BY ASBESTOS ABATEMENT CONTRACTOR UNDER SEPARATE CONTRACT.



FIRST FLOOR CORRIDOR KEYNOTES	
1	NEW 2x2 CEILING AND GRID TO BE: ARMSTRONG 'ULTIMA' 1941 WITH 15/16" PRELUDE GRID.
2	PATCH AND PAINT HARD CEILING, SEE FINISH DRAWINGS FOR COLOR.
3	CONTRACTOR SHALL REPAIR AND REPLACE LIGHT FIXTURES IN ALCOVE.
4	NEW 2x4 LIGHT FIXTURES, SEE LIGHTING CONTROLS PACKAGE FOR ADDITIONAL DETAILS.

FIRST FLOOR CORRIDOR - CEILING PLAN GENERAL NOTES

1. ALL CEILING DIFFUSERS IN CORRIDOR CEILINGS TO BE SALVAGED AND REINSTALLED IN NEW CEILING.
2. ALL FIRE ALARM AND STROBE DEVICES TO BE SALVAGED AND REINSTALLED IN NEW CEILING.
3. ALL 'WAP' DEVICES TO BE SALVAGED AND REINSTALLED IN NEW CEILING.
4. CEILING EXIT SIGNS TO BE DEMO'D AND REPLACED.
5. PAINT EXISTING CEILING SOFFIT AROUND CORRIDOR PERIMETER.
6. PAINT ALL DOOR AND ALCOVE SOFFITS, SEE FINISH PLANS FOR DETAILS.

2 1ST FLOOR CORRIDOR - PROPOSED CEILING PLAN
1/8" = 1'-0"

19 - CHEMICAL SCIENCES BUILDING
P# 19-23-03

ISSUED FOR: BIDDING DATE 01/24/23

DRAWN BY: TRA
DESIGNED: JAG
CHECKED: JAG
APPRD: GRR

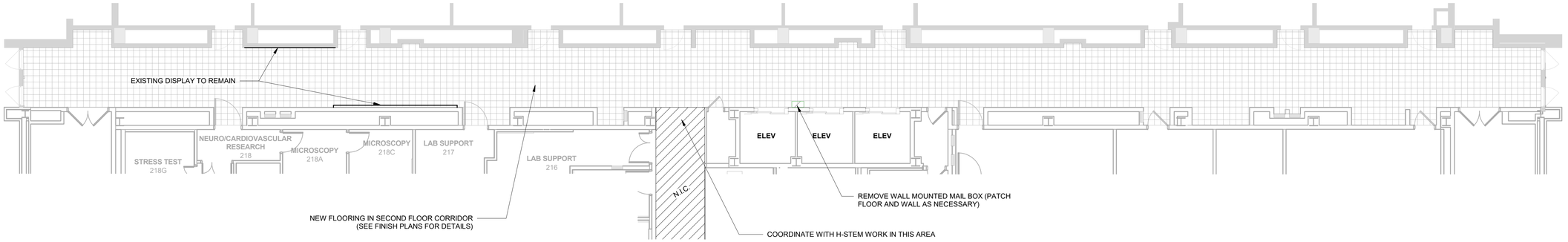
FACILITIES MANAGEMENT
1400 TOWNSEND DRIVE
HOUGHTON, MICHIGAN
(906) 487-2303 PH
(906) 487-3291 FX

Michigan Technological University
1885

CHEM-SCI CLASSROOM RENOVATIONS
FIRST FLOOR CORRIDOR RENOVATIONS

SCALE: 1/8" = 1'-0"
FILE: M:\fm\Drawings\2-Bldg Working Drawings\19-chem\19-23-03 Chem Sci Classroom Renovations\19-23-03 Chem Sci Classroom Renovations.rvt
3/9/2023 4:22:47 PM

SHEET
A103

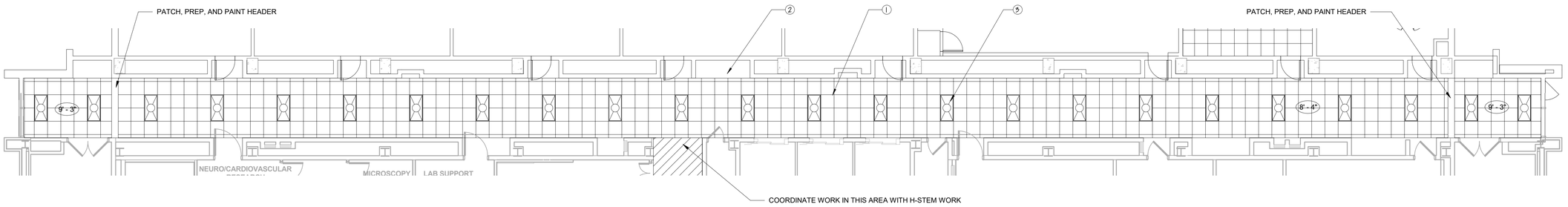


1 2ND FLOOR CORRIDOR - DEMO
1/8" = 1'-0"

NOTE: EXISTING CEILING TILES/GRID AND FLOORING TO BE REMOVED AND DISPOSED OF BY ASBESTOS ABATEMENT CONTRACTOR UNDER SEPARATE CONTRACT.

SECOND FLOOR CORRIDOR - FLOOR PLAN GENERAL NOTES

1. ALL LOOSE FURNISHINGS TO BE REMOVED BY MTU.
2. REMOVE ALL LOOSE WALL DECOR (PLAQUES, BULLETIN BOARDS, DISPLAY CASES) (UNLESS NOTED OTHERWISE) AND PATCH WALLS AS NEEDED, TURN ITEMS OVER TO OWNER.
3. EXISTING ROOM NUMBER SIGNS TO BE REMOVED. CONTRACTOR SHALL PROVIDE AND INSTALL NEW 'VISTA' WALL SIGNS AT ALL ROOM ENTRANCES PER MTU STANDARD.
4. PREP ALL WALLS FOR LEVEL 4 PAINT FINISH. COORDINATE WITH FINISH SELECTIONS.
5. ALL WALLS TO RECEIVE TWO COATS OF FINISH PAINT.



2 2ND FLOOR CORRIDOR - PROPOSED CEILING PLAN
1/8" = 1'-0"

SECOND FLOOR CORRIDOR KEYNOTES	
1	NEW 2x2 CEILING AND GRID TO BE: ARMSTRONG 'ULTIMA' 1941 WITH 15/16" PRELUDE GRID.
2	PATCH AND PAINT ALL DOOR & ALCOVE SOFFITS.
3	NEW 2x4 LIGHT FIXTURES, SEE LIGHTING CONTROLS PACKAGE FOR ADDITIONAL DETAILS.

SECOND FLOOR CORRIDOR - CEILING PLAN GENERAL NOTES

1. ALL CEILING DIFFUSERS IN CORRIDOR CEILINGS TO BE SALVAGED AND REINSTALLED IN NEW CEILING.
2. ALL FIRE ALARM AND STROBE DEVICES TO BE SALVAGED AND REINSTALLED IN NEW CEILING.
3. ALL 'WAP' DEVICES TO BE SALVAGED AND REINSTALLED IN NEW CEILING.
4. CEILING EXIT SIGNS TO BE DEMO'D AND REPLACED.
5. PAINT ALL DOOR AND ALCOVE SOFFITS, SEE FINISH PLANS FOR DETAILS.

19 - CHEMICAL SCIENCES BUILDING
P# 19-23-03

ISSUED FOR: BIDDING DATE 02/22/23

DRAWN BY: Author
DESIGNED: Designer
CHECKED: Checker
APPRD: Approver

FACILITIES MANAGEMENT
1400 TOWNSEND DRIVE
HOUGHTON, MICHIGAN
(906) 487-2303 PH
(906) 487-3291 FX

Michigan Technological University 1885

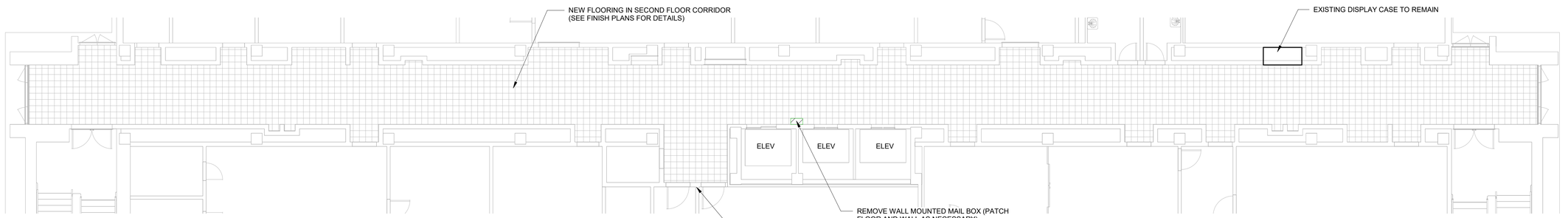
CHEM-SCI CLASSROOM RENOVATIONS
SECOND FLOOR CORRIDOR RENOVATIONS

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

FILE: M:\fm\Drawings\2-Bldg Working Drawings\19-chem\19-23-03 Chem Sci Classroom Renovations\19-23-03 Chem Sci Classroom Renovations.rvt

3/8/2023 4:22:30 PM

SHEET
A104

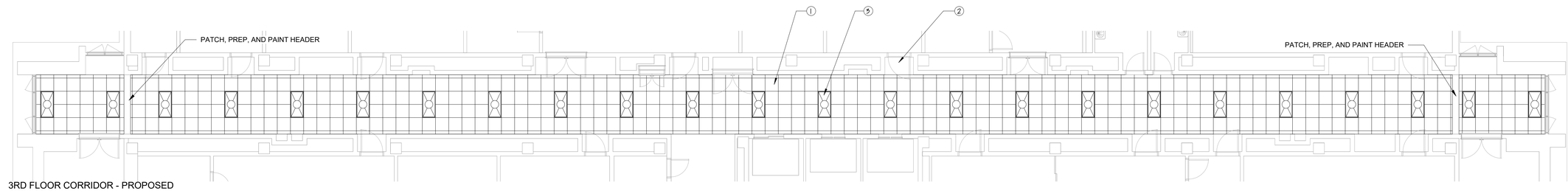


1 3RD FLOOR CORRIDOR - DEMO
1/8" = 1'-0"

THIRD FLOOR CORRIDOR - FLOOR PLAN GENERAL NOTES

1. ALL LOOSE FURNISHINGS TO BE REMOVED BY MTU.
2. REMOVE ALL LOOSE WALL DECOR (PLAQUES, BULLETIN BOARDS, DISPLAY CASES) (UNLESS NOTED OTHERWISE) AND PATCH WALLS AS NEEDED, TURN ITEMS OVER TO OWNER.
3. EXISTING ROOM NUMBER SIGNS TO BE REMOVED. CONTRACTOR SHALL PROVIDE AND INSTALL NEW 'VISTA' WALL SIGNS AT ALL ROOM ENTRANCES PER MTU STANDARD.
4. PREP ALL WALLS FOR LEVEL 4 PAINT FINISH. COORDINATE WITH FINISH SELECTIONS.
5. ALL WALLS TO RECEIVE TWO COATS OF FINISH PAINT.

NOTE: EXISTING CEILING TILES AND GRID TO BE REMOVED AND DISPOSED OF BY ASBESTOS ABATEMENT CONTRACTOR UNDER SEPARATE CONTRACT.



2 3RD FLOOR CORRIDOR - PROPOSED CEILING PLAN
1/8" = 1'-0"

THIRD FLOOR CORRIDOR KEYNOTES	
1	NEW 2x2 CEILING AND GRID TO BE: ARMSTRONG 'ULTIMA' 1941 WITH 15/16" PRELUDE GRID.
2	PATCH AND PAINT ALL DOOR & ALCOVE SOFFITS.
3	NEW 2x4 LIGHT FIXTURES, SEE LIGHTING CONTROLS PACKAGE FOR ADDITIONAL DETAILS.

THIRD FLOOR CORRIDOR - CEILING PLAN GENERAL NOTES

1. ALL CEILING DIFFUSERS IN CORRIDOR CEILINGS TO BE SALVAGED AND REINSTALLED IN NEW CEILING.
2. ALL FIRE ALARM AND STROBE DEVICES TO BE SALVAGED AND REINSTALLED IN NEW CEILING.
3. ALL 'WAP' DEVICES TO BE SALVAGED AND REINSTALLED IN NEW CEILING.
4. CEILING EXIT SIGNS TO BE DEMO'D AND REPLACED.
5. PAINT ALL DOOR AND ALCOVE SOFFITS, SEE FINISH PLANS FOR DETAILS.

19 - CHEMICAL SCIENCES BUILDING
P# 19-23-03

ISSUED FOR: BIDDING DATE 02/22/23

DRAWN BY: Author
DESIGNED: Designer
CHECKED: Checker
APPRD: Approver

FACILITIES MANAGEMENT
1400 TOWNSEND DRIVE
HOUGHTON, MICHIGAN
(906) 487-2303 PH
(906) 487-3291 FX

Michigan Technological University
1885

CHEM-SCI CLASSROOM RENOVATIONS
THIRD FLOOR CORRIDOR RENOVATIONS

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

FILE: M:\tm\Drawings\2-Bldg Working Drawings\19-chem\19-23-03 Chem Sci Classroom Renovations\19-23-03 Chem Sci Classroom Renovations.rvt

3/8/2023 4:22:12 PM

SHEET
A105

FINISH PLAN | **LEVEL 1**

LEGEND

FLOOR FINISHES

- CPT - 1
- CPT - 2
- TL - 1 | See #3 note below
- TL - 2
- NOT IN SCOPE

- PT - 3 | Accent Wall
- (A1) Acoustic Tiles | Full Wall | Reference page 42
- (A2) Acoustic Panels | Full Wall | Reference page 43
- (1) All recessed niches | Reference page 39
- (2) CPT -1 to terminate/align with nook on north wall
- (3) TL - 1 replaces 4'x4' area of colored tiles in middle of corridor; preserve existing perimeter tile | Reference page 37
- (4) TL - 2; aligned in width of TL - 1 along corridor and align with outer edges of tile with edges of elevator door openings
- (5) Elevator detailing | Reference page 40
- (6) Wall detailing reference page 45
- (7) New window shades
- (8) Replace all acoustic ceiling pads (ACP - 1) and grid

GENERAL NOTES

A) Schluter-SCHIENE FINISHING DETAIL IN BRUSHED STAINLESS STEEL APPLIED AT FLOOR TRANSITIONS FROM 1) CARPET TO TILE 2) TILE TO POLISHED CONCRETE
B) ANY WALL MOUNTED OBJECTS (SCREENS, BOARDS, CHARTS, ETC.) ARE TO BE MOUNTED OVER THE TOP OF ACOUSTIC PANELS/TILES
C) APPLY ACOUSTIC TILES / PANELS USING CONSTRUCTION ADHESIVE OR TROWEL TO FILL ANY VOIDS. BLOCK SHOULD BE CLEAN. ALTERNATE MOUNTING OPTION: Z-CLIPS
D) PAINT ALL EXISTING CEILING SOFFITS. (PT)-0-AS REQUIRED

ALL PAINT FINISHES:
ALL PAINT TO BE ZERO-VOC
ALL GYPSUM BOARD CEILINGS AND SOFFITS: FLAT FINISH, U.N.O.
ALL GYPSUM BOARD WALLS AND COLUMS: EGGSHELL FINISH, U.N.O.
ALL METAL AND WOOD SURFACES: SEMIGLOSS FINISH, U.N.O.
ALL INTERIOR GRILLES AND LOUVERS: SPRAYED SEMI-GLOSS FINISH, U.N.O.

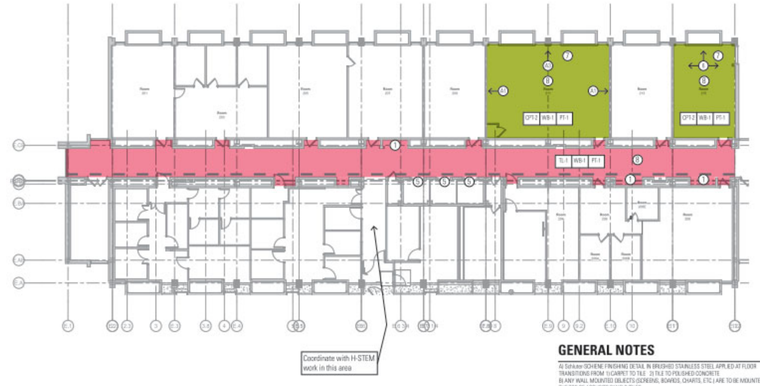
FINISH PLAN LEGEND

X-X | X-X | X-X ← WALL FINISH
← BASE FINISH
← FLOOR FINISH

SEE PAGE **47** FOR FINISH SPECIFICATIONS

HED Michigan Technological University

FINISH PLAN | **LEVEL 2**



LEGEND

FLOOR FINISHES

- CPT - 2
- TL - 1
- NOT IN SCOPE

- PT - 3 | Accent Wall
- (A1) Acoustic Tiles | Full Wall | Reference page 43
- (A2) Acoustic Panels | Full Wall | Reference page 44
- (1) All recessed niches | Reference page 39
- (5) Elevator detailing | Reference page 40
- (6) Wall detailing reference page 45
- (7) New window shades
- (8) Replace all acoustic ceiling pads (ACP - 1) and grid

GENERAL NOTES

A) Schluter-SCHIENE FINISHING DETAIL IN BRUSHED STAINLESS STEEL APPLIED AT FLOOR TRANSITIONS FROM 1) CARPET TO TILE 2) TILE TO POLISHED CONCRETE
B) ANY WALL MOUNTED OBJECTS (SCREENS, BOARDS, CHARTS, ETC.) ARE TO BE MOUNTED OVER THE TOP OF ACOUSTIC PANELS/TILES
C) APPLY ACOUSTIC TILES / PANELS USING CONSTRUCTION ADHESIVE OR TROWEL TO FILL ANY VOIDS. BLOCK SHOULD BE CLEAN. ALTERNATE MOUNTING OPTION: Z-CLIPS
D) PAINT ALL EXISTING CEILING SOFFITS. (PT)-0-AS REQUIRED

ALL PAINT FINISHES:
ALL PAINT TO BE ZERO-VOC
ALL GYPSUM BOARD CEILINGS AND SOFFITS: FLAT FINISH, U.N.O.
ALL GYPSUM BOARD WALLS AND COLUMS: EGGSHELL FINISH, U.N.O.
ALL METAL AND WOOD SURFACES: SEMIGLOSS FINISH, U.N.O.
ALL INTERIOR GRILLES AND LOUVERS: SPRAYED SEMI-GLOSS FINISH, U.N.O.

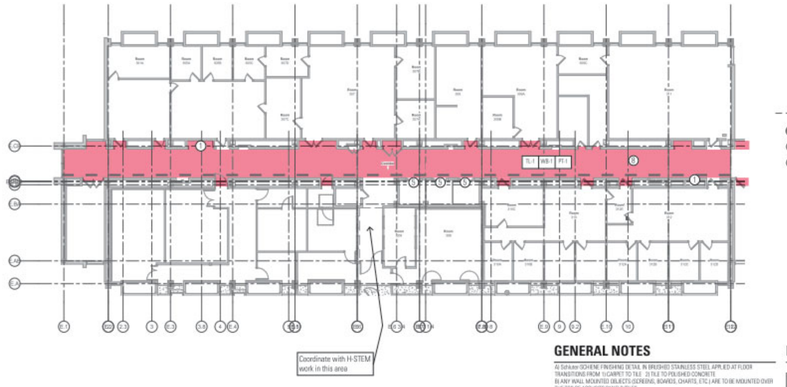
FINISH PLAN LEGEND

X-X | X-X | X-X ← WALL FINISH
← BASE FINISH
← FLOOR FINISH

SEE PAGE **47** FOR FINISH SPECIFICATIONS

HED Michigan Technological University

FINISH PLAN | **LEVEL 3**



LEGEND

FLOOR FINISHES

- Porcelain Tile
- NOT IN SCOPE

- PT - 3 | Accent Wall
- (1) All recessed niches | Reference page 39
- (5) Elevator detailing | Reference page 40
- (8) Replace all acoustic ceiling pads (ACP - 1) and grid

GENERAL NOTES

A) Schluter-SCHIENE FINISHING DETAIL IN BRUSHED STAINLESS STEEL APPLIED AT FLOOR TRANSITIONS FROM 1) CARPET TO TILE 2) TILE TO POLISHED CONCRETE
B) ANY WALL MOUNTED OBJECTS (SCREENS, BOARDS, CHARTS, ETC.) ARE TO BE MOUNTED OVER THE TOP OF ACOUSTIC PANELS/TILES
C) APPLY ACOUSTIC TILES / PANELS USING CONSTRUCTION ADHESIVE OR TROWEL TO FILL ANY VOIDS. BLOCK SHOULD BE CLEAN. ALTERNATE MOUNTING OPTION: Z-CLIPS
D) PAINT ALL EXISTING CEILING SOFFITS. (PT)-0-AS REQUIRED

ALL PAINT FINISHES:
ALL PAINT TO BE ZERO-VOC
ALL GYPSUM BOARD CEILINGS AND SOFFITS: FLAT FINISH, U.N.O.
ALL GYPSUM BOARD WALLS AND COLUMS: EGGSHELL FINISH, U.N.O.
ALL METAL AND WOOD SURFACES: SEMIGLOSS FINISH, U.N.O.
ALL INTERIOR GRILLES AND LOUVERS: SPRAYED SEMI-GLOSS FINISH, U.N.O.

FINISH PLAN LEGEND

X-X | X-X | X-X ← WALL FINISH
← BASE FINISH
← FLOOR FINISH

SEE PAGE **47** FOR FINISH SPECIFICATIONS

HED Michigan Technological University

19 - CHEMICAL SCIENCES BUILDING
P# 19-23-03

ISSUED FOR: BIDDING DATE: 03/14/23

DRAWN BY: TRA
DESIGNED: JAG
CHECKED: JAG
APPRD: GRR

FACILITIES MANAGEMENT
1400 TOWNSEND DRIVE
HOUGHTON, MICHIGAN
(906) 487-2303 PH
(906) 487-3291 FX

Michigan Technological University 1885

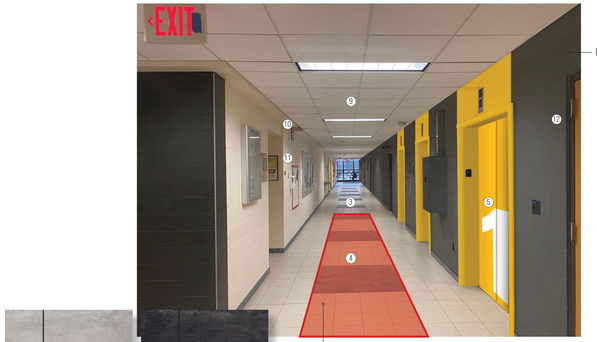
CHEM-SCI CLASSROOM RENOVATIONS
FINISH PLANS

SCALE:

SHEET
AF101

FILE: M:\fm\Drawings\2-Bldg Working Drawings\19-chem\19-23-03 Chem Sci Classroom Renovations\19-23-03 Chem Sci Classroom Renovations.rvt
3/13/2023 8:26:55 AM

CORRIDOR | **First Floor**



TL - 1 | Virginia Tile | +One | Ash | 24"x24"
Grout: Raven

TL - 2 | Virginia Tile | +One | Coal | 24"x24"
Grout: Raven

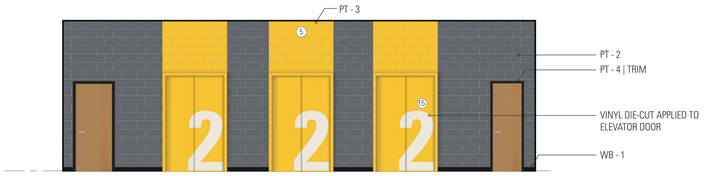
KEY

PAINT

WALL BASE

③ TL - 1 replaces 4'x4' area of colored tiles in middle of corridor; preserve existing perimeter tile | Reference page 37
④ TL - 2; aligned in width of TL - 1 along corridor and align with outer edges of tile with edges of elevator door openings
⑤ Elevator detailing | Reference page 40
⑨ Replace all acoustic ceiling pads (ACP - 1) and grid
⑩ Remove all room number signs above classroom doors
⑪ Paint all other walls: PT - 1
⑫ Paint all door trim: PT - 4

CORRIDOR | **Elevator Elevations**



SOUTH ELEVATION

KEY

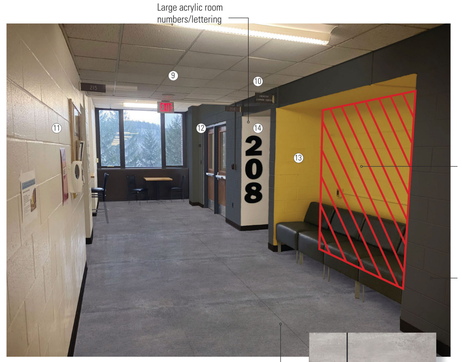
PAINT

WALL BASE

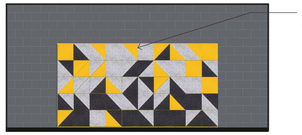
⑤ PT - 3 Applied to following:
- Elevator door trim
- CMU wall above elevator trim to ceiling, width aligning with elevator trim

⑮ Vinyl applied to full dimensions of elevator door; color matched PT - 3 | Number to correspond with floor

CORRIDOR | **Floors 2 & 3**

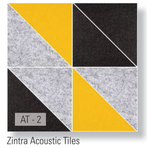


TYPICAL RECESSED NICHE ELEVATION



AT - 2 | 12" | Full wall application on back wall in similar pattern as shown in elevation.
Color ratios:
- Slate 30%
- Smoke 40%
- Sunshine 30%

TL - 1 | Virginia Tile | +One | Ash | 24"x24"
Grout: Raven



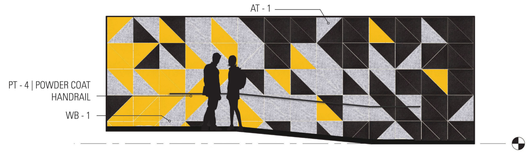
Zintra Acoustic Tiles
Custom cut | 12"
Right Triangle with beveled edge

PAINT

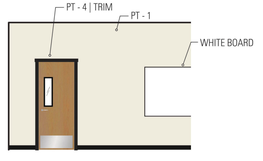
WALL BASE

⑨ Replace all acoustic ceiling pads (ACP - 1) and grid
⑩ Remove all room number signs above classroom doors
⑪ Paint all other walls: PT - 1
⑫ Paint all door trim: PT - 4
⑬ Paint sides of wall and ceiling at niche: PT - 3
⑭ DIMENSIONAL ROOM NAME / NUMBER:
Mount: 1/4" from wall with concealed fastners
Color: Black
Material: Acrylic
Size: 1/4" Thick (coordinate final size with designer and owner) to fit oroportionally on wall.
Coordinate final naming/numbering with owner

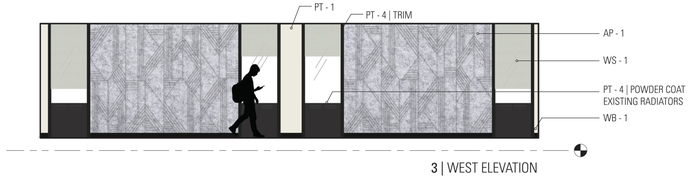
CLASSROOM ELEVATION



1 | NORTH ELEVATION

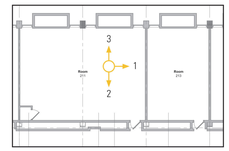


2 | EAST ELEVATION

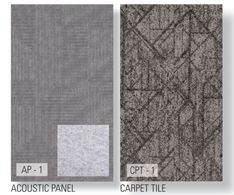


3 | WEST ELEVATION

KEY



PAINT
ACOUSTIC TILES



ACOUSTIC PANEL
CARPET TILE

WALL BASE

19 - CHEMICAL SCIENCES BUILDING
P# 19-23-03

ISSUED FOR: BIDDING
DATE: 03/14/23

DRAWN BY: TRA
DESIGNED: JAG
CHECKED: JAG
APPRD: GRR

FACILITIES MANAGEMENT
1400 TOWNSEND DRIVE
HOUGHTON, MICHIGAN
(906) 487-2303 PH
(906) 487-3291 FX

Michigan Technological University 1885

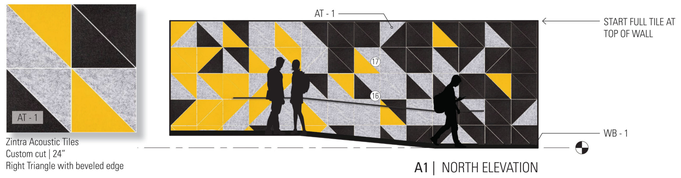
CHEM-SCI CLASSROOM RENOVATIONS
INTERIOR FINISH DETAILS

SCALE:

SHEET
AF102

FILE: M:\fm\Drawings\2-Bldg Working Drawings\19-chem\19-23-03 Chem Sci Classroom Renovations\19-23-03 Chem Sci Classroom Renovations.rvt
3/13/2023 8:32:57 AM

ELEVATIONS | **Classroom Wall A1**

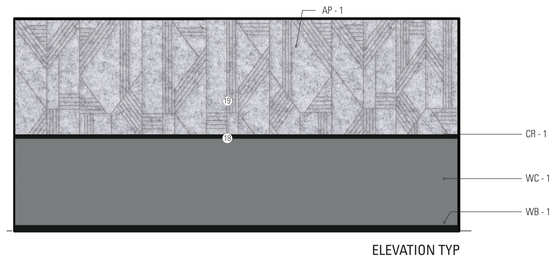


A1 | NORTH ELEVATION

16 Handrail powdercoat finish in PT - 4

17 Zintra Acoustic Tiles | 24" | Applied in similar pattern as shown in elevation with slight fade/transition. Alignment beginning with top of wall. Color ratios:
- Slate 40%
- Smoke 40%
- Sunshine 20%

ELEVATIONS | **Classrooms 106 | 215**



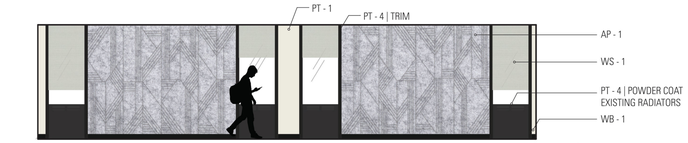
ELEVATION TYP

18 CR - 1 applied 42" AFF between AP - 1 and WC - 1 materials

19 AP - 1 applied width of wall to ceiling height

ELEVATIONS | **Classroom Wall A2 | A3**

A2 | WEST ELEVATION



A3 | WEST ELEVATION

FINISHES | MATERIAL LEGEND

FACILITIES MANAGEMENT
1400 TOWNSEND DRIVE
HOUGHTON, MICHIGAN
(906) 487-2303 PH
(906) 487-3291 FX

Michigan Technological University 1885

19 - CHEMICAL SCIENCES BUILDING
P# 19-23-03

ISSUED FOR: BIDDING
DATE: 03/14/23

DRAWN BY: TRA
DESIGNED: JAG
CHECKED: JAG
APPRD: GRR

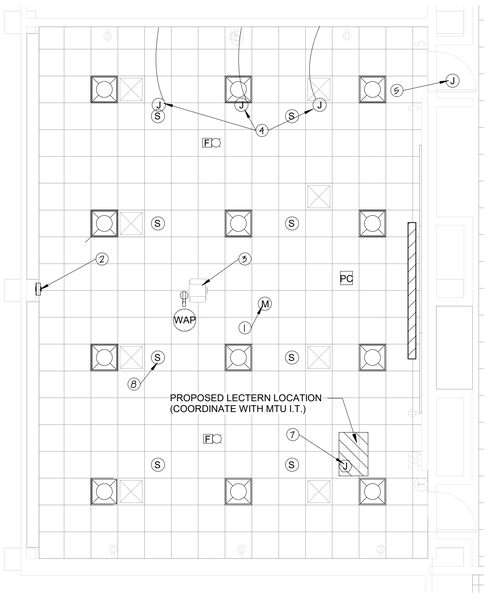
DRWG: AF103

CHEM-SCI CLASSROOM RENOVATIONS
INTERIOR FINISH DETAILS

SCALE:

SHEET
AF103

3/13/2023 8:36:42 AM FILE: M:\fm\Drawings\2-Bldg Working Drawings\19-chem\19-23-03 Chem Sci Classroom Renovations\19-23-03 Chem Sci Classroom Renovations.rvt



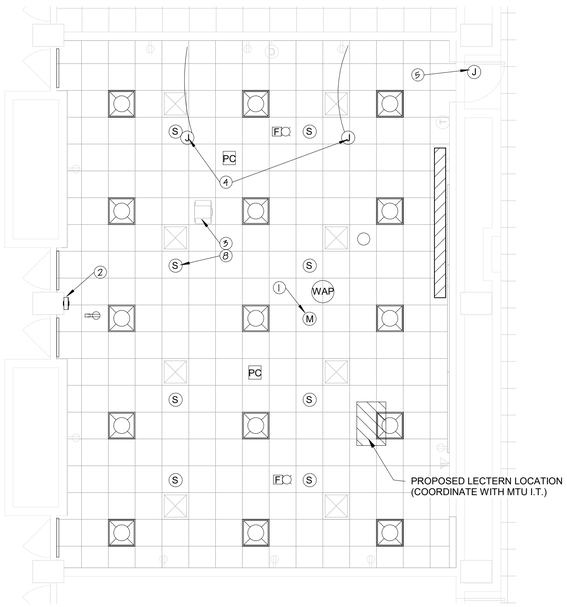
1 101 ELECTRICAL PLAN
3/16" = 1'-0"

ROOM 101 I.T. NOTES

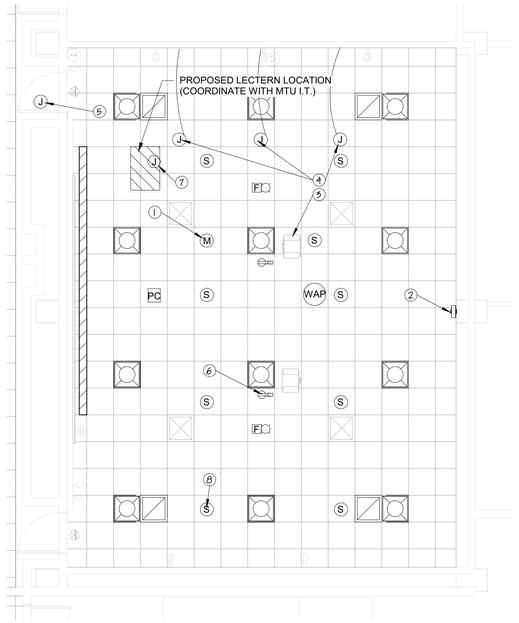
- Install Legrand WIREMOLD® Evolution™ Series 10" Poke-Thru (Contractor Provided), See specs for floor box
- 2" conduit for A/V wires from floor box to ceiling
- 1.25" conduit for future A/V from floor box to ceiling
- 1.25" conduit stub for a four port 6A Telcom standard jack and labeling from Sub Basement (SB) closet
- 1 dedicated 20 amp to feed two duplex receptacles
- Install 8 CAT 6A house network jacks-jacks to be blue (contractor provided) from the floor box to a location near the projector
- Test and label per IT direction
- Install 2 speaker wires from floor box to ceiling speakers (MTU provides speaker cable) connect to speakers per IT direction
- Install 1 each 9451P to from floor box to the projection screen (connect to screen)
- Install 1 each 9451P to from floor box to ceiling and leave a 30' loop for future use
- Cables to be Plenum rated
- Install occupancy sensor and connect a network wire to the occ sensor

ROOM 211 I.T. NOTES

- Install a four port 6A Telcom standard jack on east wall and labeling from SB closet
- 1 dedicated 20 amp to feed two duplex receptacles
- Install 4 gang caddy ring in wall for A/V cabling
- Install 8 CAT 6A house network jacks-jacks to be blue (contractor provided) (All in one stud cavity)
  8 from the caddy ring to above the ceiling near the projector
- Test and label per IT direction
- Install 2 speaker wires to the ceiling speakers (MTU provides speaker cable) connect to speakers per IT direction
- Install 1 each 9451P to ceiling and leave a 30' loop for future use
- Cables to be Plenum rated
- Install occupancy sensor and connect a network wire to the occ sensor



4 211 ELECTRICAL PLAN
3/16" = 1'-0"



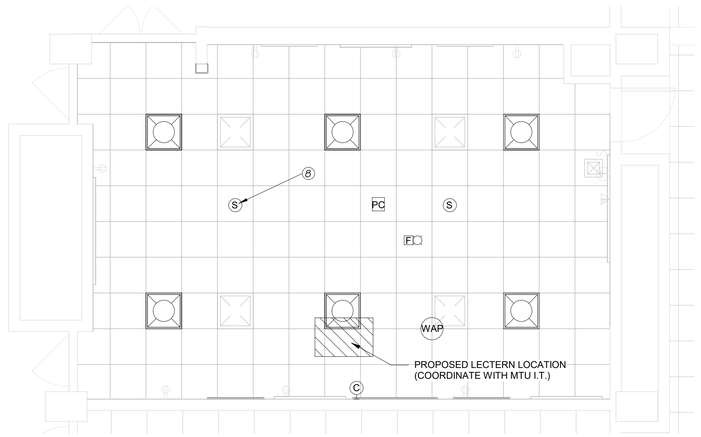
2 102 ELECTRICAL PLAN
3/16" = 1'-0"

ROOM 102 I.T. NOTES

- Install Legrand WIREMOLD® Evolution™ Series 10" Poke-Thru (Contractor Provided). See specs for floor box
- 2" conduit for A/V from floor box to ceiling
- 1.25" conduit for future A/V from floor box to ceiling
- 1.25" conduit stub for a four port 6A Telcom standard jack and labeling from SB closet
- Install a 2 port network jack location in ceiling for future WAP
- 1 dedicated 20 amp to feed two duplex receptacles
- Install 12 CAT 6A house network jacks-jacks to be blue (contractor provided)
  - 8 from the floor box to a location near the north projector
  - 4 from the floor box to a location directly above the desk
- Test and label per IT direction
- Install 2 speaker wires from floor box to ceiling speakers (MTU provides speaker cable) connect to speakers per IT direction
- Install 2 each 9451P to from floor box to each projection screen (connect to screens)
- Install 1 each 9451P to from floor box to ceiling and leave a 30' loop for future use
- Cables to be Plenum rated
- Install occupancy sensor and connect a network wire to the occ sensor

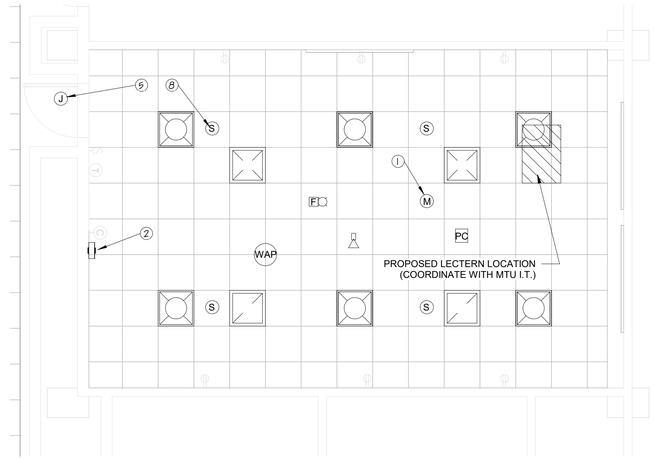
ROOM 215 I.T. NOTES

- Install a four port 6A Telcom standard jack on south wall and labeling from SB closet
- 1 dedicated 20 amp to feed two duplex receptacles
- Install 4 gang caddy ring in south wall for A/V cabling
- Install 8 CAT 6A house network jacks-jacks to be blue (contractor provided) (All in one stud cavity)
  8 from the floor box to above the ceiling
- Test and label per IT direction
- Blue network jacks for A/V connections
- Install 2 speaker wires to the ceiling speakers (MTU provides speaker cable) connect to speakers per IT direction
- Install 1 each 9451P to from floor box to ceiling and leave a 30' loop for future use
- Cables to be Plenum rated
- Install occupancy sensor and connect a network wire to the occ sensor
- Install 4 single gang caddy rings behind student TV locations for A/V cabling
- Install a single gang caddy ring behind instructor TV location for A/V cabling



5 215 ELECTRICAL PLAN
1/4" = 1'-0"

Classroom Phone Locations (each room)
Contractor to provide and install:
- SEMTRON 1FM-OE-AMP-PHONE SEMTRON WALL PHONE PLATE - AMP From GraybaR
- Run 2-each Category 6A cables to each phone location.
- Commscope USL-10G-BLU(Terminate on above faceplate)
- Commscope USL-10G-ORG(Terminate and store behind faceplate)
- Contractor to coordinate phone locations with MTU I.T.



3 106 ELECTRICAL PLAN
1/4" = 1'-0"

ROOM 106 I.T. NOTES

- Install a four port 6A Telcom standard jack and labeling from SB closet
- 1 dedicated 20 amp to feed two duplex receptacles
  - Reuse circuit from existing wiremold from wiremold on north wall if possible (All in one stud cavity)
- Install 4 gang caddy ring in east wall for A/V cabling
- Install 8 CAT 6A house network jacks-jacks to be blue (contractor provided)
  8 from the caddy ring to location above the ceiling near TV mount location
- Test and label per IT direction
- Blue network jacks for A/V connections
- Install 2 speaker wires to the ceiling speakers (MTU provides speaker cable) connect to speakers per IT direction
- Install 1 each 9451P to from floor box to ceiling and leave a 30' loop for future use
- Cables to be Plenum rated
- Install 75" LCD TV on Ceiling Mount (TV and mount provided by MTU)
- Install occupancy sensor and connect a network wire to the occ sensor
- Install 2 duplex receptacles behind the monitor on the pipe

GENERAL NOTES

1. CONTRACTOR SHALL REFER TO THE ENTERPRISE LIGHTING AND CONTROL 'CONTROLS DRAWING PACKAGE'. FOR DETAILS ON LIGHTING LAYOUT AND CONTROLS.
2. CONTRACTOR SHALL REFER TO THE ENTERPRISE LIGHTING AND CONROL DRAWINGS FOR LUMINAIRE SCHEDULES.
3. EXISTING FIRE ALARM DEVICES AND STROBES SHALL BE RE-INSTALLED IN NEW CEILING.
4. INSTALL NEW PROJECTOR/TV MOUNTS AND NEW PROJECTORS AND TVs.
5. INSTALL VIDEO CAMERAS ON BACK WALLS AS NOTED, WIREMOLD FROM CEILING AS NECESSARY.
6. INSTALL CEILING SPEAKERS AND CABLING, TERMINATE AT SPEAKERS.
7. INSTALL AND TERMINATE A/V NETWORK CABLING.
8. INSTALL CEILING MOUNTED MICROPHONES AS NOTED.
9. MTU TO SUPPLY SPEAKER CABLE, 9451P CABLE, AND PRE-TERMINATED PATCH CABLES. CONTRACTOR TO PROVIDE CAT6A PLENUM CABLE AND JACKS. MTU TO ASSIST AND COORDINATE FINAL LOCATIONS FOR ALL DEVICES.
10. CONTRACTOR SHALL PROVIDE TEMPORARY LIGHTING AS NECESSARY FOR WORK BY OTHERS.
11. CONTRACTOR SHALL TREAT ALL SPACES AS PLENUM.
12. LECTERNS TO BE PROVIDED BY MTU.

ELECTRICAL PLAN KEYNOTES	
1	INSTALL NEW CEILING MICROPHONE. (MICROPHONE SUPPLIED BY MTU)
2	INSTALL NEW WALL-MOUNTED VIDEO CAMERA ON COLUMN. (CAMERA SUPPLIED BY MTU)
3	INSTALL NEW CEILING PROJECTOR (PROJECTOR SUPPLIED BY MTU).
4	PROVIDE POWER FOR NEW FURNITURE. CONTRACTOR TO RECESS POWER IN WALL & FLOOR AND MAKE FINAL CONNECTION TO FURNITURE. COORDINATE WITH FURNITURE VENDOR.
5	PROVIDE POWER AND MAKE FINAL CONNECTION TO NEW AUTO DOOR OPERATOR.
6	RELOCATE CEILING OUTLET AS NEEDED FOR NEW LIGHTING LAYOUT.
7	NEW LEGRAND WIREMOLD EVOLUTION SERIES 10" POKE-THRU DEVICE. LOCATION TO BE COORDINATED WITH MTU I.T.
8	INSTALL NEW CEILING SPEAKERS (PROVIDED BY MTU).

NOTE:
- SEE ATTACHED ENTERPRISE 'CONTROLS DRAWING PACKAGE' FOR LIGHTING CONTROLS
- SEE ATTACHED LIGHT FIXTURE SCHEDULES AND LAYOUT DRAWINGS FOR LIGHTING PLANS

19 - CHEMICAL SCIENCES BUILDING
P# 19-23-03

ISSUED FOR: BIDDING DATE 03/14/23

DRAWN BY: TRA
DESIGNED: JAG
CHECKED: JAG
APPRD: GRR

FACILITIES MANAGEMENT
400 TOWNSEND DRIVE
HOUGHTON, MICHIGAN
(906) 487-2303 PH
(906) 487-3291 FX

Michigan Technological University 1885

CHEM-SCI CLASSROOM RENOVATIONS
PROPOSED ELECTRICAL PLAN

SCALE: As indicated
FILE: M:\fm\Drawings\2-Bldg Working Drawings\19-chem\19-23-03 Chem Sci Classroom Renovations\19-23-03 Chem Sci Classroom Renovations.rvt

SHEET
E101

3/14/2023 8:43:29 AM

ENTERPRISE

Lighting & Control

Controls Drawing Package

MICHIGAN TECHNOLOGICAL UNIVERSITY - CSE BUIDLING

HOUGHTON, MI

Drawing Type:	Prepared For: ****
Date:	02/21/2023
Scale:	NOT TO SCALE
Drawn By:	BP
Project #:	22-119681
DWG Ref:	NONE
Sheet:	LC0.0

General System Notes

ON DIGITAL SYSTEMS, ALL DEVICES TO BE CONNECTED IN A DAISY CHAIN PATTERN SO THAT THE FIRST AND LAST DEVICE IN THE CHAIN HAS AN OPEN PORT.

ON DIGITAL SYSTEMS, CONTRACTOR SHALL NOTE AND LABEL ADDRESS AND LOCATION OF EACH DEVICE ON THE SYSTEM ONE-LINE DIAGRAMS OR SYSTEM LAYOUT DRAWINGS AT TIME OF INSTALLATION.

ONE-LINE DIAGRAMS INDICATE THE REQUIRED GROUPING OF WIRES, NOT THE NUMBER OR SIZE OF CONDUITS.

WIRING SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE (NEC) AND APPLICABLE LOCAL CODES, INCLUDING PROVISION OF EQUIPMENT GROUNDING AS REQUIRED BY THE NEC.

POWER CONDUCTORS SHALL BE SIZED PER THE NEC AMPACITY TABLES (ARTICLE 310), INCLUDING ADJUSTMENT FACTOR AND NEUTRAL CONDUCTOR REQUIREMENTS (FEED AND BRANCH NEUTRAL CONDUCTORS MUST BE COUNTED AS CURRENT CARRYING CONDUCTORS). RUN SEPARATE NEUTRAL CONDUCTORS FOR EACH DIMMED LOAD CIRCUIT.

FOR 0-10VDC DIMMING SYSTEMS, VIOLET AND GRAY/PINK CONDUCTORS ARE FOR 0-10VDC LOW VOLTAGE TERMINATIONS ONLY. NEVER TERMINATE LINE VOLTAGE (120/230/277VAC) TO VIOLET AND GRAY/PINK.

CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL TERMINATIONS. NO SPLICES ARE PERMITTED IN CAT5/6 CONTROL WIRING.

LIGHTING CONTROL EQUIPMENT MUST BE INSTALLED, MAINTAINED, AND OPERATED IN AN "OFFICE CLEAN" DRY ENVIRONMENT, INDOOR DRY LOCATIONS ONLY, 10% - 90% RELATIVE HUMIDITY; AMBIENT TEMPERATURE 0°- 40°C (32°- 104°F) - 0°- 35°C (32°- 95°F) RECOMMENDED.

SENSORS IN ELECTRICAL/MECHANICAL LOCATIONS NEED TO BE VERIFIED WITH AUTHORITY HAVING JURISDICTION. REFER TO NEC 110.26.D.

VERIFY MAXIMUM CABLE LENGTHS BASED ON CONTROL SYSTEM. MANUFACTURER IS NOT RESPONSIBLE FOR SYSTEMS EXCEEDING CABLING PARAMETERS.

LOW VOLTAGE CABLE MUST BE INSTALLED AT LEAST 12 INCHES FROM ALL LINE VOLTAGE CONDUCTORS EXCEPT TO CROSS OR MAKE TERMINATIONS. CAT. 5 CABLE MUST BE KEPT AWAY FROM ALL EMF DEVICES SUCH AS BALLASTS OR TRANSFORMERS.

0-10V DIMMING BALLASTS AND DRIVERS ARE REQUIRED TO COMPLY WITH IEC 60929 ANNEX E SPECIFICATIONS.

Load Types

LINE VOLTAGE INCANDESCENT - NON-PHASE DEPENDENT FOR DIMMING.

MAGNETIC LOW VOLTAGE INCANDESCENT - ALLOWABLE IN FORWARD PHASE CONTROL MODE ONLY. TRANSFORMER MUST BE RATED FOR DIMMING BY ITS MANUFACTURER. ADD 25% TO LAMP WATTAGE TO ALLOW FOR TRANSFORMER LOSS AND TO CALCULATE TOTAL LOAD.

FLUORESCENT - ALLOWABLE WITH 2-WIRE BALLAST, 0-10VDC BALLASTS, SOME 3-WIRE AND SWITCHED DEPENDING ON SYSTEM COMPATIBILITY. VERIFY CONTROL TYPES WITH YOUR REGIONAL SUPPORT TEAM.

LED - DIMMING ALLOWED PER LED DRIVER MANUFACTURER SPECIFICATIONS. VERIFY CONTROL TYPES WITH YOUR REGIONAL SUPPORT TEAM.

NEON and COLD CATHODE - ALLOWABLE IN FORWARD PHASE CONTROL MODE ONLY. BALLAST MUST BE RATED FOR DIMMING BY ITS MANUFACTURER AND BE NORMAL (LOW) POWER FACTOR. CONNECTED LOAD MUST NOT EXCEED 50% OF THE DIMMER'S NOMINAL RATING.

MOTORS - NO DIMMING ALLOWED. SWITCHED CONTROL SOURCE ONLY.

ELECTRONIC LOW VOLTAGE INCANDESCENT - ALLOWABLE, NORMALLY IN REVERSE PHASE CONTROL MODE ONLY. ELV TRANSFORMER MUST BE RATED FOR DIMMING BY ITS MANUFACTURER.

HID - DIMMING NOT ALLOWED UNLESS WITH DIMMABLE HID DRIVER. OTHERWISE, MUST BE ON SWITCHED CONTROL SOURCE.

EMERGENCY - PLEASE CONTACT YOUR REGIONAL SUPPORT TEAM TO VERIFY EMERGENCY CONTROLS NECESSARY BASED ON SYSTEM REQUIREMENTS.

nLight System Notes

EVERY NLIGHT ENABLED DEVICE (INCLUDING NLIGHT EANABLED FIXTURES) IS FURNISHED WITH (1) PERMANENTLY ADHERED ID TAG AND (1) MATCHING, PARTIALLY ADHERED ID TAG TO BE PLACED ON THE RISER DIAGRAM SHEET, OR THE LIGHTING CONTROL LAYOUT SHEET, PROVIDED AS PART OF AN NLIGHT SUBMITTAL. THIS SHALL BE DONE DURING INSTALLATION AND PRIOR TO FACTORY STARTUP. FAILURE TO COMPLY MAY RESULT IN STARTUP DELAYS AND ADDITIONAL COSTS AT THE CONTRACTOR'S EXPENSE. DO NOT PLACE DEVICE ID STICKERS ON FLOOR PLAN UNLESS REQUIRED TO EXECUTE NFLOORPLAN SERVICES, REFERENCE NFLOORPLAN SERVICE NOTES ON THIS SHEET FOR SPECIFIC REQUIREMENTS.

ONE RELAY PACK OR NLIGHT ENABLED FIXTURE IS NEEDED PER CIRCUIT/ZONE TO BE CONTROLLED AND CAN RESIDE WITHIN SENSORS, WALLPODS, OR RELAY PACKS. POWER PACK PLACEMENT ON DRAWINGS IS FOR COUNTING ONLY; FINAL PLACEMENT IS UP TO DISCRETION OF CONTRACTOR/ENGINEER. PLEASE RECHECK COUNTS TO VERIFY THE NUMBER OF RELAYS NEEDED TO SWITCH ALL DESIRED LOADS.

BRIDGES, RELAYS, POWER PACKS, WALLPODS, AND SENSORS ON DRAWINGS WERE PLACED WITH INFORMATION PROVIDED AT TIME OF DESIGN. ADDITIONAL BRIDGES AND/OR SENSORS MAY BE REQUIRED DEPENDING ON BUILDING CHANGES, FINAL PARTITION HEIGHT/PLACEMENT, FURNITURE PLACEMENT, EQUIPMENT HEIGHT/PLACEMENT AND SHELVING HEIGHT/PLACEMENT.

THE LAYOUT OF THE NETWORK BACKBONE (BRIDGES AND GATEWAYS) HAS BEEN PLACED IN A SEPARATE TREE DIAGRAM AND NOT ON THE ACTUAL LAYOUT. FINAL PLACEMENT OF THE BRIDGE(S) AND GATEWAY(S) DEVICES SHALL BE AT THE CONTRACTOR/ENGINEER DISCRETION.

ALL DEVICES HAVE RJ-45 FEMALE PORTS. MAKING NETWORK CONTROL CABLES IS REQUIRED, T568B TERMINATIONS ARE RECOMMENDED. IT IS IMPERATIVE THAT ALL NETWORK CONTROL CABLES BE TESTED WITH A LAN CABLE TESTER TO VERIFY PROPER TERMINATIONS.

DAISY-CHAINED DEVICES SHOULD BE POWERED UP AND WORKING ON DEFAULT PROGRAMMING PRIOR TO CONNECTION TO BRIDGE OR GATEWAYS.

LOW VOLTAGE NETWORK CONTROL CABLE (CAT5/5E/6) RUNS FOR LOCAL ZONES, HOMERUNS AND BACKBONE SHOULD BE WHITE WITH CABLES LABELED.

CONTRACTOR TO VERIFY BLINK/DIAGNOSTIC CODES (VISIT HTTP://NLIGHTCONTROLS.COM/WP-CONTENT/UPLOADS/NLIGHT_POCKET_GUIDE.PDF) WHEN CONNECTING GATEWAYS/BRIDGES TO ZONES.

MAXIMUM CABLE LENGTH FROM START DEVICE TO END DEVICE IS 1500' INCLUDING HOMERUN TO BRIDGE DEVICE, IF PRESENT. MANUFACTURER IS NOT RESPONSIBLE FOR SYSTEMS EXCEEDING CABLING PARAMETERS.

Design and Assumption Notes

1. AREAS SHOWN ARE THE ONLY AREAS ASSUMED IN ACUITY SCOPE FOR THIS PROJECT.

2. THE LIGHTING CONTROL DESIGN IS SUBJECT TO CHANGE BASED ON ADDITIONAL PROJECT SPECIFIC INFORMATION.

3. ELECTRICAL DRAWINGS AND SPECIFICATIONS NOT PROVIDED AT TIME OF LAYOUT/QUOTE REQUEST. VERIFY THIS LAYOUT/QUOTE MEETS PROJECT'S SPECIFIC REQUIREMENTS.

4. QUANTITY AND TYPE OF POWERPACKS ARE SUBJECT TO CHANGE DEPENDING ON CIRCUITRY OR DIMMING TYPE.

5. EMERGENCY BY-PASS DEVICES (SHUNTING) PROVIDED. ALL EMERGENCY TRANSFER DEVICES ARE TO BE PROVIDED BY OTHERS.

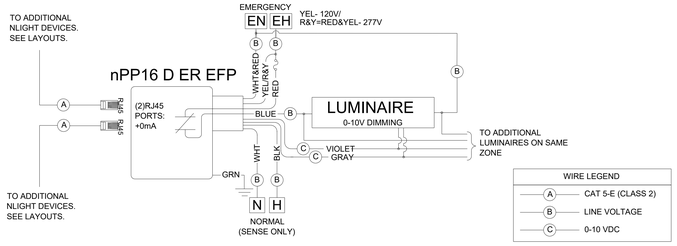
6. IT IS THE RESPONSIBILITY OF THE PROJECT'S PROFESSIONAL ENGINEER (ENGINEER OF RECORD) TO REVIEW AND CORRECT THE CONTROL DRAWINGS FOR COMPLIANCE WITH ALL STATE AND LOCAL CODE REGULATIONS.

MICHIGAN TECHNOLOGICAL UNIVERSITY - CSE BUIDLING
HOUGHTON, MI

Drawing Type: System Notes
Prepared For: ****

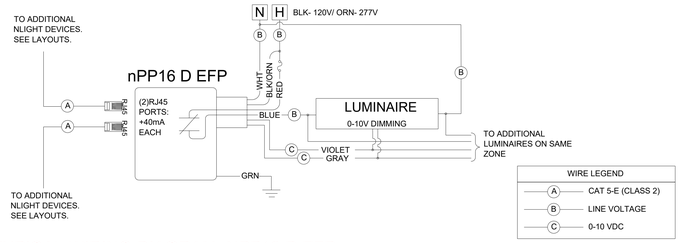
Date:	02/21/2023
Scale:	NOT TO SCALE
Drawn By:	BP
Project #:	22-119681
DWG Ref:	NONE
Sheet:	LC0.1

Created in Visual Controls



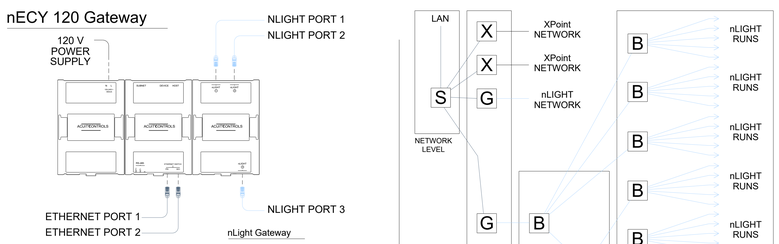
TYPICAL WIRING DIAGRAM: NPP16 D ER EFP

N.T.S.



TYPICAL WIRING DIAGRAM: NPP16 D EFP

N.T.S.

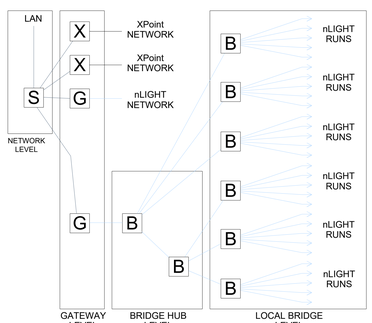


nLight Gateway

nECY 120 Eclpyse Gateway has been shown here as typical and indicative of connection types. Please refer to Gateway cutsheets for model specific features. The nECY 120 Gateway has three nLight ports; Port 1 is typicallyused to host the nLight network, port 2 is typically left spare, and port 3 is typically reserved for Gateway GFX commissioning interface. Two Ethernet ports are available with a built-in Ethernet switch. The Ethernet ports may be used to connect to a building or BMS LAN or a personal computer.

nLight Bridge

The nBRG 8 bridge features 8 nLight ports. One port is reserved for upstream communication, and any number of the remaining 7 can be used for downstream communication. Allowance of at least one spare port is typical.



NETWORK LEVEL
All nLight Gateway devices are connected over a Local Area Network. Computers on this level may connect through SensorView and building automation systems may access system offer BACnet/IP if this option is provided.

GATEWAY LEVEL
nLight Gateways on this levle will host an nLight network. The xPoint Bridge resides on this level hosting an xPoint network. Devices on this level are network visible.

BRIDGE HUB LEVEL
nLight Bridges on this level function as hubs in a star topology. The nLight network hosted by the Gateway must be routed to each bridge on the local bridge level. Each bridge hub will utilize one port to run upstream (towards the Gateway) and any number of the remaining 7 ports to feed downstream (towards nLight zone runs). Large systems will often use a tiered approach with bridge hubs running to additional bridge hubs; In these situations, the maximum number of bridge hub tiers is 8.

LOCAL BRIDGE LEVEL
nLight Bridges on this level utilize one port to run upstream (towards bridge hubs) and any number of the remaining 7 ports to facilitate nLight zones consisting of cat5 daisy-chained nLight lighting control devices.

NLIGHT NETWORK RISER

N.T.S.

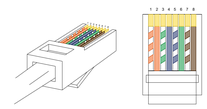
TIA / EIA-568-B CABLING STANDARD TERMINATION

Function	PAIR #	PIN OUT (T568B)	Wire Color
(T1) (R1)	1	5 4	WHITE w/ BLUE BLUE
Tx + (T2) Tx - (R2)	2	1 2	WHITE w/ ORANGE ORANGE
Rx + (T3) Rx - (R3)	3	3 6	WHITE w/ GREEN GREEN
(T4) (R4)	4	7 8	WHITE w/ BROWN BROWN

TERMINATION & TESTING OF CAT5 CABLES MUST BE DONE BY A QUALIFIED NETWORK INSTALLER

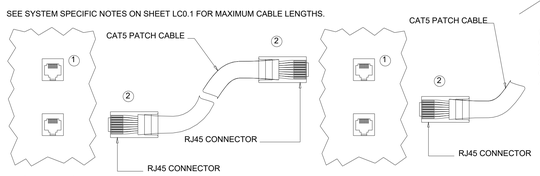
Cable termination requirements :

1. Strip off outer jacket - approximately 1-1/2" (37.6 mm)
2. Terminate approximately 1/2" (12.2 mm) from end of conductors on type 110 punch down block or connector per schedule (t568b) - maximum untwist of conductors to terminations is 1/2" (12.2 mm) - trim excess leads.



1. WHITE w/ ORANGE
2. ORANGE
3. WHITE w/ GREEN
4. BLUE
5. WHITE w/ BLUE
6. GREEN
7. WHITE w/ BROWN
8. BROWN

SEE SYSTEM SPECIFIC NOTES ON SHEET LC0.1 FOR MAXIMUM CABLE LENGTHS.



Notes:

Daisy-chain CAT5 patch cable with RJ45 connectors from digital device to digital device.

Refer to manufacturers instructions for long distance runs between digital devices.

Crimp and test each cable with a LAN circuit tester prior to installation.

① RJ45 FEMALE CONNECTOR

② RJ45 MALE CONNECTORS. ALL CABLES SUPPLIED BY CONTRACTOR.

CAT5E/6 CABLE TERMINATION

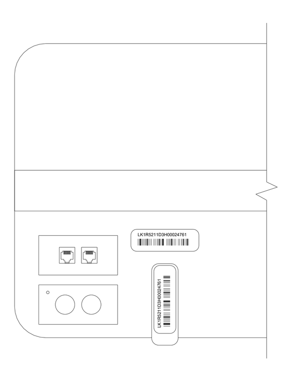
N.T.S.

MICHIGAN TECHNOLOGICAL UNIVERSITY - CSE BUIDLING
HOUGHTON, MI

Drawing Type:	Details
Prepared For:	****
Date:	02/21/2023
Scale:	NOT TO SCALE
Drawn By:	BP
Project #:	22-11968
DWG Ref:	NONE
Sheet:	LC0.2

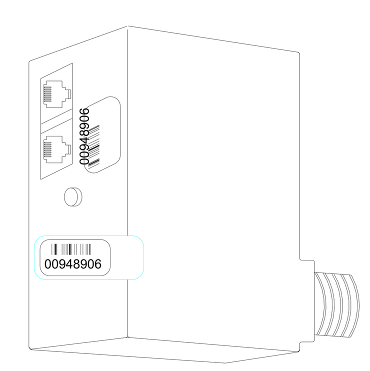
Created in Visual Controls

BARCODE TEMPLATES MUST BE SUBMITTED FOR ALL NLIGHT AND NLIGHT AIR PROJECTS PRIOR TO ON-SITE STARTUP.



BAR CODE ON NLIGHT ENABLED FIXTURE

TOP VIEW



BAR CODE ON NLIGHT DEVICE

NOTES:

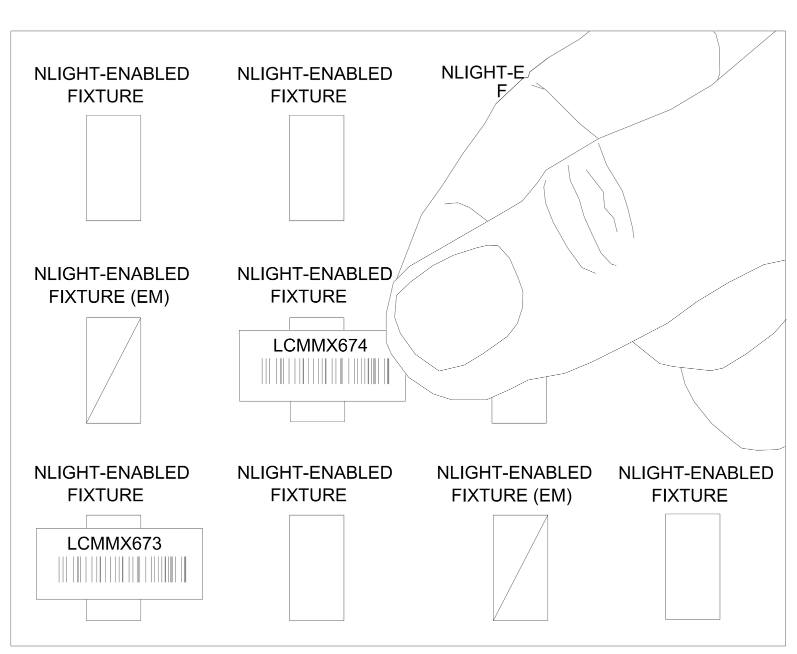
EVERY NLIGHT ENABLED DEVICE (INCLUDING NLIGHT ENABLED FIXTURES) IS FURNISHED WITH (1) PERMANENTLY ADHERED ID TAG AND (1) MATCHING, PARTIALLY ADHERED ID TAG TO BE PLACED ON THE RISER DIAGRAM OR BARCODE TEMPLATE SHEET PROVIDED AS PART OF AN NLIGHT SUBMITTAL. DURING INSTALLATION AND PRIOR TO FACTORY STARTUP, CONTRACTOR SHALL PLACE EACH ID TAG BELOW EACH CORRESPONDING DEVICE SHOWN ON RISER DIAGRAM TO FACILITATE FACTORY STARTUP. FAILURE TO COMPLY MAY RESULT IN STARTUP DELAYS AND ADDITIONAL COSTS AT THE CONTRACTOR'S EXPENSE. DO NOT PLACE DEVICE ID STICKERS ON FLOOR PLAN UNLESS REQUIRED TO EXECUTE NFLOORPLAN SERVICES, REFERENCE NFLOORPLAN SERVICE NOTES ON THIS SHEET FOR SPECIFIC REQUIREMENTS.

THE SMALL BARCODE LABELS INCLUDED WITH ALL NLIGHT DEVICES AND NLIGHT ENABLED FIXTURES MUST BE PLACED ON A PRINTED PLAN SHEET BY THE INSTALLER PRIOR TO ONSITE SYSTEM STARTUP.

THE BARCODE INDICATES THE UNIQUE ID OF EACH NLIGHT DEVICE. THIS ID IS USED DURING SYSTEM STARTUP TO PROGRAM DEVICES WITH THE CORRECT GROUPINGS AND SETTINGS. WITHOUT THIS, SYSTEM STARTUP WILL REQUIRE ADDITIONAL DAYS ON THE JOB TO LOCATE DEVICE IDS.

BARCODE INSTRUCTIONS:

1. * PRINT A PLAN SHEET OF THE INSTALLATION AREA TO A MINIMUM D SIZE (24"X 36"). THE PLAN MAY BE A RISER SHEET OR BARCODE TEMPLATE (EITHER ARE PREFERRED), FLECTED CEILING PLAN, LIGHTING PLAN, AND ELECTRICAL PLAN, SO LONG AS ALL DEVICES CAN BE LOCATED BY THE FIELD SUPPORT ENGINEER.
2. PLACE THE SMALL BARCODE LABEL (0.875" LONG) FROM EACH LUMINAIRE AND DEVICE ON THE FLOORPLAN. THE LARGE BARCODE LABEL (1.25" LONG) CAN BE USED ON THE OUTSIDE OF ANY HOUSING OR JUNCTION BOX THAT OBSCURES THE ID NUMBER SHOWN ON THE DEVICE ITSELF.
3. SAVE THE PLAN AT THE JOB SITE, AND HAND OVER TO ACUITY FIELD SUPPORT ENGINEER OR OTHER PERSONNEL RESPONSIBLE FOR ONSITE SYSTEM STARTUP. IT IS ALSO ACCEPTABLE TO PROVIDE THE BARCODE PLAN AS SCANNED PDF FILES, EMAILED TO CONTROLS.STARTUPS@ACUITYBRANDS.COM, WITH PROJECT NAME AND PROJECT ADDRESS IN SUBJECT LINE AND A COPY OF THE ONSITE STARTUP REQUEST FORM.
4. DRAW ON PLAN ANY LOCATION CHANGES FOR A FIXTURE OR DEVICES, IF DIFFERENT THAN SHOWN ON PLAN.



NLIGHT BARCODE INSTRUCTIONS

N.T.S.

ENTERPRISE Lighting & Control
2007 Pewaukee Rd. | Waukesha, WI 53188

NLIGHT BARCODE STICKER SHEET

ENTERPRISE Lighting & Control
2007 Pewaukee Rd. | Waukesha, WI 53188

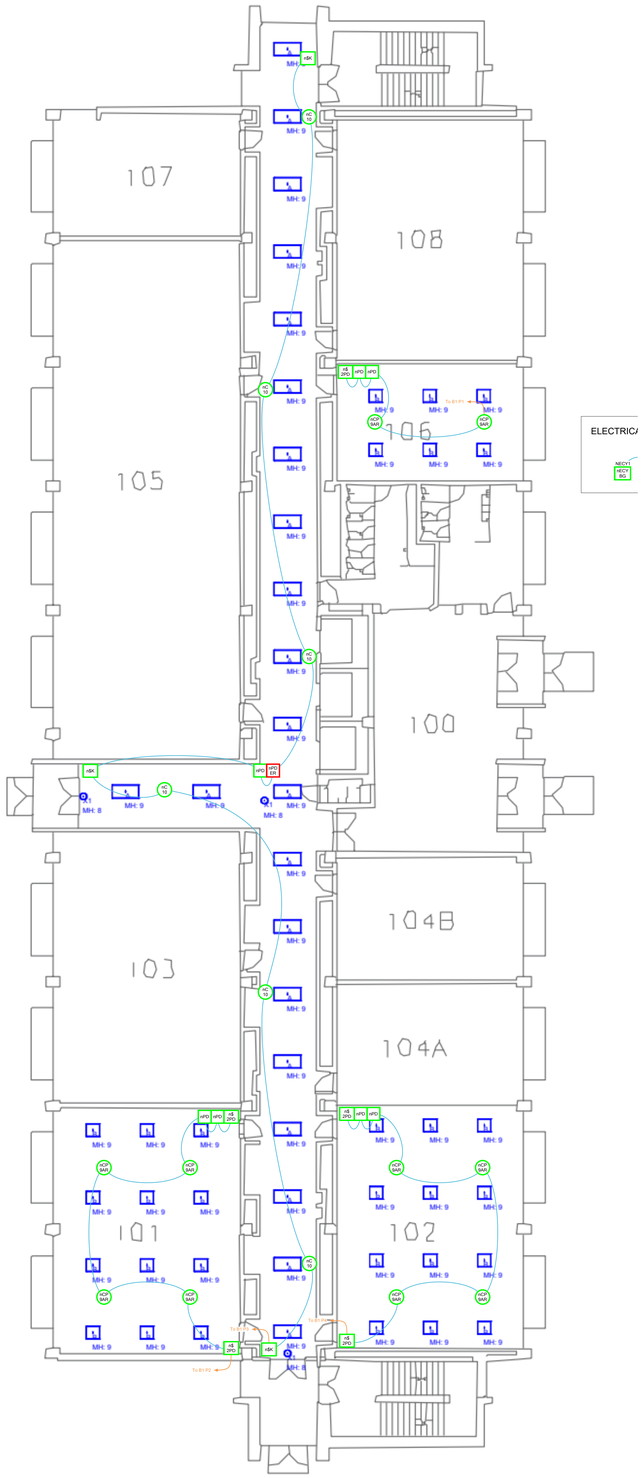
Room #	Barcode	switchleg	Daylight Zone? Y?N	Notes

MICHIGAN TECHNOLOGICAL UNIVERSITY - CSE BUIDLING
HOUGHTON, MI

Drawing Type: Schedules
Prepared For: ****

Date: 02/21/2023
Scale: NOT TO SCALE
Drawn By: BP
Project #: 22-119681
DWG Ref: E
Sheet: LC0.3

Created in Visual Controls



A 1st Floor
NOT TO SCALE

ENTERPRISE
Lighting & Control

PRODUCT LEGEND LC 1.1		
7	nPD	Power Pack NPP16 D EFP Power/Relay Pack, Occupancy Controlled Dimming, External Fault Protection
1	nPD ER	Power Pack (EM) NPP16 D ER EFP Power/Relay Pack, Occupancy Controlled Dimming, UL924 Emergency Operation, External Fault Protection
6	nC 10	Sensor NCM 10 RJB Low Voltage Ceiling Mount Sensor, Large Motion / Extended Range 360° Lens
10	nCP 9AR	Sensor NCM PDT 9 AR RJB Low Voltage Ceiling Mount Sensor, Passive Dual Technology, Small Motion / Standard Range 360° Lens, Auxiliary Relay
5	n$ 2PD	Switch NPODMA 2P DX XX nLight Wired Wallpod, 2-Pole, Raise/Lower
3	n$K	Switch NPODA KEY XX nLight Wired Wallpod, Digital keyswitch, Momentary
1	nBG	System Controller NBRG 8 KIT Bridge, Kit
1	nECY BG	System Controller NECY MVOLT BAC ENC GFXK nLight Eclypse, 120-277 VAC, BACnet, Surface Enclsoure, NGWY2 GFX and PS 150 power supply with CAT5 cable

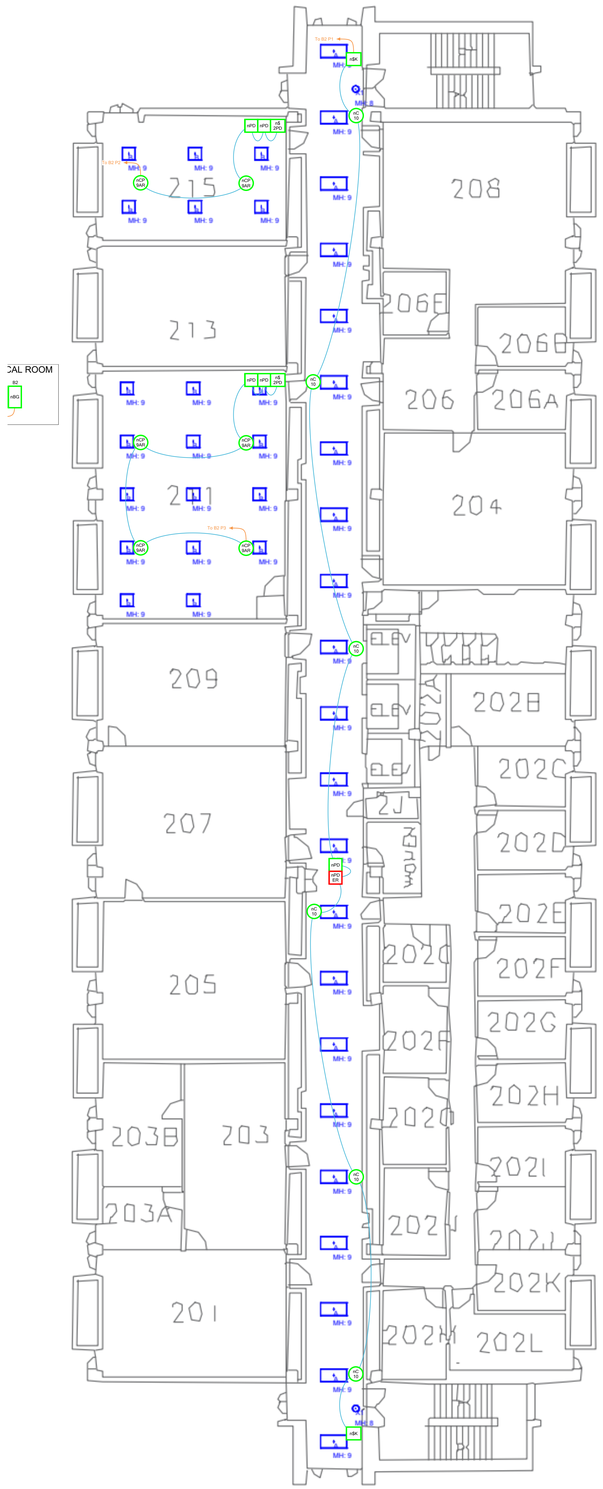
WIRE LEGEND LC 1.1	
	CAT5 nLight CAT5e nLight Pre-terminated CAT5e cable for nLight communication network

MICHIGAN TECHNOLOGICAL UNIVERSITY - CSE BUIDLING
HOUGHTON, MI

Drawing Type: Control Layout
Prepared For: ****

Date: 02/21/2023
Scale: NOT TO SCALE
Drawn By: BP
Project #: 22-119681
DWG Ref:
E
Sheet: LC 1.1

Created in Visual Controls



A 2nd Floor
1/8" = 1'

ENTERPRISE
Lighting & Control

PRODUCT LEGEND LC 1.2		
5	nPD	Power Pack NPP16 D EFP Power/Relay Pack, Occupancy Controlled Dimming, External Fault Protection
1	nPD ER	Power Pack (EM) NPP16 D ER EFP Power/Relay Pack, Occupancy Controlled Dimming, UL924 Emergency Operation, External Fault Protection
6	nC 10	Sensor NCM 10 RJB Low Voltage Ceiling Mount Sensor, Large Motion / Extended Range 360° Lens
6	nCP 9AR	Sensor NCM PDT 9 AR RJB Low Voltage Ceiling Mount Sensor, Passive Dual Technology, Small Motion / Standard Range 360° Lens, Auxiliary Relay
2	nS 2PD	Switch NPODMA 2P DX XX nLight Wired Wallpod, 2-Pole, Raise/Lower
2	nSK	Switch NPODA KEY XX nLight Wired Wallpod, Digital keyswitch, Momentaty
1	nBG	System Controller NBRG 8 KIT Bridge, Kit

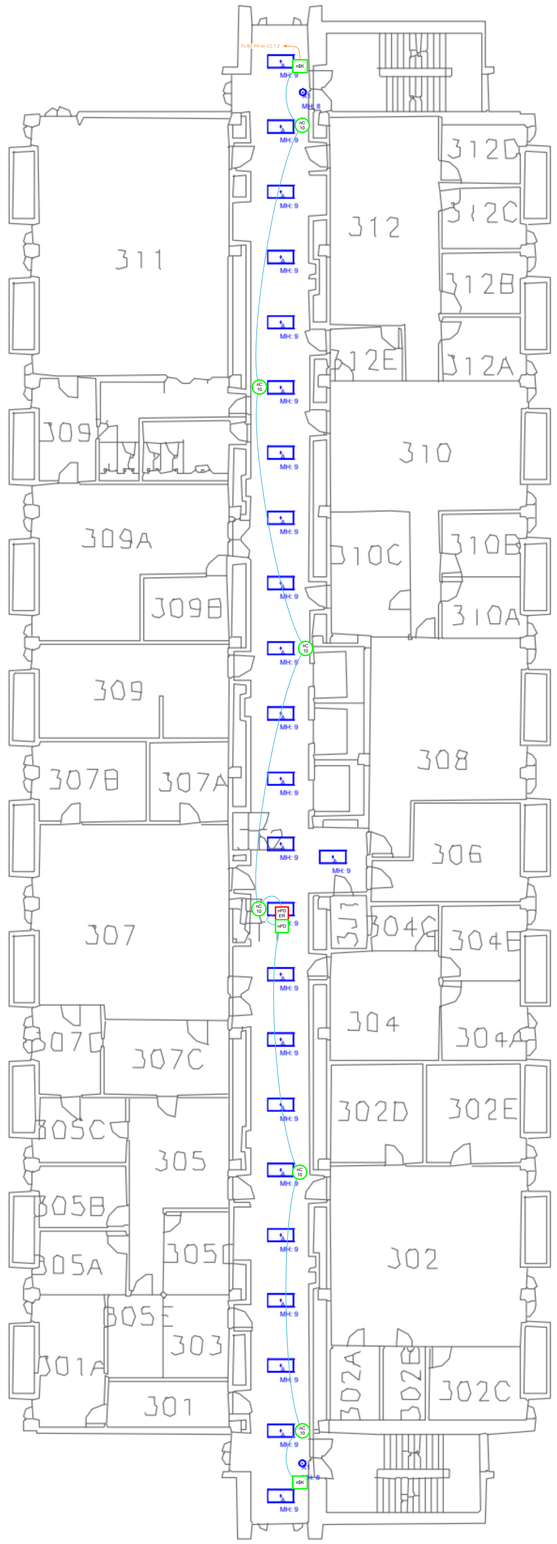
WIRE LEGEND LC 1.2	
	CAT5 nLight CAT5e nLight Pre-terminated CAT5e cable for nLight communication network

MICHIGAN TECHNOLOGICAL UNIVERSITY - CSE BUIDLING
HOUGHTON, MI

Drawing Type: Layout
Prepared For: ****

Date: 02/21/2023
Scale: 1/8" = 1'
Drawn By: BP
Project #: 22-119681
DWG Ref:
Sheet: LC 1.2

Created in Visual Controls



A 3rd Floor
1/8" = 1'

PRODUCT LEGEND LC 1.3			
1	nPD	Power Pack NPP16 D EFP Power/Relay Pack, Occupancy Controlled Dimming, External Fault Protection	
1	nPD ER	Power Pack (EM) NPP16 D ER EFP Power/Relay Pack, Occupancy Controlled Dimming, UL924 Emergency Operation, External Fault Protection	
6	nC 10	Sensor NCM 10 RJB Low Voltage Ceiling Mount Sensor, Large Motion / Extended Range 360° Lens	
2	nSK	Switch NPODA KEY XX nLight Wired Wallpod, Digital keyswitch, Momentaty	

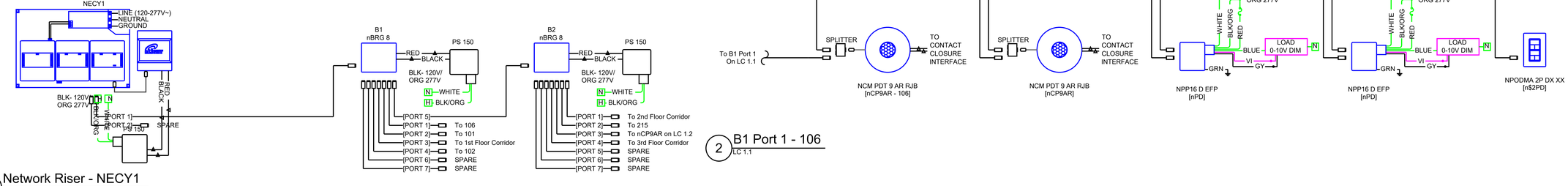
WIRE LEGEND LC 1.3	
	CAT5 nLight CAT5e nLight Pre-terminated CAT5e cable for nLight communication network

MICHIGAN TECHNOLOGICAL UNIVERSITY - CSE BUIDLING
HOUGHTON, MI

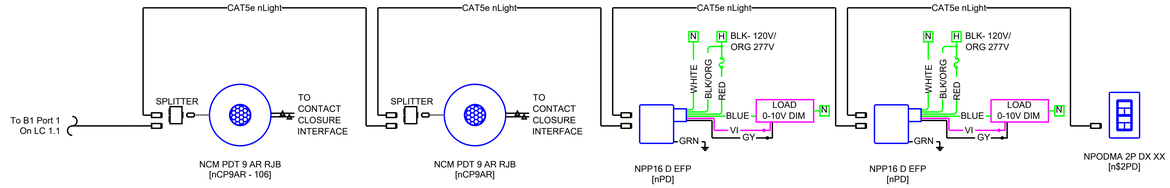
Drawing Type: Layout
Prepared For: ****

Date:	02/21/2023
Scale:	1/8" = 1'
Drawn By:	BP
Project #:	22-119681
DWG Ref:	
Sheet:	LC 1.3

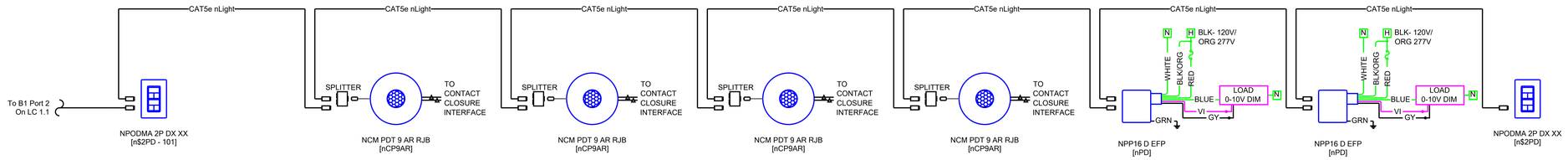
Created in Visual Controls



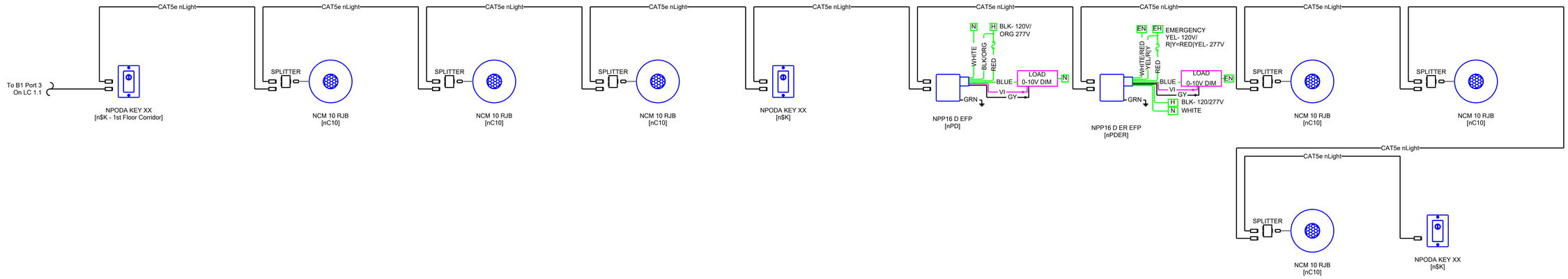
1 Network Riser - NECY1
LC 1.1, LC 1.2



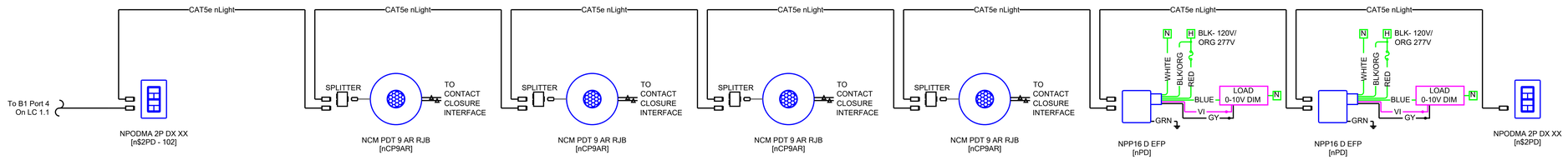
2 B1 Port 1 - 106
LC 1.1



3 B1 Port 2 - 101
LC 1.1



4 B1 Port 3 - 1st Floor Corridor
LC 1.1

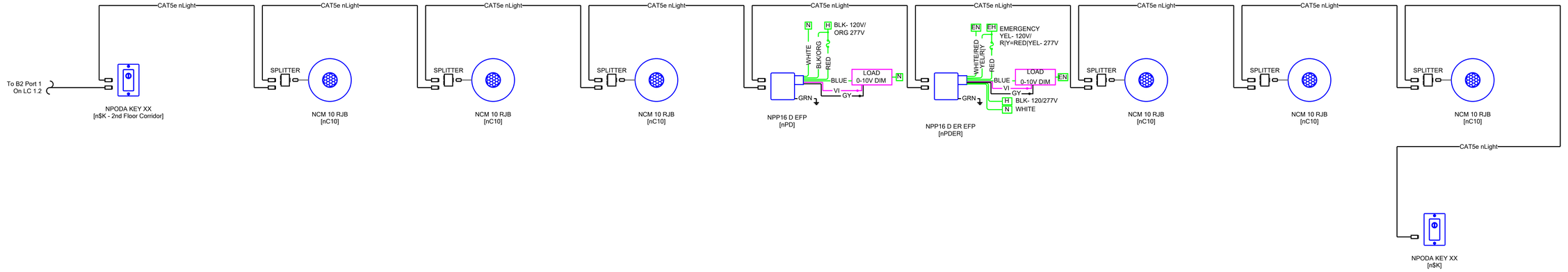


5 B1 Port 4 - 102
LC 1.1

MICHIGAN TECHNOLOGICAL UNIVERSITY - CSE BUIDLING
HOUGHTON, MI

Drawing Type:	Riser
Prepared For:	****
Date:	02/21/2023
Scale:	NOT TO SCALE
Drawn By:	BP
Project #:	22-119681
DWG Ref:	
Sheet:	Riser 1

Created in Visual Controls



6 B2 Port 1 - 2nd Floor Corridor

LC 1.2

7 B2 Port 2 - 215

LC 1.2

8 B2 Port 3

LC 1.2

9 B2 Port 4 - 3rd Floor Corridor

LC 1.3

MICHIGAN TECHNOLOGICAL UNIVERSITY - CSE BUIDLING

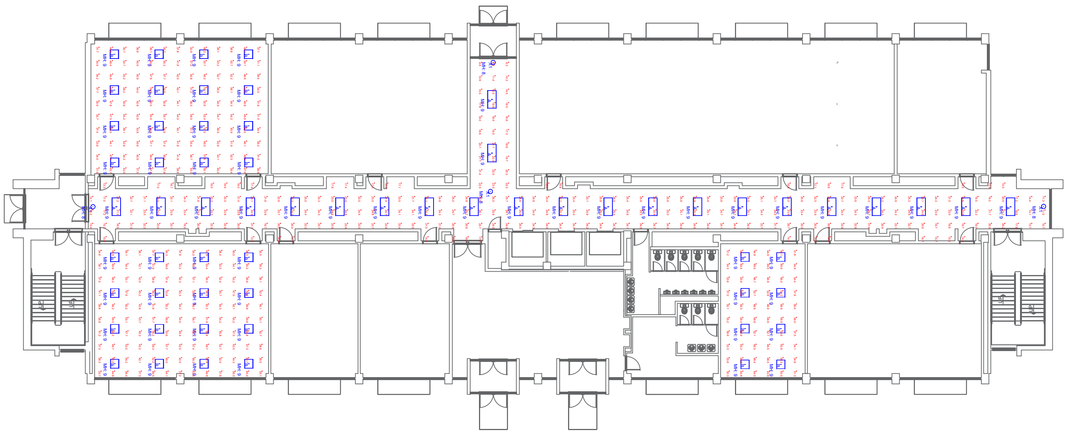
HOUGHTON, MI

Drawing Type: Riser

Prepared For: ***

Date:	02/21/2023
Scale:	NOT TO SCALE
Drawn By:	BP
Project #:	22-119681
DWG Ref:	
Sheet:	Riser 2

Created in Visual Controls



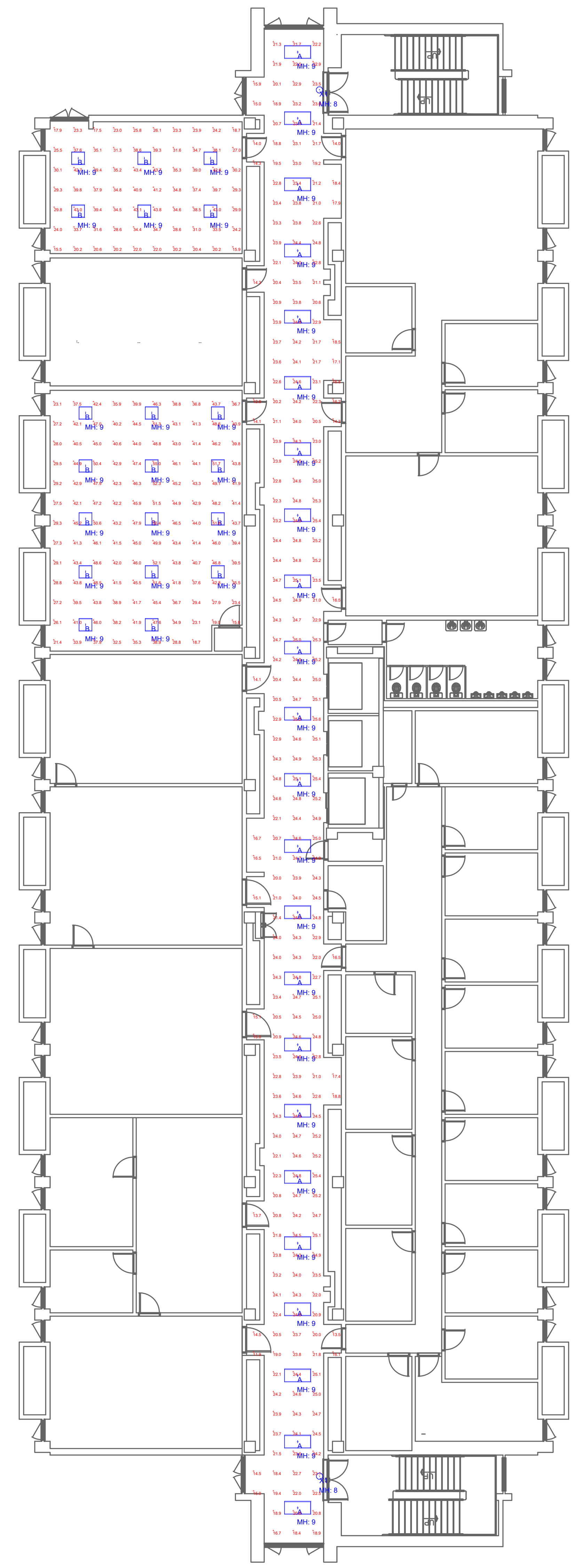
Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CORRIDORS PLAN	Illuminance	Fc	2.78	4.9	1.8	1.54	2.72
	Reflectance		0.20	0.80	0.00	N.A.	N.A.
TOILET ROOMS	Illuminance	Fc	2.73	4.5	1.8	1.52	2.50
	Reflectance		0.20	0.80	0.00	N.A.	N.A.
STAIRWAYS	Illuminance	Fc	2.63	3.3	1.9	1.38	1.74
	Reflectance		0.20	0.80	0.00	N.A.	N.A.
TOILET ROOMS	Illuminance	Fc	2.73	4.5	1.8	1.52	2.50
	Reflectance		0.20	0.80	0.00	N.A.	N.A.
CORRIDORS PLAN	Illuminance	Fc	2.78	4.9	1.8	1.54	2.72
	Reflectance		0.20	0.80	0.00	N.A.	N.A.

Luminaire Schedule							
Qty	Label	Arrangement	LLF	Luminaire	Total Watts	Total Lumens	Luminaire Efficacy
40	A	SINGLE	0.900	LITHONIA	30	3030	101
14	B	SINGLE	0.900	LITHONIA	31.1	3242	104
2	C	SINGLE	0.900	LITHONIA	31.1	3242	104
32	D	SINGLE	0.900	LITHONIA	30	3030	101
4	E	SINGLE	0.900	LITHONIA	31.1	3242	104
40	F	SINGLE	0.900	2ELTR4L40P/SPEC	72.27	4896	67.76
1	G	SINGLE	0.900	2ELTR4L40P/SPEC	72.27	4896	67.76
4	H	SINGLE	0.900	LITHONIA	31.1	3242	104

MICHIGAN TECHNOLOGICAL UNIVERSITY	DRAWN BY : AD
HOUGHTON, MICHIGAN	DATE : MAR 13, 2023
FIRST FLOOR	SCALE : 1/16" = 1'- 0"

REVISIONS	#	DATE	COMMENTS

ENTERPRISE
Lighting & Control



Luminaire Schedule								
Qty	Label	Arrangement	LLF	MFR	Description	Lum. Watts	Total Watts	Lum. Lumens
23	A	SINGLE	0.900	LITHONIA	2BLT4 40L ADP LP835	30.99	712.77	4065
20	B	SINGLE	0.900	LITHONIA	2BLT2 40L ADP LP835	31.1	622	4106
2	X1	SINGLE	0.001	LITHONIA	EXRG M6	1	2	74

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
211_Workplane	Illuminance	Fc	40.76	55.4	15.8	2.58	3.51
215_Workplane	Illuminance	Fc	31.29	43.8	15.5	2.02	2.83
CORRIDOR_Floor	Illuminance	Fc	22.31	25.6	11.9	1.87	2.15

ENTERPRISE
Lighting & Control

#	DATE	COMMENTS

REVISIONS

DRAWN BY : AD

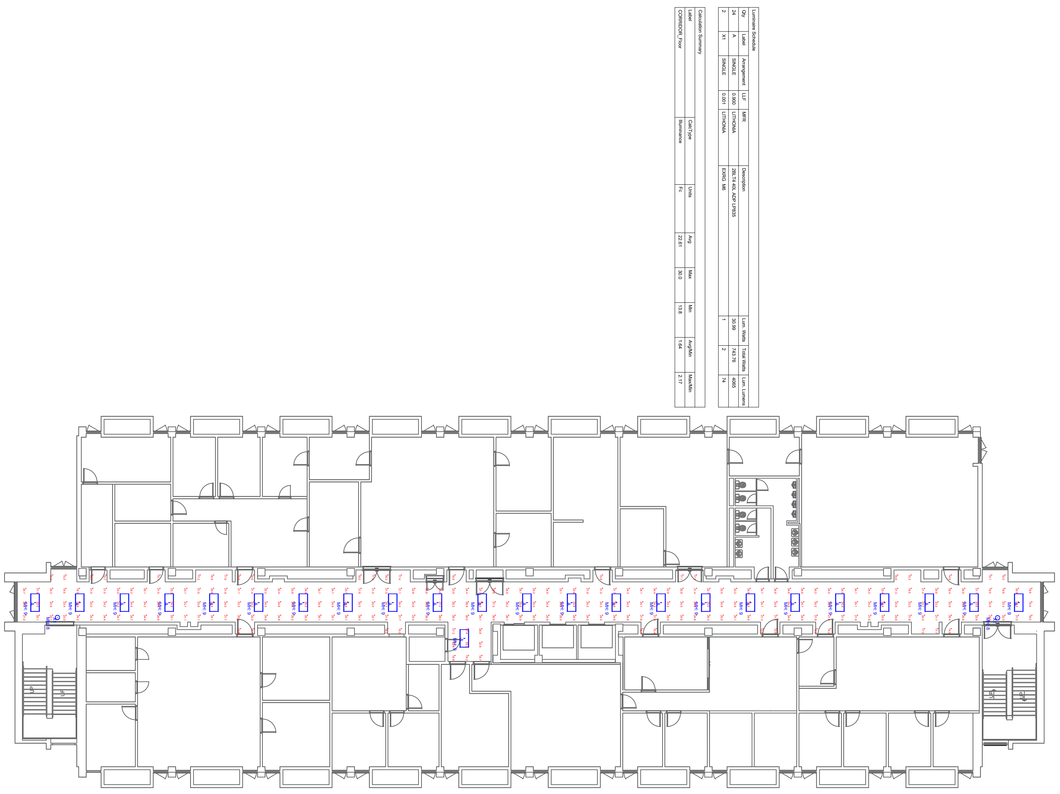
DATE : MAR 13, 2023

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

MICHIGAN TECHNOLOGICAL UNIVERSITY

HOUGHTON, MICHIGAN

SECOND FLOOR



MICHIGAN TECHNOLOGICAL UNIVERSITY	DRAWN BY : AD	REVISIONS	#	DATE	COMMENTS
HOUGHTON, MICHIGAN	DATE : MAR 13, 2023				
THIRD FLOOR	SCALE : 1/16" = 1'- 0"				

ENTERPRISE
Lighting & Control