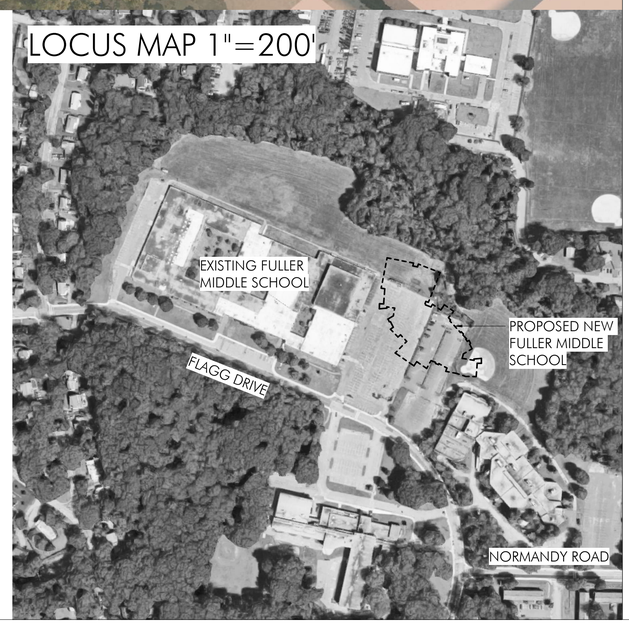


OWNER

CITY OF FRAMINGHAM
FULLER MIDDLE SCHOOL
31 FLAGG DRIVE
FRAMINGHAM, MA 01702

ARCHITECT

JONATHAN LEVI ARCHITECTS
266 BEACON STREET, SUITE 3
BOSTON, MA 02116

OWNER'S PROJECT MANAGER

SMMA
1000 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02138

CODE

HOWE ENGINEERS
101 LONGWATER CIRCLE, SUITE 203
NORWELL, MA 02061

COMMISSIONING AGENT

JACOBS
120 ST JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116

SITE SURVEYOR & CIVIL ENGINEER

CDW CONSULTANTS, INC.
6 HURON DRIVE
NATICK, MA 01760

HAZARDOUS MATERIALS ENGINEER

CDW CONSULTANTS, INC.
6 HURON DRIVE
NATICK, MA 01760

GEOTECHNICAL

RSE ASSOCIATES, INC.
63 PLEASANT STREET
WATERTOWN, MA 02472

GEOENVIRONMENTAL

McPHAIL ASSOCIATES, LLC
2269 MASSACHUSETTS AVENUE
CAMBRIDGE, MA 02140

LANDSCAPE ARCHITECT

CBA LANDSCAPE ARCHITECTS, LLC
24 THORNDIKE STREET, 4TH FLOOR
CAMBRIDGE, MA 02141

STRUCTURAL ENGINEER

RSE ASSOCIATES, INC.
63 PLEASANT STREET
WATERTOWN, MA 02472

HVAC & ELECTRICAL ENGINEER

GARCIA GALUSKA DESOUSA
375 FAUNCE CORNER ROAD, SUITE D
DARTMOUTH, MA 02747

PLUMBING&FIRE PROTECTION ENGINEER

AKAL ENGINEERING INC.
44A CENTRAL ST, UNIT 4
BERLIN, MA 01503

AUDIO VISUAL ENGINEER

ACENTECH INC.
33 MOULTON STREET
CAMBRIDGE, MA 02138

THEATER CONSULTANT

THEATRE PROJECTS CONSULTANTS
47 WATER STREET
NORWALK, CT 06854

FOOD SERVICE

CRABTREE McGRATH ASSOCIATES,
161 WEST MAIN STREET
GEORGETOWN, MA 01833

COST ESTIMATING

MIYAKODA CONSULTING, INC.
PO BOX 47
RAYNHAM, MA 02767

SUSTAINABLE DESIGN

THE GREEN ENGINEER
23 BRADFORD STREET, 1ST FLOOR
CONCORD MA 01742

ACOUSTICS CONSULTANT

ACENTECH INC.
33 MOULTON STREET
CAMBRIDGE, MA 02138

TRAFFIC CONSULTANT

PARE CORPORATION
10 LINCOLN ROAD, SUITE 103
FOXBORO, MA 02035

ELEVATOR CONSULTANT

VAN DEUSEN & ASSOCIATES
101 SUMMER STREET, 4TH FLOOR
BOSTON, MA 02210

DOOR HARDWARE CONSULTANT

ALLEGION, PLC
77 WEXFORD STREET
NEEDHAM, MA 02494

SPECIFICATIONS CONSULTANT

WIL-SPEC LLC
LYNNFIELD MEDICAL OFFICE BUILDING
15 POST OFFICE SQUARE
LYNNFIELD, MA 01940

FURNITURE & EQUIP CONSULTANT

TAVARES DESIGN ASSOCIATES, INC.
591 NORTH AVENUE, DOOR 3
WAKEFIELD, MA 01880

CITY OF FRAMINGHAM, MA

PROJECT #1722

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

CONSTRUCTION DOCUMENTS PACKAGE (CONFORMANCE SET)

2/10/2020

Volume:2

DRAWING INDEX

ESP = EARLY SITE PACKAGE issued 5/10/2019
ECSP = EARLY CONCRETE & STEEL PACKAGE issued 8/9/2019
CDP = CONSTRUCTION DOCUMENTS PACKAGE issued 11/22/2019

VOLUME: 1

		BID PACKAGE	REVISION DATE	REVISION DESCRIPTION
LIFE SAFETY				
LS001	CODE COMPLIANCE APPROACH	CDP	2/10/2020	Conformance Set
LS101	LIFE SAFETY PLAN FLOOR 1	CDP	2/10/2020	Conformance Set
LS102	LIFE SAFETY PLAN FLOOR 2	CDP	2/10/2020	Conformance Set
LS103	LIFE SAFETY PLAN FLOOR 3	CDP	2/10/2020	Conformance Set
GEOTECHNICAL				
G100	EXTENT OF SURCHARGE AND OVEREXCAVATION	ESP	2/10/2020	Conformance Set
G101	GROUND IMPROVEMENT BEYOND BUILDING FOOTPRINT	ESP	2/10/2020	Conformance Set
CIVIL				
C 0.0	OVERALL EXISTING CONDITIONS PLAN	ECSP	2/10/2020	Conformance Set
C 0.1	EXISTING CONDITIONS PLAN	ECSP	2/10/2020	Conformance Set
C 0.2	EXISTING CONDITIONS PLAN	ECSP	2/10/2020	Conformance Set
C 0.3	EXISTING CONDITIONS PLAN	ECSP	2/10/2020	Conformance Set
C 1.0	PHASE 1 - OVERALL DEMOLITION AND VEHICLE CIRCULATION	ESP	2/10/2020	Conformance Set
C 1.1	PHASE 1- LAYOUT & MATERIALS (PERMANENT PARKING)	ESP	2/10/2020	Conformance Set
C 1.2	PHASE 1-GRADING & DRAINAGE (PERMANENT PARKING)	ESP	2/10/2020	Conformance Set
C 1.3	PHASE 1-UTILITY PLAN (PERMANENT PARKING)	ESP	2/10/2020	Conformance Set
C 1.4	PHASE1-TEMPORARY PARKING LAYOUT & MATERIALS, GRADING & DRAINAGE	ESP	2/10/2020	Conformance Set
C 2.0	PHASE 2- DEMOLITION AND VEHICLE CIRCULATION	ESP	2/10/2020	Conformance Set
C 2.1	PHASE 2- LAYOUT & MATERIALS	ESP	2/10/2020	Conformance Set
C 2.2	PHASE 2- GRADING & DRAINAGE	ESP	2/10/2020	Conformance Set
C 2.3	PHASE 2- UTILITY PLAN	ESP	2/10/2020	Conformance Set
C 3.0	PHASE 3- DEMOLITION AND VEHICLE CIRCULATION	ESP	2/10/2020	Conformance Set
C 4.0	OVERALL LAYOUT & MATERIALS PLAN	ESP	2/10/2020	Conformance Set
C 4.1	LAYOUT & MATERIALS	CDP	2/10/2020	Conformance Set
C 4.2	LAYOUT & MATERIALS	ESP	2/10/2020	Conformance Set
C 4.3	COLUMN LINE LAYOUT	ESP	2/10/2020	Conformance Set
C 5.0	OVERALL GRADING & DRAINAGE PLAN	ESP	2/10/2020	Conformance Set
C 5.1	GRADING & DRAINAGE	ESP	2/10/2020	Conformance Set
C 5.2	GRADING & DRAINAGE	ESP	2/10/2020	Conformance Set
C 5.3	DETAILED GRADING FOR AMPHITHEATRE & BUILDING	CDP	2/10/2020	Conformance Set
C 5.4	DETAILED GRADING FOR AMPHITHEATRE & BUILDING	CDP	2/10/2020	Conformance Set
C 5.5	DETAILED GRADING FOR AMPHITHEATRE & BUILDING	CDP	2/10/2020	Conformance Set
C 5.6	DETAILED GRADING FOR AMPHITHEATRE & BUILDING	CDP	2/10/2020	Conformance Set
C 6.0	OVERALL UTILITY PLAN	ESP	2/10/2020	Conformance Set
C 6.1	UTILITY PLAN	ESP	2/10/2020	Conformance Set
C 6.2	UTILITY PLAN	ESP	2/10/2020	Conformance Set
C 7.0	CONSTRUCTION SITE DETAILS	ESP	2/10/2020	Conformance Set
C 7.1	CONSTRUCTION SITE DETAILS	ESP	2/10/2020	Conformance Set
C 7.2	CONSTRUCTION SITE DETAILS	ESP	2/10/2020	Conformance Set
C 7.3	CONSTRUCTION SITE DETAILS	ESP	2/10/2020	Conformance Set
C 7.4	CONSTRUCTION SITE DETAILS	ESP	2/10/2020	Conformance Set
C 7.5	CONSTRUCTION SITE DETAILS	ESP	2/10/2020	Conformance Set
C 7.6	CONSTRUCTION SITE DETAILS	ESP	2/10/2020	Conformance Set
IRRIGATION				
I100	IRRIGATION PLAN	CDP	2/10/2020	Conformance Set
I200	IRRIGATION DETAILS	CDP	2/10/2020	Conformance Set
LANDSCAPE				
L 1.0	LANDSCAPE KEY PLAN	ECSP	2/10/2020	Conformance Set
L 1.1	LANDSCAPE MATERIALS PLAN - AREA 1	ECSP	2/10/2020	Conformance Set
L 1.2	LANDSCAPE MATERIALS PLAN - AREA 2	ECSP	2/10/2020	Conformance Set
L 1.3	LANDSCAPE MATERIALS PLAN - ENLARGEMENT 1	ECSP	2/10/2020	Conformance Set
L 1.4	LANDSCAPE LAYOUT PLAN - AREA 1	ECSP	2/10/2020	Conformance Set
L 1.5	LANDSCAPE LAYOUT PLAN - AREA 2	ECSP	2/10/2020	Conformance Set
L 1.6	LANDSCAPE LAYOUT PLAN - ENLARGEMENT 1	ECSP	2/10/2020	Conformance Set
L 2.0	LANDSCAPE PLANTING PLAN - TREES, LAWN, GROUNDCOVER AREA 1	ECSP	2/10/2020	Conformance Set
L 2.1	LANDSCAPE PLANTING PLAN - TREES, LAWN, GROUNDCOVER AREA 2	ECSP	2/10/2020	Conformance Set
L 2.2	LANDSCAPE PLANTING PLAN - SHRUBS ENLARGEMENT 2	ECSP	2/10/2020	Conformance Set
L 3.0	LANDSCAPE CONSTRUCTION DETAILS	ECSP	2/10/2020	Conformance Set
ARCHITECTURAL				
A001	ABBREVIATIONS / LEGENDS	CDP	2/10/2020	Conformance Set
A002	FIREPROOFING DIAGRAM	ECSP	2/10/2020	Conformance Set
A100	FOUNDATION DAMPPROOFING & WATERPROOFING	ECSP	2/10/2020	Conformance Set
A101	PLAN - FLOOR 1 - OVERALL	CDP	2/10/2020	Conformance Set
A101A	PLAN - FLOOR 1-A	CDP	2/10/2020	Conformance Set
A101B	PLAN - FLOOR 1-B	CDP	2/10/2020	Conformance Set
A101C	PLAN - FLOOR 1-C	CDP	2/10/2020	Conformance Set
A101D	PLAN - FLOOR 1-D	CDP	2/10/2020	Conformance Set
A102	PLAN - FLOOR 2 - OVERALL	CDP	2/10/2020	Conformance Set
A102A	PLAN - FLOOR 2-A	CDP	2/10/2020	Conformance Set
A102B	PLAN - FLOOR 2-B	CDP	2/10/2020	Conformance Set
A102C	PLAN - FLOOR 2-C	CDP	2/10/2020	Conformance Set
A102D	PLAN - FLOOR 2-D	CDP	2/10/2020	Conformance Set
A103	PLAN - FLOOR 3 - OVERALL	CDP	2/10/2020	Conformance Set
A103A	PLAN - FLOOR 3-A	CDP	2/10/2020	Conformance Set
A103B	PLAN - FLOOR 3-B	CDP	2/10/2020	Conformance Set
A103C	PLAN - FLOOR 3-C	CDP	2/10/2020	Conformance Set
A104	PLAN - ROOF - OVERALL	CDP	2/10/2020	Conformance Set
A111A	EOS PLAN - FLOOR 1 - A	ECSP	2/10/2020	Conformance Set
A111B	EOS PLAN - FLOOR 1 - B	ECSP	2/10/2020	Conformance Set
A111C	EOS PLAN - FLOOR 1 - C	ECSP	2/10/2020	Conformance Set
A111D	EOS PLAN - FLOOR 1 - D	ECSP	2/10/2020	Conformance Set
A112A	EOS PLAN - FLOOR 2 - A	ECSP	2/10/2020	Conformance Set
A112B	EOS PLAN - FLOOR 2 - B	ECSP	2/10/2020	Conformance Set
A112C	EOS PLAN - FLOOR 2 - C	ECSP	2/10/2020	Conformance Set
A113A	EOS PLAN - FLOOR 3 - A	ECSP	2/10/2020	Conformance Set
A113B	EOS PLAN - FLOOR 3 - B	ECSP	2/10/2020	Conformance Set
A113C	EOS PLAN - FLOOR 3 - C	ECSP	2/10/2020	Conformance Set
A113D	EOS PLAN - FLOOR 3 - D	ECSP	2/10/2020	Conformance Set
A114B	EOS PLAN - ROOF - B	ECSP	2/10/2020	Conformance Set
A114C	EOS PLAN - ROOF - C	ECSP	2/10/2020	Conformance Set
A141A	FINISH PLAN - FLOOR 1-A & ROOM FINISH SCHEDULE	CDP	2/10/2020	Conformance Set
A141B	FINISH PLAN - FLOOR 1-B	CDP	2/10/2020	Conformance Set
A141C	FINISH PLAN - FLOOR 1-C	CDP	2/10/2020	Conformance Set
A141D	FINISH PLAN - FLOOR 1-D	CDP	2/10/2020	Conformance Set
A142A	FINISH PLAN - FLOOR 2-A	CDP	2/10/2020	Conformance Set
A142B	FINISH PLAN - FLOOR 2-B	CDP	2/10/2020	Conformance Set
A142C	FINISH PLAN - FLOOR 2-C	CDP	2/10/2020	Conformance Set
A143A	FINISH PLAN - FLOOR 3-A	CDP	2/10/2020	Conformance Set
A143B	FINISH PLAN - FLOOR 3-B	CDP	2/10/2020	Conformance Set
A143C	FINISH PLAN - FLOOR 3-C	CDP	2/10/2020	Conformance Set
A161A	FURNITURE PLAN - FLOOR 1-A	CDP	2/10/2020	Conformance Set
A161B	FURNITURE PLAN - FLOOR 1-B	CDP	2/10/2020	Conformance Set
A161C	FURNITURE PLAN - FLOOR 1-C	CDP	2/10/2020	Conformance Set
A161D	FURNITURE PLAN - FLOOR 1-D	CDP	2/10/2020	Conformance Set
A162A	FURNITURE PLAN - FLOOR 2-A	CDP	2/10/2020	Conformance Set
A162B	FURNITURE PLAN - FLOOR 2-B	CDP	2/10/2020	Conformance Set
A162C	FURNITURE PLAN - FLOOR 2-C	CDP	2/10/2020	Conformance Set
A163A	FURNITURE PLAN - FLOOR 3-A	CDP	2/10/2020	Conformance Set
A163B	FURNITURE PLAN - FLOOR 3-B	CDP	2/10/2020	Conformance Set
A163C	FURNITURE PLAN - FLOOR 3-C	CDP	2/10/2020	Conformance Set
A181	REFLECTED CEILING PLAN - FLOOR 1 - OVERALL	CDP	2/10/2020	Conformance Set
A181A	REFLECTED CEILING PLAN - FLOOR 1-A	CDP	2/10/2020	Conformance Set
A181B	REFLECTED CEILING PLAN - FLOOR 1-B	CDP	2/10/2020	Conformance Set
A181C	REFLECTED CEILING PLAN - FLOOR 1-C	CDP	2/10/2020	Conformance Set
A181D	REFLECTED CEILING PLAN - FLOOR 1-D	CDP	2/10/2020	Conformance Set
A182	REFLECTED CEILING PLAN - FLOOR 2 - OVERALL	CDP	2/10/2020	Conformance Set
A182A	REFLECTED CEILING PLAN - FLOOR 2-A	CDP	2/10/2020	Conformance Set
A182B	REFLECTED CEILING PLAN - FLOOR 2-B	CDP	2/10/2020	Conformance Set
A182C	REFLECTED CEILING PLAN - FLOOR 2-C	CDP	2/10/2020	Conformance Set
A182D	REFLECTED CEILING PLAN - FLOOR 2-D	CDP	2/10/2020	Conformance Set
A183	REFLECTED CEILING PLAN - FLOOR 3 - OVERALL	CDP	2/10/2020	Conformance Set
A183A	REFLECTED CEILING PLAN - FLOOR 3-A	CDP	2/10/2020	Conformance Set
A183B	REFLECTED CEILING PLAN - FLOOR 3-B	CDP	2/10/2020	Conformance Set
A183C	REFLECTED CEILING PLAN - FLOOR 3-C	CDP	2/10/2020	Conformance Set
A200	EXTERIOR ELEVATIONS	CDP	2/10/2020	Conformance Set
A201	KEY PLAN - UNFOLDED ELEVATIONS - MAIN ENTRY (AREA A)	CDP	2/10/2020	Conformance Set
A202	KEY PLAN - UNFOLDED ELEVATIONS - SOUTH	CDP	2/10/2020	Conformance Set
A203	KEY PLAN - UNFOLDED ELEVATIONS - NORTH	CDP	2/10/2020	Conformance Set
A204	KEY PLAN - UNFOLDED ELEVATIONS - EAST & WEST	CDP	2/10/2020	Conformance Set
A205	KEY PLAN - UNFOLDED ELEVATIONS - GYM & AUDITORIUM (AREA D)	CDP	2/10/2020	Conformance Set
A211	UNFOLDED ELEVATIONS - MAIN ENTRY (AREA A)	CDP	2/10/2020	Conformance Set
A212	UNFOLDED ELEVATIONS - SOUTH	CDP	2/10/2020	Conformance Set
A213	UNFOLDED ELEVATIONS - NORTH	CDP	2/10/2020	Conformance Set
A214	UNFOLDED ELEVATIONS - EAST & WEST	CDP	2/10/2020	Conformance Set
A215	UNFOLDED ELEVATIONS - GYM & AUDITORIUM (AREA D)	CDP	2/10/2020	Conformance Set
A221	STOREFRONT TYPES	CDP	2/10/2020	Conformance Set
A222	WOOD GRILLE & LOUVER SCHEDULE	CDP	2/10/2020	Conformance Set
A230	EXTERIOR MOCKUP	ECSP	2/10/2020	Conformance Set
A300	BUILDING SECTIONS	CDP	2/10/2020	Conformance Set
A301	BUILDING SECTIONS	CDP	2/10/2020	Conformance Set
A311	EXTERIOR WALL SECTIONS - MAIN ENTRY (AREA A)	CDP	2/10/2020	Conformance Set
A312	EXTERIOR WALL SECTIONS - MAIN ENTRY (AREA A)	CDP	2/10/2020	Conformance Set
A313	EXTERIOR WALL SECTIONS - SOUTH (AREA B)	CDP	2/10/2020	Conformance Set
A314	EXTERIOR WALL SECTIONS - SOUTH (AREA B)	CDP	2/10/2020	Conformance Set
A315	EXTERIOR WALL SECTIONS - SOUTH (AREA B)	CDP	2/10/2020	Conformance Set
A316	EXTERIOR WALL SECTIONS - SOUTH (AREA C)	CDP	2/10/2020	Conformance Set
A317	EXTERIOR WALL SECTIONS - NORTH (AREA C)	CDP	2/10/2020	Conformance Set
A318	EXTERIOR WALL SECTIONS - NORTH (AREA B)	CDP	2/10/2020	Conformance Set
A319	EXTERIOR WALL SECTIONS - EAST ENTRY (AREA B)	CDP	2/10/2020	Conformance Set
A320	EXTERIOR WALL SECTIONS - WEST ENTRY (AREA C)	CDP	2/10/2020	Conformance Set
A321	EXTERIOR WALL SECTIONS - GYM (AREA D)	CDP	2/10/2020	Conformance Set
A322	EXTERIOR WALL SECTIONS - AUDITORIUM (AREA D)	CDP	2/10/2020	Conformance Set
A400	INTERIOR ELEVATIONS - CORRIDORS	CDP	2/10/2020	Conformance Set
A401	INTERIOR ELEVATIONS - CORRIDORS	CDP	2/10/2020	Conformance Set
A402	INTERIOR ELEVATIONS - CORRIDORS	CDP	2/10/2020	Conformance Set
A403	INTERIOR ELEVATIONS - CORRIDORS	CDP	2/10/2020	Conformance Set
A404	INTERIOR ELEVATIONS - CORRIDORS	CDP	2/10/2020	Conformance Set
A405	INTERIOR ELEVATIONS - CORRIDORS	CDP	2/10/2020	Conformance Set
A406	INTERIOR ELEVATIONS - CORRIDORS	CDP	2/10/2020	Conformance Set
A410	ENLARGED PLAN, RCP, INTERIOR ELEVATIONS - TYP. CLASSROOM SUITE	CDP	2/10/2020	Conformance Set
A411	ENLARGED PLAN, RCP, INTERIOR ELEVATIONS - TYP. SCIENCE SUITE	CDP	2/10/2020	Conformance Set
A412	ENLARGED PLAN, RCP, INTERIOR ELEVATIONS - SCIENCE	CDP	2/10/2020	Conformance Set
A413	ENLARGED PLAN, RCP - BAND / CHORUS / PRACTICE SUITE	CDP	2/10/2020	Conformance Set
A414	INTERIOR ELEVATIONS - BAND / CHORUS / PRACTICE SUITE	CDP	2/10/2020	Conformance Set
A415	ENLARGED PLAN, RCP - ART / DRAMA SUITE	CDP	2/10/2020	Conformance Set
A416	INTERIOR ELEVATIONS - ART / DRAMA SUITE	CDP	2/10/2020	Conformance Set
A417	ENLARGED PLANS, RCP - SPED SUITE/ SATELITE ADMIN	CDP	2/10/2020	Conformance Set
A418	ENLARGED PLAN, RCP, INTERIOR ELEVATIONS - SATELITE ADMIN	CDP	2/10/2020	Conformance Set
A419	ENLARGED PLAN, RCP, INTERIOR ELEVATIONS - MAKERSPACE/ SHOP	CDP	2/10/2020	Conformance Set
A420	ENLARGED PLAN, RCP - LUNCH-STORAGE/ TECH-DIGITAL FAB LAB SUITE	CDP	2/10/2020	Conformance Set
A421	INTERIOR ELEVATIONS - LUNCH ROOM/ TECH-FAB LAB	CDP	2/10/2020	Conformance Set
A422	ENLARGED PLAN, RCP - MEDIA CENTER	CDP	2/10/2020	Conformance Set
A423	INTERIOR ELEVATION - MEDIA CENTER	CDP	2/10/2020	Conformance Set
A425	ENLARGED PLAN - MAIN ADMIN/ MEDICAL SUITE	CDP	2/10/2020	Conformance Set
A426	ENLARGED RCP - MAIN ADMIN / MEDICAL SUITE	CDP	2/10/2020	Conformance Set
A427	INTERIOR ELEVATIONS - MAIN ADMIN	CDP	2/10/2020	Conformance Set
A428	INTERIOR ELEVATIONS - MEDICAL SUITE	CDP	2/10/2020	Conformance Set
A429	ENLARGED PLAN - SERVICE AREA	CDP	2/10/2020	Conformance Set
A430	ENLARGED PLANS, ELEVATIONS - BREAKOUT A	CDP	2/10/2020	Conformance Set
A431	ENLARGED PLANS, ELEVATION - BREAKOUT B	CDP	2/10/2020	Conformance Set
A432	SECTION ELEVATIONS - BREAKOUT SPACE B	CDP	2/10/2020	Conformance Set
A433	ENLARGED PLANS, ELEVATIONS - BREAKOUT C	CDP	2/10/2020	Conformance Set
A434	SECTION ELEVATIONS - BREAKOUT C	CDP	2/10/2020	Conformance Set
A435	ENLARGED PLANS, ELEVATIONS - BREAKOUT D & E	CDP	2/10/2020	Conformance Set
A440	ENLARGED PLAN, RCP, ELEVATIONS - TOILET SUITE	CDP	2/10/2020	Conformance Set
A441	ENLARGED PLAN, RCP, ELEVATIONS - LOCKER/TOILET ROOMS	CDP	2/10/2020	Conformance Set
A442	INTERIOR ELEVATIONS - LOCKER/TOILET ROOMS	CDP	2/10/2020	Conformance Set
A450	ENLARGED PLAN - GYMNASIUM	CDP	2/10/2020	Conformance Set
A451	ENLARGED RCP - GYMNASIUM	CDP	2/10/2020	Conformance Set
A452	INTERIOR ELEVATIONS - GYMNASIUM	CDP	2/10/2020	Conformance Set
A453	INTERIOR ELEVATIONS - GYMNASIUM	CDP	2/10/2020	Conformance Set
A460	ENLARGED PLAN - AUDITORIUM	CDP	2/10/2020	Conformance Set
A461	ENLARGED RCP - AUDITORIUM	CDP	2/10/2020	Conformance Set
A462	INTERIOR ELEVATIONS - AUDITORIUM	CDP	2/10/2020	Conformance Set
A463	INTERIOR ELEVATIONS - AUDITORIUM	CDP	2/10/2020	Conformance Set
A470	ENLARGED PLANS, SECTIONS - STAIRS	CDP	2/10/2020	Conformance Set
A471	ENLARGED PLAN, SECTIONS - STAIRS	CDP	2/10/2020	Conformance Set
A472	ENLARGED PLANS, SECTIONS - STAIRS	CDP	2/10/2020	Conformance Set
A473	ENLARGED PLANS, SECTIONS - STAIRS	CDP	2/10/2020	Conformance Set
A480	ENLARGED PLAN, SECTIONS, DETAILS - ELEVATOR	CDP	2/10/2020	Conformance Set
A490	ENLARGED EXTERIOR SITE ELEMENTS	ECSP	2/10/2020	Conformance Set
A491	ENLARGED EXTERIOR SITE DETAILS	ECSP	2/10/2020	Conformance Set
A492	ARCHITECTURAL SITE CONCRETE LAYOUT	ECSP	2/10/2020	Conformance Set
A501	EXTERIOR DETAILS - WALL TYPES	CDP	2/10/2020	Conformance Set
A502	EXTERIOR DETAILS - ROOF TYPES	CDP	2/10/2020	Conformance Set
A503	BRICK AND CMU TYPES	CDP	2/10/2020	Conformance Set
A510	EXTERIOR PLAN DETAILS - TYPICAL CLASSROOM BAY	CDP	2/10/2020	Conformance Set
A511	EXTERIOR PLAN DETAILS - SCIENCE CLASSROOMS & GUIDANCE OFFICES	CDP	2/10/2020	Conformance Set
A512	EXTERIOR PLAN DETAILS	CDP	2/10/2020	Conformance Set
A513	EXTERIOR PLAN DETAILS	CDP	2/10/2020	Conformance Set
A514	EXTERIOR DETAILS - SEGMENTED WALL AT CORRIDOR	CDP	2/10/2020	Conformance Set
A515	EXTERIOR DETAILS - SEGMENTED WALL AT CORRIDOR	CDP	2/10/2020	Conformance Set
A520	EXTERIOR SECTION DETAILS - SOUTH	CDP	2/10/2020	Conformance Set
A521	EXTERIOR SECTION DETAILS - SOUTH	CDP	2/10/2020	Conformance Set
A522	EXTERIOR SECTION DETAILS - NORTH	CDP	2/10/2020	Conformance Set
A523	EXTERIOR SECTION DETAILS	CDP	2/10/2020	Conformance Set
A524	EXTERIOR SECTION DETAILS	CDP	2/10/2020	Conformance Set
A530	EXTERIOR PLAN DETAILS - GYMNASIUM & AUDITORIUM	CDP	2/10/2020	Conformance Set
A531	EXTERIOR SECTION DETAILS - GYMNASIUM & AUDITORIUM	CDP	2/10/2020	Conformance Set
A532	EXTERIOR SECTION DETAILS	CDP	2/10/2020	Conformance Set
A533	EXTERIOR PLAN DETAILS	CDP	2/10/2020	Conformance Set
A540	SKYLIGHT DETAILS	CDP	2/10/2020	Conformance Set
A541	SKYLIGHT DETAILS	CDP	2/10/2020	Conformance Set
A542	EXTERIOR SECTION DETAILS	CDP	2/10/2020	Conformance Set
A543	EXTERIOR & ROOF DETAILS	CDP	2/10/2020	Conformance Set
A544	TYPICAL ROOF DETAILS	CDP	2/10/2020	Conformance Set
A560	BANDSHELL	CDP	2/10/2020	Conformance Set
A600	INTERIOR WALL SECTIONS & DETAILS	CDP	2/10/2020	Conformance Set
A601	INTERIOR WALL SECTIONS & DETAILS	CDP	2/10/2020	Conformance Set
A602	INTERIOR WALL SECTIONS	CDP	2/10/2020	Conformance Set
A603	INTERIOR WALL SECTIONS	CDP	2/10/2020	Conformance Set
A604	INTERIOR WALL SECTIONS	CDP	2/10/2020	Conformance Set
A605	INTERIOR WALL SECTIONS	CDP	2/10/2020	Conformance Set
A606	INTERIOR WALL SECTIONS	CDP	2/10/2020	Conformance Set
A607	INTERIOR WALL SECTIONS	CDP	2/10/2020	Conformance Set
A609	INTERIOR WALL SECTIONS - BREAKOUT SPACES	CDP	2/10/2020	Conformance Set
A620	INTERIOR DETAILS	CDP	2/10/2020	Conformance Set
A621	INTERIOR DETAILS	CDP	2/10/2020	Conformance Set
A622	INTERIOR DETAILS - SHELF REFLECTORS & CABINETS	CDP	2/10/2020	Conformance Set
A623	INTERIOR DETAILS	CDP	2/10/2020	Conformance Set
A625	INTERIOR DETAILS - BREAKOUT SPACES	CDP	2/10/2020	Conformance Set
A650	INTERIOR DETAILS - GUARDRAILS	CDP	2/10/2020	Conformance Set
A651	INTERIOR DETAILS - STAIRS	CDP	2/10/2020	Conformance Set
A652	INTERIOR DETAILS - STAIRS	CDP	2/10/2020	Conformance Set
A690	INTERIOR DETAILS - CEILING	CDP	2/10/2020	Conformance Set
A691	INTERIOR DETAILS - CEILING	CDP	2/10/2020	Conformance Set
A700	PARTITION TYPES	CDP	2/10/2020	Conformance Set
A710	DOOR SCHEDULE AND LEGENDS	CDP	2/10/2020	Conformance Set
A711	DOOR SCHEDULES	CDP	2/10/2020	Conformance Set
A712	SILL, TRANSITION & BASE DETAILS	CDP	2/10/2020	Conformance Set
A713	DOOR DETAILS	CDP	2/10/2020	Conformance Set
A714	DOOR DETAILS	CDP	2/10/2020	Conformance Set
A715	SIGNAGE DETAILS	CDP	2/10/2020	Conformance Set
A716	ACOUSTIC PANELS DETAILS AND SCHEDULE	CDP	2/10/2020	Conformance Set
A720	BREAKOUT PANEL LAYOUT	CDP	2/10/2020	Conformance Set
A721	BREAKOUT PANEL LAYOUT	CDP	2/10/2020	Conformance Set
ELEVATOR				
VT01	ELEVATOR DETAILS	CDP	2/10/2020	Conformance Set
FOODSERVICE				
FS100	FOODSERVICE EQUIPMENT PLAN & SCHEDULE	CDP	2/10/20	Conformance Set
FS101	FOODSERVICE EQUIPMENT ROUGHING-IN PLAN	CDP	2/10/20	Conformance Set
FS102	FOODSERVICE EQUIPMENT SPECIAL CONDITIONS PLAN	CDP	2/10/20	Conformance Set
FS103	FOODSERVICE EQUIPMENT ELEVATIONS & DETAILS	CDP	2/10/20	Conformance Set

VOLUME: 2

		BID PACKAGE	REVISION DATE	REVISION DESCRIPTION
STRUCTURAL				
S000	GENERAL NOTES	ESP	02/10/2020	Conformance Set
S001	GEOMETRY PLAN	ECSP	02/10/2020	Conformance Set
S002	SNOW DRIFT PLAN	ECSP	02/10/2020	Conformance Set
S003	STEEL JOIST LOAD DIAGRAMS	ECSP	02/10/2020	Conformance Set
S101A	FOUNDATION PLAN-A	ESP	02/10/2020	Conformance Set
S101B	FOUNDATION PLAN-B	ESP	02/10/2020	Conformance Set
S101C	FOUNDATION PLAN-C	ESP	02/10/2020	Conformance Set
S101D	FOUNDATION PLAN-D	ESP	02/10/2020	Conformance Set
S101L	FOUNDATION LOADS FOR GROUND IMPROVEMENT	ESP	02/10/2020	Conformance Set
S102A	FLOOR 2 FRAMING PLAN-A	ECSP	02/10/2020	Conformance Set
S102B	FLOOR 2 FRAMING PLAN-B	ECSP	02/10/2020	Conformance Set
S102C	FLOOR 2 FRAMING PLAN-C	ECSP	02/10/2020	Conformance Set
S102D	FLOOR 2 FRAMING PLAN-D	ECSP	02/10/2020	Conformance Set
S103A	FLOOR 3 FRAMING PLAN-A	ECSP	02/10/2020	Conformance Set
S103B	FLOOR 3 FRAMING PLAN-B	ECSP	02/10/2020	Conformance Set
S103C	FLOOR 3 FRAMING PLAN-C	ECSP	02/10/2020	Conformance Set
S103D	FLOOR 3 FRAMING PLAN-D	ECSP	02/10/2020	Conformance Set
S104B	ROOF FRAMING PLAN-B	ECSP	02/10/2020	Conformance Set
S104C	ROOF FRAMING PLAN-C	ECSP	02/10/2020	Conformance Set
S104D	ROOF FRAMING PLAN-D	ECSP	02/10/2020	Conformance Set
S105B	HIGH ROOF FRAMING PLAN-B	ECSP	02/10/2020	Conformance Set
S105C	HIGH ROOF FRAMING PLAN-C	ECSP	02/10/2020	Conformance Set
S200	NORTH BUILDING COLUMN SCHEDULE	ECSP	02/10/2020	Conformance Set
S201	SOUTH BUILDING COLUMN SCHEDULE	ECSP	02/10/2020	Conformance Set
S202	BASE PLATE DETAILS	ECSP	02/10/2020	Conformance Set
S203	BASE PLATE DETAILS	ECSP	02/10/2020	Conformance Set
S204	BRACED FRAME AND TRUSS ELEVATIONS (NORTH)	ECSP	02/10/2020	Conformance Set
S205	BRACED FRAME AND TRUSS ELEVATIONS (SOUTH)	ECSP	02/10/2020	Conformance Set
S300	TYPICAL DETAILS	ECSP	02/10/2020	Conformance Set
S301	TYPICAL DETAILS	ECSP	02/10/2020	Conformance Set
S302	TYPICAL DETAILS	ECSP	02/10/2020	Conformance Set
S303	TYPICAL DETAILS	ECSP	02/10/2020	Conformance Set
S304	TYPICAL DETAILS	ECSP	02/10/2020	Conformance Set
S305	TYPICAL DETAILS	ECSP	02/10/2020	Conformance Set
S400	FOUNDATION SECTIONS	ECSP	02/10/2020	Conformance Set
S401	FOUNDATION SECTION	ECSP	02/10/2020	Conformance Set
S500	SUPERSTRUCTURE SECTIONS	ECSP	02/10/2020	Conformance Set
S501	SUPERSTRUCTURE SECTIONS	ECSP	02/10/2020	Conformance Set
S502	BANDSHELL & ENTRANCE CANOPY DETAILS	ECSP	02/10/2020	Conformance Set
S503	SUPERSTRUCTURE SECTIONS	ECSP	02/10/2020	Conformance Set
S504	SUPERSTRUCTURE SECTIONS	CDP	02/10/2020	Conformance Set
S600	EXTERIOR WALL ELEVATIONS	ECSP	02/10/2020	Conformance Set
S601	EXTERIOR WALL ELEVATIONS	ECSP	02/10/2020	Conformance Set
S602	EXTERIOR WALL ELEVATIONS	ECSP	02/10/2020	Conformance Set
S603	EXTERIOR WALL ELEVATIONS	ECSP	02/10/2020	Conformance Set
S604	EXTERIOR WALL ELEVATIONS	ECSP	02/10/2020	Conformance Set
S700	CMU SHEAR WALL ELEVATIONS AT GYM	CDP	02/10/2020	Conformance Set
S701	CMU SHEAR WALL ELEVATIONS AT AUDITORIUM	CDP	02/10/2020	Conformance Set
FIRE PROTECTION				
FP001	LEGEND, SCHEDULES, AND DETAILS	CDP	2/10/2020	Conformance Set
FP101A	FIRST FLOOR - FIRE PROTECTION A	CDP	2/10/2020	Conformance Set
FP101B	FIRST FLOOR - FIRE PROTECTION B	CDP	2/10/2020	Conformance Set
FP101C	FIRST FLOOR - FIRE PROTECTION C	CDP	2/10/2020	Conformance Set
FP101D	FIRST FLOOR - FIRE PROTECTION D	CDP	2/10/2020	Conformance Set
FP102A	SECOND FLOOR - FIRE PROTECTION A	CDP	2/10/2020	Conformance Set
FP102B	SECOND FLOOR - FIRE PROTECTION B	CDP	2/10/2020	Conformance Set
FP102C	SECOND FLOOR - FIRE PROTECTION C	CDP	2/10/2020	Conformance Set
FP102D	SECOND FLOOR - FIRE PROTECTION D	CDP	2/10/2020	Conformance Set
FP103A	THIRD FLOOR - FIRE PROTECTION A	CDP	2/10/2020	Conformance Set
FP103B	THIRD FLOOR - FIRE PROTECTION B	CDP	2/10/2020	Conformance Set
FP103C	THIRD FLOOR - FIRE PROTECTION C	CDP	2/10/2020	Conformance Set
FP104	ROOF AREA - FIRE PROTECTION	CDP	2/10/2020	Conformance Set
PL

GENERAL NOTES

1. CONTRACTOR SHALL DETERMINE EXISTING CONDITIONS WHERE REQUIRED AND VERIFY ALL FIELD CONDITIONS FOR CLEARANCES, DIMENSIONS AND ELEVATIONS SHOWN ON DRAWINGS. ANY DISCREPANCIES SHALL BE MARKED ON A PRINT OF THE STRUCTURAL DRAWING AND FORWARDED IMMEDIATELY TO THE ENGINEER.
2. THE CONTRACTOR SHALL COMPARE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL DRAWINGS BEFORE COMMENCING WITH THE WORK AND SHALL NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES REQUIRING CLARIFICATION OR REVISIONS. DO NOT SCALE STRUCTURAL DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS NOT SHOWN.
3. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFICATIONS AND THE MASSACHUSETTS BUILDING CODE, 9TH EDITION.
4. THE CONTRACTOR SHALL SUBMIT COMPLETE SHOP DRAWINGS FOR THE ENGINEER'S APPROVAL FOR ALL PARTS OF THE WORK, INCLUDING A DESCRIPTION OF DEMOLITION, CONSTRUCTION METHODS, AND SEQUENCING WHERE APPLICABLE. EXISTING FIELD CONDITIONS SHALL BE INCORPORATED INTO SUBMITTALS. NO PERFORMANCE OF THE WORK INCLUDING, BUT NOT LIMITED TO, DEMOLITION OF THE EXISTING STRUCTURE, OR FABRICATION OR ERECTION OF NEW STRUCTURAL ELEMENTS SHALL COMMENCE WITHOUT REVIEW OF THE SHOP DRAWINGS BY THE ENGINEER.
5. IN THE EVENT THAT CERTAIN DETAILS OF THE CONSTRUCTION ARE NOT FULLY SHOWN OR NOTED ON THE DRAWINGS, THEIR CONSTRUCTION SHALL BE OF THE SAME TYPE AS FOR SIMILAR CONDITIONS WHICH ARE SHOWN AND NOTED, SUBJECT TO THE STRUCTURAL ENGINEER'S APPROVAL.
6. SEE THE ARCHITECTURAL DRAWINGS FOR THE FOLLOWING:
   A. SIZE AND LOCATION OF ALL INTERIOR AND EXTERIOR NON BEARING PARTITIONS.
   B. SIZE AND LOCATION OF ALL CONCRETE CURBS, FLOOR DRAINS, SLOPES, INSERTS, ETC. EXCEPT AS SHOWN.
   C. SIZE AND LOCATION OF ALL DOOR AND WINDOW OPENINGS EXCEPT AS SHOWN.
   D. FLOOR AND ROOF FINISHES.
   E. FINISHED FLOOR AND EXTERIOR ELEVATIONS.
   F. DIMENSIONS NOT SHOWN ON STRUCTURAL DRAWINGS.
   G. STAIR FRAMING AND DETAILS.
7. SEE THE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR THE FOLLOWING:
   A. PIPE AND DUCT RUNS, SLEEVES, HANGERS, TRENCHES, WALL AND SLAB OPENINGS, ETC. EXCEPT AS SHOWN OR NOTED.
   B. ELECTRICAL CONDUIT RUNS, BOXES, OUTLETS IN WALLS AND SLABS
   C. CONCRETE INSERTS FOR ELECTRICAL, MECHANICAL, OR PLUMBING FIXTURES.
   D. SIZE AND LOCATION OF MACHINE OR EQUIPMENT BASES, ANCHOR BOLTS FOR MOTOR MOUNTS, EXCEPT AS SHOWN OR NOTED.
8. OPENING, POCKETS, ETC. LARGER THAN 6" SHALL NOT BE PLACED IN CONCRETE SLABS, DECKS, OR WALLS UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS. NOTIFY THE STRUCTURAL ENGINEER WHEN DRAWINGS BY OTHERS SHOW OPENINGS, POCKETS, ETC LARGER THAN 6" WHICH ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS, BUT WHICH ARE LOCATED IN STRUCTURAL MEMBERS.
9. ALL MECHANICAL SYSTEMS SUSPENDED LOADS EXCEEDING 100 POUNDS SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER PRIOR TO INSTALLATION UNLESS SPECIFICALLY DETAILED ON THE DRAWINGS.
10. DESIGN BASIS:
    DESIGN IS IN ACCORDANCE WITH THE MASSACHUSETTS BUILDING CODE, 9TH EDITION

    LIVE LOAD
    SEE DESIGN LOAD SCHEDULE

    SNOW LOAD

Pg	40 PSF
Pf	35 PSF
Ce	1
I	1.1
Ct	1

    WIND LOAD (SPEED and PSF IN ULTIMATE)*

BASIC WIND SPEED	137 MPH
RISK CATEGORY	III
EXPOSURE	C
INTERNAL PRESSURE COEFFICIENT	±0.18
MWFRS DESIGN LOAD	67 PSF

    *TO CONVERT ULTIMATE WIND PRESSURES TO ALLOWABLE, MULTIPLY BY 0.6. TO CONVERT ULTIMATE BASIC WIND SPEED TO ALLOWABLE, MULTIPLY BY √0.6. (IMPORTANCE FACTOR IS ALREADY INCLUDED IN SPEED AND PRESSURES).

    SEISMIC LOAD

I/ RISK CATEGORY	1.25/III
Ss/S1	0.194/0.067
SITE CLASS	D
SDS/SD1	0.207/0.107
SEISMIC DESIGN CATEGORY	B
SEISMIC-FORCE-RESISTING SYSTEM	STEEL CONCENTRICALLY BRACED FRAMES (NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE) AND INTERMEDIATE REINFORCED MASONRY SHEAR WALLS
DESIGN BASE SHEAR	1070 KIPS
Cs	0.086
R	3
ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE

11. SEE ARCHITECTURAL DRAWINGS FOR WATERPROOFING AND DAMPPROOFING DETAILS.
12. THE OWNER WILL RETAIN AN INDEPENDENT TESTING AGENCY TO INSPECT THE FOLLOWING TYPES OF WORK. SEE THE PROJECT SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.
    A. SUBGRADE, INCLUDING SOLID PREPARATION, COMPACTION AND BEARING CAPACITY
    B. STRUCTURAL FILL
    C. ALL CONCRETE WORK
    D. ALL STRUCTURAL STEEL WELDING AND HIGH STRENGTH BOLTING (EXCEPT METAL STUDS, FURRING, ETC.)
    E. SHOP WELDING PROCEDURES
    F. STEEL OPEN WEB JOISTS
    G. PRECAST DOUBLE TEE BEAMS
    H. INSTALLATION OF EXPANSION AND ADHESIVE ANCHORS
    I. STRUCTURAL STABILITY
    J. WIND BEARING OR LOAD BEARING LIGHT GAUGE METAL FRAMING
    K. WHERE INDICATED ON THE DRAWINGS OR PROJECT SPECIFICATIONS.
13. THE FOLLOWING SHALL BE DESIGNED BY A REGISTERED DESIGN PROFESSIONAL (RDP) NOT UNDER THE CONTROL OF THE STRUCTURAL ENGINEER OF RECORD (SER) AND SUBMITTED FOR REVIEW WITH CALCULATIONS PREPARED, STAMPED, AND SIGNED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MASSACHUSETTS.
    A. LIGHT GAUGE METAL SYSTEMS
    B. CURTAIN WALL
    C. METAL OR CONCRETE STAIRS AND RAILS NOT DETAILED ON STRUCTURAL DRAWINGS
    D. STRUCTURAL STEEL CONNECTIONS NOT FULLY DETAILED IN CONTRACT DRAWINGS (SHEAR CONNECTIONS, MOMENT CONNECTIONS).
    E. TEMPORARY SHORING WORK.
    F. PRE-FABRICATED STEEL OR WOOD TRUSSES.
    G. HAND RAILS, GUARDRAILS AND HALF WALLS SERVING AS SUCH.
    H. ALL OTHER SYSTEMS NOTED AS SUCH IN PROJECT SPECIFICATIONS.

    STRUCTURAL DRAWINGS PROVIDED BY SER SUBMITTED FOR PERMIT DO NOT INCLUDE DESIGN OF THE SYSTEMS LISTED ABOVE.
14. EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF THE LATERAL SYSTEM (WIND OR SEISMIC) SHOWN ON THE STRUCTURAL DRAWINGS SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND THE OWNER ACKNOWLEDGING AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTION.

TEMPORARY WORK

1. ALL TEMPORARY WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE MASSACHUSETTS BUILDING CODE, 9TH EDITION.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE PROPER SHORING AND BRACING WHEREVER NECESSARY. SHOP DRAWINGS FOR SUCH SHORING SHALL BE PREPARED BY A PROFESSIONAL ENGINEER RETAINED BY THE CONTRACTOR, IN ACCORDANCE WITH ALL APPLICABLE CURRENT RULES AND REGULATIONS.
3. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT. PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE STRUCTURE HAS NOT ATTAINED DESIGN STRENGTH.
4. SHEETING, SHORING AND BRACING FOR THE LATERAL SUPPORT OF EXCAVATION SHALL REMAIN IN PLACE UNTIL ALL PERMANENT STRUCTURAL SYSTEMS AT AND BELOW GROUND LEVEL ARE COMPLETE. FOR FURTHER INFORMATION ON LATERAL SUPPORT OF EXCAVATION, SEE SPECIFICATIONS.

EARTHWORK

1. ALL EARTHWORKS INCLUDING EXCAVATION, FILLING, SUBGRADE PREPARATIONS, AND PROOF ROLLING EXISTING SUBGRADE SHALL BE IN ACCORDANCE WITH THE GENERAL NOTES, SPECIFICATIONS, AND GEOTECHNICAL REPORT DATED MAY 2, 2019 BY RSE ASSOCIATES, INC.
2. DO NOT PLACE BACKFILL BEHIND WALLS UNTIL CONCRETE HAS ATTAINED ITS FULL DESIGN STRENGTH. DO NOT BACKFILL WALLS BELOW GRADE UNTIL GROUND LEVEL FLOOR OR OTHER PERMANENT LATERAL SUPPORT SYSTEM IS COMPLETELY IN PLACE AND HAS ATTAINED 80 PERCENT OF FULL STRENGTH.
3. EXCAVATIONS BELOW FOOTINGS OF ALL TYPES AS WELL AS SLABS ON GRADE SHOULD BE MADE SO AS TO PROVIDE A CLEAN SMOOTH BEARING AREA OF UNDISTURBED SOIL. THE BOTTOM THREE INCHES OF EXCAVATIONS FOR FOOTINGS, PILE CAPS, AND GRADE BEAMS SHALL BE FINISHED BY HAND.
4. ALL BEARING SURFACES SHALL BE PROTECTED FROM CHANGES IN MOISTURE CONTENT IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
5. NO RESPONSIBILITY IS ASSUMED BY THE ARCHITECT FOR THE VALIDITY OF THE SUBSURFACE CONDITIONS DESCRIBED ON THE DRAWINGS, SPECIFICATIONS, TEST BORINGS, OR TEST PITS. THIS DATA IS INCLUDED ONLY TO ASSIST THE CONTRACTOR DURING BIDDING AND SUBSEQUENT CONSTRUCTION AND REPRESENT CONDITIONS ONLY AT THESE SPECIFIC LOCATIONS AT THE PARTICULAR TIME THEY WERE MADE.

FOUNDATIONS

1. THE FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORTS PREPARED BY RSE ASSOCIATES, INC. DATED MAY 2, 2019.
2. ALLOWABLE SOIL BEARING PRESSURE ASSUMED TO BE 4 KSF.
3. FOUNDATIONS ON THIS PROJECT CONSIST OF SPREAD FOOTINGS, BASEMENT AND FOUNDATION WALLS, AND SLAB ON GRADE.
4. DESIGN ELEVATION FOR GROUNDWATER IS AT ELEVATION 161.5 (NAVD88) AS PER GEOTECHNICAL...
5. NO FOUNDATION CONCRETE SHALL BE PLACED IN WATER OR ON FROZEN SUBGRADE MATERIAL. WATER SHALL NOT BE ALLOWED TO STAND IN TRENCHES BEFORE OR AFTER CONCRETE IS PLACED. REFER TO GEOTECHNICAL REPORT FOR GUIDELINES ON DEWATERING.
6. IF TRENCHES BECOME SOFTENED DUE TO RAIN OR OTHER WATER BEFORE THE FOOTINGS ARE CAST, THE CONTRACTOR SHALL EXCAVATE THE SOFTENED MATERIAL AND REPLACE WITH CONCRETE.
7. FOUNDATION UNITS SHALL BE CENTERED UNDER SUPPORTED STRUCTURAL MEMBER, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
8. ALL EXCAVATIONS FOR FOUNDATIONS SHALL BE APPROVED BY THE OWNER'S GEOTECHNICAL ENGINEER PRIOR TO PLACING REINFORCEMENT AND CASTING CONCRETE.
9. BACKFILL UNDER ANY PORTION OF THE STRUCTURE SHALL BE COMPACTED IN 6 INCH LIFTS PER SPECIFICATION REQUIREMENTS.
10. ALL SLAB ON GRADE AND FOOTING SUBGRADE LEVELS SHALL BE APPROVED BY OWNERS GEOTECHNICAL ENGINEER.
11. EXTERIOR CONSTRUCTION SHALL BE CARRIED DOWN TO A MINIMUM DEPTH OF 4 FEET BELOW FINISHED EXTERIOR GRADE UNLESS NOTED OTHERWISE. PROTECT IN-PLACE FOUNDATIONS AND SLABS FROM FROST PENETRATION UNTIL THE PROJECT IS COMPLETED.
12. DOWELS FROM FOUNDATIONS INTO PIERS; COLUMNS, BUTTRESSES, OR WALLS ABOVE SHALL BE THE SAME SIZE AND NUMBER AS VERTICAL REINFORCEMENT IN PIERS, COLUMNS, BUTTRESSES, OR WALLS UNLESS NOTED OTHERWISE IN DRAWINGS.

EXPANSION AND ADHESIVE ANCHOR

1. ALL EXPANSION ANCHORS SHALL BE HILTI KWIK BOLT TZ OR APPROVED EQUAL, UNLESS NOTED OTHERWISE. SUBSTITUTIONS SHALL HAVE A CURRENT ICC EVALUATION REPORT.
2. ALL ADHESIVE ANCHORS SHALL BE THE HILTI HY 200 SYSTEM OR APPROVED EQUAL, UNLESS NOTED OTHERWISE. SUBSTITUTIONS SHALL HAVE A CURRENT ICC EVALUATION REPORT.
3. CONCRETE SHALL ATTAIN MINIMUM DESIGN STRENGTH PRIOR TO INSTALLATION OF THE ANCHORS.
4. INSTALL ANCHORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND THE INSTRUCTIONS LISTED IN THE ICC REPORT.
5. PRIOR TO ALL EXPANSION ANCHOR DRILLING OPERATIONS IN CONCRETE OR MASONRY, THE CONTRACTOR SHALL LOCATE REINFORCEMENT BY NON-DESTRUCTIVE METHODS. NO REINFORCEMENT SHALL BE DAMAGED BY DRILLING OPERATIONS.
6. THE OWNER SHALL TEST TWENTY-FIVE PERCENT OF EACH GROUP OF ANCHORS USED FOR STRUCTURAL APPLICATIONS FOR THE FULL ALLOWABLE PULLOUT CAPACITY LISTED BY THE MANUFACTURER. IF HALF OF THE TESTED ANCHORS IN A GROUP FAIL THEN ALL OF THE ANCHORS IN THAT GROUP SHALL BE TESTED.

CONCRETE BLOCK MASONRY

1. MASONRY WORK SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES, THE SPECIFICATIONS, LATEST EDITION ACI 530 BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES, AND THE MASSACHUSETTS BUILDING CODE, 9TH EDITION.
2. CONCRETE BLOCK TO BE NORMAL WEIGHT HOLLOW BLOCK ASTM C90 TYPE 1 GRADE N, NOMINAL 8" TALL x 16" LONG.
3. MORTAR TO BE ASTM C270 TYPE M OR S. ADMIXTURES ARE NOT ALLOWED.
4. GROUT TO CONFORM TO ASTM C476, FINE OR COURSE, WITH A MINIMUM STRENGTH OF 3000 PSI.
5. NET AREA COMPRESSIVE STRENGTH OF MASONRY, f'm, TO BE 2000 PSI UNO, CONSTRUCTED FROM 2000 PSI CMU AND TYPE "M" OR "S" MORTAR.
6. REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60.
7. JOINT REINFORCEMENT SHALL BE MANUFACTURED WIRE CONFORMING TO ASTM A82.
8. SEE THE ARCHITECTURAL DRAWINGS FOR NON-LOAD BEARING MASONRY PARTITIONS.
9. SEE SPECIFICATIONS FOR ALL TESTING AND INSPECTION REQUIREMENTS.
10. FILL ALL EXPANSION AND CONTROL JOINTS WITH CLOSED CELL NEOPRENE CONFORMING TO ASTM D1056 CLASS RE41 WITH 50% COMPRESSION.
11. REINFORCED MASONRY WALLS SHALL HAVE BOND BEAMS AT EACH FLOOR LEVEL, THE TOP COURSE OF PARAPETS, AND ELSEWHERE AS SHOWN. BOND BEAM REINFORCING SHALL BE EXTENDED INTO AND BE CONTINUOUS WITH ALL INTERSECTION BOND BEAMS. PROVIDE 2-#5 CONTINUOUS HORIZONTAL BARS MINIMUM IN BOND BEAMS AND FILL CONTINUOUSLY WITH GROUT.
12. MASONRY OPENINGS FOR MORE THAN 16" WIDE REQUIRE APPROVED LINTELS.
13. PROVIDE AND INSTALL LINTELS FOR OPENINGS IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

MAX OPENINGS	4" THICK CMU	6" THICK CMU	8" THICK CMU
4' - 0"	1-L4x3-1/2x5/16	1-L5x5x5/16	2-L4x3-1/2x5/16
7' - 0"	1-L6x3-1/2x5/16	1-8"x5x5/16" BENT PL.	2-L6x3-1/2x5/16

14. FOR WALLS LARGER THAN THE ABOVE THICKNESSES USE MULTIPLES OF THE ABOVE PIECES. LINTELS SHALL BEAR 8" MINIMUM AT BOTH ENDS. LONG LEGS SHALL BE VERTICAL. WHERE LINTEL ABUTS A COLUMN OR WALL PROVIDE CONNECTION TO SUCH. SUBMIT SHOP DRAWINGS OF CONNECTION DETAIL FOR APPROVAL.
15. BEAMS BEARING ON CMU WALLS SHALL HAVE BEARING PLATES OF SUFFICIENT SIZE TO DEVELOP THE MAXIMUM END REACTION OF THE BEAM. FILL CORES OF CONCRETE BLOCKS UNDER ALL BEARING PLATES WITH CONCRETE FOR A WIDTH EQUAL TO 3 TIMES THE BEARING PLATE LENGTH.
16. PROVIDE 1-#5 VERTICAL REINFORCING AT 32" O.C., UNO. THIS REINFORCING SHALL BE CONTINUOUS FOR THE FULL HEIGHT OF THE WALL, AND SPLICED 2'-0" ABOVE EACH FLOOR LEVEL.
17. REINFORCED MASONRY WALLS SHALL HAVE #9 GA LONGITUDINAL WIRES, LADDER OR TRUSS TYPE, AT 16 INCHES O.C. HORIZONTAL REINFORCEMENT, UNO.
18. MASONRY BLOCK CELLS CONTAINING VERTICAL REINFORCING SHALL BE GROUTED SOLID. FILLING CELL WITH MORTAR IS NOT ACCEPTABLE.
19. ALL CMU BELOW GRADE SHALL BE GROUTED SOLID.
20. OPENINGS, INCLUDING SEPARATE HORIZONTALLY-STAGGERED OPENINGS, IN NON-LOAD BEARING CMU WALLS TO INTERRUPT NO GREATER THAN ONE VERTICAL REINFORCEMENT BAR FOR EVERY 8 FEET IN LENGTH OF WALL. IN INSTANCES WHERE OPENINGS ARE GREATER THAN 4 FEET IN WIDTH, PROVIDE VERTICAL REINFORCEMENT AT EDGES OF OPENINGS PER TYPICAL DETAIL. DO NOT PLACE OPENINGS AT CELLS WHERE VERTICAL REINFORCEMENT RUNS AT ENDS OR CORNERS OF WALLS OR WHERE ANY HORIZONTAL REINFORCEMENT RUNS AT BOND BEAMS AT TOP AND BOTTOM OF WALLS. NOTIFY ENGINEER IF THESE PROPOSED OPENINGS DO NOT MEET THESE CRITERIA.

METAL DECK AND SHEAR CONNECTOR

1. ALL METAL DECK SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES, THE SPECIFICATIONS AND THE MASSACHUSETTS BUILDING CODE, 9TH EDITION.
2. STEEL DECK AND SHEAR CONNECTOR WORK SHALL CONFORM TO THE "SPECIFICATIONS FOR DESIGN OF LIGHT GAGE COLD-FORMED STEEL STRUCTURAL MEMBERS (AISI)"; "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (AISC)"; "STRUCTURAL WELDING CODE-STEEL (AWS D1.1-LATEST EDITION)"; AND "STRUCTURAL WELDING CODE - SHEET STEEL (AWS D1.3-LATEST EDITION.)"
3. MINIMUM BEARING OF DECKING ON STEEL TO BE 2 INCHES.
4. STEEL DECK CROSS SECTIONS ARE ONLY REPRESENTED DIAGRAMMATICALLY ON THE DRAWINGS.
5. UNITS TO BE FASTENED TO ALL STEEL OVER WHICH THEY ARE PLACED WITH 5/8" DIAMETER PUDDLE WELDS. PUDDLE WELDS TO BE PLACED AT EACH RIB, OR AT 12" O/C, DEPENDING ON THE ORIENTATION OF THE DECK RELATIVE TO THE BEAMS. DECREASE WELD SPACING TO 6" O.C. FOR ROOF DECK WITHIN 4'-0" OF THE BUILDING PERIMETER.
6. SIDE LAPS BETWEEN ADJACENT DECK UNITS SHALL BE FASTENED BY #10 SCREW AT 36 INCHES O/C.
7. PROVIDE FLASHING AND CLOSURE PLATES AT ENDS OF ALL UNITS, AT SLAB OPENINGS, AND AROUND COLUMNS. ALL JOINTS TO BE GROUT TIGHT.
8. PROVIDE MISCELLANEOUS STEEL AT COLUMNS TO SUPPORT DISCONTINUOUS DECK AS REQUIRED.
9. FABRICATE DECK UNIT IN LENGTHS TO SPAN 3 OR MORE SUPPORTS WHERE POSSIBLE.
10. STEEL DECK PANEL SHALL BE FORMED FROM STEEL SHEETS CONFORMING TO ASTM A653 (GALV.), GRADE 33, WITH A MINIMUM YIELD POINT OF 33,000 PSI; ASTM A570/A1011 (UNGALV), GRADE 33, OR ASTM A611/A1008 (UNGALV), GRADE C, WITH A MINIMUM YIELD POINT OF 33,000 PSI AND A THICKNESS NOT THINNER THAN 20 GAGE.
11. SHEAR CONNECTORS SHALL CONFORM TO ASTM A108, GRADES 1010, 1015, 1017 OR 1020. TYPICALLY SHEAR CONNECTORS SHALL BE 3/4" DIAMETER X 4 1/2" LONG HEADED STUDS. IN NO CASE SHALL SHEAR CONNECTORS BE LESS THAN 1 1/2" ABOVE STEEL DECK.
12. SHEAR CONNECTORS SHALL BE EQUALLY SPACED OVER THE LENGTH OF THE BEAM. WHERE THE NUMBER OF DECK CORRUGATIONS AVAILABLE IS LESS THAN THE NUMBER OF SHEAR CONNECTORS, USE PAIRS OF SHEAR CONNECTORS STARTING FROM EACH END OF BEAM AND CONTINUING TOWARD THE CENTER UNTIL IT IS POSSIBLE TO RETURN TO A SINGLE SHEAR CONNECTOR IN EACH CORRUGATION. SHEAR CONNECTORS SHALL BE SPACED NOT CLOSER THAN 3" TRANSVERSELY AND 4" LONGITUDINALLY.
13. HORIZONTAL CLEARANCE SHALL BE A MINIMUM OF 1" FROM THE EDGE OF ANY SHEAR CONNECTOR TO THE FACE OF CONCRETE, STEEL DECK RIB, OR SIMILAR ADJACENCY.
14. EDGE DISTANCE FROM THE CENTER OF A SHEAR CONNECTOR TO THE EDGE OF A STRUCTURAL STEEL BEAM SHALL PREFERABLY BE 2", BUT IN NO CASE LESS THAN 1-1/4".
15. WHERE BOLTS OR MISCELLANEOUS STEEL BREAKS THE PLANE OF THE BOTTOM OF THE DECK RESULTING IN UNEVEN BEARING, SHOP DRAWING SHALL PROVIDE A DETAIL OR INSTRUCTIONS OF PROPOSED SOLUTION SO DECK CAN LAY FLAT.

CONCRETE AND REINFORCEMENT

1. ALL CONCRETE CONSTRUCTION TO CONFORM TO THESE NOTES, THE SPECIFICATIONS, THE LATEST EDITION OF ACI 318, AND THE MASSACHUSETTS BUILDING CODE, 9TH EDITION, WHICHEVER IS MOST RESTRICTIVE.
2. CONTRACTOR SHALL SUBMIT CONCRETE MIX TO ENGINEER BEFORE ORDERING CONCRETE TO JOB SITE.
3. SCHEDULE OF STRUCTURAL CONCRETE 28 DAY STRENGTHS AND TYPES:

LOCATION IN STRUCTURE	28 DAY STRENGTH	DENSITY
SUSPENDED SLABS ON DECK	4000	115
SLABS ON GRADE	4000	150
WALLS AND PIERS	4000	150
FOOTINGS	4000	150
EXPOSED INTERIOR TOPPING SLABS	5000	145

4. CLEAN AND ROUGHEN TO 1/4" AMPLITUDE ALL CONCRETE SURFACES AGAINST WHICH NEW CONCRETE IS TO BE PLACED. A MINIMUM OF 72 HOURS SHALL ELAPSE BETWEEN ADJACENT CONCRETE PLACEMENTS.
5. ALL CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE WITH THE TYPICAL DETAILS SHOWN ON THE STRUCTURAL DRAWINGS AND ONLY AT APPROVED LOCATIONS.
6. REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60. REINFORCING TO BE WELDED SHALL CONFORM TO ASTM A706, GRADE 60.
7. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185 AND SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF 70,000 PSI.
8. ALL REINFORCEMENT SHALL BE DETAILED IN ACCORDANCE WITH THE LATEST EDITION OF THE ACI 315 DETAILING MANUAL.
9. ALL REINFORCING STEEL SHALL BE SECURELY HELD IN PROPER POSITION WHILE POURING CONCRETE. IF REQUIRED, ADDITIONAL BARS AND STIRRUPS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT TO THE REINFORCING STEEL.
10. ALL REINFORCING BARS MARKED CONTINUOUS SHALL BE LAPPED 47 BAR DIAMETERS AT SPLICES, EXCEPT AS OTHERWISE SHOWN ON DRAWINGS. HOOK BARS AT NON-CONTINUOUS ENDS. LAP CONTINUOUS TOP BARS AT CENTER BETWEEN SUPPORTS AND CONTINUOUS BOTTOM BARS AT SUPPORTS.
11. PROVIDE CLEAR COVERAGE OF OUTER REINFORCEMENT AS FOLLOWS:

LOCATION IN STRUCTURE	CLEAR COVERAGE
SURFACE CAST AGAINST AND PERMANENTLY IN CONTACT WITH EARTH	3"
FORMED SURFACES EXPOSED TO EARTH OR WEATHER:	
#5 BAR OR SMALLER	1-1/2"
#6 BAR TO #18 BAR	2"
FORMED SLABS, WALLS AND JOISTS NOT EXPOSED TO EARTH OR WEATHER (#11 BAR OR SMALLER)	3/4"
FORMED BEAMS AND COLUMNS NOT EXPOSED TO EARTH OR WEATHER	1-1/2"

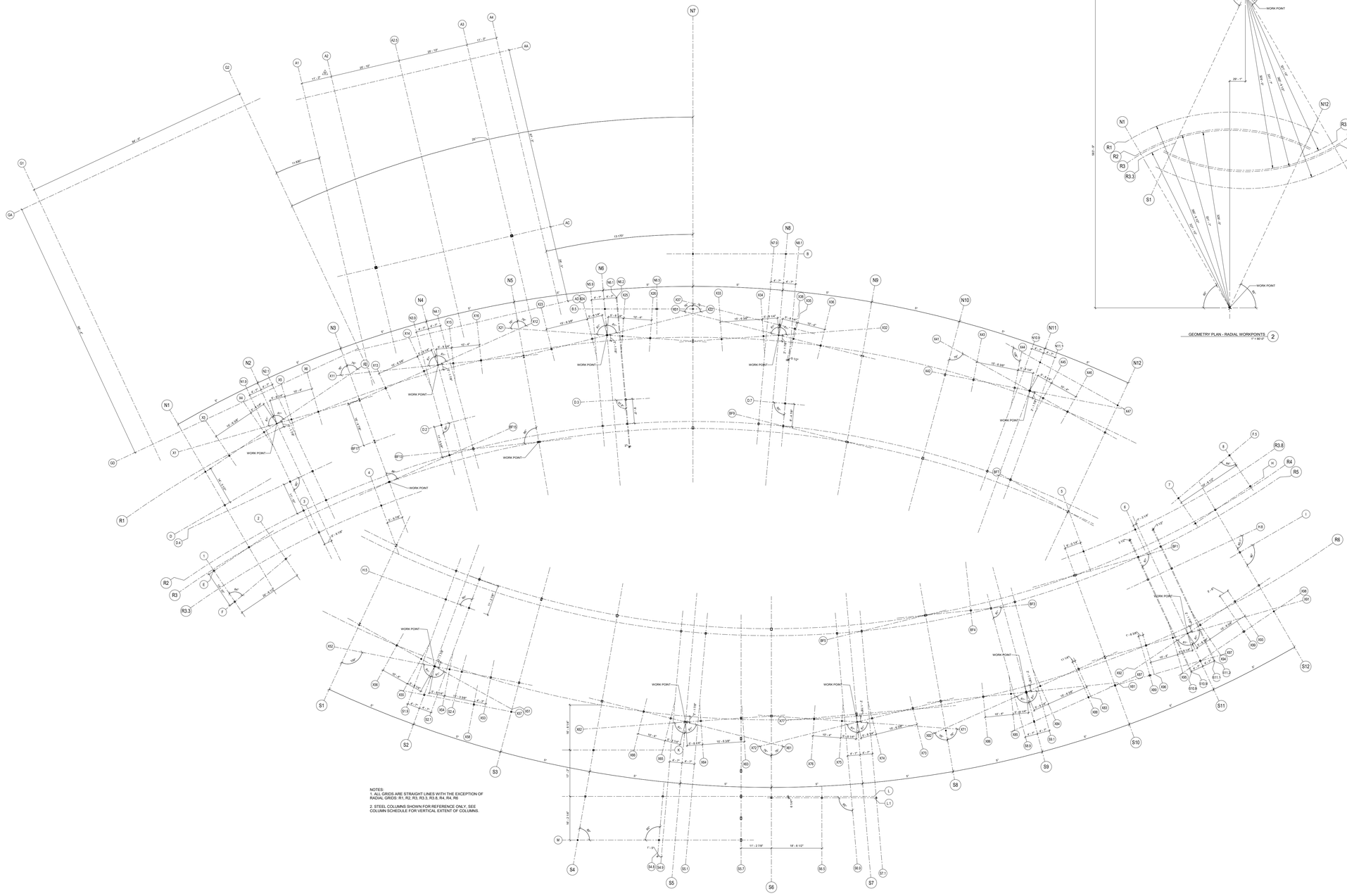
12. MINIMUM LAP OF WELDED WIRE FABRIC SHALL BE 6" OR ONE FULL MESH, WHICHEVER IS GREATER, AND SHALL BE WIRED TOGETHER.
13. NO CONCRETE SHALL BE POURED UNTIL ALL REINFORCEMENT AND INSTALLATIONS HAVE BEEN INSPECTED AND APPROVED BY THE OWNER'S TESTING AGENCY. THE CONTRACTOR SHALL NOTIFY THE OWNER'S TESTING AGENCY 48 HOURS BEFORE POURING CONCRETE TO ALLOW FOR ALL NECESSARY INSPECTIONS.
14. FOR CONCRETE SURFACES WHICH ARE TO RECEIVE FINISHES REFER TO ARCHITECTS DRAWINGS.
15. CONTRACTOR SHALL SUBMIT REBAR SHOP DRAWINGS FOR ENGINEER'S APPROVAL.
16. ALL CONCRETE TO BE EXPOSED TO FREEZING TEMPERATURES SHALL BE AIR-ENTRAINED.
17. NO PIPES OR CONDUIT SHALL BE EMBEDDED IN THE STRUCTURAL CONCRETE FLOOR SLABS WITHOUT APPROVAL OF STRUCTURAL ENGINEER.
18. PROVIDE POCKETS IN WALLS TO RECEIVE BEAMS AND SLABS WHERE REQUIRED.
19. PROVIDE VAPOR BARRIER UNDER INTERIOR SLABS CAST ON GRADE.
20. ALL OPENING FOR ELECTRICAL AND TELEPHONE CONDUITS AND ALL PLUMBING SLOTS SHALL BE FILLED WITH CONCRETE TO SAME DEPTH AS FLOOR SLAB AFTER ALL CONDUITS AND PIPING HAVE BEEN INSTALLED.
21. CONCRETE CAST ON SLOPED SURFACES SHALL BEGIN AT THE LOWEST ELEVATION AND CONTINUE MONOLITHICALLY TOWARD THE HIGHER ELEVATION UNTIL THE INTENDED CAST IS COMPLETED.
22. ALL CONSTRUCTION JOINT KEYS SHALL BE CONTINUOUS AND AS SHOWN ON THE DRAWINGS. MINIMUM KEY SIZE TO BE 3 1/2" WIDE BY 1 1/2" DEEP.
23. VERTICAL CONSTRUCTION JOINTS MAY BE MADE AT MIDSPAN OR AT POINTS OF MINIMUM SHEAR IN BEAM OR SLAB WHERE STOP IN CONCRETE WORK IS NECESSARY. SEE TYPICAL DETAILS FOR ADDITIONAL REINFORCING REQUIREMENTS AT CONSTRUCTION JOINTS.
24. CONCRETE FOUNDATION WALLS SHALL BE POURED IN ALTERNATE SECTIONS. EACH POUR SHALL NOT EXCEED 35 FEET IN LENGTH. NO HORIZONTAL JOINTS SHALL BE PERMITTED EXCEPT WHERE SHOWN ON PLAN OR APPROVED BY THE STRUCTURAL ENGINEER. LAYOUT OF ALL CONSTRUCTION AND/OR OTHER JOINTS SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER FOR APPROVAL.
25. PROVIDE BAR SUPPORTS AND SPACERS WITH NON-CORROSIVE TIPS IN ACCORDANCE WITH ACI 315 FOR ALL REINFORCING INCLUDING WWF.
26. MECHANICAL SPLICES OR WELDED SPLICES ARE GENERALLY USED FOR BARS LARGER THAN #11 DIAMETER, HOWEVER THEY MAY BE USED FOR SMALLER BARS AT CONTRACTORS OPTION.
27. WHERE MECHANICAL SPLICES ARE USED, SPLICES SHALL BE STAGGERED 24 INCHES MINIMUM ALONG LONGITUDINAL AXIS OF MEMBER AND SHALL DEVELOP 125 PERCENT OF SPECIFIED YIELD STRENGTH IN TENSION OR COMPRESSION.
28. WELDING OF REINFORCING SHALL CONFORM TO "STRUCTURAL WELDING CODE - REINFORCING STEEL" AWS D1.4-79. WELDING STIRRUPS, TIES, INSERTS, OR OTHER SIMILAR ELEMENTS TO LONGITUDINAL REINFORCING SHALL NOT BE PERMITTED. FIELD WELDING OF CROSSING BARS IS NOT PERMITTED WITHOUT THE EXPRESS APPROVAL OF THE ENGINEER.

STRUCTURAL STEEL

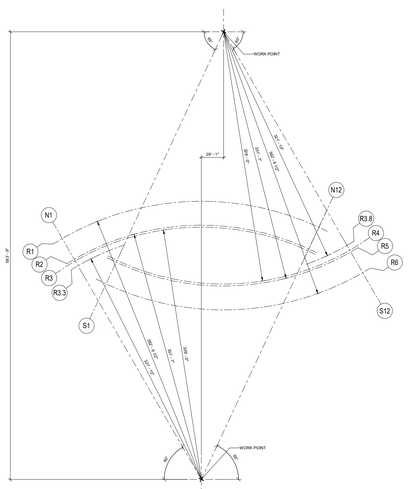
1. STRUCTURAL STEEL WORK SHALL CONFORM TO THE REQUIREMENTS OF THESE NOTES, THE SPECIFICATIONS, AND THE MASSACHUSETTS BUILDING CODE, 9TH EDITION.
2. STRUCTURAL STEEL WORK SHALL CONFORM TO "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (AISC 2010)"; "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS & BRIDGES (AISC 2010)"; AND "STRUCTURAL WELDING CODE - STEEL (AWS D1.1-94)"
3. STRUCTURAL STEEL SHALL BE DETAILED IN ACCORDANCE WITH "DETAILING FOR STEEL CONSTRUCTION (AISC)" AND, WHERE REQUIRED, DESIGNED IN ACCORDANCE WITH THE CITED REFERENCES.
4. STRUCTURAL STEEL SHALL BE THE FOLLOWING GRADES:

WIDE FLANGE ROLLED SHAPES	ASTM A992 GRADE 50
ANGLES, CHANNELS, PLATES AND BARS	ASTM A36
STEEL PIPE	ASTM A53 TYPE S GRADE B FY=35 KSI
ANCHOR RODS	ASTM F1554 GRADE 36 UNO
HIGH STRENGTH BOLTS	ASTM A325 OR A490
RECTANGULAR HSS	ASTM A500 GRADE B FY=46 KSI
ROUND HSS	ASTM A500 GRADE B FY=42 KSI

5. THE CONTRACTOR SHALL ENGAGE A PROFESSIONAL ENGINEER LICENSED IN MASSACHUSETTS TO SUPERVISE THE DESIGN OF ALL STEEL CONNECTIONS NOT SPECIFICALLY CALLED OUT AS FULLY DESIGNED ON THE STRUCTURAL DRAWINGS. SEE THE SPECIFICATIONS FOR SUBMITTAL REQUIREMENTS.
6. BOLTED CONNECTIONS SHALL BE AS FOLLOWS:
   a. 3/4 INCH MINIMUM BOLT DIAMETER, TWO BOLTS MINIMUM
   b. STANDARD, OVERSIZED, OR HORIZONTAL SHORT SLOTTED HOLES IN WEBS OF BEAMS
   c. SHEAR CONNECTIONS FOR MOMENT CONNECTED MEMBERS AND BRACED FRAMES SHALL BE SLIP CRITICAL TYPE HIGH STRENGTH BOLTS
   d. SHEAR CONNECTIONS FOR OTHER MEMBERS SHALL BE SIMPLE SHEAR CONNECTIONS WITH EITHER SLIP CRITICAL TYPE HIGH STRENGTH BOLTS OR BEARING TYPE HIGH STRENGTH BOLTS (ASSUME THREADS INCLUDED IN SHEAR PLANE FOR



GEOMETRY PLAN
1/16" = 1'-0" 1



GEOMETRY PLAN - RADIAL WORKPOINTS
1" = 80'-0" 2

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

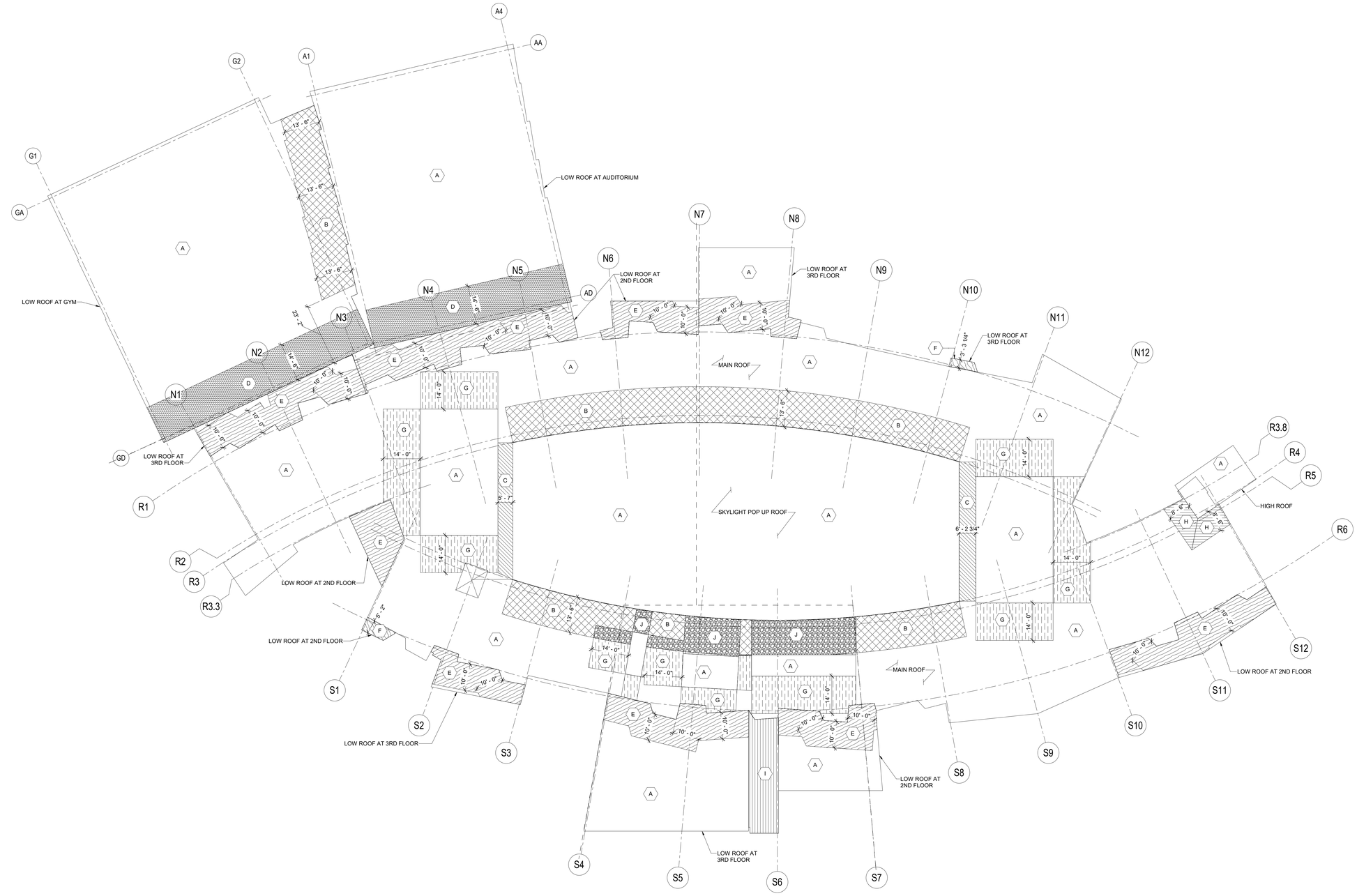
REVISIONS

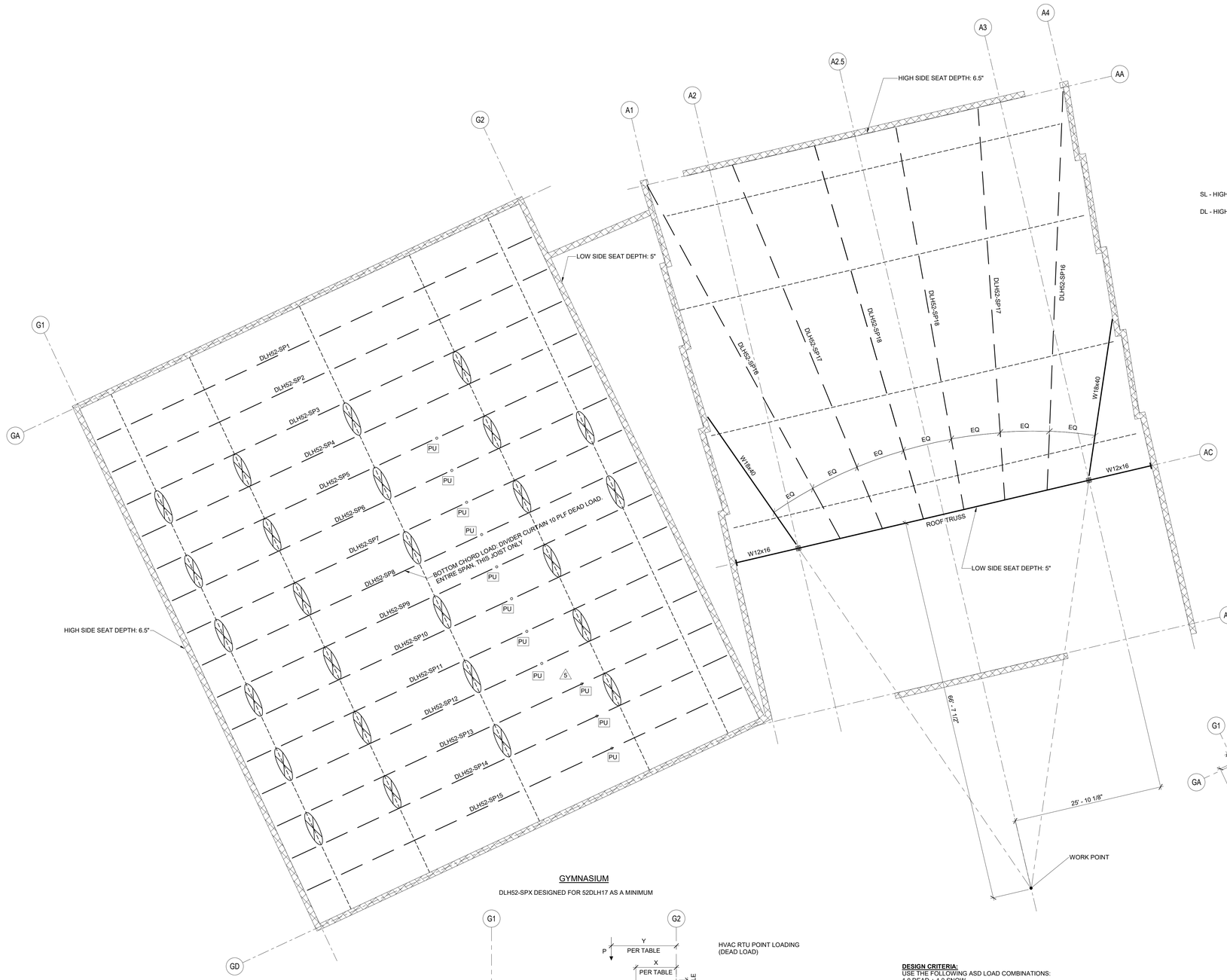
No.	Date	Description
8	11/22/2019	CDP
15	02/10/2020	Conformance Set

DRAWING NAME
GEOMETRY PLAN

PROJECT NO. Project Number

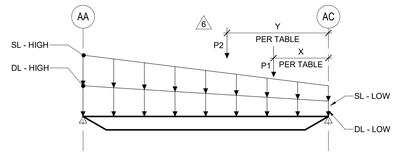
DRAWING NO.
S001


LOW ROOF AT AUDITORIUM
LOW ROOF AT GYM
LOW ROOF AT 2ND FLOOR
LOW ROOF AT 3RD FLOOR
MAIN ROOF
SKYLIGHT POP UP ROOF
HIGH ROOF
LOW ROOF AT 3RD FLOOR
LOW ROOF AT 2ND FLOOR
MAIN ROOF
LOW ROOF AT 2ND FLOOR
LOW ROOF AT 3RD FLOOR



AUDITORIUM

DLH52-SPX DESIGNED FOR 52DLH17 AS A MINIMUM



SNOW LOAD: SEE TABLE FOR HIGH AND LOW POINTS

DEAD LOAD: SEE TABLE FOR HIGH AND LOW POINTS (JOIST SELF WEIGHT NOT INCLUDED, ACCESSORIES & BRIDGING INCLUDED)

TRAPEZOIDAL LOADING TABLE

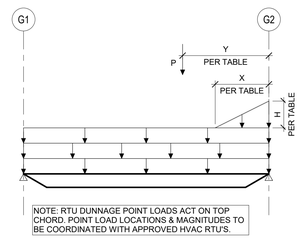
MARK	DL - HIGH	DL - LOW	SL - HIGH	SL - LOW
DLH52-SP16	435	310	370	265
DLH52-SP17	630	315	525	260
DLH52-SP18	595	300	510	255

THEATRICAL EQUIPMENT POINT LOADS (LIVE LOAD)

MARK	P1	X	P2	Y
DLH52-SP16	250 LBS	3' - 9¾"	450 LBS	26' - 7"
DLH52-SP17	260 LBS	4' - 3¼"	450 LBS	25' - 11½"
DLH52-SP18	260 LBS	4' - 7½"	450 LBS	25' - 8¾"

GYMNASIUM

DLH52-SPX DESIGNED FOR 52DLH17 AS A MINIMUM



HVAC RTU POINT LOADING (DEAD LOAD)

SNOW DRIFT LOAD 2 PER TABLE

SNOW DRIFT LOAD 1 PER TABLE

BASE SNOW LOAD: 190 PLF

DEAD LOAD: 260 PLF (JOIST SELF WEIGHT NOT INCLUDED, ACCESSORIES & BRIDGING INCLUDED)

NOTE: RTU DUNNAGE POINT LOADS ACT ON TOP CHORD. POINT LOAD LOCATIONS & MAGNITUDES TO BE COORDINATED WITH APPROVED HVAC RTU'S.

SNOW DRIFT LOAD 1

MARK	MAGNITUDE
DLH52-SP15	191 PLF
DLH52-SP14	26 PLF

SNOW DRIFT LOAD 2

MARK	H	X
DLH52-SP12	245 PLF	8' - 3"
DLH52-SP11	208 PLF	7' - 0"
DLH52-SP10	168 PLF	5' - 8"
DLH52-SP9	111 PLF	3' - 9"
DLH52-SP8	87 PLF	2' -11"
DLH52-SP7	30 PLF	1' - 0"

RTU POINT LOADS

MARK	P	Y
DLH52-SP5 THRU DLH52-SP12	3,200 LBS	30' - 1"
DLH52-SP13 THRU DLH52-SP15	1,800 LBS	25' - 3¼"

DESIGN CRITERIA:
USE THE FOLLOWING ASD LOAD COMBINATIONS:
1.0 DEAD + 1.0 SNOW
1.0 DEAD + 0.75 SNOW + 0.75 LIVE
0.6 DEAD + 1.0 WIND

DEFLECTION CRITERIA: DEFLECTION DUE TO TOTAL LOAD FROM GOVERNING LOAD COMBINATION SHALL NOT EXCEED L/240.
JOISTS TO BE CAMBERED PER STELL JOIST INSTITUTE STANDARDS

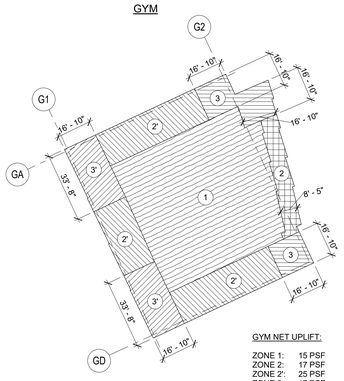
JOISTS AND THEIR END CONNECTIONS ARE TO BE DESIGNED FOR NET UPLIFT DUE TO COMPONENETS & CLADDING WIND FORCES SHOWN ON THIS SHEET.

LEGEND

INDICATES JOIST BAY WHERE DIAGONAL BRIDGING IS TO BE REMOVED AFTER ERECTION TO ACCOMODATE MECH'LS. PERMANENT HORIZONTAL TOP & BOTTOM CHORD BRIDGING IS TO BE DESIGNED FOR THIS CONDITION

NOTES:
1. IN LOCATIONS WHERE DUCTS SHOWN TO INTERSECT JOISTS IN PLAN, JOISTS TO BE DESIGNED WITH SUFFICIENT OPEN AREA TO ACCOMMODATE DUCT SIZE SHOW. ASSUME DUCTS CENTERED WITH BAYS UNLESS NOTED OTHERWISE.
2. JOIST PROVIDER TO SUBMIT FOR REVIEW PE-STAMPED CALCULATIONS SHOWING CUSTOM LOADING DESCRIBED ON THIS STREET HAS BEEN INCORPORATED INTO "SPECIAL JOIST" DESIGN

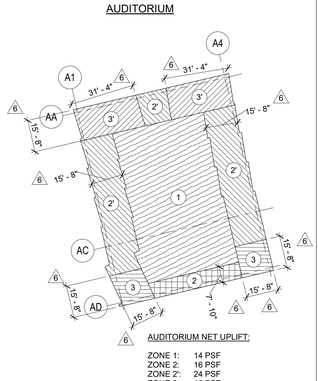
GYM



GYM NET UPLIFT:

ZONE 1: 15 PSF
ZONE 2: 17 PSF
ZONE 2': 25 PSF
ZONE 3: 17 PSF
ZONE 3': 27 PSF

AUDITORIUM



AUDITORIUM NET UPLIFT:

ZONE 1: 14 PSF
ZONE 2: 16 PSF
ZONE 2': 24 PSF
ZONE 3: 16 PSF
ZONE 3': 26 PSF

NOTE: INDICATED LOADS REPRESENT THE NET UPLIFT USING THE LOAD COMBINATION 0.6D+1.0W. JOIST SELF-WEIGHT HAS BEEN EXCLUDED AND SHOULD BE ADDED WITH A 0.6 FACTOR TO COUNTERACT UPLIFT.

WIND NET UPLIFT LOADS

STEEL JOIST LOAD DIAGRAMS
1/8" = 1'-0"
1

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

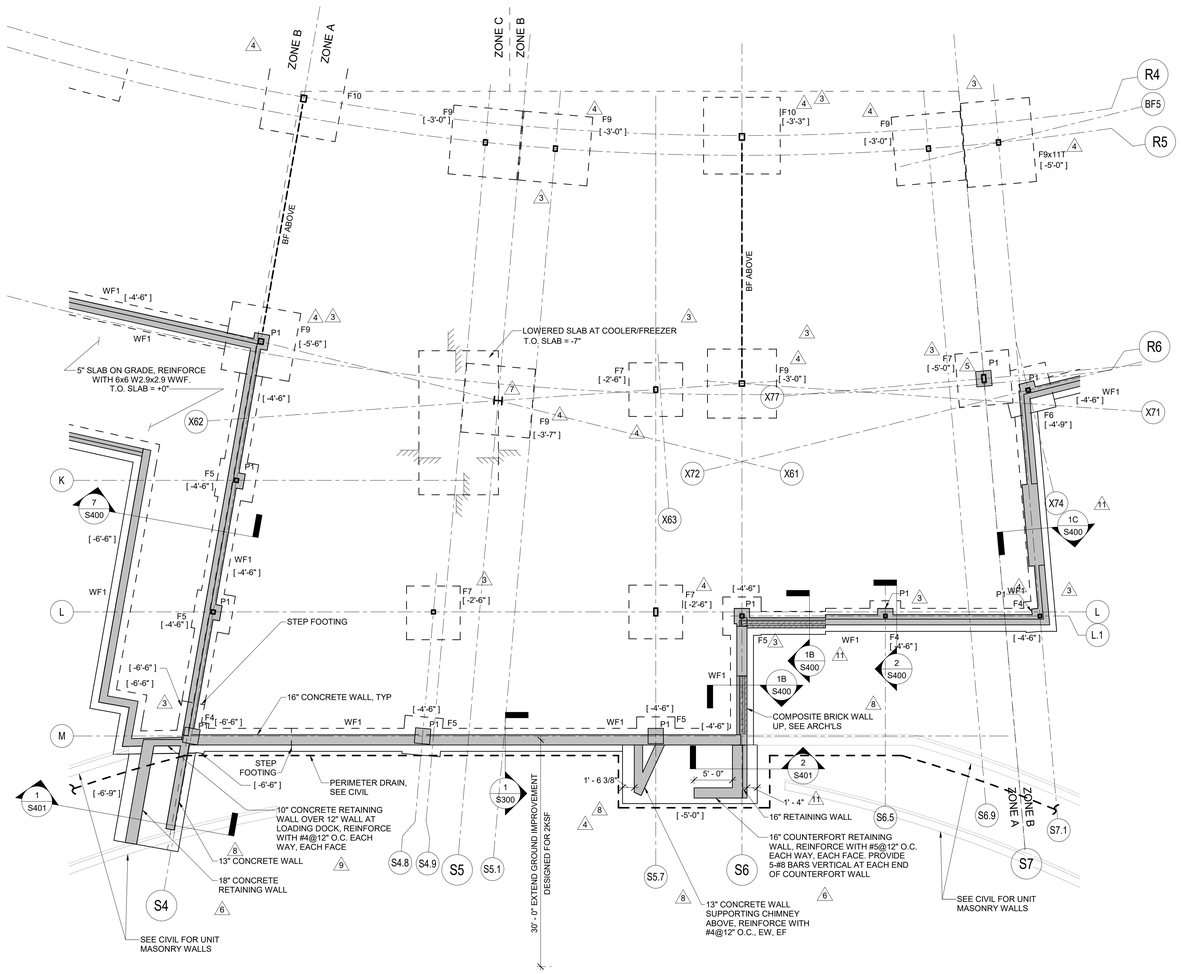
REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
15	02/10/2020	Conformance Set

DRAWING NAME
STEEL JOIST LOAD DIAGRAMS

PROJECT NO. Project Number

DRAWING NO.
S003



FOUNDATION PLAN ZONE A
1/8" = 1'-0" 1

BANDSHELL FOUNDATION PLAN MOVED TO SHEET S502

NOTES:

1. GROUND UNDER FOOTINGS AND SLAB ON GRADE TO BE IMPROVED WITH GROUND IMPROVEMENT (ASSUME AGGREGATE PIERS TYPICALLY, RIGID INCLUSIONS UNDER GYM AND AUDITORIUM).
2. GROUND IMPROVEMENT TO BE DESIGNED BY A MA/LICENSED PE RETAINED BY THE CONTRACTOR FOR THE FOLLOWING CRITERIA:
   A. UNDER SPREAD FOOTINGS: ALLOWABLE BEARING CAPACITY OF 4 KSF. MAXIMUM ALLOWABLE SETTLEMENT = 1" TOTAL, ½" DIFFERENTIAL.
   B. UNDER SLAB ON GRADE: 100 PSF LIVE LOAD + SLAB SELFWEIGHT UNDER THE SLAB ON GRADE. MAXIMUM ALLOWABLE SETTLEMENT = ½" TOTAL, ¼" DIFFERENTIAL.
3. SLAB ON GRADE TO BE CAST ON A VAPOR BARRIER ON A 2' - 0" THICK MAXIMUM LAYER OF COMPACTED STRUCTURAL FILL OR 3/4" CRUSHED STONE. GROUND IMPROVEMENT CONTRACTOR TO PROVIDE & INSTALL ALL MATERIAL UP TO BOTTOM OF SLAB ELEVATION AND UP TO UNDERSIDE OF FOOTING ELEVATION
4. PROJECT ELEVATION = 0' - 0" = 165.5' SURVEY ELEVATION NAVD 88.
5. [X' - XX"] - INDICATES BOTTOM OF FOOTING ELEVATION.
6. BOTTOM OF EXTERIOR FOOTINGS TO BE 4 '- 0" BELOW EXTERIOR GRADE.
7. TOP OF STRAP GRADE BEAMS TO BE 1FT BELOW TOP OF SLAB ON GRADE

GEOTECHNICAL NOTES:
1. DUE TO THE PRESENCE OF ORGANICS, SITE SHOULD BE SURCHARGED PRIOR TO INSTALLING GROUND IMPROVEMENT UNDER ENTIRE BUILDING AREA FOR A DURATION OF 2 TO 3 MONTHS (TO BE CONFIRMED BY SETTLEMENT READINGS) REFER TO GEOTECHNICAL REPORT.

LEGEND

BF ABOVE	INDICATES BRACED FRAME
PSP	INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS.

CONCRETE PILASTER SCHEDULE

MARK	LENGTH	WIDTH	VERT. REINF.	TIE REINF.
P1	2' - 0"	2' - 0"	(15)-#6 BARS	#4@12" O.C.
P2	1' - 9"	2' - 10"	(18)-#6 BARS	#4@12" O.C.
P3	3' - 2"	3' - 2"	(34)-#6 BARS	#4@12" O.C.
P4	2' - 4"	4' - 4"	(34)-#6 BARS	#4@12" O.C.
P5	3' - 9"	2' - 11"	(36)-#6 BARS	#4@12" O.C.

CONCRETE STRAP GRADE BEAM SCHEDULE

MARK	BEAM WIDTH	BEAM DEPTH	TOP REINFORCEMENT	BOTTOM REINFORCEMENT	TRANSVERSE
GRADE BEAM 1	4' - 6"	2' - 0"	(8)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 2	3' - 6"	2' - 0"	(12)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 3	3' - 3"	3' - 9"	(10)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 4	2' - 9"	2' - 9"	(8)-#8 BARS	(6)-#8 BARS	#4@12" O.C.
GRADE BEAM 5	3' - 0"	3' - 6"	(10)-#8 BARS	(18)-#8 BARS	#4@12" O.C.

FOOTING SCHEDULE

MARK	FOOTING LENGTH	FOOTING WIDTH	FOOTING DEPTH	REINFORCEMENT
F3	3' - 0"	3' - 0"	1' - 0"	(4)-#5 BOTTOM, EACH WAY
F4	4' - 0"	4' - 0"	1' - 0"	(5)-#5 BOTTOM, EACH WAY
F5	5' - 0"	5' - 0"	1' - 0"	(6)-#5 BOTTOM, EACH WAY
F6	6' - 0"	6' - 0"	1' - 3"	(7)-#6 BOTTOM, EACH WAY
F6.2	6' - 0"	6' - 0"	2' - 0"	(7)-#6 BOTTOM, EACH WAY
F7	7' - 0"	7' - 0"	1' - 6"	(8)-#6 BOTTOM, EACH WAY
F7.2	7' - 0"	7' - 0"	2' - 0"	(8)-#6 BOTTOM, EACH WAY
F8	8' - 0"	8' - 0"	1' - 9"	(9)-#7 BOTTOM, EACH WAY
F8.2	8' - 0"	8' - 0"	2' - 0"	(9)-#7 BOTTOM, EACH WAY
F8x3	8' - 0"	3' - 0"	1' - 0"	(9)-#4 BOTTOM, SHORT WAY, (3)-#5 BOTTOM, LONG WAY
F9	9' - 0"	9' - 0"	2' - 0"	(10)-#7 BOTTOM, EACH WAY
F9.3T	9' - 0"	9' - 0"	3' - 0"	(10)-#7 TOP AND BOTTOM, EACH WAY
F9T	9' - 0"	9' - 0"	2' - 0"	(10)-#7 TOP AND BOTTOM, EACH WAY
F9x11T	9' - 0"	11' - 0"	4' - 0"	(10)-#7 TOP AND BOTTOM, SHORT WAY, (13)-#7 TOP AND BOTTOM, SHORT WAY
F10	10' - 0"	10' - 0"	2' - 3"	(11)-#7 BOTTOM, EACH WAY
F10x3	10' - 0"	3' - 0"	1' - 0"	(11)-#4 BOTTOM, SHORT WAY, (3)-#5 BOTTOM, LONG WAY
F11	11' - 0"	11' - 0"	2' - 6"	(13)-#7 BOTTOM, EACH WAY
F11T	11' - 0"	11' - 0"	2' - 6"	(13)-#7 TOP AND BOTTOM, EACH WAY
WF1	CONT.	3' - 0"	1' - 0"	(3)-#5 BOTTOM, LONG WAY, #4@12" O.C. BOTTOM,TRANSVERSE
WF2	CONT.	4' - 0"	1' - 0"	(4)-#5 BOTTOM, LONG WAY, #4@12" O.C. BOTTOM,TRANSVERSE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY SITE PACKAGE

MAY 10, 2019

REVISIONS

No.	Date	Description
1	5/17/2019	100% DD
3	6/07/2019	ESP Addem. 2
4	8/09/2019	ECSP
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
9	12/04/2019	Adden. 5
11	12/23/2019	PR 20
15	02/10/2020	Conformance Set

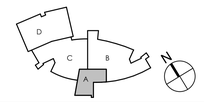
DRAWING NAME

FOUNDATION PLAN-A

PROJECT NO. Project Number

DRAWING NO.

S101A



NOTES:

1. GROUND UNDER FOOTINGS AND SLAB ON GRADE TO BE IMPROVED WITH GROUND IMPROVEMENT (ASSUME AGGREGATE PIERS TYPICALLY, RIGID INCLUSIONS UNDER GYM AND AUDITORIUM).
2. GROUND IMPROVEMENT TO BE DESIGNED BY A MA LICENSED PE RETAINED BY THE CONTRACTOR FOR THE FOLLOWING CRITERIA:
   A. UNDER SPREAD FOOTINGS: ALLOWABLE BEARING CAPACITY OF 4 KSF. MAXIMUM ALLOWABLE SETTLEMENT = 1" TOTAL, ½" DIFFERENTIAL.
   B. UNDER SLAB ON GRADE: 100 PSF LIVE LOAD + SLAB SELFWEIGHT UNDER THE SLAB ON GRADE. MAXIMUM ALLOWABLE SETTLEMENT = ½" TOTAL, ¼" DIFFERENTIAL.
3. SLAB ON GRADE TO BE CAST ON A VAPOR BARRIER ON A 2' - 0" THICK MAXIMUM LAYER OF COMPACTED STRUCTURAL FILL OR 3/4" CRUSHED STONE. GROUND IMPROVEMENT CONTRACTOR TO PROVIDE & INSTALL ALL MATERIAL UP TO BOTTOM OF SLAB ELEVATION AND UP TO UNDERSIDE OF FOOTING ELEVATION
4. PROJECT ELEVATION = 0' - 0" = 165.5' SURVEY ELEVATION NAVD 88.
5. [X' - XX"] - INDICATES BOTTOM OF FOOTING ELEVATION.
6. BOTTOM OF EXTERIOR FOOTINGS TO BE 4 '- 0" BELOW EXTERIOR GRADE.
7. TOP OF STRAP GRADE BEAMS TO BE 1FT BELOW TOP OF SLAB ON GRADE

GEOTECHNICAL NOTES:
1. DUE TO THE PRESENCE OF ORGANICS, SITE SHOULD BE SURCHARGED PRIOR TO INSTALLING GROUND IMPROVEMENT UNDER ENTIRE BUILDING AREA FOR A DURATION OF 2 TO 3 MONTHS (TO BE CONFIRMED BY SETTLEMENT READINGS) REFER TO GEOTECHNICAL REPORT.

LEGEND

BF ABOVE — INDICATES BRACED FRAME

PSP — INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS.

FOOTING SCHEDULE

MARK	FOOTING LENGTH	FOOTING WIDTH	FOOTING DEPTH	REINFORCEMENT
F3	3' - 0"	3' - 0"	1' - 0"	(4)-#5 BOTTOM, EACH WAY
F4	4' - 0"	4' - 0"	1' - 0"	(5)-#5 BOTTOM, EACH WAY
F5	5' - 0"	5' - 0"	1' - 0"	(6)-#5 BOTTOM, EACH WAY
F6	6' - 0"	6' - 0"	1' - 3"	(7)-#6 BOTTOM, EACH WAY
F6.2	6' - 0"	6' - 0"	2' - 0"	(7)-#6 BOTTOM, EACH WAY
F7	7' - 0"	7' - 0"	1' - 6"	(8)-#6 BOTTOM, EACH WAY
F7.2	7' - 0"	7' - 0"	2' - 0"	(8)-#6 BOTTOM, EACH WAY
F8	8' - 0"	8' - 0"	1' - 9"	(9)-#7 BOTTOM, EACH WAY
F8.2	8' - 0"	8' - 0"	2' - 0"	(9)-#7 BOTTOM, EACH WAY
F8x3	8' - 0"	3' - 0"	1' - 0"	(9)-#4 BOTTOM, SHORT WAY, (3)-#5 BOTTOM, LONG WAY
F9	9' - 0"	9' - 0"	2' - 0"	(10)-#7 BOTTOM, EACH WAY
F9.3T	9' - 0"	9' - 0"	3' - 0"	(10)-#7 TOP AND BOTTOM, EACH WAY
F9T	9' - 0"	9' - 0"	2' - 0"	(10)-#7 TOP AND BOTTOM, EACH WAY
F9x11T	9' - 0"	11' - 0"	4' - 0"	(10)-#7 TOP AND BOTTOM, SHORT WAY, (13)-#7 TOP AND BOTTOM, SHORT WAY
F10	10' - 0"	10' - 0"	2' - 3"	(11)-#7 BOTTOM, EACH WAY
F10x3	10' - 0"	3' - 0"	1' - 0"	(11)-#4 BOTTOM, SHORT WAY, (3)-#5 BOTTOM, LONG WAY
F11	11' - 0"	11' - 0"	2' - 6"	(13)-#7 BOTTOM, EACH WAY
F11T	11' - 0"	11' - 0"	2' - 6"	(13)-#7 TOP AND BOTTOM, EACH WAY
WF1	CONT.	3' - 0"	1' - 0"	(3)-#5 BOTTOM, LONG WAY, #4@12" O.C. BOTTOM,TRANSVERSE
WF2	CONT.	4' - 0"	1' - 0"	(4)-#5 BOTTOM, LONG WAY, #4@12" O.C. BOTTOM,TRANSVERSE

CONCRETE STRAP GRADE BEAM SCHEDULE

MARK	BEAM WIDTH	BEAM DEPTH	TOP REINFORCEMENT	BOTTOM REINFORCEMENT	TRANSVERSE
GRADE BEAM 1	4' - 6"	2' - 0"	(8)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 2	3' - 6"	2' - 0"	(12)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 3	3' - 3"	3' - 9"	(10)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 4	2' - 9"	2' - 9"	(8)-#8 BARS	(6)-#8 BARS	#4@12" O.C.
GRADE BEAM 5	3' - 0"	3' - 6"	(10)-#8 BARS	(18)-#8 BARS	#4@12" O.C.

CONCRETE PILASTER SCHEDULE

MARK	LENGTH	WIDTH	VERT. REINF.	TIE REINF.
P1	2' - 0"	2' - 0"	(15)-#6 BARS	#4@12" O.C.
P2	1' - 9"	2' - 10"	(18)-#6 BARS	#4@12" O.C.
P3	3' - 2"	3' - 2"	(34)-#6 BARS	#4@12" O.C.
P4	2' - 4"	4' - 4"	(34)-#6 BARS	#4@12" O.C.
P5	3' - 9"	2' - 11"	(36)-#6 BARS	#4@12" O.C.

FOUNDATION PLAN ZONE B 1
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
EARLY SITE PACKAGE
MAY 10, 2019

REVISIONS

No.	Date	Description
1	5/17/2019	100% DD
3	6/07/2019	ESP Addem. 2
4	8/09/2019	ECSP
5	8/27/2019	Addend. 4
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
15	02/10/2020	Conformance Set

DRAWING NAME
FOUNDATION PLAN-B

PROJECT NO. Project Number

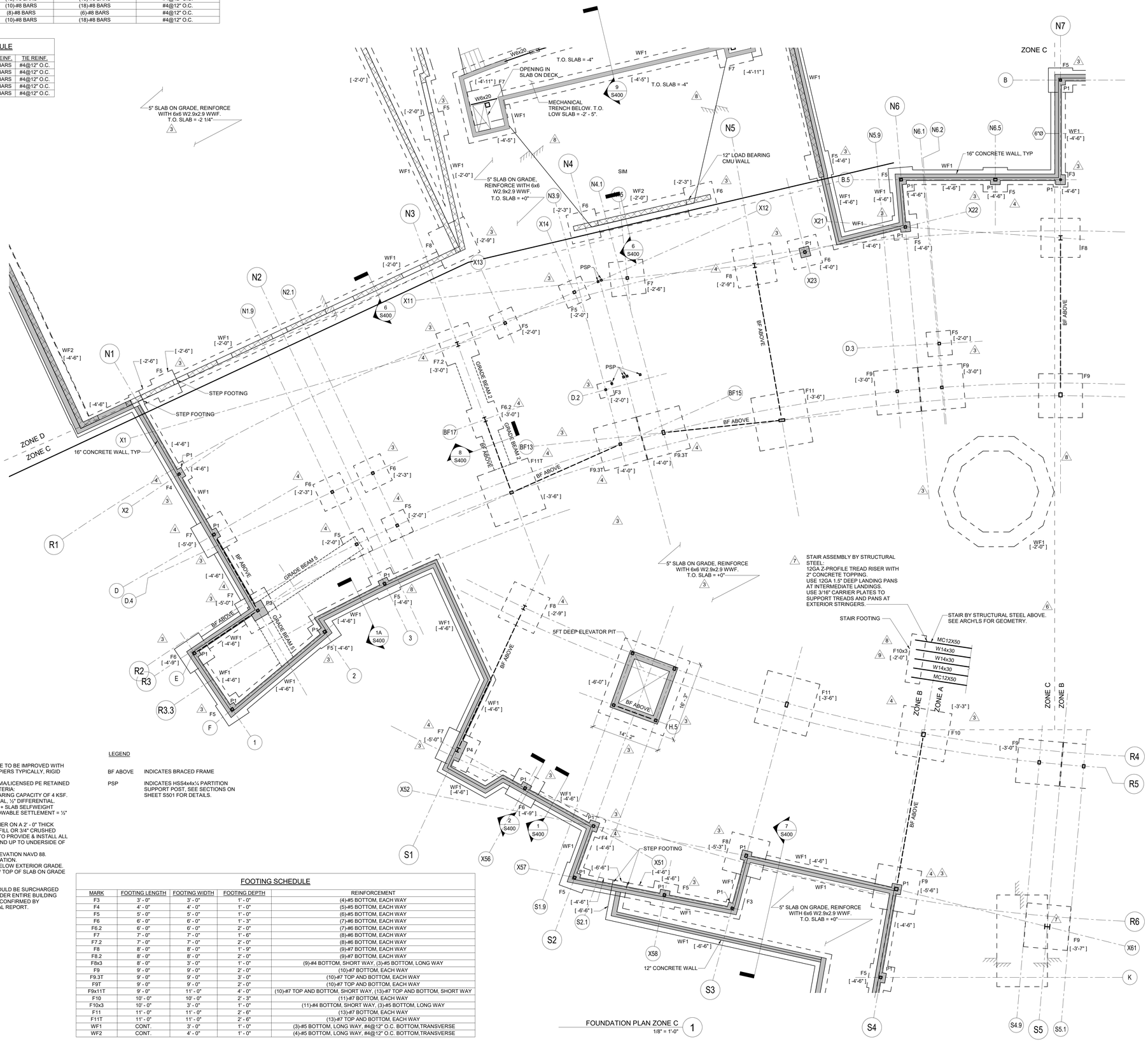
DRAWING NO.
S101B

CONCRETE STRAP GRADE BEAM SCHEDULE

MARK	BEAM WIDTH	BEAM DEPTH	TOP REINFORCEMENT	BOTTOM REINFORCEMENT	TRANSVERSE
GRADE BEAM 1	4' - 6"	2' - 0"	(8)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 2	3' - 6"	2' - 0"	(12)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 3	3' - 3"	3' - 9"	(10)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 4	2' - 9"	2' - 9"	(8)-#8 BARS	(6)-#8 BARS	#4@12" O.C.
GRADE BEAM 5	3' - 0"	3' - 6"	(10)-#8 BARS	(18)-#8 BARS	#4@12" O.C.

CONCRETE PILASTER SCHEDULE

MARK	LENGTH	WIDTH	VERT. REINF.	TIE REINF.
P1	2' - 0"	2' - 0"	(15)-#6 BARS	#4@12" O.C.
P2	1' - 9"	2' - 10"	(18)-#6 BARS	#4@12" O.C.
P3	3' - 2"	3' - 2"	(34)-#6 BARS	#4@12" O.C.
P4	2' - 4"	4' - 4"	(34)-#6 BARS	#4@12" O.C.
P5	3' - 9"	2' - 11"	(36)-#6 BARS	#4@12" O.C.



FOUNDATION PLAN ZONE C 1
1/8" = 1'-0"

NOTES:

1. GROUND UNDER FOOTINGS AND SLAB ON GRADE TO BE IMPROVED WITH GROUND IMPROVEMENT (ASSUME AGGREGATE PIERS TYPICALLY, RIGID INCLUSIONS UNDER GYM AND AUDITORIUM).
2. GROUND IMPROVEMENT TO BE DESIGNED BY A MA/LICENSED PE RETAINED BY THE CONTRACTOR FOR THE FOLLOWING CRITERIA:
   A. UNDER SPREAD FOOTINGS: ALLOWABLE BEARING CAPACITY OF 4 KSF. MAXIMUM ALLOWABLE SETTLEMENT = 1" TOTAL, ½" DIFFERENTIAL.
   B. UNDER SLAB ON GRADE: 100 PSF LIVE LOAD + SLAB SELFWEIGHT UNDER THE SLAB ON GRADE. MAXIMUM ALLOWABLE SETTLEMENT = ½" TOTAL, ¼" DIFFERENTIAL.
3. SLAB ON GRADE TO BE CAST ON A VAPOR BARRIER ON A 2' - 0" THICK MAXIMUM LAYER OF COMPACTED STRUCTURAL FILL OR 3/4" CRUSHED STONE. GROUND IMPROVEMENT CONTRACTOR TO PROVIDE & INSTALL ALL MATERIAL UP TO BOTTOM OF SLAB ELEVATION AND UP TO UNDERSIDE OF FOOTING ELEVATION
4. PROJECT ELEVATION = 0' - 0" = 165.5' SURVEY ELEVATION NAVD 88.
5. [X' - XX"] - INDICATES BOTTOM OF FOOTING ELEVATION.
6. BOTTOM OF EXTERIOR FOOTINGS TO BE 4 '- 0" BELOW EXTERIOR GRADE.
7. TOP OF STRAP GRADE BEAMS TO BE 1FT BELOW TOP OF SLAB ON GRADE

GEOTECHNICAL NOTES:

1. DUE TO THE PRESENCE OF ORGANICS, SITE SHOULD BE SURCHARGED PRIOR TO INSTALLING GROUND IMPROVEMENT UNDER ENTIRE BUILDING AREA FOR A DURATION OF 2 TO 3 MONTHS (TO BE CONFIRMED BY SETTLEMENT READINGS) REFER TO GEOTECHNICAL REPORT.

LEGEND

BF ABOVE — INDICATES BRACED FRAME

PSP — INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS.

FOOTING SCHEDULE

MARK	FOOTING LENGTH	FOOTING WIDTH	FOOTING DEPTH	REINFORCEMENT
F3	3' - 0"	3' - 0"	1' - 0"	(4)-#5 BOTTOM, EACH WAY
F4	4' - 0"	4' - 0"	1' - 0"	(5)-#5 BOTTOM, EACH WAY
F5	5' - 0"	5' - 0"	1' - 0"	(6)-#5 BOTTOM, EACH WAY
F6	6' - 0"	6' - 0"	1' - 3"	(7)-#6 BOTTOM, EACH WAY
F6.2	6' - 0"	6' - 0"	2' - 0"	(7)-#6 BOTTOM, EACH WAY
F7	7' - 0"	7' - 0"	1' - 6"	(8)-#6 BOTTOM, EACH WAY
F7.2	7' - 0"	7' - 0"	2' - 0"	(8)-#6 BOTTOM, EACH WAY
F8	8' - 0"	8' - 0"	1' - 9"	(9)-#7 BOTTOM, EACH WAY
F8.2	8' - 0"	8' - 0"	2' - 0"	(9)-#7 BOTTOM, EACH WAY
F8x3	8' - 0"	3' - 0"	1' - 0"	(9)-#4 BOTTOM, SHORT WAY, (3)-#5 BOTTOM, LONG WAY
F9	9' - 0"	9' - 0"	2' - 0"	(10)-#7 BOTTOM, EACH WAY
F9.3T	9' - 0"	9' - 0"	3' - 0"	(10)-#7 TOP AND BOTTOM, EACH WAY
F9T	9' - 0"	9' - 0"	2' - 0"	(10)-#7 TOP AND BOTTOM, EACH WAY
F9x11T	9' - 0"	11' - 0"	4' - 0"	(10)-#7 TOP AND BOTTOM, SHORT WAY, (13)-#7 TOP AND BOTTOM, SHORT WAY
F10	10' - 0"	10' - 0"	2' - 3"	(11)-#7 BOTTOM, EACH WAY
F10x3	10' - 0"	3' - 0"	1' - 0"	(11)-#4 BOTTOM, SHORT WAY, (3)-#5 BOTTOM, LONG WAY
F11	11' - 0"	11' - 0"	2' - 6"	(13)-#7 BOTTOM, EACH WAY
F11T	11' - 0"	11' - 0"	2' - 6"	(13)-#7 TOP AND BOTTOM, EACH WAY
WF1	CONT.	3' - 0"	1' - 0"	(3)-#5 BOTTOM, LONG WAY, #4@12" O.C. BOTTOM,TRANSVERSE
WF2	CONT.	4' - 0"	1' - 0"	(4)-#5 BOTTOM, LONG WAY, #4@12" O.C. BOTTOM,TRANSVERSE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY SITE PACKAGE

MAY 10, 2019

REVISIONS

No.	Date	Description
1	5/17/2019	100% DD
3	6/07/2019	ESP Adden. 2
4	8/09/2019	ECSP
6	9/09/2019	PR 12
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
9	12/04/2019	Adden. 5
15	02/10/2020	Conformance Set

DRAWING NAME

FOUNDATION PLAN-C

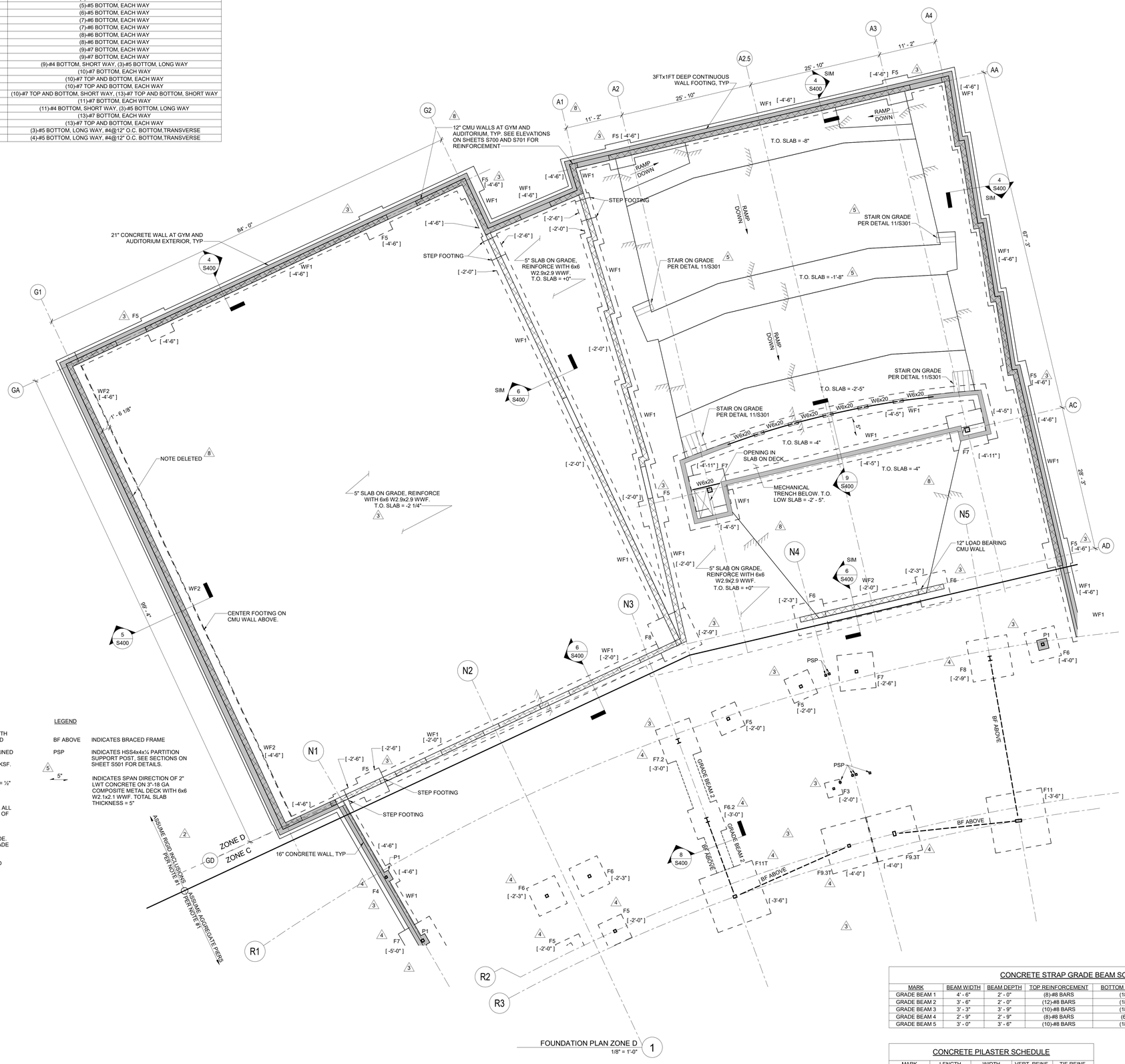
PROJECT NO. Project Number

DRAWING NO.

S101C

FOOTING SCHEDULE

MARK	FOOTING LENGTH	FOOTING WIDTH	FOOTING DEPTH	REINFORCEMENT
F3	3' - 0"	3' - 0"	1' - 0"	(4)-#5 BOTTOM, EACH WAY
F4	4' - 0"	4' - 0"	1' - 0"	(5)-#5 BOTTOM, EACH WAY
F5	5' - 0"	5' - 0"	1' - 0"	(6)-#5 BOTTOM, EACH WAY
F6	6' - 0"	6' - 0"	1' - 3"	(7)-#6 BOTTOM, EACH WAY
F6.2	6' - 0"	6' - 0"	2' - 0"	(7)-#6 BOTTOM, EACH WAY
F7	7' - 0"	7' - 0"	1' - 6"	(8)-#6 BOTTOM, EACH WAY
F7.2	7' - 0"	7' - 0"	2' - 0"	(8)-#6 BOTTOM, EACH WAY
F8	8' - 0"	8' - 0"	1' - 9"	(9)-#7 BOTTOM, EACH WAY
F8.2	8' - 0"	8' - 0"	2' - 0"	(9)-#7 BOTTOM, EACH WAY
F8x3	8' - 0"	3' - 0"	1' - 0"	(9)-#4 BOTTOM, SHORT WAY, (3)-#5 BOTTOM, LONG WAY
F9	9' - 0"	9' - 0"	2' - 0"	(10)-#7 BOTTOM, EACH WAY
F9.3T	9' - 0"	9' - 0"	3' - 0"	(10)-#7 TOP AND BOTTOM, EACH WAY
F9T	9' - 0"	9' - 0"	2' - 0"	(10)-#7 TOP AND BOTTOM, EACH WAY
F9x11T	9' - 0"	11' - 0"	4' - 0"	(10)-#7 TOP AND BOTTOM, SHORT WAY, (13)-#7 TOP AND BOTTOM, SHORT WAY
F10	10' - 0"	10' - 0"	2' - 3"	(11)-#7 BOTTOM, EACH WAY
F10x3	10' - 0"	3' - 0"	1' - 0"	(11)-#4 BOTTOM, SHORT WAY, (3)-#5 BOTTOM, LONG WAY
F11	11' - 0"	11' - 0"	2' - 6"	(13)-#7 BOTTOM, EACH WAY
F11T	11' - 0"	11' - 0"	2' - 6"	(13)-#7 TOP AND BOTTOM, EACH WAY
WF1	CONT.	3' - 0"	1' - 0"	(3)-#5 BOTTOM, LONG WAY, #4@12" O.C. BOTTOM,TRANSVERSE
WF2	CONT.	4' - 0"	1' - 0"	(4)-#5 BOTTOM, LONG WAY, #4@12" O.C. BOTTOM,TRANSVERSE



NOTES:

1. GROUND UNDER FOOTINGS AND SLAB ON GRADE TO BE IMPROVED WITH GROUND IMPROVEMENT (ASSUME AGGREGATE PIERS TYPICALLY, RIGID INCLUSIONS UNDER GYM AND AUDITORIUM).
2. GROUND IMPROVEMENT TO BE DESIGNED BY A MA/LICENSED PE RETAINED BY THE CONTRACTOR FOR THE FOLLOWING CRITERIA:
   A. UNDER SPREAD FOOTINGS: ALLOWABLE BEARING CAPACITY OF 4 KSF. MAXIMUM ALLOWABLE SETTLEMENT = 1" TOTAL, ½" DIFFERENTIAL.
   B. UNDER SLAB ON GRADE: 100 PSF LIVE LOAD + SLAB SELFWEIGHT UNDER THE SLAB ON GRADE. MAXIMUM ALLOWABLE SETTLEMENT = ½" TOTAL, ¼" DIFFERENTIAL.
3. SLAB ON GRADE TO BE CAST ON A VAPOR BARRIER ON A 2' - 0" THICK MAXIMUM LAYER OF COMPACTED STRUCTURAL FILL OR 3/4" CRUSHED STONE. GROUND IMPROVEMENT CONTRACTOR TO PROVIDE & INSTALL ALL MATERIAL UP TO BOTTOM OF SLAB ELEVATION AND UP TO UNDERSIDE OF FOOTING ELEVATION
4. PROJECT ELEVATION = 0' - 0" = 165.5' SURVEY ELEVATION NAVD 88.
5. [X' - XX"] - INDICATES BOTTOM OF FOOTING ELEVATION.
6. BOTTOM OF EXTERIOR FOOTINGS TO BE 4 '- 0" BELOW EXTERIOR GRADE.
7. TOP OF STRAP GRADE BEAMS TO BE 1FT BELOW TOP OF SLAB ON GRADE

GEOTECHNICAL NOTES:
1. DUE TO THE PRESENCE OF ORGANICS, SITE SHOULD BE SURCHARGED PRIOR TO INSTALLING GROUND IMPROVEMENT UNDER ENTIRE BUILDING AREA FOR A DURATION OF 2 TO 3 MONTHS (TO BE CONFIRMED BY SETTLEMENT READINGS) REFER TO GEOTECHNICAL REPORT.

LEGEND

BF ABOVE	INDICATES BRACED FRAME
PSP	INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS.
5"	INDICATES SPAN DIRECTION OF 2" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 5"

CONCRETE STRAP GRADE BEAM SCHEDULE

MARK	BEAM WIDTH	BEAM DEPTH	TOP REINFORCEMENT	BOTTOM REINFORCEMENT	TRANSVERSE
GRADE BEAM 1	4' - 6"	2' - 0"	(8)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 2	3' - 6"	2' - 0"	(12)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 3	3' - 3"	3' - 9"	(10)-#8 BARS	(18)-#8 BARS	#4@12" O.C.
GRADE BEAM 4	2' - 9"	2' - 9"	(8)-#8 BARS	(6)-#8 BARS	#4@12" O.C.
GRADE BEAM 5	3' - 0"	3' - 6"	(10)-#8 BARS	(18)-#8 BARS	#4@12" O.C.

CONCRETE PILASTER SCHEDULE

MARK	LENGTH	WIDTH	VERT. REINF.	TIE REINF.
P1	2' - 0"	2' - 0"	(15)-#6 BARS	#4@12" O.C.
P2	1' - 9"	2' - 10"	(18)-#6 BARS	#4@12" O.C.
P3	3' - 2"	3' - 2"	(34)-#6 BARS	#4@12" O.C.
P4	2' - 4"	4' - 4"	(34)-#6 BARS	#4@12" O.C.
P5	3' - 9"	2' - 11"	(36)-#6 BARS	#4@12" O.C.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY SITE PACKAGE

MAY 10, 2019

REVISIONS

No.	Date	Description
1	5/17/2019	100% DD
2	5/20/2019	ESP Adden. 1
3	6/07/2019	ESP Adden. 2
4	8/09/2019	ECSP
5	8/27/2019	Addend. 4
8	11/22/2019	CDP
15	02/10/2020	Conformance Set

DRAWING NAME

FOUNDATION PLAN-D

PROJECT NO. Project Number

DRAWING NO.

S101D

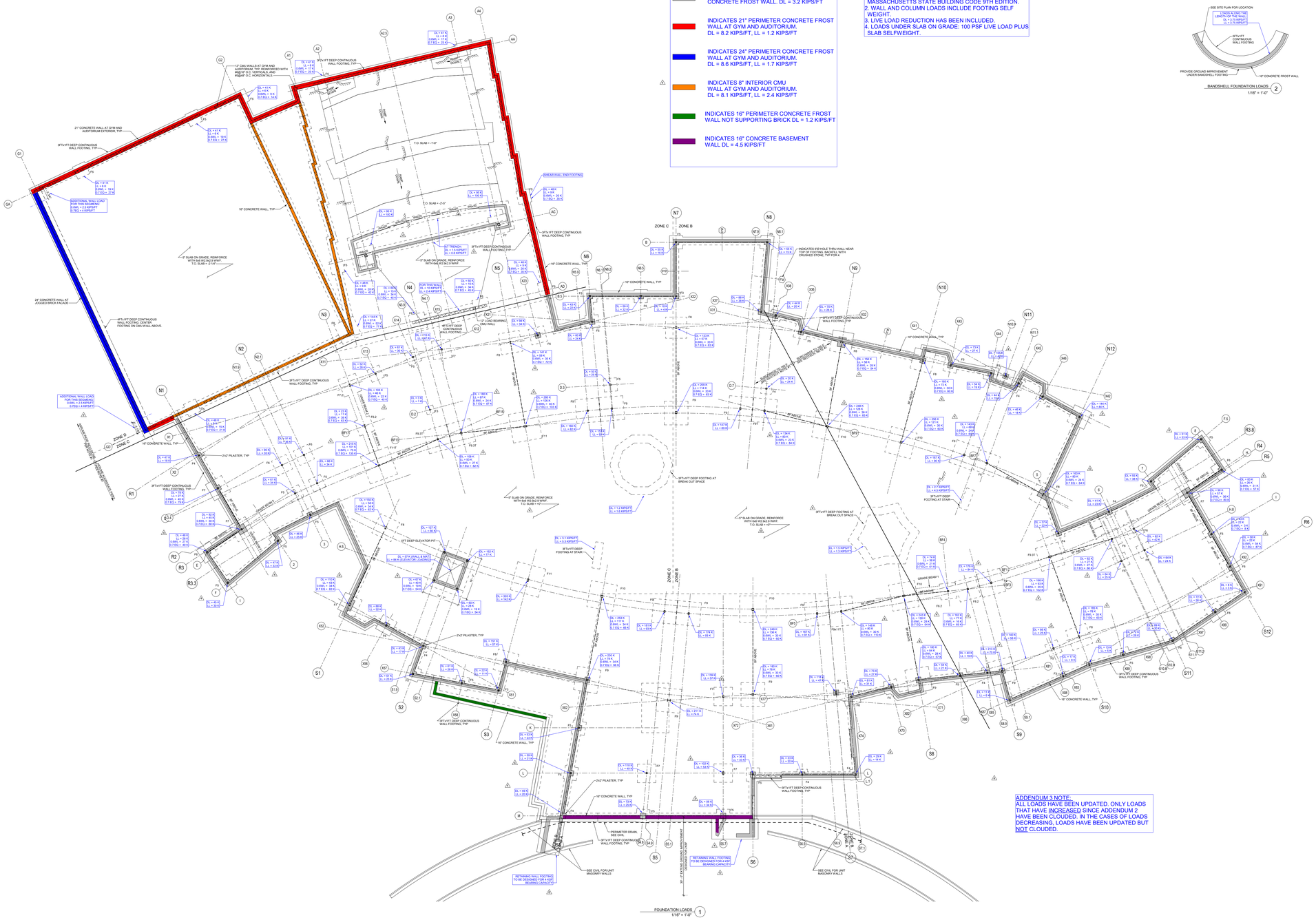
LEGEND:

- INDICATES 16" TYPICAL PERIMETER CONCRETE FROST WALL. DL = 3.2 KIPS/FT
- INDICATES 21" PERIMETER CONCRETE FROST WALL AT GYM AND AUDITORIUM. DL = 8.2 KIPS/FT, LL = 1.2 KIPS/FT
- INDICATES 24" PERIMETER CONCRETE FROST WALL AT GYM AND AUDITORIUM. DL = 8.6 KIPS/FT, LL = 1.7 KIPS/FT
- INDICATES 8" INTERIOR CMU WALL AT GYM AND AUDITORIUM. DL = 8.1 KIPS/FT, LL = 2.4 KIPS/FT
- INDICATES 16" PERIMETER CONCRETE FROST WALL NOT SUPPORTING BRICK DL = 1.2 KIPS/FT
- INDICATES 16" CONCRETE BASEMENT WALL DL = 4.5 KIPS/FT

NOTES:

1. LOADS PROVIDED ARE SERVICE LEVEL DEAD (DL), LIVE (LL), WIND (WL), AND SEISMIC (EQ) LOADS BASED ON THE MASSACHUSETTS STATE BUILDING CODE 9TH EDITION.
2. WALL AND COLUMN LOADS INCLUDE FOOTING SELF WEIGHT.
3. LIVE LOAD REDUCTION HAS BEEN INCLUDED.
4. LOADS UNDER SLAB ON GRADE: 100 PSF LIVE LOAD PLUS SLAB SELFWEIGHT.

BANDSHELL FOUNDATION LOADS 2
1/16" = 1'-0"



INDICATES Ø18 HOLE THRU WALL NEAR TOP OF FOOTING. BACKFILL WITH CRUSHED STONE. TYP FOR K

ADDENDUM 3 NOTE:
ALL LOADS HAVE BEEN UPDATED. ONLY LOADS THAT HAVE INCREASED SINCE ADDENDUM 2 HAVE BEEN CLOUDED. IN THE CASES OF LOADS DECREASING, LOADS HAVE BEEN UPDATED BUT NOT CLOUDED.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY SITE PACKAGE

MAY 10, 2019

REVISIONS

No.	Date	Description
3	6/07/2019	ESP Addem. 2
4	8/09/2019	ECSP
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
15	02/10/2020	Conformance Set

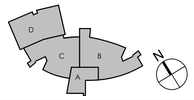
DRAWING NAME

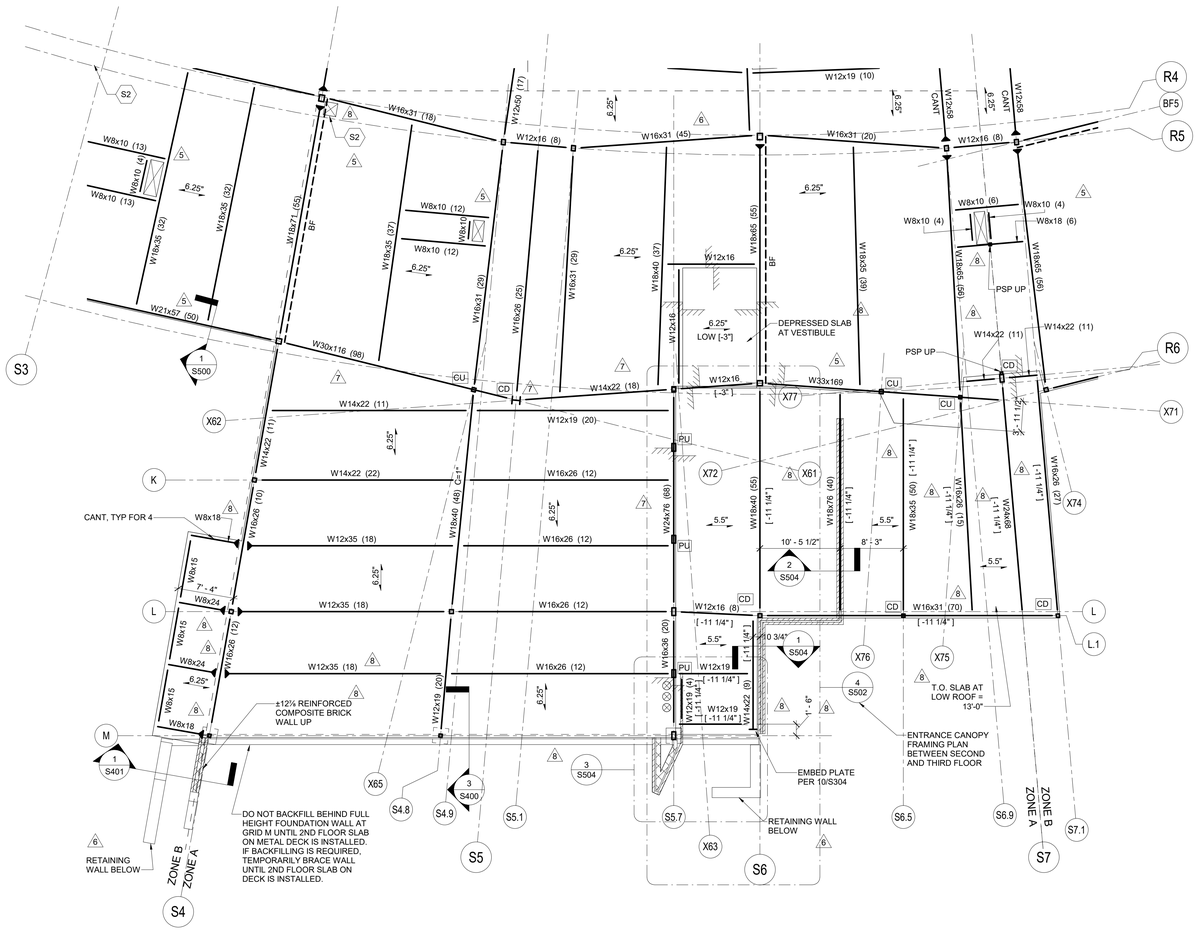
FOUNDATION LOADS FOR GROUND IMPROVEMENT

PROJECT NO. Project Number

DRAWING NO.

S101L 3





FLOOR 2 FRAMING PLAN ZONE A 1
1/8" = 1'-0"

NOTES:

1. T.O. SLAB = 14'-0", UNO
2. T.O. STEEL =13'-5¾" , UNO IN PLAN THUS [+/-X"]
3. SEE ARCH'L DRAWINGS FOR EDGE OF SLAB GEOMETRY

LEGEND

6.25	INDICATES SPAN DIRECTION OF 3¼" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 6¼"
5.5	INDICATES SPAN DIRECTION OF 2½" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 5½"
R3	INDICATES SPAN DIRECTION OF 3" 18GA ROOF DECK
BF	INDICATES BRACED FRAME
CANT	INDICATES CANTILEVERED BEAM
	INDICATES MOMENT CONNECTION
	INDICATES STEEL BEAM
CU CD	INDICATES COLUMN UP OR COLUMN DOWN, RESPECTIVELY.
HU HD	INDICATES 1"x5" 50 KSI AESS PLATE HANGER UP OR HANGER DOWN, RESPECTIVELY. ORIENTATION OF PLATE IS INDICATED BY LINE IN CIRCLE.
BPx	INDICATES BEAM POCKET INTO CMU, SEE DETAIL 5/S303.
(#)	INDICATES NUMBER OF ¾"Ø x 4½" LONG HEADED SHEAR STUDS UNIFORMLY SPACED ON BEAM. UNLESS INDICATED, PROVIDE 1 STUD EVERY 1 FOOT AT BEAMS SUPPORTING SLAB ON METAL DECK.
PSP	INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS.
S2	INDICATES SLAB OPENING TO BE REINFORCED PER DETAIL 3/S304, OPTION 2.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

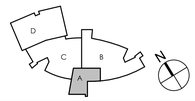
REVISIONS

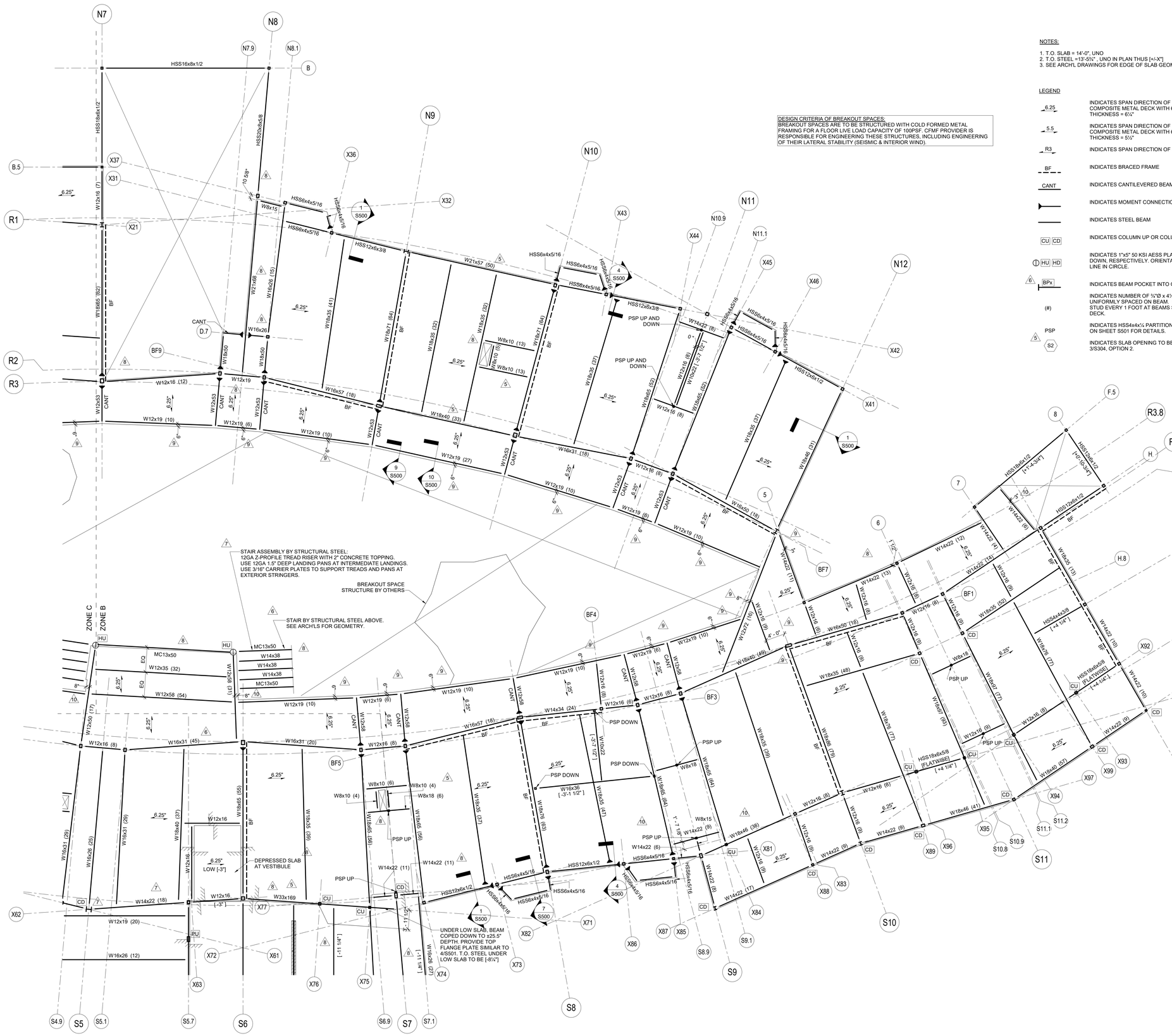
No.	Date	Description
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
15	02/10/2020	Conformance Set

DRAWING NAME
FLOOR 2 FRAMING PLAN-A

PROJECT NO. Project Number

DRAWING NO.
S102A





DESIGN CRITERIA OF BREAKOUT SPACES:
BREAKOUT SPACES ARE TO BE STRUCTURED WITH COLD FORMED METAL FRAMING FOR A FLOOR LIVE LOAD CAPACITY OF 100PSF. CFMF PROVIDER IS RESPONSIBLE FOR ENGINEERING THESE STRUCTURES, INCLUDING ENGINEERING OF THEIR LATERAL STABILITY (SEISMIC & INTERIOR WIND).

NOTES:

1. T.O. SLAB = 14'-0", UNO
2. T.O. STEEL =13'-5¼" , UNO IN PLAN THUS [+/-X"]
3. SEE ARCH'L DRAWINGS FOR EDGE OF SLAB GEOMETRY

LEGEND

- 6.25 — INDICATES SPAN DIRECTION OF 3¼" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 6¼"
- 5.5 — INDICATES SPAN DIRECTION OF 2½" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 5½"
- R3 — INDICATES SPAN DIRECTION OF 3" 18GA ROOF DECK
- BF — INDICATES BRACED FRAME
- CANT — INDICATES CANTILEVERED BEAM
- INDICATES MOMENT CONNECTION
- INDICATES STEEL BEAM
- CU CD — INDICATES COLUMN UP OR COLUMN DOWN, RESPECTIVELY.
- HU HD — INDICATES 1"x5" 50 KSI AESS PLATE HANGER UP OR HANGER DOWN, RESPECTIVELY. ORIENTATION OF PLATE IS INDICATED BY LINE IN CIRCLE.
- 6 BPx — INDICATES BEAM POCKET INTO CMU, SEE DETAIL 5/S303. 6
- (#) — INDICATES NUMBER OF ¾"Ø x 4½" LONG HEADED SHEAR STUDS UNIFORMLY SPACED ON BEAM. UNLESS INDICATED, PROVIDE 1 STUD EVERY 1 FOOT AT BEAMS SUPPORTING SLAB ON METAL DECK.
- 5 PSP — INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS.
- 5 S2 — INDICATES SLAB OPENING TO BE REINFORCED PER DETAIL 3/S304, OPTION 2.

FLOOR 2 FRAMING PLAN ZONE B 1
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

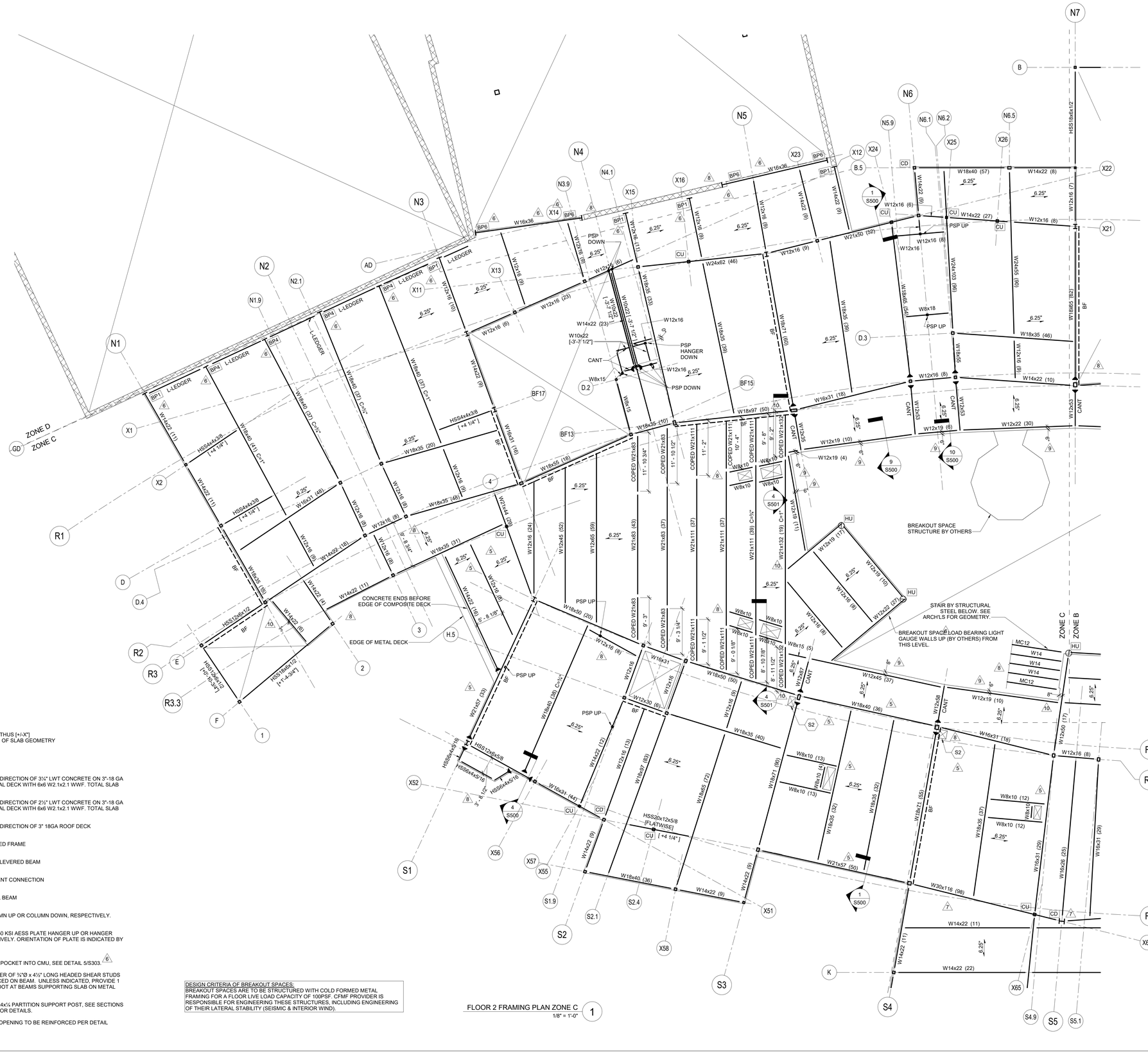
REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
9	12/04/2019	Adden. 5
10	12/20/2019	PR 21
15	02/10/2020	Conformance Set

DRAWING NAME
FLOOR 2 FRAMING PLAN-B

PROJECT NO. Project Number

DRAWING NO.
S102B



NOTES:

1. T.O. SLAB = 14'-0", UNO
2. T.O. STEEL =13'-5½", UNO IN PLAN THUS [+/-X"]
3. SEE ARCH'L DRAWINGS FOR EDGE OF SLAB GEOMETRY

LEGEND

6.25	INDICATES SPAN DIRECTION OF 3¼" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 6¼"
5.5	INDICATES SPAN DIRECTION OF 2½" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 5½"
R3	INDICATES SPAN DIRECTION OF 3" 18GA ROOF DECK
BF	INDICATES BRACED FRAME
CANT	INDICATES CANTILEVERED BEAM
	INDICATES MOMENT CONNECTION
	INDICATES STEEL BEAM
CU CD	INDICATES COLUMN UP OR COLUMN DOWN, RESPECTIVELY.
HU HD	INDICATES 1"x5" 50 KSI AESS PLATE HANGER UP OR HANGER DOWN, RESPECTIVELY. ORIENTATION OF PLATE IS INDICATED BY LINE IN CIRCLE.
6 BPx 6	INDICATES BEAM POCKET INTO CMU, SEE DETAIL 5/S303.
(#)	INDICATES NUMBER OF ¾"Ø x 4½" LONG HEADED SHEAR STUDS UNIFORMLY SPACED ON BEAM. UNLESS INDICATED, PROVIDE 1 STUD EVERY 1 FOOT AT BEAMS SUPPORTING SLAB ON METAL DECK
PSP 5 S2	INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS. INDICATES SLAB OPENING TO BE REINFORCED PER DETAIL 3/S304, OPTION 2.

DESIGN CRITERIA OF BREAKOUT SPACES:
BREAKOUT SPACES ARE TO BE STRUCTURED WITH COLD FORMED METAL FRAMING FOR A FLOOR LIVE LOAD CAPACITY OF 100PSF. CFMF PROVIDER IS RESPONSIBLE FOR ENGINEERING THESE STRUCTURES, INCLUDING ENGINEERING OF THEIR LATERAL STABILITY (SEISMIC & INTERIOR WIND).

FLOOR 2 FRAMING PLAN ZONE C 1
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE

AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
9	12/04/2019	Adden. 5
10	12/20/2019	PR 21
15	02/10/2020	Conformance Set

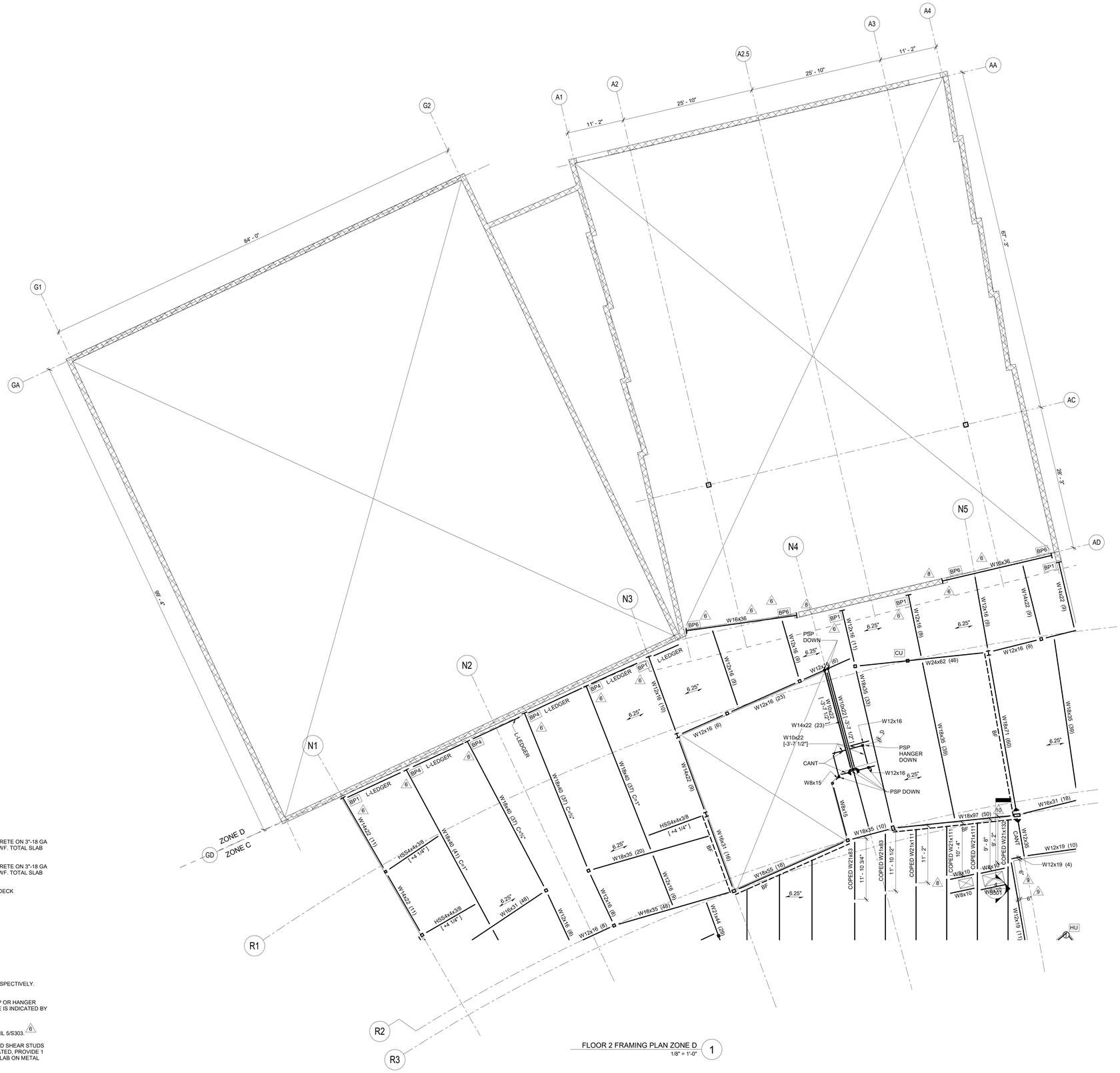
DRAWING NAME

FLOOR 2 FRAMING PLAN-C

PROJECT NO. Project Number

DRAWING NO.

S102C



FLOOR 2 FRAMING PLAN ZONE D 1

1/8" = 1'-0"

NOTES:

1. T.O. SLAB = 14'-0", UNO
2. T.O. STEEL =13'-5⅝" , UNO IN PLAN THUS [+/-X"]
3. SEE ARCH'L DRAWINGS FOR EDGE OF SLAB GEOMETRY

LEGEND

6.25	INDICATES SPAN DIRECTION OF 3¼" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 6½"
5.5	INDICATES SPAN DIRECTION OF 2½" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 5½"
R3	INDICATES SPAN DIRECTION OF 3" 18GA ROOF DECK
BF	INDICATES BRACED FRAME
CANT	INDICATES CANTILEVERED BEAM
	INDICATES MOMENT CONNECTION
	INDICATES STEEL BEAM
CU CD	INDICATES COLUMN UP OR COLUMN DOWN, RESPECTIVELY.
HU HD	INDICATES 1"x5" 50 KSI AESS PLATE HANGER UP OR HANGER DOWN, RESPECTIVELY. ORIENTATION OF PLATE IS INDICATED BY LINE IN CIRCLE.
6 BPx 6	INDICATES BEAM POCKET INTO CMU, SEE DETAIL 5/S303.
(#)	INDICATES NUMBER OF ¾"Ø x 4½" LONG HEADED SHEAR STUDS UNIFORMLY SPACED ON BEAM. UNLESS INDICATED, PROVIDE 1 STUD EVERY 1 FOOT AT BEAMS SUPPORTING SLAB ON METAL DECK.
PSP 5 S2	INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS.
	INDICATES SLAB OPENING TO BE REINFORCED PER DETAIL 3/S304, OPTION 2.

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE

AUGUST 09, 2019

REVISIONS

No.	Date	Description
6	9/09/2019	PR 12
8	11/22/2019	CDP
9	12/04/2019	Adden. 5
10	12/20/2019	PR 21
15	02/10/2020	Conformance Set

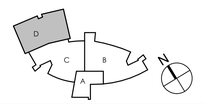
DRAWING NAME

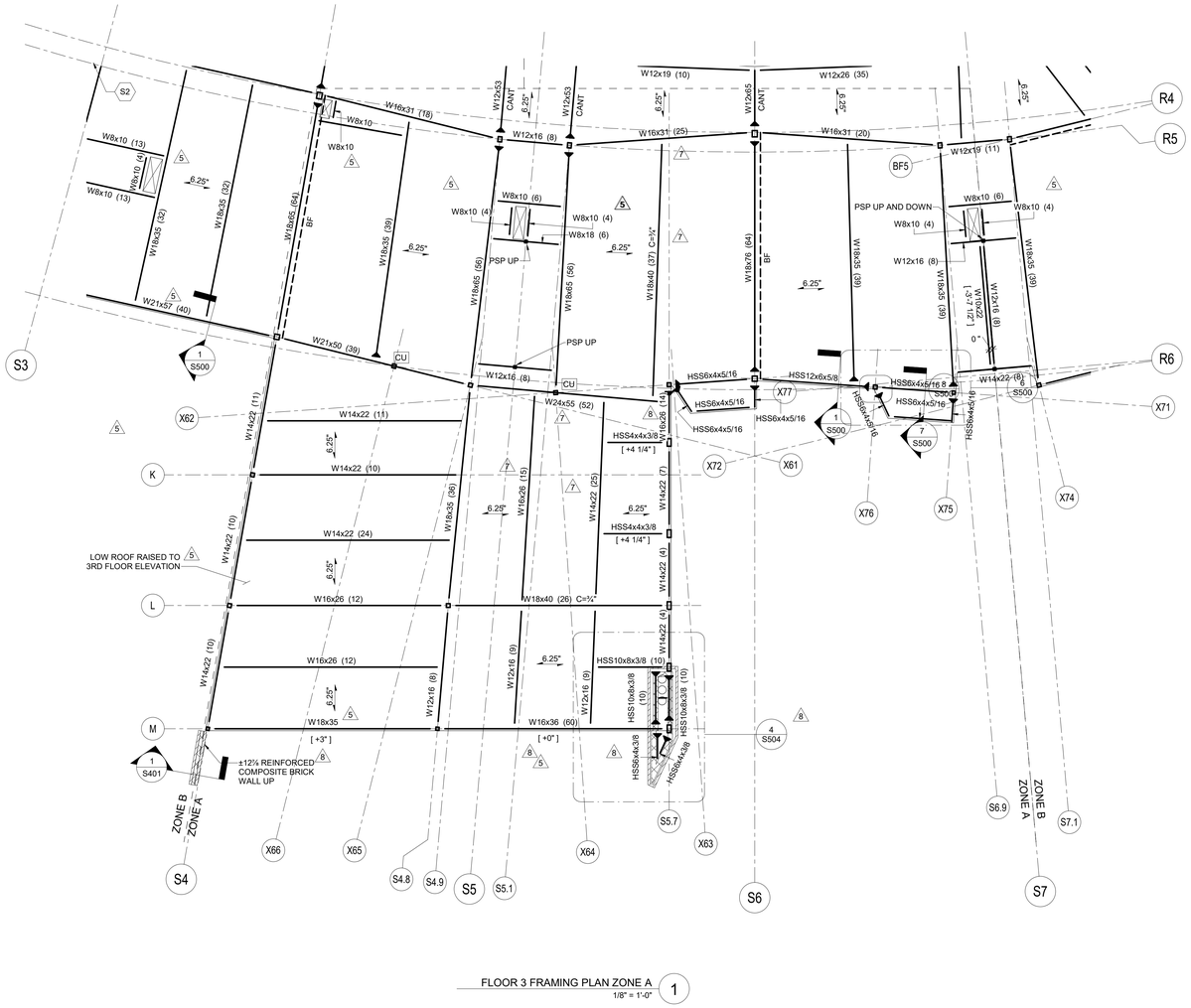
FLOOR 2 FRAMING PLAN-D

PROJECT NO. Project Number

DRAWING NO.

S102D





FLOOR 3 FRAMING PLAN ZONE A (1)
1/8" = 1'-0"

NOTES:

1. T.O. SLAB = 28'-0", UNO
2. T.O. STEEL =27'-5½", UNO IN PLAN THUS [+/-X"]
3. SEE ARCH'L DRAWINGS FOR EDGE OF SLAB/DECK GEOMETRY

LEGEND

- 6.25 — INDICATES SPAN DIRECTION OF 3¼" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 6¼"
- R4.5A — INDICATES SPAN DIRECTION OF 4.5" 18GA DEEP LONG SPAN ROOF DECK.
- R1.5A — INDICATES SPAN DIRECTION OF 1.5" 20GA ACOUSTIC ROOF DECK. CELLULAR DELETED.
- R1.5 — INDICATES SPAN DIRECTION OF 1.5" 20GA ROOF DECK
- BF — INDICATES BRACED FRAME
- CANT — INDICATES CANTILEVERED BEAM
- INDICATES MOMENT CONNECTION
- INDICATES STEEL BEAM
- INDICATES COLUMN UP OR COLUMN DOWN, RESPECTIVELY.
- CU CD — INDICATES 1"x5" 50 KSI AESS PLATE HANGER UP OR HANGER DOWN, RESPECTIVELY. ORIENTATION OF PLATE IS INDICATED BY LINE IN CIRCLE.
- HU HD
- BPx — INDICATES BEAM POCKET INTO CMU, SEE DETAIL 5/S303, 6
- (#) — INDICATES NUMBER OF ¾"Ø x 4½" LONG HEADED SHEAR STUDS UNIFORMLY SPACED ON BEAM. UNLESS INDICATED, PROVIDE 1 STUD EVERY 1 FOOT AT BEAMS SUPPORTING SLAB ON METAL DECK.
- PSP — INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS.
- INDICATES SLAB OPENING TO BE REINFORCED PER DETAIL 3/S304, OPTION 2.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE

AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
15	02/10/2020	Conformance Set

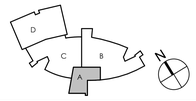
DRAWING NAME

FLOOR 3 FRAMING PLAN-A

PROJECT NO. Project Number

DRAWING NO.

S103A



DESIGN CRITERIA OF BREAKOUT SPACES:
BREAKOUT SPACES ARE TO BE STRUCTURED WITH COLD FORMED METAL FRAMING FOR A FLOOR LIVE LOAD CAPACITY OF 100PSF. CFMF PROVIDER IS RESPONSIBLE FOR ENGINEERING THESE STRUCTURES, INCLUDING ENGINEERING OF THEIR LATERAL STABILITY (SEISMIC & INTERIOR WIND).

NOTES:

1. T.O. SLAB = 28'-0", UNO
2. T.O. STEEL =27'-5½" , UNO IN PLAN THUS [+/-X"]
3. SEE ARCH'L DRAWINGS FOR EDGE OF SLAB/DECK GEOMETRY

LEGEND

- 6.25 — INDICATES SPAN DIRECTION OF 3¼" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 6¼"
- R4.5A — INDICATES SPAN DIRECTION OF 4.5" 18GA DEEP LONG SPAN ROOF DECK.
- R1.5A — INDICATES SPAN DIRECTION OF 1.5" 20GA ACOUSTIC ROOF DECK. CELLULAR DELETED.
- R1.5 — INDICATES SPAN DIRECTION OF 1.5" 20GA ROOF DECK
- BF — INDICATES BRACED FRAME
- CANT — INDICATES CANTILEVERED BEAM
- INDICATES MOMENT CONNECTION
- INDICATES STEEL BEAM
- CU CD — INDICATES COLUMN UP OR COLUMN DOWN, RESPECTIVELY.
- HU HD — INDICATES 1"x5" 50 KSI AESS PLATE HANGER UP OR HANGER DOWN, RESPECTIVELY. ORIENTATION OF PLATE IS INDICATED BY LINE IN CIRCLE.
- BPx — INDICATES BEAM POCKET INTO CMU, SEE DETAIL 5/S303,
- (#) — INDICATES NUMBER OF ½"Ø x 4½" LONG HEADED SHEAR STUDS UNIFORMLY SPACED ON BEAM. UNLESS INDICATED, PROVIDE 1 STUD EVERY 1 FOOT AT BEAMS SUPPORTING SLAB ON METAL DECK.
- PSP — INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS.
- INDICATES SLAB OPENING TO BE REINFORCED PER DETAIL 3/S304, OPTION 2.

FLOOR 3 FRAMING PLAN ZONE B
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE

AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
9	12/04/2019	Adden. 5
10	12/20/2019	PR 21
13	01/13/2020	PR 26
15	02/10/2020	Conformance Set

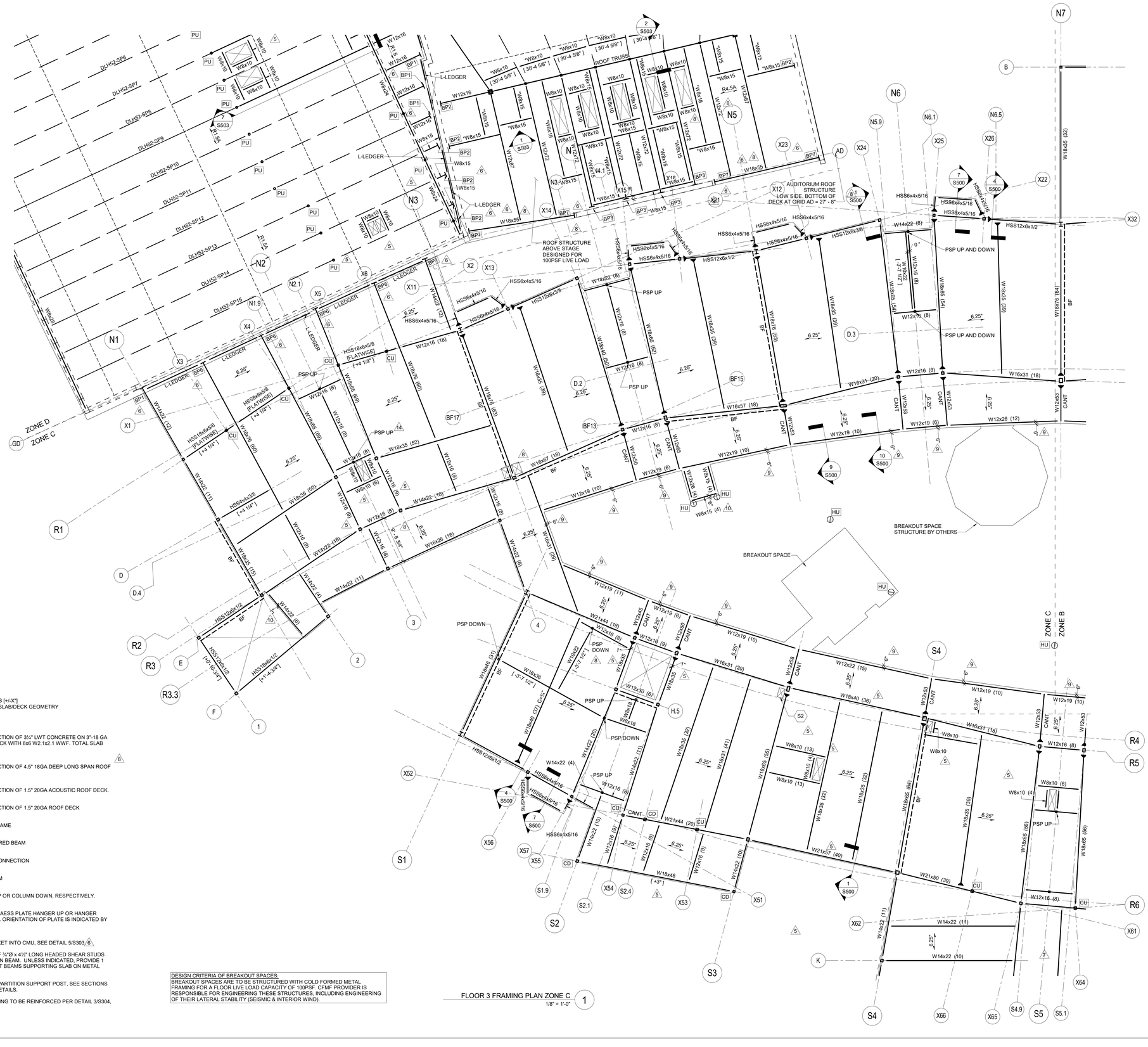
DRAWING NAME

FLOOR 3 FRAMING PLAN-B

PROJECT NO. Project Number

DRAWING NO.

S103B



NOTES:

1. T.O. SLAB = 28'-0", UNO
2. T.O. STEEL =27'-5½", UNO IN PLAN THUS [+/-X"]
3. SEE ARCH'L DRAWINGS FOR EDGE OF SLAB/DECK GEOMETRY

LEGEND

- 6.25 — INDICATES SPAN DIRECTION OF 3¼" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 6¼"
- R4.5A — INDICATES SPAN DIRECTION OF 4.5" 18GA DEEP LONG SPAN ROOF DECK.
- R1.5A — INDICATES SPAN DIRECTION OF 1.5" 20GA ACOUSTIC ROOF DECK. CELLULAR DELETED.
- R1.5 — INDICATES SPAN DIRECTION OF 1.5" 20GA ROOF DECK
- BF — INDICATES BRACED FRAME
- CANT — INDICATES CANTILEVERED BEAM
- INDICATES MOMENT CONNECTION
- INDICATES STEEL BEAM
- CU CD — INDICATES COLUMN UP OR COLUMN DOWN, RESPECTIVELY.
- HU HD — INDICATES 1"x5" 50 KSI AESS PLATE HANGER UP OR HANGER DOWN, RESPECTIVELY. ORIENTATION OF PLATE IS INDICATED BY LINE IN CIRCLE.
- BPx — INDICATES BEAM POCKET INTO CMU, SEE DETAIL 5/S303,
- (#) — INDICATES NUMBER OF ¾"Ø x 4½" LONG HEADED SHEAR STUDS UNIFORMLY SPACED ON BEAM. UNLESS INDICATED, PROVIDE 1 STUD EVERY 1 FOOT AT BEAMS SUPPORTING SLAB ON METAL DECK.
- PSP — INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS.
- INDICATES SLAB OPENING TO BE REINFORCED PER DETAIL 5/S304, OPTION 2.

DESIGN CRITERIA OF BREAKOUT SPACES:
BREAKOUT SPACES ARE TO BE STRUCTURED WITH COLD FORMED METAL FRAMING FOR A FLOOR LIVE LOAD CAPACITY OF 100PSF. CFMF PROVIDER IS RESPONSIBLE FOR ENGINEERING THESE STRUCTURES, INCLUDING ENGINEERING OF THEIR LATERAL STABILITY (SEISMIC & INTERIOR WIND).

FLOOR 3 FRAMING PLAN ZONE C 1
1/8" = 1'-0"

JLA
Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE

AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
9	12/04/2019	Adden. 5
10	12/20/2019	PR 21
14	01/17/2020	PR 26 REV1
15	02/10/2020	Conformance Set

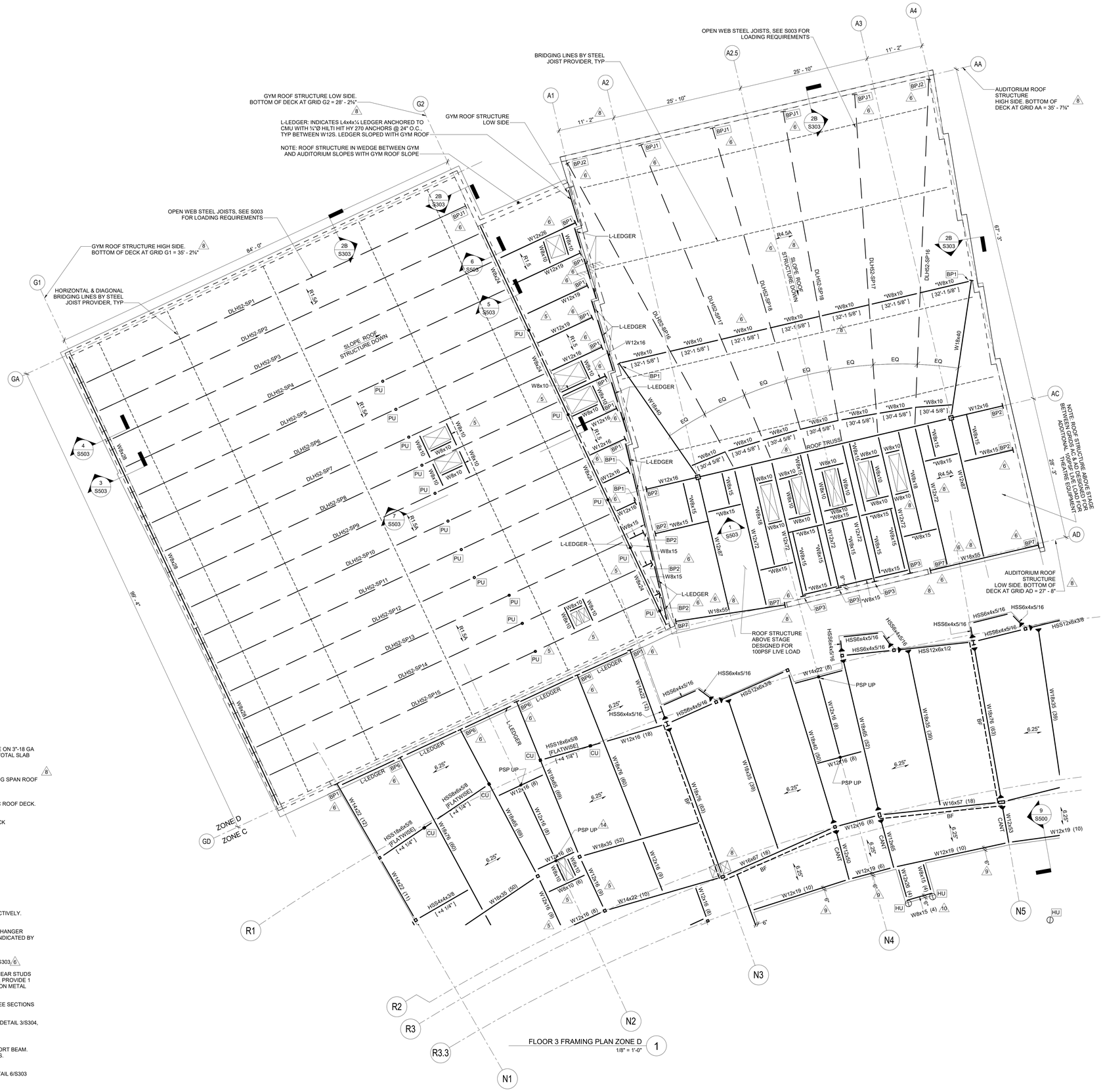
DRAWING NAME

FLOOR 3 FRAMING PLAN-C

PROJECT NO. Project Number

DRAWING NO.

S103C



FLOOR 3 FRAMING PLAN ZONE D 1
1/8" = 1'-0"

NOTES:

1. T.O. SLAB = 28'-0", UNO
2. T.O. STEEL =27'-5½" , UNO IN PLAN THUS [+/-X"]
3. SEE ARCH'L DRAWINGS FOR EDGE OF SLAB/DECK GEOMETRY

LEGEND

6.25 / 6	INDICATES SPAN DIRECTION OF 3¼" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1xz2.1 WWF. TOTAL SLAB THICKNESS = 6¼"
R4.5A / 8	INDICATES SPAN DIRECTION OF 4.5" 18GA DEEP LONG SPAN ROOF DECK.
R1.5A	INDICATES SPAN DIRECTION OF 1.5" 20GA ACOUSTIC ROOF DECK. CELLULAR DELETED.
R1.5	INDICATES SPAN DIRECTION OF 1.5" 20GA ROOF DECK
BF	INDICATES BRACED FRAME
CANT	INDICATES CANTILEVERED BEAM
	INDICATES MOMENT CONNECTION
	INDICATES STEEL BEAM
CU CD	INDICATES COLUMN UP OR COLUMN DOWN, RESPECTIVELY.
HU HD	INDICATES 1"x5" 50 KSI AESS PLATE HANGER UP OR HANGER DOWN, RESPECTIVELY. ORIENTATION OF PLATE IS INDICATED BY LINE IN CIRCLE.
BPx / 6	INDICATES BEAM POCKET INTO CMU, SEE DETAIL 5/S303, 6
(#)	INDICATES NUMBER OF ¾"Ø x 4½" LONG HEADED SHEAR STUDS UNIFORMLY SPACED ON BEAM. UNLESS INDICATED, PROVIDE 1 STUD EVERY 1 FOOT AT BEAMS SUPPORTING SLAB ON METAL DECK.
PSP / 5 / S2 / 6	INDICATES HSS4x4x¼ PARTITION SUPPORT POST, SEE SECTIONS ON SHEET S501 FOR DETAILS.
*WXxXX	INDICATES SLAB OPENING TO BE REINFORCED PER DETAIL 3/S304, OPTION 2.
BPJx	INDICATES DEDICATED THEATRE EQUIPMENT SUPPORT BEAM. COORDINATE LOCATION WITH TE-SERIES DRAWINGS.
	INDICATES JOIST BEAM POCKET INTO CMU, SEE DETAIL 6/S303

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE

AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
8	11/22/2019	CDP
9	12/04/2019	Adden. 5
10	12/20/2019	PR 21
14	01/17/2020	PR 26 REV1
15	02/10/2020	Conformance Set

DRAWING NAME

FLOOR 3 FRAMING PLAN-D

PROJECT NO. Project Number

DRAWING NO.

S103D

NOTES:

1. MAIN ROOF T.O. SLAB = 42'-0", UNO
2. MAIN ROOF T.O. STEEL =41'-6½" , UNO IN PLAN THUS [+/-X"]
3. POP-UP ROOF AT SKYLIGHTS T.O. STEEL & B.O. ROOF DECK = 47'-3", UNO
4. SEE ARCH'L DRAWINGS FOR EDGE OF SLAB/DECK GEOMETRY.
5. COORDINATE CONCRETE CURB LOCATIONS WITH MECH'L EQUIPMENT. SEE 9/S503

LEGEND

5.5	INDICATES SPAN DIRECTION OF 2½" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 5½"
R3	INDICATES SPAN DIRECTION OF 3" 18GA ROOF DECK
BF	INDICATES BRACED FRAME
CANT	INDICATES CANTILEVERED BEAM
	INDICATES MOMENT CONNECTION
	INDICATES STEEL BEAM
CU CD	INDICATES COLUMN UP OR COLUMN DOWN, RESPECTIVELY.
HU HD	INDICATES 1"x5" 50 KSI AESS PLATE HANGER UP OR HANGER DOWN, RESPECTIVELY. ORIENTATION OF PLATE IS INDICATED BY LINE IN CIRCLE.
(#)	INDICATES NUMBER OF ¾"Ø x 4½" LONG HEADED SHEAR STUDS UNIFORMLY SPACED ON BEAM. UNLESS INDICATED, PROVIDE 1 STUD EVERY 1 FOOT AT BEAMS SUPPORTING SLAB ON METAL DECK.
PSP	INDICATES HSS4x4x¼ PARTITION SUPPORT POST DOWN, SEE SECTIONS ON SHEET S501 FOR DETAILS.
S2	INDICATES SLAB OPENING TO BE REINFORCED PER DETAIL 3/S304, OPTION 2.

AREA DESIGNED FOR FUTURE PV ARRAYS, TYP FOR 4.

SKYLIGHT POP UP ROOF FRAMING NOW SHOWN ON HIGH ROOF PLAN FOR CLARITY

DESIGN BEAM CONNECTION FOR ±35 KIP'S AXIAL ASD LOAD

PSP DOWN DELETED

HSS7.625x0.375 ROUND SCREEN SUPPORT POST, TYP

ROOF FRAMING PLAN ZONE B
1/8" = 1'-0"

1

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
10	12/20/2019	PR 21
13	01/13/2020	PR 26
15	02/10/2020	Conformance Set

DRAWING NAME

ROOF FRAMING PLAN-B

PROJECT NO. Project Number

DRAWING NO.

S104B

ROOF FRAMING PLAN ZONE C 1
1/8" = 1'-0"

NOTES:

1. MAIN ROOF T.O. SLAB = 42'-0", UNO
2. MAIN ROOF T.O. STEEL =41'-6½" , UNO IN PLAN THUS [+/-X"]
3. POP-UP ROOF AT SKYLIGHTS T.O. STEEL & B.O. ROOF DECK = 47'-3", UNO
4. SEE ARCH'L DRAWINGS FOR EDGE OF SLAB/DECK GEOMETRY.
5. COORDINATE CONCRETE CURB LOCATIONS WITH MECH'L EQUIPMENT. SEE 9/S503

LEGEND

5.5	INDICATES SPAN DIRECTION OF 2½" LWT CONCRETE ON 3"-18 GA COMPOSITE METAL DECK WITH 6x6 W2.1x2.1 WWF. TOTAL SLAB THICKNESS = 5½"
R3	INDICATES SPAN DIRECTION OF 3" 18GA ROOF DECK
BF	INDICATES BRACED FRAME
CANT	INDICATES CANTILEVERED BEAM
	INDICATES MOMENT CONNECTION
	INDICATES STEEL BEAM
CU CD	INDICATES COLUMN UP OR COLUMN DOWN, RESPECTIVELY.
HU HD	INDICATES 1"x5" 50 KSI AESS PLATE HANGER UP OR HANGER DOWN, RESPECTIVELY. ORIENTATION OF PLATE IS INDICATED BY LINE IN CIRCLE.
(#)	INDICATES NUMBER OF ¾"Ø x 4½" LONG HEADED SHEAR STUDS UNIFORMLY SPACED ON BEAM. UNLESS INDICATED, PROVIDE 1 STUD EVERY 1 FOOT AT BEAMS SUPPORTING SLAB ON METAL DECK.
PSP	INDICATES HSS4x4x¼ PARTITION SUPPORT POST DOWN, SEE SECTIONS ON SHEET S501 FOR DETAILS.
S2	INDICATES SLAB OPENING TO BE REINFORCED PER DETAIL 3/S304, OPTION 2.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
8	11/22/2019	CDP
10	12/20/2019	PR 21
14	01/17/2020	PR 26 REV1
15	02/10/2020	Conformance Set

DRAWING NAME

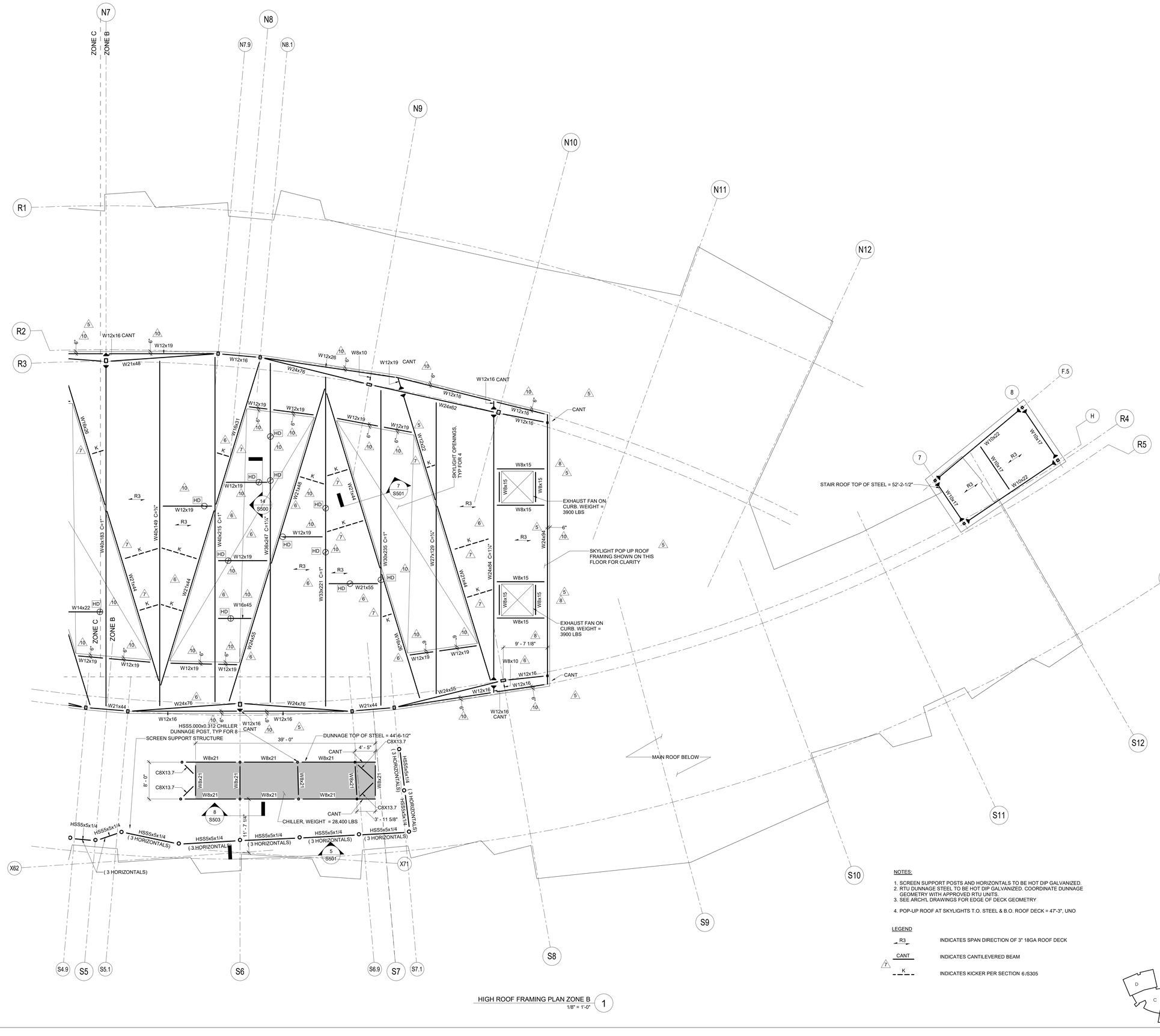
ROOF FRAMING PLAN-C

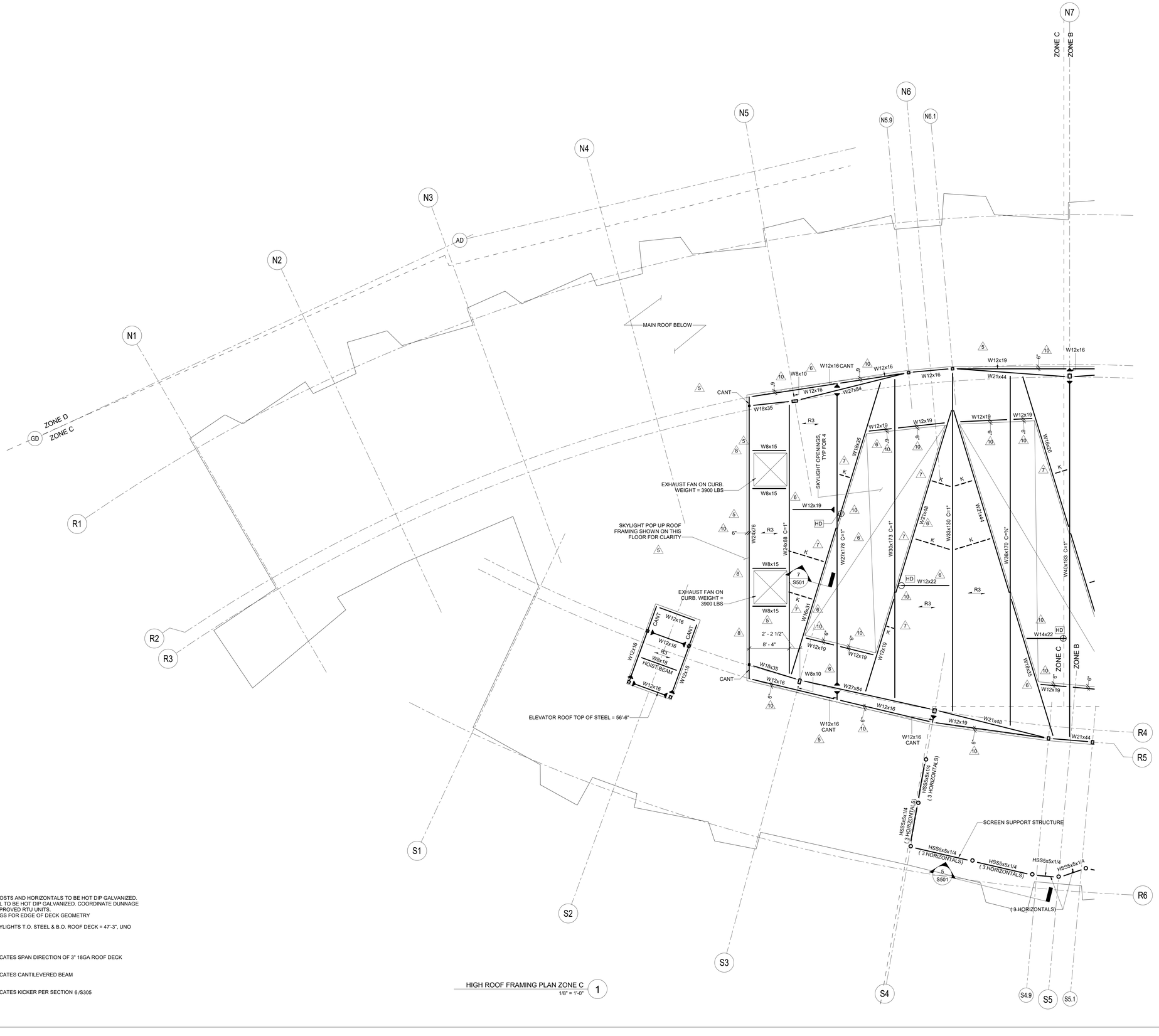
PROJECT NO. Project Number

DRAWING NO.

S104C

A4
AA
A1
G2
G1
GA
ROOF BELOW
ROOF BELOW
N5
N4
AD
N3
N2
N1
X1
GD
ZONE D
ZONE C
R1
R2
R3
R3.3
BF13
C8X13.7
W8x21
CANT
3' - 6 3/4"
W12x30
W8x21
W8x21
W8x21


N7
N8
N7.9
N8.1
N9
N10
N11
N12
R1
R2
R3
R4
R5
R6
ZONE C
ZONE B
W12x16 CANT
W12x19
W21x48
W12x16
W24x76
W12x26
W8x10
W12x19 CANT
W24x62
W12x16
CANT
W10x26
W12x19
W10x21
W12x19
W12x19
W10x22
SKYLIGHT OPENINGS, TYP FOR 4
W8x15
W8x15
W8x15
EXHAUST FAN ON CURB. WEIGHT = 3900 LBS
W40x183 C=1"
W40x149 C=½"
W40x215 C=1"
W36x247 C=1½"
W30x235 C=1"
W27x129 C=¾"
W24x84
6"
SKYLIGHT POP UP ROOF FRAMING SHOWN ON THIS FLOOR FOR CLARITY
W21x44
W21x44
W21x44
W21x55
W16x45
W24x55
W16x26
W14x22
W8x15
W8x15
W8x15
EXHAUST FAN ON CURB. WEIGHT = 3900 LBS
9' - 7 1/8"
W8x10
W12x16
CANT
W12x19
W12x19
W12x19
W12x19
W12x19
W12x19
W24x55
W12x16
W12x16
W12x16
W21x44
W24x76
W24x76
W21x44
W12x16
W12x16
W12x16
W12x16 CANT
HSS5.000x0.312 CHILLER DUNNAGE POST, TYP FOR 8
SCREEN SUPPORT STRUCTURE
39' - 0"
DUNNAGE TOP OF STEEL = 44'6-1/2"
C8X13.7
CANT
4' - 5"
W8x21
W8x21
W8x21
C8X13.7
C8X13.7
W8x21
W8x21
W8x21
W8x21
W8x21
W8x21
W8x21
W8x21
8' - 0"
HSS5x5x1/4 (3 HORIZONTALS)
C8X13.7
CANT
3' - 11 5/8"
CHILLER, WEIGHT = 28,400 LBS
1' - 7 1/4"
HSS5x5x1/4
HSS5x5x1/4
HSS5x5x1/4
HSS5x5x1/4
HSS5x5x1/4
HSS5x5x1/4
HSS5x5x1/4
(3 HORIZONTALS)
(3 HORIZONTALS)
(3 HORIZONTALS)



HIGH ROOF FRAMING PLAN ZONE C 1
1/8" = 1'-0"

NOTES:

1. SCREEN SUPPORT POSTS AND HORIZONTALS TO BE HOT DIP GALVANIZED.
2. RTU DUNNAGE STEEL TO BE HOT DIP GALVANIZED. COORDINATE DUNNAGE GEOMETRY WITH APPROVED RTU UNITS.
3. SEE ARCH'L DRAWINGS FOR EDGE OF DECK GEOMETRY
4. POP-UP ROOF AT SKYLIGHTS T.O. STEEL & B.O. ROOF DECK = 47'-3", UNO

LEGEND

- R3 — INDICATES SPAN DIRECTION OF 3" 18GA ROOF DECK
- 7 CANT — INDICATES CANTILEVERED BEAM
- K — INDICATES KICKER PER SECTION 6 /S305

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

311 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
10	12/20/2019	PR 21
15	02/10/2020	Conformance Set

DRAWING NAME

HIGH ROOF FRAMING PLAN-C

PROJECT NO. Project Number

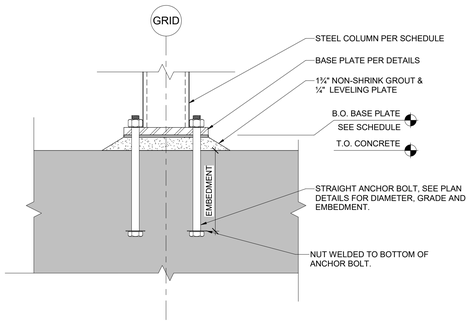
DRAWING NO.

S105C

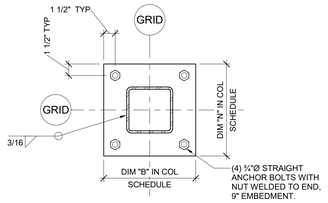
SKYLIGHTS																																			SKYLIGHTS
47' - 3" FLOOR 04																																			47' - 3" FLOOR 04
42' - 0" FLOOR 03																																			42' - 0" FLOOR 03
28' - 0" FLOOR 02	HSS6x6x5/8	HSS6x6x5/16	HSS6x6x5/16	HSS6x6x1/4	HSS5x5x5/16	HSS10x10x5/8	HSS10x10x5/8 (6)	HSS5x5x1/2	HSS5x5x1/2				HSS6x6x5/8			HSS6x6x1/2	HSS6x6x1/2	HSS6x6x1/4	HSS6x6x5/8	HSS5x5x5/16	HSS6x6x1/4	HSS6x6x5/16	HSS8x6x5/8	W10x45		HSS6x6x5/8	HSS10x6x5/8	HSS14x6x5/8	W10x45 COLUMN OFFSET 2" DOWN PLAN SOUTH ALONG GRID N5 (6)	HSS6x6x5/8		HSS6x6x5/8		HSS10x8x5/8 COLUMN OFFSET 2" UP PLAN NORTH ALONG GRID N7 (6)	W10x45	HSS6x6x5/8	HSS6x6x5/8	HSS6x6x5/8	HSS8x6x5/8		28' - 0" FLOOR 02
14' - 0" FLOOR 01										HSS6x6x5/8	HSS8x6x5/8	HSS4x4x5/16		HSS4x4x5/16	HSS8x6x1/2									W10x45														14' - 0" FLOOR 01
0"																																			0"
BASE PLATE SIZE t x B x N	2½"xSEE DETAIL	1"xSEE DETAIL	1"xSEE DETAIL	1"x8"x12"		1½"x16"x16"	1¼"x16"x16"	1"xSEE DETAIL	1"xSEE DETAIL	1"xSEE DETAIL	1"x8"x14"	½"xSEE DETAIL	2"x9"x19"	¾"x11"x11"	¾"x12"x12"	1"x12"x12"	1"x12"x12"	¾"x12"x12"	2"xSEE DETAIL	1"x8"x12"	1"x12"x12"	1"x12"x12"	2½"x22"x25"	1½"x16"x14"	1½"x16"x14"	1½"x14"x14"	1½"x14"x18"	2½"x14"x27"	1½"x16"x24"	1½"x8"x12"	¾"xSEE DETAIL	1½"x12"x12"	2"x16"x24"	1½"x16"x14"	1½"x14"x14"	1¼"x8"x14"	1½"x14"x16"	BASE PLATE SIZE t x B x N
ANCHOR BOLT PATTERN	T9	D	D	B		A	A	D	D	D	B	D	T8	A	A	A	A	A	T11	B	A	A	T6	T1	T1	T2	T2	T5	T3	B	D	A	T4	T1	A	B	T2	ANCHOR BOLT PATTERN
B.O. BASE PLATE ELEV.	-0'-10"	-0'-10"	-0'-10"	-0'-10"		-3'-3"	-3'-3"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	-0'-10"	B.O. BASE PLATE ELEV.
ORTHOGONAL GRID*		1	2	3	4		5		N8	N6									N1	N1	N1.9	N2.1	N3	N3		N3.9	N4.1	BF13	N5	N5.9	N6	N6.1	N7	N7	N7.9	N8	N8.1	ORTHOGONAL GRID*
Column Locations	E-1	F-1	F-2	R3.3-3	R3.3-4	A2-AC	A3-AC	B-N7	B-N8	B.5-N6	B.5-N6.5	B.5-N7	D-N1	D.2-N3.9	D.3-N6.2	D.4-N1.9	D.4-N2.1	D.7-N8.1	E-N1	N1-X2	N1.9-R2	N2.1-R2	N3-R3	N3-X1	N3-BF17	N3.9-R2	N4.1-R2	N5-R3	N5-X11	N5.9-R2	N6-X21	N6.1-R2	N7-R3	N7-X21	N7.9-R2	N8-X37	N8.1-R2	

| SKYLIGHTS | | | | | | | | | | | | | | | | | | |

| | | |

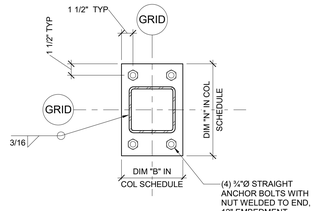


TYPICAL BASE PLATE SECTION
1 1/2" = 1'-0"
1



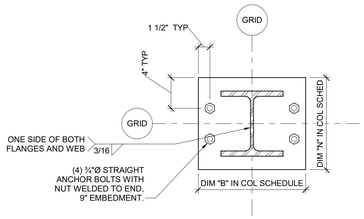
BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "A"
1 1/2" = 1'-0"
2



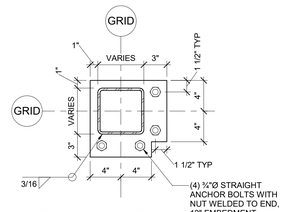
BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "B"
1 1/2" = 1'-0"
3



BASE PLATE PLAN DETAIL

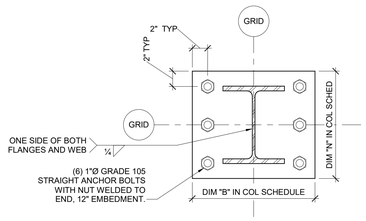
ANCHOR BOLT PATTERN "C"
1 1/2" = 1'-0"
4



NOTE: ORIENT ANCHOR BOLTS TOWARDS INTERIOR OF BUILDING.

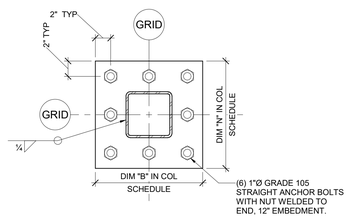
CORNER BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "D"
1 1/2" = 1'-0"
5



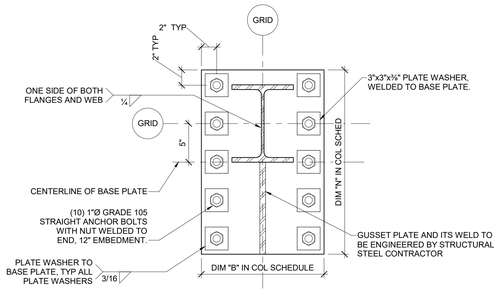
BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T1"
1 1/2" = 1'-0"
6



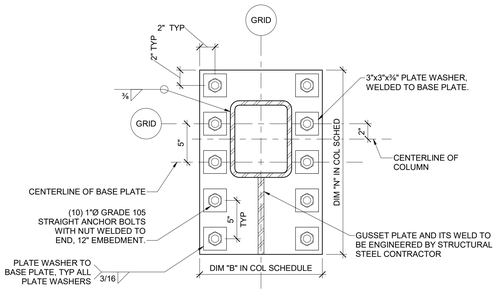
BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T2"
1 1/2" = 1'-0"
7



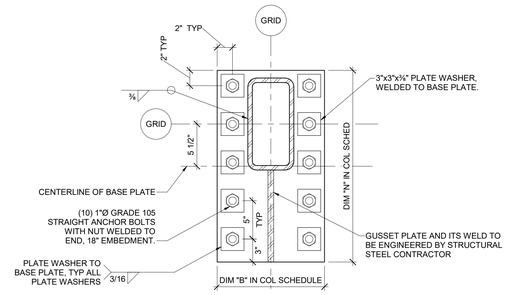
BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T3"
1 1/2" = 1'-0"
8



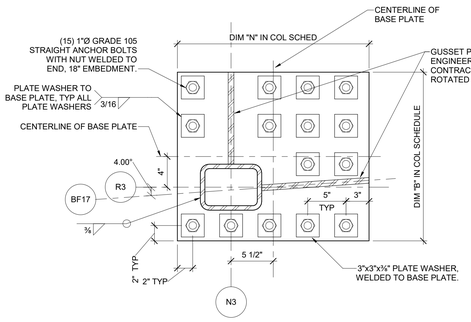
BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T4"
1 1/2" = 1'-0"
9



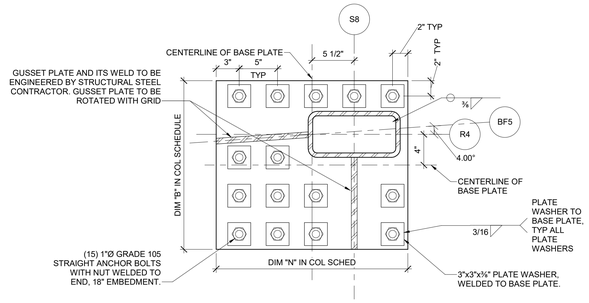
BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T5"
1 1/2" = 1'-0"
10



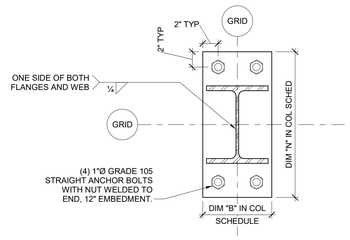
BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T6"
1 1/2" = 1'-0"
11



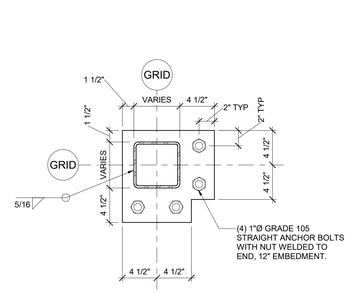
BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T7"
1 1/2" = 1'-0"
12



BASE PLATE PLAN DETAIL

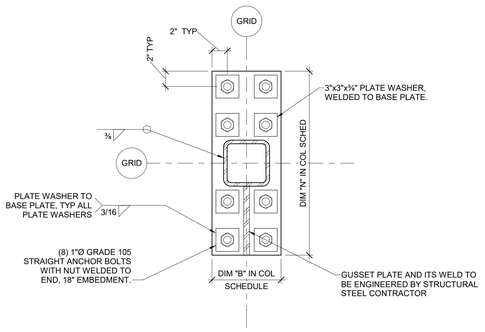
ANCHOR BOLT PATTERN "T8"
1 1/2" = 1'-0"
13



BASE PLATE PLAN DETAIL

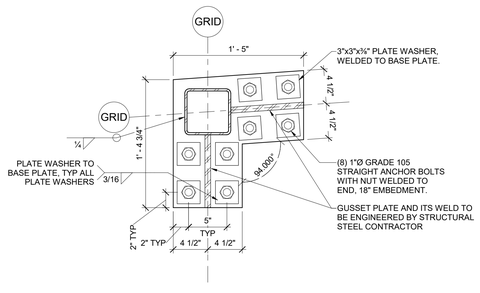
NOTE: ORIENT ANCHOR BOLTS TOWARDS INTERIOR OF BUILDING.

ANCHOR BOLT PATTERN "T9"
1 1/2" = 1'-0"
14



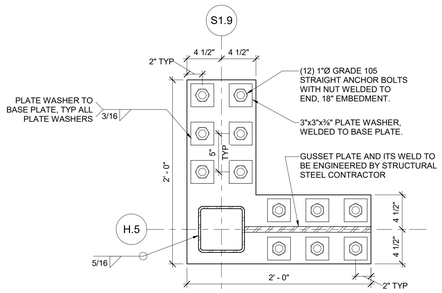
BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T10"
1 1/2" = 1'-0"
15



BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T11"
1 1/2" = 1'-0"
16



BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T12"
1 1/2" = 1'-0"
17

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

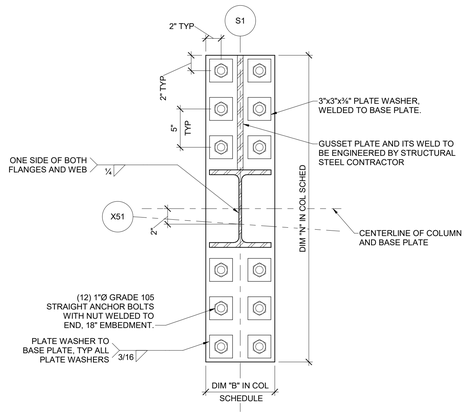
REVISIONS

No.	Date	Description
15	02/10/2020	Conformance Set

DRAWING NAME
BASE PLATE DETAILS

PROJECT NO. Project Number

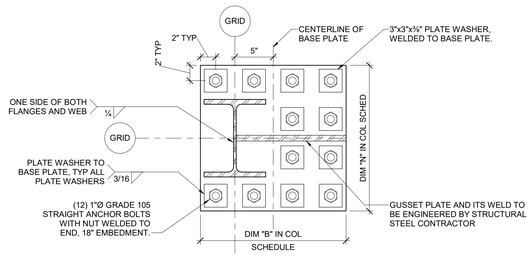
DRAWING NO.
S202



BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T13" 1

1 1/2" = 1'-0"



BASE PLATE PLAN DETAIL

ANCHOR BOLT PATTERN "T14" 2

1 1/2" = 1'-0"

ANCHOR BOLT HOLES AND WASHERS		
ANCHOR BOLT DIAM.	MAX HOLE DIAM.	MIN WASHER SIZE*
3/4"Ø	1-5/16"Ø	2"x1/4"
1"Ø	1-13/16"Ø	3"x3/8"
1-1/4"Ø	2-5/16"Ø	3-1/4"x1/2"

*USE WASHERS WHERE WELDED PLATE WASHERS NOT SPECIFICALLY CALLED FOR IN BASE PLATE PLAN DETAILS. WASHER TO BE SQUARE OR ROUND, ASTM F844.

BASE PLATE HOLE AND WASHER SCHEDULE 3

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

REVISIONS

No.	Date	Description
15	02/10/2020	Conformance Set

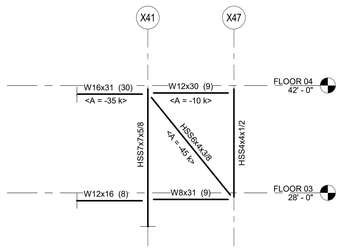
DRAWING NAME

BASE PLATE DETAILS

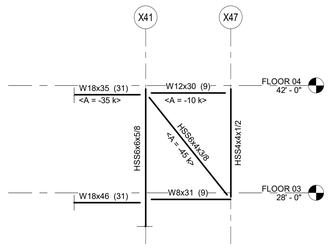
PROJECT NO. Project Number

DRAWING NO.

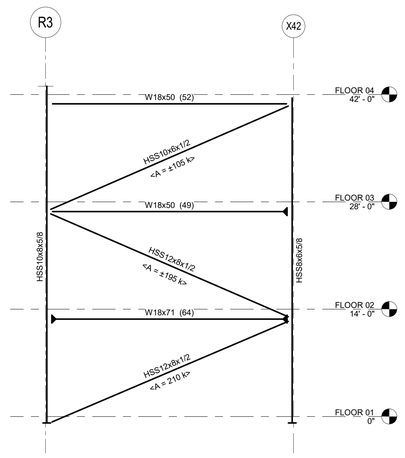
S203



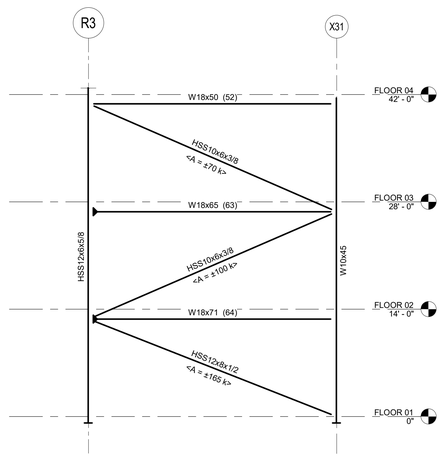
TRUSS ELEVATION AT GRID N11 — 1/8" = 1'-0" — 1



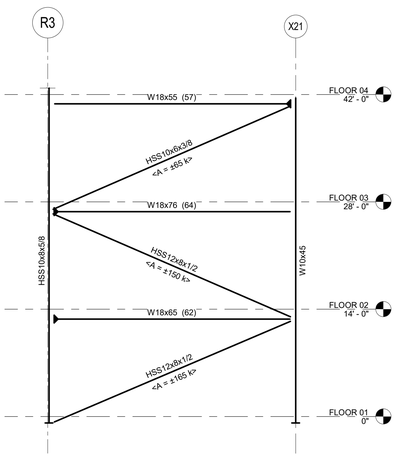
TRUSS ELEVATION AT GRID N12 — 1/8" = 1'-0" — 2



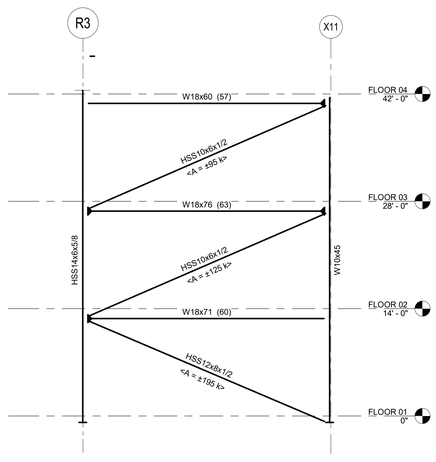
BRACED FRAME ELEVATION AT GRID N10 — 1/8" = 1'-0" — 3



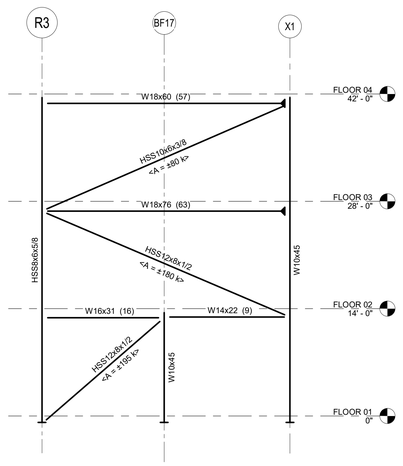
BRACED FRAME ELEVATION AT GRID N9 — 1/8" = 1'-0" — 4



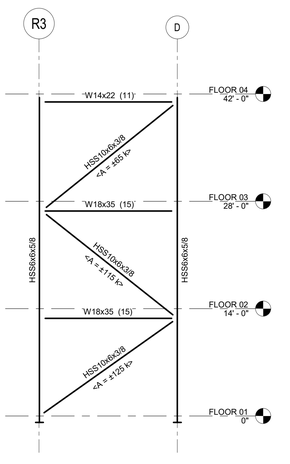
BRACED FRAME ELEVATION AT GRID N7 — 1/8" = 1'-0" — 5



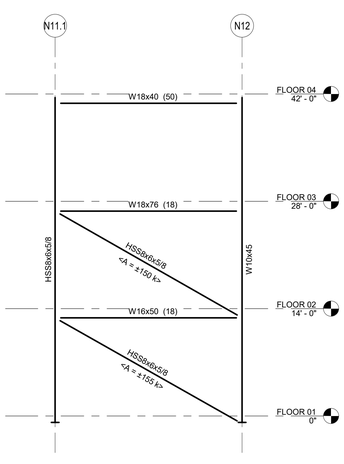
BRACED FRAME ELEVATION AT GRID N5 — 1/8" = 1'-0" — 6



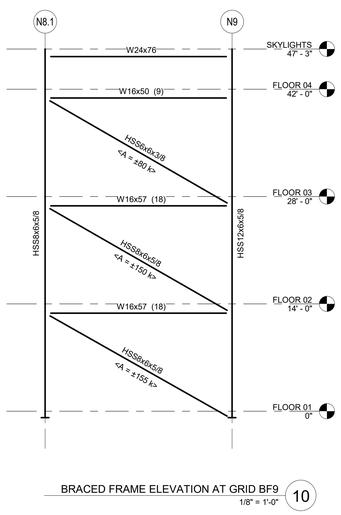
BRACED FRAME ELEVATION AT GRID N3 — 1/8" = 1'-0" — 7



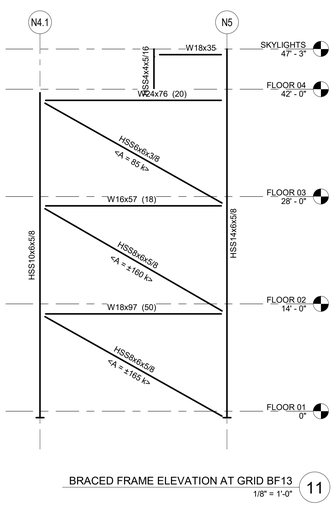
BRACED FRAME ELEVATION AT GRID N1 — 1/8" = 1'-0" — 8



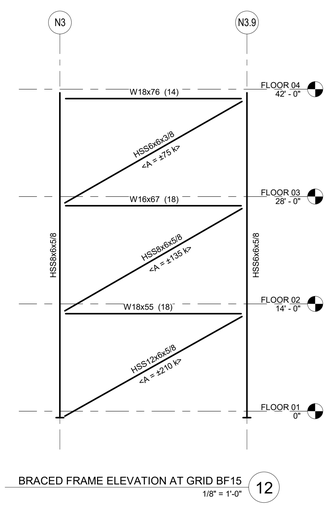
BRACED FRAME ELEVATION AT GRID BF7 — 1/8" = 1'-0" — 9



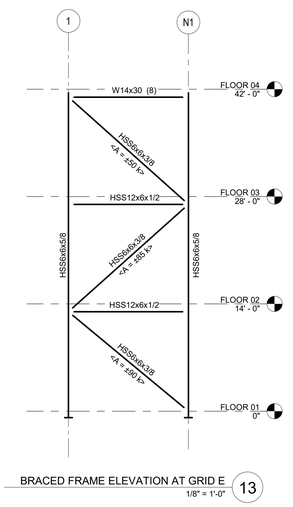
BRACED FRAME ELEVATION AT GRID BF9 — 1/8" = 1'-0" — 10



BRACED FRAME ELEVATION AT GRID BF13 — 1/8" = 1'-0" — 11

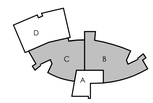


BRACED FRAME ELEVATION AT GRID BF15 — 1/8" = 1'-0" — 12



BRACED FRAME ELEVATION AT GRID E — 1/8" = 1'-0" — 13

NOTES:
1. <A=± XX K> INDICATES THE ASD BRACE CONNECTION DESIGN FORCE (- INDICATES TENSION, + INDICATES COMPRESSION) IN KIPS.
2. CONTRACTOR TO SUBMIT FOR REVIEW CALCULATIONS FOR BRACED FRAME AND TRUSS CONNECTIONS SIGNED AND STAMPED BY A MASSACHUSETTS LICENSED PROFESSIONAL ENGINEER.



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

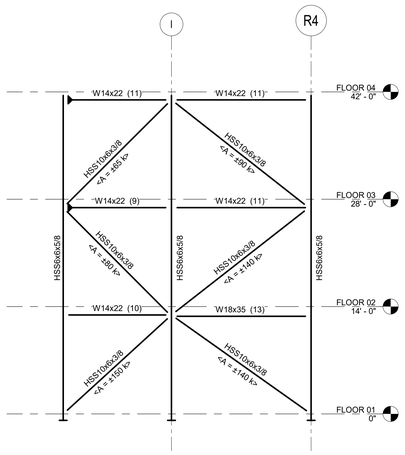
REVISIONS

No.	Date	Description
15	02/10/2020	Conformance Set

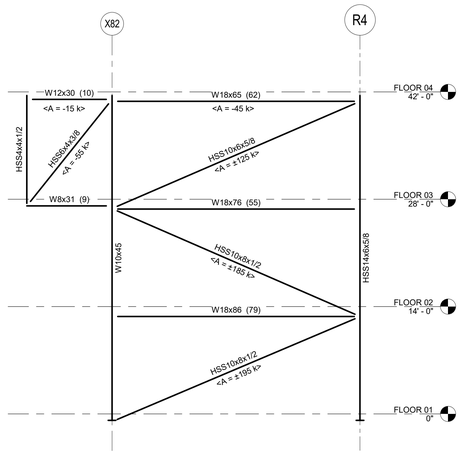
DRAWING NAME
BRACED FRAME AND TRUSS ELEVATIONS (NORTH)

PROJECT NO. Project Number

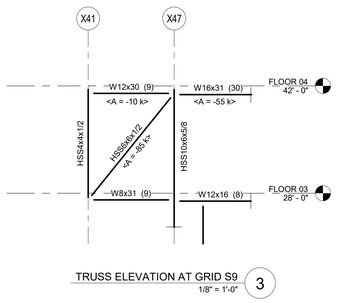
DRAWING NO.
S204



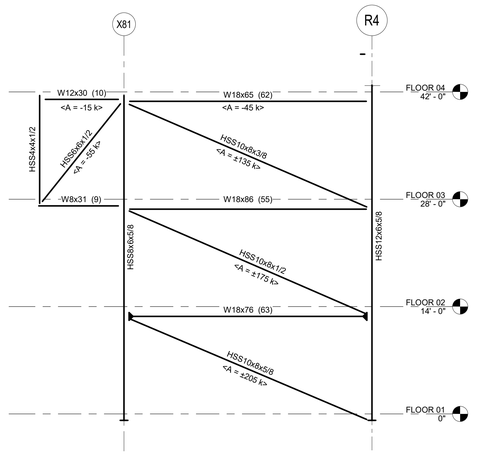
BRACED FRAME ELEVATION AT GRID S12 1
1/8" = 1'-0"



BRACED FRAME ELEVATION AT GRID S10 2
1/8" = 1'-0"



TRUSS ELEVATION AT GRID S9 3
1/8" = 1'-0"



BRACED FRAME ELEVATION AT GRID S8 4
1/8" = 1'-0"

BRACED FRAME ELEVATION AT GRID S6 5
1/8" = 1'-0"

BRACED FRAME ELEVATION AT GRID S4 6
1/8" = 1'-0"

BRACED FRAME ELEVATION AT GRID S1 7
1/8" = 1'-0"

BRACED FRAME ELEVATION AT GRID H 8
1/8" = 1'-0"

BRACED FRAME ELEVATION AT GRID BF1 9
1/8" = 1'-0"

BRACED FRAME ELEVATION AT GRID BF3 10
1/8" = 1'-0"

BRACED FRAME ELEVATION AT GRID BF5 11
1/8" = 1'-0"

BRACED FRAME ELEVATION AT GRID H.5 12
1/8" = 1'-0"

ELEVATION SHOWN FOR HORIZONTAL ELEVATOR RAIL SUPPORTS ONLY. COORDINATE LOCATIONS WITH ELEVATOR PROVIDER

ELEVATION AT GRID S1.9 13
1/8" = 1'-0"

ELEVATION SHOWN FOR HORIZONTAL ELEVATOR RAIL SUPPORTS ONLY. COORDINATE LOCATIONS WITH ELEVATOR PROVIDER

ELEVATION AT GRID S2.1 14
1/8" = 1'-0"

NOTES:
1. <A=± XX K> INDICATES THE ASD BRACE CONNECTION DESIGN FORCE (- INDICATES TENSION, + INDICATES COMPRESSION) IN KIPS.
2. CONTRACTOR TO SUBMIT FOR REVIEW CALCULATIONS FOR BRACED FRAME AND TRUSS CONNECTIONS SIGNED AND STAMPED BY A MASSACHUSETTS LICENSED PROFESSIONAL ENGINEER.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
10	12/20/2019	PR 21
15	02/10/2020	Conformance Set

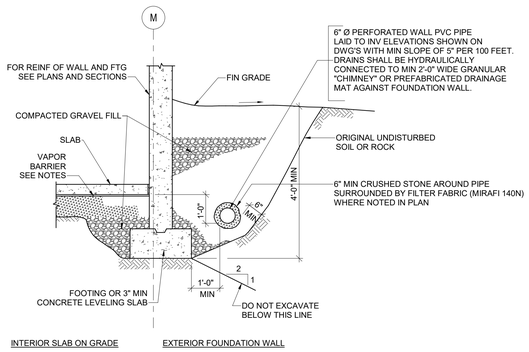
DRAWING NAME

BRACED FRAME AND TRUSS ELEVATIONS (SOUTH)

PROJECT NO. Project Number

DRAWING NO.

S205



TYPICAL UNDERSLAB FILL AND FOUNDATION DRAIN DETAILS 1

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY SITE PACKAGE

MAY 10, 2019

REVISIONS

No.	Date	Description
1	5/17/2019	100% DD
4	8/09/2019	ECSP
15	02/10/2020	Conformance Set

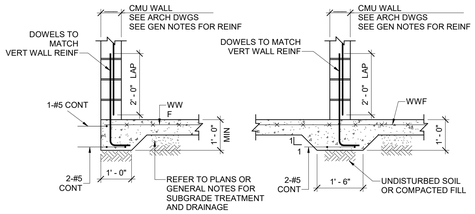
DRAWING NAME

TYPICAL DETAILS

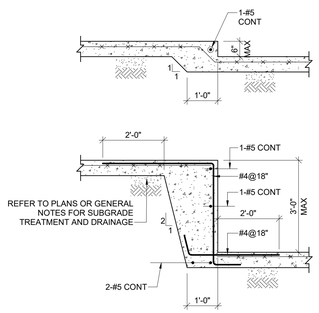
PROJECT NO. Project Number

DRAWING NO.

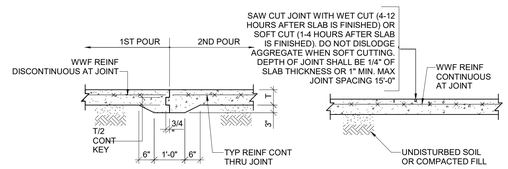
S300



TYPICAL NON-LOAD BEARING CMU PARTITION WALL FOUNDATION DETAIL 1



TYPICAL STEPPED SLAB ON GRADE DETAILS 2



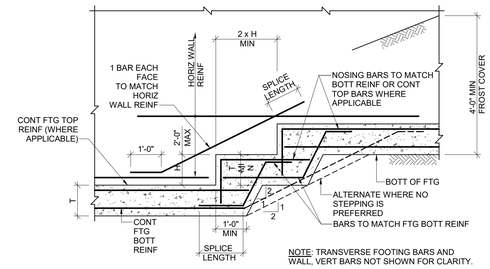
CONSTRUCTION JOINT

CONTROL JOINT

NOTE:

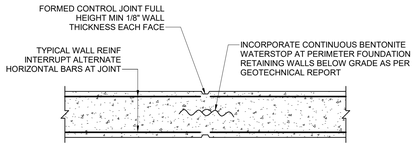
1. FILL SAW CUTS WITH RIGID OR SEMI RIGID JOINT FILLER WHERE REQUIRED BY ARCHITECT TO HIDE OR PROTECT JOINT.
2. SEE LAYOUT DETAIL FOR LOCATIONS OF SLAB ON GRADE JOINTS.
3. WWF REINFORCEMENT SHALL BE LOCATED WITHIN UPPER THIRD OF SLAB THICKNESS, OR 2" MAX FROM TOP OF SLAB.

SLAB ON GRADE JOINTS 3

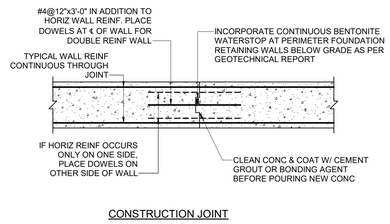


NOTE: TRANSVERSE FOOTING BARS AND WALL, VERT BARS NOT SHOWN FOR CLARITY.

TYPICAL STEPPED FOOTING DETAIL AT FOUNDATION WALLS 4



CONTROL JOINT

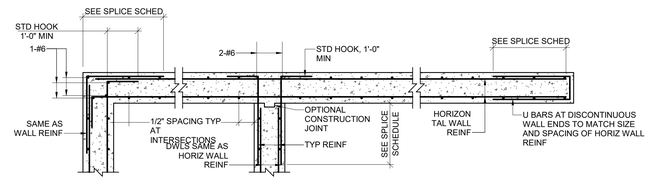


CONSTRUCTION JOINT

NOTE:

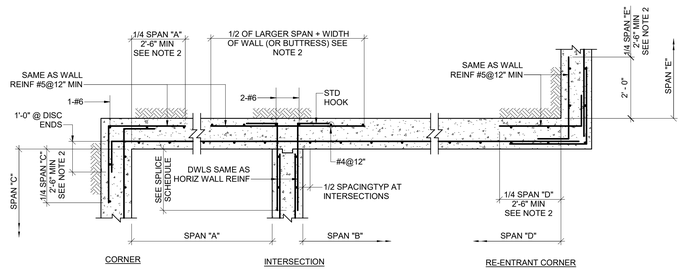
1. KEY WIDTH NOT TO EXCEED 1/3 DEPTH OF WALL.
2. VERTICAL CONSTRUCTION JOINTS SHALL BE LOCATED 4'-0" MIN AWAY FROM WALL CORNERS, FACE OF SUPPORTING PIERS OR BUTTRESSES, AND/OR WALL OPENINGS.
3. REFER TO GENERAL NOTES AND SPECIFICATIONS FOR JOINT SPACING REQUIREMENTS. SUBMIT JOINT LOCATIONS FOR APPROVAL.

TYPICAL VERTICAL JOINTS IN CONCRETE WALL 5



CORNER INTERSECTION DISCONTINUOUS END

DOUBLE LAYER



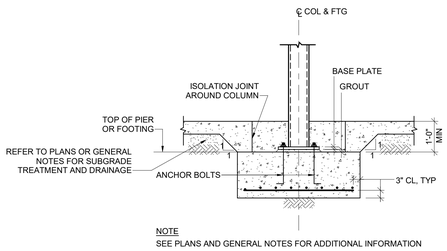
CORNER INTERSECTION RE-ENTRANT CORNER

SINGLE LAYER

NOTES:

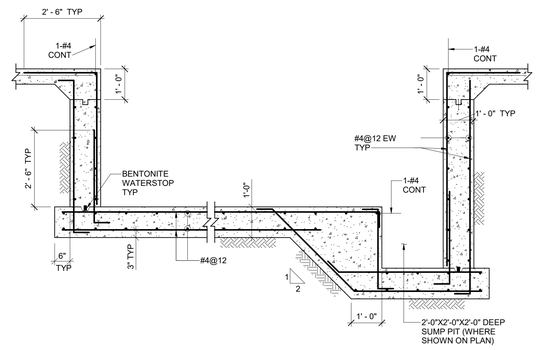
1. FOR WALL REINFORCEMENT, SEE FOUNDATION SECTIONS.
2. IF SPANS ARE LESS THAN 7 FEET, EXTEND REINFORCEMENT INTO ADJACENT SPAN.
3. ALL SPLICE LENGTHS ARE TENSION SPLICES PER CHARTS IN TYPICAL DETAILS.

TYPICAL WALL REINFORCEMENT DETAIL 6

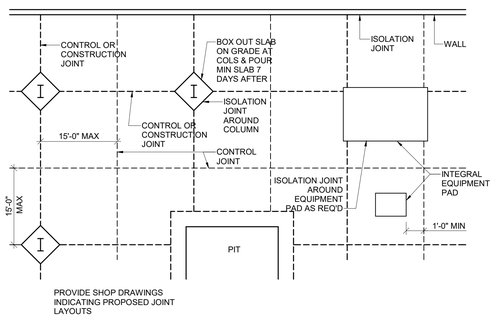


NOTE
SEE PLANS AND GENERAL NOTES FOR ADDITIONAL INFORMATION

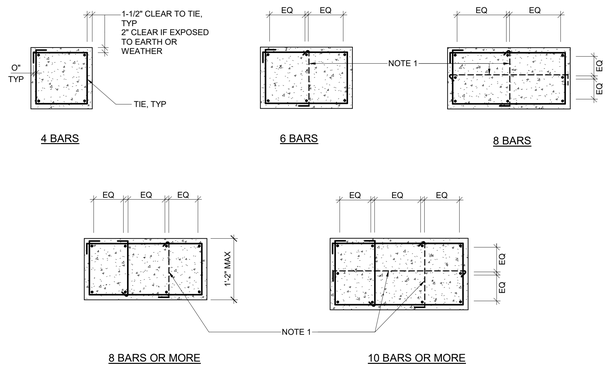
TYPICAL INTERIOR COLUMN DETAIL 7



TYPICAL ELEVATOR PIT DETAIL 8



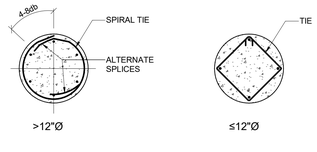
LAYOUT OF CONTROL AND CONSTRUCTION JOINTS IN CONCRETE SLABS ON GRADE 9



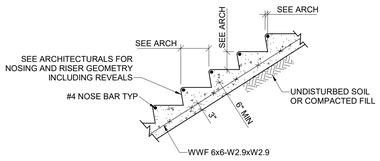
NOTE :

1. ALTERNATE TIES MAY BE OMITTED WHERE CLEAR DISTANCE BETWEEN ADJACENT BARS IS 6" OR LESS.
2. SEE SCHEDULE FOR COL SIZE AND REINF. SQUARE/RECTANGULAR

TYPICAL CONCRETE COLUMN / PIER REINFORCEMENT 10



TYPICAL CIRCULAR COLUMN REINFORCEMENT



NOTES :

1. SEE ARCH FOR STAIR DIMENSIONS.
2. CONCRETE SHALL BE NORMAL WEIGHT
3. USE AIR-ENTRAINTED FOR EXTERIOR APPLICATIONS ONLY.

5

TYPICAL CONCRETE STAIR ON GRADE 11

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE

AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
15	02/10/2020	Conformance Set

DRAWING NAME

TYPICAL DETAILS

PROJECT NO. Project Number

DRAWING NO.

S301

ACI TENSION DEVELOPMENT LENGTHS (Ld) AND CLASS 'A' LAP SPLICE LENGTHS

BAR SIZE	LAP CLASS	f'c=3,000 PSI				f'c=4,000 PSI				f'c=5,000 PSI			
		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
		CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2
#3	A	22	32	17	25	19	28	15	22	17	25	13	19
	B	28	42	22	32	24	36	19	28	22	33	17	25
#4	A	29	43	22	33	25	37	19	29	22	33	17	26
	B	37	56	29	43	32	48	25	37	29	43	22	33
#5	A	36	54	28	41	31	47	24	36	28	42	22	32
	B	47	70	36	54	40	60	31	47	36	54	28	42
#6	A	43	64	33	50	37	56	29	43	33	50	26	38
	B	56	84	43	64	48	72	37	56	43	65	33	50
#7	A	63	94	48	72	54	81	42	63	49	73	37	56
	B	81	122	63	94	70	106	54	81	63	94	49	73
#8	A	72	107	55	82	62	93	48	71	55	83	43	64
	B	93	139	72	107	80	121	62	93	72	108	55	83
#9	A	81	121	62	93	70	105	54	81	63	94	48	72
	B	105	157	81	121	91	136	70	105	81	122	63	94
#10	A	91	136	70	105	79	118	61	91	70	105	54	81
	B	118	177	91	136	102	153	79	118	91	137	70	105
#11	A	101	151	78	116	87	131	67	101	78	117	60	90
	B	131	196	101	151	113	170	87	131	101	152	78	117
#14	N/A	121	181	93	139	105	157	81	121	94	140	72	108
#18	N/A	161	241	124	186	139	209	107	161	125	187	96	114

NOTES:

1. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL WEIGHT CONCRETE.
2. 'TENSION DEVELOPMENT LENGTHS OF STANDARD HOOKS ARE CALCULATED PER ACI 318-95, SECTION 318-95, SECTIONS 12.2.2 AND 12.15, RESPECTIVELY. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS. LENGTHS ARE IN INCHES.
3. 'CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, CONCRETE COVER, AND THE CENTER-TO-CENTER SPACING OF THE BARS, ARE DEFINED AS:
   BEAMS OR COLUMNS: CASE 1: COVER AT LEAST 1.0 db AND c-c SPACING AT LEAST 2.0 db
   CASE 2: COVER LESS THAN 1.0 db OR c-c SPACING LESS THAN 2.0 db

   ALL OTHERS: CASE 1: COVER AT LEAST 1.0 db AND c-c SPACING AT LEAST 3.0 db
   CASE 2: COVER LESS THAN 1.0 db OR c-c SPACING LESS THAN 3.0 db
4. LAP SPLICE LENGTHS ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS; CLASS A = 1.0 ld AND CLASS B = 1.3 ld
   (ACI 318-95, SECTION 12.15.1).
5. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
6. FOR LIGHTWEIGHT AGGREGATE CONCRETE, MULTIPLY THE TABULATED VALUES BY 1.3.
7. FOR EPOXY-COATED BARS, MULTIPLY THE TABULATED VALUES BY ONE OF THE FOLLOWING FACTORS:

CONCRETE COVER AND SPACING	TOP BARS	OTHER BARS
COVER < 3.0 db OR c-c SPACING < 7.0 db	1.7/1.3 = 1.31	1.50
COVER ≥ 3.0 db AND c-c SPACING ≥ 7.0 db	1.20	1.20

ACI COMPRESSION DEVELOPMENT (Ldc) AND LAP SPLICE LENGTHS

BAR SIZ	COMPRESSION DEVELOPMENT LENGTHS PER f'c (PSI)						COMPRESSION LAP SPLICE LENGTH
	3,000	4,000	5,000	6,000	7,000	8,000	
#3	9	8	8	8	8	8	12
#4	11	10	9	9	9	9	15
#5	14	12	12	12	12	12	19
#6	17	15	14	14	14	14	23
#7	19	17	16	16	16	16	27
#8	22	19	18	18	18	18	30
#9	25	22	21	21	21	21	34
#10	28	24	23	23	23	23	38
#11	31	27	26	26	26	26	43
#14	37	32	31	31	31	31	N/A
#18	50	43	41	41	41	41	N/A

NOTES:

1. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL WEIGHT CONCRETE.
2. COMPRESSION DEVELOPMENT LENGTHS AND COMPRESSION LAP SPLICE LENGTHS ARE CALCULATED PER ACI 318-95, SECTIONS 12.3 AND 12.16, RESPECTIVELY. LENGTHS ARE IN INCHES.
3. FOR COMPRESSION DEVELOPMENT LENGTHS, IF BARS ARE ENCLOSED IN SPIRALS OR TIES PER ACI 318-95, SECTION 12.3.3.2 THEN A MODIFICATION FACTOR OF 0.75 MAY BE APPLIED BUT THE LENGTH MUST NOT BE LESS THAT 8 INCHES.
4. FOR COMPRESSION LAP SPLICE LENGTHS:
   A. IF BARS ARE ENCLOSED IN A TIED-REINFORCED COMPRESSION MEMBER PER ACI 318-95, SECTION 12.17.2.4,
   THEN A MODIFICATION FACTOR OF 0.83 MAY BE APPLIED BUT THE LENGTH MUST NOT BE LESS THAT 12 IN.
   B. IF THE BARS ARE ENCLOSED IN A SPIRALLY-REINFORCED COMPRESSION MEMBER PER ACI 318-95, SECTION
   12.17.2.5, THEN A MODIFICATION FACTOR OF 0.75 MAY BE APPLIED BUT THE LENGTH MUST NOT BE LESS THAN
   12 INCHES.
   C. THE TABULATED LENGTHS ARE APPLICABLE FOR ALL CONCRETE STRENGTHS OF AT LEAST 3,000 PSI.
5. ACI 318-95 DOES NOT ALLOW LAP SPLICES OF #14 OF #18 BARS, EXCEPT TO #11 OR SMALLER BARS.

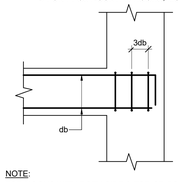
TYPICAL DEVELOPMENT AND LAP LENGTHS 1
1/2" = 1'-0"

ACI HOOK DEVELOPMENT LENGTHS (Ldh)

BAR SIZE	f'c IN PSI					
	3000	4000	5000	6000	7000	8000
#3	9	7	7	6	6	6
#4	11	10	9	8	7	7
#5	14	12	11	10	9	9
#6	17	15	13	12	11	10
#7	19	17	15	14	13	12
#8	22	19	17	16	15	14
#9	25	22	19	18	16	15
#10	28	24	22	20	19	17
#11	31	27	24	22	21	19
#14	37	32	29	27	25	23
#18	50	43	39	35	33	31

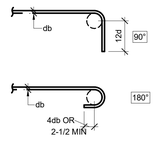
NOTES:

1. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL WEIGHT CONCRETE.
2. TENSION DEVELOPMENT LENGHTS OF STANDARD HOOKS ARE CALCULATED PER ACI 318-95, SECTION 318-95, SECTION 12.5. LENGTHS ARE IN INCHES.
3. FOR BAR SIZES #3 THROUGH #11 ONLY:
   A) IF CONCRETE COVER PER ACI 318-95 SECTIONS 12.5.3.2, THEN A MODIFICATION
   FACTOR OF 0.7 MAY BE APPLIED BUT THE LENGTH MUST NOT BE LESS THAN 8.0 db
   NOR 6 INCHES.
   B) IF HOOK IS ENCLOSED IN TIES OR STIRRUPS PER ACI 318-95, SECTION 12.5.3.3,
   THEN A MODIFICATION FACTOR OF 0.8 MAY BE APPLIED BUT THE LENGTH MUST NOT BE LESS THAN 8.0 db NOR 6 INCHES.
4. FOR EPOXY-COATED HOOKS, MULTIPLY THE TABULATED VALUES BY 1.2.



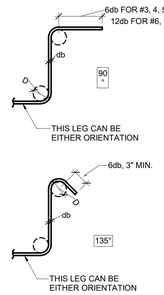
NOTE:
FOR HOOKS WITH BOTH SIDE & TOP OR BOTTOM COVER LESS THAN 2 1/2" ADD ADDL TIES PER ACI (AT DISCONTINUOUS MEMBERS ONLY) SEE DETAIL ABOVE

BAR SIZE	db	FINISHED BEND DIA. "D"
#3	3/8"	2-1/4"
#4	1/2"	3"
#5	5/8"	3-3/4"
#6	3/4"	4-1/2"
#7	7/8"	5-1/4"
#8	1"	6"
#9	1-1/8"	9-1/2"
#10	1-1/4"	10-3/4"



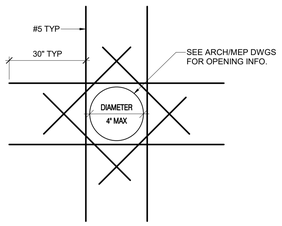
END HOOKS

BAR SIZE	db	FINISHED BEND DIA. "D"
#3	3/8"	1-1/2"
#4	1/2"	2"
#5	5/8"	2-1/2"
#6	3/4"	4-1/2"
#7	7/8"	5-1/4"
#8	1"	6"



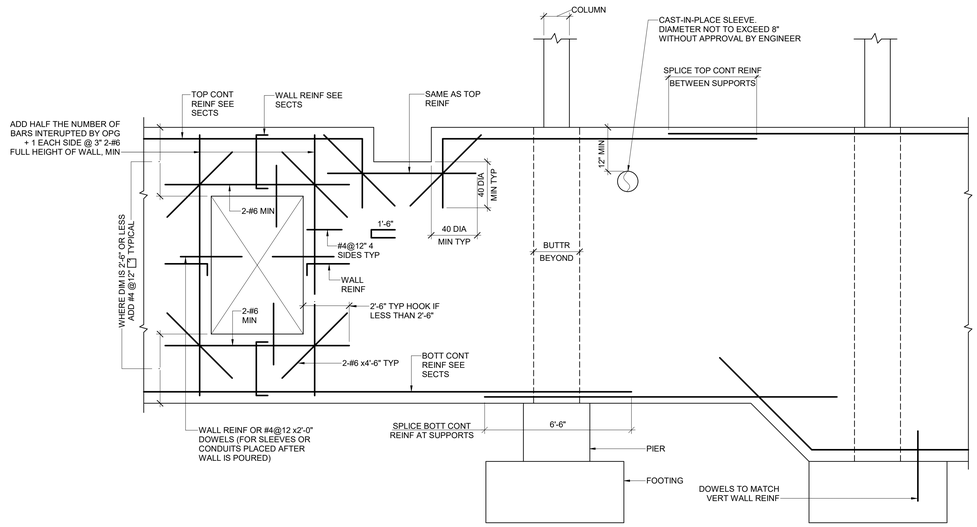
STIRRUP/TIE HOOKS

TYPICAL HOOK DETAILS 2
1/2" = 1'-0"

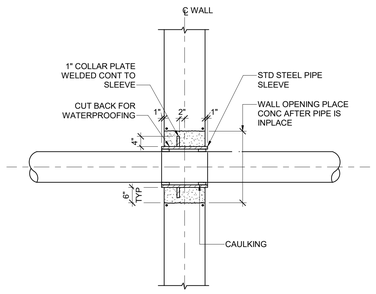


NOTE: NO REBAR REQ'D FOR D<8"

PLAN DETAIL OF SLAB ON GRADE OPENING 3
1/2" = 1'-0"



TYPICAL WALL ELEVATION INDICATING OPENING AND MISCELLANEOUS REINFORCING DETAILS 5
1/2" = 1'-0"



NOTE:
FOR REINF AROUND OPENING SEE TYPICAL WALL ELEVATION

TYPICAL SLEEVE THRU WALL DETAIL 4
1/2" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

REVISIONS

No.	Date	Description
15	02/10/2020	Conformance Set

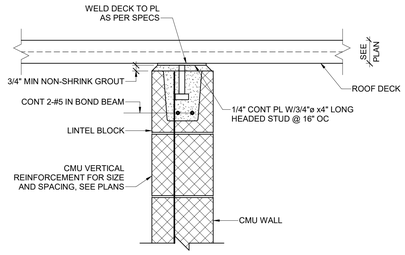
DRAWING NAME
TYPICAL DETAILS

PROJECT NO. Project Number

DRAWING NO.
S302

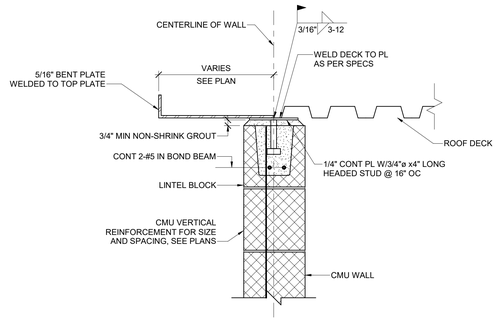
DETAIL DELETED.

△7



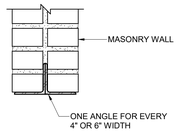
SEE PLANS FOR DECK ORIENTATION

ROOF DECK SUPPORT AT CMU WALLS - INTERIOR WALL 2A



SEE PLANS FOR DECK ORIENTATION

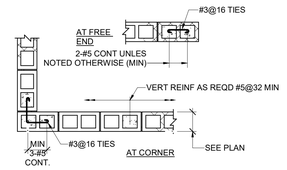
ROOF DECK SUPPORT AT CMU WALLS - EDGE 2B



SECTION

1. PROVIDE AND INSTALL LINTEL ANGLES FOR MASONRY OPENINGS IN ACCORDANCE WITH THE SCHEDULE IN GENERAL NOTES. INSTALL LONG LEG VERTICAL. SEE ARCHT & MECHANICAL PLANS FOR LOCATIONS.
2. TO INSTALL LINTELS IN EXISTING MASONRY WALLS, SAWCUT MASONRY ON ONE SIDE AND PLACE FIRST ANGLE. THEN SAWCUT SECOND SIDE AND PLACE SECOND ANGLE. WHEN BOTH ANGLES ARE IN PLACE, PROCEED WITH REMAINING DEMOLITION.
3. PROVIDE 8" MIN BEARING AT EACH END BUT NOT LESS THAN 1" PER FOOT OF SPAN. FILL 2 COURSES OF MASONRY BELOW BEARING WITH MORTAR WHERE POSSIBLE.
4. WHERE MINIMUM BEARING CANNOT BE PROVIDED, ATTACH SECURELY TO ADJACENT STRUCTURAL MEMBERS OR PROVIDE SEPERATE SUPPORTS.
5. WHERE LINTELS OCCUR IN EXTERIOR WALLS MINIMUM THICKNESS SHALL BE 5/16" AND ANGLES SHALL BE HOT DIP GALVINIZED.

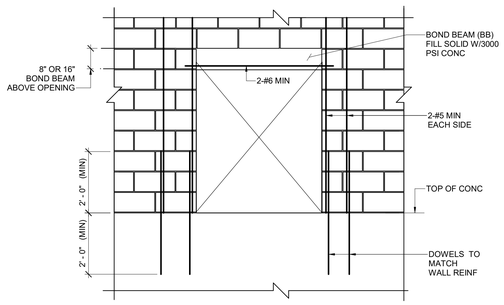
STEEL ANGLE LINTEL 3
1 1/2" = 1'-0"



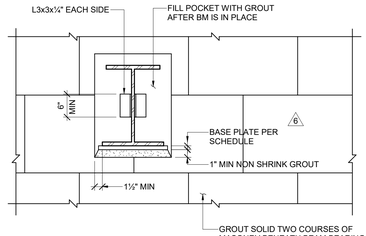
PLAN / CMU WALL

NOTES:

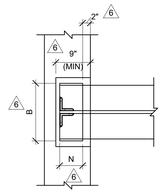
1. SEE SPECS FOR HORIZONTAL REINFORCEMENT REQUIREMENTS.
2. PROVIDE BOND BEAMS WITH MIN 2-#5 CONT BARS AT EACH FLOOR.



OPENING IN CMU WALL 4



SECTION

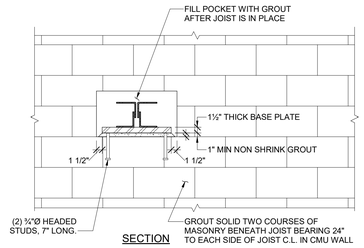


PLAN

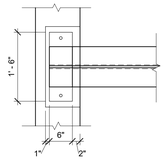
BEARING PLATE SCHEDULE △6

MARK	DIMENSION (BxN)	THICKNESS
BP1	8½"x6"	½"
BP2	6½"x6"	½"
BP3	14½"x6"	1¼"
BP4	10"x6"	1¼"
BP5	10"x6"	1"
BP6	13½"x6"	1½"
BP7	11"x7"	1½"

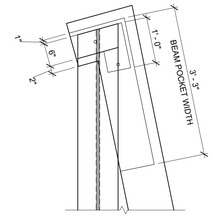
TYPICAL BEAM POCKETS IN CMU 5



SECTION

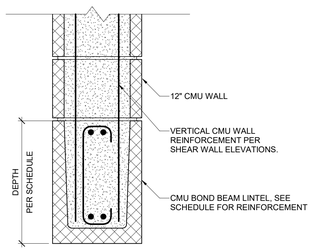


BPJ1 PLAN DETAIL



BPJ2 PLAN DETAIL

TYPICAL OWJ POCKETS IN CMU 6 △6



CMU BOND BEAM LINTEL SCHEDULE

MARK	BOND BEAM DEPTH	HORIZONTAL REINFORCEMENT	SHEAR REINFORCEMENT	MINIMUM BEARING	MAXIMUM OPENING SIZE
BBL1	16"	(2) #6 BARS TOP AND BOTTOM	#3@4" O.C.	8"	4' - 6"
BBL2	16"	(2) #7 BARS TOP AND BOTTOM	#3@4" O.C.	8"	5' - 3"
BBL3	24"	(2) #7 BARS TOP AND BOTTOM	#3@4" O.C.	8"	8' - 0"

TYPICAL CMU BOND BEAM LINTEL 7 △8

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

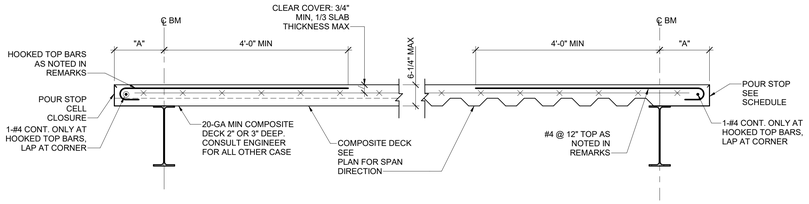
REVISIONS

No.	Date	Description
6	9/09/2019	PR 12
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
15	02/10/2020	Conformance Set

DRAWING NAME
TYPICAL DETAILS

PROJECT NO. Project Number

DRAWING NO.
S303

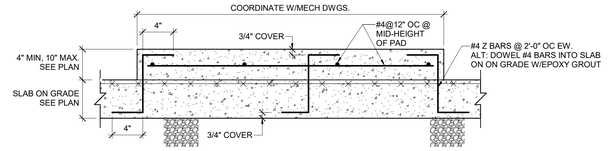


DECK ⊥ TO BEAM	
	REMARKS
A < 10"	
10" ≤ A ≤ 2'-10"	#4 @ 12" TOP

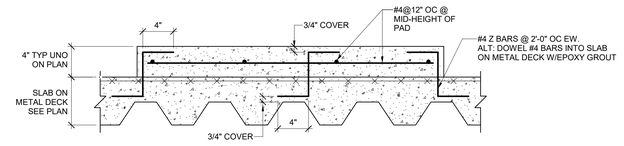
DECK || TO BEAM OR STOPPING AT BEAM		
"A"	POUR STOP PLATE GAGE	REMARKS
A ≤ 6"	14	
6"< A <10"	12	
10"≤ A <12"	10	#4 @ 12" TOP
12"≤ A ≤1'-6"	1/4"	#4 @ 12" TOP

1. SEE PLANS AND ARCHITECT DRAWINGS FOR EDGE OF SLAB DISTANCES.
2. FOR A > 1'-6" WHERE DECK SPAN IS PARALLEL TO THE BEAM OR A > 2'-10" WHERE DECK IS PERPENDICULAR AND EXTENDS PAST BEAM, NOTIFY ENGINEER.
3. FOR 1/4" THICK POUR STOPS, WELD TO BEAM FLANGE WITH 3/16" FILLET WELD, 3@12, B.S.

TYPICAL EDGE OF SLAB DETAIL 1

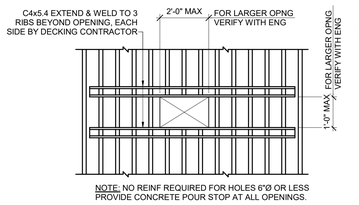


CONCRETE PAD ON SLAB ON GRADE



CONCRETE PAD ON SLAB ON METAL DECK

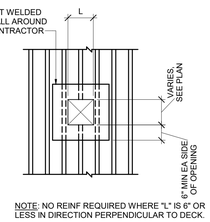
TYPICAL MECHANICAL PAD DETAIL 2



NOTE: NO REINF REQUIRED FOR HOLES 6'Ø OR LESS PROVIDE CONCRETE POUR STOP AT ALL OPENINGS.

FOR OPENINGS TO 2'-0" PERPENDICULAR TO DECK

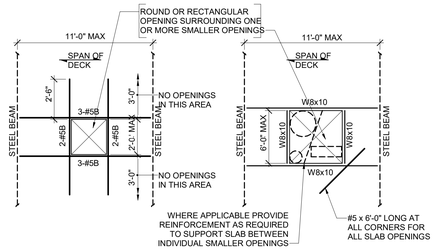
OPTION 1A



NOTE: NO REINF REQUIRED WHERE "L" IS 6" OR LESS IN DIRECTION PERPENDICULAR TO DECK.

FOR OPENINGS TO 13" PERPENDICULAR TO DECK

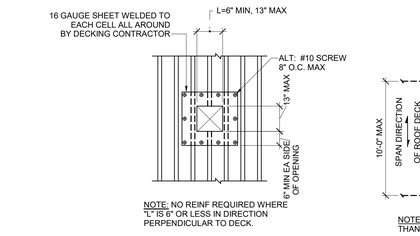
OPTION 1B



NOTES:
1. FOR OPTION 2, METAL DECK SHALL NOT BE CUT UNTIL CONCRETE HAS CURED.
2. CONTRACTOR SHALL SELECT REINFORCEMENT OPTION BASED ON OPENING SIZE.
3. COORDINATE SIZE, LOCATION AND QUANTITY WITH MECHANICAL AND ARCHITECTURAL DRAWINGS.

OPTION 2 OPTION 3

REINFORCEMENT AT OPENINGS IN SLABS WITH COMPOSITE METAL DECK 3



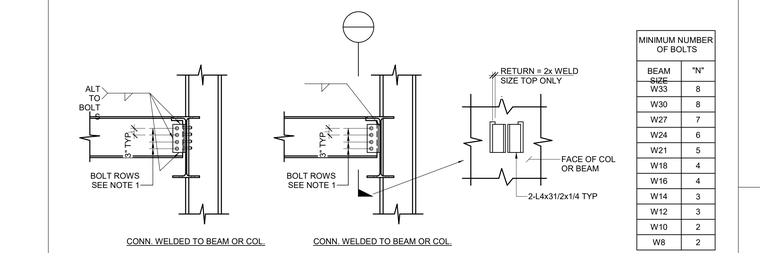
NOTE: NO REINF REQUIRED WHERE "L" IS 6" OR LESS IN DIRECTION PERPENDICULAR TO DECK.

OPTION 1

NOTE: FOR OPENINGS LARGER THAN 3'-0" NOTIFY ENGINEER.

OPTION 2

FRAMING FOR OPENINGS IN STEEL ROOF DECK (NO CONCRETE) 4



MINIMUM NUMBER OF BOLTS	
BEAM SIZE	"N"
W33	8
W30	8
W27	7
W24	6
W21	5
W18	4
W16	4
W14	3
W12	3
W10	2
W8	2

"N" = MINIMUM NUMBER OF BOLT ROWS

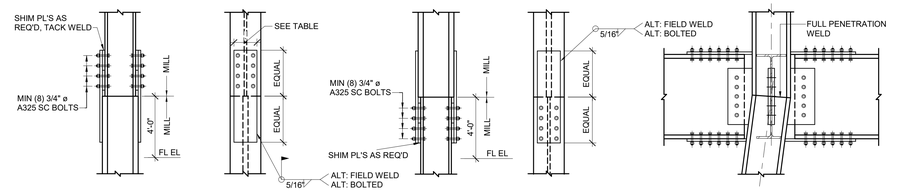
DOUBLE ANGLE CONNECTIONS TO BEAM OR COLUMN

NOTE: CONN SIMILAR WHEN CONNECTING TO GIRDER OR COLUMN (SHOWN DASHED)

NOTES:

1. SIMPLE SHEAR CONNECTIONS SHALL BE DESIGNED FOR THE REACTION SHOWN ON THE DRAWINGS OR THE GREATEST OF THE FOLLOWING:
   a. REACTION FROM AISC MANUAL OF STEEL TABLES FOR BEAMS FOR APPLICABLE BEAM MATERIAL AS PER GENERAL NOTES.
   b. MINIMUM NUMBER OF BOLTS, SEE TABLE.
2. BOLTS SHALL BE 3/4" DIAMETER A325 MINIMUM U.O.N..
3. PROVIDE WEB REINFORCING AS REQUIRED DUE TO WEB CUTS, COPES ETC..
4. DESIGN OF DOUBLE ANGLE CONNECTIONS SHALL BE BASED ON THE LATEST AISC PROCEDURES SHOWN IN THE AISC MANUAL OF STEEL CONSTRUCTION.
5. FACTOR FOR CONVERSION OF LOADS FROM SERVICE TO ULTIMATE SHALL BE EQUAL TO 1.6.
6. ALTERNATE CONNECTION SYSTEM (SINGLE ANGLE, SEATED, ETC) MAY BE USED ONLY UPON SPECIFIED APPROVAL OF THE ENGINEER OF RECORD. DETAILER SHALL SUBMIT WRITTEN REQUESTS FOR USE OF ALTERNATE CONNECTIONS TO THE ARCHITECT AND ENGINEER OF RECORD.

TYPICAL SIMPLE SHEAR CONNECTION DETAIL 5

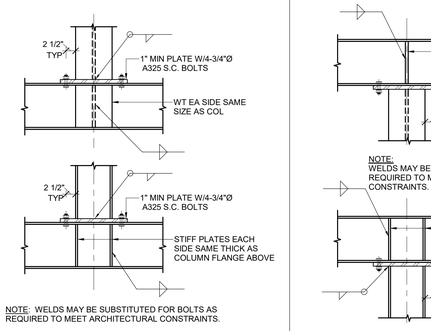


NOTE:
IF COLUMN DEPTHS DIFFER MORE THAN 2 TIMES FLANGE THICKNESS, FOLLOW AISC STANDARD DETAILS AND DEVELOP CONNECTION FOR BEARING CAPACITY OF SMALLER COLUMN. SUBMIT DETAIL FOR REVIEW.

COLUMN ABOVE SMALLER THAN COLUMN BELOW COLUMN ABOVE LARGER THAN COLUMN BELOW BENT COLUMN

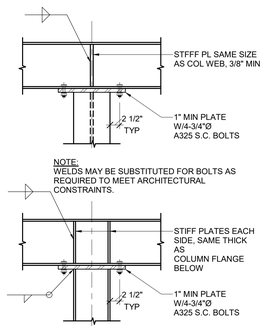
TYPICAL COLUMN SPLICES FOR GRAVITY COLUMNS 6

SPLICE PLATE SIZE		
COLUMN SIZE	WIDTH	THICKNESS
W14x455 + OVER	16	3/4"
W14x257 TO 426	14	5/8"
W14x145 TO 233	14	1/2"
W14x90 TO 132	14	3/8"
W14x43 TO 82	8	3/8"
W12x4120 TO 336	12	5/8"
W12x40 TO 106	8	3/8"
W10x33 TO 112	8	3/8"
W8x31 TO 67	8	3/8"
W8x24 & 28	6	3/8"



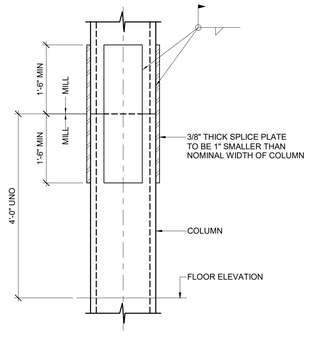
NOTE: WELDS MAY BE SUBSTITUTED FOR BOLTS AS REQUIRED TO MEET ARCHITECTURAL CONSTRAINTS.

TYPICAL COLUMN OR POST OVER BEAM 7

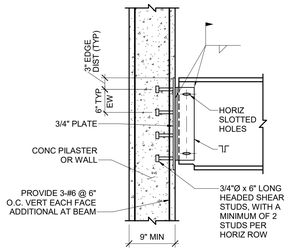


NOTE:
WELDS MAY BE SUBSTITUTED FOR BOLTS AS REQUIRED TO MEET ARCHITECTURAL CONSTRAINTS.

TYPICAL BEAM OVER COLUMN 8



TYPICAL GRAVITY BOX COLUMN SPLICE
3/4" = 1'-0" 9



NOTES:

1. DESIGN CONNECTIONS TO CARRY BEAM REACTIONS AS PER GENERAL NOTES.
2. NUMBER OF STUDS PER CONNECTION SHALL NOT BE LESS THAN THE FOLLOWING:

END REACTION	#OF STUDS
GREATER THAN 32k	12
GREATER THAN 24k 10BUT LESS THAN OR EQUAL TO 32k	
GREATER THAN 16k BUT LESS THAN OR EQUAL TO 24k	8
GREATER THAN 8k BUT LESS THAN OR EQUAL TO 16k	6
LESS THAN 8k	4

3. BEAM CONNECTIONS SHALL BE WITH DOUBLE ANGLES.

STEEL BEAM CONNECTION TO CONCRETE WALL
3/4" = 1'-0" 10

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

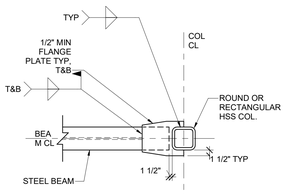
REVISIONS

No.	Date	Description
15	02/10/2020	Conformance Set

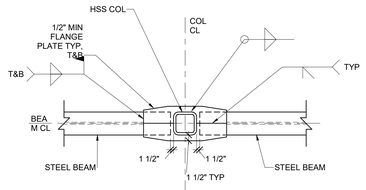
DRAWING NAME
TYPICAL DETAILS

PROJECT NO. Project Number

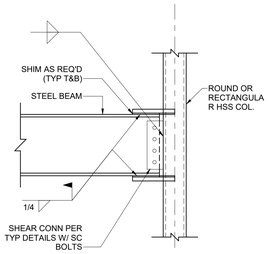
DRAWING NO.
S304



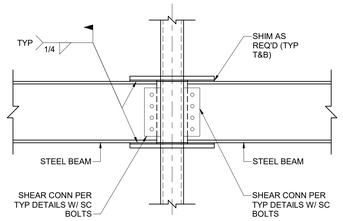
PLAN



PLAN



MOMENT CONNECTION ON ONE SIDE

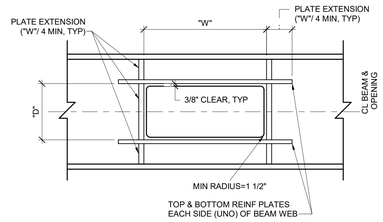


MOMENT CONNECTION ON BOTH SIDES

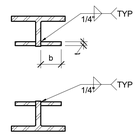
NOTES:

1. ALTERNATE CONNECTION DETAILS MAY BE SUBMITTED FOR APPROVAL BY SER.

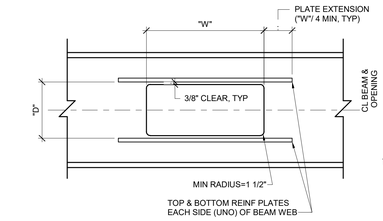
TYPICAL BEAM HSS TO COLUMN MOMENT CONNECTION DETAILS 1



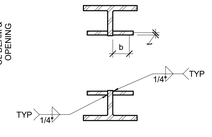
DETAIL PA



SECTION



DETAIL PB



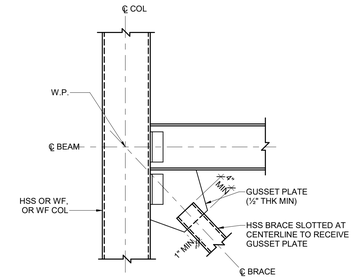
SECTION

BEAM WEB PENETRATION SCHEDULE			
MARK	SIZE WxD	"b" WIDTH x "t" THICKNESS	REINFORCING DETAIL
PO		NO ADDITIONAL PLATE REINFORCEMENT NEEDED	

NOTES:

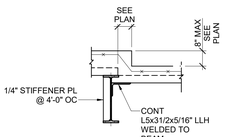
1. SEE PLAN FOR MARK AND LOCATION.
2. ALL OPENINGS TO BE CENTERED AT BEAM MID-DEPTH.
3. AN ADDITIONAL 2 STUDS PER FOOT (IN ADDITION TO STUDS SHOWN ON PLAN) ARE REQUIRED FOR 3'-0" BEYOND EACH END OF OPENING.
4. CORRDINATE ALL BEAM PENETRATION WITH HVAC, PLUMBING, AND ELECTRICAL CONTRACTORS.

TYPICAL DETAIL OF BEAM WEB PENETRATION
1/2" = 1'-0" 2

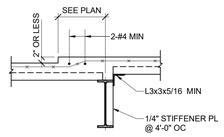


NOTE:
ALL BRACED FRAME CONNECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH SPECIFICATIONS AND DRAWINGS.

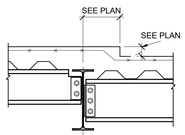
TYPICAL BRACED FRAME AND TRUSS CONNECTIONS 3



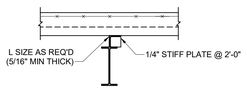
DETAIL 1



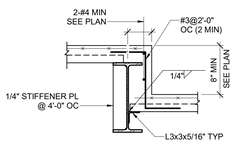
DETAIL 2



DETAIL 3



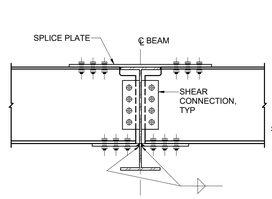
DETAIL 4



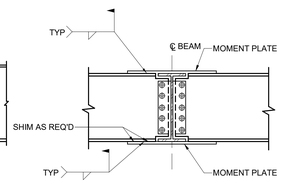
DETAIL 5

NOTE: PROVIDE CLOSURE PL WHERE ADJACENT DECKS ARE AT DIFFERENT ELEVATIONS

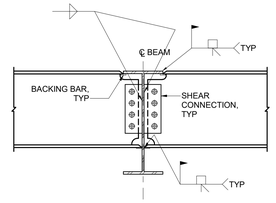
TYPICAL DETAILS FOR SLAB DEPRESSION ON STEEL DECK
3/4" = 1'-0" 4



TYPE A-BOLTED



TYPE B-WELDED / EQUAL DEPTH

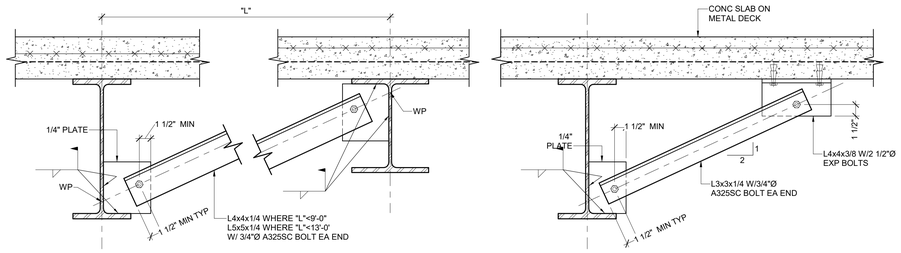


TYPE C-WELDED

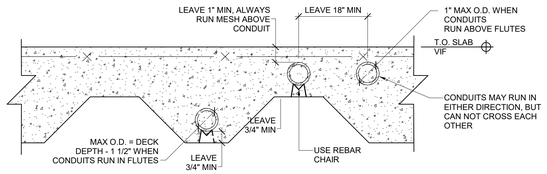
NOTES:

1. SHEAR CONNECTION SHALL BE DESIGNED FOR THE BEAM END REACTIONS PER GENERAL NOTES.
2. DESIGN MOMENT PLATES FOR THE FULL MOMENT CAPACITY OF THE SMALLER BEAM UNLESS NOTED OTHERWISE.

TYPICAL BEAM TO GIRDER MOMENT CONNECTION DETAILS 5



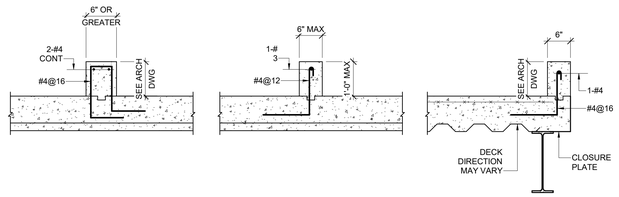
TYPICAL KICKER CONNECTION DETAIL
1 1/2" = 1'-0" 6



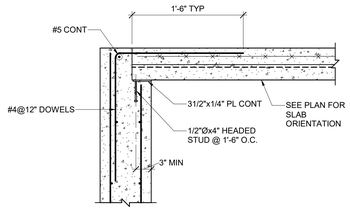
NOTE
NOTIFY ENGINEER IF CONFLICT OCCURS WITH SHEAR STUDS

SEE PLAN FOR EXACT THICKNESS OF SLAB AND DEPTH OF METAL DECK.

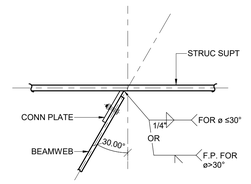
MIN CONCRETE COVER FOR CONDUIT IN CONCRETE ON METAL DECK CONSTRUCTION
3" = 1'-0" 7



TYPICAL CONCRETE CURB DETAILS
3/4" = 1'-0" 8



TYPICAL SUPPORT OF DECK AT CONCRETE WALL
1" = 1'-0" 9



PLAN

TYPICAL SKEWED CONNECTION PLATE TO SUPPORT CONNECTION
3/4" = 1'-0" 10

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

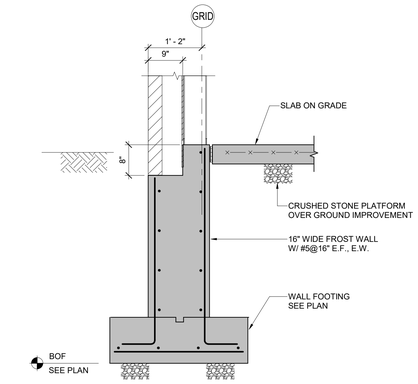
REVISIONS

No.	Date	Description
15	02/10/2020	Conformance Set

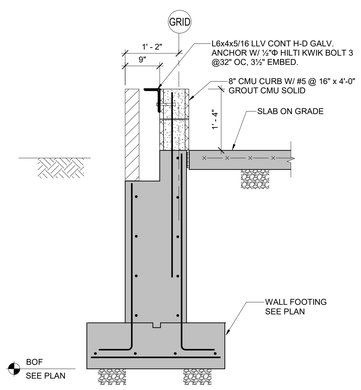
DRAWING NAME
TYPICAL DETAILS

PROJECT NO. Project Number

DRAWING NO.
S305

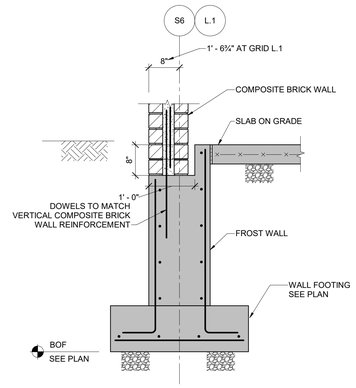


TYPICAL FROST WALL SECTION AT MASONRY BASE 1
3/4" = 1'-0"



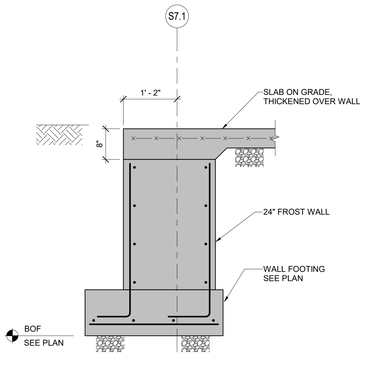
COORDINATE EXTENT OF CMU CURB W/ ARCH'LS.
SEE SECTION 1 FOR INFO NOW SHOWN HERE

FROST WALL SECTION AT STOREFRONT CMU CURB 1A
3/4" = 1'-0"



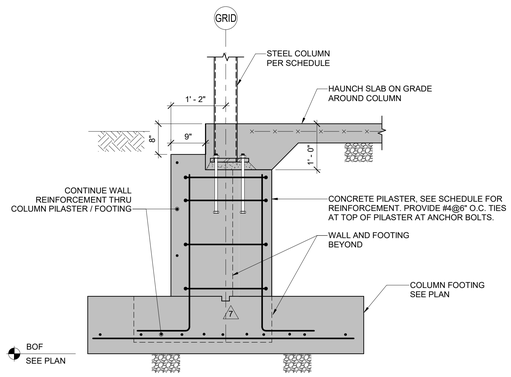
11

FROST WALL SECTION AT COMPOSITE BRICK WALL 1B
3/4" = 1'-0"

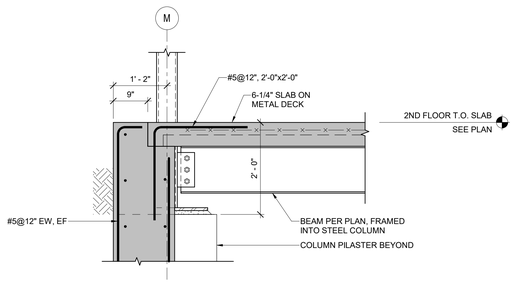


11

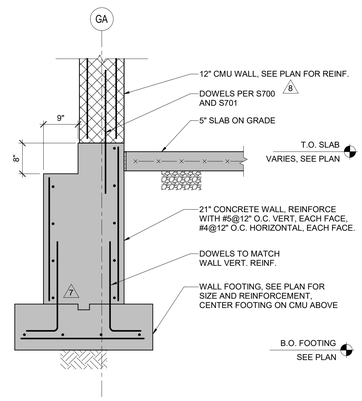
THICKENED FROST WALL SECTION AT DOOR 1C
3/4" = 1'-0"



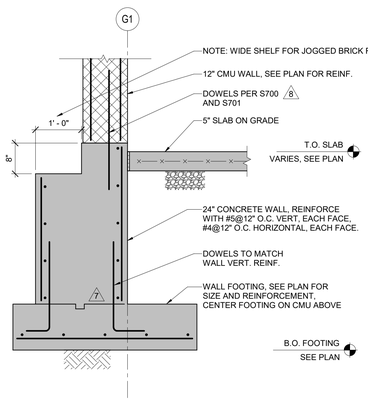
FOUNDATION DETAIL AT PILASTER 2
3/4" = 1'-0"



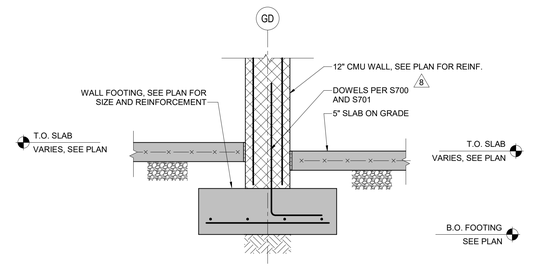
FOUNDATION DETAIL AT SOUTH RETAINING WALL 3
3/4" = 1'-0"



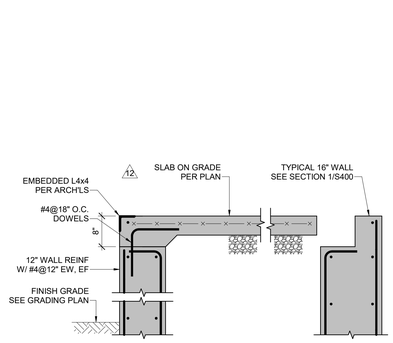
EXTERIOR CMU WALL - 21" WALL 4
3/4" = 1'-0"



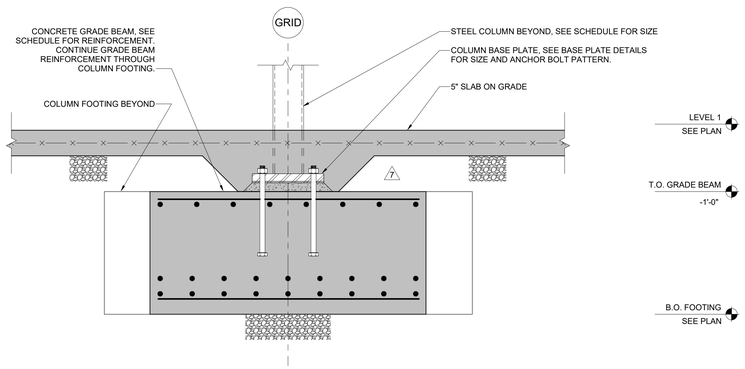
EXTERIOR CMU WALL SECTION 24" WALL 5
3/4" = 1'-0"



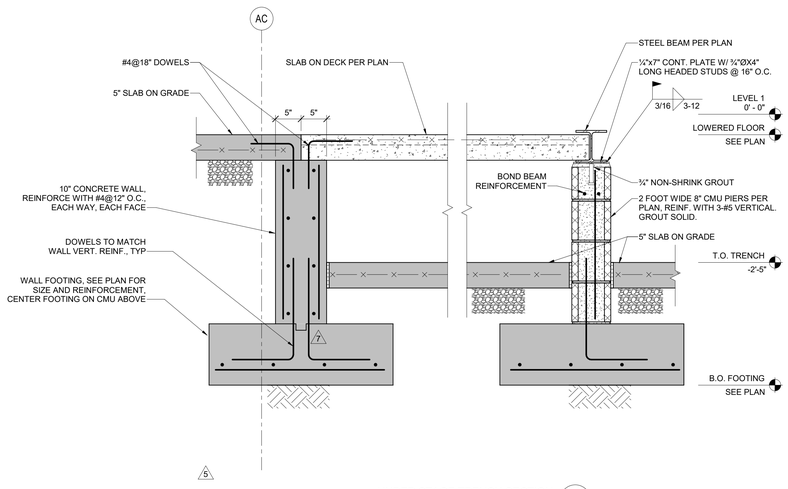
CMU WALL FOOTING SECTION 6
3/4" = 1'-0"



LOADING DOCK SECTION 7
3/4" = 1'-0"



GRADE BEAM SECTION 8
1" = 1'-0"



UNDER STAGE TRENCH SECTION 9
1" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

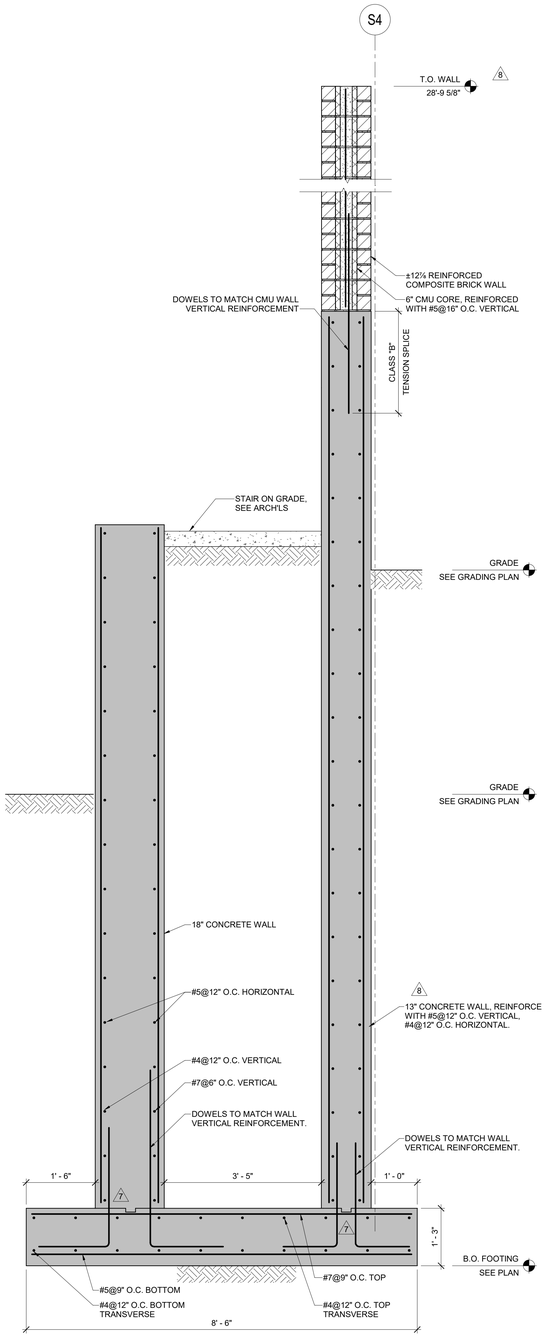
REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
11	12/23/2019	PR 20
12	01/13/2020	PR 25
15	02/10/2020	Conformance Set

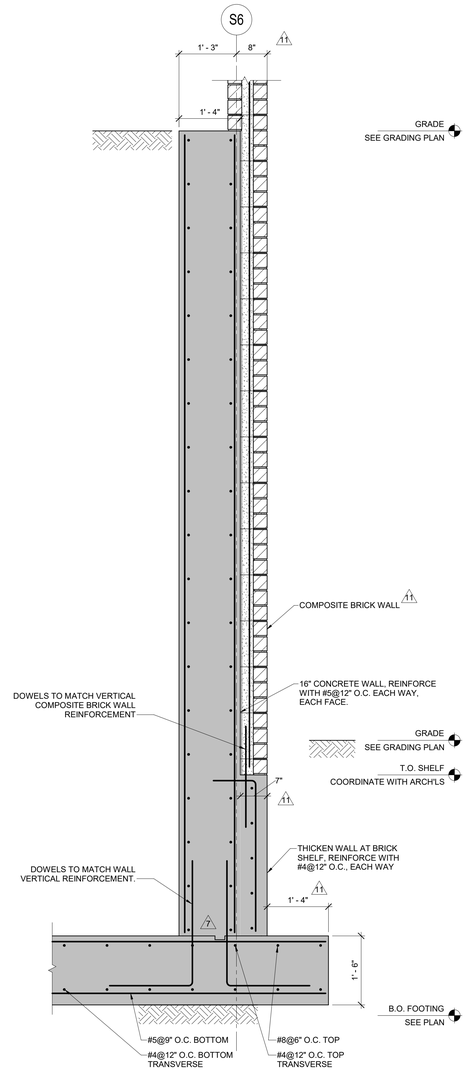
DRAWING NAME
FOUNDATION SECTIONS

PROJECT NO. Project Number

DRAWING NO.
S400



RETAINING WALL AT EGRESS STAIR 1
3/4" = 1'-0"



RETAINING WALL AT GRID S6 2
3/4" = 1'-0"

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
PR 12
SEPTEMBER 09, 2019

REVISIONS

No.	Date	Description
6	9/09/2019	PR 12
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
11	12/23/2019	PR 20
15	02/10/2020	Conformance Set

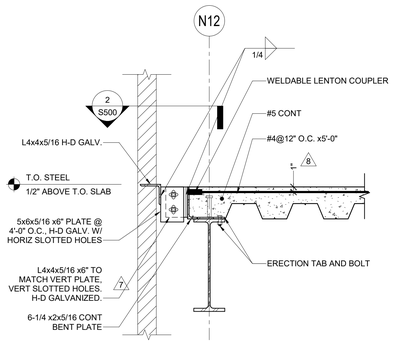
DRAWING NAME

FOUNDATION SECTION

PROJECT NO. Project Number

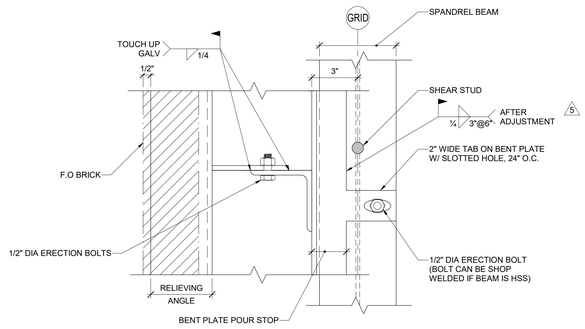
DRAWING NO.

6 S401



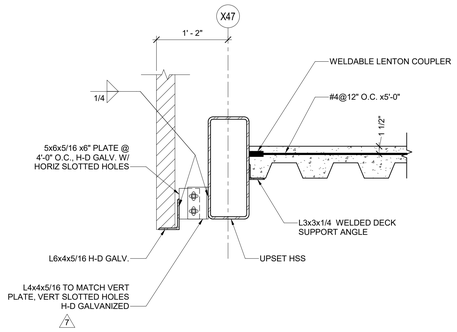
SEE 2/S500 FOR BALANCE OF INFO

SECTION AT RELIEVING ANGLE 1
1" = 1'-0"



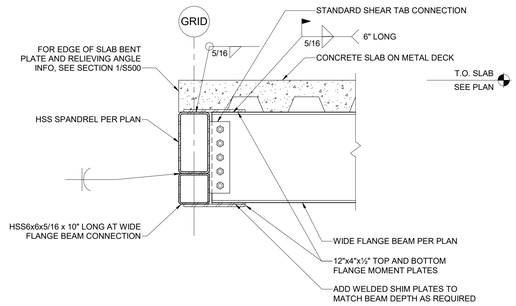
SEE 1/S500 FOR INFO NOT SHOWN HERE

PLAN DETAIL AT RELIEVING ANGLE 2
3" = 1'-0"

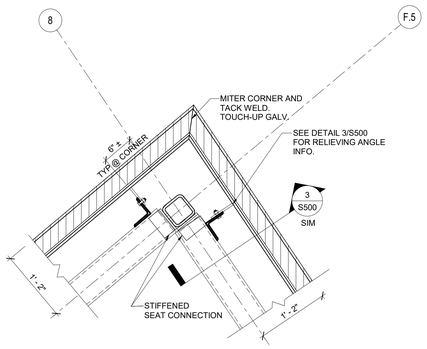


SEE 2/S500 FOR FIELD WELD INFO

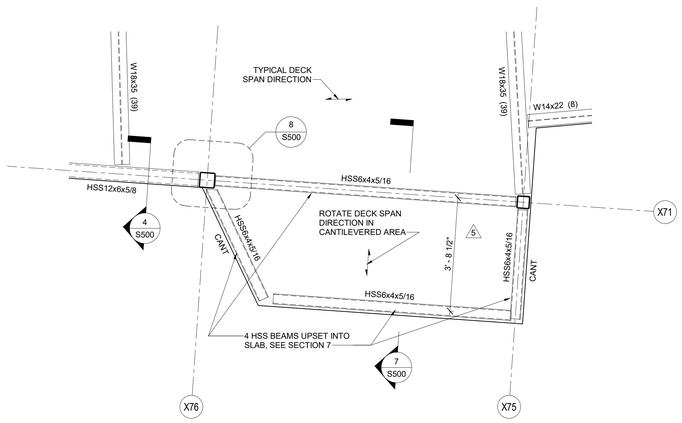
SECTION AT UPSET HSS SPANDRELS 3
1" = 1'-0"



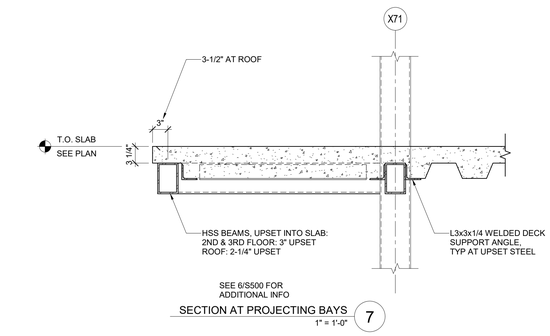
WIDE FLANGE TO HSS MOMENT CONNECTION SECTION 4
1" = 1'-0"



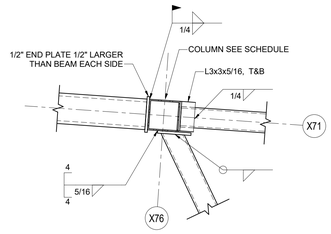
PLAN DETAIL @ BRICK CORNER 5
1" = 1'-0"



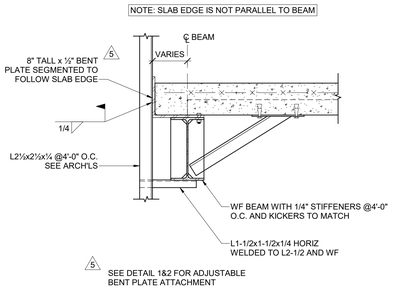
BAY WINDOW GEOMETRY - PART PLAN 6
1/2" = 1'-0"



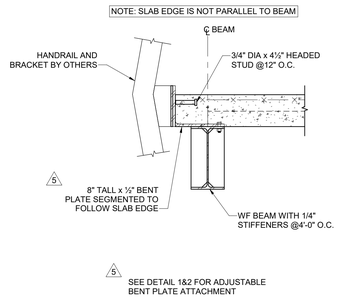
SECTION AT PROJECTING BAYS 7
1" = 1'-0"



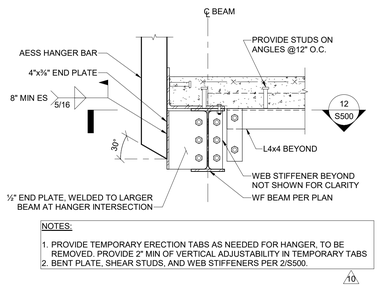
PLAN DETAIL 8
1" = 1'-0"



SECTION AT LOCKERS 9
1" = 1'-0"



SECTION AT HANDRAIL 10
1" = 1'-0"

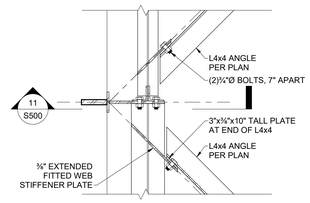


NOTES:

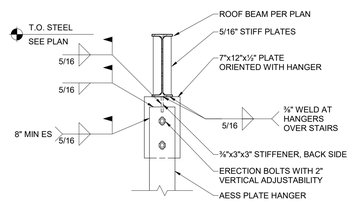
1. PROVIDE TEMPORARY ERECTION TABS AS NEEDED FOR HANGER, TO BE REMOVED. PROVIDE 2" MIN OF VERTICAL ADJUSTABILITY IN TEMPORARY TABS
2. BENT PLATE, SHEAR STUDS, AND WEB STIFFENERS PER 2/S500.

10

HANGER CONNECTION SECTION AT BRIDGE 11
1" = 1'-0"



HANGER CONNECTION PLAN DETAIL 12
1" = 1'-0"
10



HANGER CONNECTION AT ROOF BEAM 14
1" = 1'-0"
10

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE

AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
10	12/20/2019	PR 21
15	02/10/2020	Conformance Set

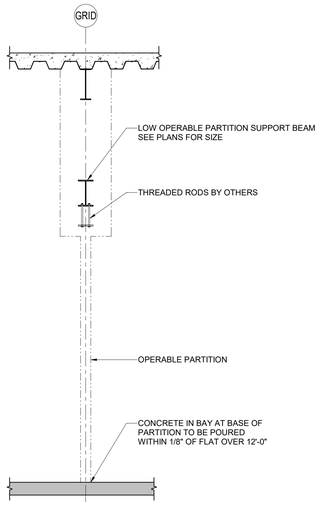
DRAWING NAME

SUPERSTRUCTURE SECTIONS

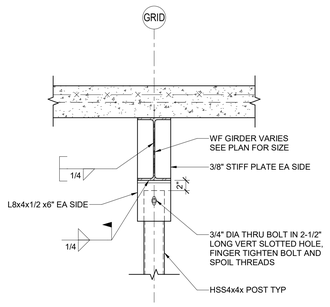
PROJECT NO. Project Number

DRAWING NO.

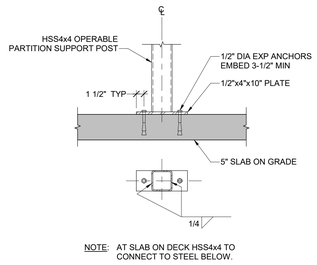
S500



TYPICAL OPERABLE PARTITION SUPPORT DETAIL 1
1/2" = 1'-0"

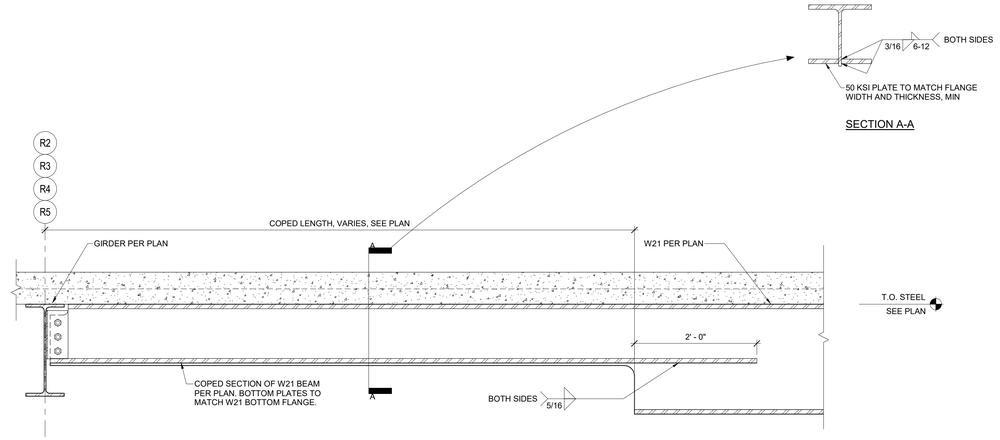


OPERABLE PARTITION SUPPORT POST DETAIL 2
1" = 1'-0"

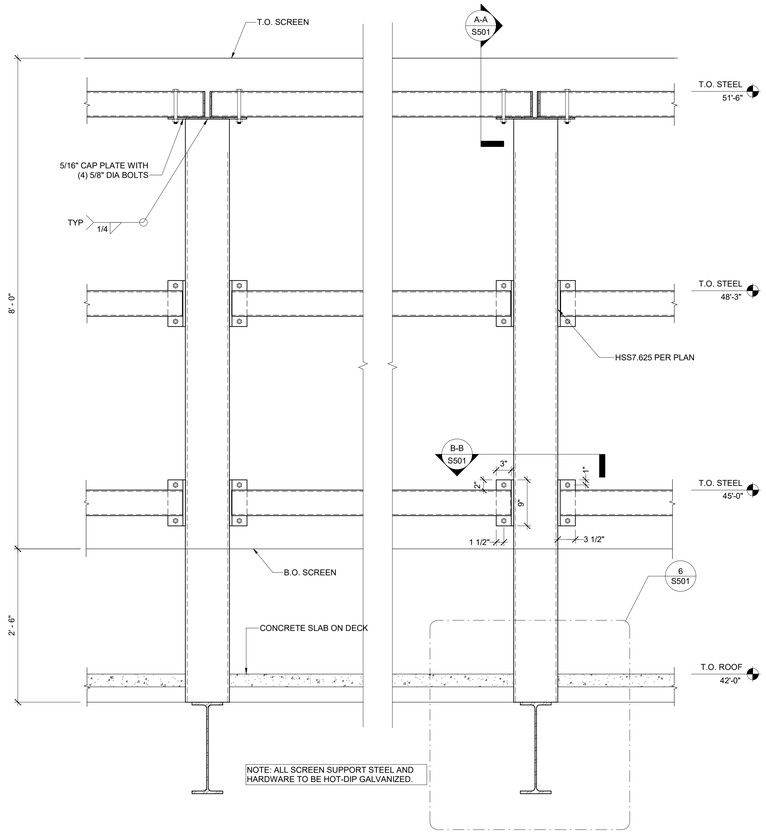


NOTE: AT SLAB ON DECK HSS4x4 TO CONNECT TO STEEL BELOW.

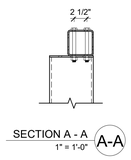
OPERABLE PARTITION BASE PLATE DETAIL 3
1" = 1'-0"



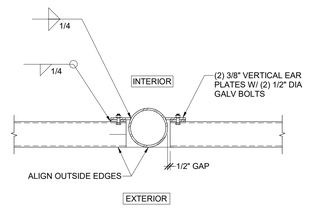
SECTION AT COPED BEAMS AT ATRIUM 4
1" = 1'-0"



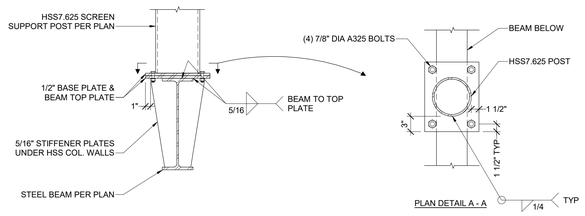
MECHANICAL SCREEN ELEVATION 5
1" = 1'-0"



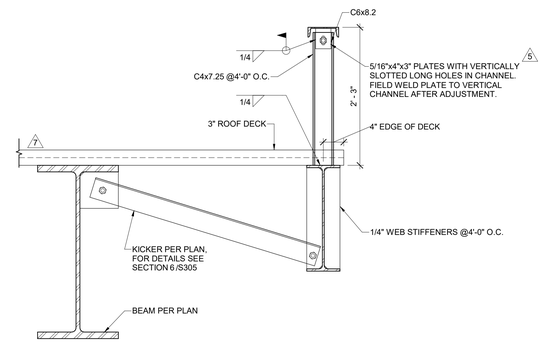
SECTION A - A A-A
1" = 1'-0"



PLAN DETAIL B - B B-B
1" = 1'-0"



MECHANICAL SCREEN POST BASE CONNECTION 6
1" = 1'-0"



SECTION AT SKYLIGHT CURB 7
1" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

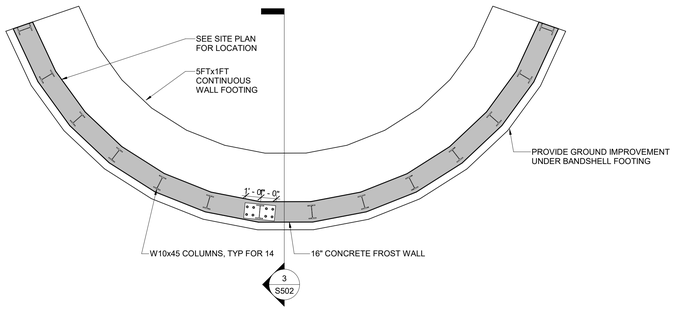
REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
7	9/12/2019	PR 12 REV1
15	02/10/2020	Conformance Set

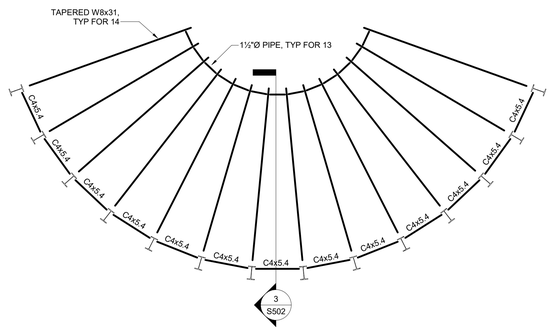
DRAWING NAME
SUPERSTRUCTURE SECTIONS

PROJECT NO. Project Number

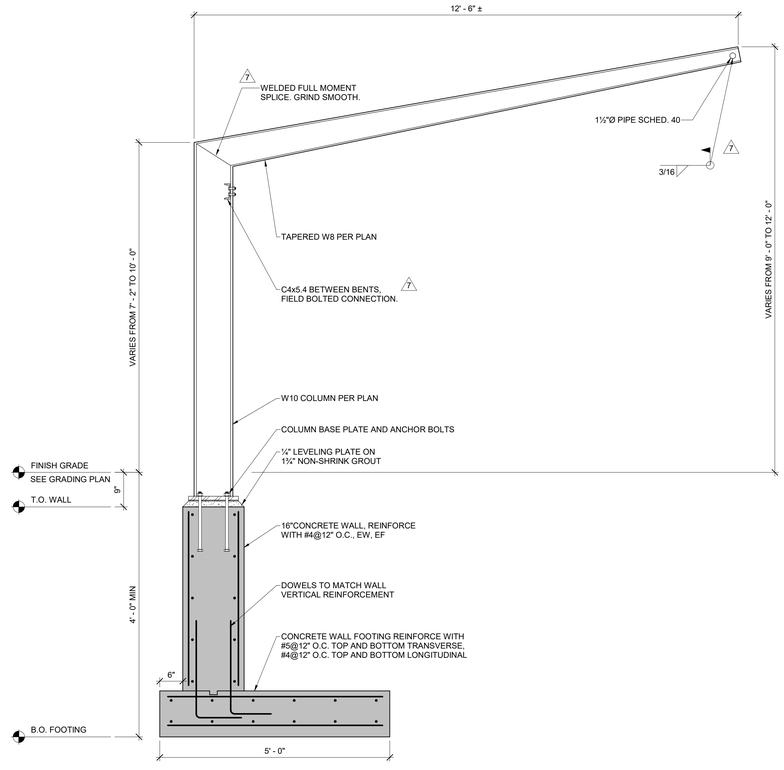
DRAWING NO.
S501



BANDSHELL FOUNDATION PLAN 1
1/4" = 1'-0"

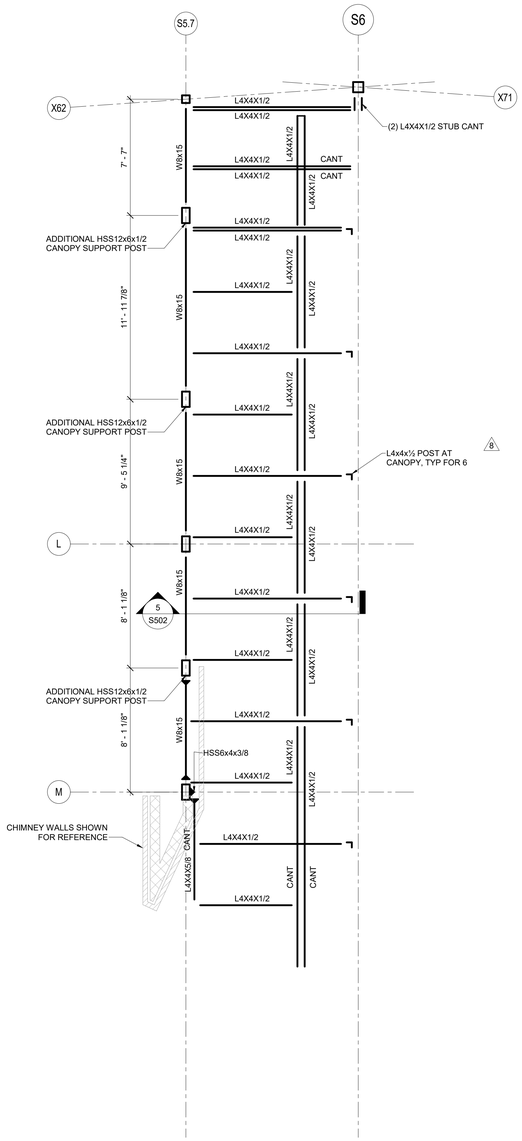


BANDSHELL FRAMING PLAN 2
1/4" = 1'-0"

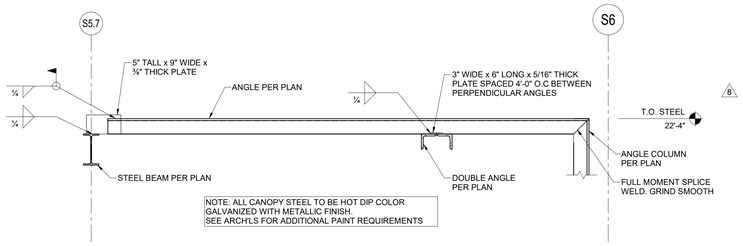


NOTE: ALL BANDSHELL STEEL TO BE HOT DIP GALVANIZED. SEE ARCH'LS FOR PAINT REQUIREMENTS.

BANDSHELL SECTION 3
3/4" = 1'-0"

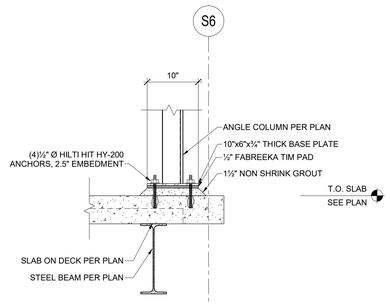


ENTRANCE CANOPY FRAMING PLAN 4
1/4" = 1'-0"

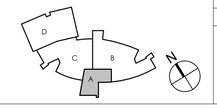


NOTE: ALL CANOPY STEEL TO BE HOT DIP COLOR GALVANIZED WITH METALLIC FINISH. SEE ARCH'LS FOR ADDITIONAL PAINT REQUIREMENTS

CANOPY SECTION 5
3/4" = 1'-0"



BASE CONNECTION AT CANOPY ANGLE COLUMN 6
1" = 1'-0"



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE

AUGUST 09, 2019

REVISIONS

No.	Date	Description
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
15	02/10/2020	Conformance Set

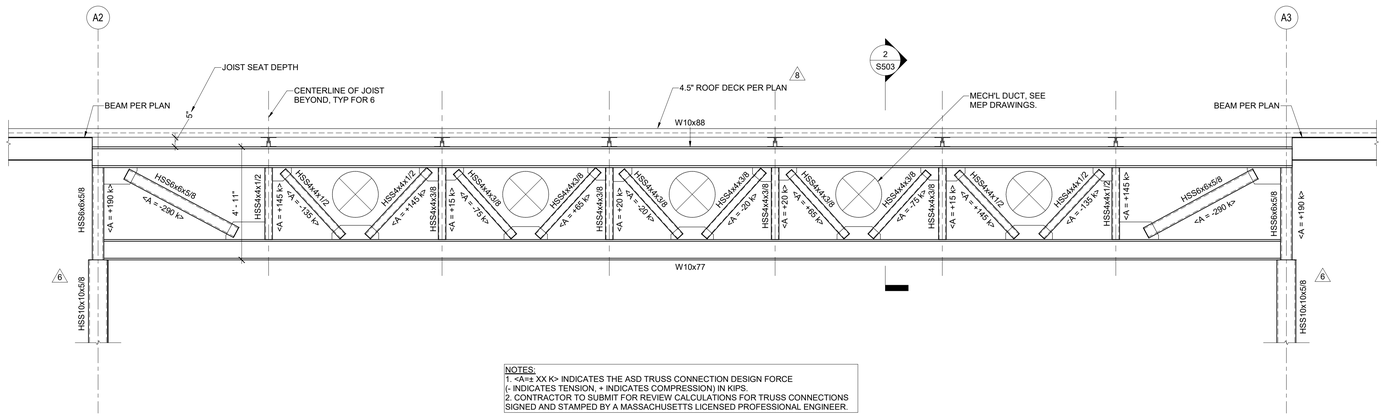
DRAWING NAME

BANDSHELL & ENTRANCE CANOPY DETAILS

PROJECT NO. Project Number

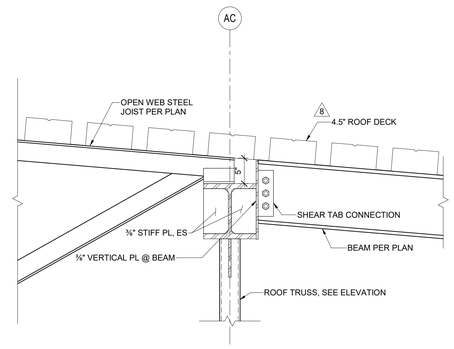
DRAWING NO.

S502

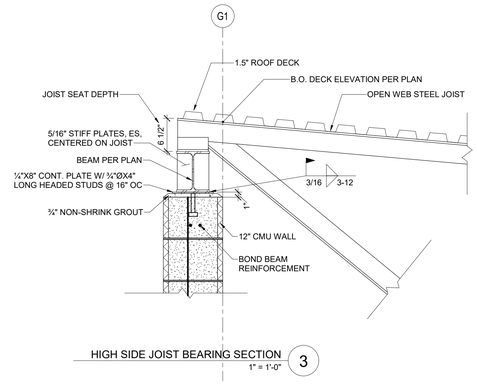


NOTES:
1. <A=± XX K> INDICATES THE ASD TRUSS CONNECTION DESIGN FORCE
(- INDICATES TENSION, + INDICATES COMPRESSION) IN KIPS.
2. CONTRACTOR TO SUBMIT FOR REVIEW CALCULATIONS FOR TRUSS CONNECTIONS SIGNED AND STAMPED BY A MASSACHUSETTS LICENSED PROFESSIONAL ENGINEER.

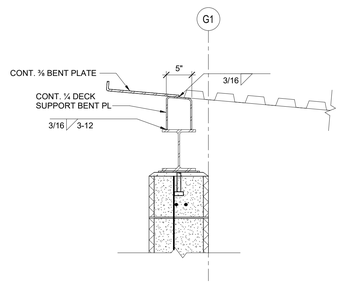
AUDITORIUM ROOF TRUSS ELEVATION 1
3/8" = 1'-0"



AUDITORIUM TRUSS SECTION 2
1" = 1'-0"

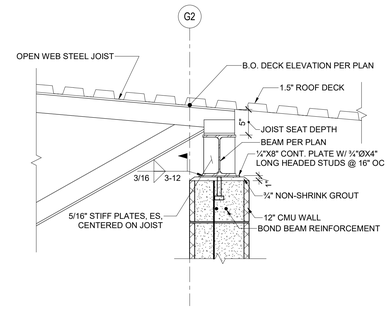


HIGH SIDE JOIST BEARING SECTION 3
1" = 1'-0"

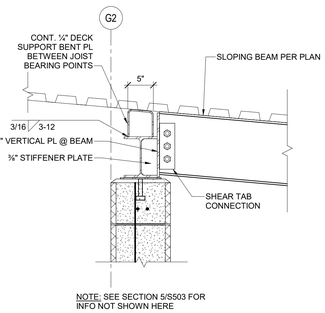


NOTE: SEE SECTION 3/S503 FOR INFO NOT SHOWN HERE

HIGH SIDE ROOF SECTION 4
1" = 1'-0"

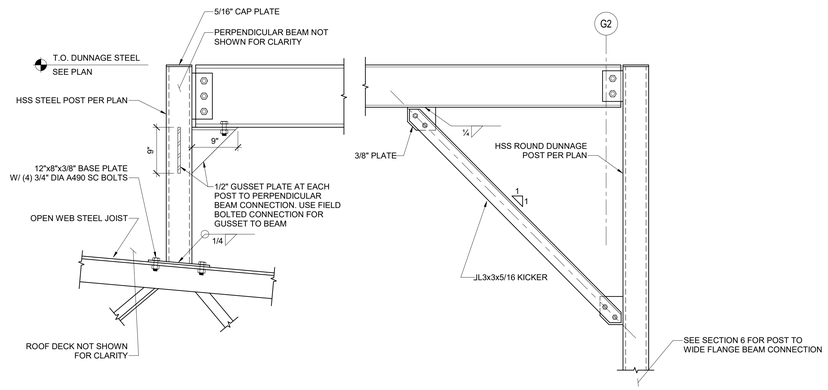


LOW SIDE JOIST BEARING SECTION 5
1" = 1'-0"

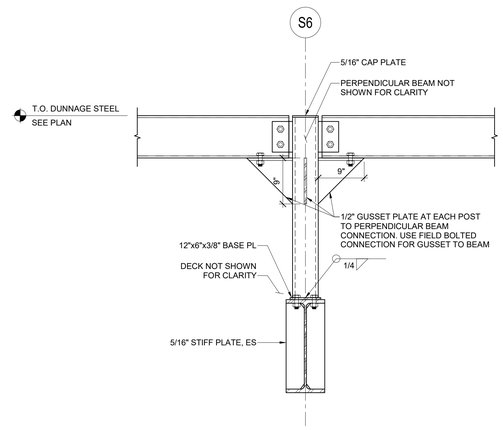


NOTE: SEE SECTION 5/S503 FOR INFO NOT SHOWN HERE

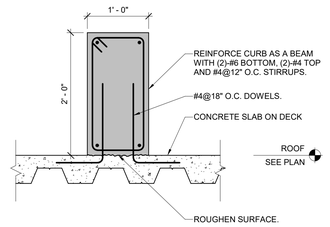
BEAM CONNECTION SECTION 6
1" = 1'-0"



GYM RTU DUNNAGE SECTION 7
1" = 1'-0"



DUNNAGE SECTION 8
1" = 1'-0"



RTU SUPPORT CURB SECTION 9
1" = 1'-0"
6

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

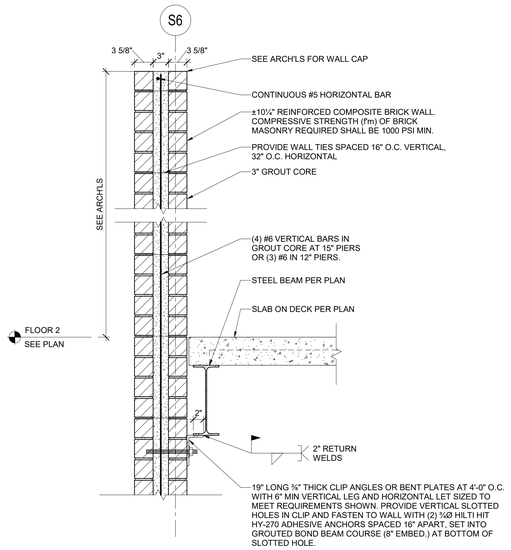
REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
6	9/09/2019	PR 12
8	11/22/2019	CDP
15	02/10/2020	Conformance Set

DRAWING NAME
SUPERSTRUCTURE SECTIONS

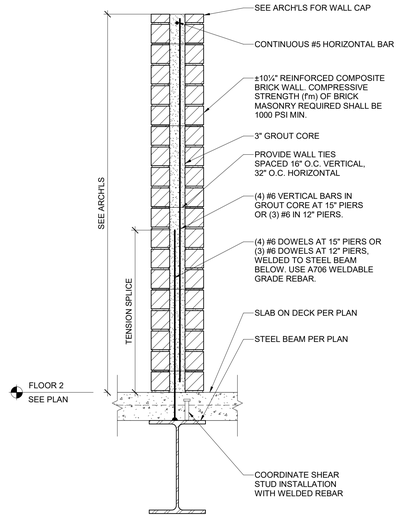
PROJECT NO. Project Number

DRAWING NO.
S503



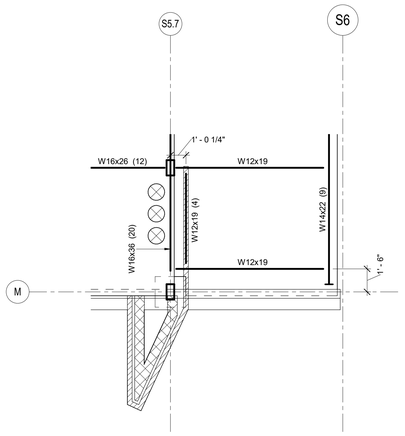
NOTES:
1. SEE ARCH'LS FOR EXTENT OF GROUTED CORE VS. PERFORATED AREAS
2. ALL REBAR TO BE EPOXY COATED

COMPOSITE BRICK PARAPET SECTION 1
1" = 1'-0"

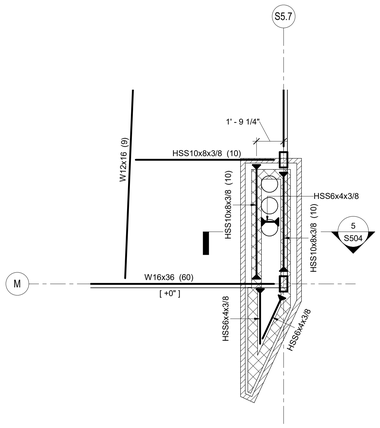


NOTES:
1. SEE ARCH'LS FOR EXTENT OF GROUTED CORE VS. PERFORATED AREAS
2. ALL REBAR TO BE EPOXY COATED

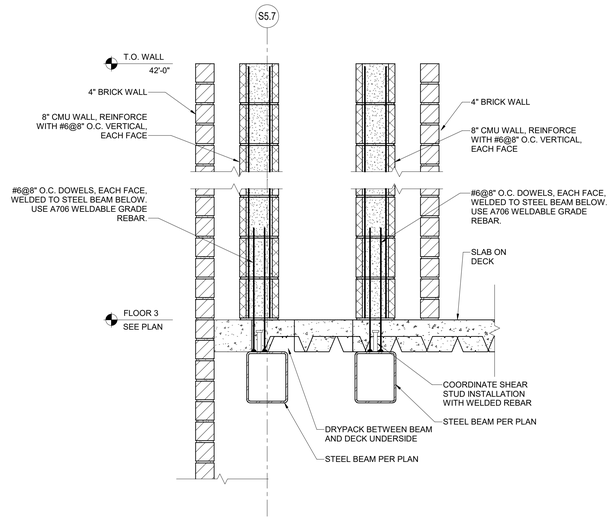
COMPOSITE BRICK PARAPET SECTION AT BEAM 2
1" = 1'-0"



CHIMNEY PART PLAN - FLOOR 2 3
1/4" = 1'-0"



CHIMNEY PART PLAN - FLOOR 3 4
1/4" = 1'-0"



CHIMNEY SECTION 5
1" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
311 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
NOVEMBER 22, 2019

REVISIONS

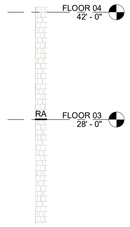
No.	Date	Description
15	02/10/2020	Conformance Set

DRAWING NAME
SUPERSTRUCTURE SECTIONS

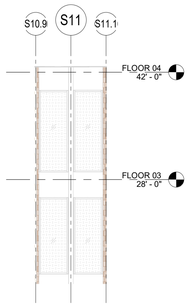
PROJECT NO. Project Number

DRAWING NO.
S504

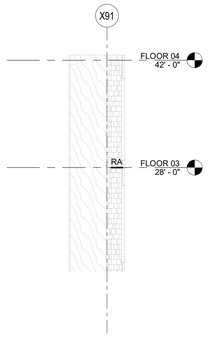
CLASSROOM ELEVATION - SOUTH 1
1/8" = 1'-0"



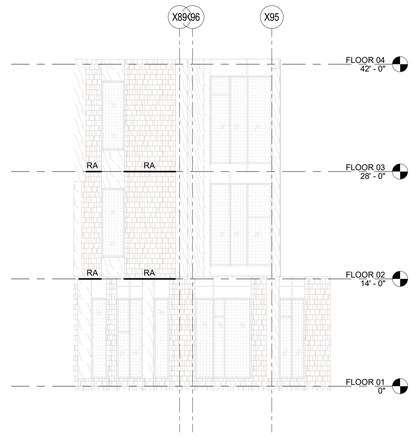
PARTIAL ELEVATION - SOUTH 3
1/8" = 1'-0"



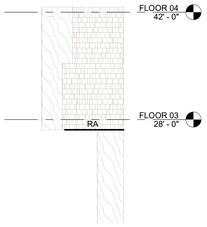
PARTIAL ELEVATION - SOUTH 4
1/8" = 1'-0"



PARTIAL ELEVATION - SOUTH 5
1/8" = 1'-0"



CLASSROOM ELEVATION SOUTH 6
1/8" = 1'-0"

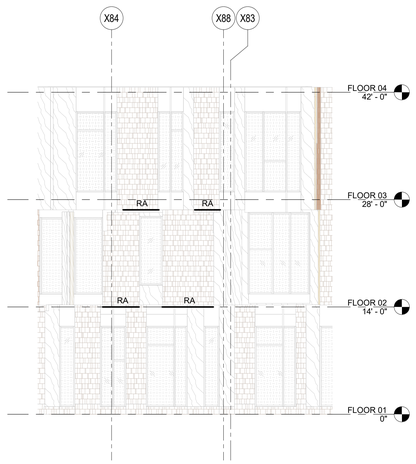


PARTIAL ELEVATION - SOUTH 8
1/8" = 1'-0"

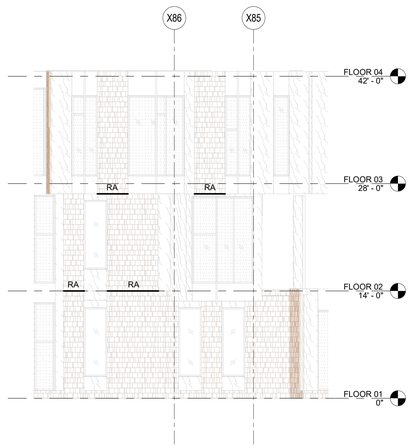
LEGEND:

RA INDICATES RELIEVING ANGLE SUPPORTED BY SLAB EDGE BENT PLATE OR HSS SPANDREL. SEE DETAILS ON S500.

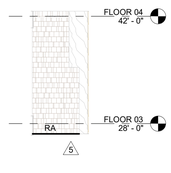
LL INDICATES STEEL LOOSE LINTEL PER SCHEDULE ON S000. HOT DIP GALVANIZE LINTELS IN EXTERIOR WALLS.
7 LL IN BRICK FACADE ONLY. OPENINGS IN CMU TO BE VIA BOND BEAM.



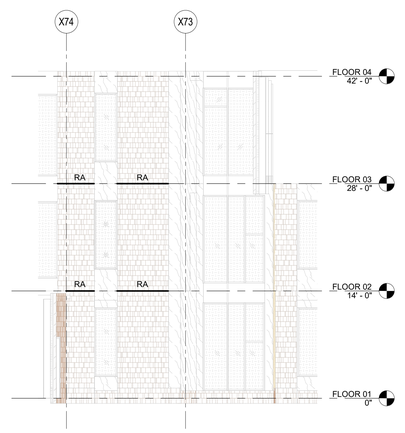
CLASSROOM ELEVATION - SOUTH 9
1/8" = 1'-0"



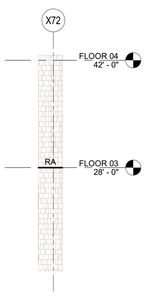
ELEVATION - SOUTH 15
1/8" = 1'-0"



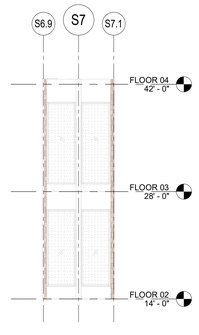
PARTIAL ELEVATION - SOUTH 17
1/8" = 1'-0"



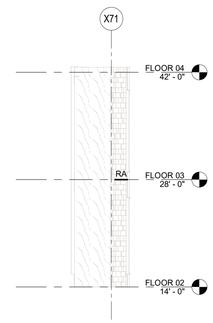
CLASSROOM ELEVATION - SOUTH 19
1/8" = 1'-0"



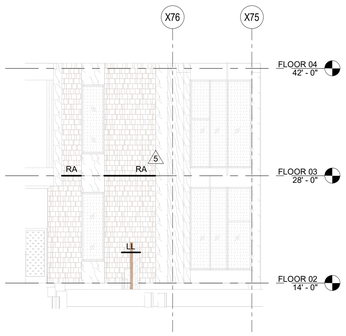
PARTIAL ELEVATION - SOUTH 21
1/8" = 1'-0"



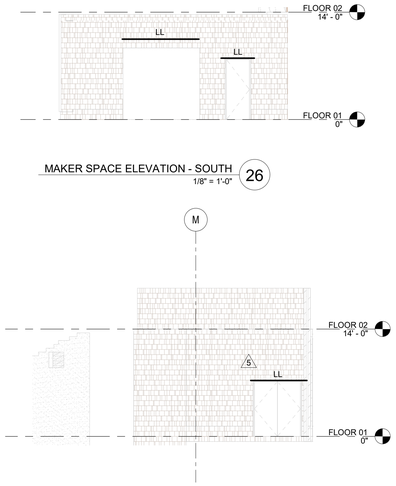
PARTIAL ELEVATION - SOUTH 22
1/8" = 1'-0"

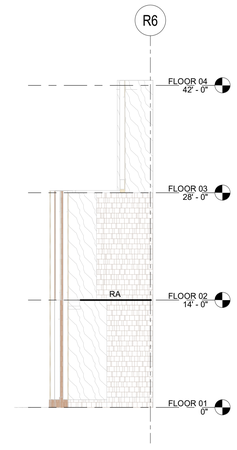


PARTIAL ELEVATION - SOUTH 23
1/8" = 1'-0"

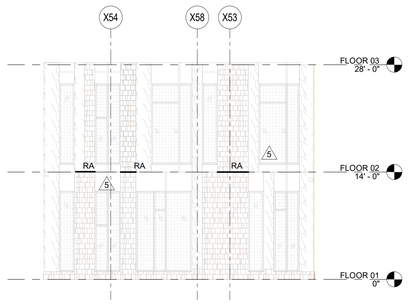


CLASSROOM ELEVATION - SOUTH 24
1/8" = 1'-0"

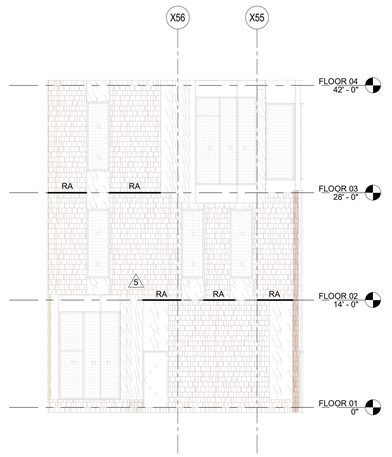




PARTIAL ELEVATION - SOUTH 31
1/8" = 1'-0"



GUIDANCE OFFICE ELEVATION - SOUTH 32
1/8" = 1'-0"



RESOURCE ELEVATION - SOUTH 34
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

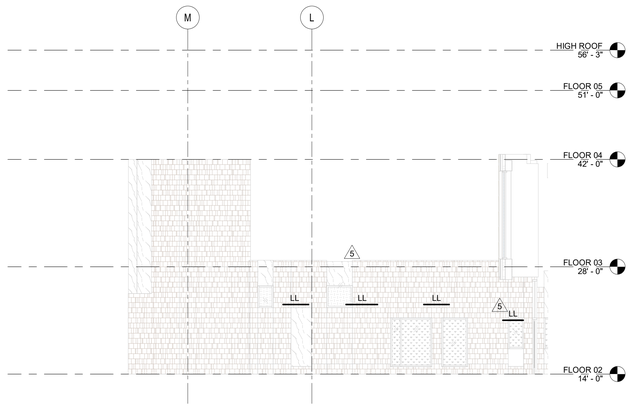
REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
7	9/12/2019	PR 12 REV1
15	02/10/2020	Conformance Set

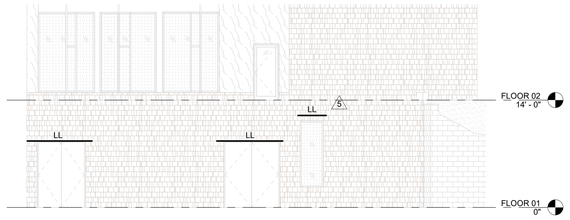
DRAWING NAME
EXTERIOR WALL ELEVATIONS

PROJECT NO. Project Number

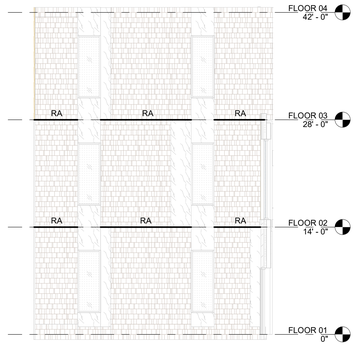
DRAWING NO.
S600



ADMIN ELEVATION - SOUTH
1/8" = 1'-0"
1



ADMIN ELEVATION - SOUTH
1/8" = 1'-0"
4



TOILET ELEVATION - SOUTH
1/8" = 1'-0"
14

LEGEND:

RA — INDICATES RELIEVING ANGLE SUPPORTED BY SLAB EDGE BENT PLATE OR HSS SPANDREL. SEE DETAILS ON S500.

LL — INDICATES STEEL LOOSE LINTEL PER SCHEDULE ON S000. HOT DIP GALVANIZE LINTELS IN EXTERIOR WALLS.
7 LL IN BRICK FACADE ONLY. OPENINGS IN CMU TO BE VIA BOND BEAM.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
7	9/12/2019	PR 12 REV1
15	02/10/2020	Conformance Set

DRAWING NAME
EXTERIOR WALL ELEVATIONS

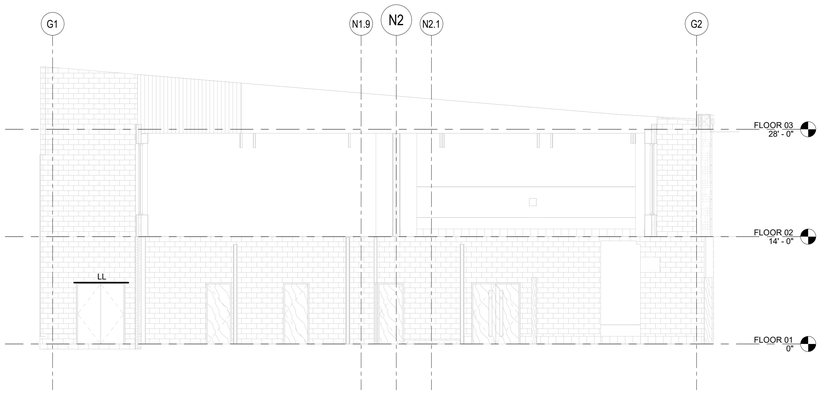
PROJECT NO. Project Number

DRAWING NO.
S601

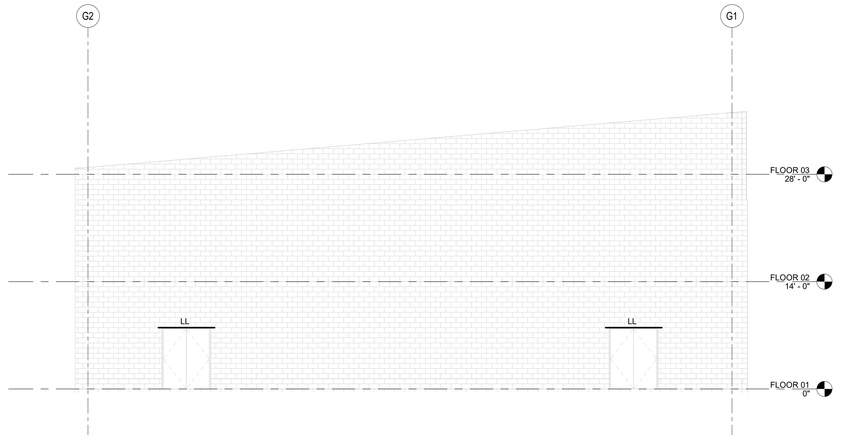
LEGEND:

RA — INDICATES RELIEVING ANGLE SUPPORTED BY SLAB EDGE BENT PLATE OR HSS SPANDREL. SEE DETAILS ON S500.

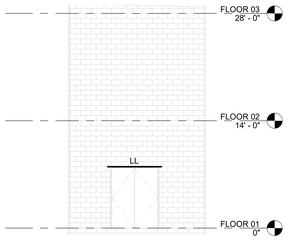
LL — INDICATES STEEL LOOSE LINTEL PER SCHEDULE ON S000. HOT DIP GALVANIZE LINTELS IN EXTERIOR WALLS.
7 LL IN BRICK FACADE ONLY. OPENINGS IN CMU TO BE VIA BOND BEAM.



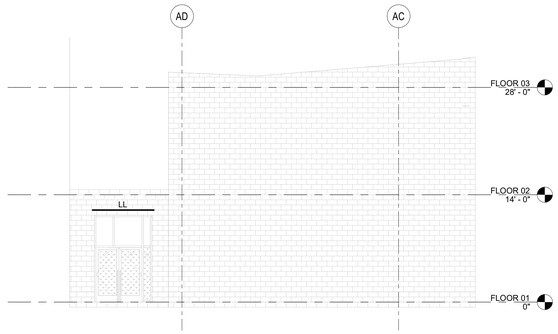
GYM ELEVATION - SOUTH 2
1/8" = 1'-0"



GYM ELEVATION - NORTH 4
1/8" = 1'-0"



GYM ELEVATION - NORTH 6
1/8" = 1'-0"



AUDITORIUM ELEVATION - EAST 8
1/8" = 1'-0"

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

REVISIONS

No.	Date	Description
7	9/12/2019	PR 12 REV1
15	02/10/2020	Conformance Set

DRAWING NAME

EXTERIOR WALL ELEVATIONS

PROJECT NO. Project Number

DRAWING NO.

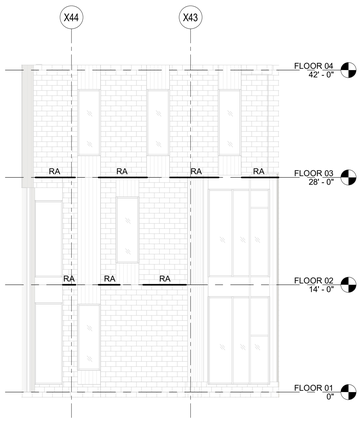
S602

LEGEND:

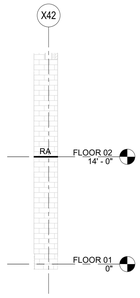
RA — INDICATES RELIEVING ANGLE SUPPORTED BY SLAB EDGE BENT PLATE OR HSS SPANDREL. SEE DETAILS ON S500.

LL — INDICATES STEEL LOOSE LINTEL PER SCHEDULE ON S000. HOT DIP GALVANIZE LINTELS IN EXTERIOR WALLS.

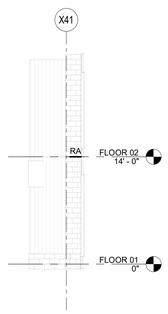
7 LL IN BRICK FACADE ONLY. OPENINGS IN CMU TO BE VIA BOND BEAM.



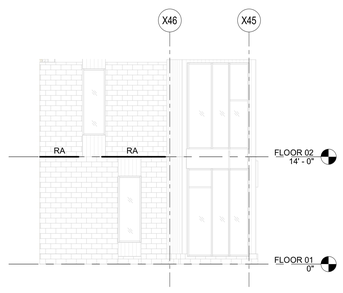
CLASSROOM ELEVATION - NORTH 3
1/8" = 1'-0"



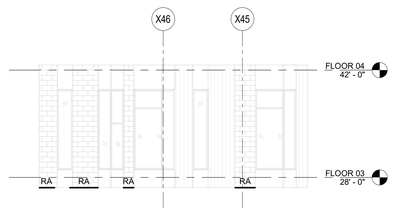
PARTIAL ELEVATION - NORTH 4
1/8" = 1'-0"



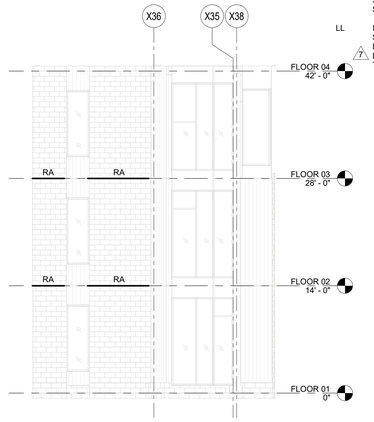
PARTIAL ELEVATION - NORTH 6
1/8" = 1'-0"



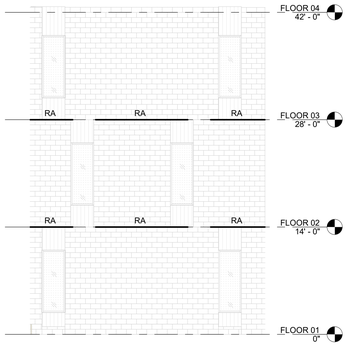
CLASSROOM ELEVATION - NORTH 7
1/8" = 1'-0"



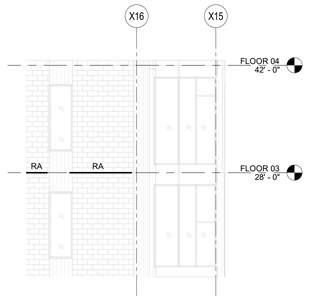
OFFICE ELEVATION - NORTH 10
1/8" = 1'-0"



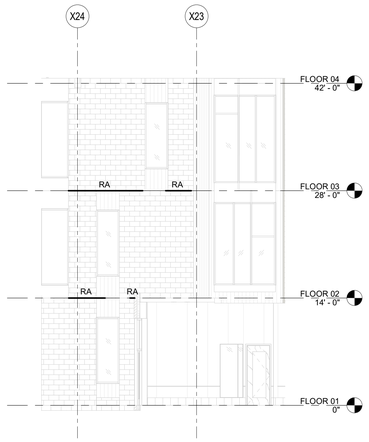
CLASSROOM ELEVATION - NORTH 19
1/8" = 1'-0"



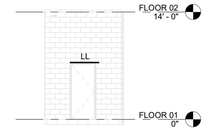
TOILET ELEVATION - NORTH 22
1/8" = 1'-0"



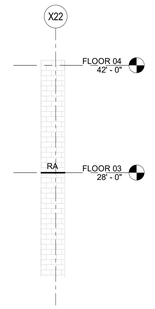
CLASSROOM ELEVATION - NORTH 23
1/8" = 1'-0"



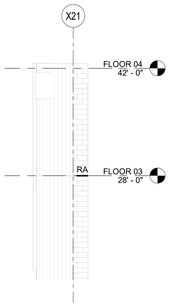
CLASSROOM ELEVATION - NORTH 26
1/8" = 1'-0"



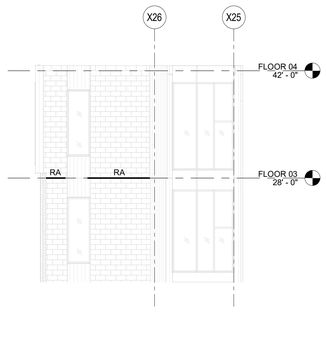
PARTIAL ELEVATION - NORTH 28
1/8" = 1'-0"



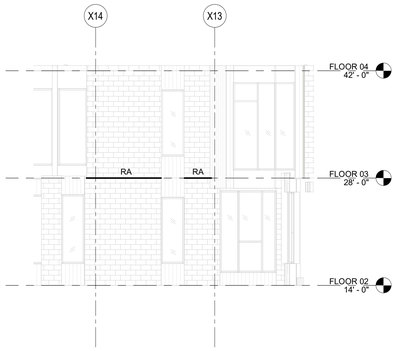
PARTIAL ELEVATION - NORTH 30
1/8" = 1'-0"



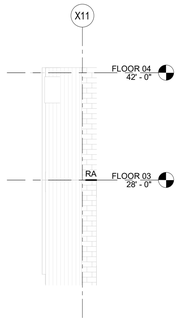
PARTIAL ELEVATION - NORTH 32
1/8" = 1'-0"



CLASSROOM ELEVATION - NORTH 33
1/8" = 1'-0"



BAND ELEVATION - NORTH 43
1/8" = 1'-0"



PARTIAL ELEVATION - NORTH 47
1/8" = 1'-0"

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

REVISIONS

No.	Date	Description
7	9/12/2019	PR 12 REV1
15	02/10/2020	Conformance Set

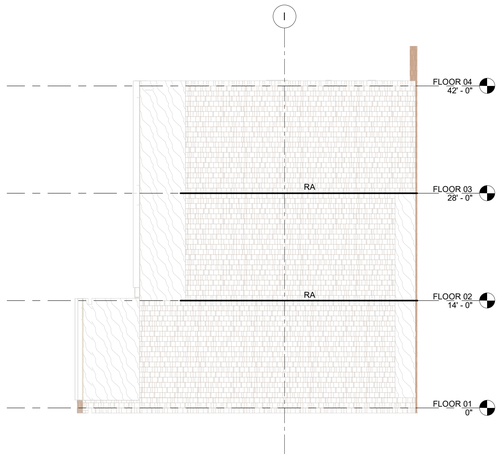
DRAWING NAME

EXTERIOR WALL ELEVATIONS

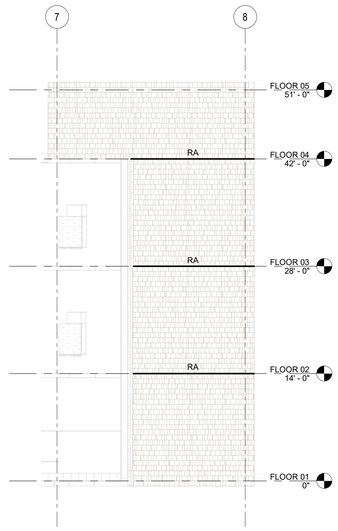
PROJECT NO. Project Number

DRAWING NO.

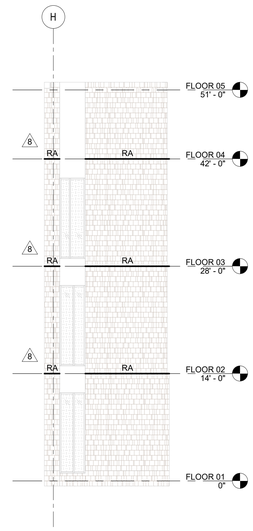
S603



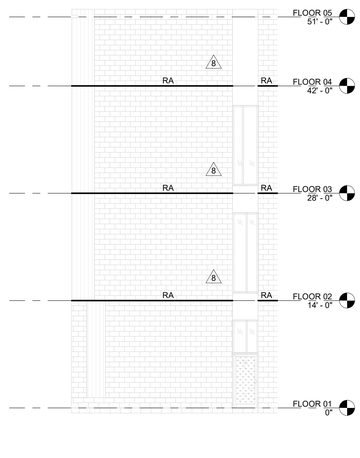
ENTRANCE ELEVATION - EAST 1
1/8" = 1'-0"



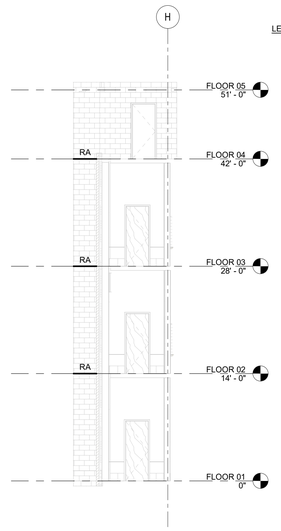
ENTRANCE ELEVATION - EAST 2
1/8" = 1'-0"



ENTRANCE ELEVATION - EAST 3
1/8" = 1'-0"



ENTRANCE ELEVATION - EAST 4
1/8" = 1'-0"



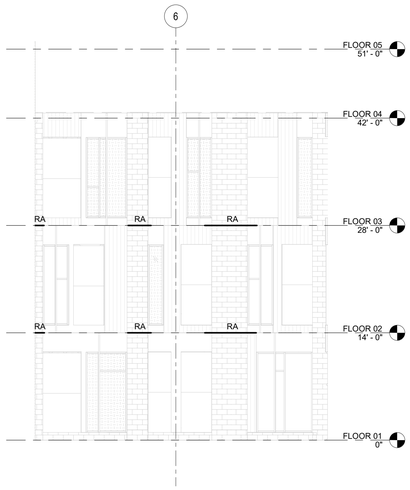
ENTRANCE ELEVATION - EAST 5
1/8" = 1'-0"

LEGEND:

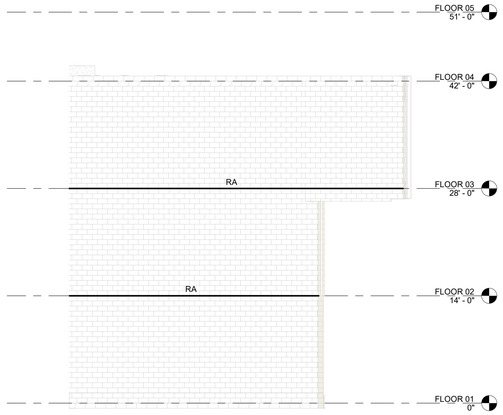
RA — INDICATES RELIEVING ANGLE SUPPORTED BY SLAB EDGE BENT PLATE OR HSS SPANDREL. SEE DETAILS ON S500.

LL — INDICATES STEEL LOOSE LINTEL PER SCHEDULE ON S000. HOT DIP GALVANIZE LINTELS IN EXTERIOR WALLS.

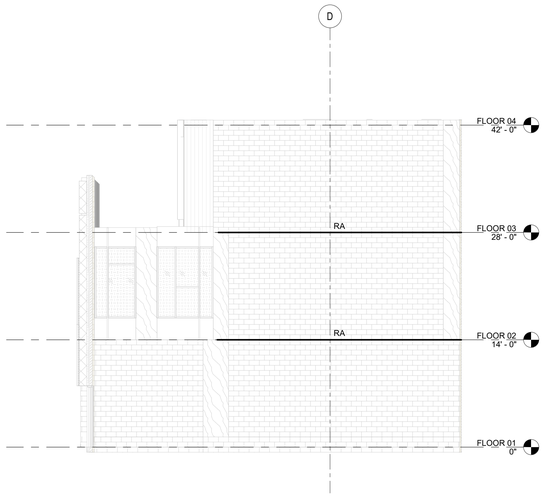
7 — LL IN BRICK FACADE ONLY. OPENINGS IN CMU TO BE VIA BOND BEAM.



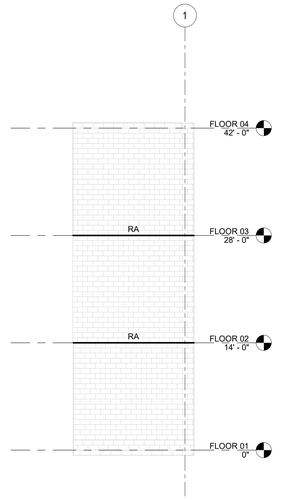
ENTRANCE ELEVATION - EAST 6
1/8" = 1'-0"



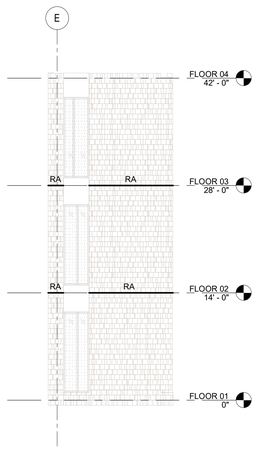
ENTRANCE ELEVATION - EAST 8
1/8" = 1'-0"



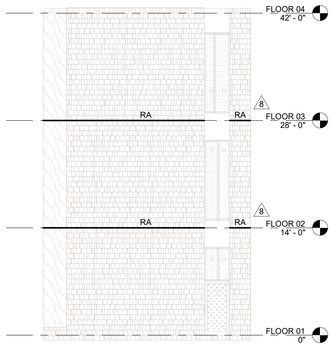
ENTRANCE ELEVATION - WEST 9
1/8" = 1'-0"



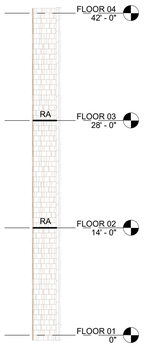
ENTRANCE ELEVATION - WEST 10
1/8" = 1'-0"



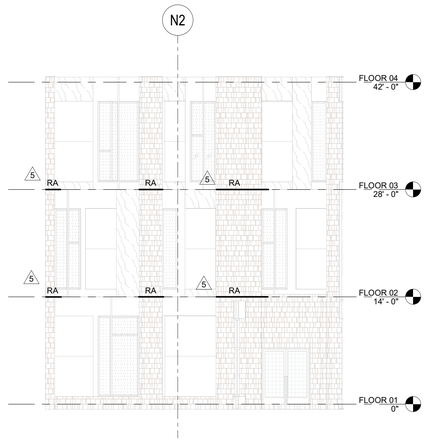
ENTRANCE ELEVATION - WEST 11
1/8" = 1'-0"



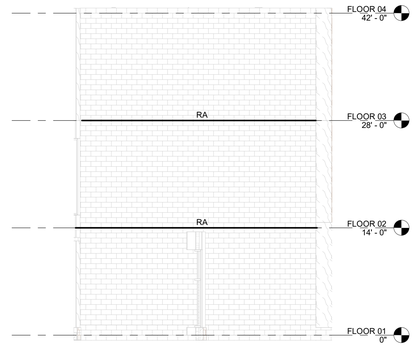
ENTRANCE ELEVATION - WEST 12
1/8" = 1'-0"



ENTRANCE ELEVATION - WEST 13
1/8" = 1'-0"



ENTRANCE ELEVATION - WEST 14
1/8" = 1'-0"



ENTRANCE ELEVATION - WEST 17
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

EARLY CONCRETE & STEEL PACKAGE
AUGUST 09, 2019

REVISIONS

No.	Date	Description
5	8/27/2019	Addend. 4
7	9/12/2019	PR 12 REV1
8	11/22/2019	CDP
15	02/10/2020	Conformance Set

DRAWING NAME

EXTERIOR WALL ELEVATIONS

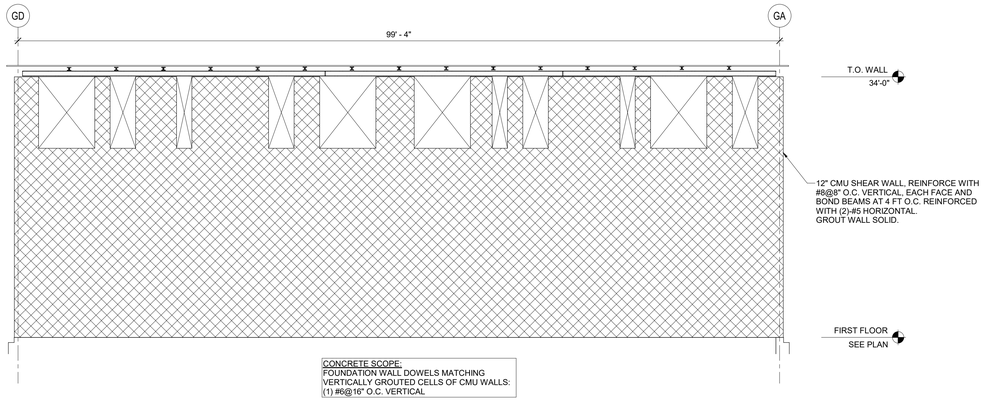
PROJECT NO. Project Number

DRAWING NO.

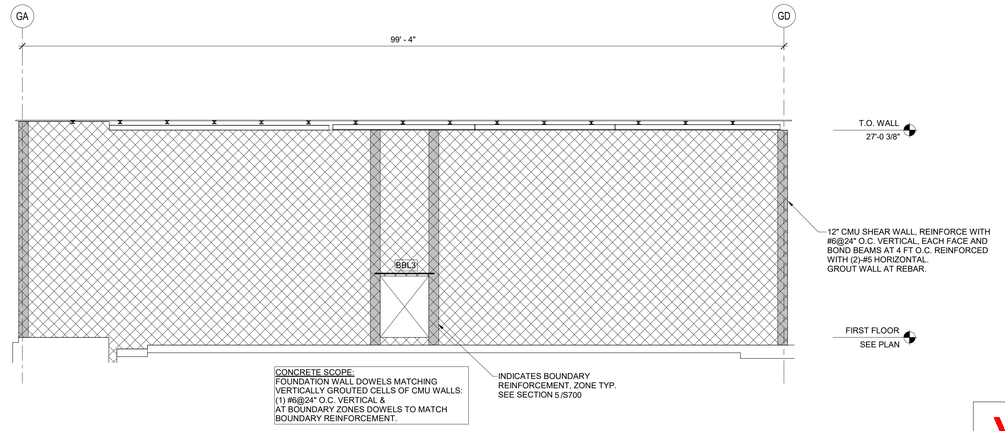
S604

LEGEND:

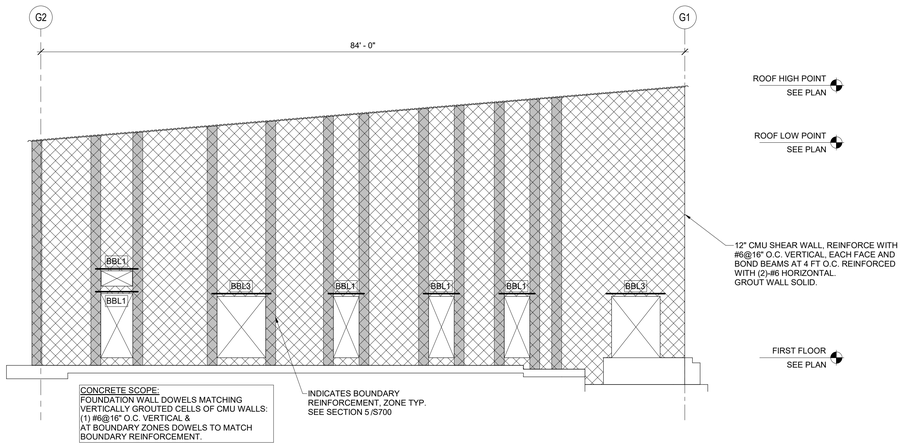
BBLx — INDICATES 12" CMU BOND BEAM LINTEL. FOR SIZE AND REINFORCEMENT, SEE DETAIL



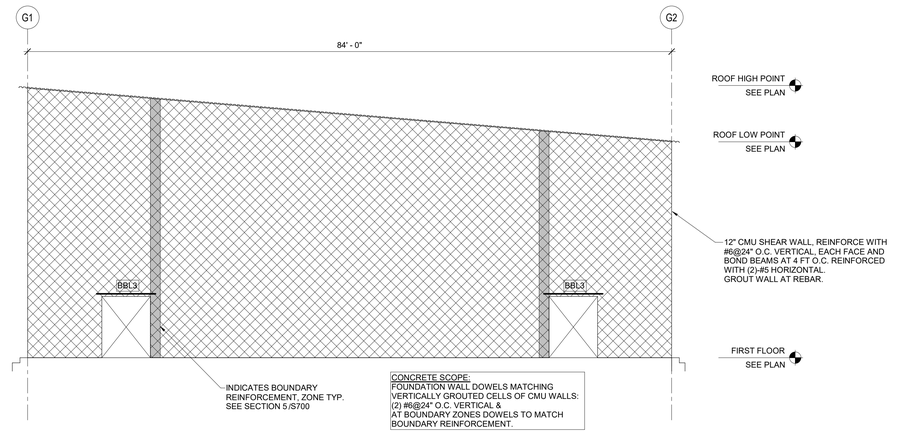
CMU SHEAR WALL ELEVATION AT GRID G1 — 1/8" = 1'-0" — 1



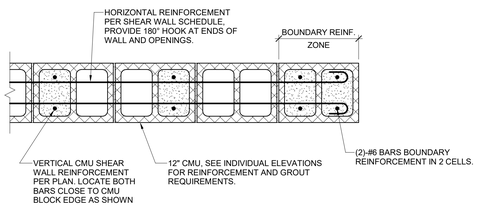
CMU SHEAR WALL ELEVATION AT GRID G2 — 1/8" = 1'-0" — 2



CMU SHEAR WALL ELEVATION AT GRID GD — 1/8" = 1'-0" — 3



CMU SHEAR WALL ELEVATION AT GRID GA — 1/8" = 1'-0" — 4



NOTE: SEE CMU SHEAR WALL ELEVATIONS FOR LOCATIONS WHERE BOUNDARY REINFORCEMENT IS REQUIRED.

BOUNDARY CONDITION AT CMU SHEAR WALLS — 1" = 1'-0" — 5

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

NOVEMBER 22, 2019

REVISIONS

No.	Date	Description
15	02/10/2020	Conformance Set

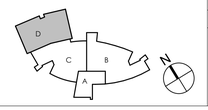
DRAWING NAME

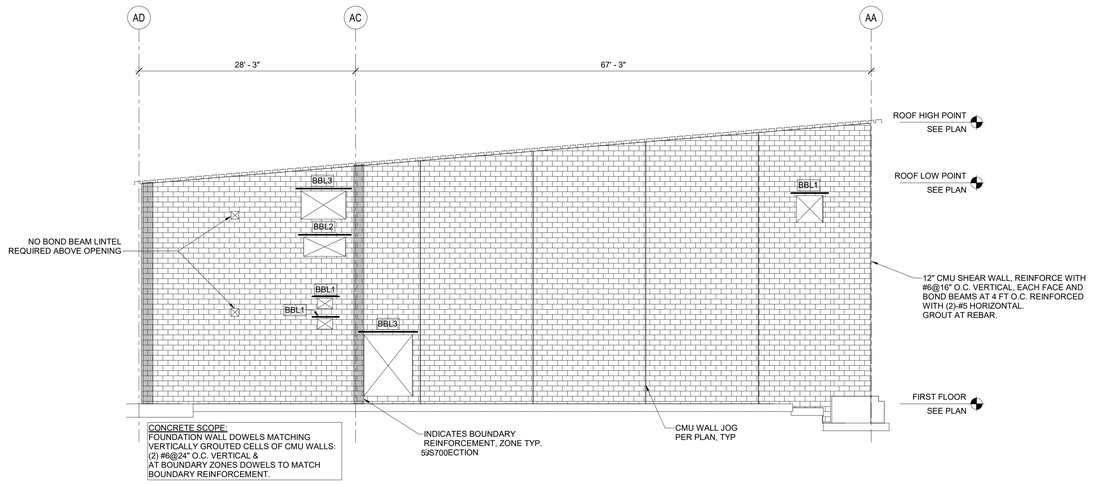
CMU SHEAR WALL ELEVATIONS AT GYM

PROJECT NO. Project Number

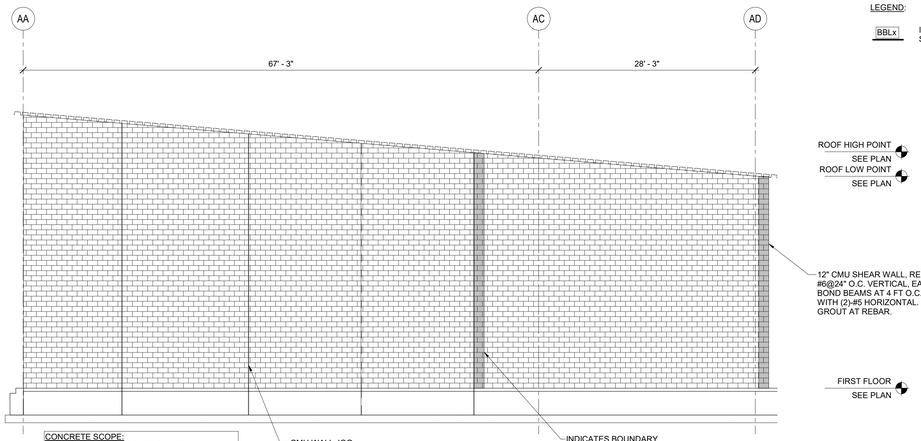
DRAWING NO.

S700





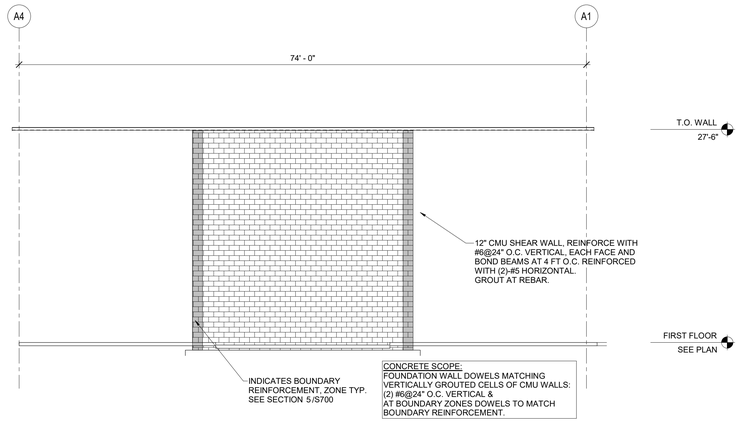
CMU SHEAR WALL ELEVATION AT GRID A1 — 1
1/8" = 1'-0"



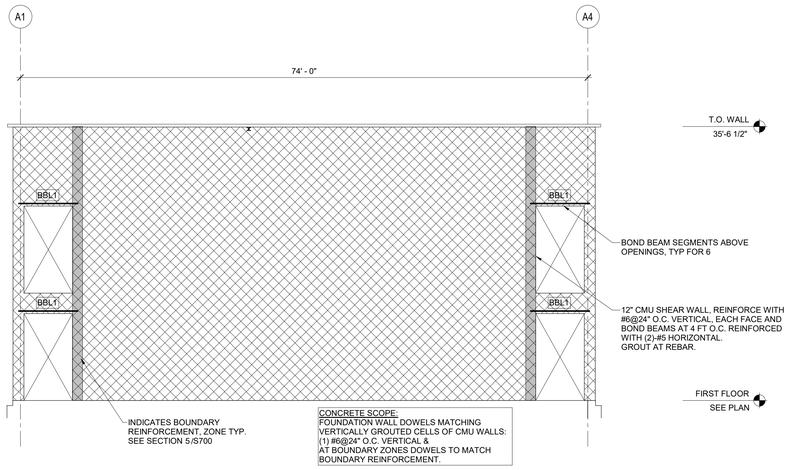
CMU SHEAR WALL ELEVATION AT GRID A4 — 2
1/8" = 1'-0"

LEGEND:

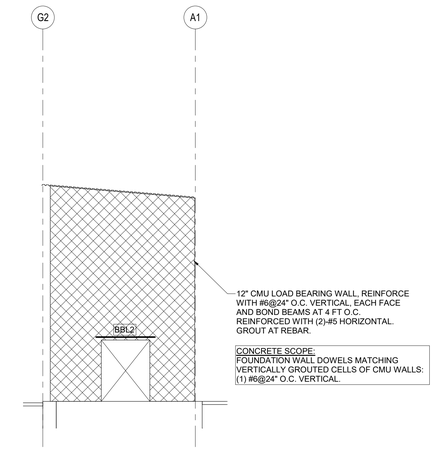
BBLx — INDICATES 12" CMU BOND BEAM LINTEL. FOR SIZE AND REINFORCEMENT, SEE DETAIL



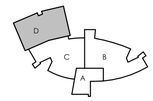
CMU SHEAR WALL ELEVATION AT GRID AD — 3
1/8" = 1'-0"



CMU SHEAR WALL ELEVATION AT GRID AA — 4
1/8" = 1'-0"



CMU LOAD BEARING WALL ELEVATION AT "WEDGE" — 5
1/8" = 1'-0"



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

NOT FOR CONSTRUCTION

FULLER SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

NOVEMBER 22, 2019

REVISIONS

No.	Date	Description
15	02/10/2020	Conformance Set

DRAWING NAME

CMU SHEAR WALL ELEVATIONS AT AUDITORIUM

PROJECT NO. Project Number

DRAWING NO.

S701

FIRE PROTECTION LEGEND

WS	WS	WET SPRINKLER PIPE
SD	SD	SPRINKLER DRAIN
SP	SP	STAND PIPE
X		HYDRAULIC REFERENCE POINT
		UPRIGHT SPRINKLER HEAD
		CONCEALED PENDENT SPRINKLER HEAD
		PENDANT SPRINKLER HEAD
		EXTENDED COVERAGE (8.1 K) UPRIGHT SPRINKLER HEAD WITH 286°F TEMPERATURE RATING
DRY		DRY HORIZONTAL SIDEWALL SPRINKLER HEAD
		HORIZONTAL SIDEWALL SPRINKLER HEAD
DRY		DRY PENDENT SPRINKLER HEAD
NS		NO SPRINKLERS
AB	AB	ELECTRIC ALARM BELL
DC	DC	DRESSER COUPLING
		RISER PIPE (THRU FLOOR OR CEILING)
CAP	CAP	CAPPED PIPE
TS	OSY	OS&Y VALVE WITH SUPERVISORY TAMPER SWITCH
	CV	CHECK VALVE
FS	FS	FLOW SWITCH
	FDV	FIRE DEPARTMENT VALVE W/ KNOX SECURE CAP
	DCVA	DOUBLE CHECK VALVE ASSEMBLY
	FCVA	FLOOR CONTROL VALVE ASSEMBLY
	WRCV	WET RISER CHECK VALVE
	FDC	STORZ FIRE DEPARTMENT CONNECTION

NTS	NOT TO SCALE
TYP	TYPICAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
GC	GENERAL CONTRACTOR
FPC	FIRE PROTECTION CONTRACTOR

FIRE PROTECTION NOTES

1. FOLLOW THE LATEST REQUIREMENTS OF NFPA, THE MASSACHUSETTS STATE BUILDING CODE AND THOSE OF ANY CITY, STATE, OR FEDERAL AGENCY HAVING JURISDICTION OVER THIS PROJECT.

2. PLANS INDICATE GENERAL SCOPE OF WORK. REFER TO CONTRACT DOCUMENTS AND SPECIFICATIONS FOR DETAILS ON ENTIRE SCOPE OF WORK, LOCATIONS OF SPRINKLER OUTLETS, BRANCH LINES AND FEED MAINS ARE DIAGRAMMATIC. THE DRAWINGS ARE NOT MEANT TO SHOW ALL OFFSETS AND PIPING ELEVATION CHANGES. THE CONTRACTOR SHALL VERIFY ALL NEEDED OFFSETS AND PIPE ELEVATIONS TO INSTALL THE PROPOSED SPRINKLER SYSTEM.

3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE WORK WITH THAT OF ALL OTHER TRADES. THE INSTALLING CONTRACTOR SHALL COORDINATE ALL WORK TO THE EXISTING AND/OR NEW FIELD CONDITIONS.

4. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF WORK. ANY SIZES OF NEW PIPING SHOWN ON THE PLAN ARE MEANT TO BE A GUIDE FOR ESTIMATING THE WORK.

5. THE CONTRACTOR SHALL PERFORM HYDRAULIC CALCULATIONS TO VERIFY PIPE SIZES ARE ADEQUATE TO PROVIDE THE NECESSARY SYSTEM DEMANDS.

6. PROVIDE A NEW FLOW TEST AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION AND NFPA. USE THE RESULTS OF THE NEW HYDRANT FLOW TEST TO HYDRAULICALLY DESIGN THE SPRINKLER SYSTEMS WITHIN THE BUILDING.

7. THE SPRINKLER CONTRACTOR SHALL PROVIDE AS PART OF THIS CONTRACT ALL SPRINKLERS BELOW FIXED OBSTRUCTIONS 48" AND LARGER AS REQUIRED BY NFPA 13, 8.6.5.3.3. IT IS THE RESPONSIBILITY OF THE SPRINKLER CONTRACTOR TO PROVIDE THE REQUIRED SPRINKLERS AND ALL ASSOCIATED PIPING, FITTINGS, HANGERS, ETC. FOR A COMPLETE INSTALLATION.

8. THE SPRINKLER CONTRACTOR SHALL PROVIDE AS PART OF HIS CONTRACT AN INSPECTOR'S TEST STATION ON EACH SPRINKLER ZONE. THE INSPECTOR'S TEST STATION WILL BE LOCATED AT THE MOST HYDRAULICALLY REMOTE PART OF EACH ZONE AND SHALL BE IDENTIFIED ON THE SPRINKLER SHOP DRAWINGS.

9. REFER TO NFPA 13 TABLE 8.3.2.5(a) FOR TEMPERATURE RATING OF SPRINKLERS BASED ON DISTANCE FROM HEAT SOURCES SUCH AS HEATING DUCTS, DIFFUSERS AND UNIT HEATERS.

10. PROVIDE AUXILIARY DRAINS AT ALL LOW POINTS PER NFPA 13, SECTION 8.16.2.5.

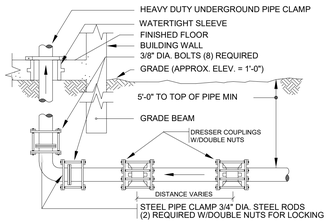
11. DESIGN CRITERIA

A. SPRINKLER SYSTEMS SHALL BE HYDRAULICALLY DESIGNED AND CALCULATED BY THE FIRE PROTECTION CONTRACTOR. THE FIRE PROTECTION CONTRACTOR SHALL SUBMIT ALL REQUIRED HYDRAULIC CALCULATIONS TO PROVE THE HYDRAULICALLY MOST REMOTE AREAS ARE BEING PROTECTED PER SYSTEM AND OCCUPANCY HAZARD. FABRICATION DRAWINGS AND HYDRAULIC CALCULATIONS SHALL BE SUBMITTED TO THE AUTHORITY HAVING JURISDICTION AND INSURANCE UNDERWRITERS (IF REQUIRED) PRIOR TO SUBMITTING TO THE ARCHITECT FOR REVIEW. FABRICATION DRAWINGS AND HYDRAULIC CALCULATIONS SHALL BEAR THE SEAL OF REGISTRATION OF A QUALIFIED REGISTERED PROFESSIONAL FIRE PROTECTION ENGINEER. MAINTAIN A MINIMUM OF 10 PSI CUSHION BETWEEN REQUIRED PRESSURE AND AVAILABLE PRESSURE. COMPLY WITH ALL UNDERWRITERS' AND CODE AUTHORITIES REQUIREMENTS INCLUDING MAXIMUM WATER FLOW VELOCITY IN THE FIRE PROTECTION SYSTEM.

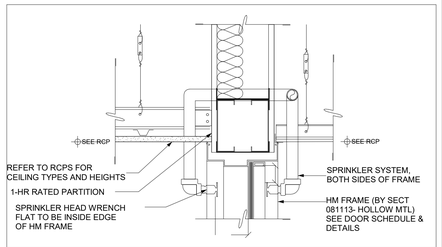
11. ALL SPRINKLER HEADS AND ESCUTCHEON COLORS SHALL BE AS PER ARCHITECT AND SPECIFICATIONS.

FLOW TEST DATA	
STATIC PRESSURE	87 PSI
RESIDUAL PRESSURE	78 PSI
FLOW	1048 GPM
DATE & TIME	10/31/2018 @ 31 FLAGG DRIVE

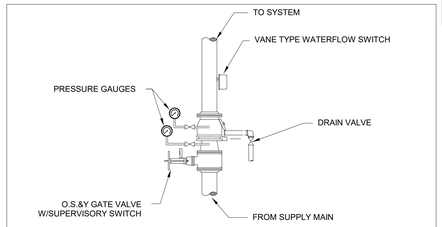
SPRINKLER SYSTEM DESIGN CRITERIA			
	GENERAL CLASS ROOMS, OFFICE AREA, CAFETERIA, REST ROOMS, CORRIDORS, LIBRARY (EXCEPT STACK ROOMS), ETC. 1	STORAGE, UTILITY, MECHANICAL & ELECTRICAL ROOMS,AUDITORIUM, KITCHEN, SCIENCE LABS, GYM, ETC. 1	GYM STORAGE, STAGE ETC.
CLASSIFICATION	LIGHT HAZARD	ORDINARY HAZARD GP-1	ORDINARY HAZARD GP-2
DENSITY	0.10 GPM/SQ.FT	0.15 GPM/SQ.FT	0.20 GPM/SQ.FT
DESIGN AREA	1500 SQ.FT	1500 SQ.FT	1500 SQ.FT
MAX. COVERAGE	225 SQ.FT	130 SQ.FT	130 SQ.FT
HOSE ALLOWANCE	100 GPM	250 GPM	250 GPM



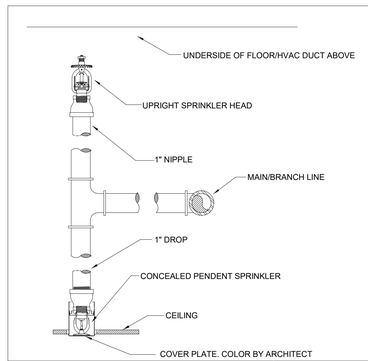
WATER SERVICE ENTRANCE — NO SCALE



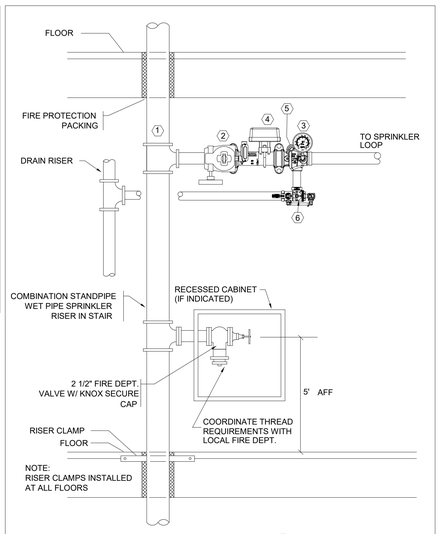
SPRINKLER AT GLASS WALLS DETAIL — NO SCALE



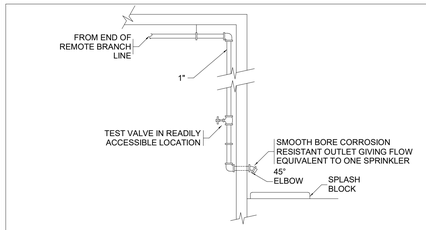
WET RISER CHECK VALVE — NO SCALE



UP AND DOWN SPRINKLER CONNECTION AT ATRIUM 1 — NO SCALE

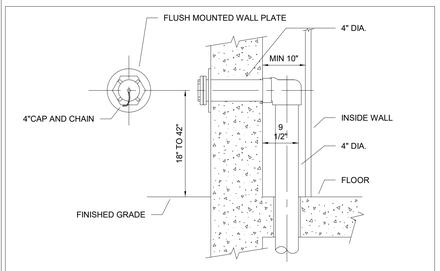


FIRE DEPARTMENT AND FLOOR CONTROL VALVES — NO SCALE

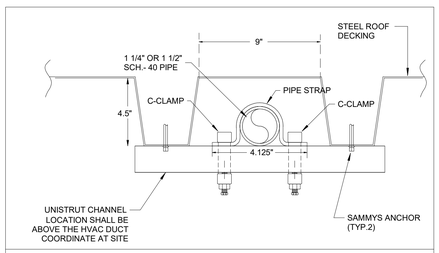


NOTE: NOT LESS THAN 4 FEET OF EXPOSED TEST PIPE IN WARM ROOM BEYOND VALVE WHERE PIPE EXTENDS THROUGH WALL TO OUTSIDE.

INSPECTOR'S TEST CONNECTION (WET PIPE) — NO SCALE

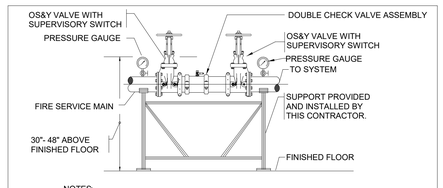


FIRE DEPARTMENT CONNECTION - STORZ — NO SCALE



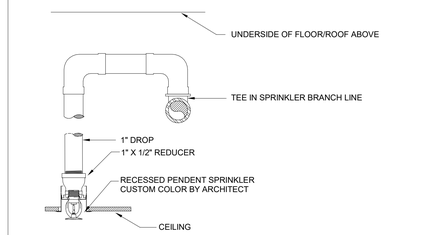
PIPE SUPPORT DETAIL IN AUDITORIUM — NO SCALE

2

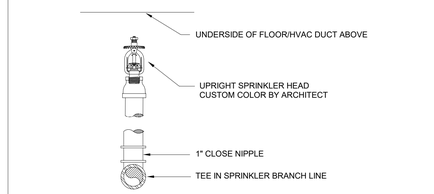


NOTES:
1. FURNISH TO OWNER ONE TEST KIT AND SPARE PARTS KIT.
2. THIS CONTRACTOR SHALL ACT AS THE OWNERS AGENT IN SEEKING APPROVAL FROM ALL LOCAL AND STATE AUTHORITIES. THIS CONTRACTOR SHALL SUBMIT ALL PLANS, SPECS, AND APPLICATIONS REQUIRED FOR APPROVAL AND PAY ALL FEES.
3. SEE FLOOR PLANS FOR SIZES.
4. MAINTAIN 1'-0" CLEARANCE FROM WALL.
5. TEST AND CERTIFY EACH INSTALLATION.

DOUBLE CHECK BACKFLOW PREVENTER DIAGRAM — NO SCALE

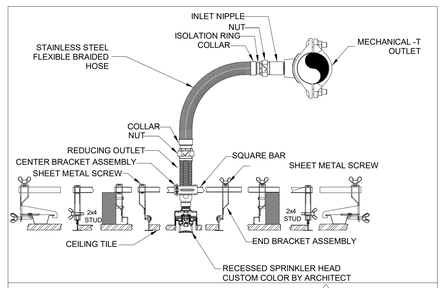


PENDENT SPRINKLER CONNECTION (RECESSED) — NO SCALE

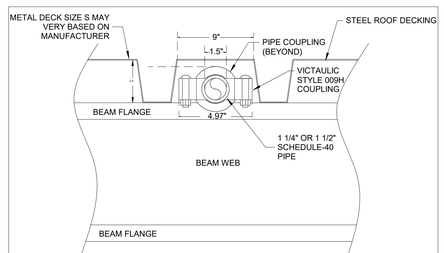


NOTE:
METAL CAGES TO BE INSTALLED FOR UPRIGHTS LOCATED IN MECHANICAL ROOM.

UPRIGHT SPRINKLER CONNECTION — NO SCALE



FLEXIBLE SPRINKLER CONNECTION (RECESSED) 1 — NO SCALE



SPRINKLER PIPING IN ROOF DECK FLUTE DETAIL — NO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/09/2019	Adden.6
2	12/12/2019	Adden.7
3	2/10/2020	Conformance Set

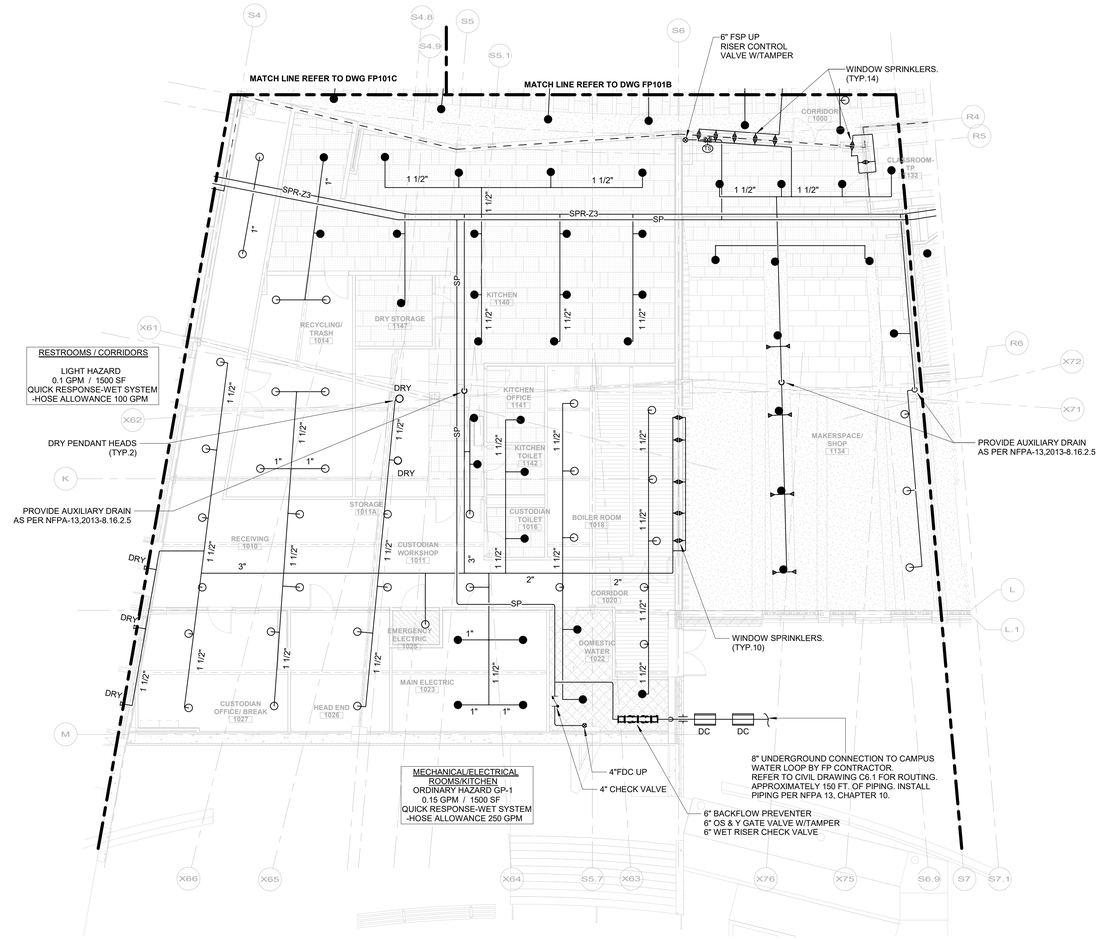
DRAWING NAME

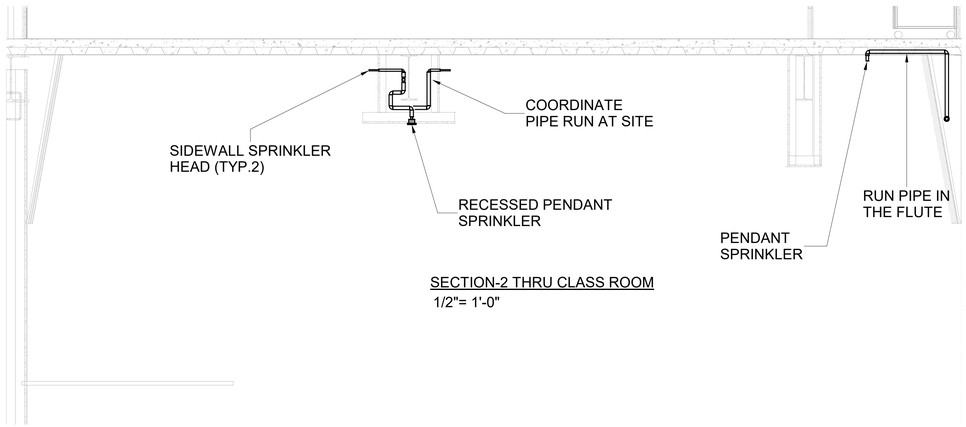
LEGEND, SCHEDULES, AND DETAILS

PROJECT NO. 1722

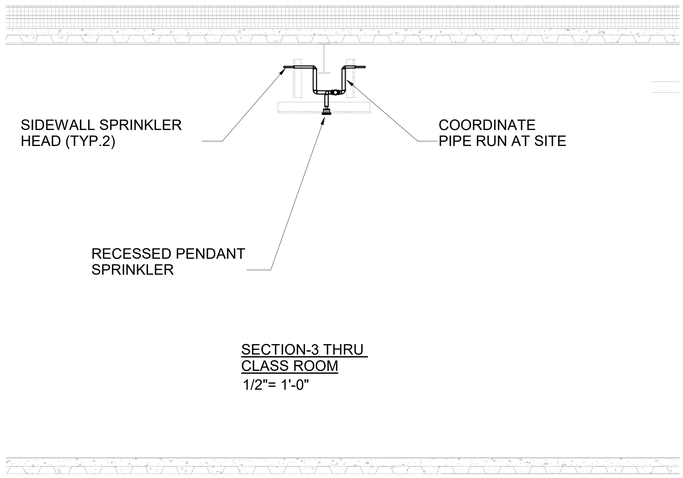
DRAWING NO.

FP001





SECTION-2 THRU CLASS ROOM
1/2"= 1'-0"



SECTION-3 THRU
CLASS ROOM
1/2"= 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS
PACKAGE

11/22/2019

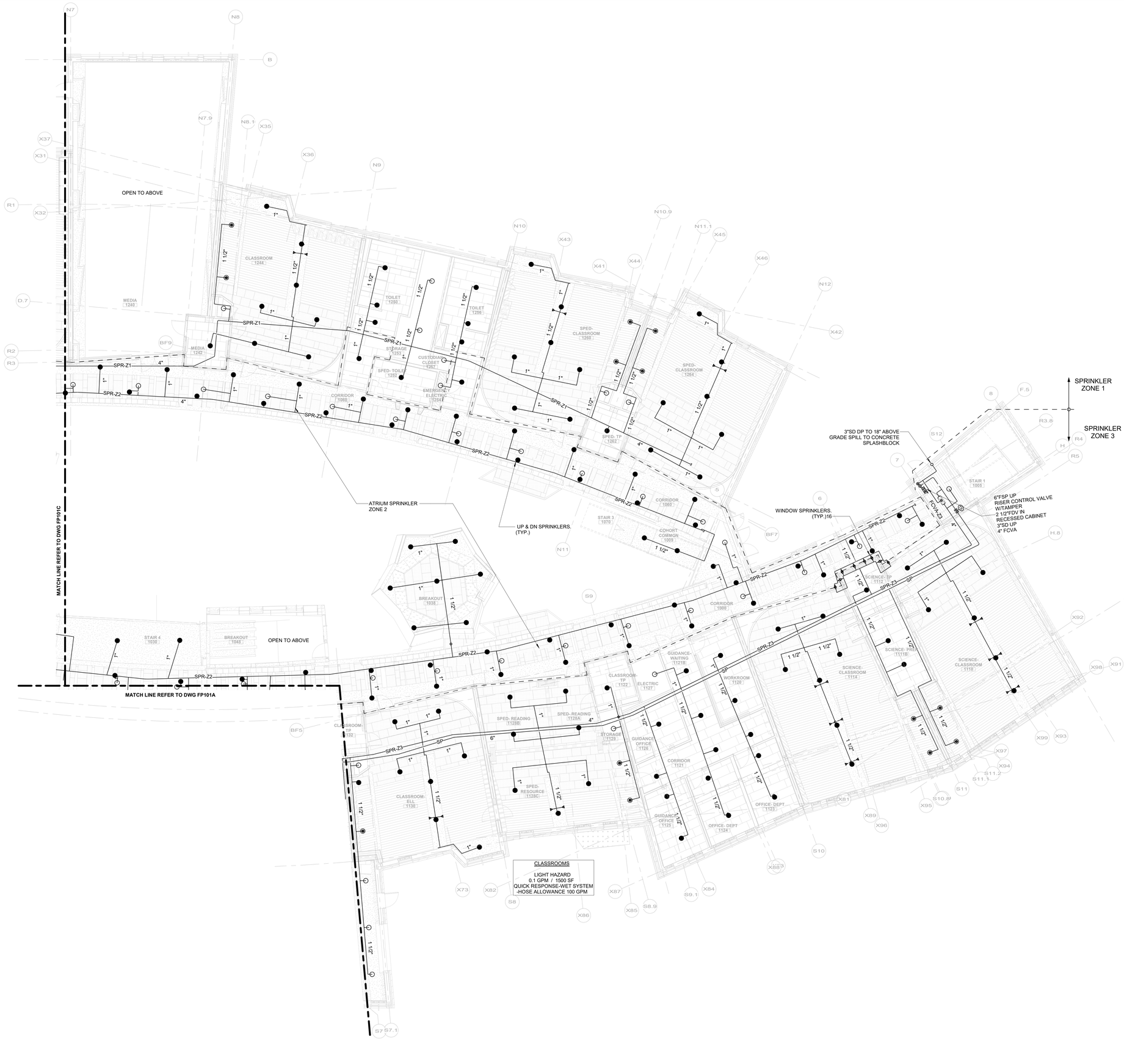
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR - FIRE
PROTECTION A

PROJECT NO. 1722

DRAWING NO.
FP101A



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME

FIRST FLOOR - FIRE PROTECTION B

PROJECT NO. 1722

DRAWING NO.

FP101B

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME

FIRST FLOOR - FIRE PROTECTION C

PROJECT NO. 1722

DRAWING NO.

FP101C

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

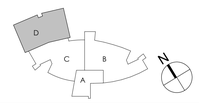
DRAWING NAME

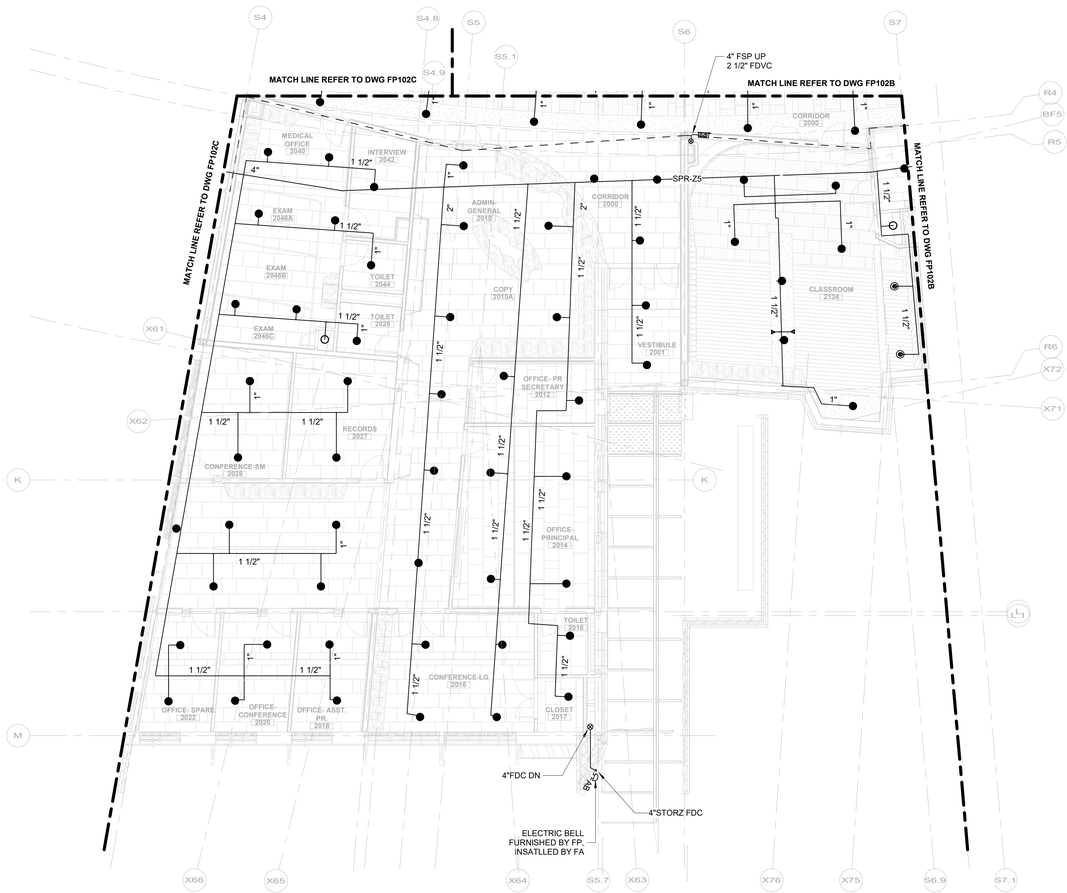
FIRST FLOOR - FIRE PROTECTION D

PROJECT NO. 1722

DRAWING NO.

FP101D





Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

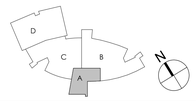
DRAWING NAME

SECOND FLOOR - FIRE PROTECTION A

PROJECT NO. 1722

DRAWING NO.

FP102A



PROVIDE STRUCTURAL BEAM PENETRATION. COORDINATE AT SITE.

CLASSROOM

LIGHT HAZARD
0.10 GPM / 1500 SF
QUICK RESPONSE-WET SYSTEM
-HOSE ALLOWANCE 100 GPM

UP & DN SPRINKLERS. (TYP.)

INSTALLED BELOW WALKWAY/ BALCONIES (TYP.)

ATRIUM SPRINKLER ZONE 2

PROVIDE AUXILIARY DRAIN AS PER NFPA-13,2013-8.16.2.5

MATCH LINE REFER TO DWG FP102A

PROVIDE STRUCTURAL BEAM PENETRATION. COORDINATE AT SITE.

CLASSROOM

LIGHT HAZARD
0.10 GPM / 1500 SF
QUICK RESPONSE-WET SYSTEM
-HOSE ALLOWANCE 100 GPM

2 FP101A

SPRINKLER ZONE 4

SPRINKLER ZONE 5

6"FSP UP
2 1/2"FDV IN
RECESSED CABINET
3"SD UP
4" FCVA

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME

SECOND FLOOR - FIRE PROTECTION B

PROJECT NO. 1722

DRAWING NO.

FP102B

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

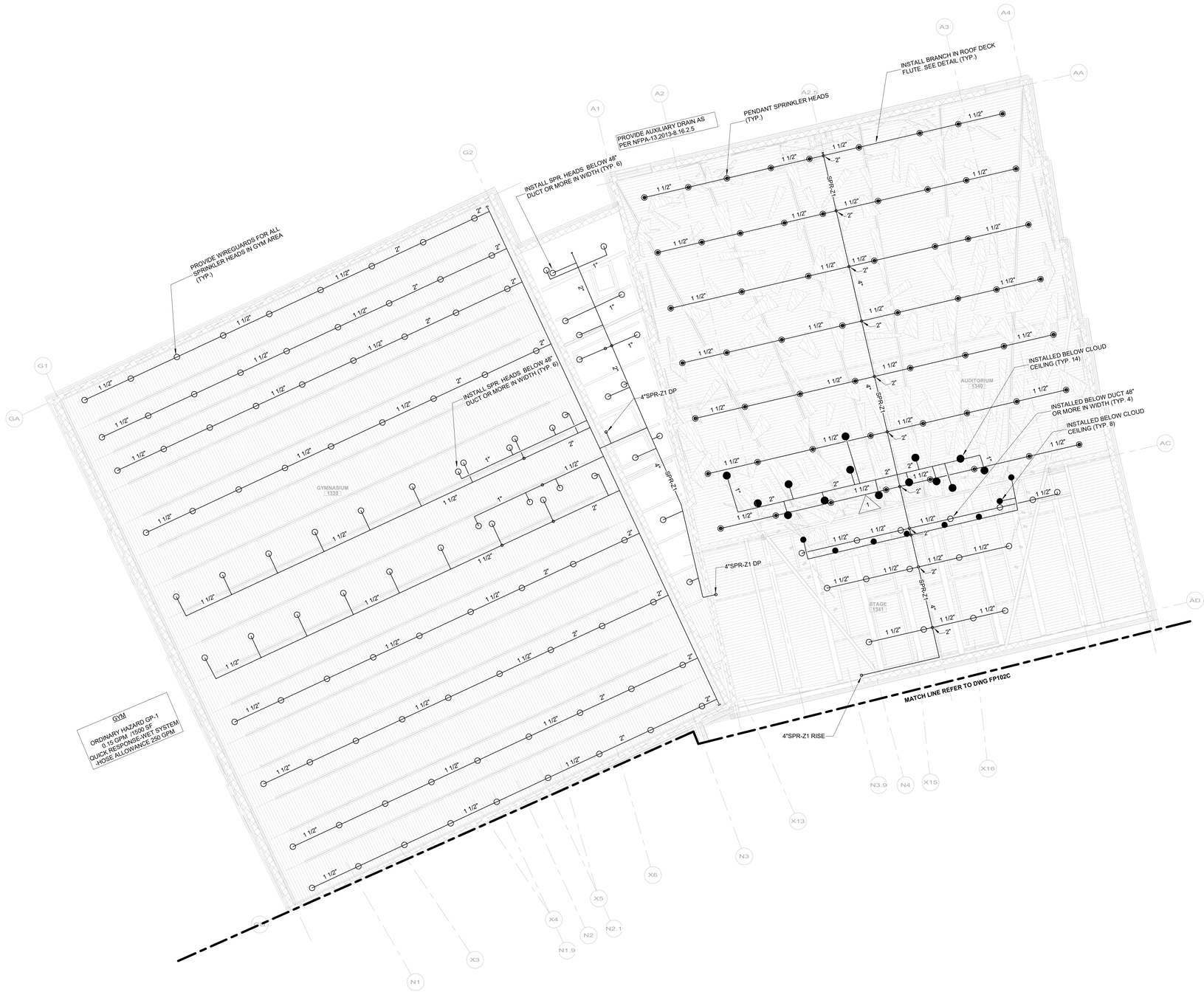
DRAWING NAME

SECOND FLOOR - FIRE PROTECTION C

PROJECT NO. 1722

DRAWING NO.

FP102C



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/04/2019	Adden.5
2	2/10/2020	Conformance Set

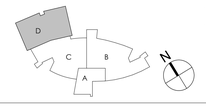
DRAWING NAME

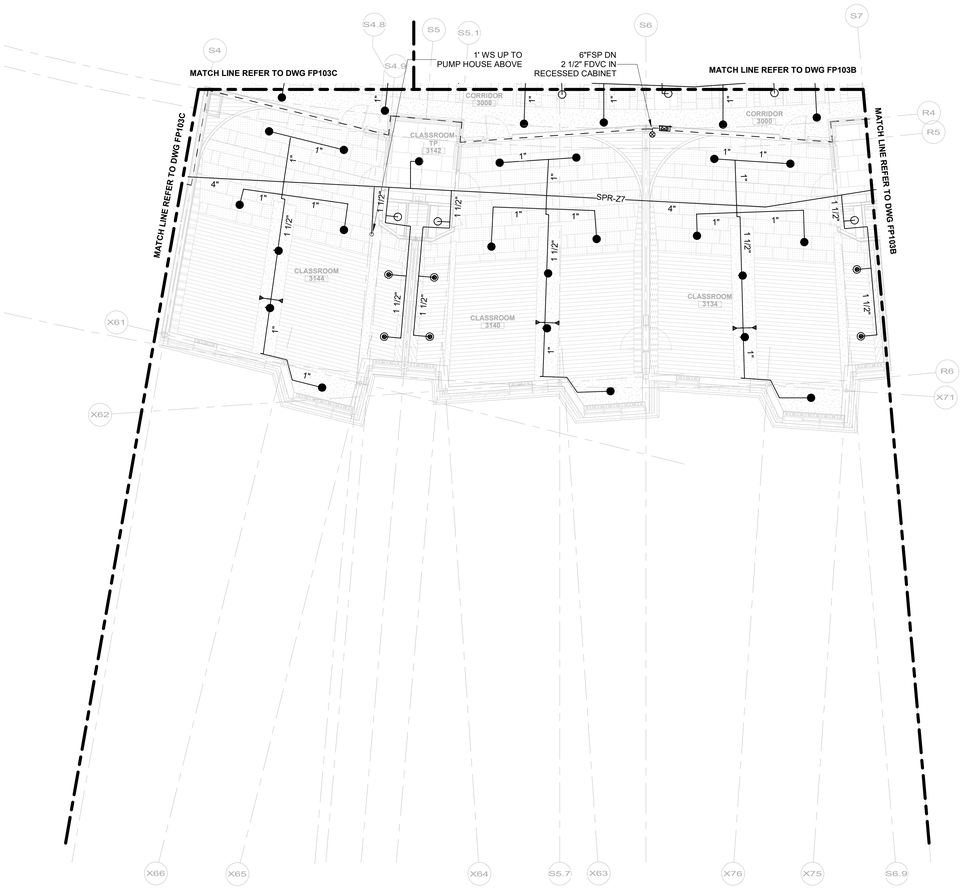
SECOND FLOOR - FIRE PROTECTION D

PROJECT NO. 1722

DRAWING NO.

FP102D





JLA
Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

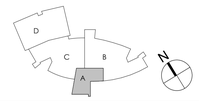
DRAWING NAME

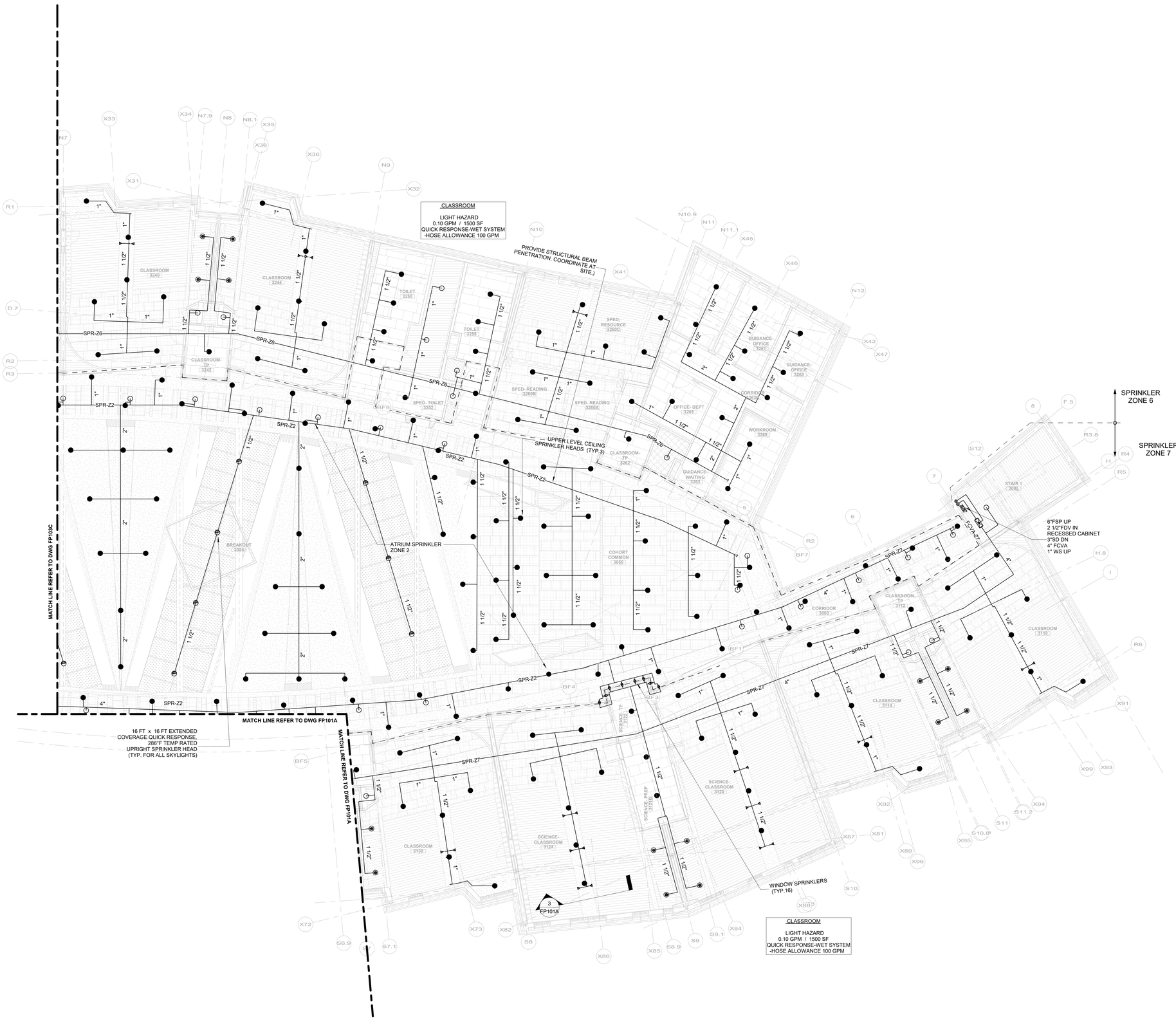
THIRD FLOOR - FIRE PROTECTION A

PROJECT NO. 1722

DRAWING NO.

FP103A





Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME

THIRD FLOOR - FIRE PROTECTION B

PROJECT NO. 1722

DRAWING NO.

FP103B

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME

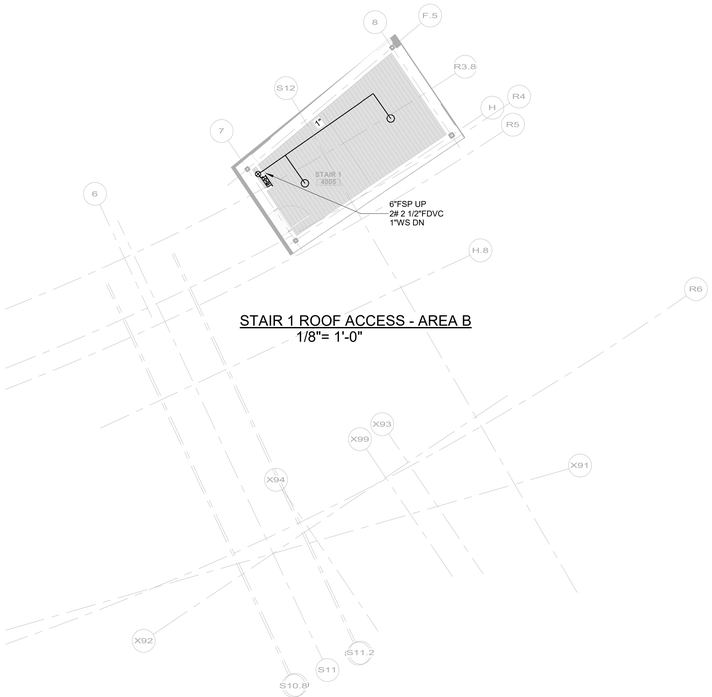
THIRD FLOOR - FIRE PROTECTION C

PROJECT NO. 1722

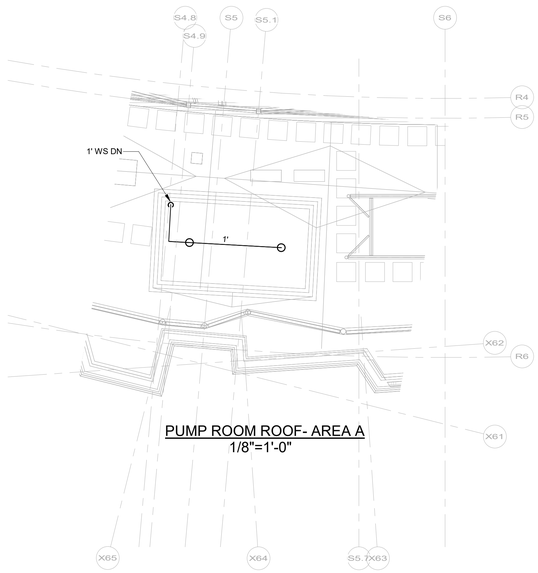
DRAWING NO.

FP103C

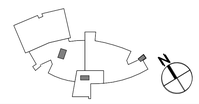
ELEVATOR LOBBY ROOF - AREA C
1/8"=1'-0"



STAIR 1 ROOF ACCESS - AREA B
1/8"= 1'-0"



PUMP ROOM ROOF- AREA A
1/8"=1'-0"



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME
ROOF AREA - FIRE PROTECTION

PROJECT NO. 1722

DRAWING NO.
FP104

LEGEND

SYMBOL	ABBREV	DESCRIPTION
AW	AW	ACID WASTE UNDERGROUND
AW	AW	ACID WASTE
SAN	SAN	SOIL/WASTE ABV. GRADE
SAN	SAN	SANITARY WASTE UNDERGROUND
V	V	VENT UNDERGROUND
V	V	VENT ABV. GRADE
IW	IW	INDIRECT WASTE
RL	RL	RAIN LEADER UNDERGROUND
RL	RL	RAIN LEADER ABV. GRADE
CW	CW	COLD WATER
HW	HW	HOT WATER
HWR	HWR	HOT WATER RETURN
HW 140°	HW 140°	HOT WATER 140°F
LCW	LCW	LAB COLD WATER
LHW	LHW	LAB HOT WATER
W	W	WASTE
KW		KITCHEN WASTE
KV		KITCHEN WASTE VENT
G	G	FUEL GAS PIPING
DP.DN	DP.DN	PIPE DROP OR DOWN
UP	UP	PIPE RISE OR UP
		TEE LOOKING DOWN
		CAP ON END OF PIPE
FD RD AD	FD RD AD	FLOOR DRAIN, ROOF DRAIN, AREA DRAIN
		STRAINER
		UNION
CO	CO	CLEANOUT
DCO	DCO	DANDY CLEANOUT
FCO	FCO	FLOOR CLEANOUT
PG/TG	PG/TG	PRESSURE GAGE/TEMPERATURE GAGE
SA	SA	SHOCK ABSORBER
		BALANCING VALVE
BV	BV	BALL VALVE
BW V	BW V	STORM BACKWATER VALVE
CV	CV	CHECK VALVE
		GAS COCK
		GAS PRESSURE REGULATOR
		SOLENOID VALVE
		SHUT OFF BALL VALVE
PRV	PRV	PRESSURE REDUCING VALVE
PT	PT	P-TRAP
EL	EL	EXPANSION LOOP
		PIPE GUIDE
		PIPE ANCHOR
		FLOW IN DIRECTION OF ARROW
HB/WH	HB/WH	HOSE BIBB/WALL HYDRANT
GW	GW	GARAGE WASTE UNDERGROUND
GV	GV	GARAGE VENT
GV	GV	GARAGE VENT UNDERGROUND
TP	TP	TRAP PRIMER
TW	TW	TEMPERED WATER
TYP.	TYPICAL	
FFE	FINISHED FLOOR ELEVATION	
INV	INVERT ELEVATION	
VTR	VENT THRU ROOF	
AVTR	ACID VENT THRU ROOF	
AP	ACCESS PANEL	
AFF	ABOVE FINISHED FLOOR	
AFG	ABOVE FINISHED GRADE	
FG	FINISHED GRADE	
CI	CAST IRON	
CP	CHROME PLATED	
ETP	ELECTRONIC TRAP PRIMER	
UC	UNDER COUNTER	
F&I	FURNISH AND INSTALL	
PC	PLUMBING CONTRACTOR	
FPC	FIRE PROTECTION CONTRACTOR	
GC	GENERAL CONTRACTOR	
HVAC	HEAT, VENT & AIR COND. CONTRACTOR	
DCVA	DOUBLE CHECK VALVE ASSEMBLY	
RPBP	REDUCED PRESSURE BACKFLOW PREVENTOR	
STK	STACK	
STP	STANDPIPE	
EXP	EXPOSED	
ETP	ELECTRIC TRAP PRIMER	

NOTE: NOT ALL SYMBOLS LISTED ARE APPLICABLE TO THIS PROJECT

SHOCK ABSORBER SCHEDULE

WATER PRESSURE OVER 65 PSI

PDI SYMBOL	B	C	D	E	F	G
ZURN SERIES 1250-XL OR EQ.	A	B	C	D	E	F
FIXTURE UNITS	1-11	12-32	33-60	61-113	114-154	155-330

PIPE SIZE TO FIXTURE SCHEDULE

P. NO.	FIXTURE	S/W	VENT	CW	HW	KW	KV	AW	AV	LCW	LHW	TW	GAS	REMARKS
P-1	WATER CLOSET	4"	2"	1 1/4"**	-	-	-	-	-	-	-	-	-	*SUPPLY RISER & 1" STUBOUT TO FLUSH VLV.
P-1A	WATER CLOSET, ACCESSIBLE	4"	2"	1 1/4"*	-	-	-	-	-	-	-	-	-	*SUPPLY RISER & 1" STUBOUT TO FLUSH VLV.
P-2	URINAL	3"	2"	1***	-	-	-	-	-	-	-	-	-	**SUPPLY RISER & 3/4" STUBOUT TO FLUSH VLV.
P-2A	URINAL, ACCESSIBLE	3"	2"	1***	-	-	-	-	-	-	-	-	-	**SUPPLY RISER & 3/4" STUBOUT TO FLUSH VLV.
P-3	LAVATORY ACCESSIBLE	1 1/2"	1 1/2"	1/2"	1/2"	-	-	-	-	-	-	-	-	COUNTER MOUNTED
P-3A	LAVATORY ACCESSIBLE	1 1/2"	1 1/2"	1/2"	1/2"	-	-	-	-	-	-	-	-	WALL MOUNTED
P-4	DRINKING FOUNTAIN	1 1/2"	1 1/2"	1/2"	-	-	-	-	-	-	-	-	-	
P-5	MOP RECEPTOR	3"	2"	3/4"	3/4"	-	-	-	-	-	-	-	-	FLOOR MOUNTED
P-5A	UTILITY SINK	3"	2"	3/4"	3/4"									WALL HUNG
P-6	SHOWER	2"	2"	1/2"	1/2"	-	-	-	-	-	-	-	-	
P-6A	SHOWER, ACCESSIBLE	2"	2"	1/2"	1/2"	-	-	-	-	-	-	-	-	
P-7 P-7A	SCIENCE LAB SINK	-	-	-	-	-	-	2"	2"	1/2"	1/2"	-	-	
P-8	CLASSROOM	2"	2"	1/2"	1/2"	-	-	-	-	-	-	-	-	
P-9	ART SINK	2"	2"	1/2"	1/2"	-	-	-	-	-	-	-	-	WITH SOLIDS INTERCEPTOR
P-9A	ART SINK, ACCESSIBLE	2"	2"	1/2"	1/2"	-	-	-	-	-	-	-	-	WITH SOLIDS INTERCEPTOR
P-10	EMERGENCY SHOWER/ EYEWASH STATION			1 1/4"	1 1/4"	-	-	-	-	-	-	-	-	THERMOSTATIC MIXING VALVE FOR TEPID WATER
P-10A	EMERGENCY EYEWASH STATION			3/4"	3/4"	-	-	-	-	-	-	-	-	THERMOSTATIC MIXING VALVE FOR TEPID WATER
P-11	FUME HOOD CONNECTION			1/2"				2"					1/2"	
P-12	VALVE OUTLET BOX													
P-13	PREP SINK W/ EYEWASH	2"	1 1/2"	1/2"	1/2"									THERMOSTATIC MIXING VALVE FOR TEPID WATER
P-14	COUNTERTOP SINK FOR FAB LAB/ MAKER SPACE	2"	1 1/2"	1/2"	1/2"									
P-15	KITCHENETTE SINK	2"	1 1/2"	1/2"	1/2"									
P-16	GAS TURRET												3/4"	
P-17	MASTER GAS CONTROL VALVE												1"	
FD- #	FLOOR DRIAN	3"	2"											PROVIDE TRAP PRIMER

COORDINATE ALL ROUGH-IN REQUIREMENTS WITH ARCHITECTURAL DRAWINGS, ACCESSIBLE HEIGHTS VARY.

GENERAL PLUMBING NOTES

1. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE GENERAL CONTRACTOR.
2. REFER TO ARCHITECTURAL PLANS FOR HEIGHT OF CEILING AND COORDINATE ALL WORK WITH ALL OTHER CONTRACTORS PRIOR TO START.
3. COORDINATE WITH ARCHITECT FOR PLUMBING FIXTURES LOCATION.
4. GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL DRAWINGS.
5. DRAWINGS ARE DIAGRAMMATIC: THIS CONTRACTOR SHALL DETERMINE EXACT LOCATIONS AND SIZES OF SYSTEMS AND COMPONENTS IN FIELD.
6. ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE LASTEST PLUMBING CODE AND ALL APPLICABLE LOCAL CODES. ALL WORK SHALL CONFORM TO THE AMERICANS WITH DISABILITIES ACT (ADA)
7. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE HIS WORK WITH THAT OF ALL OTHER TRADES, INCLUDING BUT NOT LIMITED TO, ELECTRICAL, HVAC, SPRINKLER, STRUCTURAL AND GENERAL ARCHITECTURE.
8. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER, AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF WORK.
9. NO WORK SHALL BE INSTALLED IN VIOLATION OF ANY GOVERNING CODES. ANY WORK SHOWN ON THE DRAWINGS WHICH IS IN VIOLATION OF SUCH CODES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK.
10. ALL PIPING PENETRATING CEILINGS AND WALLS SHALL BE INSTALLED WITH ESCUTCHEONS AT THE PENETRATION. ALL PIPING PENETRATING EXTERIOR WALLS AND ROOFS SHALL BE FLASHED IN AN APPROVED MANNER AND SHALL BE SEALED WEATHERTIGHT. PIPING PENETRATING FIRE RATED PARTITIONS SHALL BE PROVIDED WITH FIRE RATED SEALS AS REQUIRED BY LOCAL CODE AUTHORITY.
11. MANUFACTURERS' MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS. INSTALLATION SHALL ADHERE TO MANUFACTURERS' RECOMMENDATIONS.
12. TOP OF ALL FLOOR DRAINS SHALL BE SET FLUSH WITH FINISHED FLOOR. ALL PIPING ABOVE GRADE SHALL BE PROPERLY SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING STRUCTURE OR COMPONENTS.
13. ALL PLUMBING EQUIPMENT, PIPING, INSULATION, ETC., INSTALLED IN HVAC PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.
14. PROVIDE SHUTOFF VALVES ON ALL BRANCH PIPING AND ON ALL SUPPLIES TO INDIVIDUAL FIXTURES AND EQUIPMENT. PROVIDE BALL VALVES ON ALL WATER MAIN BRANCHES IN CORRIDORS AND WHERE INDICATED ON DRAWINGS.
15. PROVIDE BALANCING VALVES, BALL VALVES AND CHECK VALVES ON ALL HOT WATER RETURN BRANCHES, AS REQUIRED, TO BALANCE RETURN SYSTEM.
16. PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
17. PROVIDE VENTS AT HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS.
19. PROVIDE GAUGE FITTINGS AT PUMP INLETS AND OUTLETS. PROVIDE THERMOMETER WELLS ON MIXING VALVE OUTLETS AND DOMESTIC WATER HEATER OUTLETS.
20. PITCH DOWN PRESSURE PIPING TO DOMESTIC WATER HEATERS.
21. VERIFY EXACT SIZES, LOCATIONS, INVERTS AND ELEVATIONS PRIOR TO RUNNING ANY PIPING.
22. ALL EXPOSED WATER, WASTE AND VENT PIPING SHALL BE PAINTED (COLOR TO BE SELECTED BY ARCHITECT). INSTALL WATER SHOCK ARRESTORS AT EACH FIXTURE OR BATTERY OF FIXTURES. ALL INDIRECT WASTE PIPING SHALL BE COPPER AND CHROME PLATED BRASS WHERE EXPOSED.
23. ALL PLUMBING VENTS THRU ROOF SHALL BE INSTALLED MINIMUM 25' AWAY FROM ADJOINING HVAC UNIT AIR INTAKES.
24. ALL FLOOR DRAIN SHALL BE PROVIDE WITH TRAP PRIMER. THE TRAP PRIMER SHALL BE LOCATED IN ACCESSIBLE LOCATION.
25 OBTAIN GAS PERMITS AND DEFRAY ALL COSTS INCIDENTAL TO THE GAS PIPING SYSTEM. CONTRACTORS WORK SHALL COMMENCE ON THE HOUSE SIDE OF THE UTILITY CO. METERS.
26. GAS PIPING AND SAFETY DEVICES SHALL CONFORM TO THE REQUIREMENTS OF NFPA 54 AND SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE STATE REGULATORY BOARD.
27. PROVIDE A SUITABLE GAS COCK VALVE AT EACH BRANCH RUNOUT FROM THE MAIN RISER SERVING GAS OUTLETS AND AT EACH INDIVIDUAL GAS FIXTURE.
28. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING GAS TRAIN PRESSURE REGULATOR RELIEF VENTS TO ALL HEATING BOILERS AND WATER HEATERS AS REQUIRED BY THE MANUFACTURER. SIZE AND EXTEND RELIEF VENTS TO OUTDOOR AS PER 248CMR, 7.04 (11).
29. TRAP PIPING BELOW SLAB SHALL BE TYPE "K" SOFT ROLLED BRAZED COPPER ENCASED IN SUITABLE SIZE PEX TUBING. THE PEX TUBING SHALL BE LISTED FOR BURIAL IN SOIL & CONCRETE. THERE SHALL BE NO JOINTS IN COPPER OR PEX BELOW SLAB.
30. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING 24V POWER WIRING, 120-24V TRANSFORMER AND CONTROL MODULE ETC. TO ALL SENSOR ACTIVATED DEVISES..COORDINATE WORK WITH ELECTRICAL CONTRACTOR.
31. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF KITCHEN WASTE AND CHAMBER VENT PIPING BACK TO THE OUTDOOR GREASE INTERCEPTOR. THE PIPING SHALL BE CAST IRON AND SHALL BE INSTALLED IN ACCORDANCE TO 248CMR 10.09. COORDINATE LOCATION WITH SITE UTILITY PLAN TO AVOID ANY CONFLICT.
32. SANITARY PIPE AND STORM PIPE DROPS SHALL BE PROVIDED WITH CLEANOUT AT 24" ABOVE FINISH FLOOR. PROVIDE 6"x6" STAINLESS STEEL ACCESS PANEL.
33. KITCHEN EQUIPMENT SUCH DISHWASHER, GARBAGE DISPOSER, FIXTURE WITH HOSE ATTACHMENT ETC. PROVIDE BACKFLOW PREVENTER AT CROSS CONNECTIONS TO POTABLE WATER.

DOMESTIC WATER HEATER SCHEDULE (WH X)

TAG NO.	FUEL TYPE	INPUT (MBH)	MIN. EFF.	RECOVERY RATE (GPH) AT 100° F RISE	EWT (° F)	LWT (° F)	ELECTRICAL DATA VOLT	ELECTRICAL DATA PHASE	REMARKS
WH-1	NAT. GAS	399	94%	466	45	140	115	1	1 2 3 4 5
WH-2	NAT. GAS	399	94%	466	45	140	115	1	1 2 3 4 5

1. EQUAL TO LOCHINVAR MODEL AWN400PM. OTHER APPROVED MANUFACTURER ARE "HTP" AND "LAARS".
2. CONDENSATE NEUTRALIZATION KIT
3. ROOM AIR VENT KIT
4. BMS GATEWAY
5. STAINLESS STEEL CIRCULATING PUMP & CONTROL.

DOMESTIC WATER STORAGE TANK (ST X)

TAG NO.	TYPE	MIN. STORAGE (GAL)	MAX WORK PR.	REMARKS
ST-1	VERTICAL	300	125	1 2

1. WATER HEATER SHALL BE CONSTRUCTED AND STAMPED IN ACCORDANCE WITH ASME STANDARD REQUIREMENT.
2. EQUAL TO LOCHINVAR MODEL RJA175. OTHER APPROVED MANUFACTURER HTP AND LAARS

ACID NEUTRALIZING TANK (ANT X)

TAG NO.	TYPE	STORAGE CAPACITY (GAL)	DIMENSIONS	REMARKS
ANT #1	RECTANGULAR	15	12"x24"X12H	
ANT #2	RECTANGULAR	15	12"x24"X12H	
ANT #2A	RECTANGULAR	5	10"x16"x8"H	
ANT #3	RECTANGULAR	15	12"x24"X12H	
ANT #4	CYLINDRICAL	55	24" DIA, 34" H	DOUBLE WALL
ANT #5	CYLINDRICAL	55	24" DIA, 34" H	DOUBLE WALL

1

SUMP PUMP-SIMPLEX (SP X)

TAG NO.	MANUFACTURER AND MODEL NO. OR EQUAL	SERVICE	FLOW RATE (GPM)	HEAD (FT)	ELECTRICAL DATA HP	ELECTRICAL DATA VOLT	REMARKS
SP-1	BELL & GOSSET -ELKT2EC712	ELEVATOR PIT	50	38	3/4	230	1 2

1. PROVIDE CONTROL PANEL, OIL SMART SWITCH, AND ALARM
2. PUMP FLOAT TO START / STOP PUMP

OTHER EQUAL MANUFACTURERS ARE STANCOR, LIBERTY PUMP.

CIRCULATION PUMP SCHEDULE (RP X)

TAG NO.	MANUFACTURER AND MODEL NO. OR EQUAL	TYPE	FLOW RATE (GPM)	HEAD (FT)	ELECTRICAL DATA AMPS	ELECTRICAL DATA HP	ELECTRICAL DATA VOLT /PH	ELECTRICAL DATA RPM	REMARKS
RP-1	BELL & GOSSET ECOCIRC XL-20-35 OR EQUAL	INLINE	6.5	15	1.76	1/8	115/ 1	3250	1,2,3 &4
CP-1 CP-2	BELL & GOSSET SSF-22 OR EQUAL	INLINE	10	8	0.8 WATTS	92	115/ 1	2800	

ACCEPTABLE MANUFACTURER:
AMTROL, TACO, BELL & GOSSET OR APPROVED EQUAL.

NOTES:

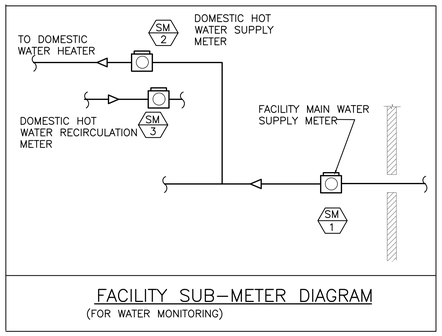
1. BRONZE BODY CONSTRUCTION, LEAD FREE, STAINLESS STEEL IMPELLER, 225°F MAX OPERATING TEMPERATURE, 125 PSI MAX WORKING PRESSURE.
2. PROVIDE AQUASTAT AND AUTOMATIC TIMER KIT.
3. ECM MOTOR
4. INTERFACE WITH BUILDING MANAGEMENT SYSTEM

EXPANASION TANK (ET 1)

TAG NO.	MANUFACTURER AND MODEL NO. OR EQUAL	TYPE	TANK VOLUME (GAL)	MAX ACCEPT FACTOR	REMARKS
ET 1	AMTROL ST-70V-C	STAND MODEL	34	0.32	1

1. NSF/ ANSI 61 LABEL AND ASME CONSTRUCTED.

ACCEPTABLE MANUFACTURER:
AMTROL, TACO, BELL & GOSSET OR APPROVED EQUAL.



FACILITY SUB-METER DIAGRAM
(FOR WATER MONITORING)

PLAN NOTES:

1. PRESSURE/TEMPERATURE RELIEF VALVE. EXTEND AND DISCHARGE TO NEAREST FLOOR DRAIN.
2. FLOW SWITCH
3. P.C SHALL PROVIDE CONDENSATE DRAIN PIPE AND ACID NEUTRALIZING KIT.

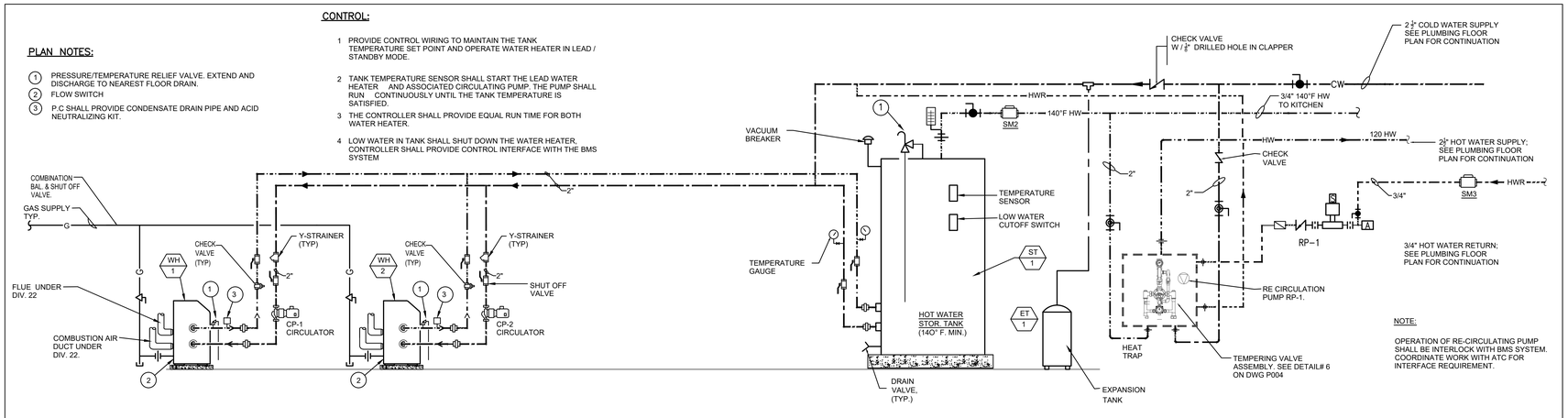
CONTROL:

1 PROVIDE CONTROL WIRING TO MAINTAIN THE TANK TEMPERATURE SET POINT AND OPERATE WATER HEATER IN LEAD / STANDBY MODE.

2 TANK TEMPERATURE SENSOR SHALL START THE LEAD WATER HEATER AND ASSOCIATED CIRCULATING PUMP. THE PUMP SHALL RUN CONTINUOUSLY UNTIL THE TANK TEMPERATURE IS SATISFIED.

3 THE CONTROLLER SHALL PROVIDE EQUAL RUN TIME FOR BOTH WATER HEATER.

4 LOW WATER IN TANK SHALL SHUT DOWN THE WATER HEATER, CONTROLLER SHALL PROVIDE CONTROL INTERFACE WITH THE BMS SYSTEM



NOTE:

OPERATION OF RE-CIRCULATING PUMP SHALL BE INTERLOCK WITH BMS SYSTEM. COORDINATE WORK WITH ATC FOR INTERFACE REQUIREMENT.

HW & CW CONNECTION TO DOMESTIC WATER HEATER (WH-1 & WH-2)
NOT TO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street. Unit # 4
Berlin, MA. 01503
Telephone - (508) 869-0403
Fax. - (508) 869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/4/2019	Adden. 5
2	2/10/2020	Conformance Set

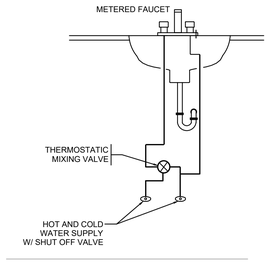
DRAWING NAME

PLUMBING LEGEND,NOTES, SCHEDULES AND DETAILS

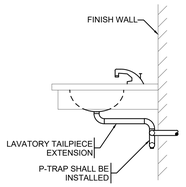
PROJECT NO. 1722

DRAWING NO.

P001



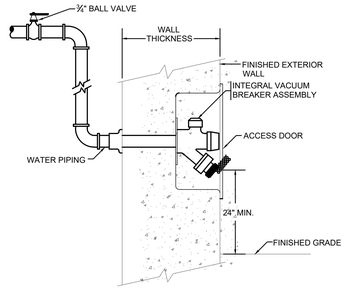
1 LAVATORY
NOT TO SCALE



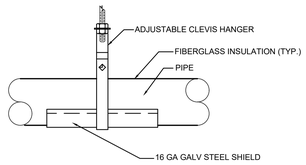
SIDE ELEVATION OF - ADA LAVATORY

NOTE:

ALL LAVATORY PIPING, (SUPPLY AND WASTE) SHALL BE FULLY INSULATED.

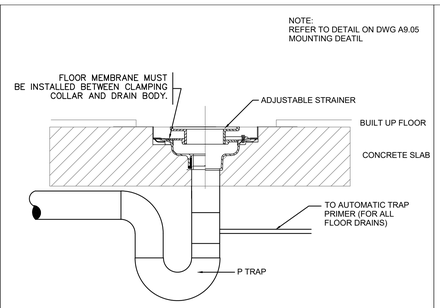


2 FROST PROOF HOSE BIBB
NOT TO SCALE

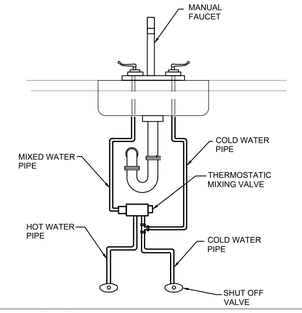


SHIELD SCHEDULE	
PIPE SIZE	LENGTH
½" TO 4"	8"
6" TO 12"	12"

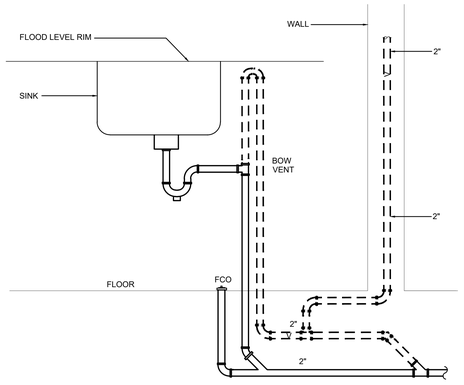
3 PIPE HANGER
NOT TO SCALE



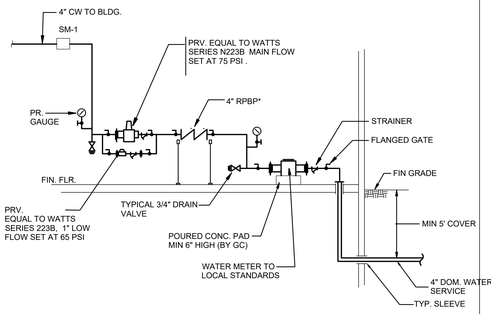
4 FLOOR DRAIN
NOT TO SCALE



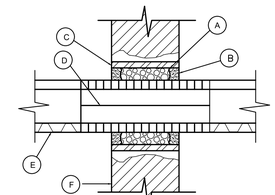
5 SINK
NOT TO SCALE



6 SINK BOW VENT PIPING DETAIL
NOT TO SCALE



7 WATER SERVICE PIPING DETAIL - SCHOOL
NOT TO SCALE



A PROVIDE 1/4" CLEARANCE BETWEEN PIPE SLEEVE OR CORE DRILLED HOLE AND PIPE. PACK CLEARANCE SPACE WITH SPECIFIED INSULATION

B PROVIDE SPECIFIED END SEALANT

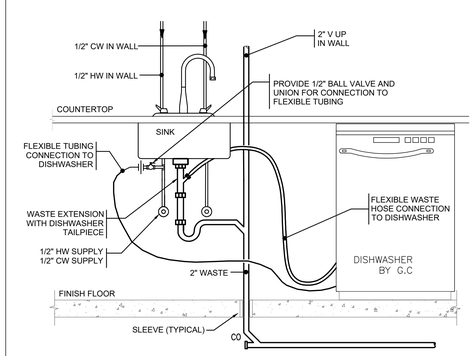
C SLEEVE-PROVIDE AS SPECIFIED. SLEEVE MAY BE OMITTED AND CORE DRILLED HOLE PROVIDED IN CONCRETE AS SPECIFIED. EXTEND FLOOR PIPE SLEEVES 2" ABOVE FLOOR.

D CALCIUM SILICATE OR APPROVED EQUAL INSULATION THRU PENETRATION AND EXTENDED 2" ON BOTH SIDES OF WALL OR FLOOR; PROVIDE METAL JACKET AS SPECIFIED OVER INSULATION

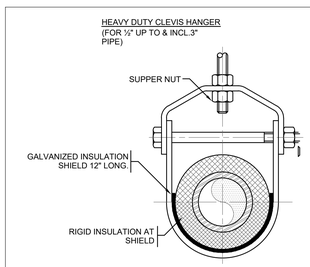
E SPECIFIED INSULATION

F WALL OR FLOOR

8 PIPE PENETRATION THROUGH INTERIOR WALL/FLOOR DETAIL
NOT TO SCALE



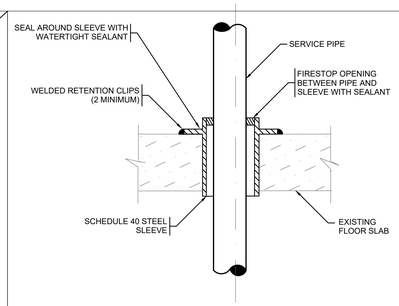
9 DISHWASHER AND SINK WASTE CONNECTION
NOT TO SCALE



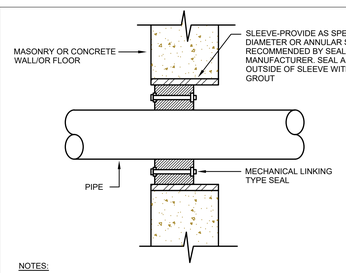
NOTES :
1. SEE SPECIFICATION FOR HANGER SIZES.

10 PIPE HANGER SUPPORT
NOT TO SCALE

11 -NOT USED-
NOT TO SCALE



12 PIPE SLEEVE PENETRATION AT FLOOR
NOT TO SCALE

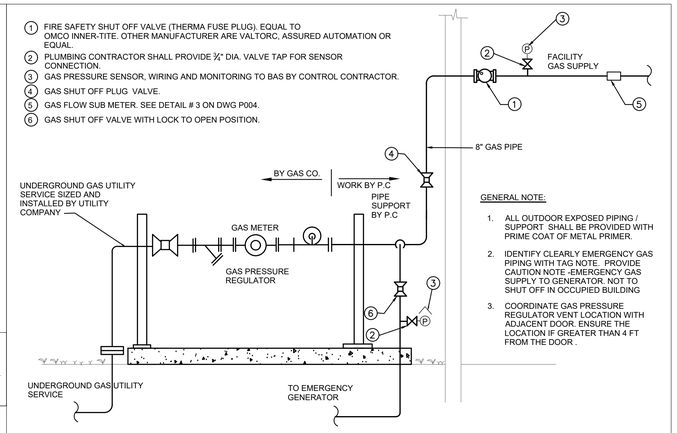


NOTES:

1. WHERE PIPE AND/OR TUBING SIZE IS TOO SMALL TO PERMIT THE USE OF MECHANICAL LINKING TYPE SEALS, PACK ANNULAR SPACE WITH MINERAL WOOL AND SEAL PENETRATION WITH NON-SHRINK GROUT, EXTERIOR GRADE CAULK, OR APPROVED EQUAL. IN SUCH INSTANCES, MULTIPLE SMALL PIPE AND /OR TUBING IS PERMITTED TO PASS THROUGH A SINGLE HOLE FOR HOLE SIZES UP TO 2" INSIDE DIAMETER SUBJECT TO THE APPROVAL OF THE ENGINEER.

13 PIPE PENETRATION THROUGH EXTERIOR WALL/FLOOR DETAIL
NOT TO SCALE

1. FIRE SAFETY SHUT OFF VALVE (THERMA FUSE PLUG), EQUAL TO OMCO INNER-TITE. OTHER MANUFACTURER ARE VALTORC, ASSURED AUTOMATION OR EQUAL.
2. PLUMBING CONTRACTOR SHALL PROVIDE ¾" DIA. VALVE TAP FOR SENSOR CONNECTION.
3. GAS PRESSURE SENSOR, WIRING AND MONITORING TO BAS BY CONTROL CONTRACTOR.
4. GAS SHUT OFF PLUG VALVE.
5. GAS FLOW SUB METER. SEE DETAIL # 3 ON DWG P004.
6. GAS SHUT OFF VALVE WITH LOCK TO OPEN POSITION.



GENERAL NOTE:

1. ALL OUTDOOR EXPOSED PIPING / SUPPORT SHALL BE PROVIDED WITH PRIME COAT OF METAL PRIMER.
2. IDENTIFY CLEARLY EMERGENCY GAS PIPING WITH TAG NOTE. PROVIDE CAUTION NOTE -EMERGENCY GAS SUPPLY TO GENERATOR. NOT TO SHUT OFF IN OCCUPIED BUILDING
3. COORDINATE GAS PRESSURE REGULATOR VENT LOCATION WITH ADJACENT DOOR. ENSURE THE LOCATION IF GREATER THAN 4 FT FROM THE DOOR .

14 MAIN GAS METER
NOT TO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street. Unit # 4
Berlin, MA. 01503
Telephone - (508) 869-0403
Fax. - (508) 869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

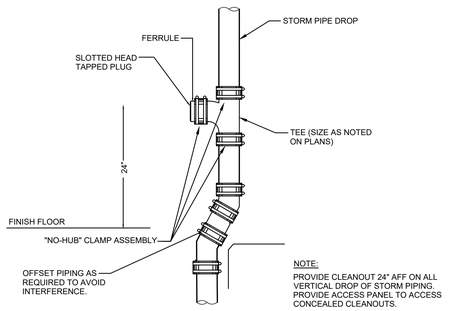
DRAWING NAME

PLUMBING DETAILS

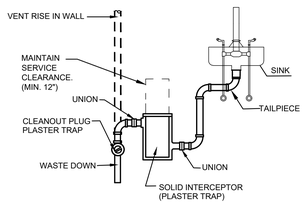
PROJECT NO. 1722

DRAWING NO.

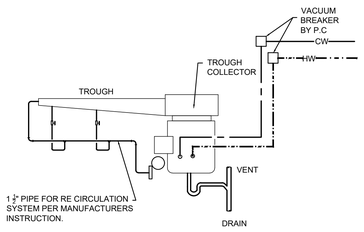
P002



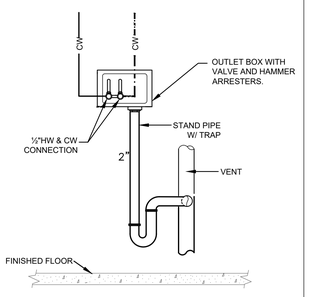
1 VERTICAL STORM PIPE CLEANOUT DETAIL (TYP)
NOT TO SCALE



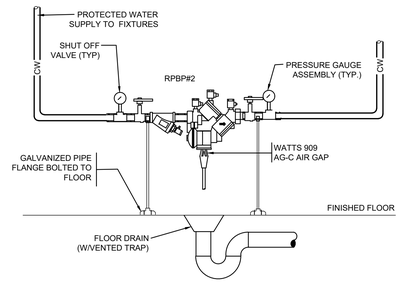
2 ART SINK PIPE CONN. DETAIL
NOT TO SCALE



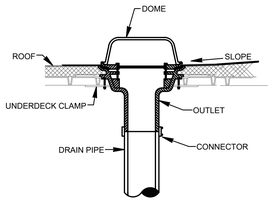
3 TROUGH DISPOSAL PIPE CONNECTION
NOT TO SCALE



4 WASHING MACHINE SUPPLY
NOT TO SCALE



5 REDUCED PRESSURE BACKFLOW PREVENTOR
NOT TO SCALE



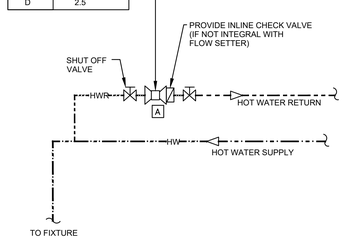
NOTE:
SEE ARCHITECTURAL DWG. FOR ROOFING DETAIL

REGULAR ROOF DRAIN

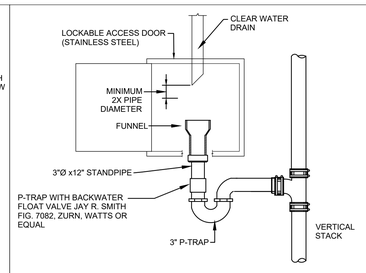
6 ROOF DRAIN DETAIL
NOT TO SCALE

TAG#	FLOW SET (GPM)
A	0.5
B	1.5
C	2.0
D	2.5

PROVIDE LEAD FREE QUICK FLOW SETTER WITH ONBOARD FLOW MEASURING DEVICE. THE FLOW SETTER SHALL BE EQUAL TO CALEFFI -132 SERIES. OTHER APPROVED MANUFACTURERS ARE BELL AND GOSSET, TACO OR EQUAL.



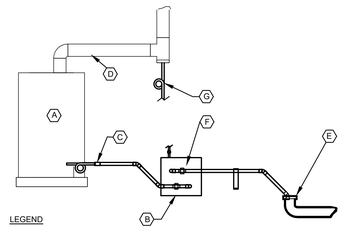
7 HOT WATER RECIRULATION LOOP DETAIL
NOT TO SCALE



NOTE:

1. ALL PIPING SHALL BE LOCATED IN WALL/CHASE SPACE.
2. COORDINATE LOCATION AND HEIGHT WITH LOCKABLE
3. ACCESS PANEL IN WALL FOR MAINTAINING DRAIN.

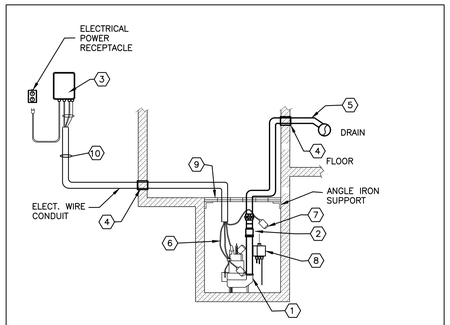
8 INDIRECT A/C DRAIN DETAIL
SCALE: NONE



LEGEND

- (A) CONDENSING WATER HEATER
- (B) CONDENSATE NEUTRALIZING TANK
- (C) WATER HEATER CONDENSATE TRAP CONNECTION
- (D) WATER HEATER VENT
- (E) FLOOR DRAIN OR SUMP
- (F) ELEVATE TE NB TANK ON A STRUCTURAL BASE TO BE RAISED, IF NECESSARY FOR THE OUTLET
- (G) WATER HEATER CONDENSATE TRAP CONNECTION

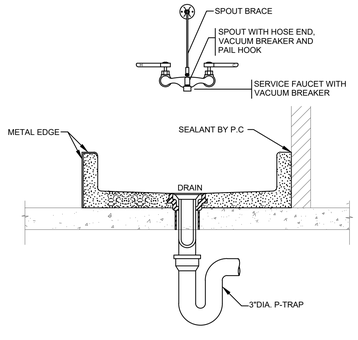
9 FLUE CONDENSATE DRAIN NEUTRALIZATION TANK DETAIL
NOT TO SCALE



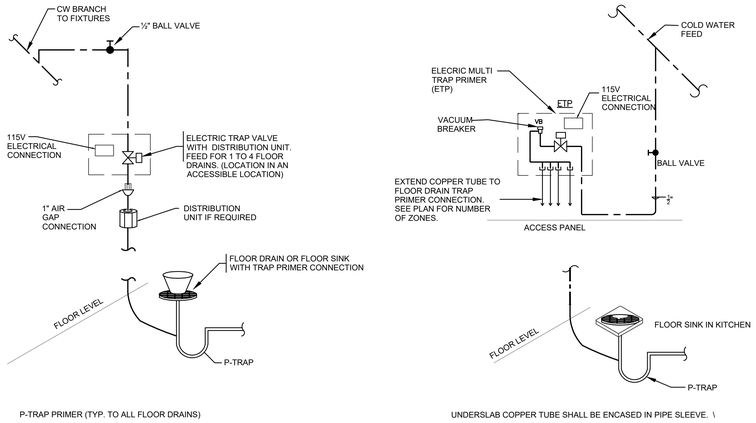
13 ELEVATOR SUMP PUMP SYSTEM DETAIL
NOT TO SCALE

1. SUBMERSIBLE EFFLUENT PUMP IN ELEVATOR. SEE PUMP SCHEDULE
2. CHECK VALVE
3. CONTROL PANEL WITH BUILT-IN AUDIBLE AND VISUAL ALARM WHEN PUMP DOES NOT RUN DUE TO OIL IN PIT OR HIGH LIQUID CONDITION. PROVIDE SILENCING BUTTON FOR AUDIBLE ALARM BUILT INTO PANEL. PANEL SHALL HAVE ADDITIONAL CONTACT FOR A REMOTE ALARM LOCATION
4. WATERTIGHT SLEEVE
5. 2" PUMP DISCHARGE TO DRAIN
6. POWER CABLE, PROBE CABLE, AND HIGH LIQUID ALARM CABLE IN CONDUIT
7. HIGH LIQUID ALARM FLOAT WITH CLAMP DEVICE TO MOUNT TO PUMP DISCHARGE PIPING
8. OIL AND LIQUID DETECTION SWITCH.
9. OPEN GRATING WITH CUT-OUT FOR DISCHARGE & ELECTRICAL CONDUIT

NOTE:
PROVIDE 6' STAINLESS STEEL BRADED WATER SUPPLY HOSE WITH PRESSURE BLEEDER DEVICE AND DUAL VENTED CHECK VALVE (ASSE10055B APPROVED) FOR SECONDARY BACK FLOW PREVENTER TO SOAP DISPENSER CONNECTION. INSTALLATION SHALL BE AS PER THE PLUMBING CODE REQUIREMENT.



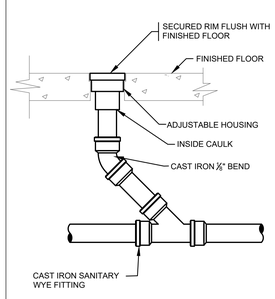
10 MOP SINK
NOT TO SCALE



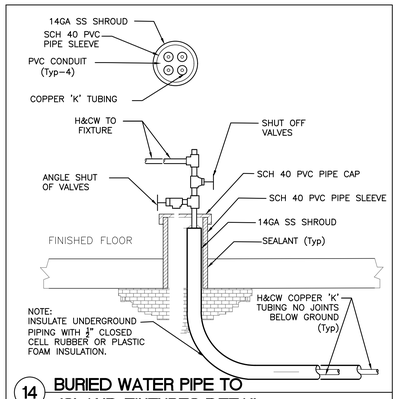
P-TRAP PRIMER (TYP. TO ALL FLOOR DRAINS)

UNDERSLAB COPPER TUBE SHALL BE ENCASED IN PIPE SLEEVE. \

11 P-TRAP PRIMER (TYP. TO ALL FLOOR DRAINS)
NOT TO SCALE



12 FLOOR CLEANOUT DETAIL
NOT TO SCALE



NOTE:
INSULATE UNDERGROUND PIPING WITH 1" CLOSED CELL RUBBER OR PLASTIC FOAM INSULATION.

14 BURIED WATER PIPE TO ISLAND FIXTURES DETAIL
N.T.S

JLA
Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street. Unit # 4
Berlin, MA. 01503
Telephone - (508) 869-0403
Fax. - (508) 869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

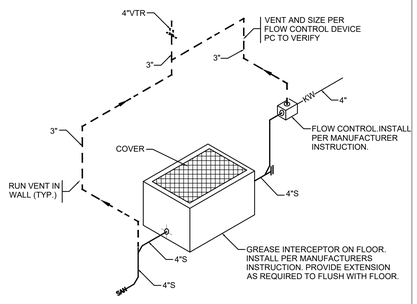
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME
PLUMBING DETAILS

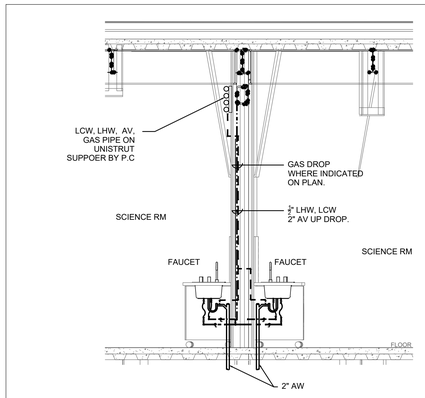
PROJECT NO. 1722

DRAWING NO.
P003

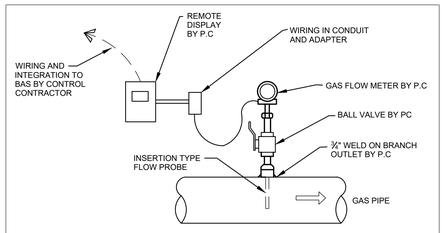


1 INTERIOR GREASE INTERCEPTOR PIPING DETAIL

NOT TO SCALE

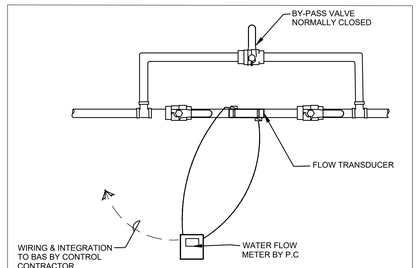


2 SCIENCE ROOM SINK



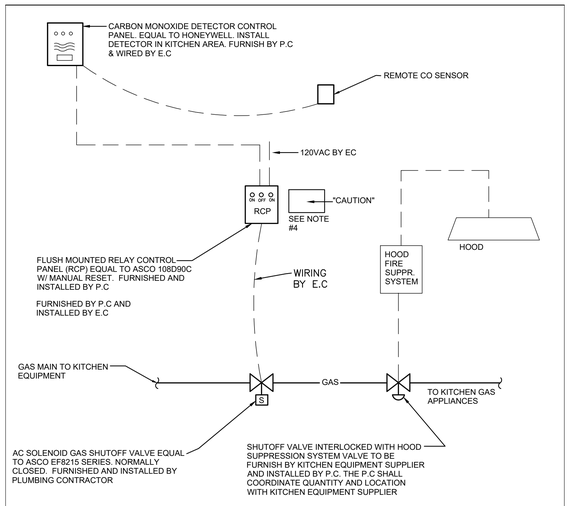
NOTE:
P.C SHALL FURNISH LOW VOLTAGE TRANSFER TO MATCH THE DEVICE VOLTAGE REQUIREMENT.

3 GAS FLOW SUB -METER



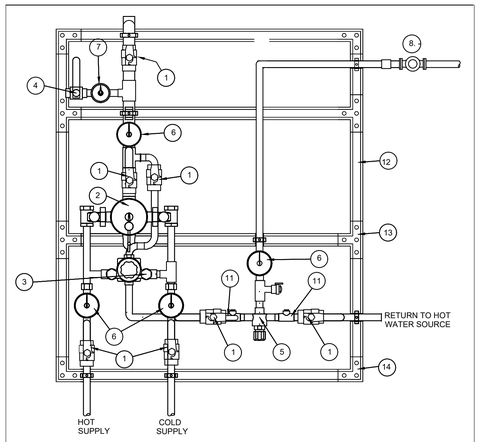
NOTE:
P.C SHALL FURNISH LOW VOLTAGE TRANSFER TO MATCH THE DEVICE VOLTAGE REQUIREMENT.

4 WATER SUB METER (SM)



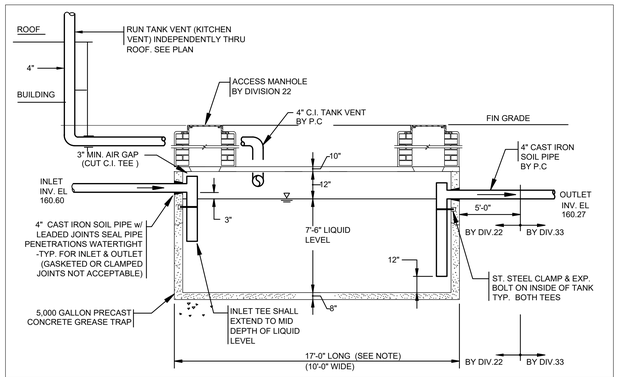
5 KITCHEN - MASTER GAS VALVE CONTROL DIAGRAM

1. ALL LOW VOLTAGE WIRING, TRANSFORMER ETC. SHALL BE BY THE PLUMBING CONTRACTOR.
2. ALARM MODE: WHENEVER THE CARBON MONOXIDE (CO) EXCEED THE SET LIMIT, POWER SHALL BE INTERRUPTED TO THE RELAY CONTROL PANEL (RCP) AND THE GAS SHUTOFF WILL CLOSE.
3. GAS FLOW MAY BE MANUALLY RESTARTED AFTER THE CO DETECTION AND THE FACP ARE RESET, WHICH WILL REPOWER THE RCP. TURNING KEY SWITCH TO "ON" WILL ENERGIZE THE SOLENOID.
4. P.C SHALL PROVIDE YELLOW ENGRAVED WARNING. PLACARD, MOUNTED ADJACENT TO THE RCP, WITH THE FOLLOWING "CAUTION-GAS FLOW IS RE-ESTABLISHED WHEN "ON" KEY SWITCH IS TURNED. RELIGHT ALL KITCHEN APPLIANCE PILOTS IMMEDIATELY UPON RESET. CO DETECTORS AND THE FIRE ALARM CONTROL PANEL MUST BE CLEAR OF ANY CO ALARMS PRIOR TO RESET.



PLAN NOTES	
1. FULL PORT BALL VALVE	7. PRESSURE GAUGE
2. LARGE TM MIXING VALVE	8. INLINE RE CIRCULATOR PUMP
3. SMALL TM MIXING VALVE	9. AQUASTAT
4. TEST CONNECTION	10. CIRCULATOR POWER SWITCH
5. AUTOMATIC RETURN VALVE	11. FLAPPER CHECK
6. DIAL THERMOMETER	12. GALVANIZED STRUT
	13. TEE BRACKET

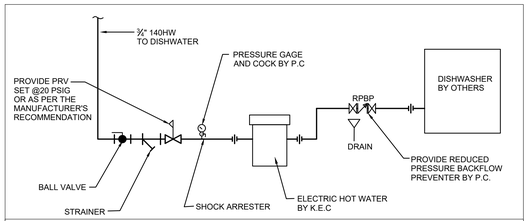
6 WATER TEMPERATURE CONTROL STATION



7 EXTERIOR GREASE TRAP DETAIL

N.T.S.

NOTES:
1. THE PRECAST STRUCTURE AND ALL PIPING WITHIN STRUCTURE IS BY DIVISION 22.
2. LOCATE INLET AND OUTLET TEES SO VISIBLE FROM
3. SIZE FOR 5000 GAL. TANK. THE DIMENSION SHOWN MAY VARY PER MANUFACTURERS STANDARD.



8 WAREWASHER HOT WATER PIPING DETAIL

NOT TO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street. Unit # 4
Berlin, MA. 01503
Telephone - (508) 869-0403
Fax. - (508) 869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

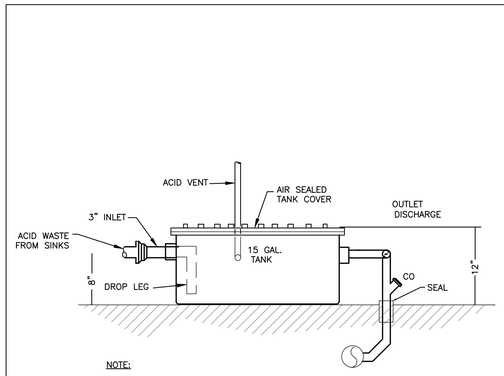
DRAWING NAME

PLUMBING DETAILS

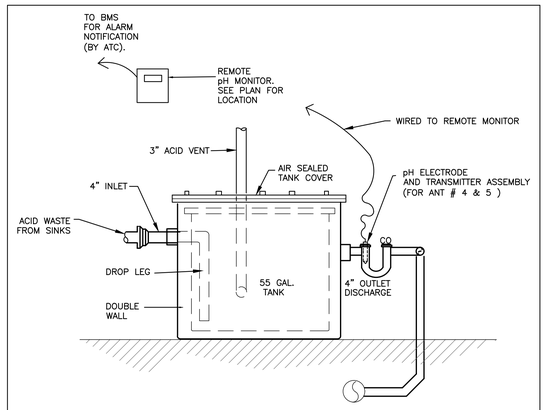
PROJECT NO. 1722

DRAWING NO.

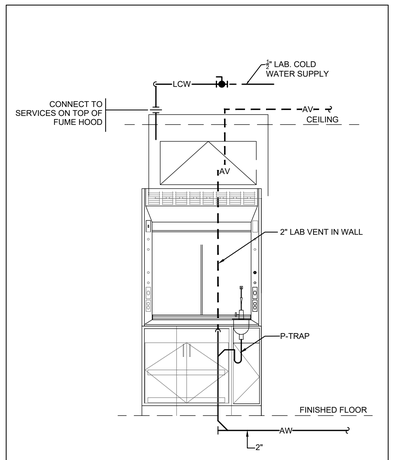
P004



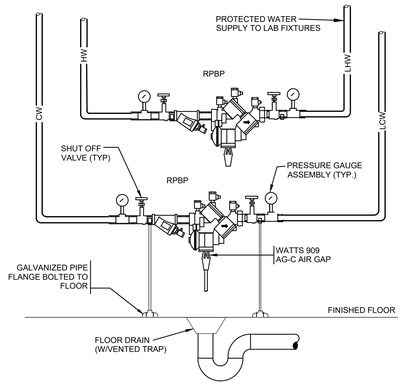
1 NEUTRALIZING TANK
NOT TO SCALE



2 NEUTRALIZING TANK
NOT TO SCALE

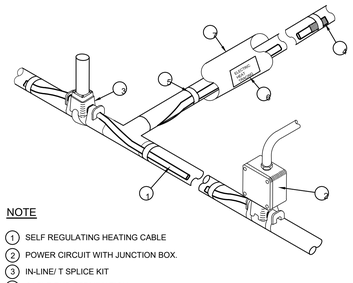


3 FUME HOOD PIPE CONNECTION DETAIL.
NOT TO SCALE



REDUCED PRESSURE BACKFLOW PREVENTOR

4 FOR LAB. WATER SUPPLY
NOT TO SCALE

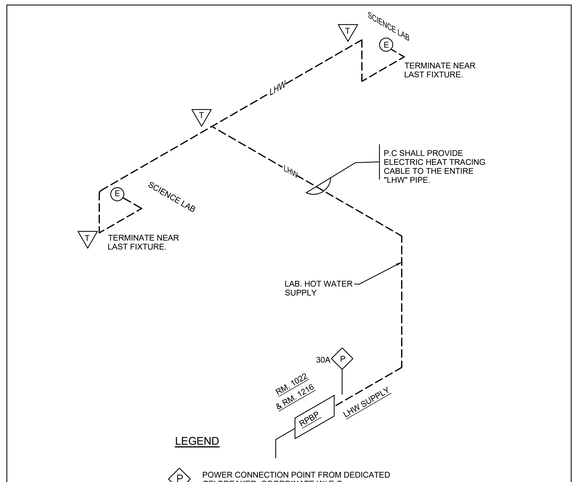


NOTE

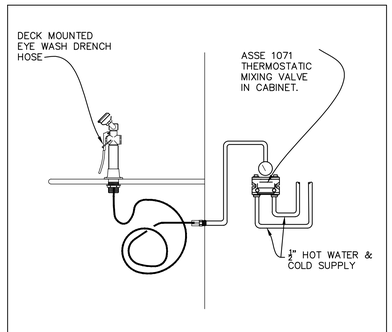
1. SELF REGULATING HEATING CABLE
2. POWER CIRCUIT WITH JUNCTION BOX.
3. IN-LINE/ T SPLICE KIT
4. CABLE END TERMINATION
5. TAPE SECURE CABLE TO PIPE. USE 12 TO 24" INTERVAL
6. PEEL AND STICK LABEL INSTALL 10' INTERVAL
7. FIBERGLASS INSULATION

NOTE:
REFER TO THE MANUFACTURERS INSTALLATION INSTRUCTION.

5 HEATING CABLE INSTALLATION DETAIL.
NOT TO SCALE



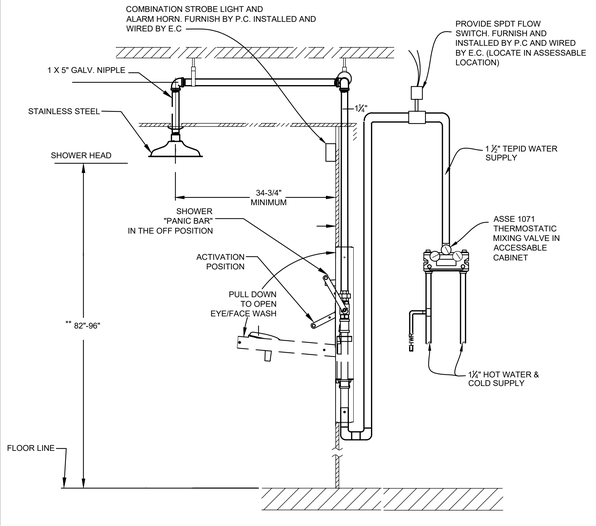
6 TEMPERATURE MAINTENANCE HEATING CABLE DIAGRAM.
NOT TO SCALE



7 EMERGENCY EYEWASH DRENCH HOSE
NOT TO SCALE

NOTES:

TO COMPLY WITH ANSI Z358.1-2009 FOR EMERGENCY EYEWASH OR EYE/FACE WASH AND SHOWER EQUIPMENT:
- UNIT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND ACCEPTABLE PLUMBING PRACTICES.
- EYEWASH OR EYE/FACE WASH SHALL BE POSITIONED WITH NOZZLES NOT LESS THEN (33 IN.) AND NO GREATER THAN (45 IN.) FROM SURFACE ON WHICH USER STANDS AND (6 IN.) MINIMUM FROM WALL OR NEAREST OBSTRUCTION.
- SHOWER SHALL BE POSITIONED SO THAT SHOWER HEAD IS NOT LESS THAN (82 IN.) NOR MORE THAN (96 IN.) FROM SURFACE ON WHICH USER STANDS.
- SHOWER SPRAY PATTERN SHALL HAVE A MINIMUM DIAMETER OF (20 IN.) AT (60 IN.) ABOVE SURFACE ON WHICH USER STANDS, AND CENTER OF SPRAY PATTERN SHALL BE LOCATED AT LEAST (16 IN.) FROM ANY OBSTRUCTION.



8 EMERGENCY SHOWER/ EYE WASH STATION -WALL RECESSED
NOT TO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street. Unit # 4
Berlin, MA. 01503
Telephone - (508) 869-0403
Fax. - (508) 869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

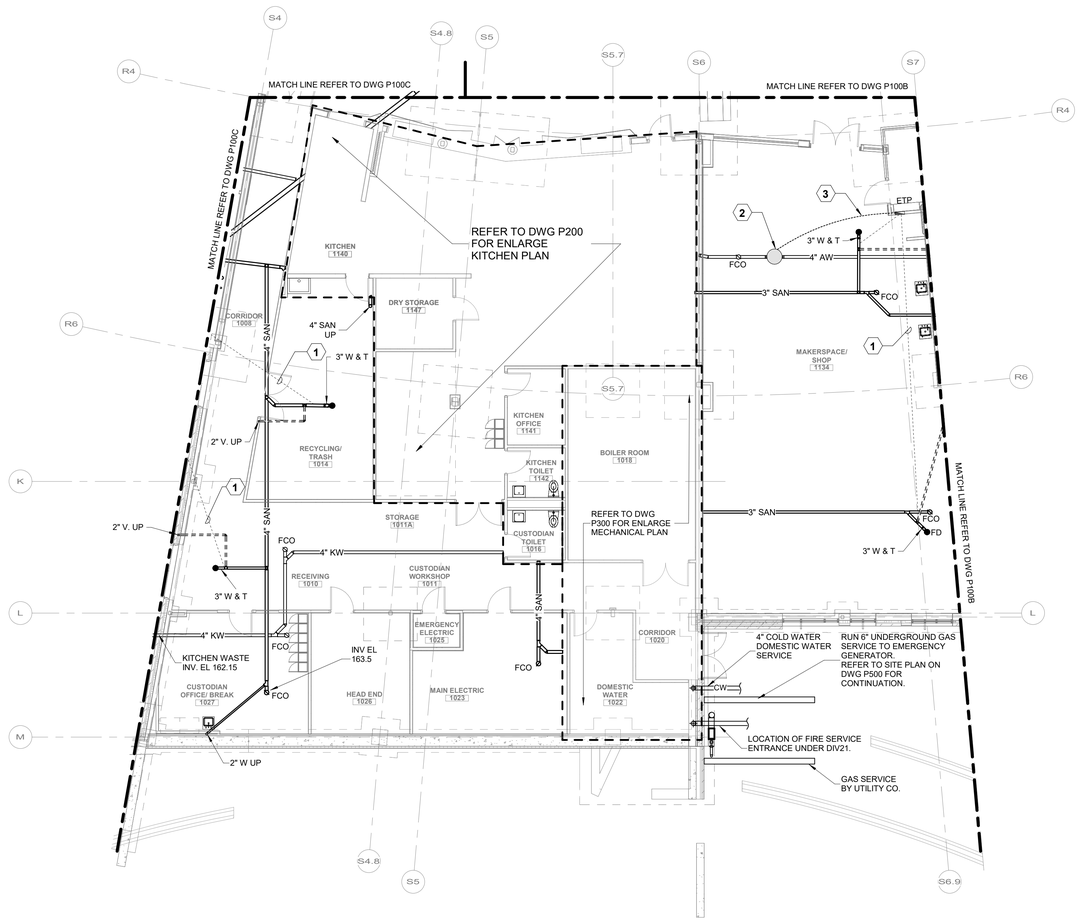
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME
PLUMBING DETAILS

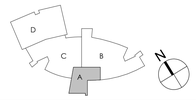
PROJECT NO. 1722

DRAWING NO.
P005



PLAN NOTE:

1. RUN 1/2" COPPER TUBING FOR TRAP PRIMER.
2. CYLINDRICAL CONCRETE VAULT FOR ACID WASTE MONITORING PROBE. SEE DWG. P402.
3. PROVIDE 1" UNDERGROUND CONDUIT FOR SENSOR WIRING.



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	02/10/2020	Conformance Set

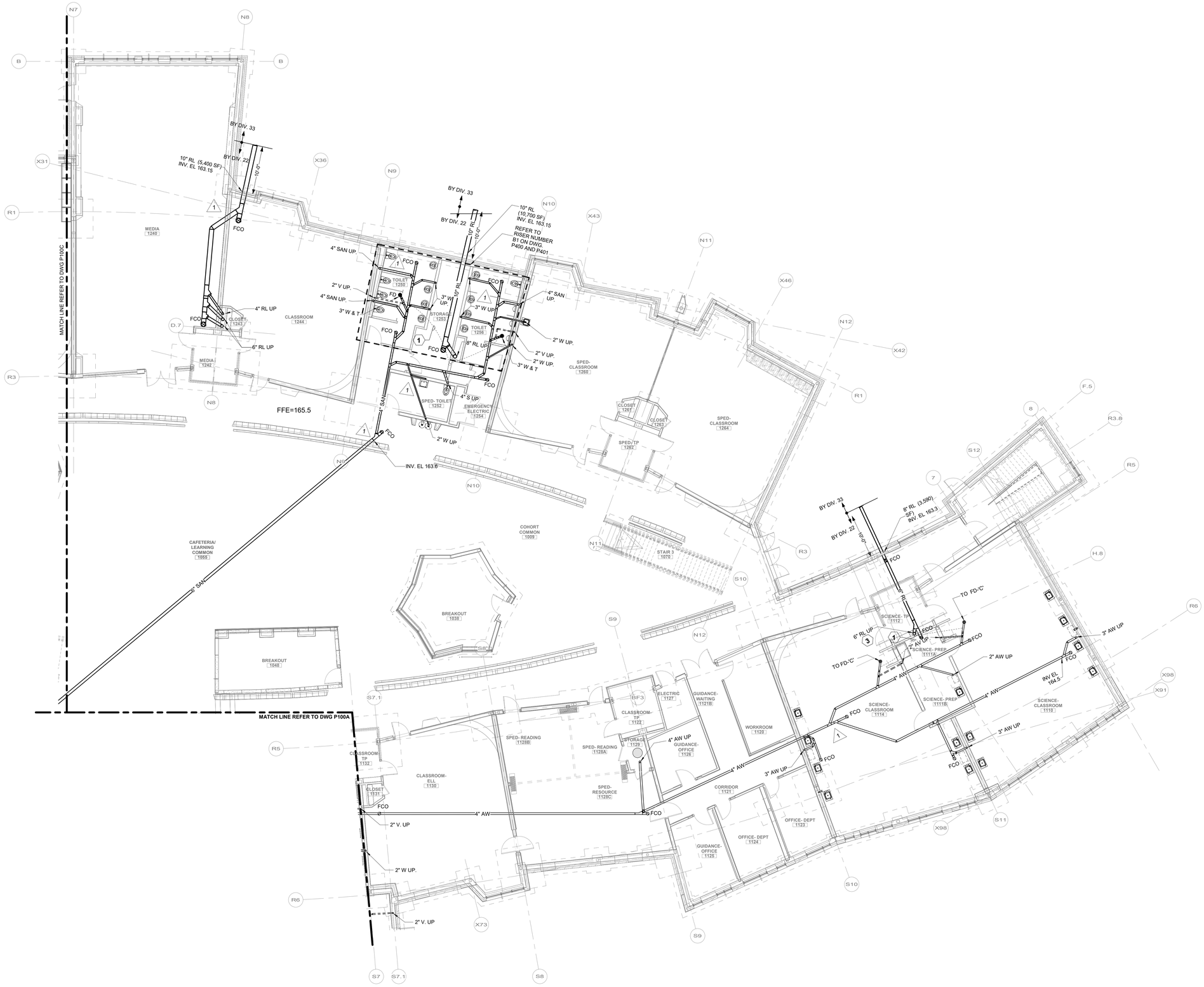
DRAWING NAME

FIRST FLOOR BELOW SLAB PLAN - PLUMBING A

PROJECT NO. 1722

DRAWING NO.

P100A



PLAN NOTE:

(1) RUN 1/2" COPPER TUBING FOR TRAP PRIMER.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/13/2019	Adden. 7
2	02/10/2020	Conformance Set

DRAWING NAME

FIRST FLOOR BELOW SLAB PLAN - PLUMBING B

PROJECT NO. 1722

DRAWING NO.

P100B

PLAN NOTE:

1. RUN 1/2" COPPER TUBING FOR TRAP PRIMER.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/13/2019	Adden. 7
2	02/10/2020	Conformance Set

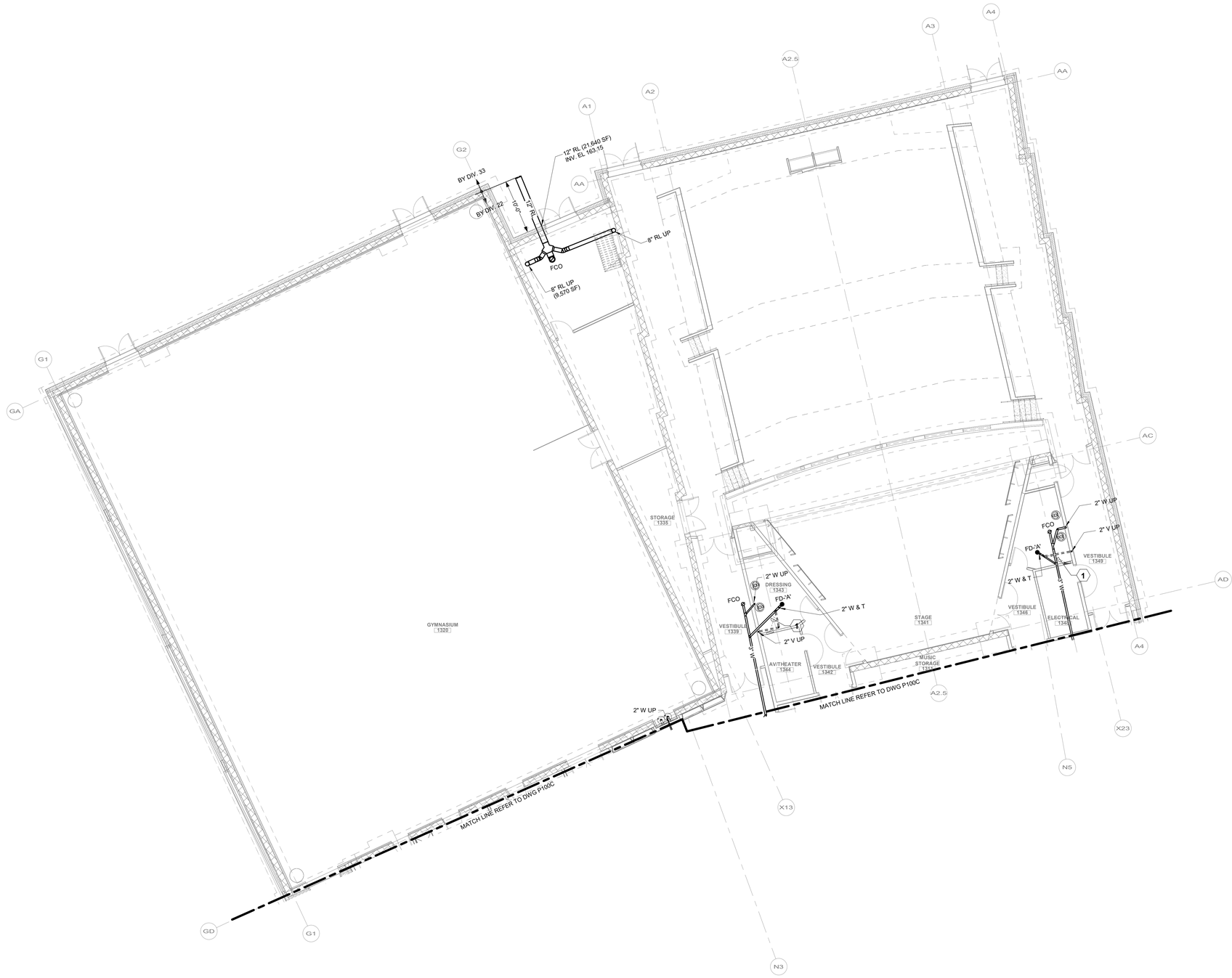
DRAWING NAME

FIRST FLOOR BELOW SLAB PLAN - PLUMBING C

PROJECT NO. 1722

DRAWING NO.

P100C



PLAN NOTE:

1. RUN 1/2" COPPER TUBING FOR TRAP PRIMER.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	02/10/2020	Conformance Set

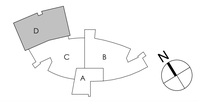
DRAWING NAME

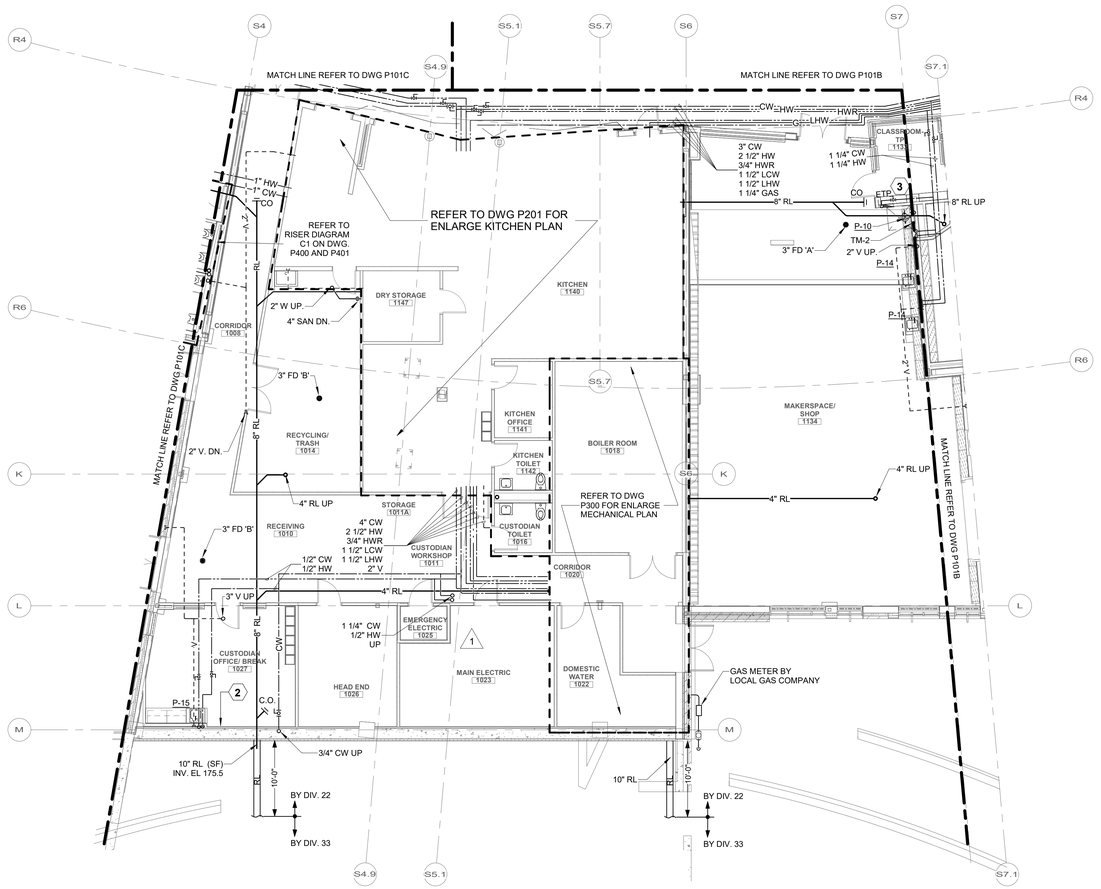
FIRST FLOOR
BELOW SLAB PLAN
- PLUMBING D

PROJECT NO. 1722

DRAWING NO.

P100D





PLAN NOTE:

1. PROVIDE 6" DEEP STAINLESS STEEL DRAIN PAN BELOW PIPING.
2. PROVIDE 3/8" CW CONNECTION TO REFRIGERATOR.
3. PROVIDE ELECTRONIC TRAP PRIMER IN RECESSED CABINET

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/04/2019	Adden. 5
2	02/10/2020	Conformance Set

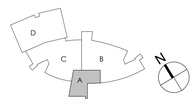
DRAWING NAME

FIRST FLOOR PLAN - PLUMBING A

PROJECT NO. 1722

DRAWING NO.

P101A



PLAN NOTES:

1. REFER TO PIPE RISER DIAGRAM ON DWG P402 FOR PIPE CONNECTION AND PIPE SIZES.
2. BALANCING VALVE AT RECIRCULATION LOOP. REFER TO DETAIL 7 ON DWG. P003.
3. PROVIDE CLEANOUT AT STORM RISER 24" AFF AND ACCESS PANEL
4. RUN LHW, LCW, AV AND GAS IN SLOPED CEILING SPACE. REFER TO DETAIL 2 ON DWG P004
5. PROVIDE HUB DRAIN FOR A/C INDIRECT CONDENSATE DRAIN CONNECTION. REFER TO DETAIL # 8 ON DWG. P003.
6. ACID NUTRILIZATION PH MONITORING CONTROL PANEL
7. 2" W&T, 1 1/2" V CONNECTION TO LAUNDARY BOX. SEE DETAIL #4 ON DWG P003

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA.

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	02/10/2020	Conformance Set

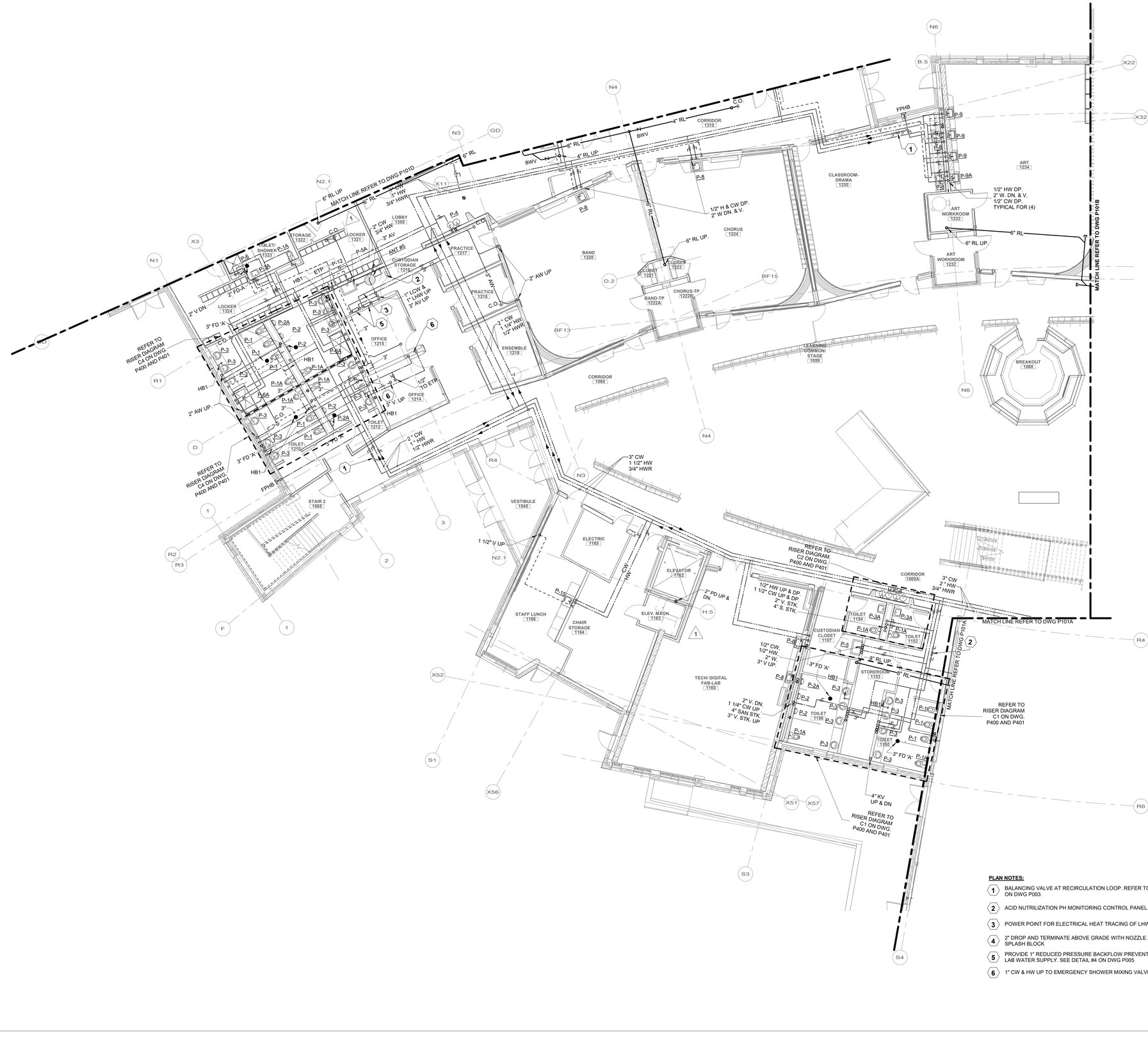
DRAWING NAME

FIRST FLOOR PLAN - PLUMBING B

PROJECT NO. 1722

DRAWING NO.

P101B



PLAN NOTES:

1. BALANCING VALVE AT RECIRCULATION LOOP. REFER TO DETAIL 7 ON DWG P003.
2. ACID NUTRILIZATION PH MONITORING CONTROL PANEL.
3. POWER POINT FOR ELECTRICAL HEAT TRACING OF LHW PIPE.
4. 2" DROP AND TERMINATE ABOVE GRADE WITH NOZZLE AND SPLASH BLOCK
5. PROVIDE 1" REDUCED PRESSURE BACKFLOW PREVENTER FOR LAB WATER SUPPLY. SEE DETAIL #4 ON DWG P005
6. 1" CW & HW UP TO EMERGENCY SHOWER MIXING VALVE TM2

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/04/2019	Adden. 5
2	02/10/2020	Conformance Set

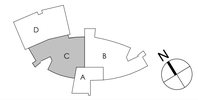
DRAWING NAME

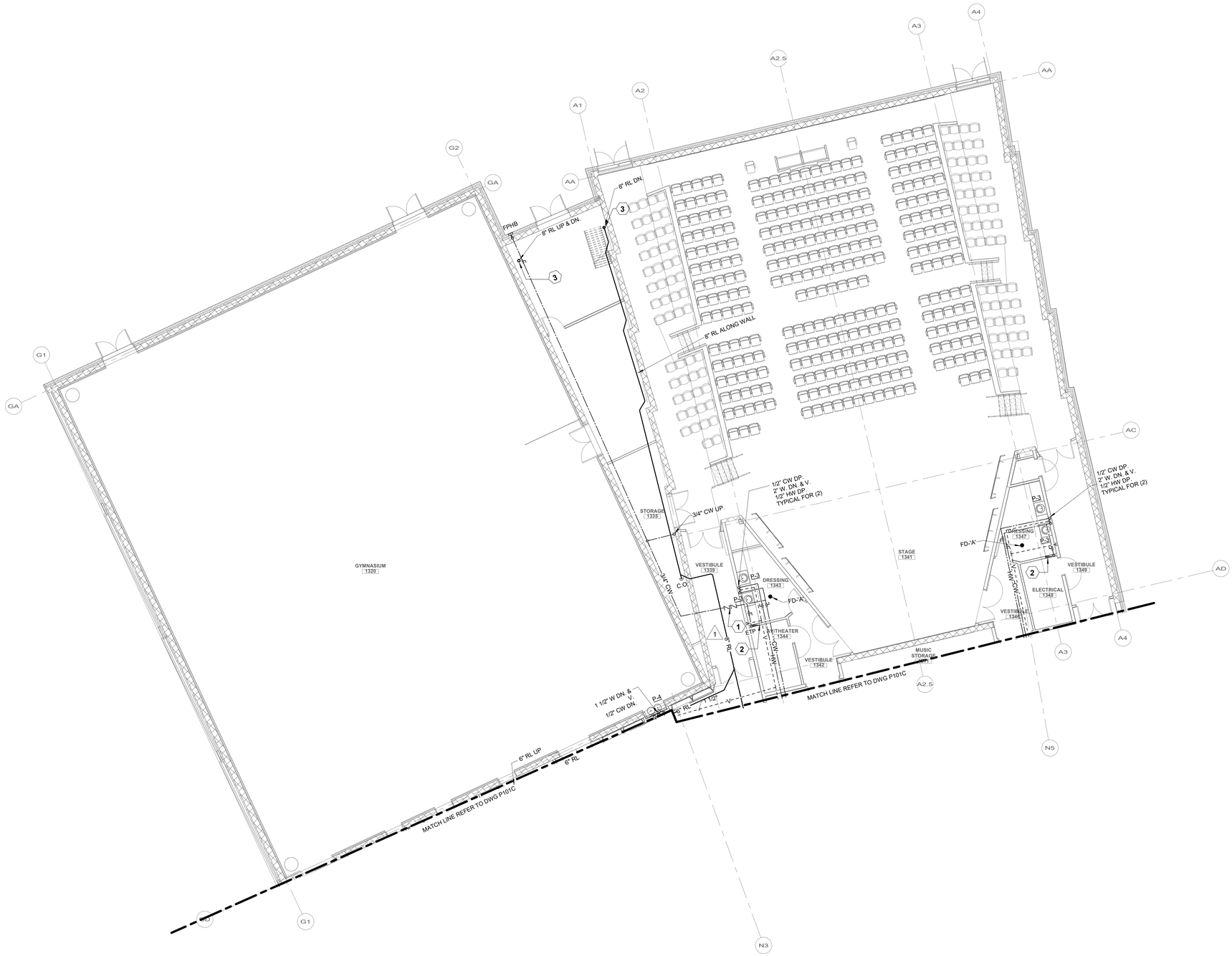
FIRST FLOOR PLAN - PLUMBING C

PROJECT NO. 1722

DRAWING NO.

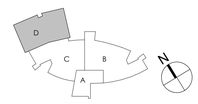
P101C





PLAN NOTES:

1. PROVIDE INLINE DUAL CHECK VALVE.
2. ELECTRONIC TRAP PRIMER AND ACCESS PANEL.
3. STORM PIPE DROP. REFER TO DETAIL #1 ON DWG P003.



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/04/2019	Adden. 5
2	02/10/2020	Conformance Set

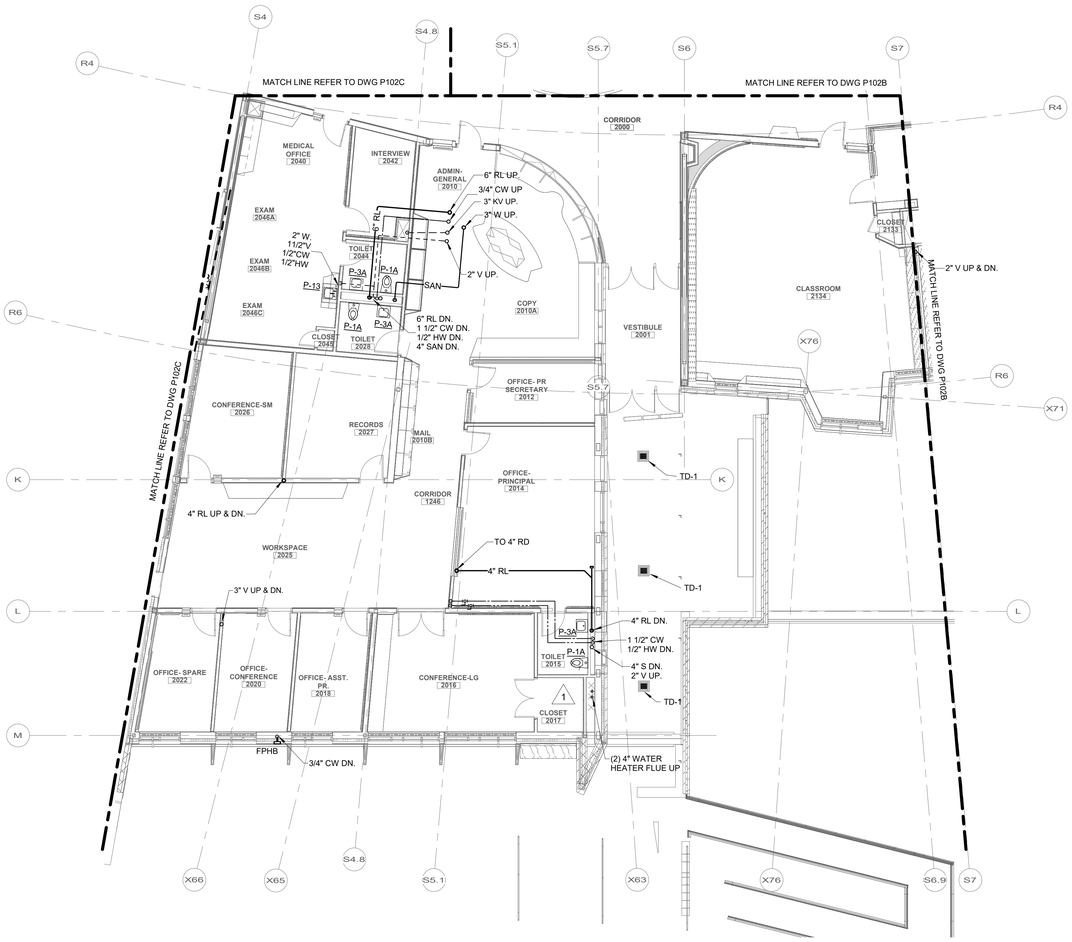
DRAWING NAME

FIRST FLOOR PLAN - PLUMBING D

PROJECT NO. 1722

DRAWING NO.

P101D



PLAN NOTE:

1. PROVIDE 3/8" CW CONNECTION TO REFRIGERATOR

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/04/2019	Adden. 5
2	02/10/2020	Conformance Set

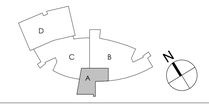
DRAWING NAME

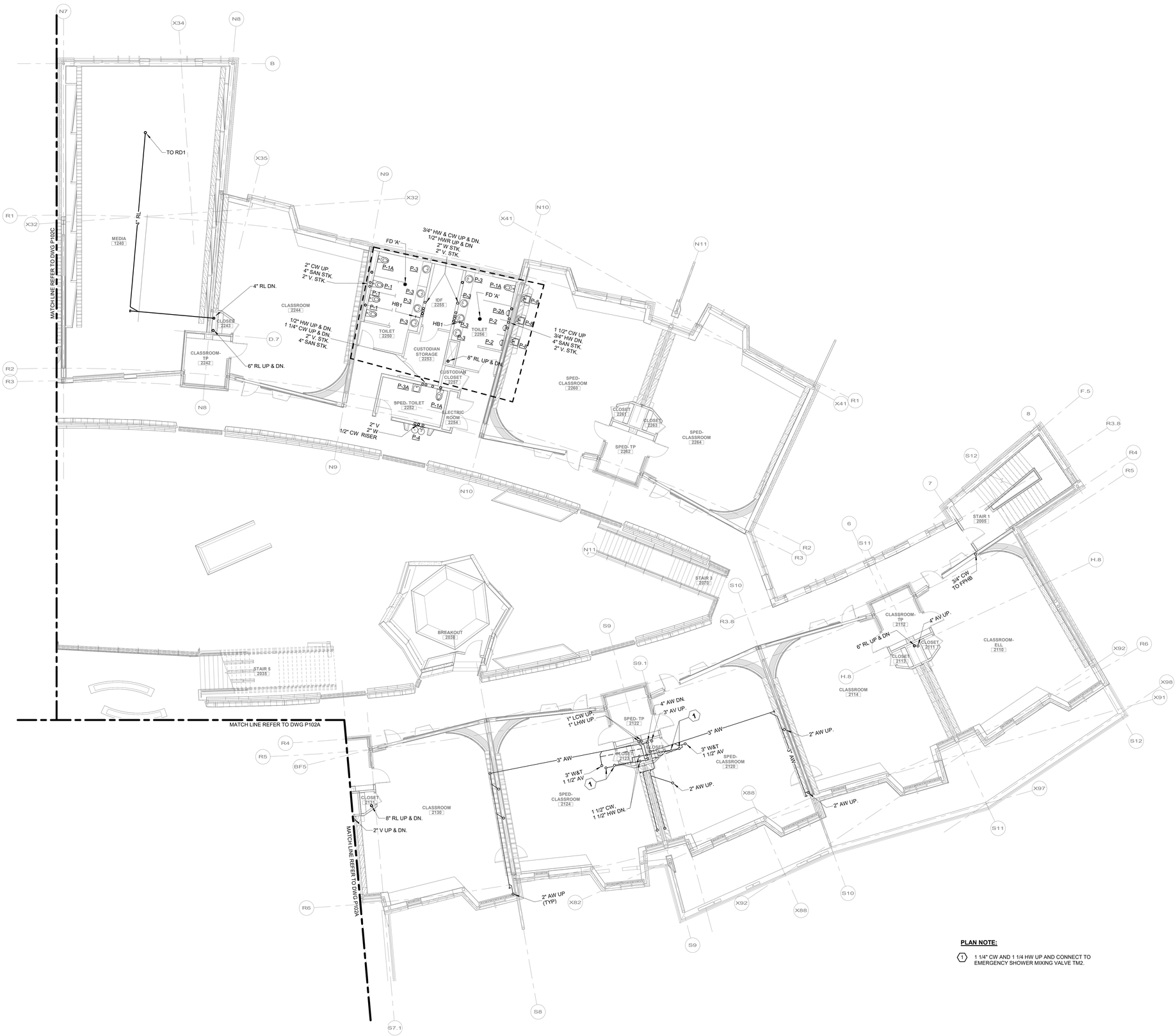
SECOND FLOOR PLAN - PLUMBING A

PROJECT NO. 1722

DRAWING NO.

P102A





PLAN NOTE:

(1) 1 1/4" CW AND 1 1/4 HW UP AND CONNECT TO EMERGENCY SHOWER MIXING VALVE TM2.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	02/10/2020	Conformance Set

DRAWING NAME

SECOND FLOOR PLAN - PLUMBING B

PROJECT NO. 1722

DRAWING NO.

P102B

PLAN NOTE:

1. RUN 1/2" LHW, 1/2" LCW AND 2" AV IN SLOPED CEILING SPACE. REFER TO DETAIL 2 ON DWG P004

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/04/2019	Adden. 5
2	02/10/2020	Conformance Set

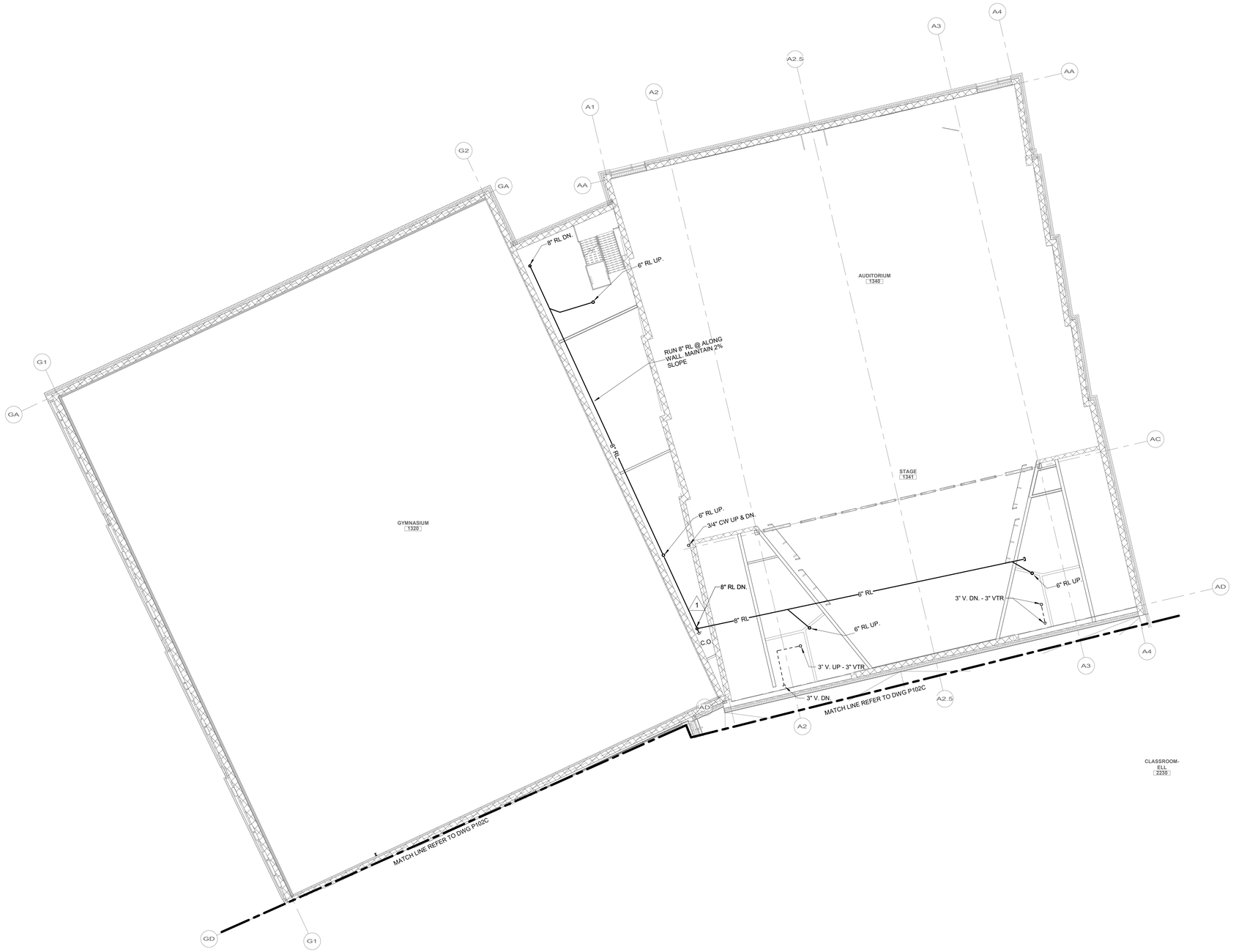
DRAWING NAME

SECOND FLOOR PLAN - PLUMBING C

PROJECT NO. 1722

DRAWING NO.

P102C



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/04/2019	Adden. 5
2	02/10/2020	Conformance Set

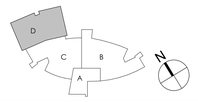
DRAWING NAME

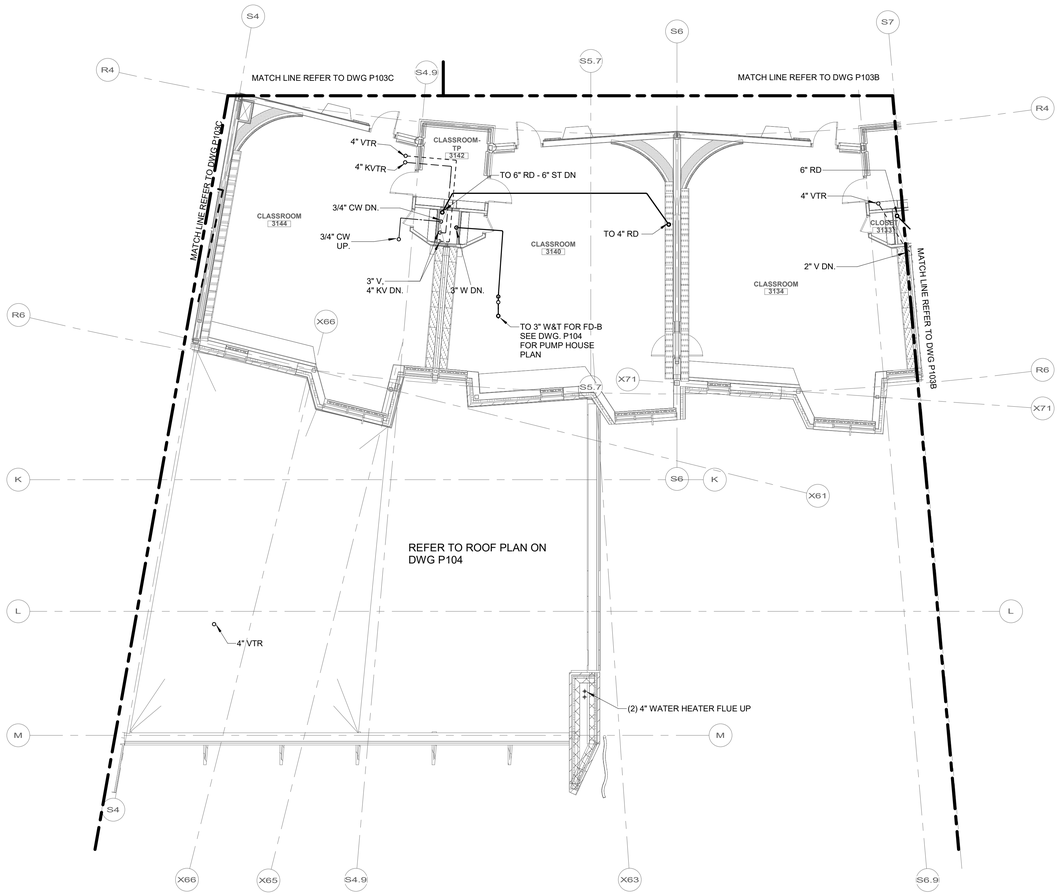
SECOND FLOOR PLAN - PLUMBING D

PROJECT NO. 1722

DRAWING NO.

P102D





Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.

44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	02/10/2020	Conformance Set

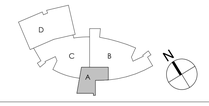
DRAWING NAME

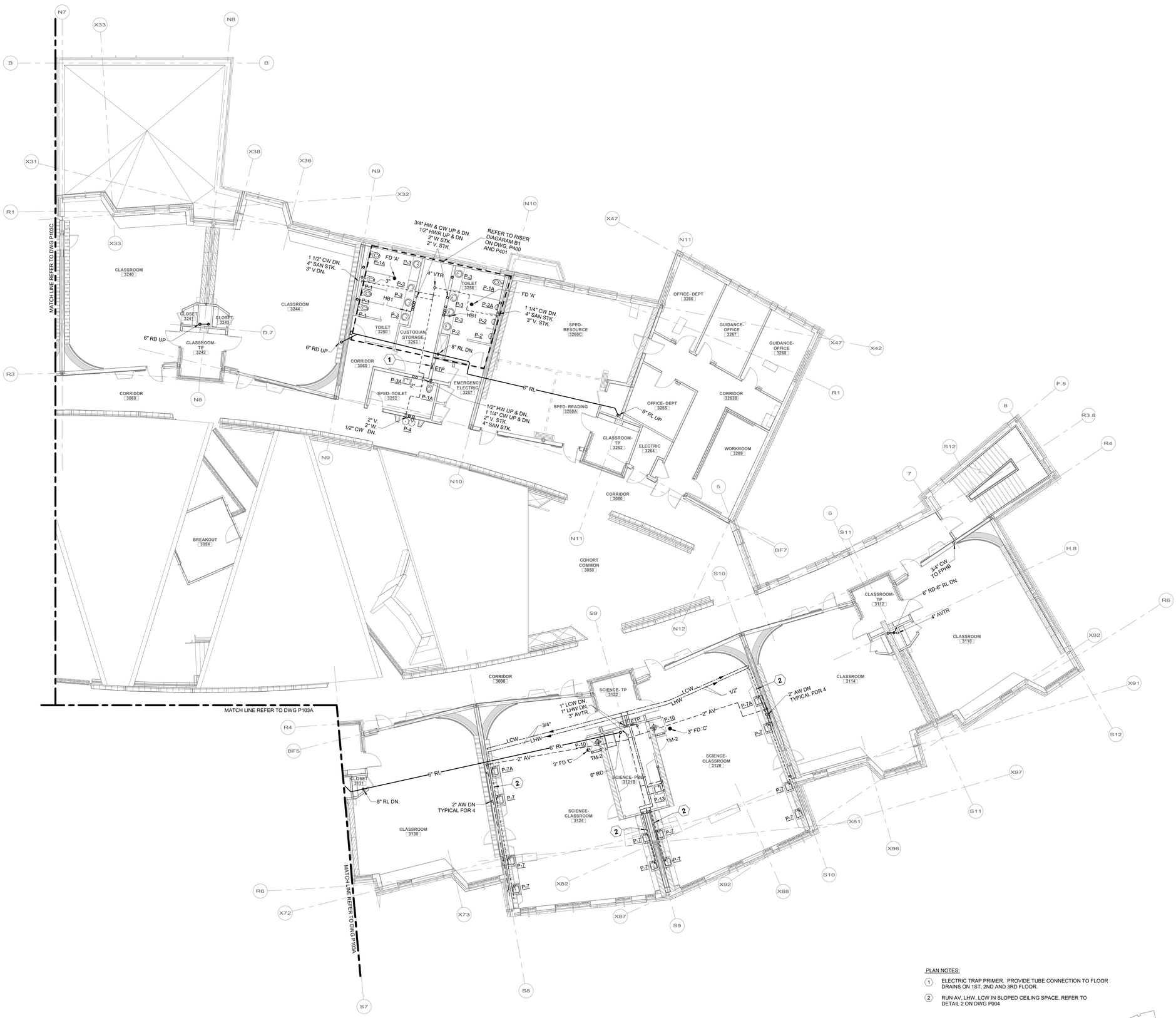
THIRD FLOOR PLAN - PLUMBING A

PROJECT NO. 1722

DRAWING NO.

P103A





PLAN NOTES:

1. ELECTRIC TRAP PRIMER. PROVIDE TUBE CONNECTION TO FLOOR DRAINS ON 1ST, 2ND AND 3RD FLOOR.
2. RUN AV, LHW, LCW IN SLOPED CEILING SPACE. REFER TO DETAIL 2 ON DWG P004

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	02/10/2020	Conformance Set

DRAWING NAME

THIRD FLOOR PLAN - PLUMBING B

PROJECT NO. 1722

DRAWING NO.

P103B

PLAN NOTES:

1. ELECTRIC TRAP PRIMER. PROVIDE TUBE CONNECTION TO FLOOR DRAINS ON 1ST, 2ND AND 3RD FLOOR.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	02/10/2020	Conformance Set

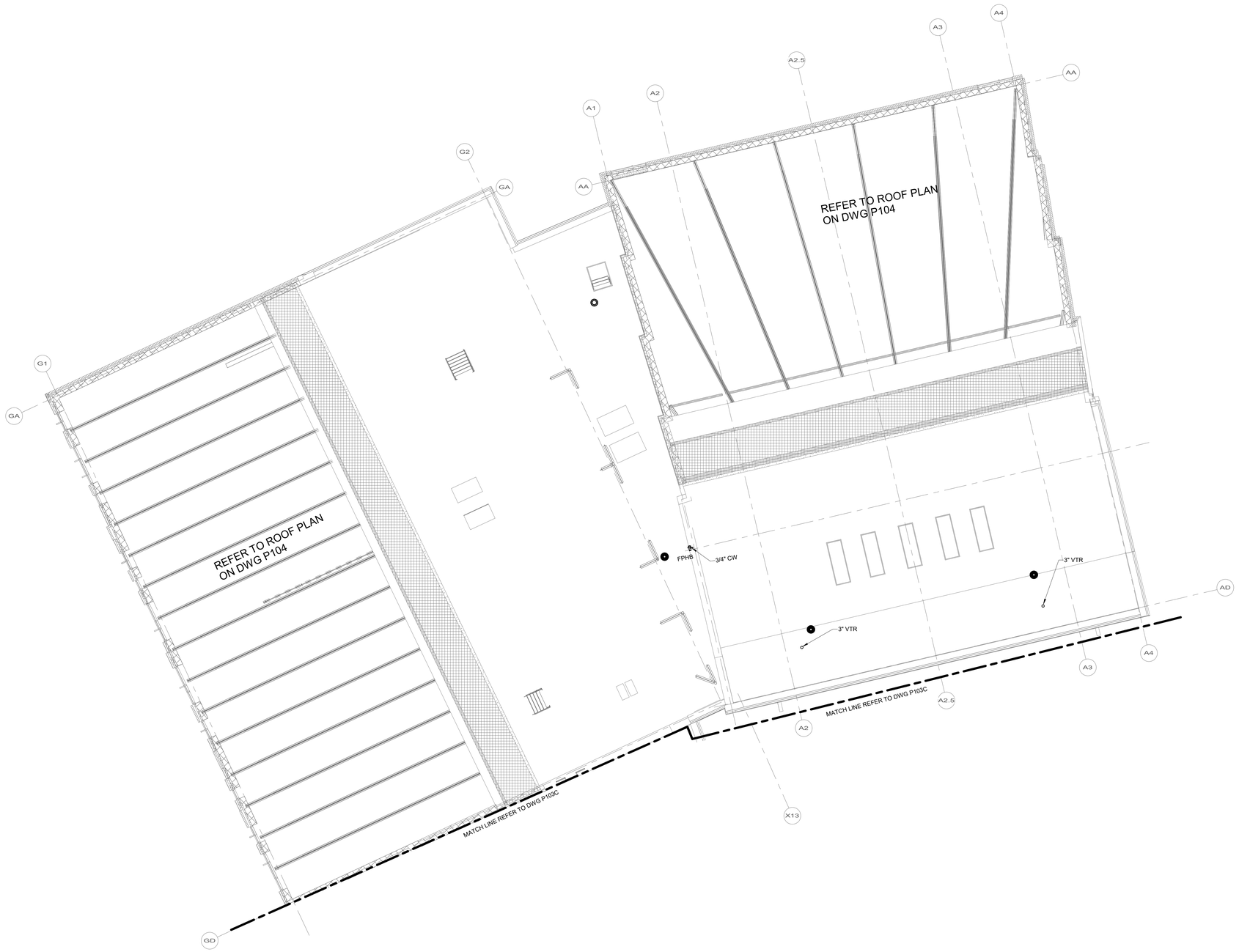
DRAWING NAME

THIRD FLOOR PLAN - PLUMBING C

PROJECT NO. 1722

DRAWING NO.

P103C



Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.

44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	02/10/2020	Conformance Set

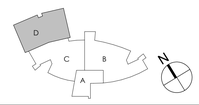
DRAWING NAME

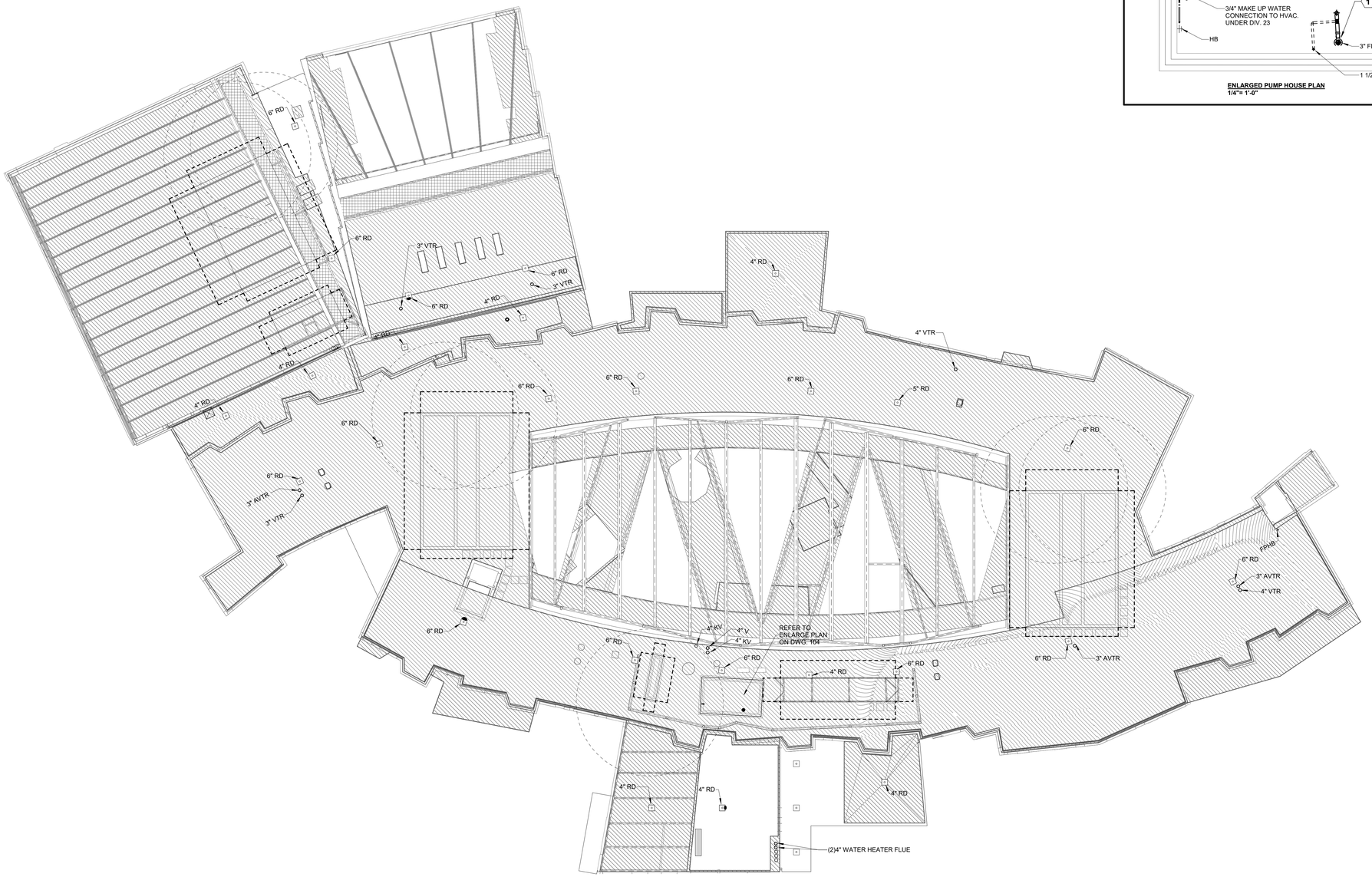
THIRD FLOOR PLAN - PLUMBING D

PROJECT NO. 1722

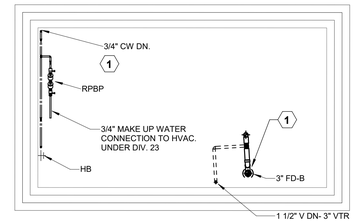
DRAWING NO.

P103D





PLUMBING ROOF PLAN
1/16" = 1'-0"



ENLARGED PUMP HOUSE PLAN
1/4"= 1'-0"

PLAN NOTE:

1 P.C. SHALL HEAT TRACE AND INSULATE PIPING IN UNHEATED SPACE BETWEEN ROOF DECK AND PUMP HOUSE FLOOR.

JLA
Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

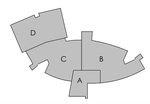
REVISIONS

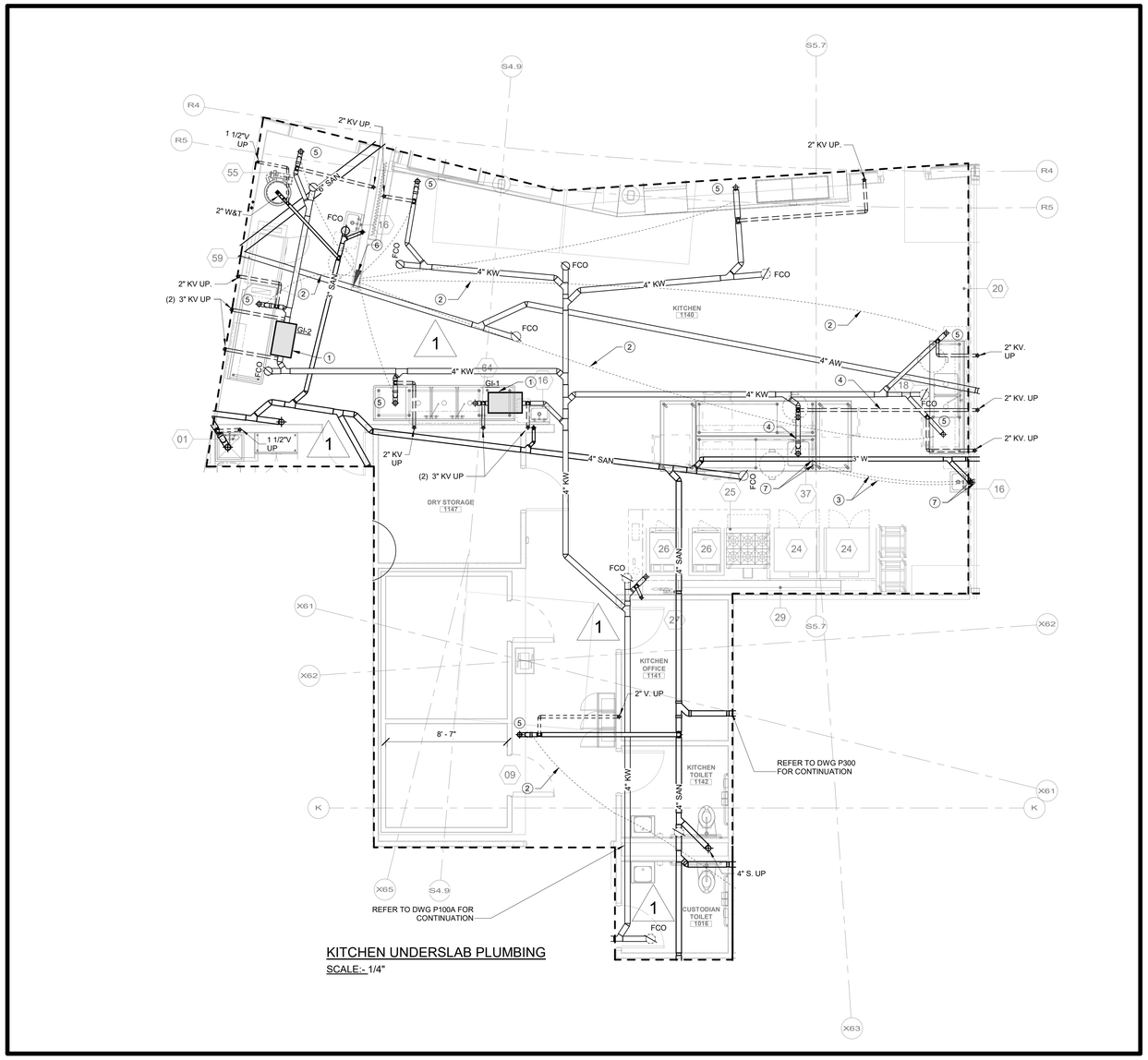
No.	Date	Description
1	02/10/2020	Conformance Set

DRAWING NAME
ROOF PLAN - PLUMBING

PROJECT NO. 1722

DRAWING NO.
P104





KITCHEN UNDERSLAB PLUMBING

SCALE:- 1/4"

SCHEDULE OF FOODSERVICE EQUIPMENT & CONNECTIONS				
Item	Qty	Description	Plumbing	Mechanical / Equipment Remarks
01	1	Mop Sink (by PC)	1/2" H&CW; Drain in Floor	
08a	1	Cooler Evaporator Coil	3/4" IW to FS	CONDENSATE FROM REFRIGERATION IT1M 15b KEC
09a	1	Freezer Evaporator Coil	3/4" IW to FS	CONDENSATE FROM REFRIGERATION IT1M 15b
16	3	Hand Sink	1/2" H&CW; 1-1/2" W	
18	1	Prep Table with Sinks	1/2" H&CW; 2" IW to FS	
20	1	Produce Washing Sink	3/4" H&CW; 1-1/2" IW to FS	
24	2	Double Convection Oven	3/4 G @ 100 MBTU (from Item 29)	
25	1	Six-Burner Range with Oven	3/4" G @ 243 MBTU (from Item 29)	
26	2	Teen Pan Convetion Steamer	3/4" G @ 78 MBTU (from Item 29) (2) 3/8"CW; (2) 1 1/2" IW TO FS	
27	2	Water Filter Assembly	3/4" CW (from Item 29)	
29	1	Utility Distribution System	2" G @ 1,450 MBTU; 3/4" H&CW	
37	1	Cook's Table with Sink	1/2" H&CW; 2" IW to FS	
55	1	Trough Collector	1/2" H&CW 2" W	SEE PIPE CONNECTION DETAIL #3 ON P003
58	1	Hose Reel Assembly	1/2" H&CW	
59	1	Rack Conveyor Warewasher	1/2" HW (2) 1/2" CW; 1-1/2" IW to FS	SEE PIPE CONNECTION DETAIL #8 ON P004
64	1	Three Compartment Sink	3/4" 120°F H&CW; (3) 2" W thru GI by PC	

KITCHEN PLAN NOTES:

1. FLOOR RECESSED GREASE INTERCEPTOR.
2. RUN 1/2" PRE INSULATED COPPER TUBE UNDERSLAB TO SERVE FLOOR DRAIN TRAP PRIMER.
3. RUN 1/2" CW AND 1/2" HW PRE INSULATED COPPER TUBE UNDERSLAB TO SERVE SINK 37.
4. 2" KITCHEN WASTE WITH BOW VENT TO SINK 37. REFER TO PIPE CONNECTION DETAIL # 6 ON DWG P002.
5. 3" WASTE & TRAP TO FLOOR SINK.
6. 1/2" COPPER TUBE PIPE RISER TO TRAP PRIMER MANIFOLD. REFER TO DETAIL NO.11 DWG. P003
7. RUN 1/2" CW AND 1/2" HW UP FROM BELOW SLAB. REFER TO DETAIL 11 ON DWG. P002.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/13/2019	Adden. 7
2	02/10/2020	Conformance Set

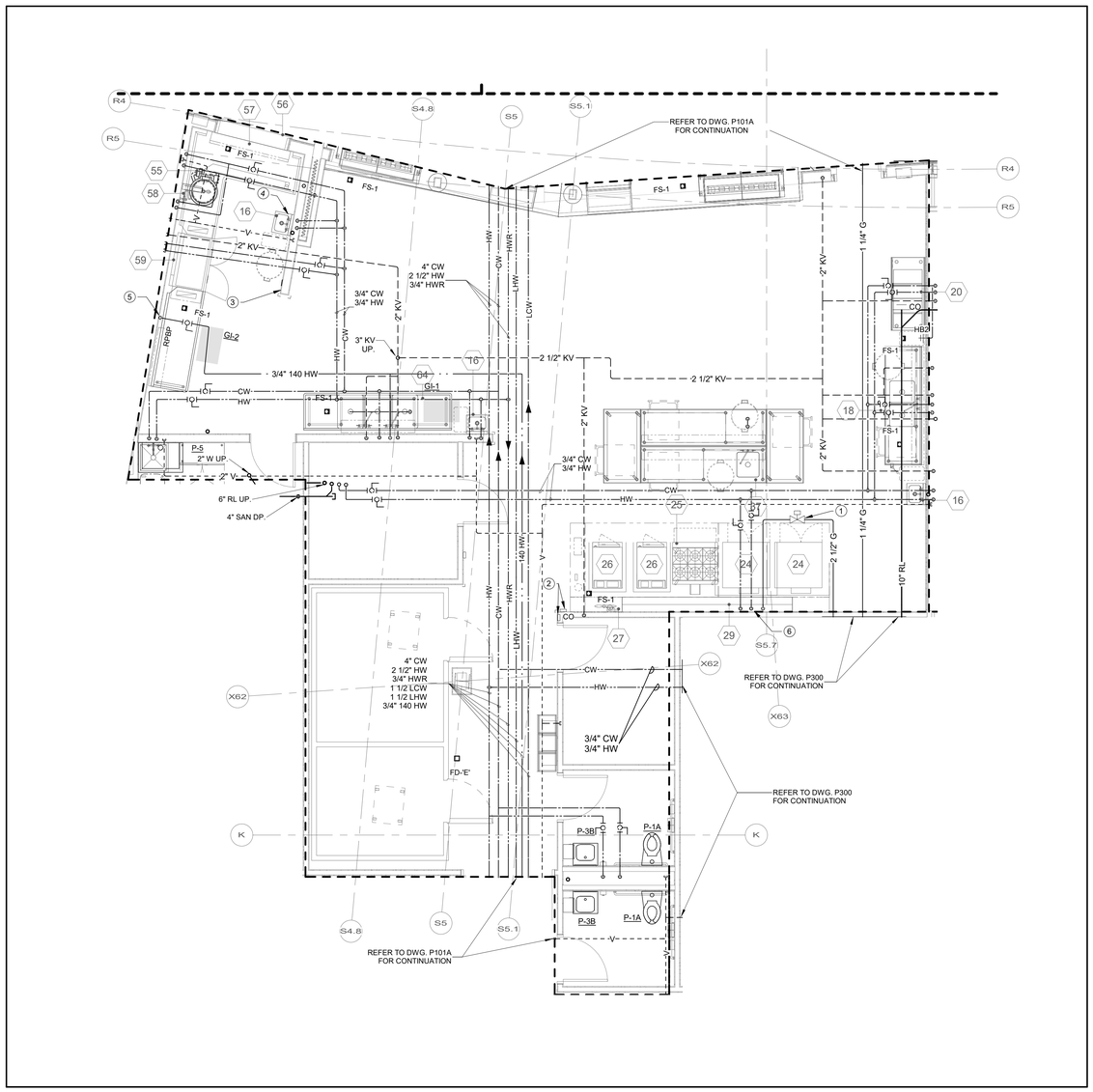
DRAWING NAME

KITCHEN BELOW SLAB PLUMBING

PROJECT NO. 1722

DRAWING NO.

P200



KITCHEN PLAN NOTES:

A. PROVIDE ROUGHING AND FINAL CONNECTIONS FOR WATER, WASTE, VENT AND GAS SYSTEMS; INCLUDING TRAPS, TAILPIECE AND STRAINERS,WHEEL HANDLE STOPS, VALVES, COCKS AND APPURTENANCES TO FIXTURES AND EQUIPMENT REQUIRING SAME. EACH FIXTURE AND PIECE OF EQUIPMENT, INCLUDING WORK IN, UNDER OR THROUGH TABLES, CABINETS AND EQUIPMENT CHASES, SHALL BE VALVED AND TRAPPED.

B. AS EQUIPMENT PURCHASED MAY VARY SLIGHTLY FROM THAT INDICATED, AND, THEREFORE, REQUIRE SOME RE-ARRANGEMENTS OF EQUIPMENT DIFFERENT FROM THAT INDICATED ON THE DRAWINGS, MAKE CONNECTIONS TO SUCH RE-ARRANGED EQUIPMENT WITHOUT ADDITIONAL COST TO OWNER. UNPACK, ASSEMBLE AND INSTALL SUPPLY TRIM FOR EQUIPMENT AND FIXTURES FURNISHED BY OWNER.

C. PROVIDE MISCELLANEOUS EQUIPMENT CONNECTIONS AND INDIRECT DRAINS FROM SERVICE UNITS AND SIMILAR EQUIPMENT. UNIONS SHALL BE INSTALLED AT KITCHEN EQUIPMENT AND AT OTHER SUCH PLACES AS MAY BE NECESSARY TO DISCONNECT PIPING SO AS TO MAKE REPAIRS.

D. ROUGHING SHALL NOT BE UNDERTAKEN UNTIL ARCHITECT HAS APPROVED EQUIPMENT AND FIXTURE SHOP DRAWINGS AND KITCHEN TEMPLATE IS FURNISHED BY PERTINENT MANUFACTURER SO THAT CONNECTING REQUIREMENTS MAY BE VERIFIED AND WORK INSTALLED IN A NEAT AND WORKMANLIKE MANNER. EXACT LOCATION OF SERVICE CONNECTIONS SHALL BE OBTAINED PRIOR TO ROUGHING.

E. IF APPLICABLE, HOOK-UP BETWEEN A GARBAGE DISPOSER AND COLD WATER BRANCH SHALL INCLUDE INSTALLATION OF BALL VALVE, SOLENOID VALVE AND VACUUM BREAKER.

F. SHOCK ABSORBERS SHALL BE INSTALLED IN CONJUNCTION WITH QUICK CLOSING VALVES INCLUDING DISHWASHER AND BOOSTER HEATER. SHUT OFF VALVE SHALL BE INSTALLED BENEATH EACH ABSORBER. ABSORBER SHALL BE SIZED IN ACCORDANCE WITH PLUMBING AND DRAINAGE INSTITUTE STANDARD PDI-WH 201.

G. PROVIDE 1/2 IN. STOP VALVES ON ALL FIXTURES AND EQUIPMENT SUPPLIES.

H. VACUUM BREAKER SHALL BE INSTALLED IN CONJUNCTION WITH WATER LINES WHERE REQUIRED.

I. ALL FLOOR SANI-CEPTOR "FS1" AND FLOOR DRAINS "FD E" SHALL BE BY P.C. AND SHALL BE PROVIDED W/ P- TRAP.TRAP SHALL BE VENTED AS PER 248 CMR 10.16 (12).

J. PROVIDE SHUT OFF VALVE FOR RESPECTIVE MANIFOLDS IN THE UTILITY DISTRIBUTION SYSTEM. COORDINATE WORK WITH K.E.C TO CONNECT INCOMING SERVICES. CONNECT HOSE CONNECTION TO GAS EQUIPMENT AND PRESSURE CHECK ALL LINES IN THE UTILITY DISTRIBUTION SYSTEM.

K. COORDINATE PLUMBING PIPE DROPS WITH MASONRY WORK UNDER DIV. 4 .

SCHEDULE OF FOODSERVICE EQUIPMENT & CONNECTIONS

Item	Qty	Description	Plumbing	Mechanical / Equipment Remarks
01	1	Mop Sink (by PC)	1/2" H&CW; Drain in Floor	
08a	1	Cooler Evaporator Coil	3/4" IW to FS	CONDENSATE FROM REFRIGERATION IT1M 15b KEC
09a	1	Freezer Evaporator Coil	3/4" IW to FS	CONDENSATE FROM REFRIGERATION IT1M 15b
16	3	Hand Sink	1/2" H&CW; 1-1/2" W	
18	1	Prep Table with Sinks	1/2" H&CW; 2" IW to FS	
20	1	Produce Washing Sink	3/4" H&CW; 1-1/2" IW to FS	
24	2	Double Convection Oven	3/4 G @ 100 MBTU (from Item 29)	
25	1	Six-Burner Range with Oven	3/4" G @ 243 MBTU (from Item 29)	
27	2	Water Filter Assembly	3/4" CW (from Item 29)	
29	1	Utility Distribution System	2" G @ 1,450 MBTU; 3/4" H&CW	
37	1	Cook's Table with Sink	1/2" H&CW; 2" IW to FS	
55	1	Trough Collector	1/2" H&CW" 2" W	SEE PIPE CONNECTION DETAIL #3 ON P003
58	1	Hose Reel Assembly	1/2" H&CW	
59	1	Rack Conveyor Warewasher	1/2" HW (2) 1/2" CW; 1-1/2" IW to FS	SEE PIPE CONNECTION DETAIL #8 ON P004
64	1	Three Compartment Sink	3/4" 120°F H&CW; (3) 2" W thru GI by PC	

KITCHEN PLAN NOTES:

1. GAS CONTROL SHUT OFF VALVE AS PER STATE FUEL GAS CODE. REFER TO CONTROL DIAGRAM 4 ON P005
2. CO DETECTOR CONTROL PANEL AND GAS VALVE RESET PANEL. REFER TO CONTROL DIAGRAM 4 ON DWG P005
3. WALL RECESSED ELECTRONIC TRAP PIPING MANIFOLD . PRIME TRAPS OF ALL KITCHEN FLOOR DRAINS. SEE PIPE CONNECTION DETAIL-11 ON P004
4. PROVIDE THERMOSTATIC MIXING VALVE FOR EMERGENCY EYE WASH FAUCET .
5. 140 HW DROP AND CONNECT TO DISHWASHER . REFER TO DETAIL#8 ON DWG. P004 FOR PIPE CONNECTION.
6. CONNECT 2" GAS, 3/4" HW & CW TO UTILITY DISTRIBUTION SYSTEM.

JLA
Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	02/10/2020	Conformance Set

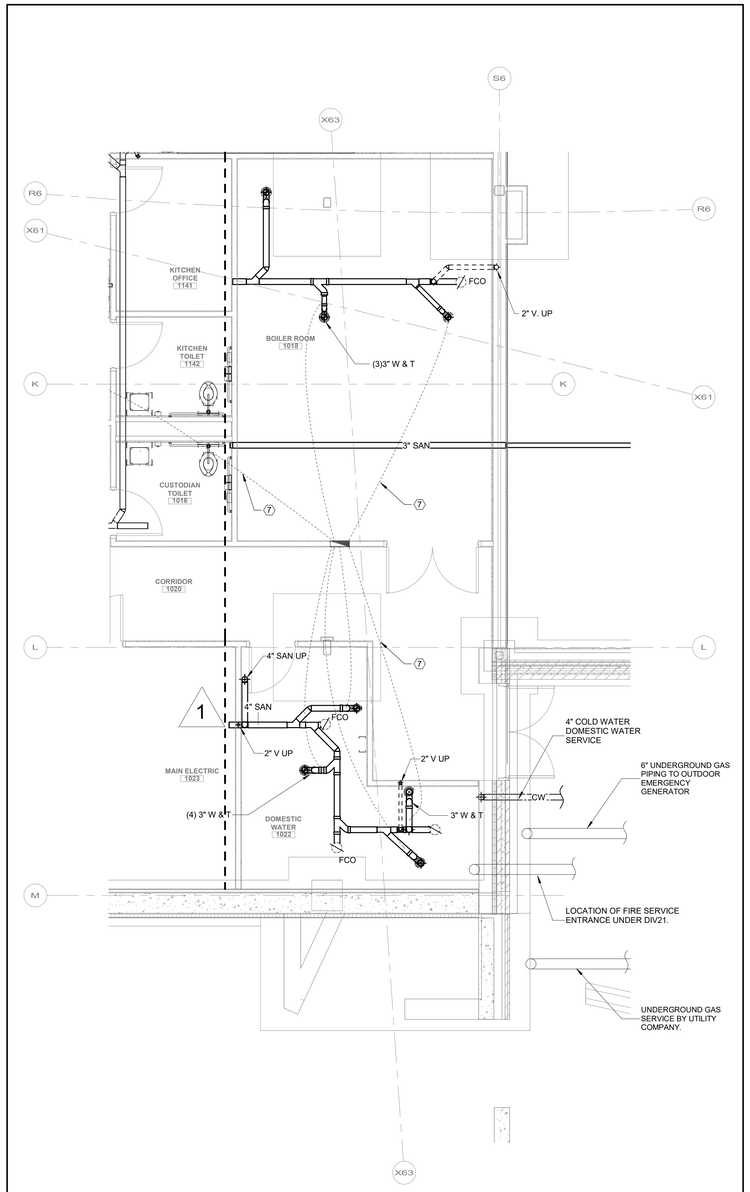
DRAWING NAME

KITCHEN ABOVE SLAB PLUMBING

PROJECT NO. 1722

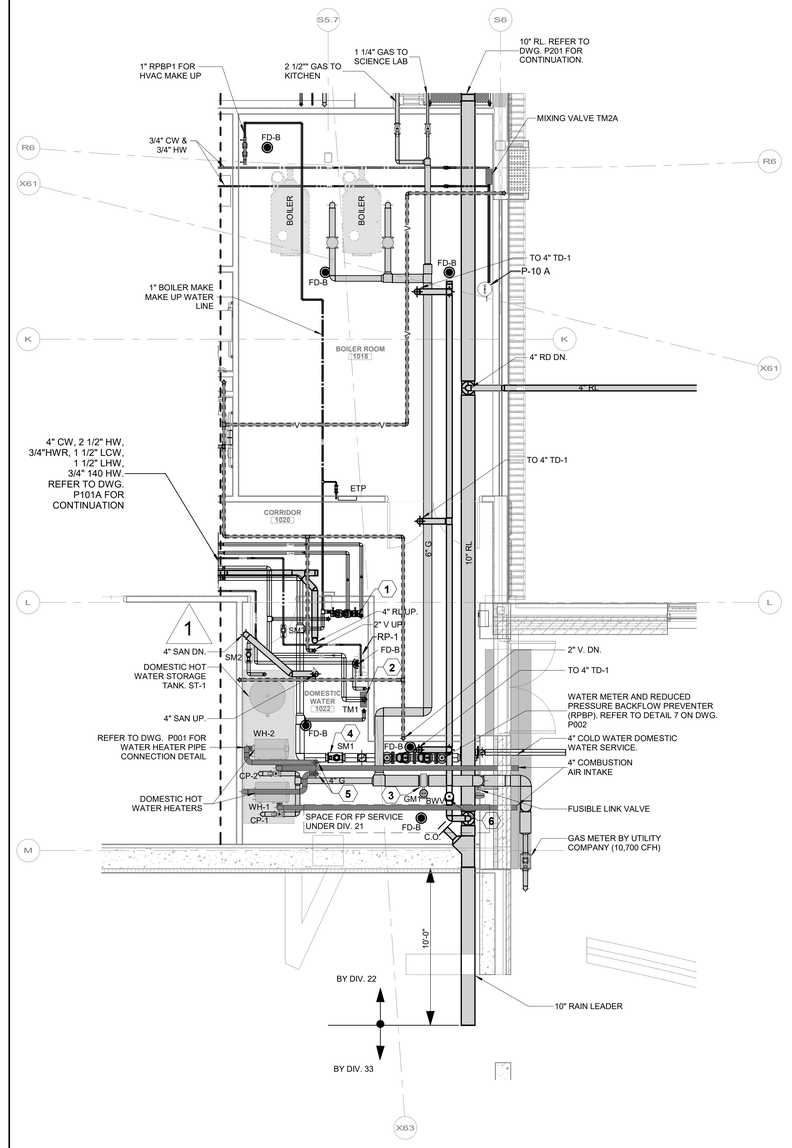
DRAWING NO.

P201



ENLARGE MECHANICAL PLAN UNDER SLAB

SCALE: 1/4"



ENLARGE MECHANICAL PLAN ABOVE SLAB

SCALE: 1/4"

PLAN NOTE:

1. (2) 1 1/2" REDUCED PRESSURE BACKFLOW PREVENTER (RPBP). REFER TO DETAIL # 4 ON DWG P005
2. THERMOSTATIC MASTER MIXING VALVE STATION (TM1). REFER TO DETAIL# 6 ON DWG P004
3. GAS FLOW SUB METER
4. WATER SUB METER
5. (2) 6" WATER HEATER FLUE UP
6. PROVIDE BACK WATER VALVE
7. RUN 1/2" PRE INSULATED COPPER TUBING FOR TRAP PRIMER

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street Unit # 4
Berlin, MA.01503
Telephone- (508)-869-0403
Fax: (508)-869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	12/04/2019	Addem. 5
2	02/10/2020	Conformance Set

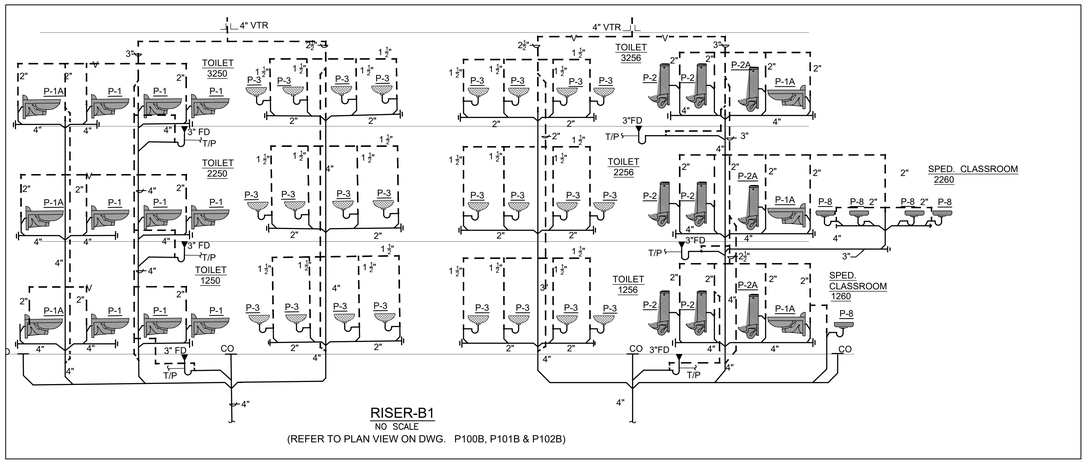
DRAWING NAME

ENLARGE MECHANICAL PLAN

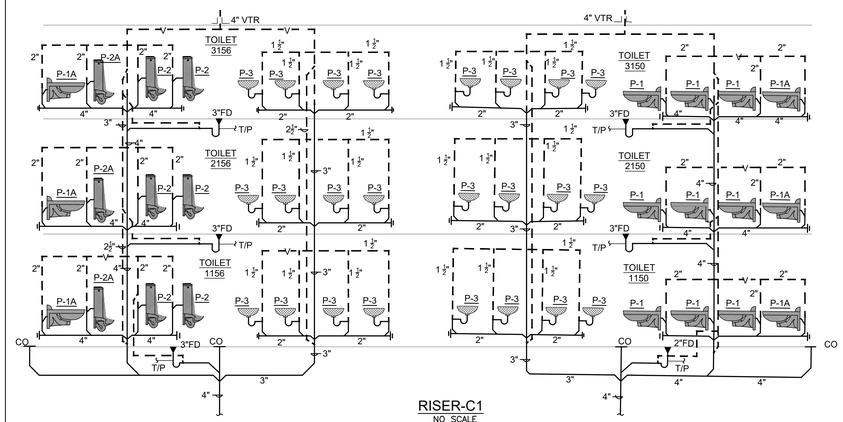
PROJECT NO. 1722

DRAWING NO.

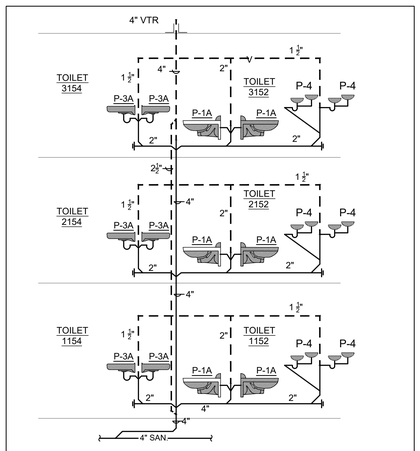
P300



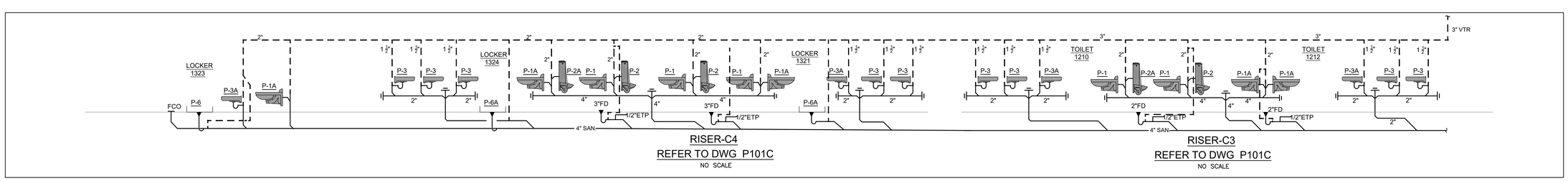
RISER-B1
NO SCALE
(REFER TO PLAN VIEW ON DWG. P100B, P101B & P102B)



RISER-C1
NO SCALE
(REFER TO PLAN VIEW ON DWG. P100B, P101B & P102B)
NO SCALE



RISER-C2
REFER TO DWG P100C, P101C, P102C & P103C
NO SCALE



RISER-C4
REFER TO DWG P101C
NO SCALE

RISER-C3
REFER TO DWG P101C
NO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street. Unit # 4
Berlin, MA. 01503
Telephone - (508) 869-0403
Fax. - (508) 869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

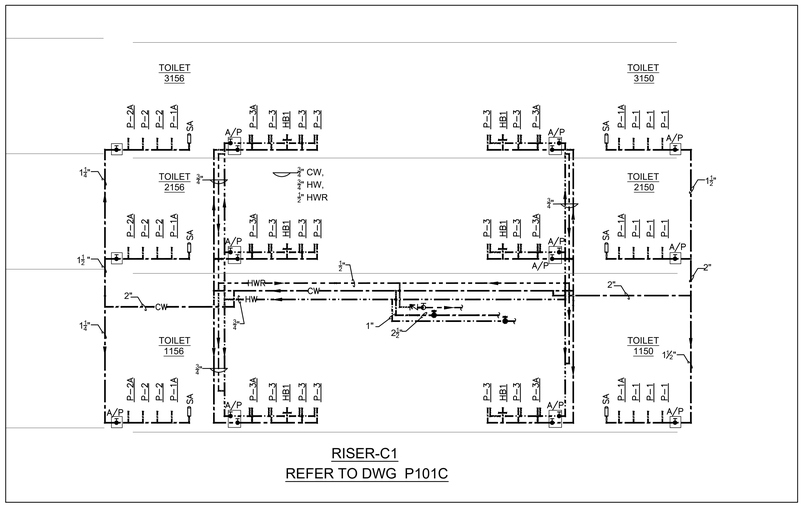
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

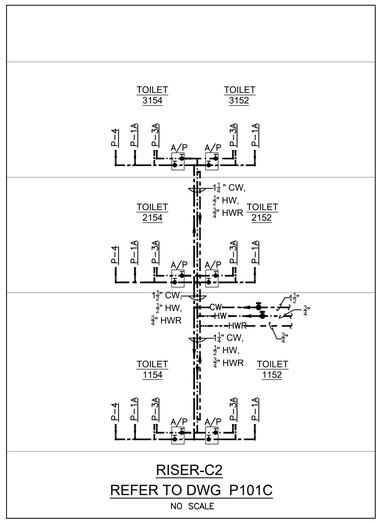
DRAWING NAME
SANITARY & VENT PIPING DIAGRAMS

PROJECT NO. 1722

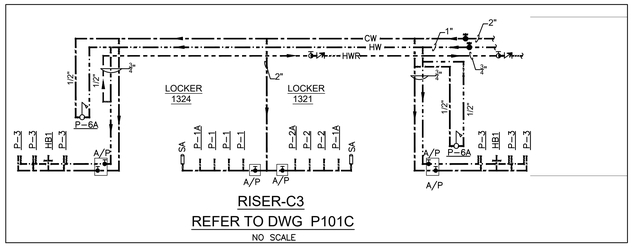
DRAWING NO.
P400



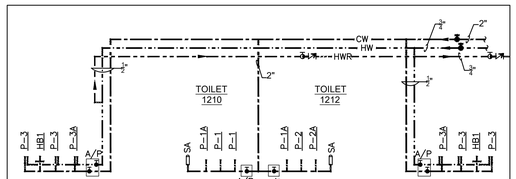
RISER-C1
REFER TO DWG P101C



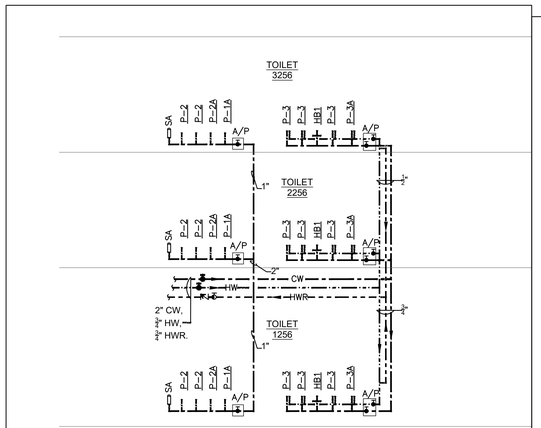
RISER-C2
REFER TO DWG P101C
NO SCALE



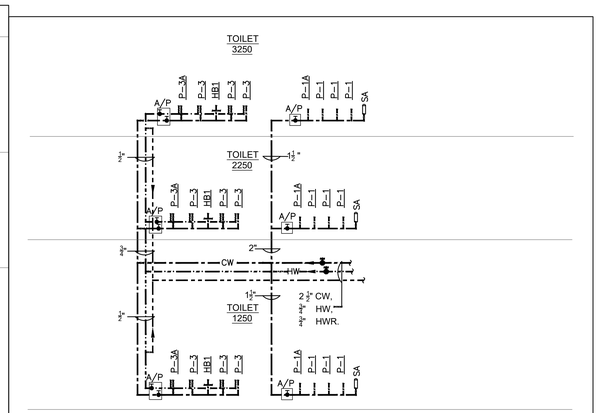
RISER-C3
REFER TO DWG P101C
NO SCALE



RISER-C4
REFER TO DWG P101C
NO SCALE



RISER-B1
REFER TO DWG P101B
NO SCALE



RISER-B1
REFER TO DWG P101B
NO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street, Unit # 4
Berlin, MA. 01503
Telephone - (508) 869-0403
Fax. - (508) 869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

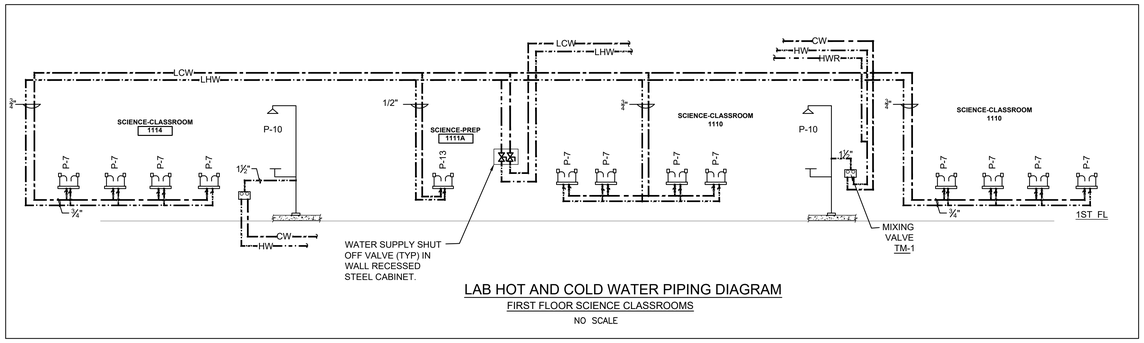
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

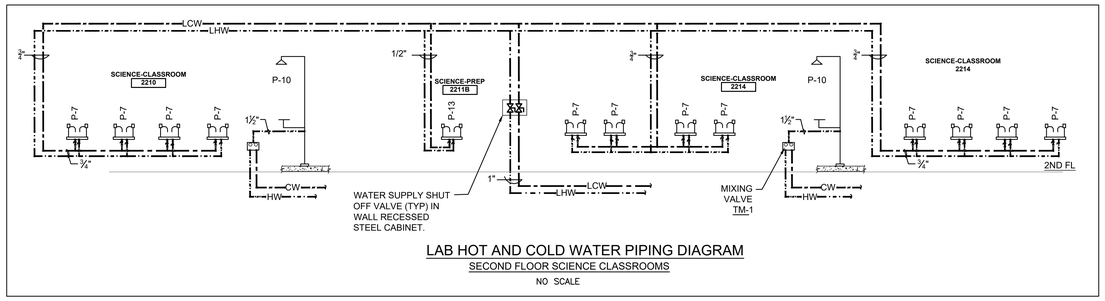
DRAWING NAME
COLD WATER & HOT WATER RISER DIAGRAMS

PROJECT NO. 1722

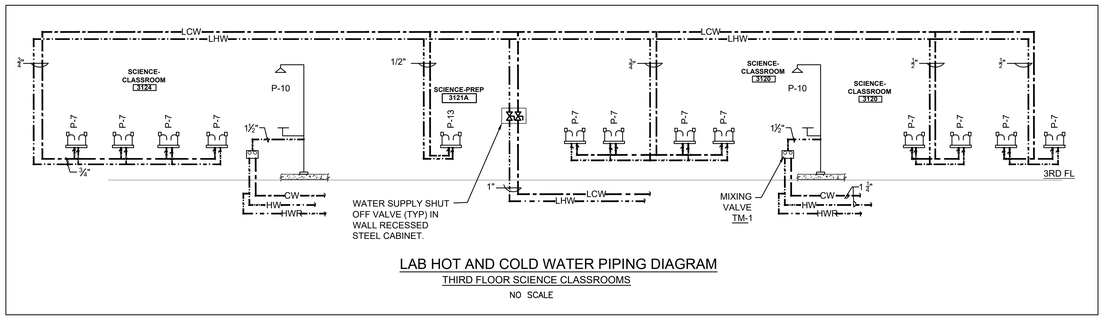
DRAWING NO.
P401



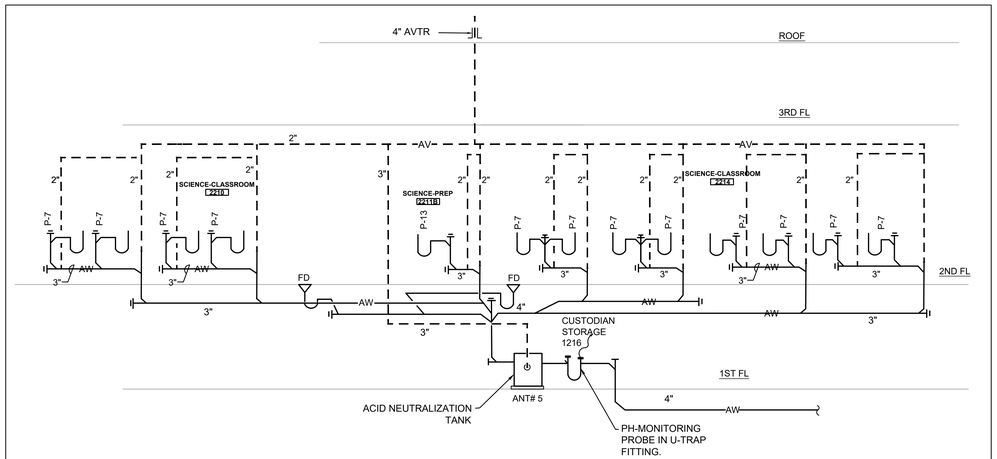
LAB HOT AND COLD WATER PIPING DIAGRAM
FIRST FLOOR SCIENCE CLASSROOMS
NO SCALE



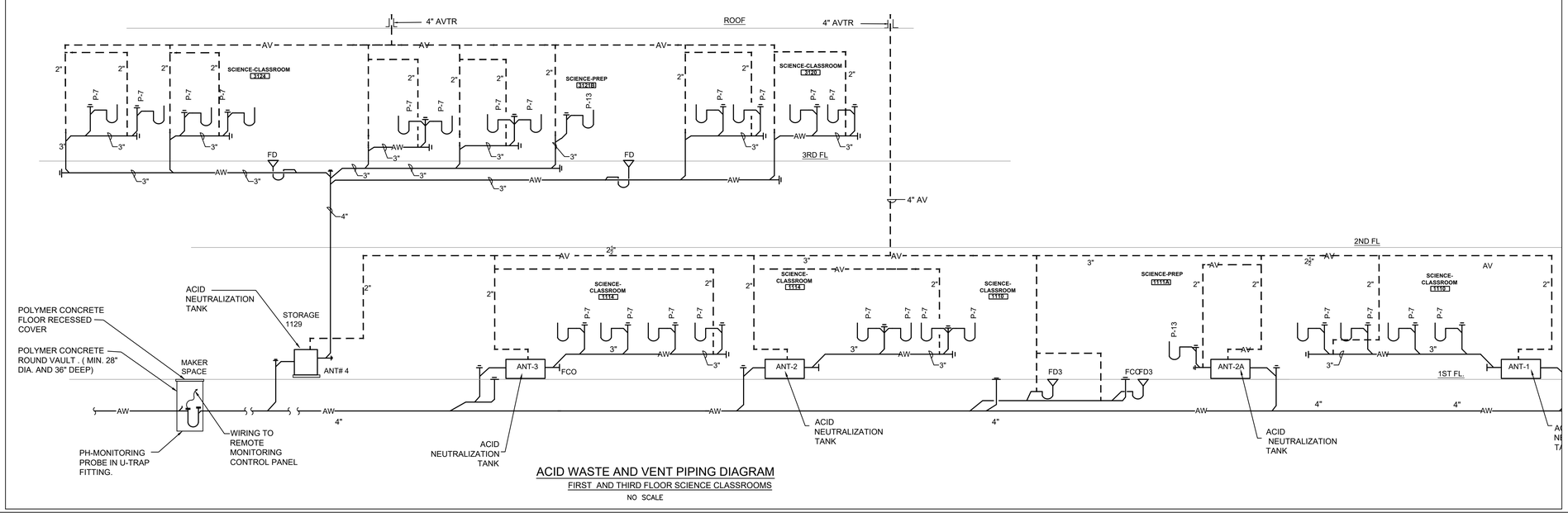
LAB HOT AND COLD WATER PIPING DIAGRAM
SECOND FLOOR SCIENCE CLASSROOMS
NO SCALE



LAB HOT AND COLD WATER PIPING DIAGRAM
THIRD FLOOR SCIENCE CLASSROOMS
NO SCALE



ACID WASTE AND VENT PIPING DIAGRAM
SECOND FLOOR SCIENCE CLASSROOMS
NO SCALE



ACID WASTE AND VENT PIPING DIAGRAM
FIRST AND THIRD FLOOR SCIENCE CLASSROOMS
NO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street. Unit # 4
Berlin, MA. 01503
Telephone - (508) 869-0403
Fax. - (508) 869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

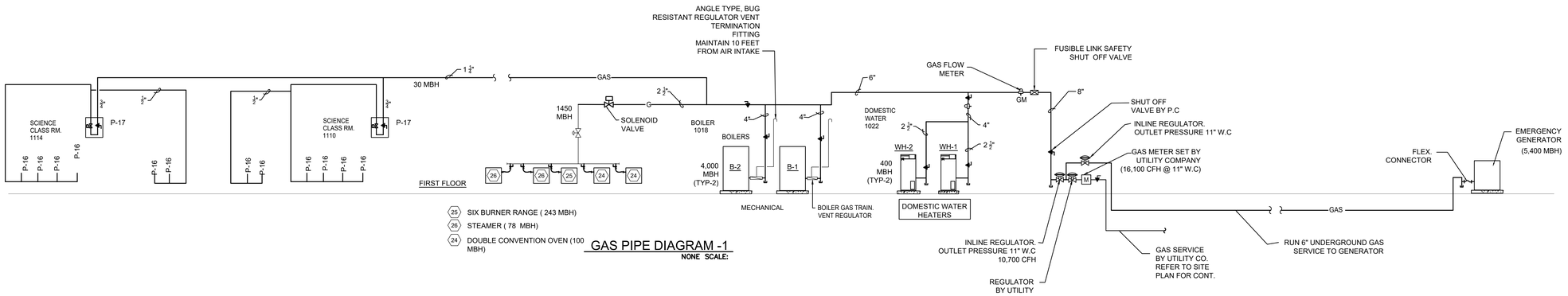
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME
SCIENCE CLASSROOM ROOM PIPING DIAGRAMS

PROJECT NO. 1722

DRAWING NO.
P402



GAS PIPE DIAGRAM -1

NONE SCALE:

NOTE:

PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING GAS RELIEF VENTS FROM BOILER / WATER HEATER GAS TRAIN REGULATOR AS REQUIRED BY THE MANUFACTURER. P.C SHALL EXTEND RELIEF VENTS TO OUTDOOR AS PER 248CMR, 7.04 (11).

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street. Unit # 4
Berlin, MA. 01503
Telephone - (508) 869-0403
Fax. - (508) 869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

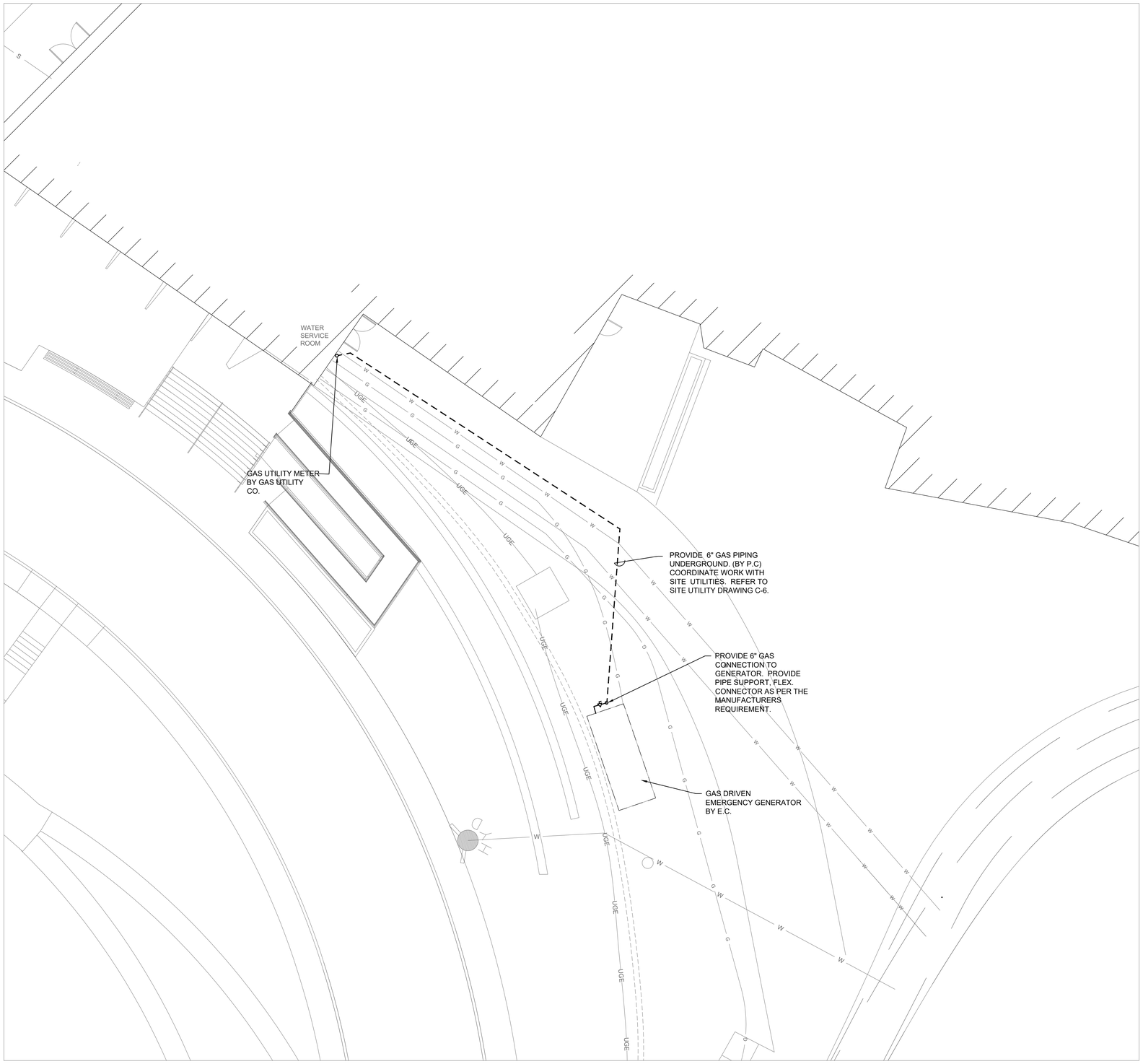
DRAWING NAME

GAS PIPING RISER DIAGRAM

PROJECT NO. 1722

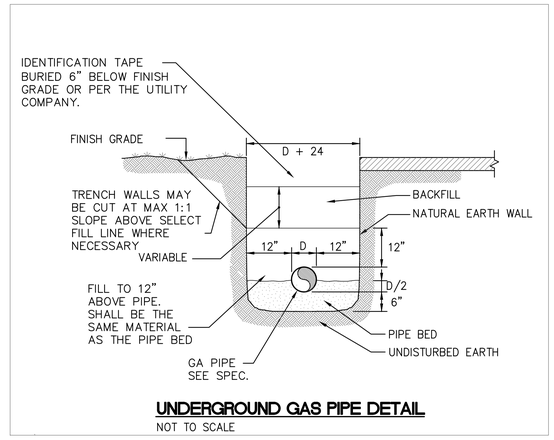
DRAWING NO.

P403



SITE GAS PIPING PLAN

SCALE : $\frac{1}{8}$" = 1'-0"



UNDERGROUND GAS PIPE DETAIL

NOT TO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

AKAL Engineering Inc.
44 Central Street, Unit # 4
Berlin, MA. 01503
Telephone - (508) 869-0403
Fax. - (508) 869-2891
www.akalengineering.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME

SITE GAS PIPING PLAN

PROJECT NO. 1722

DRAWING NO.

P500

AIR COOLED LIQUID CHILLER

UNIT NO.	MANUF. NO.	NOMINAL TONS	AMB. TEMP.	EVAPORATOR E.W.T.	EVAPORATOR L.W.T.	EVAPORATOR G.P.M.	EVAPORATOR P.D.	COMP NO./STEPS	FANS NO./kW	ELECTRICAL K.W.	ELECTRICAL V	ELECTRICAL PH.	ELECTRICAL MCA	ELECTRICAL MOP	EER 100%	EER IPLV	REMARKS
CH-1	AD150	369.6	95	53	43	926.3	13.4	4 / 4	20 / 45.62	423.2	460	3	632	757	10.5	22.66	

SELECTION BASED ON "SMARDT".
PROVIDE 30% BY WEIGHT PROPYLENE GLYCOL SOLUTION FOR FREEZE PROTECTION FOR CHILLED WATER SYSTEM.

WATER PUMPS

UNIT NO.	PUMP SERIES	MANUF. NO.	BUILDING LOCATION	SERVICE	G.P.M.	T.D.H. FT.	MOTOR HP.	MOTOR VOLT	MOTOR PH.	REMARKS
P-1	FI	5013D	BOILER ROOM	HHW	800	96	25	460	3	VFD, NOTE 1
P-2	FI	5013D	BOILER ROOM	HHW	800	96	25	460	3	VFD, NOTE 1
P-3	FI	5011D	PUMP HOUSE	CHW	800	90	25	460	3	VFD
P-4	FI	5011D	PUMP HOUSE	CHW	800	90	25	460	3	VFD

SELECTIONS BASED ON "TACO". PROVIDE 30% BY WEIGHT PROPYLENE GLYCOL SOLUTION FOR FREEZE PROTECTION IN HOT AND CHILLED WATER SYSTEMS.
PROVIDE SHAFT GROUNDING RINGS FOR ALL VFD DRIVEN PUMPS
PROVIDE PUMP WITH MAX NON-OVERLOADING IMPELLER TRIM FOR SELECTED MOTOR.
NOTE 1: UNIT TO BE ON EMERGENCY POWER.

HOT WATER BOILER

UNIT NO.	MANUF. NO.	MIN. EFF.	MIN TURN DOWN	AIR INLET	FLUE SIZE	GROSS OUTPUT	GAS INPUT C.F.H.	MIN. GAS PRESS (IN W.C.)	MAX. GAS PRESS (IN W.C.)	HW GPM	EWT	LWT	BURNER FAN V	BURNER FAN PH.	BURNER FAN FLA	REMARKS
B-1	AR 4000	90%	20:1	10"	10"	3,844	4,000	4.0	14.0	227	140	160	208	3	27.0	--
B-2	AR 4000	90%	20:1	10"	10"	3,844	4,000	4.0	14.0	227	140	160	208	3	27.0	--

SELECTION BASED ON "RIELLO"
NOTE 1: BOILERS SHALL EXCEED 2015 IECC CODE REQUIREMENTS AT 95% THERMAL EFFICIENCY AND 94% COMBUSTION EFFICIENCY PER DOE 10 CFR PART 431 TEST PROCEDURES.
BOILERS TO BE ON EMERGENCY POWER.

EXPANSION TANKS

UNIT NO.	MANUF. NO.	SERVICE	ACCEPT. VOL.	TOTAL VOL.	TANK SIZE HEIGHT	TANK SIZE DIA.	SYSTEM PRESSURES (PSIG) MIN.	SYSTEM PRESSURES (PSIG) MAX.	SYSTEM PRESSURES (PSIG) RELEIF
ET-1	CA300	HHW	100%	300	59	24	17	40	52
ET-2	CA300	HHW	100%	300	59	24	17	40	52
ET-3	CA90	CHW	100%	500	32	20	12	40	52

SELECTION BASED ON "TACO"

GLYCOL MAKE-UP

UNIT NO.	MODEL	SYSTEM	MAKE-UP CAP. (GPM @ PSI)	DIMENSIONS	PRESURE RANGE(PSI)	ELECTRICAL DATA HP	ELECTRICAL DATA VOLTS	ELECTRICAL DATA PH
GF-1	GMP-13100	HHW	1.8 @ 70	28"Ø x 67"H	10 - 70	1/3	120	1
GF-2	GMP-13100	CHW	1.8 @ 70	28"Ø x 67"H	10 - 70	1/3	120	1

SELECTION BASED ON "WESSELS COMPANY."
PROVIDE 30% BY WEIGHT PROPYLENE GLYCOL SOLUTION FOR FREEZE PROTECTION FOR HHW & CHW SYSTEM.

AIR SEPERATOR

UNIT NO.	MANUF. NO.	SERVICE	GPM	SIZE	PRESS. DROP FT H_2O	REMARKS
AS-1	4900	HHW	790	8"	3	NOTE 1
AS-2	4900	CHW	800	8"	3	NOTE 1

SELECTION BASED ON "TACO"
NOTE #1: PROVIDE W/ AIR & DIRT SEPARATION STRAINER

BUFFER TANKS

UNIT NO.	MANUF. NO.	SERVICE	TOTAL VOL.	TANK SIZE HEIGHT	TANK SIZE DIA.	TANK SIZE THICK.
BT-1	CWB	CHW	120	60"	24"	1"

SELECTION BASED ON "CEMLINE"

VIBRATION ISOLATION SCHEDULE

UNIT(S)	ISOLATOR TYPE *	MIN. STATIC DEFLECTION (IN.)	BASE TYPE *	REMARKS
AHUS	--	2.0	-	SEE AHU INTERNAL FAN FOR INTERNAL ISOLATION & HVAC AHU DETAILS
ACC	SLF	1.5	"	--
BOILERS	--	0.25	"	MOUNT ON NEOPRENE MOUNTS (MODEL ND) OR PADS (SUPER W)
ROOFTOP CENT. EXHAUST FANS	BGS	0.75	CMAB	REFER TO SPEC. SECTION 23 05 48 FOR DUCTWORK CONNECTION TO EXHAUST FAN REQUIREMENTS.
INLINE EXHAUST FANS	HD	0.35	"	--
SMOKE EXHAUST FAN		1.5	"	--
CHILLER	SLR	2.0	"	--
BASE MOUNTED PUMPS	SLF	1.5	"	--

*NOTES: 1. REFER TO ISOLATOR TYPES AND BASE TYPES INDICATED IN THE NOISE AND VIBRATION CONTROL SPECIFICATION (SECTION 230548) FOR THE PROJECT. SELECTION BASED ON MASON INDUSTRIES MODELS.
2. MINIMUM STATIC DEFLECTION LISTED IS UNDER LOAD CONDITIONS.

AIR CONDITIONING DESIGN DATA

DESIGN AREA	SUMMER OUT D.B.	SUMMER OUT W.B.	SUMMER IN D.B.	SUMMER IN W.B.	WINTER OUT D.B.	WINTER IN D.B.
BOSTON, MASSACHUSETTS	88°F	74°F	75° 2°F	68°F	7°F	70 ° 2°F

ROOFTOP EQUIPMENT SOUND POWER DATA

UNIT NO.	DISCHARGE (@ S.A. DUCT CONN.) OCTAVE BANDS 63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	INLET (@ R.A. DUCT CONN.) OCTAVE BANDS 63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	RADIATED OCTAVE BANDS 63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
RTU-1	74	82	90	95	99	92	89	80	58	67	83	87	85	83	81	80	91	93	83	83	75	54	44	36
RTU-2	74	82	90	95	99	92	89	80	58	67	83	87	85	83	81	80	91	93	83	83	75	54	44	36
RTU-3	74	82	90	95	99	92	89	80	58	67	83	87	85	83	81	80	91	93	83	83	75	54	44	36
RTU-4	74	82	90	95	99	92	89	80	58	67	83	87	85	83	81	80	91	93	83	83	75	54	44	36
RTU-5	74	82	88	92	98	90	87	78	54	67	79	87	86	83	81	79	92	89	82	82	75	53	43	36
RTU-6	60	74	85	92	96	95	88	83	51	62	77	82	81	79	77	74	77	81	77	81	73	53	43	38
RTU-7	76	75	83	88	91	88	85	78	58	56	67	73	72	73	70	65	88	90	79	79	71	51	42	36
MAU-1	54	63	89	81	101	80	78	68	--	--	--	--	--	--	--	--								
CH-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	80	79	81	83	89	85	78	81

SOUND ATTENUATORS

UNIT NO.	MANUF NO.	SERVES UNIT	SERVES AIR STREAM	MAX PD.	AIRFLOW (CFM)	SIZE	LENGTH	MAX VEL FPM	DYNAMIC INSERTION LOSS (dB) 63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	REMARKS
SA-1/2S	RM	RTU-1	SUPPLY	0.3	40,000	72"x40"	7'-0"	2000	9	12	18	28	18	13	12	10	--
SA-1/2R1	RM	RTU-1	RETURN	0.3	21,500	66"x30"	7'-0"	1564	10	14	22	31	22	14	12	10	--
SA-1/2R2	RM	RTU-1	RETURN	0.3	18,500	62"x30"	7'-0"	1432	9	14	23	34	26	17	12	10	--
SA-3/4S	RM	RTU-2	SUPPLY	0.3	40,000	72"x40"	7'-0"	2000	9	12	18	28	18	13	12	10	--
SA-3/4R	ERM	RTU-2	RETURN	0.3	40,000	72"x40"	7'-0"	2000	14	18	29	48	51	47	38	29	--
SA-5S	RM	RTU-5	SUPPLY	0.25	15,000	60"x36"	5'-0"	1000	6	11	16	23	18	14	11	9	--
SA-5R	RM	RTU-5	RETURN	0.25	15,000	60"x36"	5'-0"	1000	7	12	18	24	19	14	11	9	--
SA-6S	RM	RTU-6	SUPPLY	0.25	12,000	64"x38"	5'-0"	711	7	11	16	24	19	14	11	9	--
SA-6R1	RM	RTU-6	RETURN	0.25	6,000	60"x24"	5'-0"	600	7	12	17	24	19	14	11	9	--
SA-6R2	RM	RTU-6	RETURN	0.25	6,000	60"x24"	5'-0"	600	7	12	17	24	19	14	11	9	--
SA-7S	RM	RTU-7	SUPPLY	0.25	2,000	28"x12"	5'-0"	857	6	11	16	25	21	15	11	10	--
SA-7R	RM	RTU-7	RETURN	0.25	2,000	28"x12"	5'-0"	857	7	11	18	26	21	15	11	10	--
SA-8	RM	MAU-1	SUPPLY	0.25	4,170	34"x18"	5'-0"	981	7	11	14	22	16	12	10	9	--

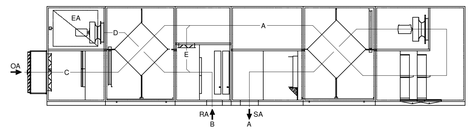
SELECTION BASED ON "PRICE", 16 GAUGE OUTER CASING, 22 GAUGE INNER CASING.

THE SOUND ATTENUATOR DYNAMIC INSERTION LOSS VALUES ARE BASED ON THE BASIS OF DESIGN ROOFTOP UNIT SOUND POWER DATA. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ROOFTOP UNITS WITH SIMILAR OR LOWER SOUND DATA OR PROVIDING ADDITIONAL SOUND ATTENUATION IN ORDER TO MEET MA-CHPS ACOUSTICAL REQUIREMENTS.

MAKE UP AIR UNITS

UNIT NO.	MANUF. NO.	BUILDING LOCATION	TOTAL CFM	O.A. CFM	EXT. IN W.G.	E.D.B.	L.D.B.	HEATING MBH	HHW GPM	FLUID PD (FT H2O)	COOLING TOTAL MBH	SENSIBLE MBH	CHW GPM	E.A.T DB/WB	L.A.T DB/WB	FLUID PD (FT H2O)	MOTOR QTY	MOTOR HP.	MOTOR V	MOTOR PH.	MOTOR MCA	MOTOR MOCP	MOTOR RPM	REMARKS
MAU-1	MSX	KITCHEN	4,170	4,170	2.0	7	85.0	312.5	32.8	2.2	273.1	173.9	58	88/74	53/53	16.8	1	5	460	3	9.7	15	1,750	NOTE 1, 2

SELECTION BASED ON "GREENHECK". HHW COIL BASED ON 160°F EWT, 20°F WTD, 30% PROPYLENE GLYCOL CONCENTRATION. CHW COIL BASED ON 53°F EWT, 10°F WTD, 30% PROPYLENE GLYCOL CONCENTRATION.
PROVIDE MOTORIZED INLET DAMPER.
PROVIDE FAN(S) WITH SHAFT GROUNDING RINGS SIMILAR TO AEGIS, OR EQUAL.
NOTE #1: PROVIDE VFD ON SUPPLY FAN MOTOR FACTORY WIRED BY UNIT MANUFACTURER IN ACCORDANCE W/ DIVISION 260000
NOTE #2: MINIMUM EFFICIENCY RATINGS PER ANSI Z21.47 TEST PROCEDURES.



ROOFTOP UNIT - INTERNAL DESIGN AIRFLOWS (CFM) UNIT	A (S.A.)	B (R.A.)	C (O.A.)	D (E.A.)	E (RECIRC)
RTU-1	17,905	16,370	11,500	9,965	6,405
RTU-2	17,905	16,370	11,500	9,965	6,405
RTU-3	18,245	16,020	11,000	8,775	7,245
RTU-4	18,245	16,020	11,000	8,775	7,245
RTU-5	15,000	15,000	11,000	11,000	4,000
RTU-6	12,000	12,000	5,000	5,000	7,000
RTU-7	1,765	1,765	1,765	1,765	0

AIRFLOW VALUES ARE BASED ON UNIT OPERATING AT NORMAL HEATING OR COOLING CONDITIONS AND MAXIMUM O.A. AIRFLOW. (I.E. NOT IN ECONOMIZER MODE)

ROOFTOP UNITS

UNIT NO.	MANUF. NO.	AREA SERVED	UNIT MAX C.F.M.	S.A. TOTAL DESIGN C.F.M.	O.A. C.F.M.	R.A. C.F.M.	MAX. COIL VEL. F.P.M.	HOT WATER HEATING DATA ENT. AIR°F	LVG. AIR°F	GPM	HEATING M.B.H.	MAX. FLUID PD (FT H2O)	CHILLED WATER COOLING DATA ENT. COND. D.B.°F	ENT. COND. W.B.°F	LVG. COND. D.B.°F	LVG. COND. W.B.°F	CHILLED WATER M.B.H. E.W.T.	CHILLED WATER M.B.H. L.W.T.	CHILLED WATER M.B.H. SENS.	CHILLED WATER M.B.H. TOTAL	GPM TOTAL	MAX. FLUID PD (FT H2O)	VAV CONTROL VF DRIVE	SUPPLY AIR E.S.P. IN.W.G.	SUPPLY AIR T.S.P. IN.W.G.	SUPPLY AIR H.P.	SUPPLY AIR VOLT	SUPPLY AIR PH.	SUPPLY AIR R.P.M	RETURN AIR E.S.P. IN.W.G.	RETURN AIR T.S.P. IN.W.G.	RETURN AIR H.P.	RETURN AIR VOLT	RETURN AIR PH.	RETURN AIR R.P.M	ELECTRICAL MCA	ELECTRICAL MOP	FIRST ENTHALPY ENERGY HEAT PLATE TOTAL EFFECTIVENESS (%) SUMMER	FIRST ENTHALPY ENERGY HEAT PLATE TOTAL EFFECTIVENESS (%) WINTER	FIRST ENTHALPY ENERGY HEAT PLATE TOTAL EFFECTIVENESS (%) PD (IN WG)	SECOND SENSIBLE ENERGY HEAT PLATE WET EFFECTIVENESS (%) SUMMER	SECOND SENSIBLE ENERGY HEAT PLATE WET EFFECTIVENESS (%) WINTER	SECOND SENSIBLE ENERGY HEAT PLATE WET EFFECTIVENESS (%) PD (IN WG)	UNIT WEIGHT (LBs)	REMARKS
RTU-1	ERP	CLASSROOMS	20,000	17,905	11,500	16,370	500	46.3	85.0	88	836.0	8.0	64.9	62.4	52.0	52.0	43.0	53.0	279.0	601.0	127.0	16.4	YES	2.5"	8.0"	(2) 25	460	3	1800	2.0"	5.0"	(2) 15	460	3	1800	103	125	50 %	50 %	1.17"	50 %	N/A	0.54"	25,750	SEE BELOW & NOTE 1
RTU-2	ERP	CLASSROOMS	20,000	17,905	11,500	16,370	500	46.3	85.0	88	836.0	8.0	64.9	62.4	52.0	52.0	43.0	53.0	279.0	601.0	127.0	16.4	YES	2.5"	8.0"	(2) 25	460	3	1800	2.0"	5.0"	(2) 15	460	3	1800	103	125	50 %	50 %	1.17"	50 %	N/A	0.54"	25,750	SEE BELOW
RTU-3	ERP	CLASSROOMS	20,000	18,245	11,000	16,020	500	46.3	85.0	88	836.0	8.0	64.9	62.4	52.0	52.0	43.0	53.0	279.0	601.0	127.0	16.4	YES	2.5"	8.0"	(2) 25	460	3	1800	2.0"	5.0"	(2) 15	460	3	1800	103	125	50 %	50 %	1.17"	50 %	N/A	0.54"	25,750	SEE BELOW & NOTE 1
RTU-4	ERP	CLASSROOMS	20,000	18,245	11,000	16,020	500	46.3	85.0	88	836.0	8.0	64.9	62.4	52.0	52.0	43.0	53.0	279.0	601.0	127.0	16.4	YES	2.5"	8.0"	(2) 25	460	3	1800	2.0"	5.0"	(2) 15	460	3	1800	103	125	50 %	50 %	1.17"	50 %	N/A	0.54"	25,750	SEE BELOW
RTU-5	ERP	GYMNASIUM	15,000	15,000	11,000	15,000	500	42.5	85.0	74	689.0	8.0	65.5	63.0	52.0	52.0	43.0	53.0	219.0	480.0	102.0	16.4	YES	2.0"	8.0"	(2) 20	460	3	1800	2.0"	4.0"	(2) 7.5	460	3	1800	73	90	50 %	50 %	1.13"	50 %	N/A	0.51"	19,600	SEE BELOW
RTU-6	ERP	AUDITORIUM/STAGE	12,000	12,000	5,000	12,000	500	53.5	85.0	43	409.0	8.0	63.7	61.0	52.0	52.0	43.0	53.0	152.0	309.0	65.0	16.4	YES	2.5"	8.0"	(2) 15	460	3	1800	2.0"	4.0"	(2) 7.5	460	3	1800	59	70	50 %	50 %	1.01"	50 %	N/A	0.49"	19,600	SEE BELOW
RTU-7	ERP	LOCKER ROOMS	2,000	1,765	1,765	1,765	500	33.2	85.0	12	112.0	8.0	67.4	64.3	51.0	51.0	43.0	53.0	36.0	78.0	17.0	16.4	YES	2.5"	8.0"	5	460	3	3600	2.0"	4.0"	3	460	3	1800	12	15	50 %	50 %	1.15"	50 %	N/A	0.4"	5,800	SEE BELOW

ROOFTOP UNIT SELECTIONS BASED ON "ANNEXAIR". REFER TO SPECIFICATIONS FOR ALTERNATE MANUFACTURERS WHICH MAY BE ACCEPTABLE SUBJECT TO COMPLIANCE WITH SPECIFICATION REQUIREMENTS AND PROVDED THE UNITS HAVE SIMILAR OR LESSER WEIGHTS AND DIMENSIONS.
ROOFTOP UNIT MANUFACTURER SHALL PROVIDE VARIABLE FREQUENCY DRIVES FOR SUPPLY AND EXHAUST AIR FANS FOR EACH UNIT IN ACCORDANCE WITH DIV. 260000 REQUIREMENTS.
ALL ROOFTOP UNITS SHALL BE PROVIDED WITH AIRFLOW MEASURING STATIONS BY ATC.
ALL ROOFTOP UNITS TO HAVE SINGLE POINT 480V AND SINGLE POINT 120V GFI CONNECTIONS.
ALL ROOFTOP UNIT FANS TO BE PROVIDED WITH SHAFT GROUNDING RINGS SIMILAR TO AEGIS, OR EQUAL.
ALL UNIT DAMPERS AND 24V ACTUATORS SHALL BE PROVIDED BY UNIT MANUFACTURER. CONTROL WIRING SHALL BE PROVIDED BY ATC.
UNIT HHW & CHW COILS, SUPPLY & RETURN FANS AND ENERGY RECOVERY SECTION PERFORMANCE SHALL BE BASED ON UNIT MAX CFM AIRFLOW. TOTAL DESIGN SA CFM INDICATES ACTUAL CONNECTED AIRFLOW LOAD.
NOTE 1: UNIT TO BE ON EMERGENCY POWER.

GENERAL NOTES

1 ALL PIPING AND DUCTWORK UNLESS DIMENSIONED IS SHOWN DIAGRAMATICALLY ONLY, EXACT LOCATION SHALL BE DETERMINED IN FIELD AFTER COORDINATING WITH OTHER WORK.
2 FOR TYPICAL PIPING DIAGRAMS AND CONNECTIONS AT EQUIPMENT, SEE DETAIL DRAWINGS.
3 EXACT LOCATION OF ALL CEILING DIFFUSERS, REGISTERS, AND GRILLES SHALL BE COORDINATED WITH LIGHTING FIXTURES, SPRINKLERS, & OTHER DEVICES. REFER TO REFLECTED CEILING PLAN.
4 FOR DETAILS OF ROOF CURBS, FLASHING, PIPING, AND VENTS THRU ROOF REFER TO ARCHITECTURAL DRAWINGS.
5 FOR LOCATION OF OPENINGS IN ROOF AND FLOORS REFER TO STRUCTURAL AND ARCHITECTURAL DRAWINGS.
6 AUTOMATIC VENTS, VALVES, ETC. THAT MUST BE SERVICED SHALL BE LOCATED IN ACCESSIBLE LOCATIONS & ACCESS DOORS PROVIDED WHERE REQUIRED.
7 THIS CONTRACTOR SHALL PROVIDE CONCRETE BASES A 4" MINIMUM HEIGHT. LOCATION AND DIMENSIONS ARE APPROXIMATE. PROVIDE TO SUIT EQUIPMENT AND ALLOW A MIN. OF 6" ALL AROUND EQUIPMENT.
8 THIS CONTRACTOR SHALL PROVIDE REMOVABLE PANELS AT LOCATIONS WHERE ACCESS TO VALVES, DAMPERS, FIRE DAMPERS, ETC. ARE REQUIRED.
9 ALL DUCTWORK SHALL HAVE JOINTS AND SEAMS FILLED WITH SEALANT FOR AIR TIGHT INSTALLATIONS.ALL AHU SUPPLY AND RETURN AIR DUCTWORK INCLUDING SMOKE EVACUATION EXHAUST DUCTWORK, PAINT BOOTH, AND WELDING EXHAUST DUCTWORK SHALL BE CONSTRUCTED PER SMACNA 4" CLASS, SEALED PER CLASS AND LEAKAGE CLASS 3. ALL OTHER DUCTWORK INCLUDING GENERAL EXHAUST, OUTSIDE AIR, KITCHEN SUPPLY,EXHAUST, KILN & FUME HOOD EXHAUST DUCTWORK SHALL BE CONSTRUCTED PER SMACNA 3" CLASS, SEALED PER CLASS A AND LEAKAGE CLASS 3.
10 PROVIDE SWING JOINTS AT ALL PIPING TAKEOFFS FROM MAINS (MINIMUM OF 3 ELBOWS), AND PROVIDE ISOLATION VALVES ON SUPPLY AND RETURN PIPING TAKEOFFS.
11 ALL AIR VENTS & PRESSURE GAUGES SHALL BE INSTALLED WITH COCKS SUCH THAT THE DEVICE CAN BE REMOVED WITHOUT DRAINING PIPING SYSTEM.
12 PROVIDE DUCT ACCESS DOORS FOR ALL FIRE, SMOKE, AND CONTROL DAMPERS LOCATED IN DUCTWORK RUNS.
13 H.V.A.C. CONTRACTOR SHALL COORDINATE ALL WORK WITH PLUMBING, ELECTRICAL, FIRE PROTECTION, AND GENERAL CONTRACTORS.
14 H.V.A.C. CONTRACTOR SHALL INFORM G.C. AS TO THE LOCATION AND SIZE OF ALL ACCESS PANELS.
15 ALL DOOR GRILLES SHALL BE BY G.C.
16 ALL SUPPORT STEEL UNLESS SHOWN ON STRUCTURAL DRAWINGS SHALL BE PROVIDED BY H.V.A.C. CONTRACTOR.
17 ALL DUCT ELBOWS SHALL BE LONG RADIUS (R=1.5), OR SQUARE TYPE WITH DOUBLE THICKNESS TURNING VANES.
18 DUCT SMOKE DETECTORS INDICATED ARE TO BE INSTALLED BY THIS CONTRACTOR, FURNISH AND FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR TO PROVIDE BMS INTERLOCK TO SHUT UNIT DOWN AND INITIATE AN ALARM UPON ACTIVATION.
19 FOR ALL CONNECTIONS TO BUILDING STEEL REFER TO STRUCTURAL DRAWINGS.
20 TOTAL DYNAMIC HEAD AND STATIC PRESSURE INDICATED IN THE SCHEDULES IS BASED ON ENGINEERING ANALYSIS AND MAY NOT NECESSARILY MATCH ACTUAL INSTALLED CONDITIONS. THIS CONTRACTOR SHALL PROVIDE REQUIRED SHEAVES, BELTS AND DRIVES TO MEET THE VOLUME FLOW CHARACTERISTICS SPECIFIED. ACTUAL INSTALLED CONDITIONS SHALL BE DETERMINED BY THE TAB CONTRACTOR.
21 PROVIDE 4" FLEXIBLE CONNECTION AT EACH DUCT CONNECTION TO FAN OR AIR HANDLING UNIT.
22 ALL DUCTWORK FROM FUME HOOD TO EXHAUST SHALL BE STAINLESS STEEL. FUME HOOD EXHAUST FANS SHALL BE REINFORCED WITH GUY WIRES AS NECESSARY.
23 ALL DUCTWORK BETWEEN WELDING HOOD/PAINT BOOTH AND ASSOCIATED EXHAUST FAN SHALL BE STAINLESS STEEL.
24 THE MANUFACTURER LISTED IN THE SCHEDULES REFLECTS THE BASIS OF DESIGN AS INDICATED ON THE CONTRACT DRAWINGS AND IS NOT INTENDED TO SUGGEST THE REQUIRED PROVIDER. REFER TO THE SPECIFICATIONS FOR A COMPLETE DESCRIPTION OF EACH PRODUCT REQUIRED AND REFERENCE "OR EQUAL" REQUIREMENTS.
25 DUCTWORK DIMENSIONS INDICATED ARE CLEAR INSIDE DIMENSIONS.
26 PROVIDE ISOLATION VALVES ON ALL BRANCH AND MAIN PIPING SUPPLY & RETURN LINES WHICH SERVE MORE THAN TWO PIECES OF TERMINAL HVAC EQUIPMENT.
27 CONDENSATE PIPING PENETRATING EXTERIOR WALLS TO BE FURNISHED WITH ESCUTCHEON.
28 ALL KITCHEN EXHAUST DUCT SHALL BE 2-HOUR CONSTRUCTION STAINLESS STEEL OR EQUIVALENT PER NFPA 90 REQUIREMENTS.
29 ALL SMOKE DAMPERS SHALL BE COMBINATION SMOKE/FIRE DAMPERS & SHALL BE FURNISHED & INSTALLED BY HVAC CONTRACTOR. FIRE ALARM INTERLOCK & POWER WIRING BY ELECTRICAL CONTRACTOR. AHU SHUT DOWN & BMS ALARM BY ATC CONTRACTOR.
30 ALL LOCKER ROOM DUCTWORK SHALL BE ALUMINUM.
31 ALL DRYER DUCTWORK TO BE FRICTION FIT W/ TAPED JOINTS. NO MECHANICAL FASTENERS. PROVIDE NECESSARY FITTINGS & DUCTWORK FROM DRYER TO OUTSIDE WALL CAP.
32 ALL DOUBLE WALL DUCTWORK INDICATED ON DRAWINGS SHALL BE 16-GA. OUTER WALL, PERFORATED INNER WALL, W/ 1-1/2" INTERNAL ACOUSTIC LINER.
33 ALL AIR HANDLING UNITS >2000 CFM SHALL HAVE A DUCT MOUNTED SMOKE DETECTOR INSTALLED IN THE SUPPLY & RETURN AIRSTREAM.

EXHAUST FANS

UNIT NO.	MANUF. NO.	BUILDING LOCATION	SERVICE	DRIVE TYPE	TIP SPEED	ESP	CFM	RPM	SONES	MOTOR HP	MOTOR V	MOTOR PH	CONTROL TYPE	CONTROL SYST.	REMARKS
EF-1	G-VG	ROOF	GENERAL EXHAUST	DIRECT	4,595	0.75"	2,650	949	10.7	1	120	1	II	BUILD.	NOTE 3
EF-2	G-VG	ROOF	GENERAL EXHAUST	DIRECT	4,081	0.5"	2,550	843	9.0	3/4	120	1	II	BUILD.	NOTE 3
EF-3	SQ-VG	RM. 1014	1014 RECYCLING/TRASH	DIRECT	4,252	0.5"	400	1452	10.8	1/4	120	1	II	BUILD.	NOTE 3
EF-4	G-VG	ROOF	1233 ART WORKROOM	DIRECT	4,578	0.5"	250	1,563	8.6	1/4	120	1	III	HOOD	NOTE 3
EF-5	---	---	---	---	---	---	---	---	---	--	--	--	--	KILN	NOTE 2
EF-6	G-VG	ROOF	FAB LAB 1160	DIRECT	6,771	1.5"	650	2500	14.1	1/2	120	1	I	HOOD	NOTE 3
SEF-1	QEI	ROOF	ATRIUM EXHAUST	--	10,685	2.5"	45,000	1725	32	40	460	3	V	SMOKE	NOTE 1
SEF-2	QEI	ROOF	ATRIUM EXHAUST	--	12,322	2.5"	60,000	1725	42	50	460	3	V	SMOKE	NOTE 1
SEF-3	QEI	ROOF	ATRIUM EXHAUST	--	12,322	2.5"	60,000	1725	42	50	460	3	V	SMOKE	NOTE 1
SEF-4	QEI	ROOF	ATRIUM EXHAUST	--	11,337	2.5"	50,000	1725	36	40	460	3	V	SMOKE	NOTE 1
SEF-5	QEI	ROOF	ATRIUM EXHAUST	--	11,819	2.5"	25,000	1725	38	20	460	3	V	SMOKE	NOTE 1
KEF-1	CUBE	ROOF	1140 KITCHEN MAIN HOOD	BELT	7,597	2.0"	3,570	1725	18.4	3	460	3	I	HOOD	--
KEF-2	CUBE	ROOF	1140 KITCHEN WAREWASHER	BELT	6,269	1.25"	600	2153	12.0	1/3	120	1	I	HOOD	--
FEF-1	VEKTOR-H	ROOF	1134 MAKERSPACE SPRAY BOOTH	BELT	--	1.2"	1,200	3600	78 (dBA)	1 1/2	460	3	III	HOOD	--
FEF-2	VEKTOR-H	ROOF	2210 SCIENCE CLASSROOM	BELT	--	1.0"	550	3600	71 (dBA)	3/4	460	3	III	HOOD	--
FEF-3	VEKTOR-H	ROOF	2214 SCIENCE CLASSROOM	BELT	--	1.0"	1,100	3600	71 (dBA)	1	460	3	III	HOOD	--
SF-1	---	PUMP HOUSE	PUMP HOUSE	BELT	--

DUCTLESS COOLING UNIT SYSTEMS

UNIT NO.	MANUF. NO.	EVAP. LOCATION	COND. LOCATION	COND. PUMP	EVAPORATOR UNTS						ASSOCIATED CONDENSER	CONDENSER MODEL	ELECTRICAL DATA			MIN SEER @ ARI	REMARKS
					CFM	COOLING BTUH	HEATING BTUH	V	PH	MCA			V	PH	MCA		
DCUe-1	PKA-A12	ELEV. MACHINE 1163	ROOF	CP-1	320	12,000	11,100	208	1	1	DCUc-1	PUZ-A12	208	1	11	20.8	
DCUe-2	PKA-A24	HEAD END 1026	ROOF	CP-1	635	24,000	18,300	208	1	1	DCUc-2	PUZ-A24	208	1	19	21.4	
DCUe-3	PKA-A24	HEAD END 1026	ROOF	CP-1	635	24,000	18,300	208	1	1	DCUc-3	PUZ-A24	208	1	19	21.4	
DCUe-4	PKA-A36	MAIN ELEC. 1023	ROOF	CP-1	705	36,000	25,900	208	1	1	DCUc-4	PUZ-A36	208	1	25	18.8	
DCUe-5	PKA-A18	ELEC. 1348	ROOF	CP-1	320	18,000	13,900	208	1	1	DCUc-5	PUZ-A18	208	1	11	18.5	
DCUe-6	PKA-A18	IDF 2155	ROOF	CP-1	320	18,000	13,900	208	1	1	DCUc-6	PUZ-A18	208	1	11	18.5	
DCUe-7	PKA-A12	EMERG. ELEC. 3257	ROOF	CP-1	320	12,000	11,100	208	1	1	DCUc-7	PUZ-A12	208	1	11	20.8	
DCUe-8	PKA-A18	IDF 2255	ROOF	CP-1	320	18,000	13,900	208	1	1	DCUc-8	PUZ-A18	208	1	11	18.5	

SELECTION BASED ON "MITSUBISHI" PROVIDE WIRED T'STAT, LOW AMBIENT CONTROL (DOWN TO 0°) AND INTERNAL MOUNTED CONDENSATE PUMP OF MODEL LISTED ABOVE. CFM BASED ON FANS SET AT LOW SPEED.
PROVIDE WITH MATCHING AIR COOLED CONDENSING UNIT. ALL REFRIGERANT TUBING SHALL BE SIZED BY UNIT MANUFACTURER. PROVIDE ALL NECESSARY JOINT KITS, FITTINGS AND ACCESSORIES FOR A COMPLETE OPERATING SYSTEM PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE BAS (BACNET) INTERFACE FOR INTEGRATION TO BMS SYSTEM. PROVIDE SERVICE ISOLATION VALVES FOR EACH INDOOR UNIT.

RADIANT HEATING PANELS

UNIT NO.	MANUF NO.	NO. OF PASSES	PANEL WIDTH	PANEL LENGTH	BTU/ LIN. FT.	REMARKS
RP-1	RPL	8	24"	SEE DRAWINGS	313	SEE FLOOR PLAN FOR LENGTH
RP-2	RPLS	8	24"	SEE DRAWINGS	313	SEE FLOOR PLAN FOR LENGTH
RP-3	RV-10	--	29"	SEE DRAWINGS	946	SEE FLOOR PLAN FOR LENGTH

RP-1 & 2: SELECTION BASED ON "PRICE". RP-3: SELECTION BASED ON "RUNTAL".
160° EWT, 20° WTD, 150° AWT, 30% BY WEIGHT PROPYLENE GLYCOL SOLUTION.
CONFIRM MOUNTING LOCATIONS WITH RCP ELEMENTS & ARCHITECT. PROVIDE MANUFACTURERS END AND INTER-CONNECTION TRIM PIECES TO PROVIDE A CONTINUOUS APPEARANCE
PROVIDE A MINIMUM OF 1.0 GPM FOR EACH CIRCUIT.
ALL RP-1 SHALL BE PROVIDED WITH FACTORY PRIMER & FIELD PAINTED BY G.C., COLOR BY ARCHITECT.

CONDENSATE PUMPS

UNIT NO.	MANUF. NO.	SERVICE	G.P.H.	T.D.H. FT WATER	MOTOR			REMARKS
					WATTS	VOLT	PH.	
CP-1	SI-10	DCU	5	33	--	120	1	--

SELECTION BASED ON "SAUERMANN"
PROVIDE OVERFLOW SAFETY SWITCH FOR EACH PUMP W/ ALARM, ALSO EACH PUMP SHALL BE FURNISHED WITH PROVISIONS FOR DIRECT CONNECTION (HARD WIRE) WITH PIGTAIL READY FOR CONNECTION BY ELECTRICAL CONTRACTOR.

UNIT HEATERS (HEATING HOT WATER)

UNIT NO.	MANUF. NO.	BUILDING LOCATION	C.F.M.	M.B.H.	G.P.M.	MOTOR			REMARKS
						HP.	V	PH.	
UH-1	RW	STAIR-2 1065	350	30.0	3.2	1/15	115	1	
UH-2	RW	VESTIBULE 1045	350	20.0	2.1	1/15	115	1	
UH-3	RH	EQUIP. STORAGE 1326	1050	35.0	3.8	1/10	115	1	
UH-4	RFRC	VESTIBULE 1348	480	20.0	2.1	1/15	115	1	
UH-5	RFRW	CORRIDOR 1310	350	20.0	2.1	1/15	115	1	
UH-6	RFRC	CORRIDOR 1008	350	20.0	2.1	1/15	115	1	
UH-7	RFRC	RECEIVING 1010	350	20.0	2.1	1/15	115	1	
UH-8	RFRC	CORRIDOR 1020	350	20.0	2.1	1/15	115	1	
UH-9	RFRC	CORRIDOR 1060	350	20.0	2.1	1/15	115	1	
UH-10	RW	STAIR-1 1005	350	30.0	3.2	1/15	115	1	
UH-11	RFRC	CORRIDOR 2000	350	20.0	2.1	1/15	115	1	
UH-12	RFRC	VESTIBULE 2001	350	20.0	2.1	1/15	115	1	
UH-13	RW	STAIR-2 3065	350	30.0	3.2	1/15	115	1	
UH-14	RW	STAIR-2 3005	350	20.0	3.2	1/15	115	1	
UH-15	RH	BOILER ROOM 1018	350	9.4	1.0	1/30	115	1	

SELECTION BASED ON "RITTLING", 160°F EWT, 20°F WTD, 30% PROPYLENE GLYCOL CONCENTRATION.
CEILING/WALL UNIT HEATERS SHALL BE RECESSED INSTALLATION. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
PROVIDE UNIT WITH MOUNTING FRAME FOR RECESSED INSTALLATION.
CEILING MOUNTED CABINET TYPE UNIT HEATERS SHALL BE FACTORY PRIMED FOR FIELD PAINTING BY PAINTING SUBCONTRACTOR.
ALL OTHER UNIT HEATERS SHALL BE FACTORY PAINTED. COLOR FINISH SHALL BE SELECTED BY THE ARCHITECT.

UNIT HEATERS (ELECTRIC)

UNIT NO.	MANUF. NO.	CFM	COIL		POWER		FAN HP	REMARKS
			KW	MBH	V	PH		
EUH-1	MUH	100	3.0	10.2	277	1	1/100	

SELECTION BASED ON "Q-MARK"
REFER TO FLOOR PLAN DRAWINGS FOR LOCATIONS
PROVIDE WITH MOUNTING BRACKET

FIN-TUBE RADIATION SCHEDULE (HYDRONIC)

TAG NO.	MANUFACTURER MODEL NUMBER	BTU PER FT	EWT (°F)	LWT (°F)	PIPE SIZE (IN)	PIPE MTRL	FIN SIZE	FINS PER FOOT	FIN MTRL	ROWS	REMARKS
FTR-1	BARE ELEMENT	1,061	160	140	3/4"	COPPER	4-1/4" SQ	48	ALUM.	2	-
FTR-2	PIBGS	998	160	140	1"	COPPER	4-1/4" SQ	48	ALUM.	1	-
FTR-3	FS	1,337	160	140	1"	COPPER	4-1/4" SQ	48	ALUM.	2	-

SELECTION BASED ON "RITTLING" EWT 160°, 20° ΔT, 30% PROPYLENE GLYCOL
LENGTHS INDICATED ARE ACTIVE LENGTH.
PROVIDE WITH PIPE SUPPORTS FOR FTR WITH SUPPLY AND RETURN PIPING ENTERING/EXITING ON THE SAME SIDE.
ENCLOSURE SHALL BE 14 GAUGE CONSTRUCTION.

FTR-1 LENGTH
GPM

CONVECTOR

UNIT NO.	MANUF. NO.	DIMENSIONS D X H X L	GPM	MBH
C-1	PL	6"x32"x48"	0.6	6.0

SELECTION BASED ON "RITTLING"
160° EWT, 20° WTD, 30% PROPYLENE GLYCOL

VARIABLE AIR VOLUME BOXES

UNIT NO.	MANUF. NO.	SPACE SERVED	CFM		MAX NC @ 1.5" PD	APD	INLET DIA	REMARKS
			MAX	MIN				
VAV-1-1	SDVQ	1214 OFFICE	100	60	<25	0.6"	5"	RTU-1/2
VAV-1-2	SDVQ	1215 OFFICE	100	60	<25	0.6"	5"	RTU-1/2
VAV-1-3	SDVQ	1217 PRACTICE	75	60	<25	0.6"	5"	RTU-1/2
VAV-1-4	SDVQ	1218 PRACTICE	75	60	<25	0.6"	5"	RTU-1/2
VAV-1-5	SDVQ	1219 ENSEMBLE	110	60	<25	0.6"	5"	RTU-1/2
VAV-1-6	SDVQ	1300 LOBBY	140	60	<25	0.6"	5"	RTU-1/2
VAV-1-7	SDVQ	1310 CORRIDOR	465	130	<25	0.6"	8"	RTU-1/2
VAV-1-8	SDVQ	1220 BAND	625	130	<25	0.6"	8"	RTU-1/2
VAV-1-9	SDVQ	1222A BAND - TP	80	60	<25	0.6"	5"	RTU-1/2
VAV-1-10	SDVQ	1224 CHORUS	620	130	<25	0.6"	8"	RTU-1/2
VAV-1-11	SDVQ	1230 CR - DRAMA	520	130	<25	0.6"	8"	RTU-1/2
VAV-1-12	SDVQ	1232 ART WORKROOM	80	60	<25	0.6"	5"	RTU-1/2
VAV-1-13	SDVQ	1233 ART WORKROOM	80	60	<25	0.6"	5"	RTU-1/2
VAV-1-14	SDVQ	1234 ART	785	170	<25	0.6"	9"	RTU-1/2
VAV-1-15	SDVQ	1055A LEARNING COMMONS	1,680	440	<25	0.6"	14"	RTU-1/2
VAV-1-16	SDVQ	1055B LEARNING COMMONS	1,440	440	<25	0.6"	14"	RTU-1/2
VAV-1-17	SDVQ	1068 BREAKOUT	150	60	<25	0.6"	5"	RTU-1/2
VAV-1-18	SDVQ	2210 SCIENCE - CR	860	220	<25	0.6"	10"	RTU-1/2
VAV-1-19	SDVQ	2211A/B SCIENCE - PREP	85	60	<25	0.6"	5"	RTU-1/2
VAV-1-20	SDVQ	2212 SCIENCE - TP	80	60	<25	0.6"	5"	RTU-1/2
VAV-1-21	SDVQ	2214 SCIENCE - CR	1,100	305	<25	0.6"	12"	RTU-1/2
VAV-1-22	SDVQ	2222 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-1/2
VAV-1-23	SDVQ	2224 CLASSROOM	625	130	<25	0.6"	8"	RTU-1/2
VAV-1-24	SDVQ	2230 CLASSROOM - ELL	625	130	<25	0.6"	8"	RTU-1/2
VAV-1-25	SDVQ	2232 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-1/2
VAV-1-26	SDVQ	2234 CLASSROOM	630	130	<25	0.6"	8"	RTU-1/2
VAV-1-27	SDVQ	2068 BREAKOUT	220	65	<25	0.6"	6"	RTU-1/2
VAV-1-28	SDVQ	3210 CLASSROOM	730	165	<25	0.6"	9"	RTU-1/2
VAV-1-29	SDVQ	3212 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-1/2
VAV-1-30	SDVQ	3214 CLASSROOM	655	130	<25	0.6"	8"	RTU-1/2
VAV-1-31	SDVQ	3220 CLASSROOM - ELL	630	130	<25	0.6"	8"	RTU-1/2
VAV-1-32	SDVQ	3222 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-1/2
VAV-1-33	SDVQ	3224 CLASSROOM	665	130	<25	0.6"	8"	RTU-1/2
VAV-1-34	SDVQ	3230 CLASSROOM	655	130	<25	0.6"	8"	RTU-1/2
VAV-1-35	SDVQ	3232 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-1/2
VAV-1-36	SDVQ	3234 CLASSROOM	665	130	<25	0.6"	8"	RTU-1/2
VAV-1-37	SDVQ	3068 BREAKOUT	510	130	<25	0.6"	8"	RTU-1/2
VAV-2-1	SDVQ	1166 STAFF LUNCH	370	130	<25	0.6"	7"	RTU-1/2
VAV-2-2	SDVQ	1160 TECH/DIGITAL FAB LAB	860	305	<25	0.6"	12"	RTU-1/2
VAV-2-3	SDVQ	1140 KITCHEN	700	165	<25	0.6"	9"	RTU-1/2
VAV-2-4	SDVQ	1141 KITCHEN OFFICE	75	60	<25	0.6"	5"	RTU-1/2
VAV-2-5	SDVQ	1027 CUST. OFFICE	290	65	<25	0.6"	6"	RTU-1/2
VAV-2-6	SDVQ	1055 LEARNING COMMONS	480	130	<25	0.6"	8"	RTU-1/2
VAV-2-7	SDVQ	1055 LEARNING COMMONS	720	165	<25	0.6"	9"	RTU-1/2
VAV-2-8	SDVQ	1055 LEARNING COMMONS	1,200	300	<25	0.6"	12"	RTU-1/2
VAV-2-9	SDVQ	2168B SPED - READING	105	60	<25	0.6"	5"	RTU-1/2
VAV-2-10	SDVQ	2168A SPED - READING	80	60	<25	0.6"	5"	RTU-1/2
VAV-2-11	SDVQ	2168C SPED - RESOURCE	410	100	<25	0.6"	7"	RTU-1/2
VAV-2-12	SDVQ	2166 GUIDANCE - OFFICE	100	60	<25	0.6"	5"	RTU-1/2
VAV-2-13	SDVQ	2165 GUIDANCE - OFFICE	175	60	<25	0.6"	5"	RTU-1/2
VAV-2-14	SDVQ	2164 OFFICE - DEPT	200	60	<25	0.6"	5"	RTU-1/2
VAV-2-15	SDVQ	2163 OFFICE - DEPT	180	60	<25	0.6"	5"	RTU-1/2
VAV-2-16	SDVQ	2160 WORKSHOP	160	60	<25	0.6"	5"	RTU-1/2
VAV-2-17	SDVQ	2161 GUIDANCE WAITING	110	60	<25	0.6"	5"	RTU-1/2
VAV-2-18	SDVQ	2040 MEDICAL OFFICE	330	65	<25	0.6"	6"	RTU-1/2
VAV-2-19	SDVQ	2042 INTERVIEW	70	60	<25	0.6"	5"	RTU-1/2
VAV-2-20	SDVQ	2010 ADMIN - GENERAL	470	130	<25	0.6"	8"	RTU-1/2
VAV-2-21	SDVQ	2026 CONFERENCE - SM	290	65	<25	0.6"	6"	RTU-1/2
VAV-2-22	SDVQ	2027 RECORDS	60	60	<25	0.6"	4"	RTU-1/2
VAV-2-23	SDVQ	2012 OFFICE - PR SEC.	100	60	<25	0.6"	5"	RTU-1/2
VAV-2-24	SDVQ	2025 WORKSPACE	570	100	<25	0.6"	7"	RTU-1/2
VAV-2-25	SDVQ	2014 OFFICE - PRINCIPAL	365	65	<25	0.6"	6"	RTU-1/2
VAV-2-26	SDVQ	2022 OFFICE - SPARE	185	60	<25	0.6"	5"	RTU-1/2
VAV-2-27	SDVQ	2020 OFFICE - CONFERENCE	180	60	<25	0.6"	5"	RTU-1/2
VAV-2-28	SDVQ	2018 OFFICE - ASST. PR	180	60	<25	0.6"	5"	RTU-1/2
VAV-2-29	SDVQ	2016 CONFERENCE - LG	555	130	<25	0.6"	8"	RTU-1/2
VAV-2-30	SDVQ	2058 BREAKOUT	145	60	<25	0.6"	5"	RTU-1/2
VAV-2-31	SDVQ	3164 CLASSROOM - ELL	795	165	<25	0.6"	9"	RTU-1/2
VAV-2-32	SDVQ	3160 CLASSROOM - ELL	870	220	<25	0.6"	10"	RTU-1/2
VAV-2-33	SDVQ	3144 CLASSROOM	740	165	<25	0.6"	9"	RTU-1/2
VAV-2-34	SDVQ	3142 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-1/2
VAV-2-35	SDVQ	3140 CLASSROOM	760	165	<25	0.6"	9"	RTU-1/2
VAV-2-36	SDVQ	3058 BREAKOUT	535	130	<25	0.6"	8"	RTU-1/2

SELECTION BASED ON "PRICE" W/ HOSPITAL-GRADE LINER IN ATTENUATOR.
CONTROLS SHALL BE PROVIDED BY ATC CONTRACTOR & FIELD INSTALLED.

VARIABLE AIR VOLUME BOXES (continued)

UNIT NO.	MANUF. NO.	SPACE SERVED	CFM		MAX NC @ 1.5" PD	APD	INLET DIA	REMARKS
			MAX	MIN				
VAV-3-1	SDVQ	1240 MEDIA	1,605	440	<25	0.6"	14"	RTU-3/4
VAV-3-2	SDVQ	1242 MEDIA	65	60	<25	0.6"	5"	RTU-3/4
VAV-3-3	SDVQ	1244 CLASSROOM	670	130	<25	0.6"	8"	RTU-3/4
VAV-3-4	SDVQ	1260 SPED - CR	650	130	<25	0.6"	8"	RTU-3/4
VAV-3-5	SDVQ	1262 SPED - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-3-6	SDVQ	1264 SPED - CR	680	130	<25	0.6"	8"	RTU-3/4
VAV-3-7	SDVQ	1055 LEARNING COMMONS	1,440	440	<25	0.6"	14"	RTU-3/4
VAV-3-8	SDVQ	1055 LEARNING COMMONS	720	130	<25	0.6"	8"	RTU-3/4
VAV-3-9	SDVQ	1055 LEARNING COMMONS	960	220	<25	0.6"	10"	RTU-3/4
VAV-3-10	SDVQ	2242 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-3-11	SDVQ	2244 CLASSROOM	640	130	<25	0.6"	8"	RTU-3/4
VAV-3-12	SDVQ	2260 SPED - CR	660	130	<25	0.6"	8"	RTU-3/4
VAV-3-13	SDVQ	2262 SPED - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-3-14	SDVQ	2264 SPED - CR	690	130	<25	0.6"	8"	RTU-3/4
VAV-3-15	SDVQ	3240 CLASSROOM	670	130	<25	0.6"	8"	RTU-3/4
VAV-3-16	SDVQ	3242 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-3-17	SDVQ	3244 CLASSROOM	780	130	<25	0.6"	8"	RTU-3/4
VAV-3-18	SDVQ	3260B SPED - READING	105	60	<25	0.6"	5"	RTU-3/4
VAV-3-19	SDVQ	3260A SPED - READING	80	60	<25	0.6"	5"	RTU-3/4
VAV-3-20	SDVQ	3260C SPED - RESOURCE	395	100	<25	0.6"	7"	RTU-3/4
VAV-3-21	SDVQ	3262 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-3-22	SDVQ	3265 OFFICE - DEPT	100	60	<25	0.6"	5"	RTU-3/4
VAV-3-23	SDVQ	3269 WORKROOM	185	60	<25	0.6"	5"	RTU-3/4
VAV-3-24	SDVQ	3266 OFFICE - DEPT	145	60	<25	0.6"	5"	RTU-3/4
VAV-3-25	SDVQ	3267 GUIDANCE - OFFICE	160	60	<25	0.6"	5"	RTU-3/4
VAV-3-26	SDVQ	3268 GUIDANCE - OFFICE	160	60	<25	0.6"	5"	RTU-3/4
VAV-3-27	SDVQ	3263 GUIDANCE WAITING	145	60	<25	0.6"	5"	RTU-3/4
VAV-3-28	SDVQ	3054 BREAKOUT	455	100	<25	0.6"	7"	RTU-3/4
VAV-4-1	SDVQ	1134 MAKERSPACE	2,300	570	<25	0.6"	16"	RTU-3/4
VAV-4-2	SDVQ	1132 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-4-3	SDVQ	1130 CLASSROOM - ELL	670	130	<25	0.6"	8"	RTU-3/4
VAV-4-4	SDVQ	1128B SPED - READING	100	60	<25	0.6"	5"	RTU-3/4
VAV-4-5	SDVQ	1128A SPED - READING	80	60	<25	0.6"	5"	RTU-3/4
VAV-4-6	SDVQ	1128C SPED - RESOURCE	420	100	<25	0.6"	7"	RTU-3/4
VAV-4-7	SDVQ	1122 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-4-8	SDVQ	1126 GUIDANCE OFFICE	100	60	<25	0.6"	5"	RTU-3/4
VAV-4-9	SDVQ	1125 GUIDANCE OFFICE	175	60	<25	0.6"	5"	RTU-3/4
VAV-4-10	SDVQ	1124 OFFICE - DEPT	195	60	<25	0.6"	5"	RTU-3/4
VAV-4-11	SDVQ	1123 OFFICE - DEPT	160	60	<25	0.6"	5"	RTU-3/4
VAV-4-12	SDVQ	1120 WORKROOM	165	60	<25	0.6"	5"	RTU-3/4
VAV-4-13	SDVQ	1121B GUIDANCE WAITING	110	60	<25	0.6"	5"	RTU-3/4
VAV-4-14	SDVQ	1114 SCIENCE - CR	830	60	<25	0.6"	9"	RTU-3/4
VAV-4-15	SDVQ	1112 SCIENCE - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-4-16	SDVQ	1111A/B SCIENCE PREP	90	60	<25	0.6"	5"	RTU-3/4
VAV-4-17	SDVQ	1110 SCIENCE - CR	900	220	<25	0.6"	10"	RTU-3/4
VAV-4-18	SDVQ	1048 BREAKOUT	175	60	<25	0.6"	5"	RTU-3/4
VAV-4-19	SDVQ	1038 BREAKOUT	185	60	<25	0.6"	5"	RTU-3/4
VAV-4-20	SDVQ	1055 LEARNING COMMONS	480	130	<25	0.6"	8"	RTU-3/4
VAV-4-21	SDVQ	1055 LEARNING COMMONS	480	130	<25	0.6"	8"	RTU-3/4
VAV-4-22	SDVQ	1055 LEARNING COMMONS	720	170	<25	0.6"	9"	RTU-3/4
VAV-4-23	SDVQ	1055 LEARNING COMMONS	480	130	<25	0.6"	8"	RTU-3/4
VAV-4-24	SDVQ	1055 LEARNING COMMONS	720	170	<25	0.6"	9"	RTU-3/4
VAV-4-25	SDVQ	2134 CLASSROOM	740	170	<25	0.6"	9"	RTU-3/4
VAV-4-26	SDVQ	2132 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-4-27	SDVQ	2130 CLASSROOM	725	170	<25	0.6"	9"	RTU-3/4
VAV-4-28	SDVQ	2124 SPED - CR	720	170	<25	0.6"	9"	RTU-3/4
VAV-4-29	SDVQ	2122 SPED - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-4-30	SDVQ	2120 SPED - CR	725	170	<25	0.6"	9"	RTU-3/4
VAV-4-31	SDVQ	2114 CLASSROOM	720	170	<25	0.6"	9"	RTU-3/4
VAV-4-32	SDVQ	2112 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-4-33	SDVQ	2110 CLASSROOM - ELL	725	170	<25	0.6"	9"	RTU-3/4
VAV-4-34	SDVQ	2038 BREAKOUT	195	60	<25	0.6"	5"	RTU-3/4
VAV-4-35	SDVQ	3134 CLASSROOM	760	170	<25	0.6"	9"	RTU-3/4
VAV-4-36	SDVQ	3132 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-4-37	SDVQ	3130 CLASSROOM	710	170	<25	0.6"	9"	RTU-3/4
VAV-4-38	SDVQ	3124 SCIENCE - CR	840	170	<25	0.6"	9"	RTU-3/4
VAV-4-39	SDVQ	3122 SCIENCE - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-4-40	SDVQ	3121B SCIENCE PREP	95	60	<25	0.6"	5"	RTU-3/4
VAV-4-41	SDVQ	3120 SCIENCE - CR	850	220	<25	0.6"	10"	RTU-3/4
VAV-4-42	SDVQ	3114 CLASSROOM	750	170	<25	0.6"	9"	RTU-3/4
VAV-4-43	SDVQ	3112 CLASSROOM - TP	80	60	<25	0.6"	5"	RTU-3/4
VAV-4-44	SDVQ	3110 CLASSROOM	720	170	<25	0.6"	9"	RTU-3/4
VAV-6-1	SDVQ	1344 AV/THEATER	275	65	<25	0.6"	6"	RTU-6
VAV-6-2	SDVQ	1343 DRESSING	100	60	<25	0.6"	5"	RTU-6
VAV-6-3	SDVQ	1347 DRESSING	100	60	<25	0.6"	5"	RTU-6

SELECTION BASED ON "PRICE" W/ HOSPITAL-GRADE LINER IN ATTENUATOR.
CONTROLS SHALL BE PROVIDED BY ATC CONTRACTOR & FIELD INSTALLED.

CONSTANT VOLUME REGULATORS

UNIT NO.	MANUF. NO.	DIA. (INCHES)	MIN. CFM	MAX. CFM	REMARKS
CVD-1	MR MAX	8"	150	530	
CVD-2	MR MAX	10"	295	940	
CVD-3	MR MAX	12"	470	1,650	
CVD-4	MR MAX	4"	40	130	

SELECTION BASED ON "ALDES"
UNIT NUMBERS ARE FOR TYPE ONLY, REFER TO FLOOR PLANS FOR QUANTITIES

ROOF HOOD SCHEDULE

UNIT NO.	MODEL	DIMENSION(INCHES)					
		A	B	C	"TW"	"TL"	AREA
RH-1	FGR	18"	24"	14"	8"	14"	0.78 S.F.

SELECTION BASED ON "GREENHECK"

DISPLACEMENT DIFFUSERS

UNIT NO.	MANUF. NO.	SIZE W x H x D	MAX FACE VELOCITY	DUCT CONNECTION	REMARKS
DD-1	DF1L	24"Wx24"H	40 FPM	8"Ø TOP	NOTE 2
DD-2	DF1L	24"Wx48"H	40 FPM	10"Ø TOP	NOTE 2
DD-3	DFW	24"Wx30"H	40 FPM	18"x4" TOP	NOTE 2, 3
DD-4	DFW	24"Wx48"H	40 FPM	18"x4" TOP	NOTE 2, 3
DD-5	DFW	24"Wx60"H	40 FPM	14"x4" TOP	NOTE 2, 3
DD-6	DF1C	34"Wx28"H	40 FPM	10"Ø TOP	NOTE 2, 3
DD-7	DFR	38"Wx72"H	40 FPM	22"x12" TOP	NOTE 1, 2, 3
DD-8	DF1C	44"Wx28"H	40 FPM	12"Ø TOP	NOTE 2, 3
DD-9	DFR	52"Wx30"H	40 FPM	16"x10" TOP	NOTE 1, 2, 3
DD-10	DF1C	50"Wx28"H	40 FPM	12"Ø TOP	NOTE 2, 3
DD-11	DF1C	54"Wx28"H	40 FPM	12"Ø TOP	NOTE 2, 3
DD-12	DF1C	42"Wx28"H	40 FPM	12"Ø TOP	NOTE 2, 3
DD-13	DF1W	34"Wx60"H	40 FPM	30"x4" TOP	NOTE 2, 3

SELECTION BASED ON "PRICE" FINISH AND COLOR TO BE BY ARCH.
REFER TO FLOOR PLANS FOR CFM.
NOTE #1: PROVIDE 16" DEEP PLENUM ON REAR OF DIFFUSER.
NOTE #2: ALL DISPLACEMENT DIFFUSERS SHALL BE FACTORY PAINTED FACTORY WHITE.
NOTE #3: PROVIDE MUD FRAME.

RETURN/ EXHAUST REGISTER(R/E)

NO.	STYLE
R/E-1	PDR
R/E-2	96

SELECTION BASED ON "PRICE"
NOTE #1: REFER TO DRAWINGS FOR THROW DIRECTION, SIZE & CFM ALL CEILING REGISTERS SHALL BE PROVIDED W/
NOTE #2: ALL GRILLES AND REGISTERS SHALL BE FACTORY PAINTED FACTORY WHITE.

SUPPLY DIFFUSER

NO.	STYLE
A	PDS
B	LBPH16A
C	91

SELECTION BASED ON "PRICE"
NOTE #1: REFER TO DRAWINGS FOR THROW DIRECTION, SIZE & CFM
NOTE #2: ALL DIFFUSERS SHALL BE FACTORY PAINTED FACTORY WHITE.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

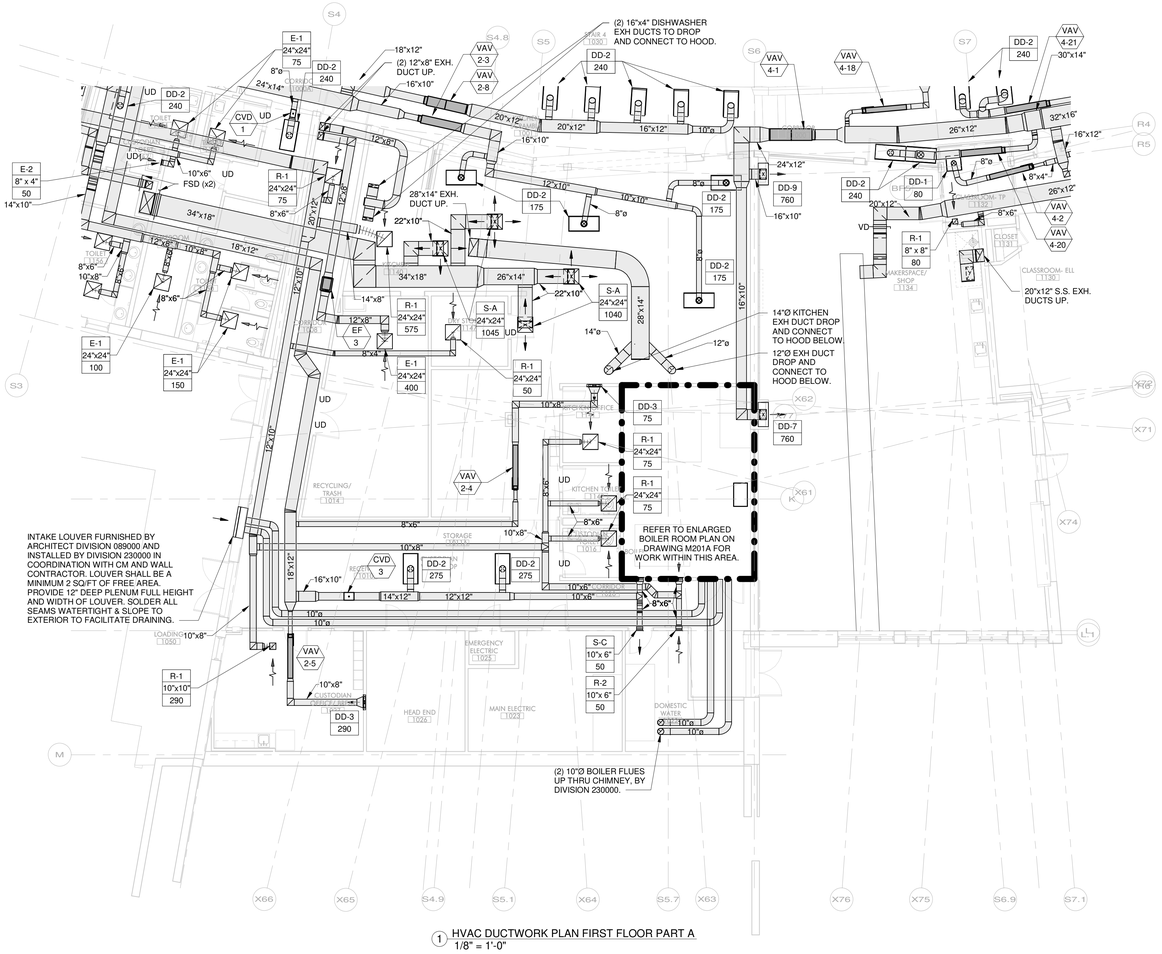
GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 5, Belmont, MA 02478
781 - 489 - 5700 FAX 508 - 998 - 0880 E - MAIL info@ggd - p - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCU



1 HVAC DUCTWORK PLAN FIRST FLOOR PART A
1/8" = 1'-0"

DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR, POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR. FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR, PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC. AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDITORIUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL, CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 5, Belmont, MA 02478
781 - 489 - 5700 FAX 508 - 748 - 0983 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

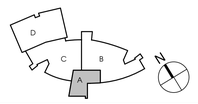
REVISIONS

No.	Date	Description
1	2019-12-04	Addendum # 5
2	2019-12-09	Addendum # 6
3	2019-12-13	Addendum # 7
4	2020-02-10	Conformance Set

DRAWING NAME
DUCTWORK PLAN
FLOOR 1-A - HVAC

PROJECT NO. 1722

DRAWING NO.
M101A



DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR, POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR. FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR. PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDITORIUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL. CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

1 HVAC DUCTWORK PLAN FIRST FLOOR PART B
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 3, Belmont, MA 02478
781 - 489 - 5750 FAX 508 - 998 - 0960 E - MAIL: info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2019-12-13	Addendum #7
4	2020-02-10	Conformance Set

DRAWING NAME
DUCTWORK PLAN
FLOOR 1-B - HVAC

PROJECT NO. 1722

DRAWING NO.
M101B

1 HVAC DUCTWORK PLAN FIRST FLOOR PART C
1/8" = 1'-0"

DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR. POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR. FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR, PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDITORIUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL, CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 5, Belmont, MA 02478
508 - 866 - 5700 FAX 508 - 866 - 5900 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2019-12-13	Addendum #7
4	2020-02-10	Conformance Set

DRAWING NAME

DUCTWORK PLAN FLOOR 1-C - HVAC

PROJECT NO. 1722

DRAWING NO.

M101C

1 HVAC DUCTWORK PLAN FIRST FLOOR PART D
1/8" = 1'-0"

DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR. POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR. FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR, PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDITORIUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL, CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1058
508 - 998 - 5700 FAX 508 - 998 - 5980 E - MAIL: info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-13	Addendum #7
3	2020-02-10	Conformance Set

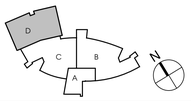
DRAWING NAME

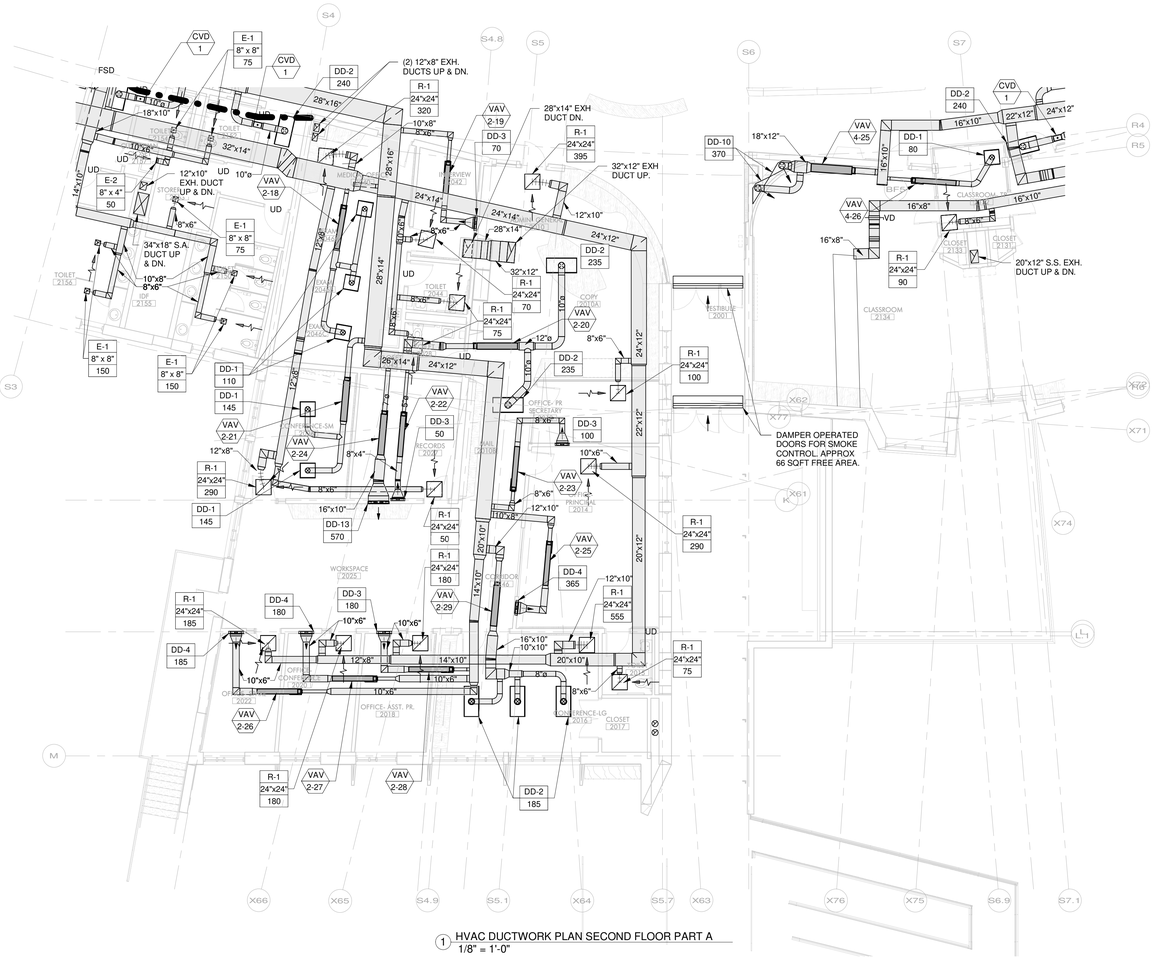
DUCTWORK PLAN
FLOOR 1-D - HVAC

PROJECT NO. 1722

DRAWING NO.

M101D





1 HVAC DUCTWORK PLAN SECOND FLOOR PART A
1/8" = 1'-0"

DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR, POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR. FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR, PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDITORIUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL, CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1058
508 - 998 - 5700 FAX 508 - 998 - 5980 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

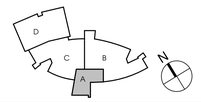
REVISIONS

No.	Date	Description
1	2019-12-13	Addendum #7
2	2020-02-10	Conformance Set

DRAWING NAME
DUCTWORK PLAN
FLOOR 2-A - HVAC

PROJECT NO. 1722

DRAWING NO.
M102A



DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR. POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR. FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR, PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC. AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDITORIUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL, CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

1 HVAC DUCTWORK PLAN SECOND FLOOR PART B
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street - Suite 5, Dartmouth, MA 02747 - 1508
508 - 998 - 5700 FAX 508 - 998 - 5883 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2019-12-13	Addendum #7
4	2020-02-10	Conformance Set

DRAWING NAME
DUCTWORK PLAN
FLOOR 2-B - HVAC

PROJECT NO. 1722

DRAWING NO.
M102B

DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR, POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR, FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR, PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC. AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDITORIUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL, CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

1 HVAC DUCTWORK PLAN SECOND FLOOR PART C
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 5, Belmont, MA 02478
508 - 866 - 5700 FAX 508 - 866 - 5900 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2019-12-13	Addendum #7
4	2020-02-10	Conformance Set

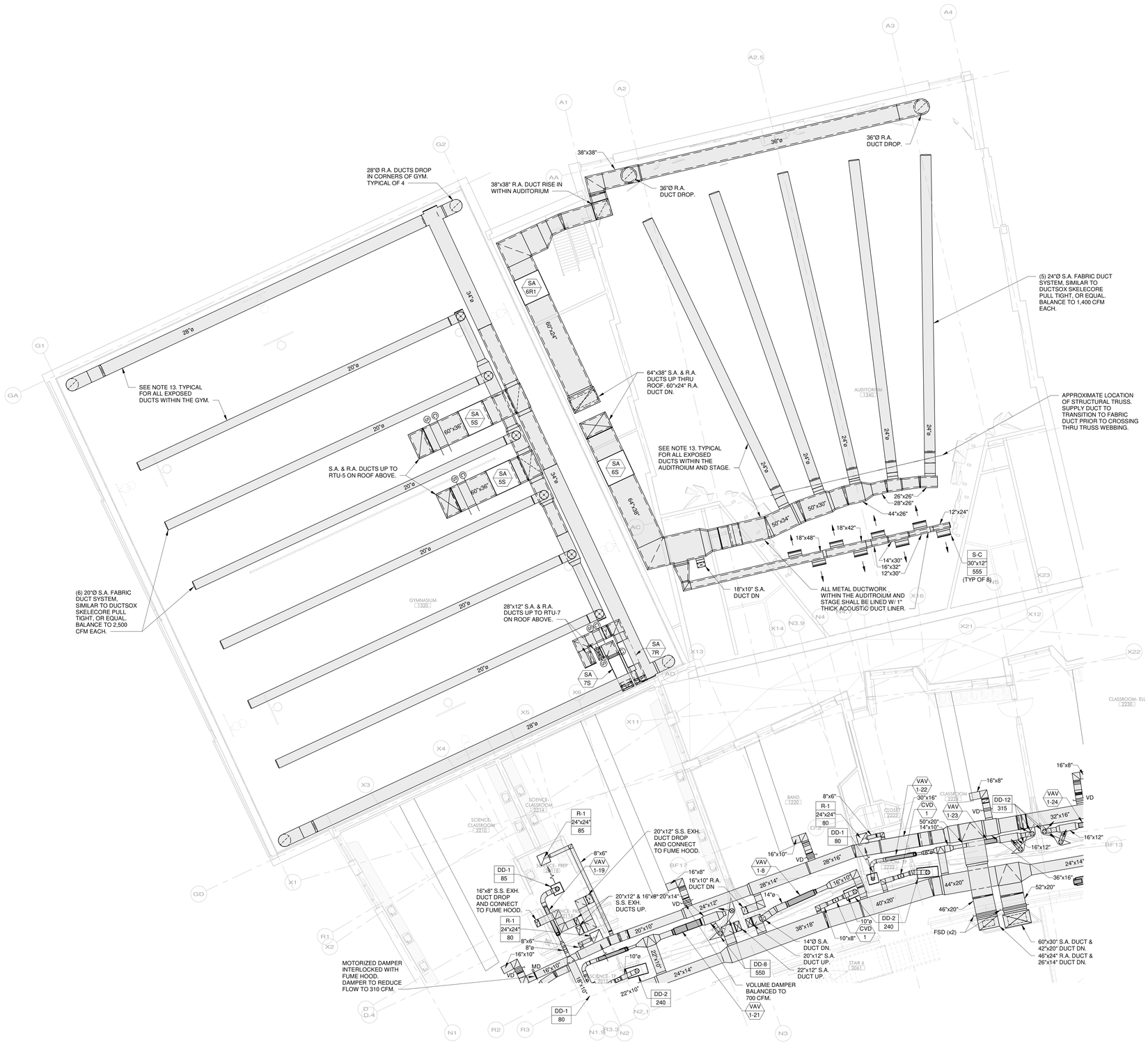
DRAWING NAME

DUCTWORK PLAN
FLOOR 2-C - HVAC

PROJECT NO. 1722

DRAWING NO.

M102C



1 HVAC DUCTWORK PLAN SECOND FLOOR PART D
1/8" = 1'-0"

DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR. POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR. FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR, PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER, THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDITORIUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL, CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 3, Belmont, MA 02478
508 - 898 - 5700 FAX 508 - 898 - 5960 E - MAIL info@gg - p - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-09	Addendum #6
2	2019-12-13	Addendum #7
3	2020-02-10	Conformance Set

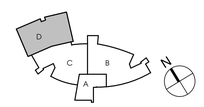
DRAWING NAME

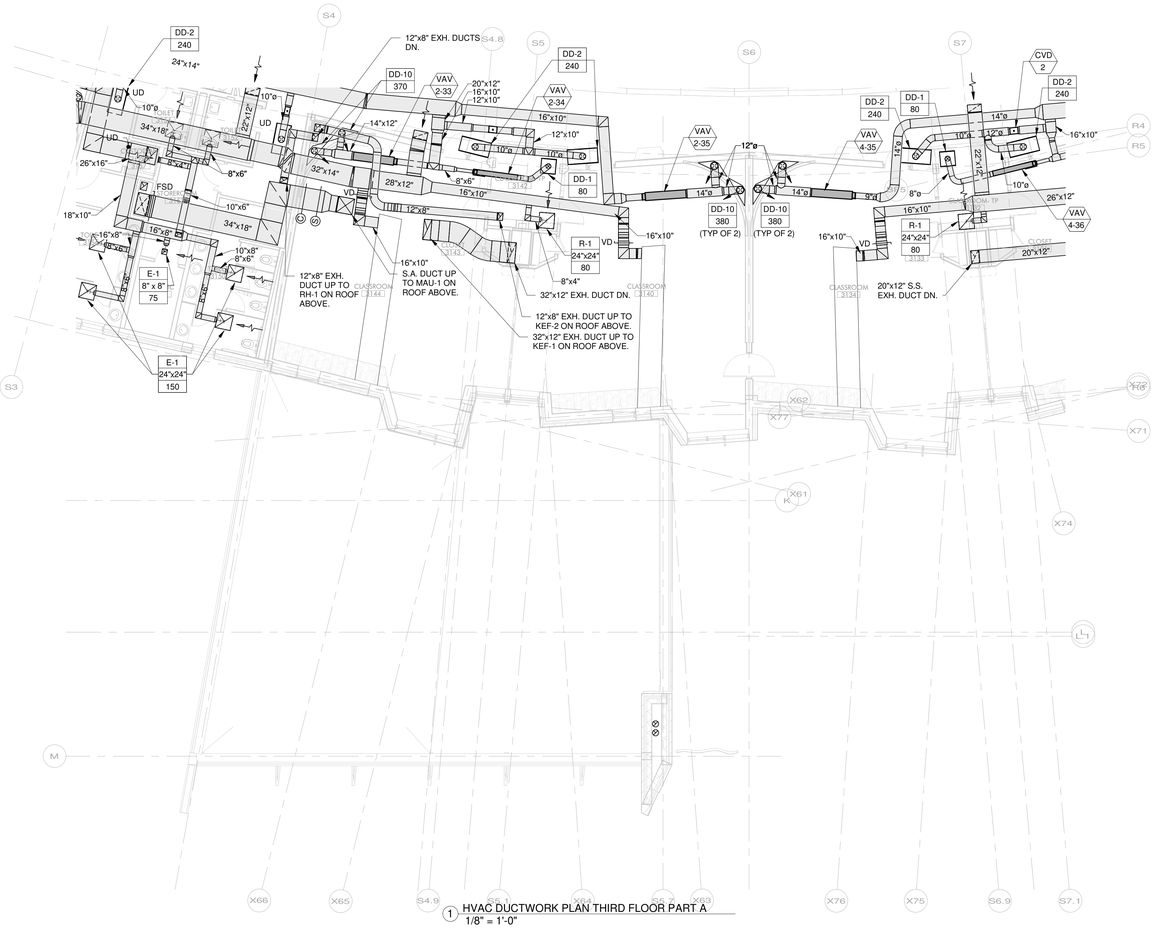
DUCTWORK PLAN FLOOR 2-D - HVAC

PROJECT NO. 1722

DRAWING NO.

M102D





1 HVAC DUCTWORK PLAN THIRD FLOOR PART A
1/8" = 1'-0"

DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR, POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR, ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR. FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR, PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDITORIUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL, CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street - Suite 5, Belmont, MA 02478 - 1308
555 - 888 - 5700 FAX 555 - 888 - 5800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

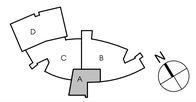
REVISIONS

No.	Date	Description
1	2019-12-13	Addendum # 7
2	2020-02-10	Conformance Set

DRAWING NAME
DUCTWORK PLAN
FLOOR 3-A - HVAC

PROJECT NO. 1722

DRAWING NO.
M103A



DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR. POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR. FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR, PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDTIORUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL, CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

1 HVAC DUCTWORK PLAN THIRD FLOOR PART B
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 5, Belmont, MA 02478
508 - 866 - 5700 FAX 508 - 866 - 5900 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-13	Addendum #7
2	2020-02-10	Conformance Set

DRAWING NAME

DUCTWORK PLAN
FLOOR 3-B - HVAC

PROJECT NO. 1722

DRAWING NO.

M103B

1 HVAC DUCTWORK PLAN THIRD FLOOR PART C
1/8" = 1'-0"

DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR. POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR. FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR, PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDITORIUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL, CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pawtucket Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 5980 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-13	Addendum #7
2	2020-02-10	Conformance Set

DRAWING NAME

DUCTWORK PLAN FLOOR 3-C - HVAC

PROJECT NO. 1722

DRAWING NO.

M103C

DRAWING NOTES:

1.) PROVIDE ALL NECESSARY DUCT TRANSITIONS, OFFSET, FASTENERS, ELBOWS & CLIPS FOR A COMPLETE CONNECTION FROM THE DUCT MAIN TO THE VAV BOX THEN TO THE DISPLACEMENT DIFFUSER. UTILIZE DUCT SEALANT & MECHANICAL FASTENERS FOR AN AIRTIGHT SEAL. PROVIDE SUPPLEMENTAL STRUCTURAL SUPPORTS AS REQUIRED FOR THE INSTALLATION OF VAV BOX & ANY TYPE OF DISPLACEMENT DIFFUSER INCLUDING WALL BRACING IF NECESSARY.

2.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

3.) ALL FIRE/SMOKE DAMPERS SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR, POWER WIRE & FIRE ALARM INTERLOCK BY THE ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO SHUT ASSOCIATED EQUIPMENT DOWN UPON ACTIVATION OF THE DAMPER/SMOKE DETECTOR.

4.) ALL RTU'S & MAU'S SHALL BE PROVIDED W/ SUPPLY & RETURN AIR DUCT MOUNTED SMOKE DETECTORS. THE DUCT MOUNTED SMOKE DETECTORS SHALL BE INSTALLED BY THE HVAC CONTRACTOR. FIRE ALARM INTERLOCK, POWER, WIRING, & FURNISHING OF THE DETECTOR SHALL BE BY THE ELECTRICAL CONTRACTOR. UNIT SHUT DOWN UPON ACTIVATION WILL BE PROVIDED BY THE ATC CONTRACTOR, PROVIDE NECESSARY WIRING, PROGRAMMING, & COMPONENTS TO ACHIEVE THE DESIRED SEQUENCE.

5.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

6.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

7.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

8.) ALL KILN & FUME HOOD DUCTWORK SHALL BE STAINLESS STEEL. PROVIDE ALL REQUIRED TRANSITIONS TO FUME HOOD CONNECTION & TO ROOF-MOUNTED EXHAUST FAN.

9.) ALL DUCTWORK MAINS SHALL BE INSTALLED TIGHT TO STEEL TO ACCOMMODATE OTHER TRADES. COORDINATE ALL DUCTWORK WITH ALL NECESSARY TRADES.

10.) ALL VAV BOXES WILL BE PROVIDED W/ 120V POWER WIRING BY ELECTRICAL CONTRACTOR. POWER WIRING SHALL TERMINATE IN JUNCTION BOX PROVIDED BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR SHALL PROVIDE TRANSFORMER IN SEPERATE JUNCTION BOX & THEN 24 V CONTROL WIRING TO VAV CONTROL PANEL. REFER TO CONTROL DWGS.

11.) VOLUME DAMPERS INDICATED ON DUCTWORK DRAWINGS REPRESENT LOCATIONS WHERE THESE ARE REQUIRED & INTENDED, HOWEVER IT DOES NOT REPRESENT ALL NECESSARY LOCATIONS. REFER TO DUCT/BRANCH DETAILS FOR FURTHER VOLUME DAMPER REQUIREMENTS IN ALL BRANCH/DIFFUSER DUCTS.

12.) ALL EXPOSED DUCTWORK, INCLUDING DUCTWORK LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE RIGID DUCT BOARD INSULATION SIMILAR TO JOHNS MANVILLE 800 SERIES SPIN-GLAS OR EQUAL.

13.) ALL EXPOSED SHEETMETAL DUCTWORK LOCATED WITHIN THE GYM, AUDITORIUM AND STAGE SHALL BE HUNG USING AIR CRAFT CABLE. FABRIS DUCT SHALL BE SUPPORTED PER MANUFACTURER'S REQUIREMENTS.

14.) ALL EXPOSED KITCHEN EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL. ALL KITCHEN EXHAUST DUCTWORK LOCATED ABOVE CEILINGS SHALL BE CONSTRUCTED OF 16 GAUGE BLACK IRON STEEL, CONSTRUCTED IN ACCORDANCE WITH IMC 2015 AND NFPA 96 REQUIREMENTS. REFER TO SPECIFICATIONS FOR GREASE DUCT INSULATION REQUIREMENTS.

1 HVAC DUCTWORK PLAN THIRD FLOOR PART D
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1058
508 - 998 - 5700 FAX 508 - 998 - 5883 E - MAIL: info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-13	Addendum #7
2	2020-02-10	Conformance Set

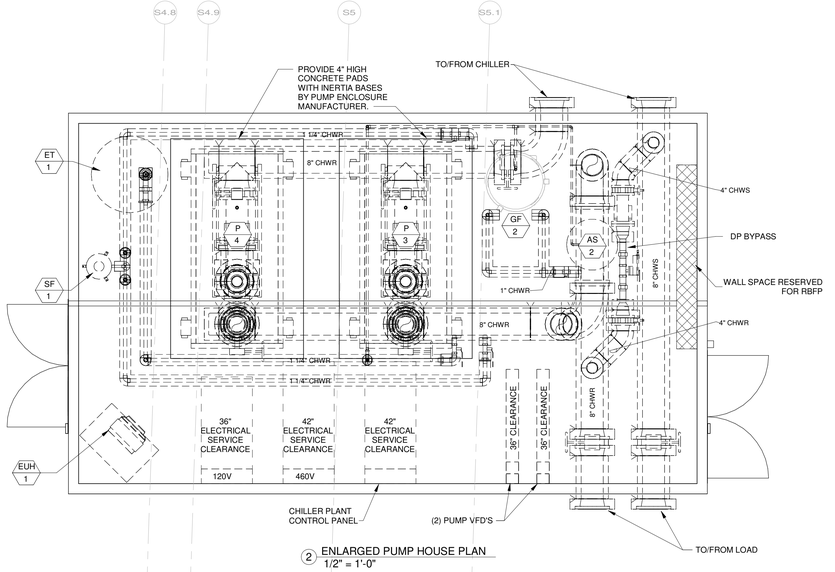
DRAWING NAME

DUCTWORK PLAN
FLOOR 3-D - HVAC

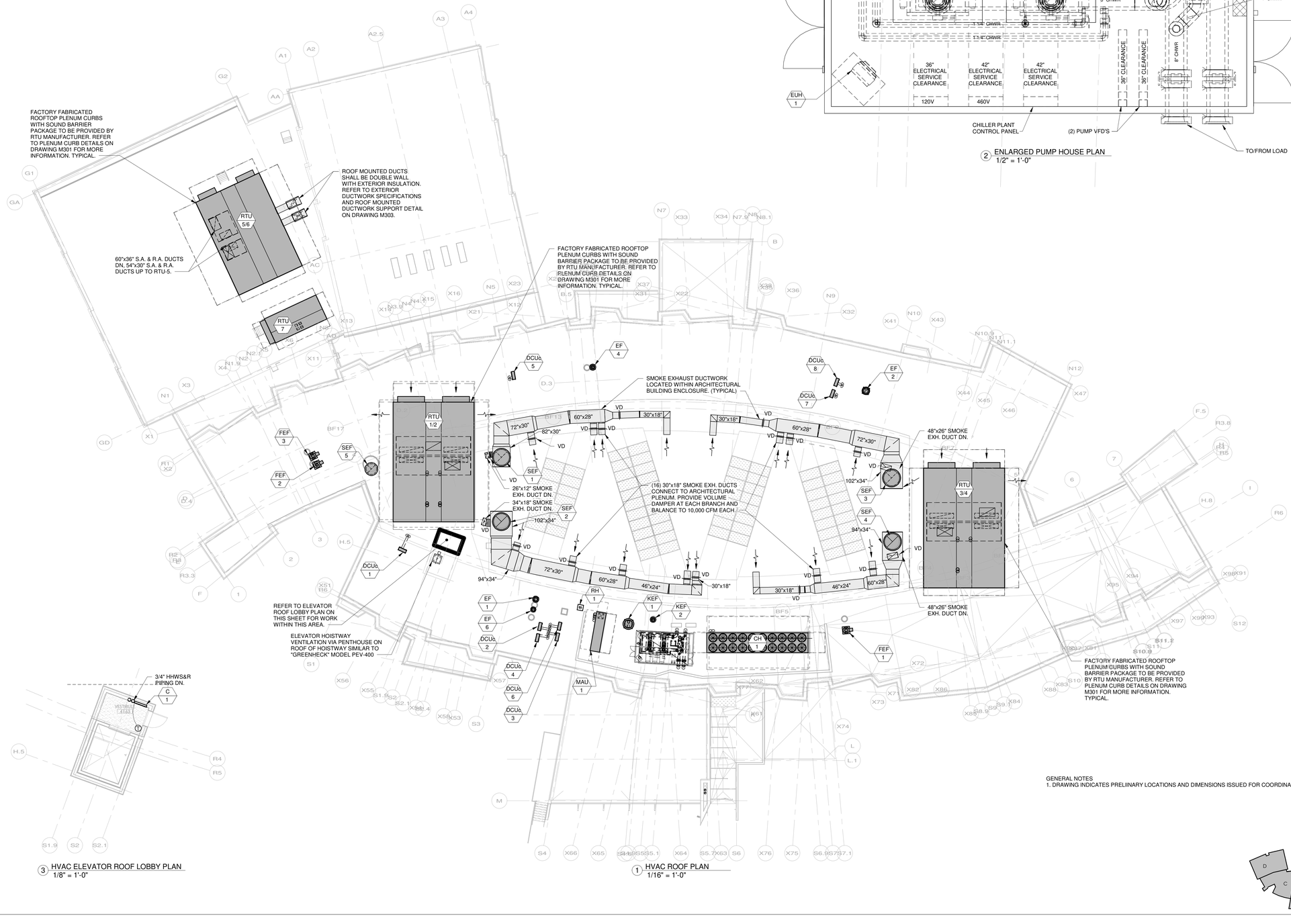
PROJECT NO. 1722

DRAWING NO.

M103D



2 ENLARGED PUMP HOUSE PLAN
1/2" = 1'-0"



3 HVAC ELEVATOR ROOF LOBBY PLAN
1/8" = 1'-0"

1 HVAC ROOF PLAN
1/16" = 1'-0"

GENERAL NOTES
1. DRAWING INDICATES PRELIINARY LOCATIONS AND DIMENSIONS ISSUED FOR COORDINATION PURPOSES ONLY

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1058
508 - 992 - 5700 FAX 508 - 998 - 0983 E - MAIL: info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

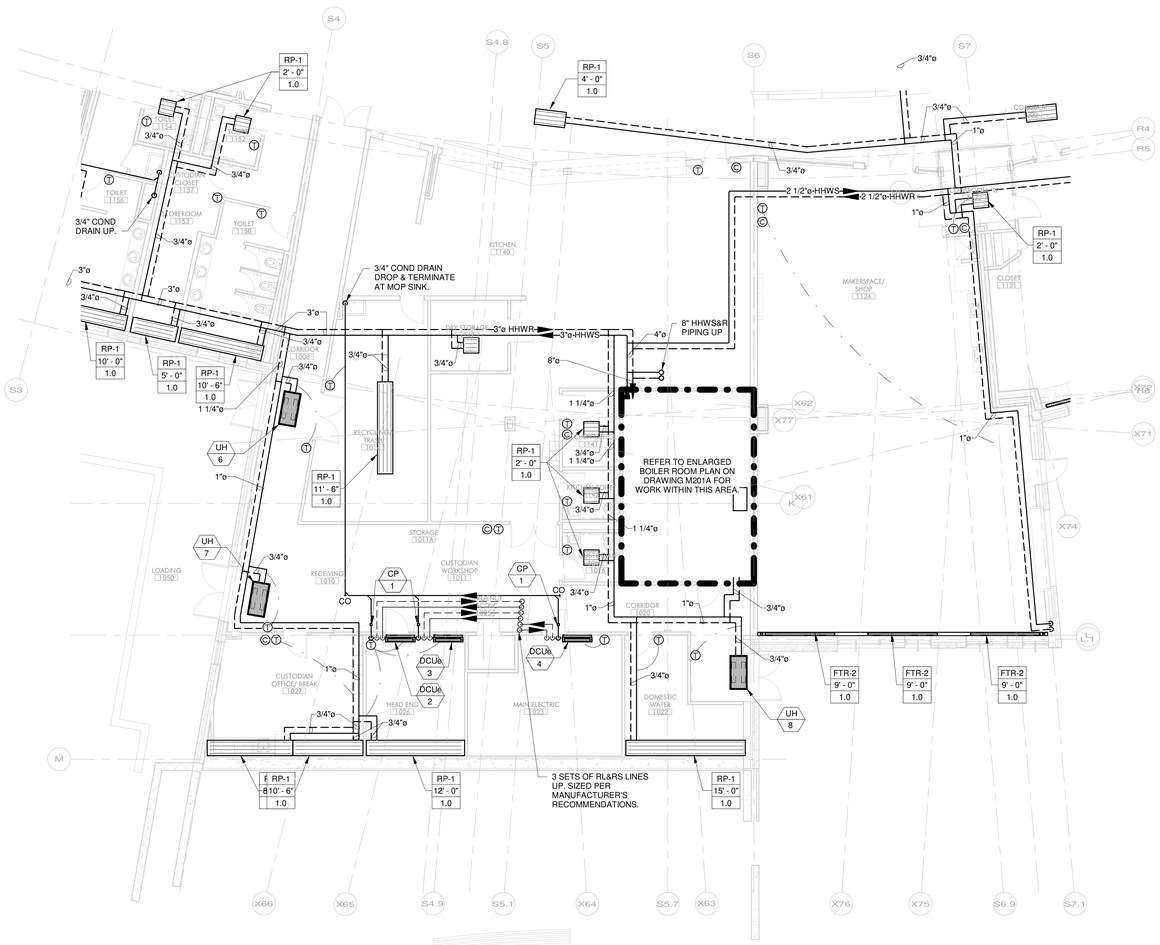
REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-13	Addendum #7
3	2020-02-10	Conformance Set

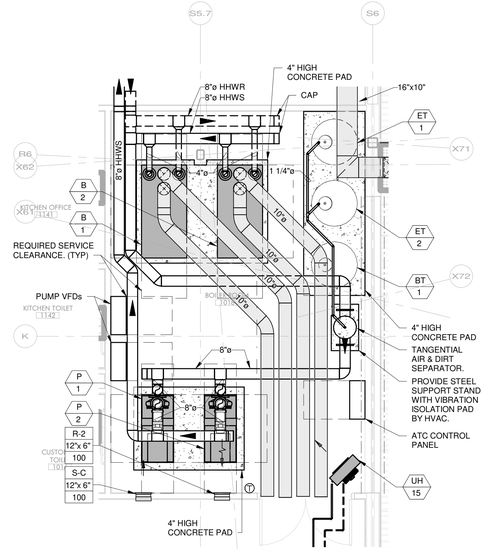
DRAWING NAME
OVERALL ROOF PLAN - HVAC

PROJECT NO. 1722

DRAWING NO.
M104



1 HVAC PIPING PLAN FIRST FLOOR PART A
1/8" = 1'-0"



2 ENLARGED BOILER ROOM PLAN
1/4" = 1'-0"

DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC. AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1058
508 - 998 - 5700 FAX 508 - 998 - 5980 E - MAIL: info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-13	Addendum #7
3	2020-02-10	Conformance Set

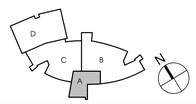
DRAWING NAME

PIPING PLAN
FLOOR 1-A - HVAC

PROJECT NO. 1722

DRAWING NO.

M201A



1 HVAC PIPING PLAN FIRST FLOOR PART B
1/8" = 1'-0"

DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC. AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ.FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 5, Belmont, MA 02478
508 - 866 - 5750 FAX 508 - 866 - 5860 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2019-12-13	Addendum #7
4	2020-02-10	Conformance Set

DRAWING NAME

PIPING PLAN
FLOOR 1-B - HVAC

PROJECT NO. 1722

DRAWING NO.

M201B

1 HVAC PIPING PLAN FIRST FLOOR PART C
1/8" = 1'-0"

DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 310 Lawrence, MA 01840 (978) 686-1900

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2020-02-10	Conformance Set

DRAWING NAME

PIPING PLAN
FLOOR 1-C - HVAC

PROJECT NO. 1722

DRAWING NO.

M201C

DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC. AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.

1 HVAC PIPING PLAN FIRST FLOOR PART D
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1058
508 - 998 - 5700 FAX 508 - 998 - 5900 E - MAIL info@g g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

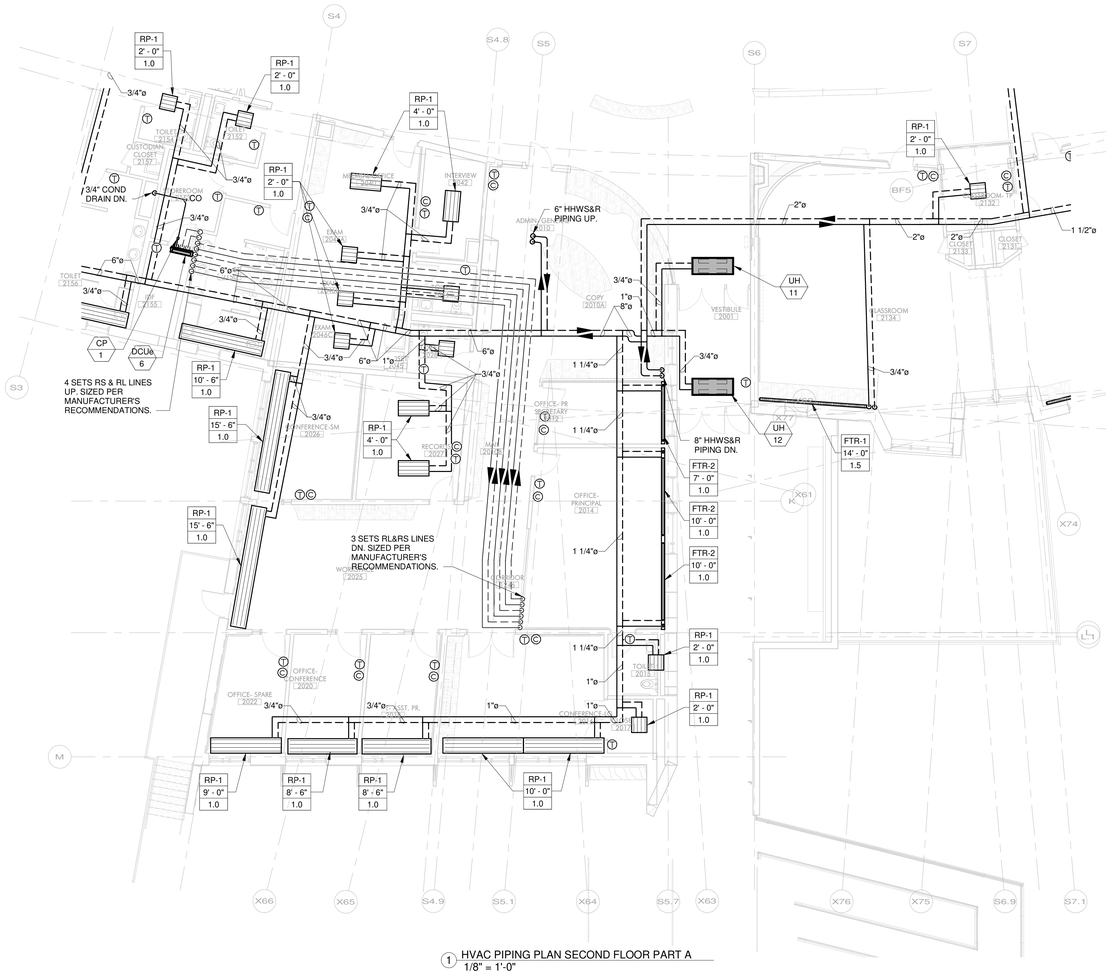
REVISIONS

No.	Date	Description
1	2019-12-04	Addendum # 5
2	2019-12-09	Addendum # 6
3	2020-02-10	Conformance Set

DRAWING NAME
PIPING PLAN
FLOOR 1-D - HVAC

PROJECT NO. 1722

DRAWING NO.
M201D



1 HVAC PIPING PLAN SECOND FLOOR PART A
1/8" = 1'-0"

DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 210, Lawrence, MA 01843
978 - 686 - 1200 FAX 978 - 686 - 1201 E - MAIL info@gg - p - a . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

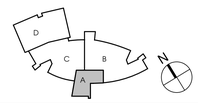
REVISIONS

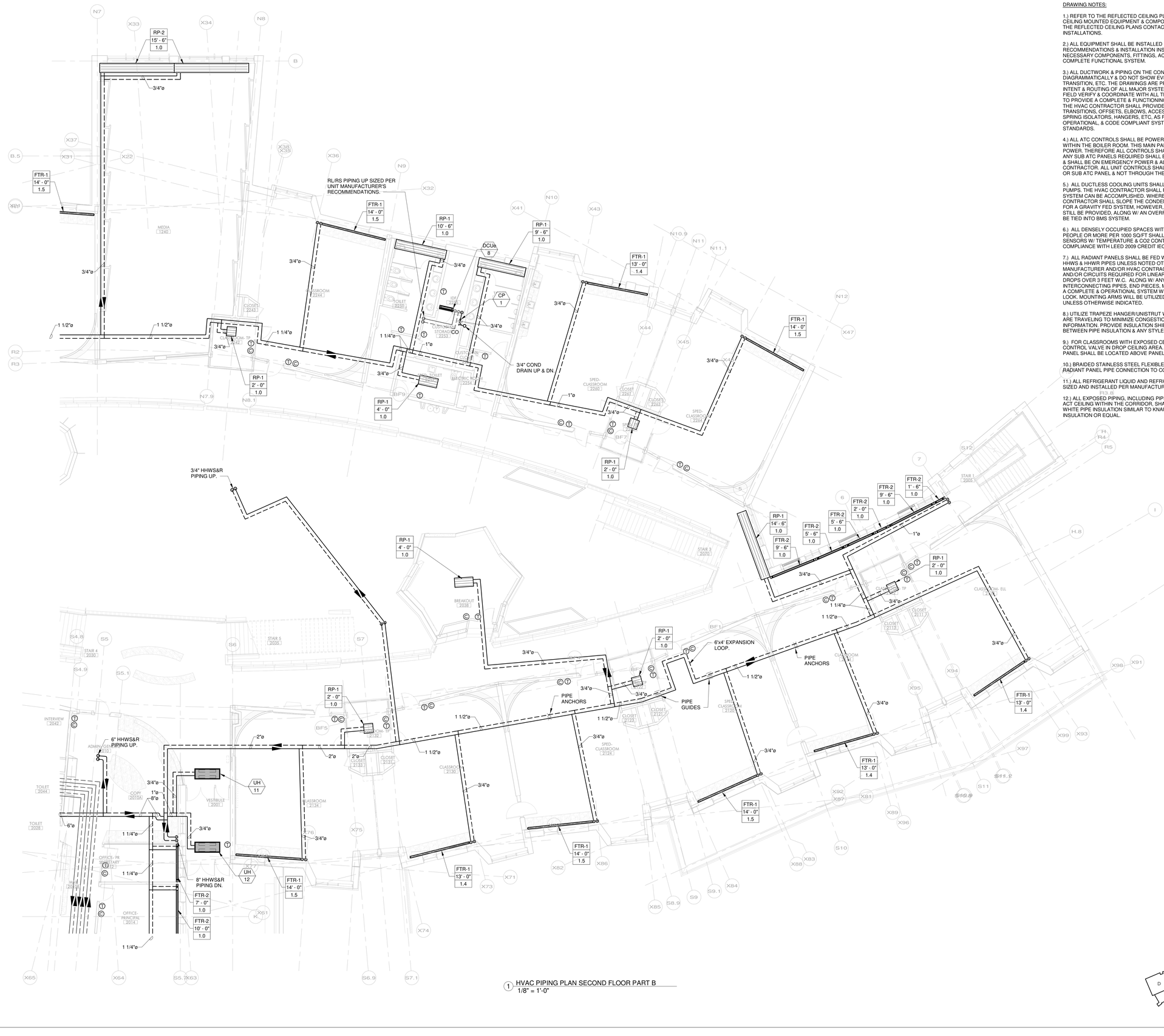
No.	Date	Description
1	2019-12-09	Addendum # 6
2	2020-02-10	Conformance Set

DRAWING NAME
PIPING PLAN
FLOOR 2-A - HVAC

PROJECT NO. 1722

DRAWING NO.
M202A





1 HVAC PIPING PLAN SECOND FLOOR PART B
1/8" = 1'-0"

DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC. AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 3, Belmont, MA 02478
508 - 866 - 5700 FAX 508 - 866 - 5900 E - MAIL info@g g d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

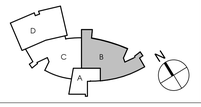
REVISIONS

No.	Date	Description
1	2019-12-09	Addendum #6
2	2020-02-10	Conformance Set

DRAWING NAME
PIPING PLAN
FLOOR 2-B - HVAC

PROJECT NO. 1722

DRAWING NO.
M202B



1 HVAC PIPING PLAN SECOND FLOOR PART C
1/8" = 1'-0"

DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC. AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street - Suite 5, Dartmouth, MA 02747 - 1058
508 - 998 - 5700 FAX 508 - 998 - 5900 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

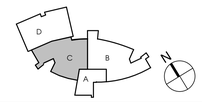
REVISIONS

No.	Date	Description
1	2019-12-09	Addendum #6
2	2020-02-10	Conformance Set

DRAWING NAME
PIPING PLAN
FLOOR 2-C - HVAC

PROJECT NO. 1722

DRAWING NO.
M202C



DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.

1 HVAC PIPING PLAN SECOND FLOOR PART D
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1058
508 - 998 - 5700 FAX 508 - 998 - 5980 E - MAIL: info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-09	Addendum #6
2	2020-02-10	Conformance Set

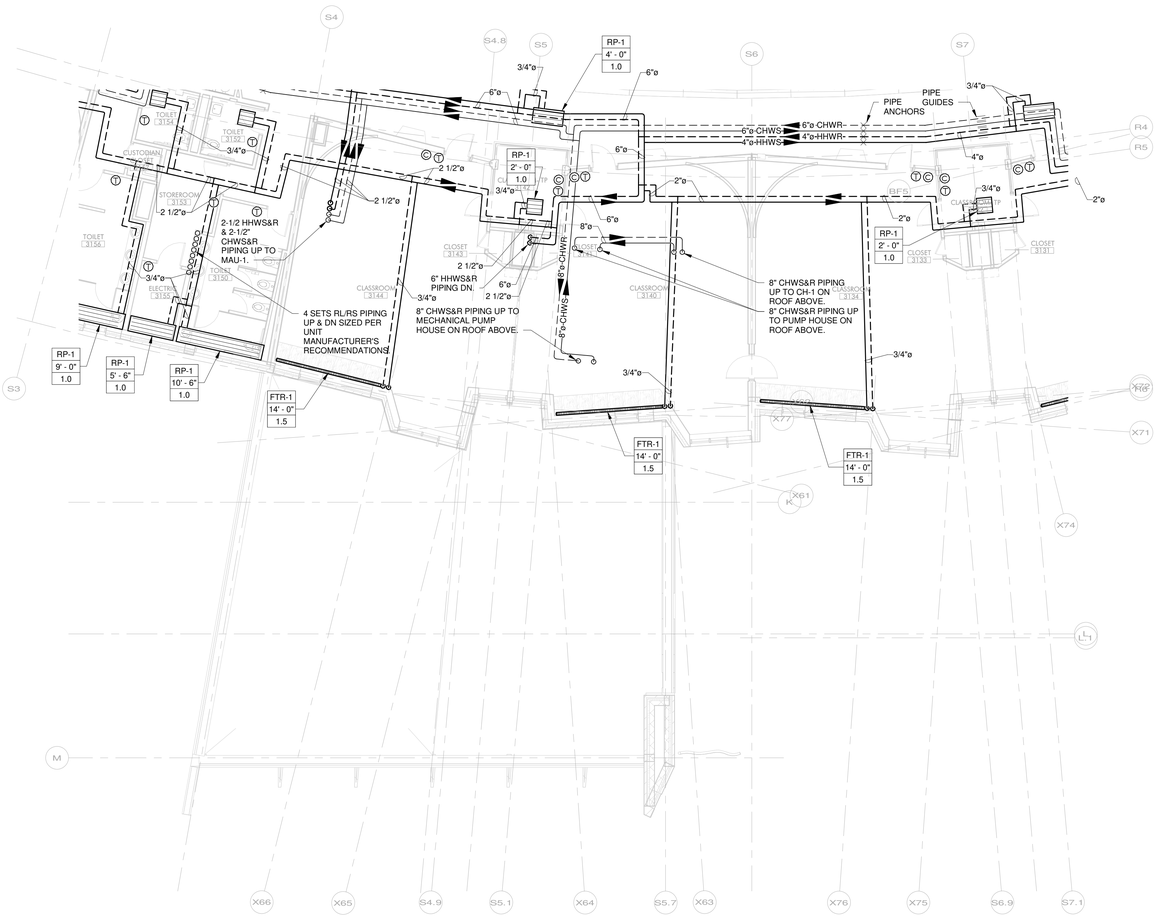
DRAWING NAME

PIPING PLAN
FLOOR 2-D - HVAC

PROJECT NO. 1722

DRAWING NO.

M202D



1 HVAC PIPING PLAN THIRD FLOOR PART A
1/8" = 1'-0"

DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC, AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 5, Belmont, MA 02478
508 - 866 - 5700 FAX 508 - 866 - 5800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

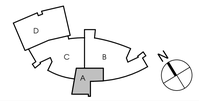
REVISIONS

No.	Date	Description
1	2019-12-09	Addendum #6
2	2020-02-10	Conformance Set

DRAWING NAME
PIPING PLAN
FLOOR 3-A - HVAC

PROJECT NO. 1722

DRAWING NO.
M203A



DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC. AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.

1 HVAC PIPING PLAN THIRD FLOOR PART B
1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street - Suite 5, Belmont, MA 02478 - 1008
508 - 866 - 5700 FAX 508 - 866 - 0860 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-09	Addendum #6
2	2020-02-10	Conformance Set

DRAWING NAME

PIPING PLAN
FLOOR 3-B - HVAC

PROJECT NO. 1722

DRAWING NO.

M203B

1 HVAC PIPING PLAN THIRD FLOOR PART C
1/8" = 1'-0"

DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC. AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ.FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 3, Belmont, MA 02478
781 - 489 - 5750 FAX 781 - 489 - 5960 E - MAIL: info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-09	Addendum #6
2	2020-02-10	Conformance Set

DRAWING NAME

PIPING PLAN
FLOOR 3-C - HVAC

PROJECT NO. 1722

DRAWING NO.

M203C

DRAWING NOTES:

1.) REFER TO THE REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED EQUIPMENT & COMPONENTS. IF IT IS NOT INDICATED ON THE REFLECTED CEILING PLANS CONTACT A/E IN WRITING PRIOR TO INSTALLATIONS.

2.) ALL EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURE'S RECOMMENDATIONS & INSTALLATION INSTRUCTIONS. PROVIDE ALL NECESSARY COMPONENTS, FITTINGS, ACCESSORIES, WIRING, ETC. FOR A COMPLETE FUNCTIONAL SYSTEM.

3.) ALL DUCTWORK & PIPING ON THE CONTRACT DRAWINGS IS SHOWN DIAGRAMMATICALLY & DO NOT SHOW EVERY FITTING, OFFSET, ELBOW, TRANSITION, ETC. THE DRAWINGS ARE PROVIDED TO SHOW THE DESIGN INTENT & ROUTING OF ALL MAJOR SYSTEMS. THE HVAC CONTRACTOR SHALL FIELD VERIFY & COORDINATE WITH ALL TRADES & BUILDING COMPONENTS TO PROVIDE A COMPLETE & FUNCTIONING SYSTEM AS IT RELATES TO HVAC. THE HVAC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY FITTINGS, TRANSITIONS, OFFSETS, ELBOWS, ACCESSORIES, FLEXIBLE CONNECTORS, SPRING ISOLATORS, HANGERS, ETC. AS REQUIRED FOR A COMPLETE, OPERATIONAL, & CODE COMPLIANT SYSTEM(S) UTILIZING INDUSTRY STANDARDS.

4.) ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE ATC PANEL WITHIN THE BOILER ROOM. THIS MAIN PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE ALL CONTROLS SHALL BE ON EMERGENCY POWER. ANY SUB ATC PANELS REQUIRED SHALL BE FED FROM THIS MAIN ATC PANEL & SHALL BE ON EMERGENCY POWER & ALL SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THIS MAIN ATC PANEL OR SUB ATC PANEL & NOT THROUGH THE UNIT'S MAIN POWER SOURCE.

5.) ALL DUCTLESS COOLING UNITS SHALL BE PROVIDED W/ CONDENSATE PUMPS. THE HVAC CONTRACTOR SHALL FIELD DETERMINE IF A GRAVITY FED SYSTEM CAN BE ACCOMPLISHED. WHERE POSSIBLE THE HVAC CONTRACTOR SHALL SLOPE THE CONDENSATE PIPING SYSTEM TO ALLOW FOR A GRAVITY FED SYSTEM, HOWEVER, THE CONDENSATE PUMP SHALL STILL BE PROVIDED, ALONG W/ AN OVERFLOW SAFETY ALARM WHICH SHALL BE TIED INTO BMS SYSTEM.

6.) ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED 2009 CREDIT IEQC1.

7.) ALL RADIANT PANELS SHALL BE FED W/ ONE SET OF INSULATED 3/4" HHWS & HHWR PIPES UNLESS NOTED OTHERWISE. RADIANT PANEL MANUFACTURER AND/OR HVAC CONTRACTOR SHALL PROVIDE ALL HEADERS AND/OR CIRCUITS REQUIRED FOR LINEAR PANELS W/ HIGH PRESSURE DROPS OVER 3 FEET W.C. ALONG W/ ANY TRIM CONNECTORS, INTERCONNECTING PIPES, END PIECES, MOUNTING ARMS & SUPPORTS FOR A COMPLETE & OPERATIONAL SYSTEM WHILE MAINTAINING A SEAMLESS LOOK. MOUNTING ARMS WILL BE UTILIZED FOR ALL RADIANT LIGHT SHELVES UNLESS OTHERWISE INDICATED.

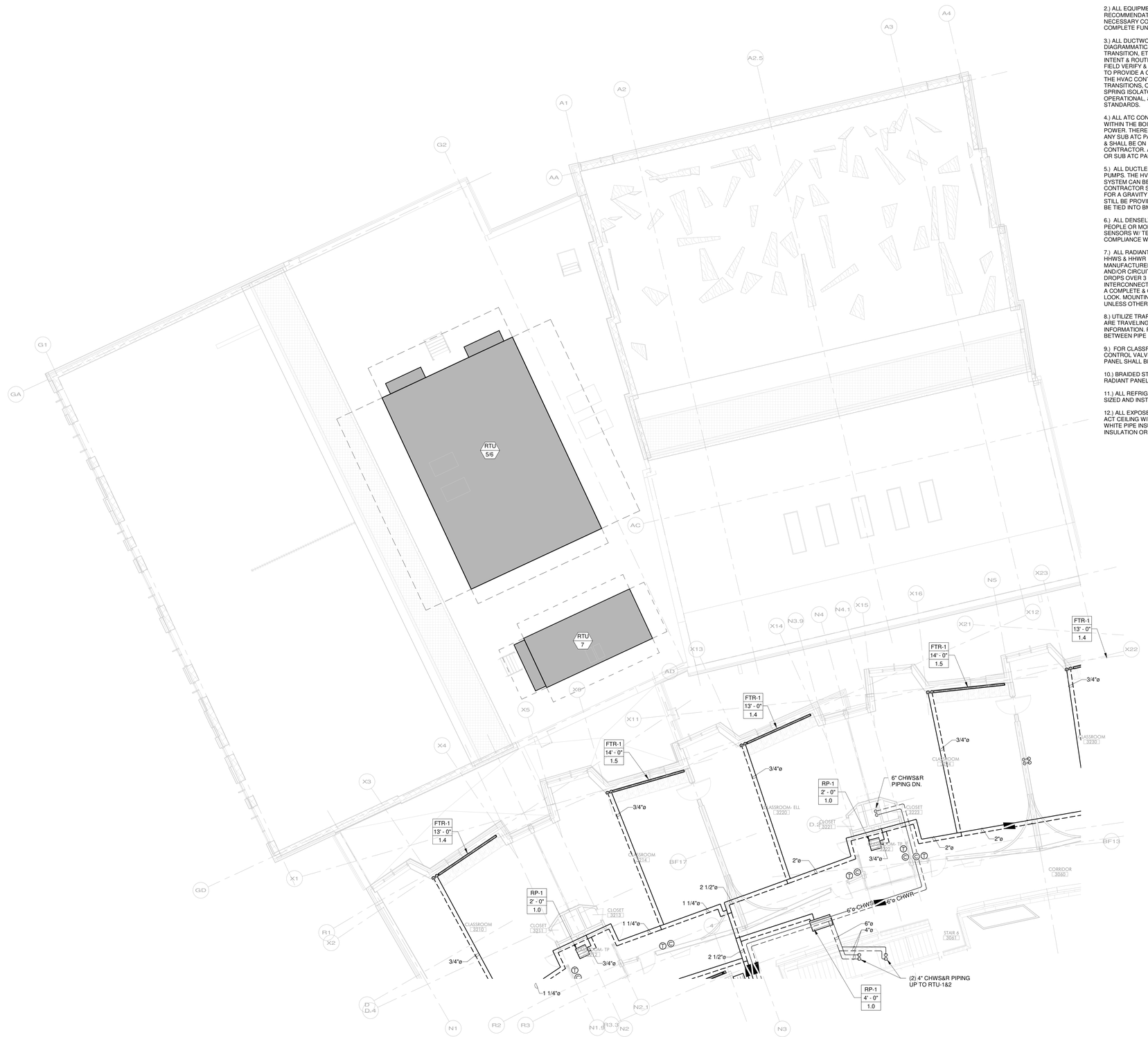
8.) UTILIZE TRAPEZE HANGER/UNISTRUT WHERE MULTIPLE PIPING SYSTEMS ARE TRAVELING TO MINIMIZE CONGESTION. REFER TO DETAIL FOR FURTHER INFORMATION. PROVIDE INSULATION SHIELDS AT EACH POINT OF CONTACT BETWEEN PIPE INSULATION & ANY STYLE HANGER

9.) FOR CLASSROOMS WITH EXPOSED CEILINGS, LOCATE RADIANT PANEL CONTROL VALVE IN DROP CEILING AREA. ISOLATION VALVES FOR RADIANT PANEL SHALL BE LOCATED ABOVE PANEL CONNECTIONS.

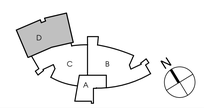
10.) BRAIDED STAINLESS STEEL FLEXIBLE HOSES MAY BE UTILIZED FOR RADIANT PANEL PIPE CONNECTION TO COPPER BRANCH PIPING.

11.) ALL REFRIGERANT LIQUID AND REFRIGERANT SUCTION LINES SHALL BE SIZED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

12.) ALL EXPOSED PIPING, INCLUDING PIPING LOCATED ABOVE THE SLOPED ACT CEILING WITHIN THE CORRIDOR, SHALL BE INSULATED WITH A MATTE WHITE PIPE INSULATION SIMILAR TO KNAUF INSULATION REDI-KLAD PIPE INSULATION OR EQUAL.



1 HVAC PIPING PLAN THIRD FLOOR PART D
1/8" = 1'-0"



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

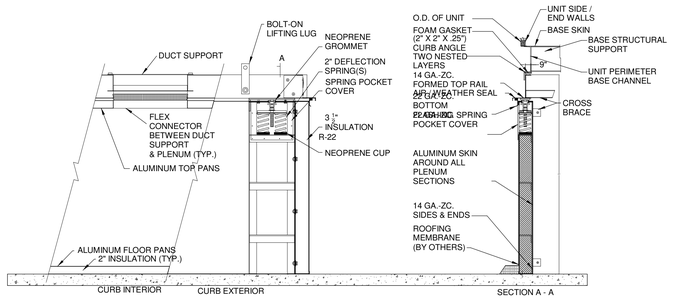
REVISIONS

No.	Date	Description
1	2019-12-09	Addendum # 6
2	2020-02-10	Conformance Set

DRAWING NAME
PIPING PLAN
FLOOR 3-D - HVAC

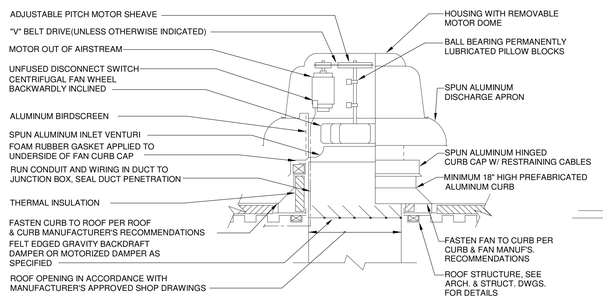
PROJECT NO. 1722

DRAWING NO.
M203D



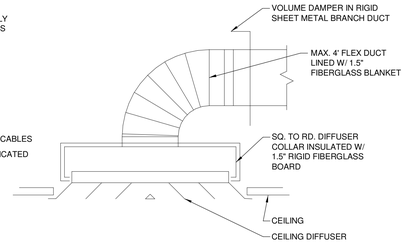
PLENUM CURB DETAIL II

(NOT TO SCALE)



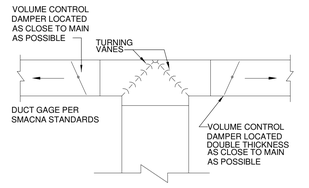
TYPICAL DETAIL-ROOF EXHAUST FAN

(NOT TO SCALE)



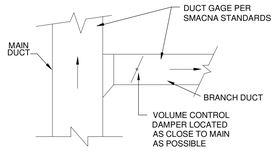
DIFFUSER/REGISTER DETAIL

NOT TO SCALE



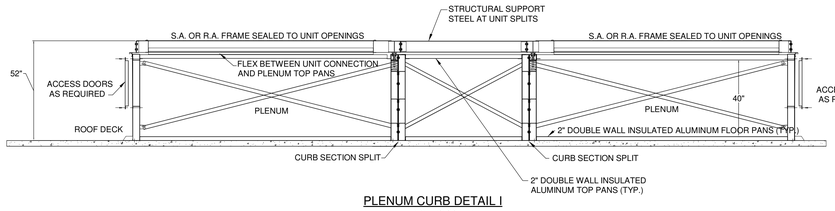
TYPICAL TEE DUCT CONNECTION

(NOT TO SCALE)



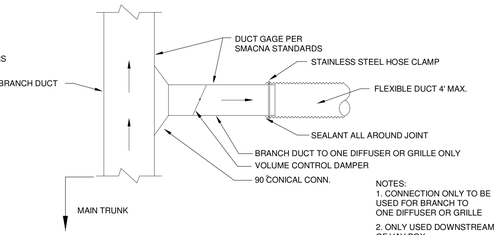
BRANCH DUCT CONNECTION TO MAIN

(NOT TO SCALE)



PLENUM CURB DETAIL I

(NOT TO SCALE)

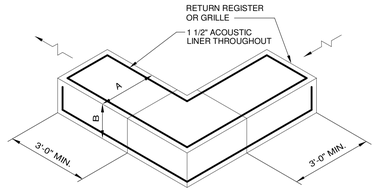


NOTES:
1. CONNECTION ONLY TO BE USED FOR BRANCH TO ONE DIFFUSER OR GRILLE

2. ONLY USED DOWNSTREAM OF VAV BOX

DIFFUSER/GRILLE CONNECTION TO BRANCH

(NOT TO SCALE)

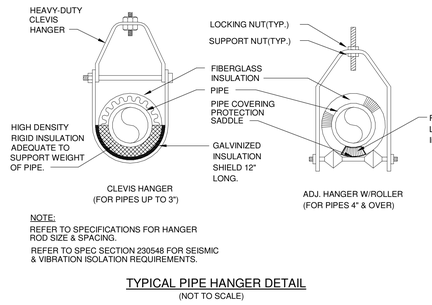


MAXIMUM CFM	DUCT SIZE (")	
	A	B
250	14	6
500	14	10
750	20	10
1000	26	10

" - DUCT SIZES ARE INSIDE CLEAR DIMENSIONS.

TYPICAL RETURN/TRANSFER DETAIL

(NOT TO SCALE)

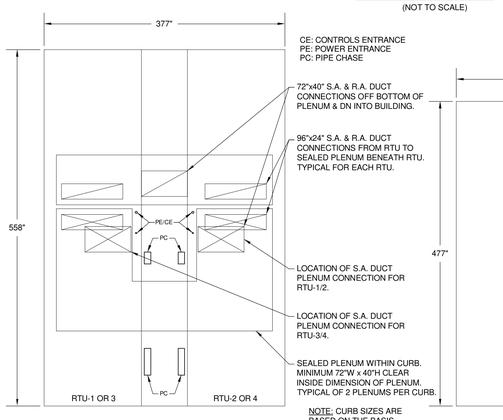


NOTE:
REFER TO SPECIFICATIONS FOR HANGER ROD SIZE & SPACING.

REFER TO SPEC SECTION 230548 FOR SEISMIC & VIBRATION ISOLATION REQUIREMENTS.

TYPICAL PIPE HANGER DETAIL

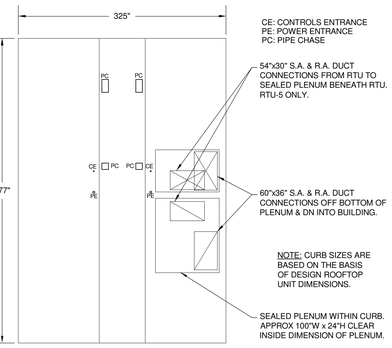
(NOT TO SCALE)



NOTE: CURB SIZES ARE BASED ON THE BASIS OF DESIGN ROOFTOP UNIT DIMENSIONS.

RTU-1/2 & 3/4 PLENUM CURB SIZING DETAIL

(NOT TO SCALE)



NOTE: CURB SIZES ARE BASED ON THE BASIS OF DESIGN ROOFTOP UNIT DIMENSIONS.

RTU-5/6 PLENUM CURB SIZING DETAIL

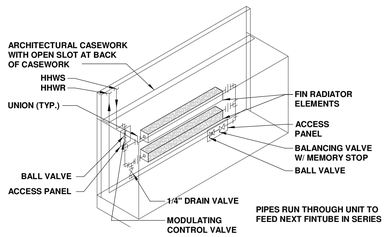
(NOT TO SCALE)

FLOOR RISER VOLUME CONTROL DAMPER DETAIL

(NOT TO SCALE)

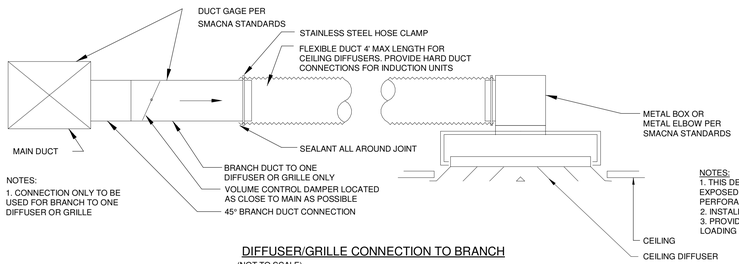
DUCT PENETRATION THROUGH ROOF DETAIL

(NOT TO SCALE)



TYPICAL HOT WATER BARE ELEMENT FINTUBE RADIATOR PIPING DETAIL (2 TIER)

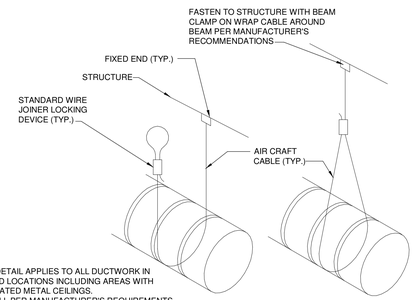
(NOT TO SCALE)



NOTES:
1. CONNECTION ONLY TO BE USED FOR BRANCH TO ONE DIFFUSER OR GRILLE

DIFFUSER/GRILLE CONNECTION TO BRANCH

(NOT TO SCALE)



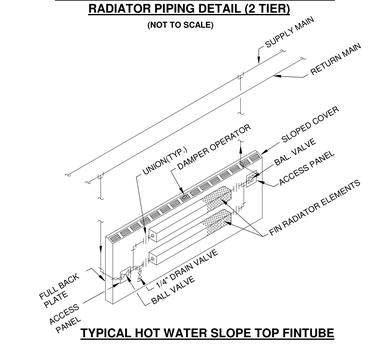
NOTES:
1. THIS DETAIL APPLIES TO ALL DUCTWORK IN EXPOSED LOCATIONS INCLUDING AREAS WITH PERFORATED METAL CEILINGS.
2. INSTALL PER MANUFACTURER'S REQUIREMENTS.
3. PROVIDE HANGER SPACING PER MANUFACTURER'S WEIGHT LOADING ALLOWABLE CAPACITY.

TYPICAL EXPOSED DUCTWORK HANGING DETAIL

(NOT TO SCALE)

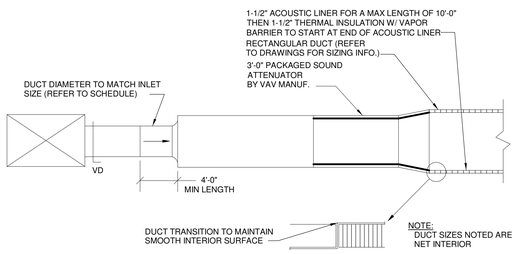
PIPE PENETRATION THROUGH ROOF DETAIL

(NOT TO SCALE)



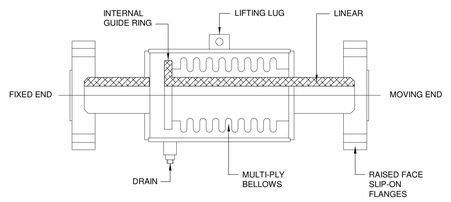
TYPICAL HOT WATER SLOPE TOP FINTUBE RADIATOR PIPING DETAIL (2 TIER)

(NOT TO SCALE)



TYPICAL VARIABLE AIR VOLUME DUCT DETAIL

(NOT TO SCALE)



EXTERNALLY-PRESSURIZED

INLINE EXPANSION JOINT DETAIL

(NOT TO SCALE)

REFRIGERANT PIPE ROOF PENETRATION HOUSING

(NOT TO SCALE)

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1058
508 - 992 - 5700 FAX 508 - 998 - 0960 E - MAIL: info@g g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-09	Addendum #6
2	2019-12-13	Addendum #7
3	2020-02-10	Conformance Set

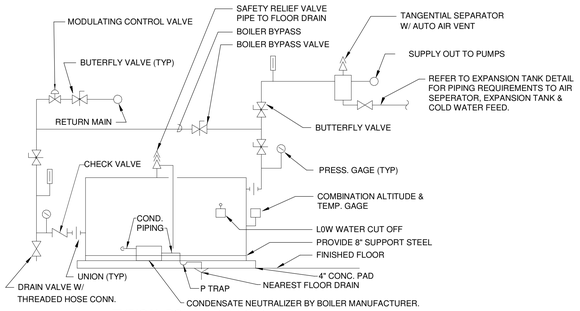
DRAWING NAME

DETAILS I - HVAC

PROJECT NO. 1722

DRAWING NO.

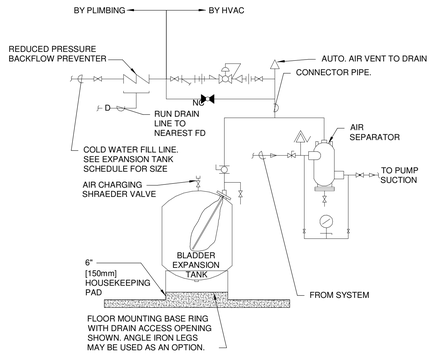
M301



TYPICAL BOILER PIPING DETAIL

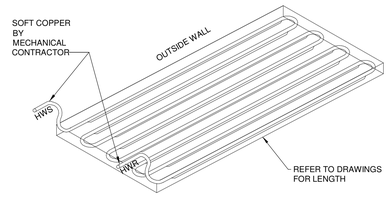
(NOT TO SCALE)

NOTE:
BOILER CONDENSATE PIPING
DIVISION 23 00 00



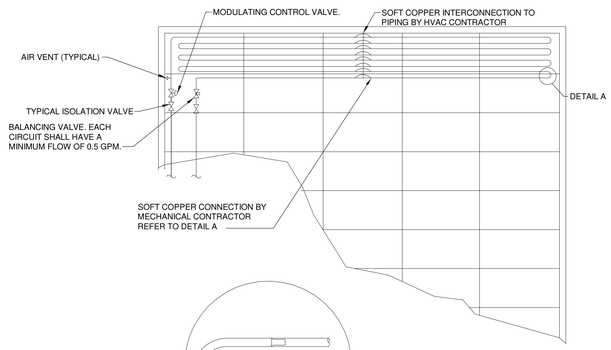
EXPANSION TANK DETAIL

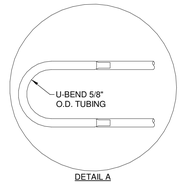
(NOT TO SCALE)



RADIANT HEATING PANEL SUPPLY, RETURN CONNECTION DETAIL

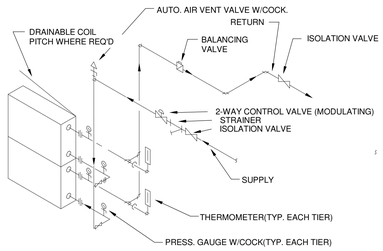
(NOT TO SCALE)





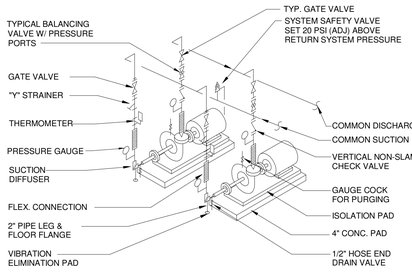
SINGLE CIRCUIT RADIANT HEATING PANEL PIPING DETAIL

(NOT TO SCALE)



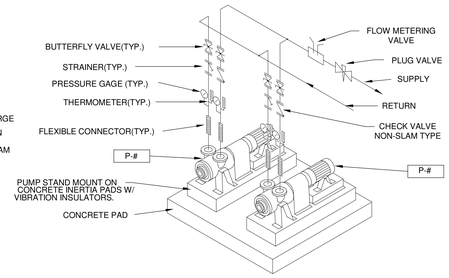
MULTI-TIER HOT WATER HEATING COIL PIPING W/2-WAY MODULATING CONTROL VALVE

(NOT TO SCALE)



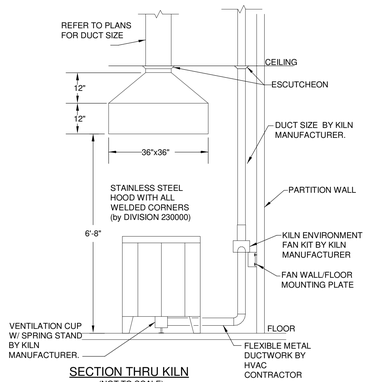
TYPICAL PIPING DETAIL FOR ALL WATER PUMPS

(NOT TO SCALE)



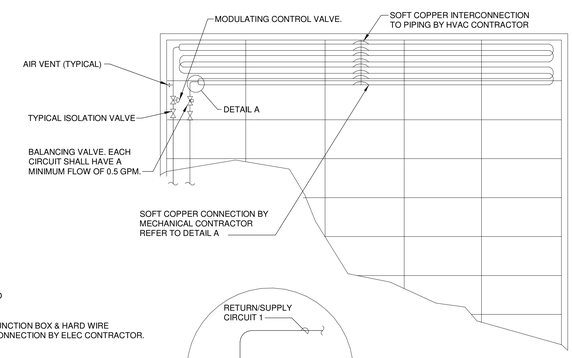
BASE MOUNTED PUMP PIPING DETAIL

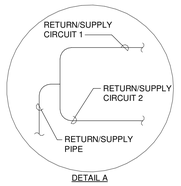
(NOT TO SCALE)



SECTION THRU KILN

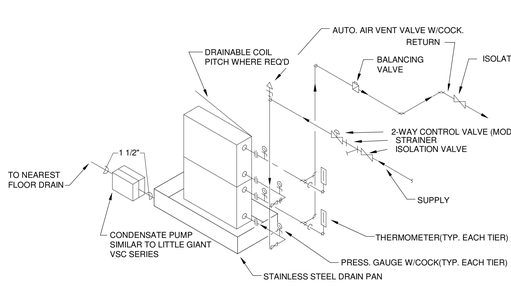
(NOT TO SCALE)





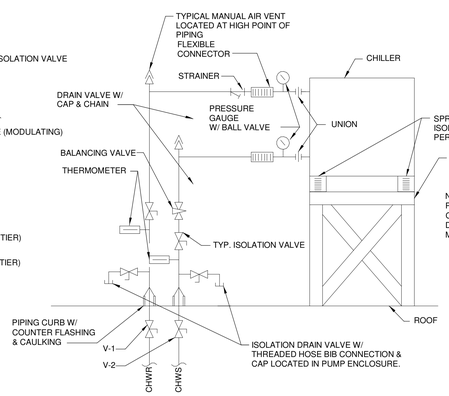
DOUBLE CIRCUIT RADIANT HEATING PANEL PIPING DETAIL

(NOT TO SCALE)



MULTI-TIER CHILLED WATER COIL PIPING W/2-WAY MODULATING CONTROL VALVE

(NOT TO SCALE)

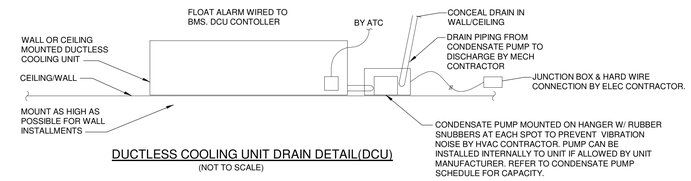


NOTES:
PRIOR TO WINTER MONTHS, THE CHILLER SHALL BE SHUT DOWN & DRAINED BY THE FACILITIES MAINTENANCE STAFF.

1. SHUT DOWN CHILLER THROUGH BMS & TURN OFF DISCONNECT SWITCH
2. CLOSE ISOLATION VALVES LABELED V-1 & V-2.
3. OPEN MANUAL AIR VENTS ON OUTDOOR PIPING.
4. UN-CAP THREADED HOSE BIB'S ON ISOLATION DRAIN VALVES & CONNECT HOSE. OTHER END OF HOSE CAN DRAIN INTO NEARBY SHOWER OR SINK DRAIN.
5. OPEN ISOLATION DRAIN VALVE. ONCE PIPING IS COMPLETELY DRAINED, CLOSE THE ISOLATION DRAIN VALVES & THE MANUAL AIR VENTS ON THE OUTDOOR PIPING.
6. PRIOR TO RESTARTING CHILLER, OPEN ISOLATION VALVES LABELED V-1 & V-2, TURN ON DISCONNECT SWITCH AND ENABLE CHILLER ON BMS SYSTEM

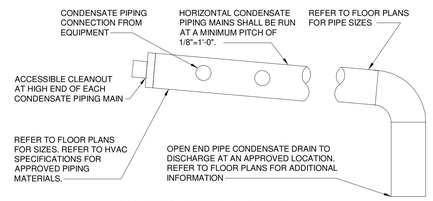
CHILLER PIPING DIAGRAM

(NOT TO SCALE)



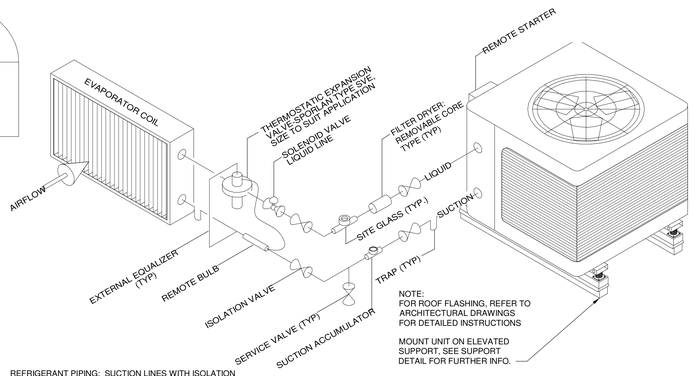
DUCTLESS COOLING UNIT DRAIN DETAIL(DCU)

(NOT TO SCALE)



CONDENSATE PIPING DETAIL

NO SCALE

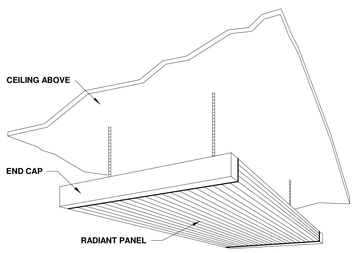


REFRIGERANT PIPING: SUCTION LINES WITH ISOLATION VALVE, SUCTION ACCUMULATOR AND CHARGING CONNECTION. LIQUID LINE WITH SITE GLASS HAVING DOUBLE PORTS WITH CAPS, FILTER DRYER, ISOLATION VALVES AND CHARGING CONNECTION. INSULATE PER SPECIFICATIONS.
COVER ALL REFRIGERANT PIPING WITH ULTRA VIOLET PROTECTED PVC COVERING (COLOR= GRAY)

DCU CONDENSOR UNIT & REFRIGERANT PIPING DIAGRAM

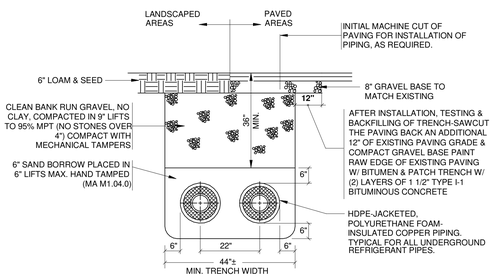
(NOT TO SCALE)

PIPING INDICATED IS FOR SINGLE CIRCUIT; CONTRACTOR SHALL PROVIDE ALL NECESSARY PIPING, FITTINGS, & VALVES FOR UNITS WITH MULTIPLE CIRCUITS AND HOT GAS BYPASS CIRCUIT. INSTALL ALL COMPONENTS IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS AND GUIDELINE REQUIREMENTS. COORDINATE W/ MANUFACTURER PRIOR TO INSTALLATION TO DETERMINE PIPE SIZE, QUANTITY OF CIRCUITS & PIPING TO ENSURE A PROPER & FUNCTIONING SYSTEM IS PROVIDED.



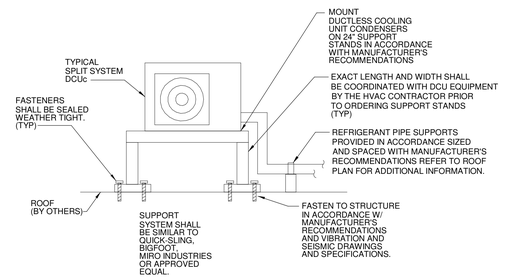
HANGING RADIANT PANEL IN EXPOSED AREA DETAIL

(NOT TO SCALE)



TRENCH SECTION FOR UNDERGROUND PIPING

(NOT TO SCALE)



OUTDOOR EQUIPMENT SUPPORT SYSTEM

(NOT TO SCALE)

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA
508 - 990 - 5700 FAX 508 - 998 - 0960 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2020-02-10	Conformance Set

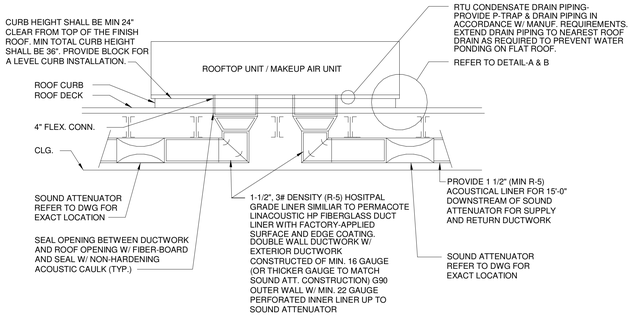
DRAWING NAME

DETAILS II - HVAC

PROJECT NO. 1722

DRAWING NO.

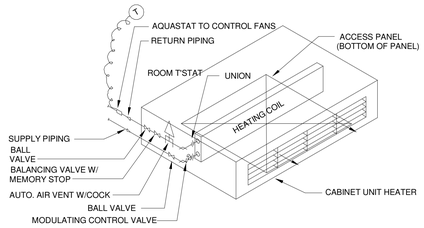
M302



NOTE: THERMAL DUCT INSULATION TO START AT TERMINATION OF ACOUSTIC INSUL.

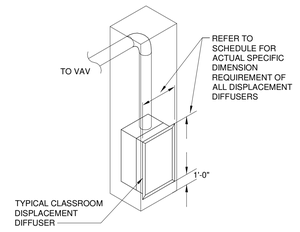
ROOFTOP UNIT / MAKEUP AIR UNIT DETAIL

(NOT TO SCALE)



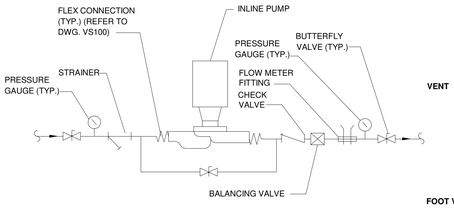
TYPICAL CABINET UNIT HEATER CEILING TYPE-PIPING DETAIL-HOT WATER

(NOT TO SCALE)



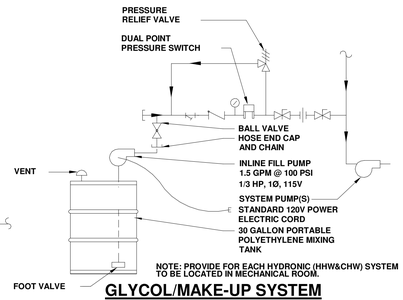
TYPICAL FLOOR MOUNTED DISPLACEMENT DIFFUSER DETAIL - TOP CONNECTION

(NOT TO SCALE)



INLINE PUMP PIPING DETAIL

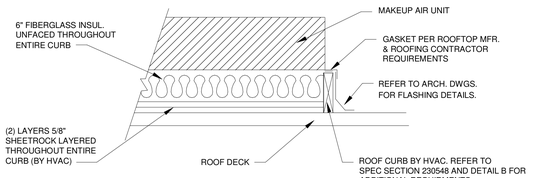
(NOT TO SCALE)



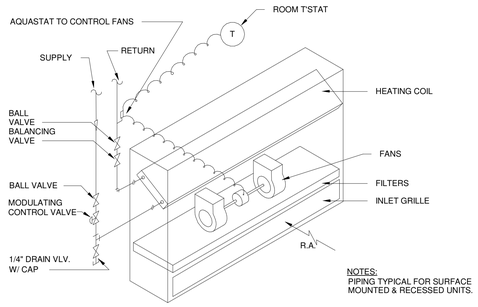
NOTE: PROVIDE FOR EACH HYDRONIC (HHW&CHW) SYSTEM TO BE LOCATED IN MECHANICAL ROOM.

GLYCOL/MAKE-UP SYSTEM

(NOT TO SCALE)



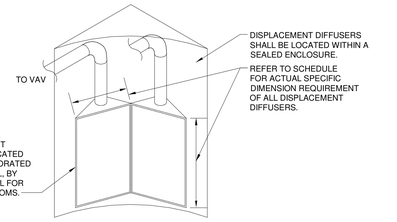
DETAIL-A



NOTES:
PIPING TYPICAL FOR SURFACE MOUNTED & RECESSED UNITS.

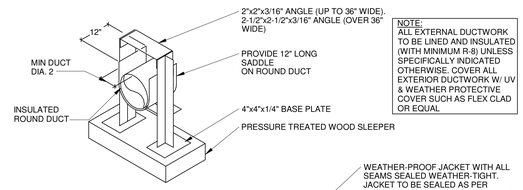
TYPICAL CABINET UNIT HEATER PIPING DETAIL

(NOT TO SCALE)

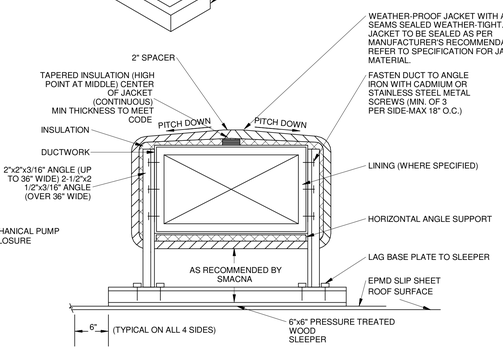


TYPICAL CLASSROOM DISPLACEMENT DIFFUSER DETAIL AT CURVED WALL

(NOT TO SCALE)

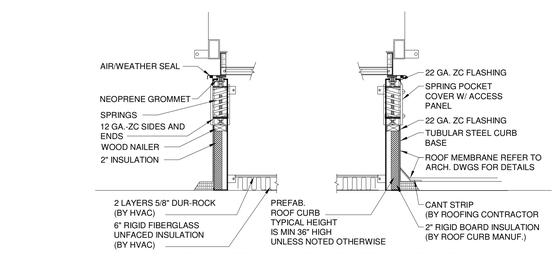


NOTE:
ALL EXTERNAL DUCTWORK TO BE LINED AND INSULATED (WITH MINIMUM R-8) UNLESS SPECIFICALLY INDICATED OTHERWISE. COVER ALL EXTERIOR DUCTWORK W/ UV & WEATHER PROTECTIVE COVER SUCH AS FLEX CLAD OR EQUAL

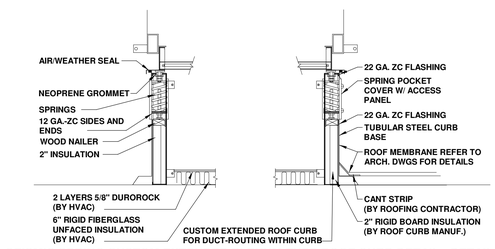


ROOF MOUNTED DUCTWORK SUPPORT

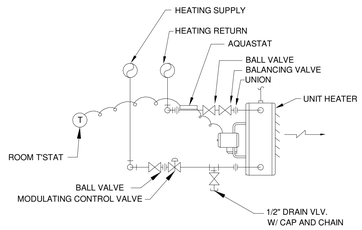
(NOT TO SCALE)



SEISMIC SPRING ROOF CURB DETAIL - DETAIL B



SEISMIC SPRING CUSTOM EXTENDED PLENUM-TYPE ROOF CURB DETAIL - DETAIL B



TYPICAL HORIZONTAL UNIT HEATER PIPING DETAIL-HEATING-HOT WATER

(NOT TO SCALE)

NOTES:
1. FLOOR DRAIN BY ENCLOSURE MANUFACTURER. DRAIN PIPING BY DIVISION 220000.

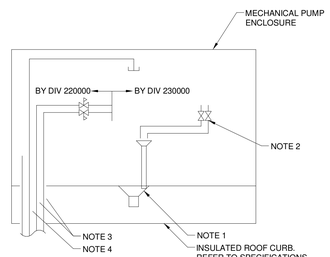
2. 2" DRAIN DOWN VALVES WITH VALVED AND CAPPED CONNECTION ROUTED HUB DRAIN. HUB DRAIN PROVIDED BY DIVISION 220000.

3. 1-1/4" CITY MAKE-UP WATER CONNECTION WITH RFBP BY DIVISION 220000. MAKE-UP WATER PIPING DOWNSTREAM OF RFBP BY DIVISION 230000. PIPING PENETRATION HOLE BY ENCLOSURE MANUFACTURER.

4. FIRE PROTECTION PIPING (1") PENETRATION HOLE BY ENCLOSURE MANUFACTURER.

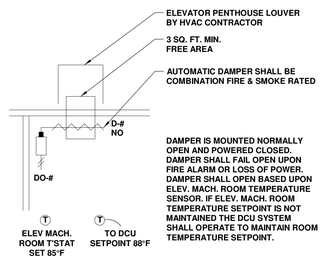
5. ENCLOSURE MANUFACTURER SHALL PROVIDE PENETRATION HOLES REQUIRED FOR ELECTRICAL POWER WIRING AND LIGHTING.

6. ALL PIPING AND WIRING CONDUIT PENETRATIONS SHALL BE FULLY WEATHER SEALED BY HVAC.



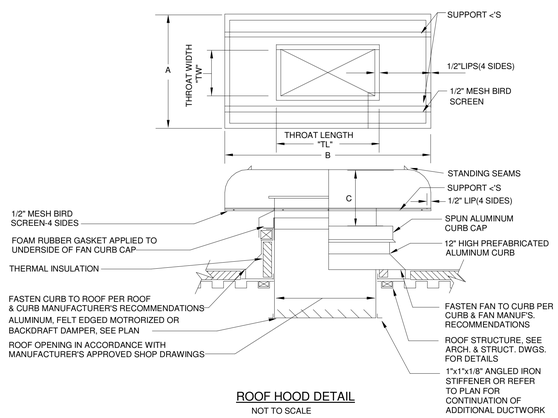
PUMP ENCLOSURE DETAIL

NOT TO SCALE



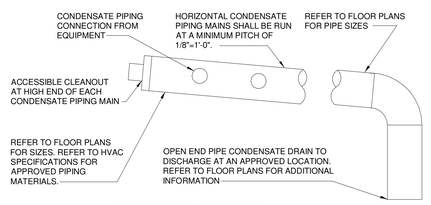
ELEVATOR HOISTWAY

(NOT TO SCALE)



ROOF HOOD DETAIL

NOT TO SCALE



CONDENSATE PIPING DETAIL

NO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street - Suite G, Dartmouth, MA 02747 - 1308
508 - 998 - 5700 FAX 508 - 998 - 5900 E - MAIL: info@g - g - d - com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

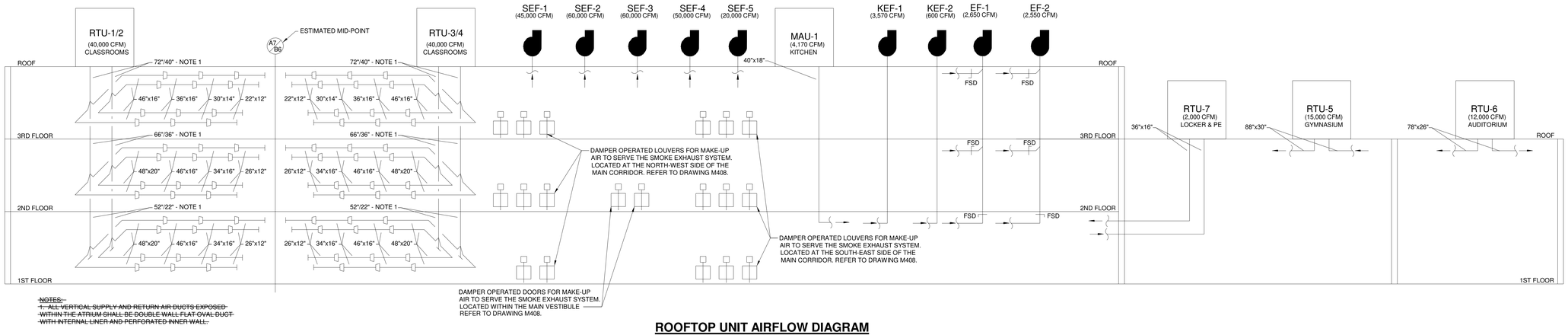
REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2020-02-10	Conformance Set

DRAWING NAME
DETAILS III - HVAC

PROJECT NO. 1722

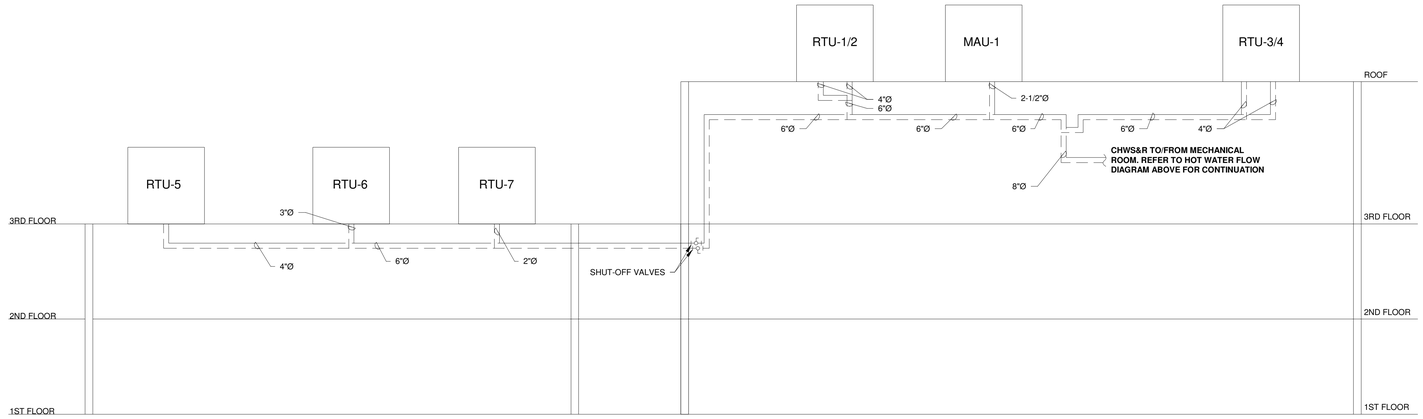
DRAWING NO.
M303



~~NOTES:~~
~~1. ALL VERTICAL SUPPLY AND RETURN AIR DUCTS EXPOSED WITHIN THE ATRIUM SHALL BE DOUBLE WALL FLAT OVAL DUCT WITH INTERNAL LINER AND PERFORATED INNER WALL.~~

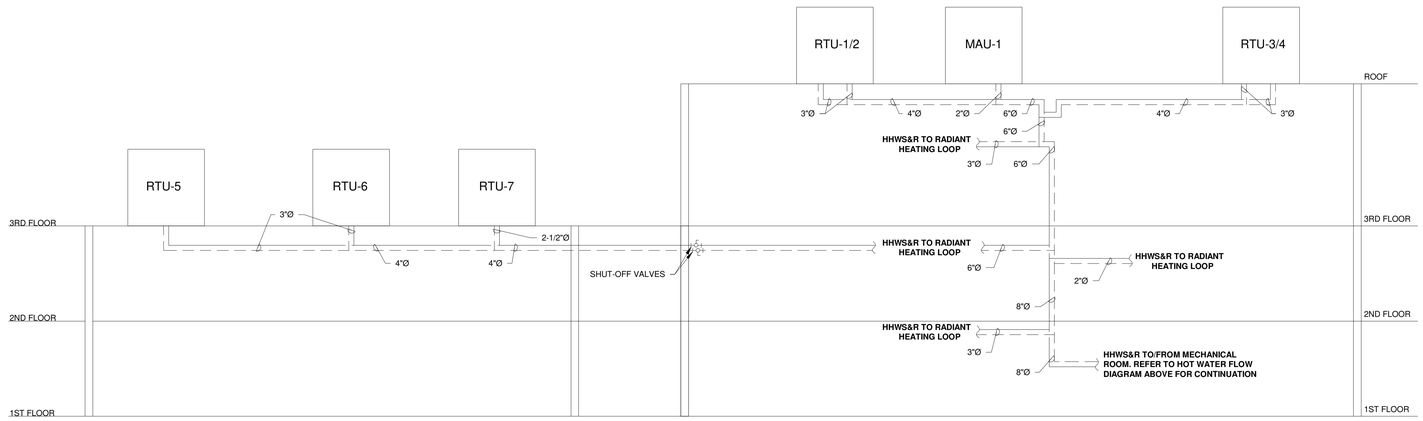
ROOFTOP UNIT AIRFLOW DIAGRAM

(NOT TO SCALE)



ROOFTOP UNIT CHILLED WATER FLOW DIAGRAM

(NOT TO SCALE)



ROOFTOP UNIT HOT WATER FLOW DIAGRAM

(NOT TO SCALE)

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1058
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@ g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

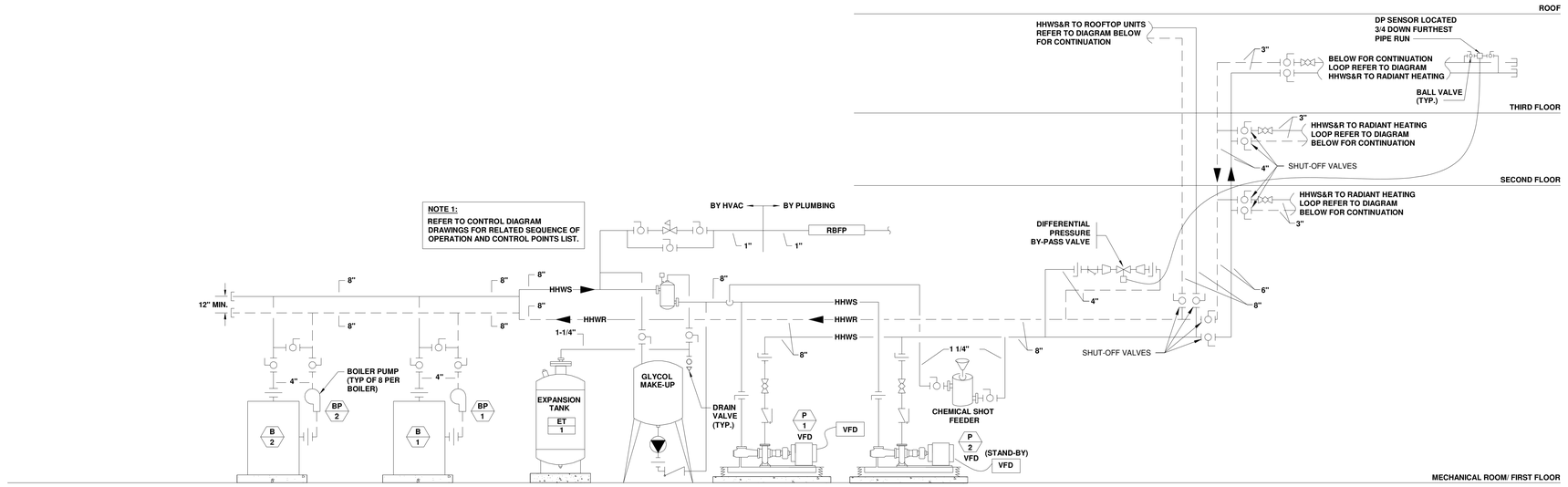
REVISIONS

No.	Date	Description
1	2019-12-13	Addendum #7
2	2020-02-10	Conformance Set

DRAWING NAME
RTU HYDRONIC & AIRFLOW DIAGRAMS - HVAC

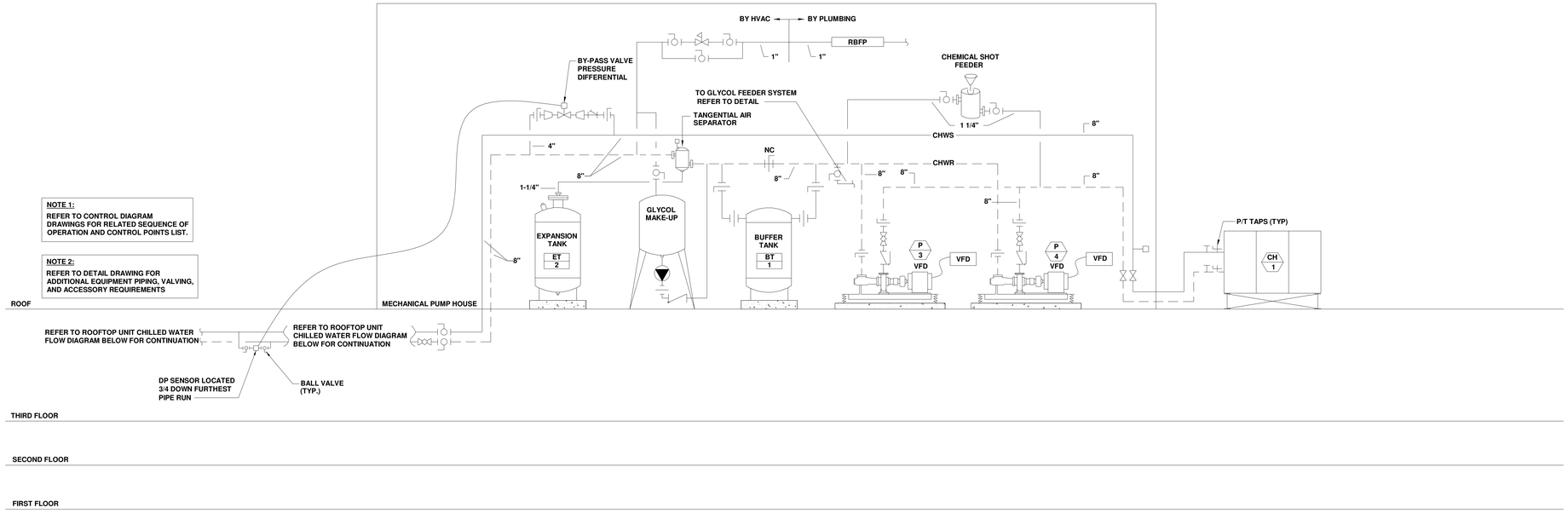
PROJECT NO. 1722

DRAWING NO.
M304



HOT WATER FLOW DIAGRAM

(NOT TO SCALE)



CHILLED WATER FLOW DIAGRAM

(NOT TO SCALE)

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1008
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@gg-d.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

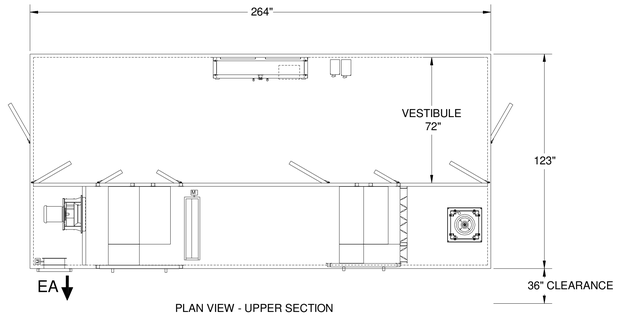
REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-13	Addendum #7
3	2020-02-10	Conformance Set

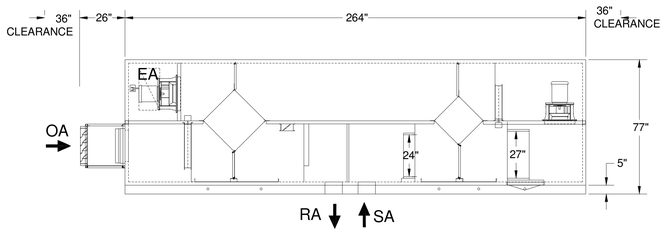
DRAWING NAME
HHW & CHW FLOW DIAGRAM - HVAC

PROJECT NO. 1722

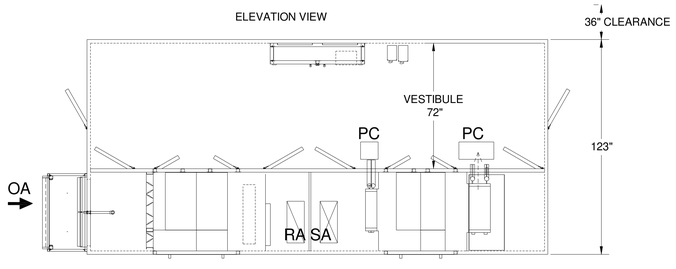
DRAWING NO.
M305



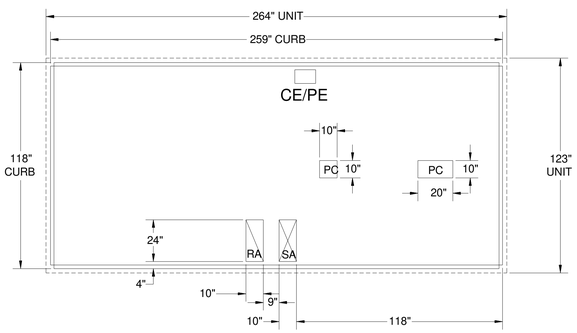
PLAN VIEW - UPPER SECTION



ELEVATION VIEW

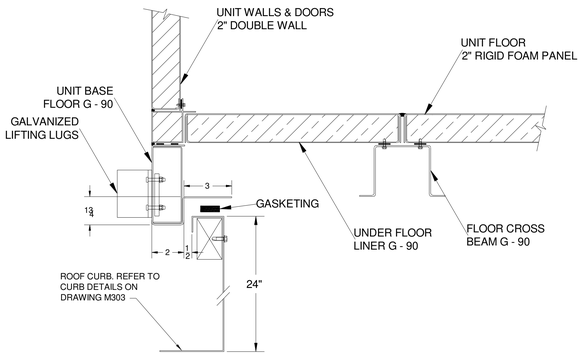


PLAN VIEW - LOWER SECTION



PLAN VIEW - CURB SECTION

ROOF CURB RTU-7

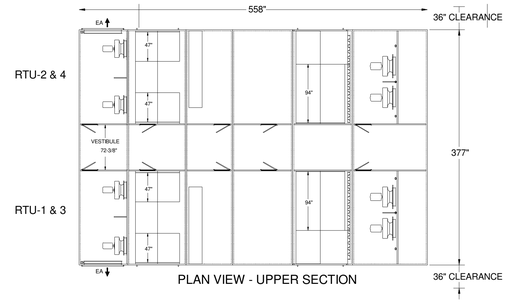


ROOFTOP UNIT DETAILS - RTU-7

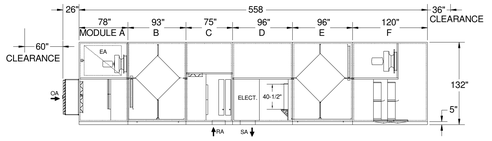
1 - 2" DOUBLE WALL CASING
2 - OA HOOD w/ 4" LOUVER
3 - 2" MERV 10 + 4" MER 13 OA FILTERS
4 - OA FACE DAMPER & OA BYPASS DAMPER
5 - ENTHALPY PLATE IPES-IM-33H-25S-0.1
6 - RECIRCULATION DAMPER
7 - FIXED PLATE BC AL 05 N 0838 L 1 AE SC
8 - CHILLED WATER COIL
9 - SA DDF GR35C w/ 5HP
10 - FACE DAMPER & BYPASS DAMPER
11 - HOT WATER COIL
12 - 2" MERV10 FILTERS
13 - EA FAN GR40C w/ 3HP
14 - EA DAMPER w/ 2"LOUVER

CE: CONTROLS ENTRANCE
PE: POWER ENTRANCE
PC: PIPE CHASE

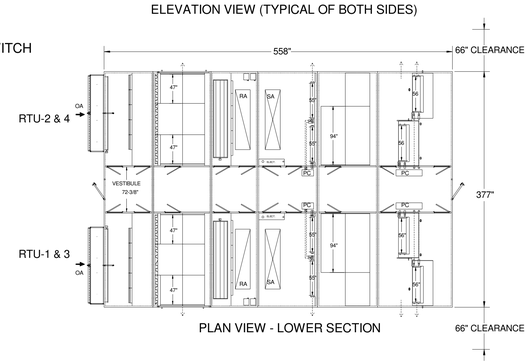
Φ : GFI : LIGHT $: LIGHT SWITCH



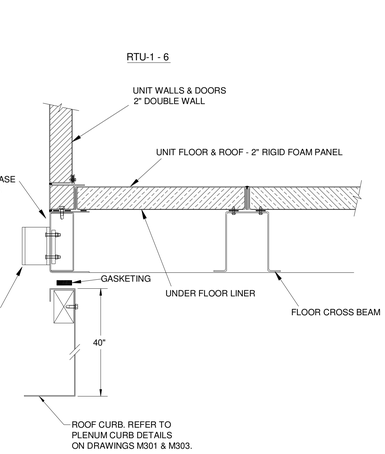
PLAN VIEW - UPPER SECTION



ELEVATION VIEW (TYPICAL OF BOTH SIDES)



PLAN VIEW - LOWER SECTION

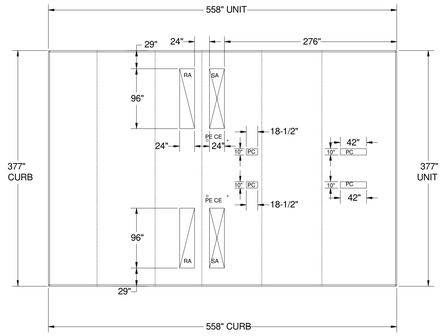


ROOFTOP UNIT DETAILS - RTU-1/2 & 3/4

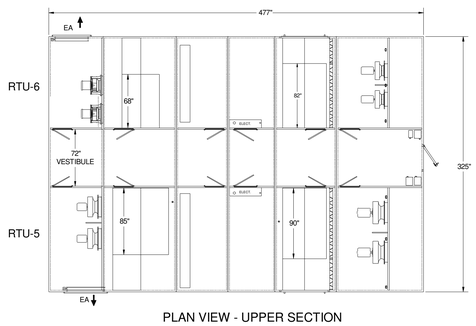
1 - 2" DOUBLE WALL CASING
2 - OA HOOD w/ 4" LOUVER w/ OA DAMPER
3 - 2" MERV 10 + 4" MERV 13 OA FILTERS
4 - OA FACE DAMPER & OA BYPASS DAMPER
5 - ENTHALPY PLATE PLATE IPES-IM94H-50S-0.16
6 - RECIRCULATION DAMPER
7 - FIXED PLATE FC AL 14 N 2388 W 1 AE SC
8 - CHILLED WATER COIL
9 - SA DDF (Qty2) ER71C w/ 25 HP each
10 - FACE DAMPER & BYPASS DAMPER
11 - HOT WATER COIL
12 - 2" MERV 10 FILTERS
13 - EA FAN (Qty2) ER63C w/ 15 HP each
14 - EA DAMPER w/ 2"LOUVER

CE: CONTROLS ENTRANCE
PE: POWER ENTRANCE
PC: PIPE CHASE

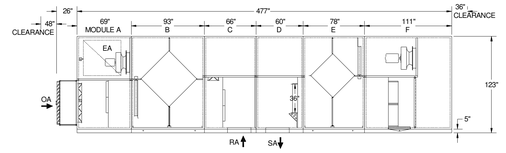
Φ : GFI : LIGHT $: LIGHT SWITCH



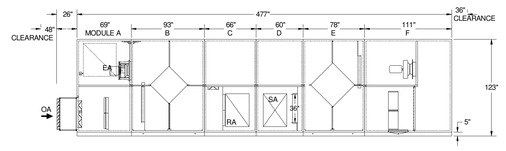
PLAN VIEW - CURB SECTION



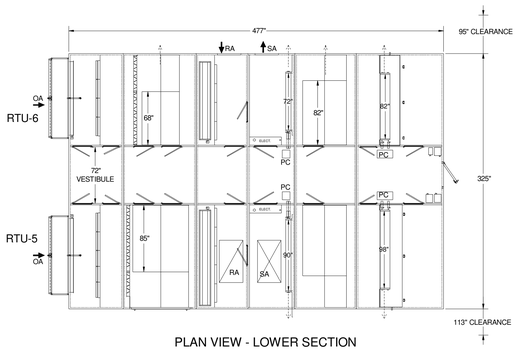
PLAN VIEW - UPPER SECTION



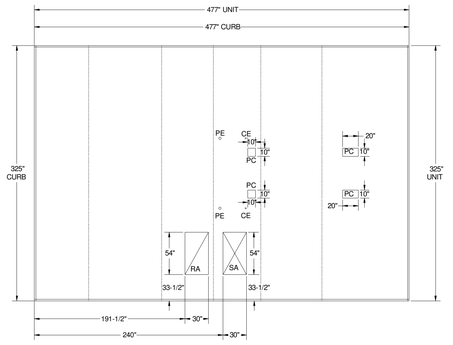
ELEVATION VIEW - RTU-5



ELEVATION VIEW - RTU-6



PLAN VIEW - LOWER SECTION



PLAN VIEW - CURB SECTION

ROOFTOP UNIT DETAILS - RTU-5

1 - 2" DOUBLE WALL CASING
2 - OA HOOD w/ 4" LOUVER w/ OA DAMPER
3 - 2" MERV 10 + 4" MERV 13 OA FILTERS
4 - OA FACE DAMPER & OA BYPASS DAMPER
5 - ENTHALPY PLATE IPE5-IM-85H-50S-0.16
6 - RECIRCULATION DAMPER
7 - FIXED PLATE FC AL 10 N 2286 L 1 AE SC
8 - CHILLED WATER COIL
9 - SA DDF (Qty2) ER63C w/ 20 HP each
10 - FACE DAMPER & BYPASS DAMPER
11 - HOT WATER COIL
12 - 2" MERV10 FILTERS
13 - EA FAN (Qty2) ER56C w/ 7.5 HP each
14 - EA DAMPER w/ 2"LOUVER

ROOFTOP UNIT DETAILS - RTU-6

1 - 2" DOUBLE WALL CASING
2 - OA HOOD w/ 4" LOUVER w/ OA DAMPER
3 - 2" MERV 10 + 4" MERV 13 OA FILTERS
4 - OA FACE DAMPER & OA BYPASS DAMPER
5 - ENTHALPY PLATE IPE5-IM-68H-34S-0.14
6 - RECIRCULATION DAMPER
7 - FIXED PLATE FC AL 10 N 2083 M 1 AE SC
8 - CHILLED WATER COIL
9 - SA DDF (Qty2) ER50C w/ 15 HP each
10 - FACE DAMPER & BYPASS DAMPER
11 - HOT WATER COIL
12 - 2" MERV10 FILTERS
13 - EA FAN (Qty2) GR50C w/ 7.5 HP each
14 - EA DAMPER w/ 2"LOUVER

CE: CONTROLS ENTRANCE
PE: POWER ENTRANCE
PC: PIPE CHASE

Φ : GFI : LIGHT $: LIGHT SWITCH

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-09	Addendum #6
2	2020-02-10	Conformance Set

DRAWING NAME

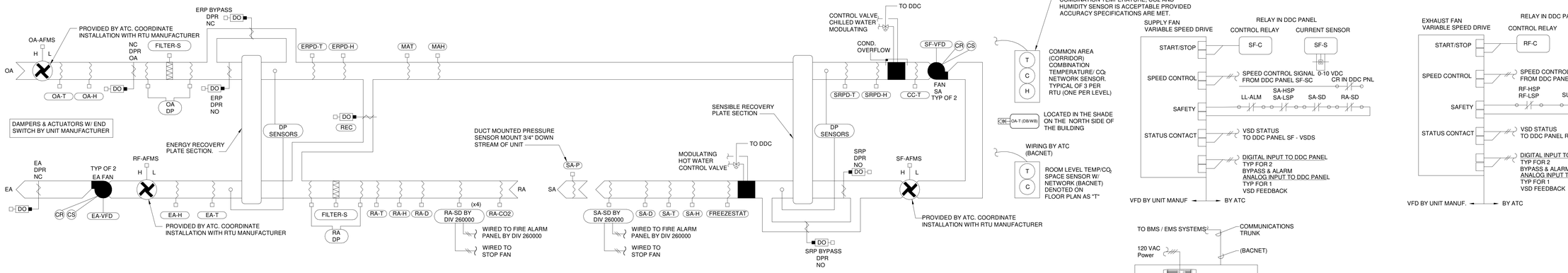
ROOFTOP AIR HANDLING UNIT DRAWINGS - HVAC

PROJECT NO. 1722

DRAWING NO.

M306

ROOFTOP AIR HANDLING UNIT - VAV AC DISPLACEMENT VENTILATION SYSTEM (100% OUTSIDE AIR) - RTU-1-4



ROOFTOP AIR HANDLING UNITS

THE VARIABLE VOLUME ENERGY RECOVERY UNIT CONSISTS OF A SUPPLY AIR AND EXHAUST AIR SECTION WITH OUTDOOR AIR AND EXHAUST AIR DAMPERS AS WELL AS A RE-CIRCULATION DAMPER, RETURN AIR AND OUTSIDE AIR FILTERS, ONE TOTAL ENERGY PLATE HEAT EXCHANGER & ONE SENSIBLE ONLY PLATE HEAT EXCHANGER, HOT WATER HEATING COIL, CHILLED WATER COOLING COIL, SUPPLY FANS AND EXHAUST FANS. THE UNIT SHALL BE DDC CONTROLLED USING ELECTRIC ACTUATION.

A DDC CONTROLLER USING ELECTRIC ACTUATION CONTROLS THE AIR HANDLING UNIT OPERATION AS FOLLOWS:

RUN CONDITIONS - SCHEDULED:

1. WARM-UP:
THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE, THE CHILLED WATER CONTROL VALVES SHALL BE CLOSED, THE RE-CIR DAMPER SHALL OPEN, THE SUPPLY FAN SHALL START, THE EXHAUST FAN REMAINS OFF, AND THE HOT WATER CONTROL VALVE SHALL MODULATE TO 100% OPEN TO PROVIDE A RAPID RISE IN THE AVERAGE SPACE TEMPERATURE. ALL VAV BOXES WILL GO TO 100% OPEN. THE SYSTEM SHALL BE PREVENTED FROM ENTERING THE WARM-UP MODE MORE THAN ONCE PER DAY. THE RADIANT PANELS AND UNIT HEATERS WILL BE THE FIRST STAGE OF WARM-UP. IF THE RADIATION AND UNIT HEATERS ARE NOT MEETING THE SPACE SET POINTS TEMPERATURE AS THE OCCUPIED PERIOD APPROACHES THEN THE AIR HANDLING UNIT WILL RUN TO MEET THE OCCUPIED SETPOINT. THE BMS SHALL MONITOR THE RATE OF TEMPERATURE RISE TO DETERMINE WHEN TO USE THE AIR HANDLING UNIT FOR WARM-UP THROUGH THE OPTIMIZED START PROGRAM WITHIN THE DDC SYSTEM.

2. COOLDOWN:
THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE. THE HOT WATER COIL CONTROL VALVE SHALL BE CLOSED, THE ENTHALPY AND SENSIBLE ENERGY RECOVERY SECTION DAMPERS SHALL BE CLOSED, THE SENSIBLE ENERGY RECOVERY BYPASS DAMPER SHALL OPEN, THE RE-CIR DAMPER SHALL OPEN, VAV BOXES SHALL OPEN TO MAX POSITION, THE SUPPLY FAN SHALL START, AND CHILLED WATER COOLING COIL SHALL MODULATE TO MAINTAIN DISCHARGE SETPOINT OF 55°F (ADJ.). MORNING COOLDOWN SHALL OCCUR (1 HR. ADJ.) PRIOR TO UNIT SCHEDULED OCCUPIED START TIME (TIME PERIOD SHALL BE ADJUSTED THRU THE DDC OPTIMIZED START LOGIC UTILIZING UNIT TREND DATA). ECONOMIZER MODE OF OPERATION SHALL OVERRIDE NORMAL COOLDOWN MODE OF OPERATION. OPTIMIZE START LOGIC SHALL ALLOW 55°F SUPPLY AIR TEMPERATURE TO BE UTILIZED TO MINIMIZE THE COOLDOWN PERIOD.

3. OCCUPIED:
THE FANS START OR CONTINUE TO RUN AND THE UNIT IS CONTROLLED AS FOLLOWS:
THE SUPPLY AND EXHAUST FAN SHALL RUN AND ADJUST ITS SPEED BASED ON THE DUCT MOUNTED PRESSURE SENSOR WHICH WILL FLUCTUATE BASED ON VAV DAMPER POSITIONS.THE TAB CONTRACTOR SHALL DETERMINE THE EXACT SYSTEM PRESSURE & UTILIZE THIS VALUE AS THE SYSTEM SETPOINT. THE OUTSIDE AIR DAMPER SHALL OPEN TO ITS MAX POSITION AS INDICATED IN THE AHU SCHEDULE. THE EXHAUST DAMPER SHALL RECEIVE THE SAME SIGNAL AS THE OUTSIDE AIR DAMPER & BOTH SHALL MODULATE IN UNISON. THE RETURN AIR DAMPER SHALL RECEIVE THE OPPOSITE SIGNAL AS THE OUTSIDE AIR DAMPER. ALL DAMPERS WILL MODULATE IN SEQUENCE WITHOUT OVERLAP AS THE ASSOCIATED SYSTEM VAV BOXES MODULATE TO MAINTAIN SPACE CO_2 LEVELS & SPACE TEMPERATURE. IF ALL SPACE CO_2 LEVELS ARE BELOW 800 PPM, THE OUTSIDE AIR DAMPER SHALL GO TO ITS MINIMUM POSITION WHICH SHALL BE 20% OF THE SCHEDULED CFM. THE OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN 800 PPM THRESHOLD AT THE SPACE CO_2 PROGRAMMING SHALL BE PROVIDED TO ALLOW THE MODULATION OF THE SUPPLY & EXHAUST FANS TO MAINTAIN THE SYSTEM STATIC PRESSURE. THE TOTAL ENERGY RECOVERY SECTION WILL PRE-HEAT OR PRE-COOL THE INCOMING OUTSIDE AIR DEPENDING ON THE SEASON. THE CHILLED WATER COIL CONTROL VALVE SHALL MODULATE TO COOL/DEHUMIDIFY THE INCOMING AIR TO A SETPOINT OF 52°F (ADJ.). THE SENSIBLE ENERGY SECTION DAMPERS SHALL MODULATE TO REHEAT THE SUB COOLED SUPPLY AIR FROM THE CHILLED WATER COIL TO 63°F (ADJ SUMMER). DURING THE WINTER WHEN THE OUTDOOR AIR IS BELOW 60°F (ADJ.), THE COOLING COIL CONTROL VALVE IS CLOSED, THE SENSIBLE ENERGY RECOVERY BYPASS DAMPER IS OPEN, AND THE SENSIBLE ENERGY RECOVERY DAMPER IS CLOSED, THE HOT WATER COIL SHALL MODULATE, AS REQUIRED, TO PROVIDE HEAT TO THE SUPPLY AIR TO MAINTAIN THE DISCHARGE AIR TEMPERATURE OF 68°F (ADJ WINTER).

4. UNOCCUPIED:
UNDER THIS MODE ALL UNITS SHALL BE OFF & DAMPERS CLOSED. ALL HEATING HOT WATER EQUIPMENT & COMPONENTS THROUGHOUT THE BUILDING SHALL MODULATE AS REQUIRED TO MAINTAIN THE BUILDING'S UNOCCUPIED SETPOINT OF 60° (ADJ) IN THE WINTER. IN THE EVENT THAT THE HEATING HOT WATER EQUIPMENT CAN NOT MAINTAIN THE BUILDING AVERAGE UNOCCUPIED SETPOINT, THE AHU(S) SHALL BE ACTIVATED & FUNCTION AS INDICATED IN THE WARM UP MODE W/ THE EXCEPTION THAT THE FAN SPEEDS WOULD BE REDUCED TO 60% OF THEIR TOTAL CAPACITY. DURING THE SUMMER MONTHS WHEN OAT IS ABOVE 80° (ADJ) AND/OR RH IS ABOVE 70% (ADJ) & THE BUILDING'S AVERAGE UNOCCUPIED SETPOINTS OF 80° (ADJ) ARE NOT MAINTAINING, THEN THE UNIT WILL BE ACTIVATED & FUNCTION AS INDICATED IN THE COOLDOWN MODE W/ THE EXCEPTION THAT THE FAN SPEEDS WOULD BE REDUCED TO 60% OF THEIR TOTAL CAPACITY.

5. ECONOMIZER (DUAL ENTHALPY CONTROL):
THE CONTROLLER SHALL MEASURE THE RETURN AIR AND OUTSIDE AIR ENTHALPY TEMPERATURES AND MODULATE THE OUTSIDE AIR DAMPER, RETURN AIR DAMPER, AND DAMPERS OF THE ENERGY AND SENSIBLE REHEAT PLATE HEAT EXCHANGER TO MAINTAIN A SETPOINT 2°F LESS THAN THE COOLING SUPPLY AIR TEMPERATURE SETPOINT. THE ECONOMIZER SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN 22 BTU/LB (ADJ).
- AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY.
- AND THE SUPPLY FAN STATUS IS ON.
- AND THE CHILLED WATER SUPPLY TEMPERATURE IS ABOVE 70 F. (ADJ.)

THE ECONOMIZER SHALL BE DISABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE DROPS BELOW 48°F (ADJ.).
- OR ON LOSS OF SUPPLY FAN STATUS.
- OR THE FREEZESTAT IS ON.

6. EMERGENCY SHUTDOWN:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN EMERGENCY SHUTDOWN SIGNAL.

7. LOW LEAVING TEMPERATURE:
UPON A LOW LEAVING TEMPERATURE CONDITION (38°F ADJ) SENSED BY THE FREEZESTAT, THE OUTSIDE AIR AND EXHAUST AIR DAMPER SHALL CLOSE, THE SUPPLY AND EXHAUST AIR FANS SHALL SHUT DOWN THE HOT WATER CONTROL VALVE SHALL GO TO 100% FULL OPEN AND AN ALARM SHALL BE GENERATED.

8. SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS.

9. SUPPLY FAN:
THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME, UNLESS SHUT DOWN ON SAFETIES.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF OR VICE VERSA.
- SUPPLY FAN VFD: IN FAULT.

10. EXHAUST FAN:
THE EXHAUST FAN SHALL RUN WHENEVER THE TOTAL ENERGY HEAT EXCHANGER DAMPER IS OPEN OR THE UNIT IS IN ECONOMIZER, UNLESS SHUT DOWN ON SAFETIES. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- EXHAUST FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- EXHAUST FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.

CURRENT SENSORS SHALL BE INSTALLED ON THE SUPPLY AND EXHAUST FANS. THE DDC SYSTEM USES THESE SENSORS TO CONFIRM THE FANS ARE IN THE DESIRED STATE (I.E. ON OR OFF) AND GENERATES AN ALARM IF STATUS DEVIATES FROM DDC START/STOP CONTROL. IF EITHER SUPPLY OR EXHAUST FAN FAILS, THE OTHER FAN SHALL SHUTDOWN AND AN ALARM SHALL BE GENERATED.

11. SUPPLY AIR TEMPERATURE SETPOINT:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE AND SHALL RESET SUPPLY AIR TEMPERATURE SETPOINT BASED ON OUTSIDE AIR TEMPERATURE. AT AN OAT OF 88°F(ADJ.) OR ABOVE, THE UNIT DAT SHALL BE 63°F(ADJ.). AT AN OAT OF 60°F(ADJ.) OR BELOW.

12. CHILLED WATER COOLING:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND SHALL MODULATE THE CHILLED WATER CONTROL VALVE TO MAINTAIN THE REQUIRED COOLING COIL DAT OF 52°F (ADJ.). THE COOLING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
- AND THE SUPPLY AIR TEMPERATURE IS ABOVE COOLING SETPOINT.
- AND THE FAN STATUS IS ON.
- SPACE TEMPERATURE CALLS FOR COOLING

13. HOT WATER HEATING:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE HOT WATER HEATING CONTROL VALVE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT OF 68°F (ADJ). THE HEATING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 60°F (ADJ.).
- AND THE SUPPLY AIR TEMPERATURE IS BELOW HEATING SETPOINT.
- AND THE FAN STATUS IS ON.

THE HEATING SHALL NORMALLY BE DISABLED WHENEVER COOLING SYSTEM IS ENERGIZED AND SENSIBLE RECOVERY HEAT EXCHANGER REHEATING IS UTILIZED TO PROVIDE RE-HEAT.

14. ENERGY RECOVERY HEAT PLATE:
THE CONTROLLER SHALL MODULATE THE ENERGY RECOVERY HEAT PLATE DAMPERS AS FOLLOWS:

COOLING RECOVERY MODE: THE ENERGY RECOVERY HEAT PLATE DAMPERS SHALL MODULATE FOR SUPPLY AIR COOLING RECOVERY WHENEVER:
- THE UNIT RETURN AIR TEMPERATURE IS 5°F (ADJ.) OR MORE BELOW THE OUTSIDE AIR TEMPERATURE
- AND THE SUPPLY FAN IS ON.

HEATING RECOVERY MODE:THE ENERGY RECOVERY HEAT PLATE DAMPERS SHALL MODULATE FOR SUPPLY AIR HEATING RECOVERY WHENEVER:
- THE UNIT RETURN AIR TEMPERATURE IS 5°F (ADJ.) OR MORE ABOVE THE OUTSIDE AIR TEMPERATURE
- AND THE SUPPLY FAN IS ON.

HEAT PLATE DEFROST CYCLE: IF THE WHEEL DIFFERENTIAL PRESSURE RISES TO 1 INCH OF H2O (ADJ.) AND THE OUTSIDE AIR TEMPERATURE IS BELOW 30°F, THE ENERGY RECOVERY HEAT PLATE BYPASS DAMPER SHALL MODULATE OPEN, UNTIL THE PRESSURE RETURNS TO NORMAL. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HEAT PLATE DP RISES ABOVE 1.5" (ADJ.)

15. SENSIBLE RECOVERY HEAT PLATE:
THE CONTROLLER SHALL MODULATE THE ENERGY RECOVERY HEAT PLATE DAMPERS AS FOLLOWS:

REHEAT MODE: THE SENSIBLE RECOVERY HEAT PLATE DAMPERS SHALL MODULATE FOR SUPPLY AIR REHEAT WHENEVER:
- THE UNIT IS IN COOLING/DEHUMIDIFICATION MODE.
- COOLING COIL DAT IS BELOW UNIT SAT

SENSIBLE RECOVERY HEAT PLATE SHALL BE BYPASSED WHILE COOLING IS DISABLED AND ENERGY RECOVERY HEAT PLATE IS IN HEAT RECOVERY.

16. ENERGY AND SENSIBLE HEAT PLATE EXCHANGER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE ENERGY AND SENSIBLE PLATE HEAT EXHANGER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HEAT EXCHANGER CLEANING REQUIRED: FINAL HEAT EXCHANGER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

17. PREFILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PREFILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- PREFILTER CHANGE REQUIRED: PREFILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

18. FINAL FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- FINAL FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

19. RETURN FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- RETURN FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

20. SUPPLY AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
- LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

21. CARBON DIOXIDE (CO_2) LEVELS:
IF THE SPACE CO_2 LEVELS VARY BY 10% OR MORE FROM THE DESIGN VALUE OF 800 PPM, AN ALARM SHALL GENERATE AT THE BMS TO ALERT THE BUILDING OPERATOR.

22. OVERRIDE: THE SPACE-MOUNTED TEMPERATURE SENSOR SHALL HAVE PUSH-BUTTON OVERRIDE CAPABILITY. UPON ACTIVATION, THE ASSOCIATED ROOFTOP UNIT (& VAV'S FOR RTU-2) SHALL CHANGE TO OCCUPIED MODE FOR A PERIOD OF 2 HRS. (ADJ.)

RTU 1-4	HARDWARE POINTS				SOFTWARE POINTS							
POINT NAME	AI	AO	DI	DO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC	REMARKS
OUTSIDE AIR FLOW MEASURING STATION	X								X		X	
SUPPLY AIR FLOW MEASURING STATION	X								X		X	
EXHAUST AIR FLOW MEASURING STATION	X								X		X	
OUTSIDE AIR TEMP	X								X		X	FROM WEATHER STATION
OUTSIDE AIR HUMIDITY	X								X		X	FROM WEATHER STATION
EXHAUST AIR TEMP	X								X		X	
EXHAUST AIR HUMIDITY	X								X		X	
ENERGY PLATE HEAT EXCHANGER DISCHARGE AIR TEMP	X								X		X	
ENERGY PLATE HEAT EXCHANGER DISCHARGE AIR HUMIDITY	X								X		X	
ENERGY PLATE HEAT EXCHANGER DIFFERENTIAL PRESSURE	X								X		X	
SENSIBLE PLATE HEAT EXCHANGER DISCHARGE AIR TEMP	X								X		X	
SENSIBLE PLATE HEAT EXCHANGER DISCHARGE AIR HUMIDITY	X								X		X	
SENSIBLE PLATE HEAT EXCHANGER DIFFERENTIAL PRESSURE	X								X		X	
MIXED AIR TEMP	X								X		X	
MIXED AIR HUMIDITY	X								X		X	
COOLING COIL AIR TEMP	X	X							X		X	
HEATING COIL AIR TEMP	X	X							X		X	
SUPPLY AIR TEMP	X	X							X		X	
SUPPLY AIR HUMIDITY	X	X							X		X	
OUTSIDE AIR FILTER DIFFERENTIAL PRESSURE	X								X		X	
RETURN AIR FILTER DIFFERENTIAL PRESSURE	X								X		X	
RETURN AIR HUMIDITY	X								X		X	
RETURN AIR TEMP	X								X		X	
ENERGY RECOVERY SECTION DAMPER	X	X							X		X	
SUPPLY FAN VFD SPEED (TYP OF 2)	X	X							X		X	
EXHAUST FAN VFD SPEED (TYP OF 2)	X	X							X		X	
CHILLED WATER CONTROL VALVE		X							X		X	
HOT WATER CONTROL VALVE		X							X		X	
RE-CIRC AIR DAMPER	X	X							X		X	W/ END SWITCH
OUTSIDE AIR DAMPER	X	X							X		X	W/ END SWITCH
EXHAUST AIR DAMPER	X	X							X		X	W/ END SWITCH
RETURN AIR SMOKE DETECTOR (x4)			X						X	X		
SUPPLY AIR SMOKE DETECTOR			X						X	X		
SUPPLY FAN STATUS (TYP OF 2)			X						X		X	
EXHAUST FAN STATUS (TYP OF 2)			X						X		X	
SUPPLY FAN START/STOP (TYP OF 2)				X					X		X	
EXHAUST FAN START/STOP (TYP OF 2)				X					X		X	
COOLING SUPPLY AIR SET POINT					X				X		X	
HEATING SUPPLY AIR SET POINT					X				X		X	
EMERGENCY SHUT DOWN						X			X	X	X	
SCHEDULE							X					
SUPPLY FAN FAILURE (TYP OF 2)										X		
SUPPLY FAN VFD FAILURE (TYP OF 2)										X		
EXHAUST FAN FAILURE (TYP OF 2)										X		
EXHAUST FAN VFD FAILURE (TYP OF 2)										X		
HIGH COOLING SUPPLY AIR TEMP										X		ABOVE 75°F
HIGH HEATING SUPPLY AIR TEMP										X		ABOVE 90°F
LOW HEATING SUPPLY AIR TEMP										X		ABOVE 60°F
OUTSIDE AIR FILTER CHANGE REQUIRED										X	X	
RETURN AIR FILTER CHANGE REQUIRED										X	X	
HIGH RETURN AIR HUMIDITY										X		ABOVE 80% R.H.
LOW RETURN AIR TEMP										X		BELOW 50°F
HIGH RETURN AIR TEMP										X		ABOVE 90°F
SUPPLY SMOKE DETECTOR										X		
RETURN SMOKE DETECTOR										X		
FREEZESTAT										X		W/ AUTOMATIC RESET
CONDENSATE PAN OVERFLOW										X		
ENERGY RECOVERY DAMPER POSITION		X							X		X	
ENERGY RECOVERY BYPASS DAMPER POSITION		X							X		X	
SENSIBLE RECOVERY DAMPER POSITION		X							X		X	
SENSIBLE RECOVERY BYPASS DAMPER POSITION		X							X		X	
RETURN AIR CO2		X							X	X	X	
SUPPLY AIR STATIC PRESSURE		X	X						X	X	X	

ABBREVIATIONS

AFMS	AIRFLOW MEASURING STATION
ALM	ALARM
AQ	AQUASTAT
ATC	AUTOMATIC TEMPERATURE CONTROLS
BLDG	BUILDING
BLR	BOILER
BMS	BUILDING MANAGEMENT SYSTEM (ENERGY & AUTOMATION)
COMB	COMBUSTION
CONTR	CONTROLLER
CO2	CARBON DIOXIDE
CR	CONTROL RELAY
CS	CURRENT SENSOR
CUV	CABINET UNIT VENTILATOR
D	DAMPER
DA	DISCHARGE AIR
DAS	DISCHARGE AIR SENSOR
DAT	DISCHARGE AIR TEMPERATURE
DCV	DEMAND CONTROL VENTILATION
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DDC	DIRECT DIGITAL CONTROL
DO	DAMPER OPERATOR
DP	DIFFERENTIAL PRESSURE
DPR	DAMPER
DPV	DIFFERENTIAL PRESSURE VALVE
EA	EXHAUST AIR
EF	EXHAUST FAN
F	FLOW/FARENHEIT (AS APPLICABLE)
FB	FACE & BYPASS
FD	FIRE DAMPER
H	HUMIDITY
HS	ENTHALPY SENSOR
HT	HIGH TEMPERATURE
HTG	HEATING
HR	HEAT RECOVERY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LT	LOW TEMPERATURE
M	MOTOR
MAT	MIXED AIR TEMPERATURE
NAC	NETWORK APPLICATION CONTROLLER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OVR	OVERRIDE
P	PRESSURE
PB	PUSH BUTTON
PNL	PANEL
RA	RETURN AIR
REL	RELIEF AIR
RF	RETURN FAN
RFC	RETURN FAN CONTROLLER
RM	ROOM
SA	SUPPLY AIR
SD	SMOKE DAMPER OR SMOKE DETECTOR
SF	SUPPLY FAN
SFC	SUPPLY FAN CONTROLLER
SP	STATIC PRESSURE
T	TEMPERATURE
TEC	TERMINAL EQUIPMENT CONTROLLER
UV	UNIT VENTILATOR
VAC	VOLTS - ALTERNATING CURRENT
VDC	VOLTS - DIRECT CURRENT
VFD	SEE VSD
VLV	VALVE
VP	VELOCITY PROBE (AIRFLOW)
VSD	VARIABLE SPEED (FREQUENCY) DRIVE
XFMR	TRANSFORMER

ATC/BMS GENERAL NOTES

1. ALL SETPOINTS INDICATED IN THE SEQUENCE OF OPERATIONS SHALL BE ADJUSTABLE.
2. THE CONTROL POINTS LISTED IN THE SUMMARY MATRIX ARE THE MINIMUM CONTROL POINTS REQUIRED. ATC CONTRACTOR SHALL PROVIDE ALL CONTROL POINTS AS REQUIRED FOR COMPLETE SYSTEM CONTROL PER THE SEQUENCE OF OPERATIONS.
3. ALL CONTROL WIRING, SENSORS, RELAYS, CONTROLLERS, PANELS, DAMPERS, ACTUATORS, ETC. INDICATED ON THE CONTROL DIAGRAMS SHALL BE PROVIDED BY THE ATC CONTRACTOR UNLESS NOTED OTHERWISE.
4. ALL ATC CONTROLS SHALL BE POWERED BY EMERGENCY POWER CIRCUITS COORD W/ DIV 260000
5. ALL HHW VALVES SHALL BE FAIL OPEN ON LOSS OF POWER. ALL CHW VALVES SHALL BE FAIL CLOSE ON LOSS OF POWER.
6. ALL HHW WATER VALVES SHALL BE MODULATING TYPE FOR GPM > 1; 2-POSITION ACCEPTABLE FOR FLOWS < 1 GPM
7. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPEC FOR FURTHER INFO.
8. DUCT SMOKE DETECTORS INDICATED ARE TO BE FURNISHED & INSTALLED IN THE DUCT BY HVAC CONTRACTOR. POWER WIRING AND FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR TO PROVIDE BMS INTERLOCK TO SHUT ASSOCIATED UNIT DOWN AND INITIATE AN ALARM UPON ACTIVATION
9. ALL SMOKE DAMPERS SHALL BE COMBINATION SMOKE/FIRE DAMPERS, SHALL BE FURNISHED & INSTALLED BY HVAC CONTRACTOR, AND POWER WIRED BY ATC CONTRACTOR. DAMPERS SHALL BE MOTOR OPERATED WITH 24 VOLT / 120 VOLT ACTUATOR BY HVAC CONTRACTOR. FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. DAMPER ENDSWITCH INTEGRATION TO BMS BY ATC CONTRACTOR.
10. DURING ENERGY RESTRICTION OR EMERGENCY POWER, SUPPLY FAN TO RUN; MECHANICAL COOLING SHALL BE DE-ENERGIZED.
11. ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE CORRESPONDING MAIN ATC PANEL, OR SUB ATC PANEL. EACH ATC PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE, ALL CONTROLS SHALL BE ON EMERGENCY POWER. ALL PANELS SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THE MAIN ATC PANEL, OR SUB PANEL, & NOT THROUGH THE UNIT'S MAIN POWER SOURCE. ATC CONTRACTOR SHALL PROVIDE EMERGENCY POWER FEEDER FROM THE ELECTRICAL EMERGENCY POWER PANELS TO ANY AND ALL ATC PANELS/SUB PANELS. ATC CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR TO DETERMINE WHERE EMERGENCY POWER MAY BE DERIVED FROM.
12. ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED v.4 CREDIT IEQC1.
13. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPECIFICATION.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 210, Lawrence, MA 01840
978 - 686 - 1829 FAX 978 - 749 - 0702 E - MAIL info@ggdengineers.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

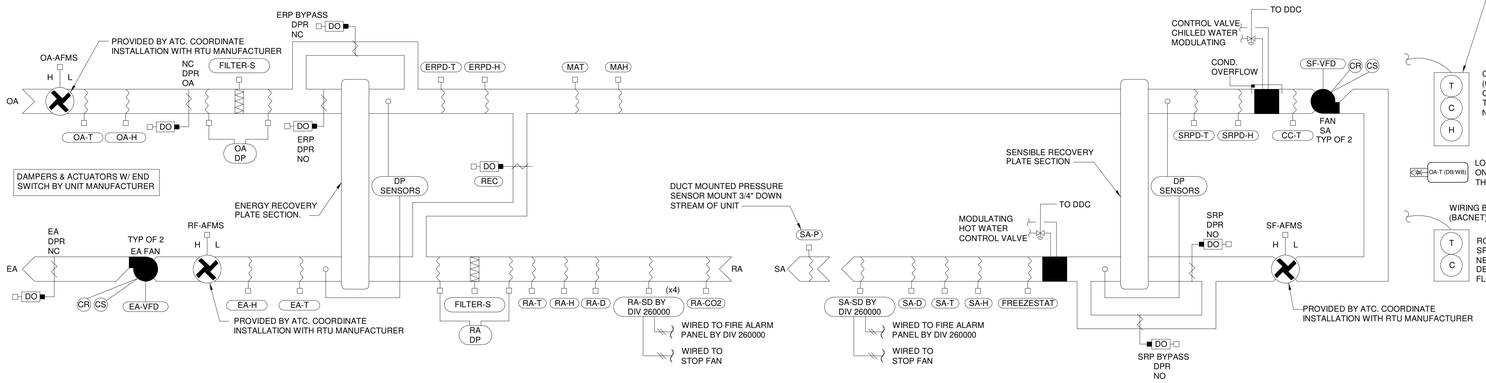
No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2020-02-10	Conformance Set

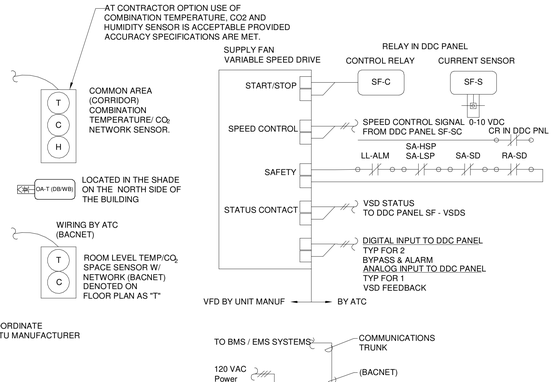
DRAWING NAME
CONTROLS I - HVAC

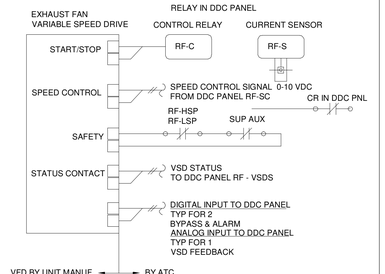
PROJECT NO. 1722

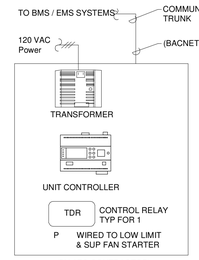
DRAWING NO.
M401

ROOFTOP AIR HANDLING UNIT - SINGLE ZONE AC MIXED AIR OVERHEAD VENTILATION SYSTEM - RTU-5









(BY ATC CONTRACTOR)

ROOFTOP AIR HANDLING UNITS

THE VARIABLE VOLUME ENERGY RECOVERY UNIT CONSISTS OF A SUPPLY AIR AND EXHAUST AIR SECTION WITH OUTDOOR AIR AND EXHAUST AIR DAMPERS AS WELL AS A RE-CIRCULATION DAMPER, RETURN AIR AND OUTSIDE AIR FILTERS, ONE TOTAL ENERGY PLATE HEAT EXCHANGER & ONE SENSIBLE ONLY PLATE HEAT EXCHANGER, HOT WATER HEATING COIL, CHILLED WATER COOLING COIL, SUPPLY FANS AND EXHAUST FANS. THE UNIT SHALL BE DDC CONTROLLED USING ELECTRIC ACTUATION.

A DDC CONTROLLER USING ELECTRIC ACTUATION CONTROLS THE AIR HANDLING UNIT OPERATION AS FOLLOWS:

RUN CONDITIONS - SCHEDULED:

1. WARM-UP:
THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE, THE CHILLED WATER CONTROL VALVES SHALL BE CLOSED, THE RE-CIR DAMPER SHALL OPEN, THE SUPPLY FAN SHALL START, THE EXHAUST FAN REMAINS OFF, AND THE HOT WATER CONTROL VALVE SHALL MODULATE TO 100% OPEN TO PROVIDE A RAPID RISE IN THE AVERAGE SPACE TEMPERATURE. ALL VAV BOXES WILL GO TO 100% OPEN. THE SYSTEM SHALL BE PREVENTED FROM ENTERING THE WARM-UP MODE MORE THAN ONCE PER DAY. THE RADIANT PANELS AND UNIT HEATERS WILL BE THE FIRST STAGE OF WARM-UP. IF THE RADIATION AND UNIT HEATERS ARE NOT MEETING THE SPACE SET POINTS TEMPERATURE AS THE OCCUPIED PERIOD APPROACHES THEN THE AIR HANDLING UNIT WILL RUN TO MEET THE OCCUPIED SETPOINT. THE BMS SHALL MONITOR THE RATE OF TEMPERATURE RISE TO DETERMINE WHEN TO USE THE AIR HANDLING UNIT FOR WARM-UP THROUGH THE OPTIMIZED START PROGRAM WITHIN THE DDC SYSTEM.

2. COOLDOWN:
THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE, THE HOT WATER COIL CONTROL VALVE SHALL BE CLOSED, THE ENTHALPY AND SENSIBLE ENERGY RECOVERY SECTION DAMPERS SHALL BE CLOSED. THE SENSIBLE ENERGY RECOVERY BYPASS DAMPER SHALL OPEN, THE RE-CIR DAMPER SHALL OPEN, VAV BOXES SHALL OPEN TO MAX POSITION, THE SUPPLY FAN SHALL START, AND CHILLED WATER COOLING COIL SHALL MODULATE TO MAINTAIN DISCHARGE SETPOINT OF 55°F (ADJ). MORNING COOLDOWN SHALL OCCUR (1 HR. ADJ.) PRIOR TO UNIT SCHEDULED OCCUPIED START TIME (TIME PERIOD SHALL BE ADJUSTED THRU THE DDC OPTIMIZED START LOGIC UTILIZING UNIT TREND DATA). ECONOMIZER MODE OF OPERATION SHALL OVERRIDE NORMAL COOLDOWN MODE OF OPERATION. OPTIMIZE START LOGIC SHALL ALLOW 55°F SUPPLY AIR TEMPERATURE TO BE UTILIZED TO MINIMIZE THE COOLDOWN PERIOD.

3. OCCUPIED:
THE FANS START OR CONTINUE TO RUN AND THE UNIT IS CONTROLLED AS FOLLOWS:
THE SUPPLY AND EXHAUST FAN SHALL RUN AND ADJUST ITS SPEED BASED ON THE DUCT MOUNTED PRESSURE SENSOR WHICH WILL FLUCTUATE BASED ON VAV DAMPER POSITIONS.THE TAB CONTRACTOR SHALL DETERMINE THE EXACT SYSTEM PRESSURE & UTILIZE THIS VALUE AS THE SYSTEM SETPOINT. THE OUTSIDE AIR DAMPER SHALL OPEN TO ITS MAX POSITION AS INDICATED IN THE AHU SCHEDULE. THE EXHAUST DAMPER SHALL RECEIVE THE SAME SIGNAL AS THE OUTSIDE AIR DAMPER & BOTH SHALL MODULATE IN UNISON. THE RETURN AIR DAMPER SHALL RECEIVE THE OPPOSITE SIGNAL AS THE OUTSIDE AIR DAMPER. ALL DAMPERS WILL MODULATE IN SEQUENCE WITHOUT OVERLAP AS THE ASSOCIATED SYSTEM VAV BOXES MODULATE TO MAINTAIN SPACE CO_2 LEVELS & SPACE TEMPERATURE. IF ALL SPACE CO_2 LEVELS ARE BELOW 800 PPM, THE OUTSIDE AIR DAMPER SHALL GO TO ITS MINIMUM POSITION WHICH SHALL BE 20% OF THE SCHEDULED CFM. THE OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN 800 PPM THRESHOLD AT THE SPACE CO_2 PROGRAMMING SHALL BE PROVIDED TO ALLOW THE MODULATION OF THE SUPPLY & EXHAUST FANS TO MAINTAIN THE SYSTEM STATIC PRESSURE. THE TOTAL ENERGY RECOVERY SECTION WILL PRE-HEAT OR PRE-COOL THE INCOMING UTSIDE AIR DEPENDING ON THE SEASON. THE CHILLED WATER COIL CONTROL VALVE SHALL MODULATE TO COOL/DEHUMIDIFY THE INCOMING AIR TO A SETPOINT OF 52°F (ADJ.). THE SENSIBLE ENERGY SECTION DAMPERS SHALL MODULATE TO REHEAT THE SUB COOLED SUPPLY AIR FROM THE CHILLED WATER COIL TO 63°F (ADJ SUMMER). DURING THE WINTER WHEN THE OUTDOOR AIR IS BELOW 60°F (ADJ.), THE COOLING COIL CONTROL VALVE IS CLOSED, THE SENSIBLE ENERGY RECOVERY BYPASS DAMPER IS OPEN, AND THE SENSIBLE ENERGY RECOVERY DAMPER IS CLOSED, THE HOT WATER COIL SHALL MODULATE, AS REQUIRED, TO PROVIDE HEAT TO THE SUPPLY AIR TO MAINTAIN THE DISCHARGE AIR TEMPERATURE OF 68°F (ADJ WINTER).

4. UNOCCUPIED:
UNDER THIS MODE ALL UNITS SHALL BE OFF & DAMPERS CLOSED. ALL HEATING HOT WATER EQUIPMENT & COMPONENTS THROUGHOUT THE BUILDING SHALL MODULATE AS REQUIRED TO MAINTAIN THE BUILDING'S UNOCCUPIED SETPOINT OF 60° (ADJ) IN THE WINTER. IN THE EVENT THAT THE HEATING HOT WATER EQUIPMENT CAN NOT MAINTAIN THE BUILDING AVERAGE UNOCCUPIED SETPOINT, THE AHU(S) SHALL BE ACTIVATED & FUNCTION AS INDICATED IN THE WARM UP MODE W/ THE EXCEPTION THAT THE FAN SPEEDS WOULD BE REDUCED TO 60% OF THEIR TOTAL CAPACITY. DURING THE SUMMER MONTHS WHEN ANY SPACE(S) ARE 80° (ADJ) AND/OR RH IS ABOVE 70% (ADJ) & THE BUILDING'S AVERAGE UNOCCUPIED SETPOINTS OF 80° (ADJ) ARE NOT MAINTAINING, THEN THE UNIT WILL BE ACTIVATED & FUNCTION AS INDICATED IN THE COOLDOWN MODE W/ THE EXCEPTION THAT THE FAN SPEEDS WOULD BE REDUCED TO 60% OF THEIR TOTAL CAPACITY.

5. ECONOMIZER (DUAL ENTHALPY CONTROL):
THE CONTROLLER SHALL MEASURE THE RETURN AIR AND OUTSIDE AIR ENTHALPY TEMPERATURES AND MODULATE THE OUTSIDE AIR DAMPER, RETURN AIR DAMPER, AND DAMPERS OF THE ENERGY AND SENSIBLE REHEAT PLATE HEAT EXCHANGER TO MAINTAIN A SETPOINT 2°F LESS THAN THE COOLING SUPPLY AIR TEMPERATURE SETPOINT. THE ECONOMIZER SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN 22 BTU/LB (ADJ).
- AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY.
- AND THE SUPPLY FAN STATUS IS ON.
- AND THE CHILLED WATER SUPPLY TEMPERATURE IS ABOVE 70 F. (ADJ.)

THE ECONOMIZER SHALL BE DISABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE DROPS BELOW 48°F (ADJ.).
- OR ON LOSS OF SUPPLY FAN STATUS.
- OR THE FREEZESTAT IS ON.

6. EMERGENCY SHUTDOWN:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN EMERGENCY SHUTDOWN SIGNAL.

7. LOW LEAVING TEMPERATURE:
UPON A LOW LEAVING TEMPERATURE CONDITION (38°F ADJ) SENSED BY THE FREEZESTAT, THE OUTSIDE AIR AND EXHAUST AIR DAMPER SHALL CLOSE, THE SUPPLY AND EXHAUST AIR FANS SHALL SHUT DOWN THE HOT WATER CONTROL VALVE SHALL GO TO 100% FULL OPEN AND AN ALARM SHALL BE GENERATED.

8. SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS.

9. SUPPLY FAN:
THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME, UNLESS SHUT DOWN ON SAFETIES.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF OR VICE VERSA.
- SUPPLY FAN VFD: IN FAULT.

10. EXHAUST FAN:
THE EXHAUST FAN SHALL RUN WHENEVER THE TOTAL ENERGY HEAT EXCHANGER DAMPER IS OPEN OR THE UNIT IS IN ECONOMIZER, UNLESS SHUT DOWN ON SAFETIES. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- EXHAUST FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- EXHAUST FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.

CURRENT SENSORS SHALL BE INSTALLED ON THE SUPPLY AND EXHAUST FANS. THE DDC SYSTEM USES THESE SENSORS TO CONFIRM THE FANS ARE IN THE DESIRED STATE (I.E. ON OR OFF) AND GENERATES AN ALARM IF STATUS DEVIATES FROM DDC START/STOP CONTROL. IF EITHER SUPPLY OR EXHAUST FAN FAILS, THE OTHER FAN SHALL SHUTDOWN AND AN ALARM SHALL BE GENERATED.

11. SUPPLY AIR TEMPERATURE SETPOINT:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE AND SHALL RESET SUPPLY AIR TEMPERATURE SETPOINT BASED ON DEVIATION FROM SETPOINT. DISCHARGE AIR FROM THE UNIT SHALL RANGE FROM 55°F (ADJ.) TO 95°F (ADJ.).

12. CHILLED WATER COOLING:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND SHALL MODULATE THE CHILLED WATER CONTROL VALVE TO MAINTAIN THE REQUIRED COOLING COIL DAT OF 55°F (ADJ.). THE COOLING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
- AND THE SUPPLY AIR TEMPERATURE IS ABOVE COOLING SETPOINT.
- AND THE FAN STATUS IS ON.
- SPACE TEMPERATURE CALLS FOR COOLING

13. HOT WATER HEATING:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE HOT WATER HEATING CONTROL VALVE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT. THE HEATING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 60°F (ADJ.).
- AND THE SUPPLY AIR TEMPERATURE IS BELOW HEATING SETPOINT.
- AND THE FAN STATUS IS ON.

THE HEATING SHALL NORMALLY BE DISABLED WHENEVER COOLING SYSTEM IS ENERGIZED.

14. ENERGY RECOVERY HEAT PLATE:
THE CONTROLLER SHALL MODULATE THE ENERGY RECOVERY HEAT PLATE DAMPERS AS FOLLOWS:

COOLING RECOVERY MODE: THE ENERGY RECOVERY HEAT PLATE DAMPERS SHALL MODULATE FOR SUPPLY AIR COOLING RECOVERY WHENEVER:
- THE UNIT RETURN AIR TEMPERATURE IS 5°F (ADJ.) OR MORE BELOW THE OUTSIDE AIR TEMPERATURE
- AND THE SUPPLY FAN IS ON.

HEATING RECOVERY MODE:THE ENERGY RECOVERY HEAT PLATE DAMPERS SHALL MODULATE FOR SUPPLY AIR HEATING RECOVERY WHENEVER:
- THE UNIT RETURN AIR TEMPERATURE IS 5°F (ADJ.) OR MORE ABOVE THE OUTSIDE AIR TEMPERATURE
- AND THE SUPPLY FAN IS ON.

HEAT PLATE DEFROST CYCLE: IF THE WHEEL DIFFERENTIAL PRESSURE RISES TO 1 INCH OF H2O (ADJ.) AND THE OUTSIDE AIR TEMPERATURE IS BELOW 30°F, THE ENERGY RECOVERY HEAT PLATE BYPASS DAMPER SHALL MODULATE OPEN, UNTIL THE PRESSURE RETURNS TO NORMAL. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HEAT PLATE DP RISES ABOVE 1.5" (ADJ.)

15. ENERGY HEAT PLATE EXCHANGER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE ENERGY PLATE HEAT EXCHANGER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HEAT EXCHANGER CLEANING REQUIRED: FINAL HEAT EXCHANGER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

16. PREFILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PREFILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- PREFILTER CHANGE REQUIRED: PREFILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

17. FINAL FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- FINAL FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

18. RETURN FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- RETURN FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

19. SUPPLY AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
- LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

20. CARBON DIOXIDE (CO_2) LEVELS:
IF THE SPACE CO_2 LEVELS VARY BY 10% OR MORE FROM THE DESIGN VALUE OF 800 PPM, AN ALARM SHALL GENERATE AT THE BMS TO ALERT THE BUILDING OPERATOR.

21. OVERRIDE: THE SPACE-MOUNTED TEMPERATURE SENSOR SHALL HAVE PUSH-BUTTON OVERRIDE CAPABILITY UPON ACTIVATION, THE ASSOCIATED ROOFTOP UNIT SHALL CHANGE TO OCCUPIED MODE FOR A PERIOD OF 2 HRS. (ADJ.)

RTU-5	HARDWARE POINTS				SOFTWARE POINTS							
POINT NAME	AI	AO	DI	DO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC	REMARKS
OUTSIDE AIR FLOW MEASURING STATION	X								X		X	
SUPPLY AIR FLOW MEASURING STATION	X								X		X	
EXHAUST AIR FLOW MEASURING STATION	X								X		X	
OUTSIDE AIR TEMP	X								X		X	FROM WEATHER STATION
OUTSIDE AIR HUMIDITY	X								X		X	FROM WEATHER STATION
EXHAUST AIR TEMP	X								X		X	
EXHAUST AIR HUMIDITY	X								X		X	
ENERGY PLATE HEAT EXCHANGER DISCHARGE AIR TEMP	X								X		X	
ENERGY PLATE HEAT EXCHANGER DISCHARGE AIR HUMIDITY	X								X		X	
ENERGY PLATE HEAT EXCHANGER DIFFERENTIAL PRESSURE	X								X		X	
MIXED AIR TEMP	X								X		X	
MIXED AIR HUMIDITY	X								X		X	
COOLING COIL AIR TEMP	X	X							X		X	
HEATING COIL AIR TEMP	X	X							X		X	
SUPPLY AIR TEMP	X	X							X		X	
SUPPLY AIR HUMIDITY	X	X							X		X	
OUTSIDE AIR FILTER DIFFERENTIAL PRESSURE	X								X		X	
RETURN AIR FILTER DIFFERENTIAL PRESSURE	X								X		X	
RETURN AIR HUMIDITY	X								X		X	
RETURN AIR TEMP	X								X		X	
ENERGY RECOVERY SECTION DAMPER	X	X							X		X	
SUPPLY FAN VFD SPEED (TYP OF 2)	X	X							X		X	
EXHAUST FAN VFD SPEED (TYP OF 2)	X	X							X		X	
CHILLED WATER CONTROL VALVE		X							X		X	
HOT WATER CONTROL VALVE		X							X		X	
RE-CIRC AIR DAMPER	X	X							X		X	W/ END SWITCH
OUTSIDE AIR DAMPER	X	X							X		X	W/ END SWITCH
EXHAUST AIR DAMPER	X	X							X		X	W/ END SWITCH
RETURN AIR SMOKE DETECTOR (x4)			X						X	X		
SUPPLY AIR SMOKE DETECTOR			X						X	X		
SUPPLY FAN STATUS (TYP OF 2)			X						X		X	
EXHAUST FAN STATUS (TYP OF 2)			X						X		X	
SUPPLY FAN START/STOP (TYP OF 2)				X					X		X	
EXHAUST FAN START/STOP (TYP OF 2)				X					X		X	
COOLING SUPPLY AIR SET POINT					X				X		X	
HEATING SUPPLY AIR SET POINT					X				X		X	
EMERGENCY SHUT DOWN						X			X	X	X	
SCHEDULE								X				
SUPPLY FAN FAILURE (TYP OF 2)										X		
SUPPLY FAN VFD FAILURE (TYP OF 2)										X		
EXHAUST FAN FAILURE (TYP OF 2)										X		
EXHAUST FAN VFD FAILURE (TYP OF 2)										X		
HIGH COOLING SUPPLY AIR TEMP										X		ABOVE 75°F
HIGH HEATING SUPPLY AIR TEMP										X		ABOVE 90°F
LOW HEATING SUPPLY AIR TEMP										X		ABOVE 60°F
OUTSIDE AIR FILTER CHANGE REQUIRED										X	X	
RETURN AIR FILTER CHANGE REQUIRED										X	X	
HIGH RETURN AIR HUMIDITY										X		ABOVE 80% R.H.
LOW RETURN AIR TEMP										X		BELOW 50°F
HIGH RETURN AIR TEMP										X		ABOVE 90°F
SUPPLY SMOKE DETECTOR			X							X		
RETURN SMOKE DETECTOR			X							X		
FREEZESTAT			X						X	X		W/ AUTOMATIC RESET
CONDENSATE PAN OVERFLOW			X						X	X		
ENERGY RECOVERY DAMPER POSITION		X							X		X	
ENERGY RECOVERY BYPASS DAMPER POSITION		X							X		X	
RETURN AIR CO2		X							X	X	X	
SUPPLY AIR STATIC PRESSURE		X	X						X	X	X	

ABBREVIATIONS

AFMS	AIRFLOW MEASURING STATION
ALM	ALARM
AQ	AQUASTAT
ATC	AUTOMATIC TEMPERATURE CONTROLS
BLDG	BUILDING
BLR	BOILER
BMS	BUILDING MANAGEMENT SYSTEM (ENERGY & AUTOMATION)
COMB	COMBUSTION
CONTR	CONTROLLER
CO2	CARBON DIOXIDE
CR	CONTROL RELAY
CS	CURRENT SENSOR
CUV	CABINET UNIT VENTILATOR
D	DAMPER
DA	DISCHARGE AIR
DAS	DISCHARGE AIR SENSOR
DAT	DISCHARGE AIR TEMPERATURE
DCV	DEMAND CONTROL VENTILATION
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DDC	DIRECT DIGITAL CONTROL
DO	DAMPER OPERATOR
DP	DIFFERENTIAL PRESSURE
DPR	DAMPER
DPV	DIFFERENTIAL PRESSURE VALVE
EA	EXHAUST AIR
EF	EXHAUST FAN
F	FLOW/FARENHEIT (AS APPLICABLE)
FB	FACE & BYPASS
FD	FIRE DAMPER
H	HUMIDITY
HS	ENTHALPY SENSOR
HT	HIGH TEMPERATURE
HTG	HEATING
HR	HEAT RECOVERY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LT	LOW TEMPERATURE
M	MOTOR
MAT	MIXED AIR TEMPERATURE
NAC	NETWORK APPLICATION CONTROLLER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OVR	OVERRIDE
P	PRESSURE
PB	PUSH BUTTON
PNL	PANEL
RA	RETURN AIR
REL	RELIEF AIR
RF	RETURN FAN
RFC	RETURN FAN CONTROLLER
RM	ROOM
SA	SUPPLY AIR
SD	SMOKE DAMPER OR SMOKE DETECTOR
SF	SUPPLY FAN
SFC	SUPPLY FAN CONTROLLER
SP	STATIC PRESSURE
T	TEMPERATURE
TEC	TERMINAL EQUIPMENT CONTROLLER
UV	UNIT VENTILATOR
VAC	VOLTS - ALTERNATING CURRENT
VDC	VOLTS - DIRECT CURRENT
VFD	SEE VSD
VLV	VALVE
VP	VELOCITY PROBE (AIRFLOW)
VSD	VARIABLE SPEED (FREQUENCY) DRIVE
XFMR	TRANSFORMER

ATC/BMS GENERAL NOTES

1. ALL SETPOINTS INDICATED IN THE SEQUENCE OF OPERATIONS SHALL BE ADJUSTABLE.
2. THE CONTROL POINTS LISTED IN THE SUMMARY MATRIX ARE THE MINIMUM CONTROL POINTS REQUIRED. ATC CONTRACTOR SHALL PROVIDE ALL CONTROL POINTS AS REQUIRED FOR COMPLETE SYSTEM CONTROL PER THE SEQUENCE OF OPERATIONS.
3. ALL CONTROL WIRING, SENSORS, RELAYS, CONTROLLERS, PANELS, DAMPERS, ACTUATORS, ETC. INDICATED ON THE CONTROL DIAGRAMS SHALL BE PROVIDED BY THE ATC CONTRACTOR UNLESS NOTED OTHERWISE.
4. ALL ATC CONTROLS SHALL BE POWERED BY EMERGENCY POWER CIRCUITS COORD W/ DIV 260000
5. ALL HHW VALVES SHALL BE FAIL OPEN ON LOSS OF POWER. ALL CHW VALVES SHALL BE FAIL CLOSE ON LOSS OF POWER.
6. ALL HHW WATER VALVES SHALL BE MODULATING TYPE FOR GPM > 1; 2-POSITION ACCEPTABLE FOR FLOWS < 1 GPM
7. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPEC FOR FURTHER INFO.
8. DUCT SMOKE DETECTORS INDICATED ARE TO BE FURNISHED & INSTALLED IN THE DUCT BY HVAC CONTRACTOR. POWER WIRING AND FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR TO PROVIDE BMS INTERLOCK TO SHUT ASSOCIATED UNIT DOWN AND INITIATE AN ALARM UPON ACTIVATION
9. ALL SMOKE DAMPERS SHALL BE COMBINATION SMOKE/FIRE DAMPERS, SHALL BE FURNISHED & INSTALLED BY HVAC CONTRACTOR, AND POWER WIRED BY ATC CONTRACTOR. DAMPERS SHALL BE MOTOR OPERATED WITH 24 VOLT / 120 VOLT ACTUATOR BY HVAC CONTRACTOR. FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. DAMPER ENDSWITCH INTEGRATION TO BMS BY ATC CONTRACTOR.
10. DURING ENERGY RESTRICTION OR EMERGENCY POWER, SUPPLY FAN TO RUN; MECHANICAL COOLING SHALL BE DE-ENERGIZED.
11. ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE CORRESPONDING MAIN ATC PANEL, OR SUB ATC PANEL. EACH ATC PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE, ALL CONTROLS SHALL BE ON EMERGENCY POWER. ALL PANELS SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THE MAIN ATC PANEL, OR SUB PANEL, & NOT THROUGH THE UNIT'S MAIN POWER SOURCE. ATC CONTRACTOR SHALL PROVIDE EMERGENCY POWER FEEDER FROM THE ELECTRICAL EMERGENCY POWER PANELS TO ANY AND ALL ATC PANELS/SUB PANELS. ATC CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR TO DETERMINE WHERE EMERGENCY POWER MAY BE DERIVED FROM.
12. ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED v.4 CREDIT IEQC1.
13. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPECIFICATION.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Pawtucket Road - Suite D, Dartmouth, MA 02747 - 1308
508 - 998 - 5700 FAX 508 - 998 - 5900 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2020-02-10	Conformance Set

DRAWING NAME

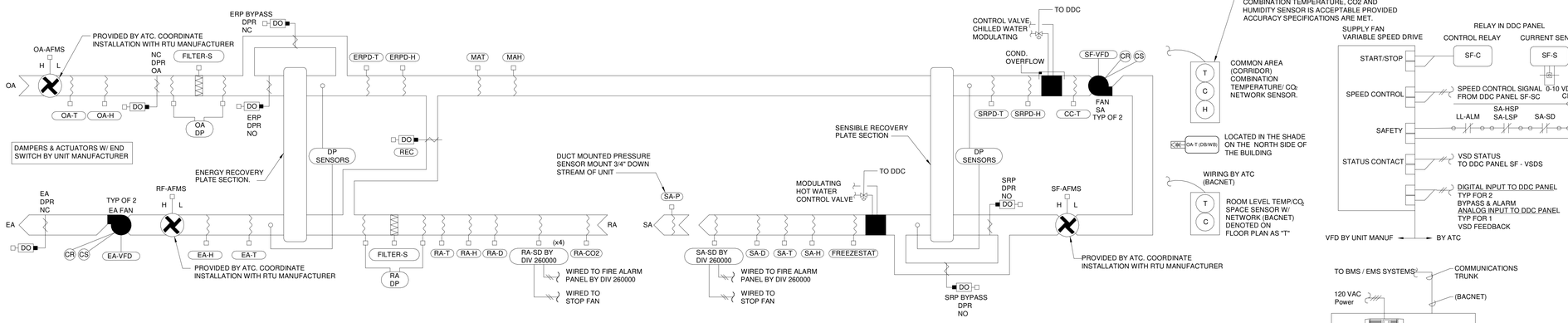
CONTROLS II - HVAC

PROJECT NO. 1722

DRAWING NO.

M402

ROOFTOP AIR HANDLING UNIT - VAV AC OVERHEAD VENTILATION SYSTEM (MIXED AIR) - RTU-6



ROOFTOP AIR HANDLING UNITS

THE VARIABLE VOLUME ENERGY RECOVERY UNIT CONSISTS OF A SUPPLY AIR AND EXHAUST AIR SECTION WITH OUTDOOR AIR AND EXHAUST AIR DAMPERS AS WELL AS A RE-CIRCULATION DAMPER, RETURN AIR AND OUTSIDE AIR FILTERS, ONE TOTAL ENERGY PLATE HEAT EXCHANGER & ONE SENSIBLE ONLY PLATE HEAT EXCHANGER, HOT WATER HEATING COIL, CHILLED WATER COOLING COIL, SUPPLY FANS AND EXHAUST FANS. THE UNIT SHALL BE DDC CONTROLLED USING ELECTRIC ACTUATION.

A DDC CONTROLLER USING ELECTRIC ACTUATION CONTROLS THE AIR HANDLING UNIT OPERATION AS FOLLOWS:

1. WARM-UP:
   RUN CONDITIONS - SCHEDULED:
   THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE, THE CHILLED WATER CONTROL VALVES SHALL BE CLOSED, THE RE-CIR DAMPER SHALL OPEN, THE SUPPLY FAN SHALL START, THE EXHAUST FAN REMAINS OFF, AND THE HOT WATER CONTROL VALVE SHALL MODULATE TO 100% OPEN TO PROVIDE A RAPID RISE IN THE AVERAGE SPACE TEMPERATURE. ALL VAV BOXES WILL GO TO 100% OPEN. THE SYSTEM SHALL BE PREVENTED FROM ENTERING THE WARM-UP MODE MORE THAN ONCE PER DAY. THE RADIANT PANELS AND UNIT HEATERS WILL BE THE FIRST STAGE OF WARM-UP. IF THE RADIATION AND UNIT HEATERS ARE NOT MEETING THE SPACE SET POINTS TEMPERATURE AS THE OCCUPIED PERIOD APPROACHES THEN THE AIR HANDLING UNIT WILL RUN TO MEET THE OCCUPIED SETPOINT. THE BMS SHALL MONITOR THE RATE OF TEMPERATURE RISE TO DETERMINE WHEN TO USE THE AIR HANDLING UNIT FOR WARM-UP THROUGH THE OPTIMIZED START PROGRAM WITHIN THE DDC SYSTEM.

2. COOLDOWN:
   THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE, THE HOT WATER COIL CONTROL VALVE SHALL BE CLOSED, THE ENTHALPY AND SENSIBLE ENERGY RECOVERY SECTION DAMPERS SHALL BE CLOSED, THE SENSIBLE ENERGY RECOVERY BYPASS DAMPER SHALL OPEN, THE RE-CIR DAMPER SHALL OPEN, VAV BOXES SHALL OPEN TO MAX POSITION, THE SUPPLY FAN SHALL START, AND CHILLED WATER COOLING COIL SHALL MODULATE TO MAINTAIN DISCHARGE SETPOINT OF 55°F (ADJ). MORNING COOLDOWN SHALL OCCUR (1 HR. ADJ.) PRIOR TO UNIT SCHEDULED OCCUPIED START TIME (THE PERIOD SHALL BE ADJUSTED THRU THE DDC OPTIMIZED START LOGIC UTILIZING UNIT TREND DATA). ECONOMIZER MODE OF OPERATION SHALL OVERRIDE NORMAL COOLDOWN MODE OF OPERATION. OPTIMIZE START LOGIC SHALL ALLOW 55°F SUPPLY AIR TEMPERATURE TO BE UTILIZED TO MINIMIZE THE COOLDOWN PERIOD.

3. OCCUPIED:
   THE FANS START OR CONTINUE TO RUN AND THE UNIT IS CONTROLLED AS FOLLOWS:
   THE SUPPLY AND EXHAUST FAN SHALL RUN AND ADJUST ITS SPEED BASED ON THE DUCT MOUNTED PRESSURE SENSOR WHICH WILL FLUCTUATE BASED ON VAV DAMPER POSITIONS.THE TAB CONTRACTOR SHALL DETERMINE THE EXACT SYSTEM PRESSURE & UTILIZE THIS VALUE AS THE SYSTEM SETPOINT. THE OUTSIDE AIR DAMPER SHALL OPEN TO ITS MAX POSITION AS INDICATED IN THE AHU SCHEDULE. THE EXHAUST DAMPER SHALL RECEIVE THE SAME SIGNAL AS THE OUTSIDE AIR DAMPER & BOTH SHALL MODULATE IN UNISON. THE RETURN AIR DAMPER SHALL RECEIVE THE OPPOSITE SIGNAL AS THE OUTSIDE AIR DAMPER. ALL DAMPERS WILL MODULATE IN SEQUENCE WITHOUT OVERLAP AS THE ASSOCIATED SYSTEM VAV BOXES MODULATE TO MAINTAIN SPACE CO_2 LEVELS & SPACE TEMPERATURE. IF ALL SPACE CO_2 LEVELS ARE BELOW 800 PPM, THE OUTSIDE AIR DAMPER SHALL GO TO ITS MINIMUM POSITION WHICH SHALL BE 20% OF THE SCHEDULED CFM. THE OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN 800 PPM THRESHOLD AT THE SPACE CO_2 PROGRAMMING SHALL BE PROVIDED TO ALLOW THE MODULATION OF THE SUPPLY & EXHAUST FANS TO MAINTAIN THE SYSTEM STATIC PRESSURE. THE TOTAL ENERGY RECOVERY SECTION WILL PRE-HEAT OR PRE-COOL THE INCOMING OUTSIDE AIR DEPENDING ON THE SEASON. THE CHILLED WATER COIL CONTROL VALVE SHALL MODULATE TO COOL/DEHUMIDIFY THE INCOMING AIR TO A SETPOINT OF 52°F (ADJ.). THE SENSIBLE ENERGY SECTION DAMPERS SHALL MODULATE TO REHEAT THE SUB COOLED SUPPLY AIR FROM THE CHILLED WATER COIL TO 63°F (ADJ SUMMER). DURING THE WINTER WHEN THE OUTDOOR AIR IS BELOW 60°F (ADJ.), THE COOLING COIL CONTROL VALVE IS CLOSED, THE SENSIBLE ENERGY RECOVERY BYPASS DAMPER IS OPEN, AND THE SENSIBLE ENERGY RECOVERY DAMPER IS CLOSED, THE HOT WATER COIL SHALL MODULATE, AS REQUIRED, TO PROVIDE HEAT TO THE SUPPLY AIR TO MAINTAIN THE DISCHARGE AIR TEMPERATURE OF 68°F (ADJ WINTER).

4. UNOCCUPIED:
   UNDER THIS MODE ALL UNITS SHALL BE OFF & DAMPERS CLOSED. ALL HEATING HOT WATER EQUIPMENT & COMPONENTS THROUGHOUT THE BUILDING SHALL MODULATE AS REQUIRED TO MAINTAIN THE BUILDING'S UNOCCUPIED SETPOINT OF 60° (ADJ) IN THE WINTER. IN THE EVENT THAT THE HEATING HOT WATER EQUIPMENT CAN NOT MAINTAIN THE BUILDING AVERAGE UNOCCUPIED SETPOINT, THE AHU(S) SHALL BE ACTIVATED & FUNCTION AS INDICATED IN THE WARM UP MODE W/ THE EXCEPTION THAT THE FAN SPEEDS WOULD BE REDUCED TO 60% OF THEIR TOTAL CAPACITY. DURING THE MONTHS WHEN OAT IS ABOVE 80° (ADJ) AND/OR RH IS ABOVE 70% (ADJ) & THE BUILDING'S AVERAGE UNOCCUPIED SETPOINTS OF 80° (ADJ) ARE NOT MAINTAINING, THEN THE UNIT WILL BE ACTIVATED & FUNCTION AS INDICATED IN THE COOLDOWN MODE W/ THE EXCEPTION THAT THE FAN SPEEDS WOULD BE REDUCED TO 60% OF THEIR TOTAL CAPACITY.

5. ECONOMIZER (DUAL ENTHALPY CONTROL):
   THE CONTROLLER SHALL MEASURE THE RETURN AIR AND OUTSIDE AIR ENTHALPY TEMPERATURES AND MODULATE THE OUTSIDE AIR DAMPER, RETURN AIR DAMPER, AND DAMPERS OF THE ENERGY AND SENSIBLE REHEAT PLATE HEAT EXCHANGER TO MAINTAIN A SETPOINT 2°F LESS THAN THE COOLING SUPPLY AIR TEMPERATURE SETPOINT.
   THE ECONOMIZER SHALL BE ENABLED WHENEVER:
   - OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
   - AND THE OUTSIDE AIR ENTHALPY IS LESS THAN 22 BTU/LB (ADJ).
   - AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
   - AND THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY.
   - AND THE SUPPLY FAN STATUS IS ON.
   - AND THE CHILLED WATER SUPPLY TEMPERATURE IS ABOVE 70 F. (ADJ.)

   THE ECONOMIZER SHALL BE DISABLED WHENEVER:
   - OUTSIDE AIR TEMPERATURE DROPS BELOW 48°F (ADJ.).
   - OR ON LOSS OF SUPPLY FAN STATUS.
   - OR THE FREEZESTAT IS ON.

6. EMERGENCY SHUTDOWN:
   THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN EMERGENCY SHUTDOWN SIGNAL.

7. LOW LEAVING TEMPERATURE:
   UPON A LOW LEAVING TEMPERATURE CONDITION (38°F ADJ) SENSED BY THE FREEZESTAT, THE OUTSIDE AIR AND EXHAUST AIR DAMPER SHALL CLOSE, THE SUPPLY AND EXHAUST AIR FANS SHALL SHUT DOWN THE HOT WATER CONTROL VALVE SHALL GO TO 100% FULL OPEN AND AN ALARM SHALL BE GENERATED.

8. SMOKE DETECTION:
   THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS.

9. SUPPLY FAN:
   THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME, UNLESS SHUT DOWN ON SAFETIES.
   ALARMS SHALL BE PROVIDED AS FOLLOWS:
   - SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF OR VICE VERSA.
   - SUPPLY FAN VFD: IN FAULT.

10. EXHAUST FAN:
    THE EXHAUST FAN SHALL RUN WHENEVER THE TOTAL ENERGY HEAT EXCHANGER DAMPER IS OPEN OR THE UNIT IS IN ECONOMIZER, UNLESS SHUT DOWN ON SAFETIES. ALARMS SHALL BE PROVIDED AS FOLLOWS:
    - EXHAUST FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
    - EXHAUST FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.

    CURRENT SENSORS SHALL BE INSTALLED ON THE SUPPLY AND EXHAUST FANS. THE DDC SYSTEM USES THESE SENSORS TO CONFIRM THE FANS ARE IN THE DESIRED STATE (I.E. ON OR OFF) AND GENERATES AN ALARM IF STATUS DEVIATES FROM DDC START/STOP CONTROL. IF EITHER SUPPLY OR EXHAUST FAN FAILS, THE OTHER FAN SHALL SHUTDOWN AND AN ALARM SHALL BE GENERATED.

11. SUPPLY AIR TEMPERATURE SETPOINT:
    THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE AND SHALL RESET SUPPLY AIR TEMPERATURE SETPOINT BASED ON OUTSIDE AIR TEMPERATURE. AT AN OAT OF 88°F(ADJ.) OR ABOVE, THE UNIT DAT SHALL BE 63°F(ADJ.). AT AN OAT OF 60°F(ADJ.) OR BELOW.

12. CHILLED WATER COOLING:
    THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND SHALL MODULATE THE CHILLED WATER CONTROL VALVE TO MAINTAIN THE REQUIRED COOLING COIL DAT OF 52°F (ADJ.). THE COOLING SHALL BE ENABLED WHENEVER:
    - OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
    - AND THE SUPPLY AIR TEMPERATURE IS ABOVE COOLING SETPOINT.
    - AND THE FAN STATUS IS ON.
    - SPACE TEMPERATURE CALLS FOR COOLING

13. HOT WATER HEATING:
    THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE HOT WATER HEATING CONTROL VALVE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT OF 68°F (ADJ). THE HEATING SHALL BE ENABLED WHENEVER:
    - OUTSIDE AIR TEMPERATURE IS LESS THAN 60°F (ADJ.).
    - AND THE SUPPLY AIR TEMPERATURE IS BELOW HEATING SETPOINT.
    - AND THE FAN STATUS IS ON.

    THE HEATING SHALL NORMALLY BE DISABLED WHENEVER COOLING SYSTEM IS ENERGIZED.

14. ENERGY RECOVERY HEAT PLATE:
    THE CONTROLLER SHALL MODULATE THE ENERGY RECOVERY HEAT PLATE DAMPERS AS FOLLOWS:

    COOLING RECOVERY MODE: THE ENERGY RECOVERY HEAT PLATE DAMPERS SHALL MODULATE FOR SUPPLY AIR COOLING RECOVERY WHENEVER:
    - THE UNIT RETURN AIR TEMPERATURE IS 5°F (ADJ.) OR MORE BELOW THE OUTSIDE AIR TEMPERATURE
    - AND THE SUPPLY FAN IS ON.

    HEATING RECOVERY MODE:THE ENERGY RECOVERY HEAT PLATE DAMPERS SHALL MODULATE FOR SUPPLY AIR HEATING RECOVERY WHENEVER:
    - THE UNIT RETURN AIR TEMPERATURE IS 5°F (ADJ.) OR MORE ABOVE THE OUTSIDE AIR TEMPERATURE
    - AND THE SUPPLY FAN IS ON.

    HEAT PLATE DEFROST CYCLE: IF THE WHEEL DIFFERENTIAL PRESSURE RISES TO 1 INCH OF H2O (ADJ.) AND THE OUTSIDE AIR TEMPERATURE IS BELOW 30°F, THE ENERGY RECOVERY HEAT PLATE BYPASS DAMPER SHALL MODULATE OPEN, UNTIL THE PRESSURE RETURNS TO NORMAL. ALARMS SHALL BE PROVIDED AS FOLLOWS:
    - HEAT PLATE DP RISES ABOVE 1.5" (ADJ.)

15. ENERGY HEAT PLATE EXCHANGER DIFFERENTIAL PRESSURE MONITOR:
    THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE ENERGY PLATE HEAT EXCHANGER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
    - HEAT EXCHANGER CLEANING REQUIRED: FINAL HEAT EXCHANGER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

16. PREFILTER DIFFERENTIAL PRESSURE MONITOR:
    THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PREFILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
    - PREFILTER CHANGE REQUIRED: PREFILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

17. FINAL FILTER DIFFERENTIAL PRESSURE MONITOR:
    THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
    - FINAL FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

18. RETURN FILTER DIFFERENTIAL PRESSURE MONITOR:
    THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
    - RETURN FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

19. SUPPLY AIR TEMPERATURE:
    THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE. ALARMS SHALL BE PROVIDED AS FOLLOWS:
    - HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
    - LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

20. CARBON DIOXIDE (CO_2) LEVELS:
    IF THE SPACE CO_2 LEVELS VARY BY 10% OR MORE FROM THE DESIGN VALUE OF 800 PPM, AN ALARM SHALL GENERATE AT THE BMS TO ALERT THE BUILDING OPERATOR.

21. OVERRIDE: THE SPACE-MOUNTED TEMPERATURE SENSOR SHALL HAVE PUSH-BUTTON OVERRIDE CAPABILITY UPON ACTIVATION, THE ASSOCIATED ROOFTOP UNIT SHALL CHANGE TO OCCUPIED MODE FOR A PERIOD OF 2 HRS. (ADJ.)

RTU-6	HARDWARE POINTS				SOFTWARE POINTS							
POINT NAME	AI	AO	DI	DO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC	REMARKS
OUTSIDE AIR FLOW MEASURING STATION	X								X		X	
SUPPLY AIR FLOW MEASURING STATION	X								X		X	
EXHAUST AIR FLOW MEASURING STATION	X								X		X	
OUTSIDE AIR TEMP	X								X		X	FROM WEATHER STATION
OUTSIDE AIR HUMIDITY	X								X		X	FROM WEATHER STATION
EXHAUST AIR TEMP	X								X		X	
EXHAUST AIR HUMIDITY	X								X		X	
ENERGY PLATE HEAT EXCHANGER DISCHARGE AIR TEMP	X								X		X	
ENERGY PLATE HEAT EXCHANGER DISCHARGE AIR HUMIDITY	X								X		X	
ENERGY PLATE HEAT EXCHANGER DIFFERENTIAL PRESSURE	X								X		X	
MIXED AIR TEMP	X								X		X	
MIXED AIR HUMIDITY	X								X		X	
COOLING COIL AIR TEMP	X	X							X		X	
HEATING COIL AIR TEMP	X	X							X		X	
SUPPLY AIR TEMP	X	X							X		X	
SUPPLY AIR HUMIDITY	X	X							X		X	
OUTSIDE AIR FILTER DIFFERENTIAL PRESSURE	X								X		X	
RETURN AIR FILTER DIFFERENTIAL PRESSURE	X								X		X	
RETURN AIR HUMIDITY	X								X		X	
RETURN AIR TEMP	X								X		X	
ENERGY RECOVERY SECTION DAMPER	X	X							X		X	
SUPPLY FAN VFD SPEED (TYP OF 2)	X	X							X		X	
EXHAUST FAN VFD SPEED (TYP OF 2)	X	X							X		X	
CHILLED WATER CONTROL VALVE		X							X		X	
HOT WATER CONTROL VALVE		X							X		X	
RE-CIRC AIR DAMPER	X	X							X		X	W/ END SWITCH
OUTSIDE AIR DAMPER	X	X							X		X	W/ END SWITCH
EXHAUST AIR DAMPER	X	X							X		X	W/ END SWITCH
RETURN AIR SMOKE DETECTOR (x4)			X						X	X		
SUPPLY AIR SMOKE DETECTOR			X						X	X		
SUPPLY FAN STATUS (TYP OF 2)			X						X		X	
EXHAUST FAN STATUS (TYP OF 2)			X						X		X	
SUPPLY FAN START/STOP (TYP OF 2)				X					X		X	
EXHAUST FAN START/STOP (TYP OF 2)				X					X		X	
COOLING SUPPLY AIR SET POINT					X				X		X	
HEATING SUPPLY AIR SET POINT					X				X		X	
EMERGENCY SHUT DOWN						X			X	X	X	
SCHEDULE								X				
SUPPLY FAN FAILURE (TYP OF 2)										X		
SUPPLY FAN VFD FAILURE (TYP OF 2)										X		
EXHAUST FAN FAILURE (TYP OF 2)										X		
EXHAUST FAN VFD FAILURE (TYP OF 2)										X		
HIGH COOLING SUPPLY AIR TEMP										X		ABOVE 75°F
HIGH HEATING SUPPLY AIR TEMP										X		ABOVE 90°F
LOW HEATING SUPPLY AIR TEMP										X		ABOVE 60°F
OUTSIDE AIR FILTER CHANGE REQUIRED										X	X	
RETURN AIR FILTER CHANGE REQUIRED										X	X	
HIGH RETURN AIR HUMIDITY										X		ABOVE 80% R.H.
LOW RETURN AIR TEMP										X		BELOW 50°F
HIGH RETURN AIR TEMP										X		ABOVE 90°F
SUPPLY SMOKE DETECTOR				X						X		
RETURN SMOKE DETECTOR				X						X		
FREEZESTAT				X					X			W/ AUTOMATIC RESET
CONDENSATE PAN OVERFLOW				X					X	X		
ENERGY RECOVERY DAMPER POSITION		X							X		X	
ENERGY RECOVERY BYPASS DAMPER POSITION		X							X		X	
RETURN AIR CO2		X							X	X	X	
SUPPLY AIR STATIC PRESSURE		X	X						X	X	X	

ABBREVIATIONS

AFMS	AIRFLOW MEASURING STATION
ALM	ALARM
AQ	AQUASTAT
ATC	AUTOMATIC TEMPERATURE CONTROLS
BLDG	BUILDING
BLR	BOILER
BMS	BUILDING MANAGEMENT SYSTEM (ENERGY & AUTOMATION)
COMB	COMBUSTION
CONTR	CONTROLLER
CO2	CARBON DIOXIDE
CR	CONTROL RELAY
CS	CURRENT SENSOR
CUV	CABINET UNIT VENTILATOR
D	DAMPER
DA	DISCHARGE AIR
DAS	DISCHARGE AIR SENSOR
DAT	DISCHARGE AIR TEMPERATURE
DCV	DEMAND CONTROL VENTILATION
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DDC	DIRECT DIGITAL CONTROL
DO	DAMPER OPERATOR
DP	DIFFERENTIAL PRESSURE
DPR	DAMPER
DPV	DIFFERENTIAL PRESSURE VALVE
EA	EXHAUST AIR
EF	EXHAUST FAN
F	FLOW/FARENHEIT (AS APPLICABLE)
FB	FACE & BYPASS
FD	FIRE DAMPER
H	HUMIDITY
HS	ENTHALPY SENSOR
HT	HIGH TEMPERATURE
HTG	HEATING
HR	HEAT RECOVERY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LT	LOW TEMPERATURE
M	MOTOR
MAT	MIXED AIR TEMPERATURE
NAC	NETWORK APPLICATION CONTROLLER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OVR	OVERRIDE
P	PRESSURE
PB	PUSH BUTTON
PNL	PANEL
RA	RETURN AIR
REL	RELIEF AIR
RF	RETURN FAN
RFC	RETURN FAN CONTROLLER
RM	ROOM
SA	SUPPLY AIR
SD	SMOKE DAMPER OR SMOKE DETECTOR
SF	SUPPLY FAN
SFC	SUPPLY FAN CONTROLLER
SP	STATIC PRESSURE
T	TEMPERATURE
TEC	TERMINAL EQUIPMENT CONTROLLER
UV	UNIT VENTILATOR
VAC	VOLTS - ALTERNATING CURRENT
VDC	VOLTS - DIRECT CURRENT
VFD	SEE VSD
VLV	VALVE
VP	VELOCITY PROBE (AIRFLOW)
VSD	VARIABLE SPEED (FREQUENCY) DRIVE
XFMR	TRANSFORMER

ATC/BMS GENERAL NOTES

1. ALL SETPOINTS INDICATED IN THE SEQUENCE OF OPERATIONS SHALL BE ADJUSTABLE.
2. THE CONTROL POINTS LISTED IN THE SUMMARY MATRIX ARE THE MINIMUM CONTROL POINTS REQUIRED. ATC CONTRACTOR SHALL PROVIDE ALL CONTROL POINTS AS REQUIRED FOR COMPLETE SYSTEM CONTROL PER THE SEQUENCE OF OPERATIONS.
3. ALL CONTROL WIRING, SENSORS, RELAYS, CONTROLLERS, PANELS, DAMPERS, ACTUATORS, ETC. INDICATED ON THE CONTROL DIAGRAMS SHALL BE PROVIDED BY THE ATC CONTRACTOR UNLESS NOTED OTHERWISE.
4. ALL ATC CONTROLS SHALL BE POWERED BY EMERGENCY POWER CIRCUITS COORD W/ DIV 260000
5. ALL HHW VALVES SHALL BE FAIL OPEN ON LOSS OF POWER. ALL CHW VALVES SHALL BE FAIL CLOSE ON LOSS OF POWER.
6. ALL HHW WATER VALVES SHALL BE MODULATING TYPE FOR GPM > 1; 2-POSITION ACCEPTABLE FOR FLOWS < 1 GPM
7. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPEC FOR FURTHER INFO.
8. DUCT SMOKE DETECTORS INDICATED ARE TO BE FURNISHED & INSTALLED IN THE DUCT BY HVAC CONTRACTOR. POWER WIRING AND FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR TO PROVIDE BMS INTERLOCK TO SHUT ASSOCIATED UNIT DOWN AND INITIATE AN ALARM UPON ACTIVATION
9. ALL SMOKE DAMPERS SHALL BE COMBINATION SMOKE/FIRE DAMPERS, SHALL BE FURNISHED & INSTALLED BY HVAC CONTRACTOR, AND POWER WIRED BY ATC CONTRACTOR. DAMPERS SHALL BE MOTOR OPERATED WITH 24 VOLT / 120 VOLT ACTUATOR BY HVAC CONTRACTOR. FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. DAMPER ENDSWITCH INTEGRATION TO BMS BY ATC CONTRACTOR.
10. DURING ENERGY RESTRICTION OR EMERGENCY POWER, SUPPLY FAN TO RUN; MECHANICAL COOLING SHALL BE DE-ENERGIZED.
11. ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE CORRESPONDING MAIN ATC PANEL, OR SUB ATC PANEL. EACH ATC PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE, ALL CONTROLS SHALL BE ON EMERGENCY POWER. ALL PANELS SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THE MAIN ATC PANEL, OR SUB PANEL, & NOT THROUGH THE UNIT'S MAIN POWER SOURCE. ATC CONTRACTOR SHALL PROVIDE EMERGENCY POWER FEEDER FROM THE ELECTRICAL EMERGENCY POWER PANELS TO ANY AND ALL ATC PANELS/SUB PANELS. ATC CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR TO DETERMINE WHERE EMERGENCY POWER MAY BE DERIVED FROM.
12. ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED v.4 CREDIT IEQC1.
13. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPECIFICATION.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Fairoe Corner Road - Suite D, Dartmouth, MA
508 - 992 - 5700 FAX 508 - 998 - 0960 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2020-02-10	Conformance Set

DRAWING NAME

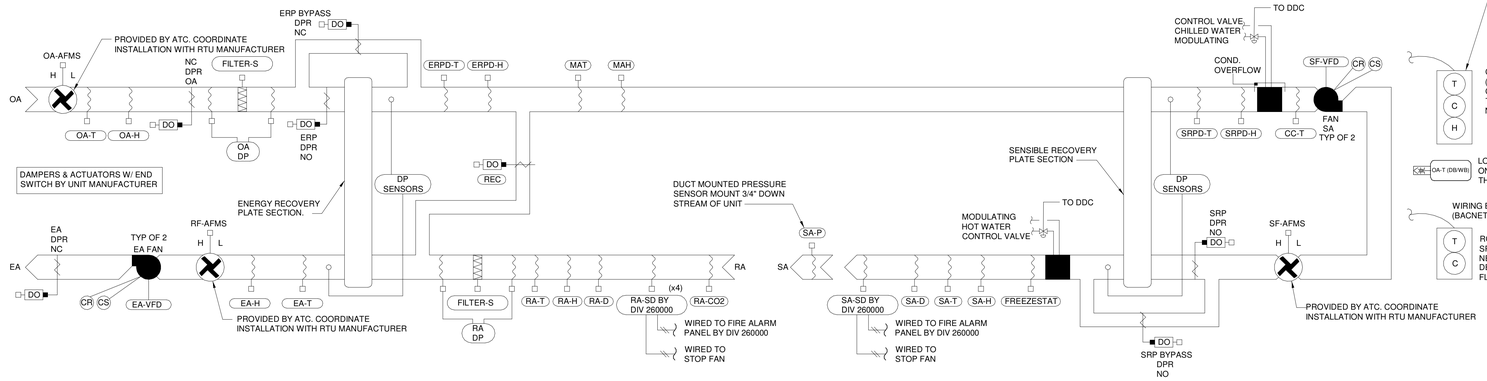
CONTROLS III - HVAC

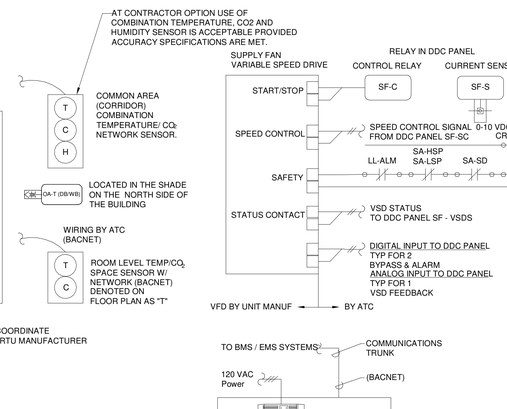
PROJECT NO. 1722

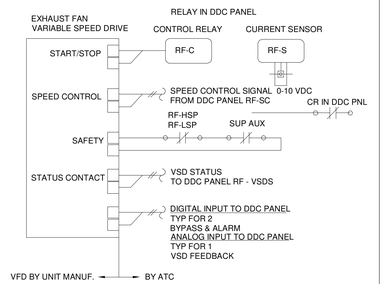
DRAWING NO.

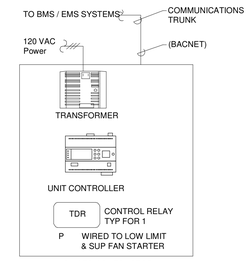
M403

ROOFTOP AIR HANDLING UNIT - DEHUMIDIFICAITON OVERHEAD VENTILATION SYSTEM (100% OA) - RTU-7









ROOFTOP AIR HANDLING UNITS

THE VARIABLE VOLUME ENERGY RECOVERY UNIT CONSISTS OF A SUPPLY AIR AND EXHAUST AIR SECTION WITH OUTDOOR AIR AND EXHAUST AIR DAMPERS AS WELL AS A RE-CIRCULATION DAMPER, RETURN AIR AND OUTSIDE AIR FILTERS, ONE TOTAL ENERGY PLATE HEAT EXCHANGER & ONE SENSIBLE ONLY PLATE HEAT EXCHANGER, HOT WATER HEATING COIL, CHILLED WATER COOLING COIL, SUPPLY FANS AND EXHAUST FANS. THE UNIT SHALL BE DDC CONTROLLED USING ELECTRIC ACTUATION.

A DDC CONTROLLER USING ELECTRIC ACTUATION CONTROLS THE AIR HANDLING UNIT OPERATION AS FOLLOWS:
RUN CONDITIONS - SCHEDULED:

1. WARM-UP:
THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE, THE CHILLED WATER CONTROL VALVES SHALL BE CLOSED, THE RE-CIR DAMPER SHALL OPEN, THE SUPPLY FAN SHALL START, THE EXHAUST FAN REMAINS OFF, AND THE HOT WATER CONTROL VALVE SHALL MODULATE TO 100% OPEN TO PROVIDE A RAPID RISE IN THE AVERAGE SPACE TEMPERATURE. ALL VAV BOXES WILL GO TO 100% OPEN. THE SYSTEM SHALL BE PREVENTED FROM ENTERING THE WARM-UP MODE MORE THAN ONCE PER DAY. THE RADIANT PANELS AND UNIT HEATERS WILL BE THE FIRST STAGE OF WARM-UP. IF THE RADIATION AND UNIT HEATERS ARE NOT MEETING THE SPACE SET POINTS TEMPERATURE AS THE OCCUPIED PERIOD APPROACHES THEN THE AIR HANDLING UNIT WILL RUN TO MEET THE OCCUPIED SETPOINT. THE BMS SHALL MONITOR THE RATE OF TEMPERATURE RISE TO DETERMINE WHEN TO USE THE AIR HANDLING UNIT FOR WARM-UP THROUGH THE OPTIMIZED START PROGRAM WITHIN THE DDC SYSTEM.

2. COOLDOWN:
THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE, THE HOT WATER COIL CONTROL VALVE SHALL BE CLOSED, THE ENTHALPY AND SENSIBLE ENERGY RECOVERY SECTION DAMPERS SHALL BE CLOSED, THE SENSIBLE ENERGY RECOVERY BYPASS DAMPER SHALL OPEN, THE RE-CIR DAMPER SHALL OPEN, VAV BOXES SHALL OPEN TO MAX POSITION, THE SUPPLY FAN SHALL START, AND CHILLED WATER COOLING COIL SHALL MODULATE TO MAINTAIN DISCHARGE SETPOINT OF 55°F (ADJ). MORNING COOLDOWN SHALL OCCUR (1 HR. ADJ.) PRIOR TO UNIT SCHEDULED OCCUPIED START TIME (TIME SHALL BE ADJUSTED THRU THE DDC OPTIMIZED START LOGIC USING UNIT TREND DATA). ECONOMIZER MODE OF OPERATION SHALL OVERRIDE NORMAL COOLDOWN MODE OF OPERATION. OPTIMIZE START LOGIC SHALL ALLOW 55°F SUPPLY AIR TEMPERATURE TO BE UTILIZED TO MINIMIZE THE COOLDOWN PERIOD.

3. OCCUPIED:
THE FANS START OR CONTINUE TO RUN AND THE UNIT IS CONTROLLED AS FOLLOWS:
THE SUPPLY AND EXHAUST FAN SHALL RUN AND ADJUST ITS SPEED BASED ON THE DUCT MOUNTED PRESSURE SENSOR WHICH WILL FLUCTUATE BASED ON VAV DAMPER POSITIONS.THE TAB CONTRACTOR SHALL DETERMINE THE EXACT SYSTEM PRESSURE & UTILIZE THIS VALUE AS THE SYSTEM SETPOINT. THE OUTSIDE AIR DAMPER SHALL OPEN TO ITS MAX POSITION AS INDICATED IN THE AHU SCHEDULE. THE EXHAUST DAMPER SHALL RECEIVE THE SAME SIGNAL AS THE OUTSIDE AIR DAMPER & BOTH SHALL MODULATE IN UNISON. THE RETURN AIR DAMPER SHALL RECEIVE THE OPPOSITE SIGNAL AS THE OUTSIDE AIR DAMPER. ALL DAMPERS WILL MODULATE IN SEQUENCE WITHOUT OVERLAP AS THE ASSOCIATED SYSTEM VAV BOXES MODULATE TO MAINTAIN SPACE CO_2 LEVELS & SPACE TEMPERATURE. IF ALL SPACE CO_2 LEVELS ARE BELOW 800 PPM, THE OUTSIDE AIR DAMPER SHALL GO TO ITS MINIMUM POSITION WHICH SHALL BE 20% OF THE SCHEDULED CFM. THE OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN 800 PPM THRESHOLD AT THE SPACE CO_2. PROGRAMMING SHALL BE PROVIDED TO ALLOW THE MODULATION OF THE SUPPLY & EXHAUST FANS TO MAINTAIN THE SYSTEM STATIC PRESSURE. THE TOTAL ENERGY RECOVERY SECTION WILL PRE-HEAT OR PRE-COOL THE INCOMING OUTSIDE AIR DEPENDING ON THE SEASON. THE CHILLED WATER COIL CONTROL VALVE SHALL MODULATE TO COOL/DEHUMIDIFY THE INCOMING AIR TO A SETPOINT OF 52°F (ADJ.). THE SENSIBLE ENERGY SECTION DAMPERS SHALL MODULATE TO PRE-HEAT THE SUB COOLED SUPPLY AIR FROM THE CHILLED WATER COIL TO 63°F (ADJ SUMMER). DURING THE WINTER WHEN THE OUTDOOR AIR IS BELOW 60°F (ADJ.), THE COOLING COIL CONTROL VALVE IS CLOSED, THE SENSIBLE ENERGY RECOVERY BYPASS DAMPER IS OPEN, AND THE SENSIBLE ENERGY RECOVERY DAMPER IS CLOSED, THE HOT WATER COIL SHALL MODULATE, AS REQUIRED, TO PROVIDE HEAT TO THE SUPPLY AIR TO MAINTAIN THE DISCHARGE AIR TEMPERATURE OF 68°F (ADJ WINTER).

4. UNOCCUPIED:
UNDER THIS MODE ALL UNITS SHALL BE OFF & DAMPERS CLOSED. ALL HEATING HOT WATER EQUIPMENT & COMPONENTS THROUGHOUT THE BUILDING SHALL MODULATE AS REQUIRED TO MAINTAIN THE BUILDING'S UNOCCUPIED SETPOINT OF 60° (ADJ) IN THE WINTER. IN THE EVENT THAT THE HEATING HOT WATER EQUIPMENT CAN NOT MAINTAIN THE BUILDING AVERAGE UNOCCUPIED SETPOINT, THE AHU(S) SHALL BE ACTIVATED & FUNCTION AS INDICATED IN THE WARM UP MODE W/ THE EXCEPTION THAT THE FAN SPEEDS WOULD BE REDUCED TO 60% OF THEIR TOTAL CAPACITY. DURING THE SUMMER MONTHS WHEN OAT IS ABOVE 80° (ADJ) AND/OR RH IS ABOVE 70% (ADJ) & THE BUILDING'S AVERAGE UNOCCUPIED SETPOINTS OF 80° (ADJ) ARE NOT MAINTAINING, THEN THE UNIT WILL BE ACTIVATED & FUNCTION AS INDICATED IN THE COOLDOWN MODE W/ THE EXCEPTION THAT THE FAN SPEEDS WOULD BE REDUCED TO 60% OF THEIR TOTAL CAPACITY.

5. ECONOMIZER (DUAL ENTHALPY CONTROL):
THE CONTROLLER SHALL MEASURE THE RETURN AIR AND OUTSIDE AIR ENTHALPY TEMPERATURES AND MODULATE THE OUTSIDE AIR DAMPER, RETURN AIR DAMPER, AND DAMPERS OF THE ENERGY AND SENSIBLE REHEAT PLATE HEAT EXCHANGER TO MAINTAIN A SETPOINT 2°F LESS THAN THE COOLING SUPPLY AIR TEMPERATURE SETPOINT. THE ECONOMIZER SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN 22 BTU/LB (ADJ.).
- AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY.
- AND THE SUPPLY FAN STATUS IS ON.
- AND THE CHILLED WATER SUPPLY TEMPERATURE IS ABOVE 70 F. (ADJ.)

THE ECONOMIZER SHALL BE DISABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE DROPS BELOW 48°F (ADJ.).
- OR ON LOSS OF SF STATUS.
- OR THE FREEZESTAT IS ON.

6. EMERGENCY SHUTDOWN:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN EMERGENCY SHUTDOWN SIGNAL.

7. LOW LEAVING TEMPERATURE:
UPON A LOW LEAVING TEMPERATURE CONDITION (38°F ADJ) SENSED BY THE FREEZESTAT, THE OUTSIDE AIR AND EXHAUST AIR DAMPER SHALL CLOSE, THE SUPPLY AND EXHAUST AIR FANS SHALL SHUT DOWN THE HOT WATER CONTROL VALVE SHALL GO TO 100% FULL OPEN AND AN ALARM SHALL BE GENERATED.

8. SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS.

9. SUPPLY FAN:
THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME, UNLESS SHUT DOWN ON SAFETIES.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- SUPPLY FAN PANEL IS COMMANDED ON, BUT THE STATUS IS OFF OR VICE VERSA.
- SUPPLY FAN VFD: IN FAULT,

10. EXHAUST FAN:
THE EXHAUST FAN SHALL RUN WHENEVER THE TOTAL ENERGY HEAT EXCHANGER DAMPER IS OPEN OR THE UNIT IS IN ECONOMIZER, UNLESS SHUT DOWN ON SAFETIES. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- EXHAUST FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- EXHAUST FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.

CURRENT SENSORS SHALL BE INSTALLED ON THE SUPPLY AND EXHAUST FANS. THE DDC SYSTEM USES THESE SENSORS TO CONFIRM THE FANS ARE IN THE DESIRED STATE (I.E. ON OR OFF) AND GENERATES AN ALARM IF STATUS DEVIATES FROM DDC START/STOP CONTROL. IF EITHER SUPPLY OR EXHAUST FAN FAILS, THE OTHER FAN SHALL SHUTDOWN AND AN ALARM SHALL BE GENERATED.

11. SUPPLY AIR TEMPERATURE SETPOINT:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE AND SHALL RESET SUPPLY AIR TEMPERATURE
SETPOINT BETWEEN 63°F AND 95°F BASED ON A DEVIATION FROM THE AVERAGE SPACE SETPOINT.

12. CHILLED WATER COOLING:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND SHALL MODULATE THE CHILLED WATER CONTROL VALVE TO MAINTAIN THE REQUIRED COOLING COIL DAT OF 52°F (ADJ.). THE COOLING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
- AND THE SUPPLY AIR TEMPERATURE IS ABOVE COOLING SETPOINT.
- AND THE FAN STATUS IS ON.
- SPACE TEMPERATURE CALLS FOR COOLING

13. HOT WATER HEATING:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE HOT WATER HEATING CONTROL VALVE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT THE HEATING SHALL BE ENABLED
WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 60°F (ADJ.).
- AND THE SUPPLY AIR TEMPERATURE IS BELOW HEATING SETPOINT.
- AND THE FAN STATUS IS ON.

THE HEATING SHALL NORMALLY BE DISABLED WHENEVER COOLING SYSTEM IS ENERGIZED AND SENSIBLE RECOVERY HEAT EXCHANGER REHEATING IS UTILIZED TO PROVIDE RE-HEAT.

14. ENERGY RECOVERY HEAT PLATE:
THE CONTROLLER SHALL MODULATE THE ENERGY RECOVERY HEAT PLATE DAMPERS AS FOLLOWS:

COOLING RECOVERY MODE: THE ENERGY RECOVERY HEAT PLATE DAMPERS SHALL MODULATE FOR SUPPLY AIR COOLING RECOVERY WHENEVER:
- THE UNIT RETURN AIR TEMPERATURE IS 5°F (ADJ.) OR MORE BELOW THE OUTSIDE AIR TEMPERATURE
- AND THE SUPPLY FAN IS ON.

HEATING RECOVERY MODE:THE ENERGY RECOVERY HEAT PLATE DAMPERS SHALL MODULATE FOR SUPPLY AIR HEATING RECOVERY WHENEVER:
- THE UNIT RETURN AIR TEMPERATURE IS 5°F (ADJ.) OR MORE ABOVE THE OUTSIDE AIR TEMPERATURE
- AND THE SUPPLY FAN IS ON.

HEAT PLATE DEFROST CYCLE: IF THE WHEEL DIFFERENTIAL PRESSURE RISES TO 1 INCH OF H2O (ADJ.) AND THE OUTSIDE AIR TEMPERATURE IS BELOW 30°F, THE ENERGY RECOVERY HEAT PLATE BYPASS DAMPER SHALL MODULATE OPEN, UNTIL THE PRESSURE RETURNS TO NORMAL. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HEAT PLATE DP RISES ABOVE 1.5" (ADJ.)

15. SENSIBLE RECOVERY HEAT PLATE:
THE CONTROLLER SHALL MODULATE THE ENERGY RECOVERY HEAT PLATE DAMPERS AS FOLLOWS:

REHEAT MODE: THE SENSIBLE RECOVERY HEAT PLATE DAMPERS SHALL MODULATE FOR SUPPLY AIR REHEAT WHENEVER:
- THE UNIT IS IN COOLING/DEHUMIDIFICATION MODE.
- COOLING COIL DAT IS BELOW UNIT SAT

SENSIBLE RECOVERY HEAT PLATE SHALL BE BYPASSED WHILE COOLING IS DISABLED AND ENERGY
RECOVERY HEAT PLATE IS IN HEAT RECOVERY.

16. ENERGY AND SENSIBLE HEAT PLATE EXCHANGER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE ENERGY AND SENSIBLE PLATE HEAT EXHANGER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HEAT EXCHANGER CLEANING REQUIRED: FINAL HEAT EXCHANGER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

17. PREFILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PREFILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- PREFILTER CHANGE REQUIRED: PREFILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

18. FINAL FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- FINAL FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

19. RETURN FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- RETURN FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

20. SUPPLY AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE. ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
- LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

21. CARBON DIOXIDE (CO_2) LEVELS:
IF THE SPACE CO_2 LEVELS VARY BY 10% OR MORE FROM THE DESIGN VALUE OF 800 PPM, AN ALARM SHALL GENERATE AT THE BMS TO ALERT THE BUILDING OPERATOR.

22. OVERRIDE: THE SPACE-MOUNTED TEMPERATURE SENSOR SHALL HAVE PUSH-BUTTON OVERRIDE CAPABILITY. UPON ACTIVATION, THE ASSOCIATED ROOFTOP UNIT (& VAV'S FOR RTU-2) SHALL CHANGE TO OCCUPIED MODE FOR A PERIOD OF 2 HRS. (ADJ.)

RTU-7	HARDWARE POINTS				SOFTWARE POINTS							
POINT NAME	AI	AO	DI	DO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC	REMARKS
OUTSIDE AIR FLOW MEASURING STATION	X								X		X	
SUPPLY AIR FLOW MEASURING STATION	X								X		X	
EXHAUST AIR FLOW MEASURING STATION	X								X		X	
OUTSIDE AIR TEMP	X								X		X	FROM WEATHER STATION
OUTSIDE AIR HUMIDITY	X								X		X	FROM WEATHER STATION
EXHAUST AIR TEMP	X								X		X	
EXHAUST AIR HUMIDITY	X								X		X	
ENERGY PLATE HEAT EXCHANGER DISCHARGE AIR TEMP	X								X		X	
ENERGY PLATE HEAT EXCHANGER DISCHARGE AIR HUMIDITY	X								X		X	
ENERGY PLATE HEAT EXCHANGER DIFFERENTIAL PRESSURE	X								X		X	
SENSIBLE PLATE HEAT EXCHANGER DISCHARGE AIR TEMP	X								X		X	
SENSIBLE PLATE HEAT EXCHANGER DISCHARGE AIR HUMIDITY	X								X		X	
SENSIBLE PLATE HEAT EXCHANGER DIFFERENTIAL PRESSURE	X								X		X	
MIXED AIR TEMP	X								X		X	
MIXED AIR HUMIDITY	X								X		X	
COOLING COIL AIR TEMP	X	X							X		X	
HEATING COIL AIR TEMP	X	X							X		X	
SUPPLY AIR TEMP	X	X							X		X	
SUPPLY AIR HUMIDITY	X	X							X		X	
OUTSIDE AIR FILTER DIFFERENTIAL PRESSURE	X								X		X	
RETURN AIR FILTER DIFFERENTIAL PRESSURE	X								X		X	
RETURN AIR HUMIDITY	X								X		X	
RETURN AIR TEMP	X								X		X	
ENERGY RECOVERY SECTION DAMPER	X	X							X		X	
SUPPLY FAN VFD SPEED (TYP OF 2)	X	X							X		X	
EXHAUST FAN VFD SPEED (TYP OF 2)	X	X							X		X	
CHILLED WATER CONTROL VALVE		X							X		X	
HOT WATER CONTROL VALVE		X							X		X	
RE-CIRC AIR DAMPER	X	X							X		X	W/ END SWITCH
OUTSIDE AIR DAMPER	X	X							X		X	W/ END SWITCH
EXHAUST AIR DAMPER	X	X							X		X	W/ END SWITCH
RETURN AIR SMOKE DETECTOR (x4)			X						X	X		
SUPPLY AIR SMOKE DETECTOR			X						X	X		
SUPPLY FAN STATUS (TYP OF 2)			X						X		X	
EXHAUST FAN STATUS (TYP OF 2)			X						X		X	
SUPPLY FAN START/STOP (TYP OF 2)				X					X		X	
EXHAUST FAN START/STOP (TYP OF 2)				X					X		X	
COOLING SUPPLY AIR SET POINT					X				X		X	
HEATING SUPPLY AIR SET POINT					X				X		X	
EMERGENCY SHUT DOWN						X			X	X	X	
SCHEDULE								X				
SUPPLY FAN FAILURE (TYP OF 2)										X		
SUPPLY FAN VFD FAILURE (TYP OF 2)										X		
EXHAUST FAN FAILURE (TYP OF 2)										X		
EXHAUST FAN VFD FAILURE (TYP OF 2)										X		
HIGH COOLING SUPPLY AIR TEMP										X		ABOVE 75°F
HIGH HEATING SUPPLY AIR TEMP										X		ABOVE 90°F
LOW HEATING SUPPLY AIR TEMP										X		ABOVE 60°F
OUTSIDE AIR FILTER CHANGE REQUIRED										X	X	
RETURN AIR FILTER CHANGE REQUIRED										X	X	
HIGH RETURN AIR HUMIDITY										X		ABOVE 80% R.H.
LOW RETURN AIR TEMP										X		BELOW 50°F
HIGH RETURN AIR TEMP										X		ABOVE 90°F
SUPPLY SMOKE DETECTOR				X						X		
RETURN SMOKE DETECTOR				X						X		
FREEZESTAT				X					X	X		W/ AUTOMATIC RESET
CONDENSATE PAN OVERFLOW				X					X	X		
ENERGY RECOVERY DAMPER POSITION		X							X		X	
ENERGY RECOVERY BYPASS DAMPER POSITION		X							X		X	
SENSIBLE RECOVERY DAMPER POSITION		X							X		X	
SENSIBLE RECOVERY BYPASS DAMPER POSITION		X							X		X	
RETURN AIR CO2		X							X	X	X	
SUPPLY AIR STATIC PRESSURE		X	X						X	X	X	

ABBREVIATIONS

AFMS	AIRFLOW MEASURING STATION
ALM	ALARM
AQ	AQUASTAT
ATC	AUTOMATIC TEMPERATURE CONTROLS
BLDG	BUILDING
BLR	BOILER
BMS	BUILDING MANAGEMENT SYSTEM (ENERGY & AUTOMATION)
COMB	COMBUSTION
CONTR	CONTROLLER
CO2	CARBON DIOXIDE
CR	CONTROL RELAY
CS	CURRENT SENSOR
CUV	CABINET UNIT VENTILATOR
D	DAMPER
DA	DISCHARGE AIR
DAS	DISCHARGE AIR SENSOR
DAT	DISCHARGE AIR TEMPERATURE
DCV	DEMAND CONTROL VENTILATION
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DDC	DIRECT DIGITAL CONTROL
DO	DAMPER OPERATOR
DP	DIFFERENTIAL PRESSURE
DPR	DAMPER
DPV	DIFFERENTIAL PRESSURE VALVE
EA	EXHAUST AIR
EF	EXHAUST FAN
F	FLOW/FARENHEIT (AS APPLICABLE)
FB	FACE & BYPASS
FD	FIRE DAMPER
H	HUMIDITY
HS	ENTHALPY SENSOR
HT	HIGH TEMPERATURE
HTG	HEATING
HR	HEAT RECOVERY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LT	LOW TEMPERATURE
M	MOTOR
MAT	MIXED AIR TEMPERATURE
NAC	NETWORK APPLICATION CONTROLLER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OVR	OVERRIDE
P	PRESSURE
PB	PUSH BUTTON
PNL	PANEL
RA	RETURN AIR
REL	RELIEF AIR
RF	RETURN FAN
RFC	RETURN FAN CONTROLLER
RM	ROOM
SA	SUPPLY AIR
SD	SMOKE DAMPER OR SMOKE DETECTOR
SF	SUPPLY FAN
SFC	SUPPLY FAN CONTROLLER
SP	STATIC PRESSURE
T	TEMPERATURE
TEC	TERMINAL EQUIPMENT CONTROLLER
UV	UNIT VENTILATOR
VAC	VOLTS - ALTERNATING CURRENT
VDC	VOLTS - DIRECT CURRENT
VFD	SEE VSD
VLV	VALVE
VP	VELOCITY PROBE (AIRFLOW)
VSD	VARIABLE SPEED (FREQUENCY) DRIVE
XFMR	TRANSFORMER

ATC/BMS GENERAL NOTES

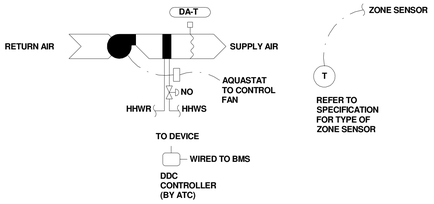
1. ALL SETPOINTS INDICATED IN THE SEQUENCE OF OPERATIONS SHALL BE ADJUSTABLE.
2. THE CONTROL POINTS LISTED IN THE SUMMARY MATRIX ARE THE MINIMUM CONTROL POINTS REQUIRED. ATC CONTRACTOR SHALL PROVIDE ALL CONTROL POINTS AS REQUIRED FOR COMPLETE SYSTEM CONTROL PER THE SEQUENCE OF OPERATIONS.
3. ALL CONTROL WIRING, SENSORS, RELAYS, CONTROLLERS, PANELS, DAMPERS, ACTUATORS, ETC. INDICATED ON THE CONTROL DIAGRAMS SHALL BE PROVIDED BY THE ATC CONTRACTOR UNLESS NOTED OTHERWISE.
4. ALL ATC CONTROLS SHALL BE POWERED BY EMERGENCY POWER CIRCUITS COORD W/ DIV 260000
5. ALL HHW VALVES SHALL BE FAIL OPEN ON LOSS OF POWER. ALL CHW VALVES SHALL BE FAIL CLOSE ON LOSS OF POWER.
6. ALL HHW WATER VALVES SHALL BE MODULATING TYPE FOR GPM > 1; 2-POSITION ACCEPTABLE FOR FLOWS < 1 GPM
7. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPEC FOR FURTHER INFO.
8. DUCT SMOKE DETECTORS INDICATED ARE TO BE FURNISHED & INSTALLED IN THE DUCT BY HVAC CONTRACTOR. POWER WIRING AND FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR TO PROVIDE BMS INTERLOCK TO SHUT ASSOCIATED UNIT DOWN AND INITIATE AN ALARM UPON ACTIVATION
9. ALL SMOKE DAMPERS SHALL BE COMBINATION SMOKE/FIRE DAMPERS, SHALL BE FURNISHED & INSTALLED BY HVAC CONTRACTOR, AND POWER WIRED BY ATC CONTRACTOR. DAMPERS SHALL BE MOTOR OPERATED WITH 24 VOLT / 120 VOLT ACTUATOR BY HVAC CONTRACTOR. FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. DAMPER ENDSWITCH INTEGRATION TO BMS BY ATC CONTRACTOR.
10. DURING ENERGY RESTRICTION OR EMERGENCY POWER, SUPPLY FAN TO RUN; MECHANICAL COOLING SHALL BE DE-ENERGIZED.
11. ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE CORRESPONDING MAIN ATC PANEL, OR SUB ATC PANEL. EACH ATC PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE, ALL CONTROLS SHALL BE ON EMERGENCY POWER. ALL PANELS SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THE MAIN ATC PANEL OR SUB PANEL, & NOT THROUGH THE UNIT'S MAIN POWER SOURCE. ATC CONTRACTOR SHALL PROVIDE EMERGENCY POWER FEEDER FROM THE ELECTRICAL EMERGENCY POWER PANELS TO ANY AND ALL ATC PANELS/SUB PANELS. ATC CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR TO DETERMINE WHERE EMERGENCY POWER MAY BE DERIVED FROM.
12. ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED v.4 CREDIT IEQC1.
13. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPECIFICATION.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Fairow Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 5980 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAG

CABINET UNIT HEATER (UH)
(WALL OR CEILING TYPE)



UNIT HEATER CONTROL- (CABINET, CONCEALED & WALL TYPE)

A DDC CONTROLLER USING ELECTRIC ACTUATION CONTROLS THE UNIT OPERATION AS FOLLOWS:

RUN CONDITIONS - SCHEDULED:
THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:
- OCCUPIED MODE: THE UNIT SHALL MAINTAIN A HEATING SETPOINT OF 70°F (ADJ.).
- UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN A HEATING SETPOINT OF 60°F (ADJ.).

FAN:
THE FAN SHALL RUN ANYTIME THE AQUASTAT SENSES WATER TEMPERATURE IS ABOVE 90°F (ADJ.) AND THE SPACE TEMPERATURE IS BELOW SETPOINT, UNLESS SHUTDOWN ON SAFETIES.

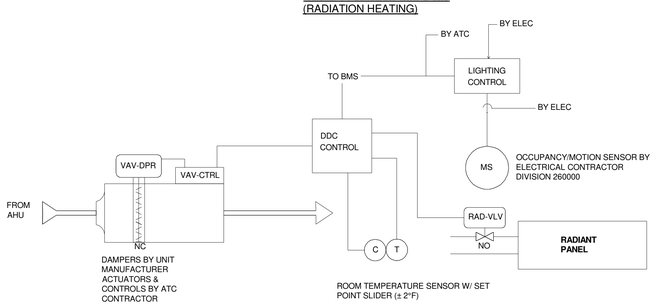
HEATING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE HEATING COIL VALVE TO MAINTAIN ITS HEATING SETPOINT. THE HEATING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- ZONE TEMPERATURE IS BELOW THE HEATING SETPOINT.

SUMMER OPERATIONS:
- THE FAN IS OFF.
- THE CONTROL VALVE IS CLOSED.

CABINET UNIT HEATER	HARDWARE POINTS				SOFTWARE POINTS							
POINT NAME	AI	AO	DI	DO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC	REMARKS
ZONE TEMP	X								X	X	X	
HEATING VALVE		X							X		X	
SPACE SETPOINT				X				X			X	
FAN START/STOP				X				X			X	
FAN STATUS			X						X	X	X	
TOTALS	1	1	1	2	0	0	0	2	3	2	5	

TOTAL HARDWARE (2) TOTAL SOFTWARE (0)

VARIABLE AIR VOLUME BOX
(RADIATION HEATING)

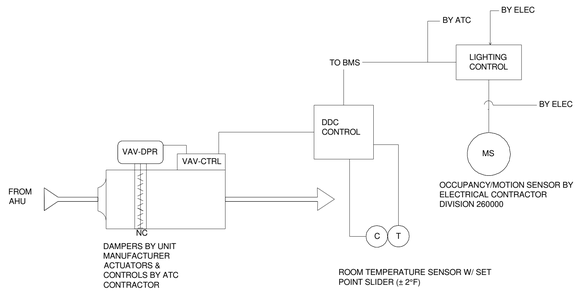


VARIABLE AIR VOLUME BOX WITH HOT WATER REHEAT AND RATIATION HEATING

A. THE SPACE THERMOSTAT SHALL MODULATE THE NORMALLY OPEN VARIABLE AIR VOLUME BOX DAMPER BETWEEN THE MAXIMUM AND MINIMUM POSITIONS AS INDICATED IN THE DRAWINGS. AT THE MINIMUM POSITION, IF THE SPACE TEMPERATURE CONTINUES TO FALL, THE MODULATING RADIATION VALVE SHALL MODULATE OPEN AS THE FIRST STAGE OF HEATING.
B. DURING UNOCCUPIED THE DAMPER SHALL BE FULL OPEN AND THE RADIATION HEATING HOT WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN UNOCCUPIED SPACE THERMOSTAT SETPOINT.
C. WHEN THE BOILER IS NOT OPERATING, THE AIR VOLUME DAMPER SHALL MODULATE TO THE COOLING MINIMUM POSITION.
D. ROOM/ZONE TEMPERATURE SENSORS SHALL HAVE PUSH BUTTON OCCUPIED OVERRIDE BUTTON CAPABILITY TO MANUALLY CHANGE TO UNIT OCCUPIED MODE FOR A PERIOD OF 3 HOURS (ADJ.)
E. THE SPACE MOUNTED CO2 SENSOR SHALL GENERATE AN ALARM WHEN CONDITIONS VARY BY 10% OR MORE FROM THE DESIGN CONDITION.

VARIABLE AIR VOLUME BOX (VAV)	AI	AO	DI	DO	ALARM
DAMPER POS./COMMAND (EACH)	X	X			X
SUPPLY AIR TEMP.	X				
SUPPLY AIR VOLUME (CFM)	X				
ROOM TEMPERATURE	X				X
HH W RADIANT PANEL VALVE	X	X			
CO2 SENSOR	X				X
MOTION SENSOR (L.C.P)	X				

VARIABLE AIR VOLUME BOX



VARIABLE AIR VOLUME BOX

A. THE SPACE THERMOSTAT SHALL MODULATE THE NORMALLY OPEN VARIABLE AIR VOLUME BOX DAMPER BETWEEN THE MAXIMUM AND MINIMUM POSITIONS AS INDICATED IN THE DRAWINGS. AT THE MINIMUM POSITION, IF THE SPACE TEMPERATURE CONTINUES TO FALL, THE MODULATING RADIATION VALVE SHALL MODULATE OPEN AS THE FIRST STAGE OF HEATING.
B. WHEN THE BOILER IS NOT OPERATING, THE AIR VOLUME DAMPER SHALL MODULATE TO THE COOLING MINIMUM POSITION.
C. ROOM/ZONE TEMPERATURE SENSORS SHALL HAVE PUSH BUTTON OCCUPIED OVERRIDE BUTTON CAPABILITY TO MANUALLY CHANGE TO UNIT OCCUPIED MODE FOR A PERIOD OF 3 HOURS (ADJ.)
D. THE SPACE MOUNTED CO2 SENSOR SHALL GENERATE AN ALARM WHEN CONDITIONS VARY BY 10% OR MORE FROM THE DESIGN CONDITION.

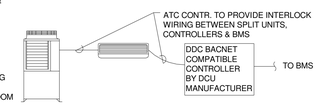
VARIABLE AIR VOLUME BOX (VAV)	AI	AO	DI	DO	ALARM	REMARKS
DAMPER POS./COMMAND (EACH)	X	X			X	
SUPPLY AIR TEMP.	X					
SUPPLY AIR VOLUME (CFM)	X					
ROOM TEMPERATURE	X					NOTE #1
CO2 SENSOR	X				X	

NOTE #1: ± 5°F (ADJ.) FROM SETPOINT.

DUCTLESS COOLING UNITS (DCU)

ALL CONDENSATE DRAIN PANS ASSOCIATED WITH DCU'S TO BE PROVIDED WITH EQUIPMENT MANUFACTURER'S OVERFLOW SENSORS WHICH ARE TO BE INTERLOCKED WITH THE BUILDING MANAGEMENT SYSTEM FOR MONITORING ONLY. PROVIDE ROOM TEMPERATURE AND HIGH CONDENSATE ALARM.

ON A CONDENSATE OVERFLOW ALARM THE UNIT SHALL BE DE-ACTIVATED & ALARM SHALL BE GENERATED AT THE BMS



DUCTLESS COOLING UNIT (DCU)	AI	AO	DI	DO	ALARM
DCU SYSTEM S/S & STATUS			X	X	X
SPACE TEMPERATURE	X				X
CONDENSATE OVERFLOW ALARM			X		X

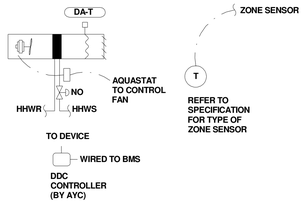
ABBREVIATIONS

AFMS	AIRFLOW MEASURING STATION
ALM	ALARM
AQ	AQUASTAT
ATC	AUTOMATIC TEMPERATURE CONTROLS
BLDG	BUILDING
BLR	BOILER
BMS	BUILDING MANAGEMENT SYSTEM (ENERGY & AUTOMATION)
COMB	COMBUSTION
CONTR	CONTROLLER
CO2	CARBON DIOXIDE
CR	CONTROL RELAY
CS	CURRENT SENSOR
CUV	CABINET UNIT VENTILATOR
D	DAMPER
DA	DISCHARGE AIR
DAS	DISCHARGE AIR SENSOR
DAT	DISCHARGE AIR TEMPERATURE
DCV	DEMAND CONTROL VENTILATION
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DDC	DIRECT DIGITAL CONTROL
DO	DAMPER OPERATOR
DP	DIFFERENTIAL PRESSURE
DPR	DAMPER
DPV	DIFFERENTIAL PRESSURE VALVE
EA	EXHAUST AIR
EF	EXHAUST FAN
F	FLOW/FARENHEIT (AS APPLICABLE)
FB	FACE & BYPASS
FD	FIRE DAMPER
H	HUMIDITY
HS	ENTHALPY SENSOR
HT	HIGH TEMPERATURE
HTG	HEATING
HR	HEAT RECOVERY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LT	LOW TEMPERATURE
M	MOTOR
MAT	MIXED AIR TEMPERATURE
NAC	NETWORK APPLICATION CONTROLLER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OVR	OVERRIDE
P	PRESSURE
PB	PUSH BUTTON
PNL	PANEL
RA	RETURN AIR
REL	RELIEF AIR
RF	RETURN FAN
RFC	RETURN FAN CONTROLLER
RM	ROOM
SA	SUPPLY AIR
SD	SMOKE DAMPER OR SMOKE DETECTOR
SF	SUPPLY FAN
SFC	SUPPLY FAN CONTROLLER
SP	STATIC PRESSURE
T	TEMPERATURE
TEC	TERMINAL EQUIPMENT CONTROLLER
UV	UNIT VENTILATOR
VAC	VOLTS - ALTERNATING CURRENT
VDC	VOLTS - DIRECT CURRENT
VFD	SEE VSD
VLV	VALVE
VP	VELOCITY PROBE (AIRFLOW)
VSD	VARIABLE SPEED (FREQUENCY) DRIVE
XFMR	TRANSFORMER

ATC/BMS GENERAL NOTES

1. ALL SETPOINTS INDICATED IN THE SEQUENCE OF OPERATIONS SHALL BE ADJUSTABLE.
2. THE CONTROL POINTS LISTED IN THE SUMMARY MATRIX ARE THE MINIMUM CONTROL POINTS REQUIRED. ATC CONTRACTOR SHALL PROVIDE ALL CONTROL POINTS AS REQUIRED FOR COMPLETE SYSTEM CONTROL PER THE SEQUENCE OF OPERATIONS.
3. ALL CONTROL WIRING, SENSORS, RELAYS, CONTROLLERS, PANELS, DAMPERS, ACTUATORS, ETC. INDICATED ON THE CONTROL DIAGRAMS SHALL BE PROVIDED BY THE ATC CONTRACTOR UNLESS NOTED OTHERWISE.
4. ALL ATC CONTROLS SHALL BE POWERED BY EMERGENCY POWER CIRCUITS COORD W/ DIV 260000
5. ALL HHW VALVES SHALL BE FAIL OPEN ON LOSS OF POWER. ALL CHW VALVES SHALL BE FAIL CLOSE ON LOSS OF POWER.
6. ALL HHW WATER VALVES SHALL BE MODULATING TYPE FOR GPM > 1; 2-POSITION ACCEPTABLE FOR FLOWS < 1 GPM
7. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPEC FOR FURTHER INFO.
8. DUCT SMOKE DETECTORS INDICATED ARE TO BE FURNISHED & INSTALLED IN THE DUCT BY HVAC CONTRACTOR. POWER WIRING AND FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR TO PROVIDE BMS INTERLOCK TO SHUT ASSOCIATED UNIT DOWN AND INITIATE AN ALARM UPON ACTIVATION
9. ALL SMOKE DAMPERS SHALL BE COMBINATION SMOKE/FIRE DAMPERS, SHALL BE FURNISHED & INSTALLED BY HVAC CONTRACTOR, AND POWER WIRED BY ATC CONTRACTOR. DAMPERS SHALL BE MOTOR OPERATED WITH 24 VOLT / 120 VOLT ACTUATOR BY HVAC CONTRACTOR. FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. DAMPER ENDSWITCH INTEGRATION TO BMS BY ATC CONTRACTOR.
10. DURING ENERGY RESTRICTION OR EMERGENCY POWER, SUPPLY FAN TO RUN; MECHANICAL COOLING SHALL BE DE-ENERGIZED.
11. ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE CORRESPONDING MAIN ATC PANEL, OR SUB ATC PANEL. EACH ATC PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE, ALL CONTROLS SHALL BE ON EMERGENCY POWER. ALL PANELS SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THE MAIN ATC PANEL, OR SUB PANEL, & NOT THROUGH THE UNIT'S MAIN POWER SOURCE. ATC CONTRACTOR SHALL PROVIDE EMERGENCY POWER FEEDER FROM THE ELECTRICAL EMERGENCY POWER PANELS TO ANY AND ALL ATC PANELS/SUB PANELS. ATC CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR TO DETERMINE WHERE EMERGENCY POWER MAY BE DERIVED FROM.
12. ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED v.4 CREDIT IEQC1.
13. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPEC/FICATION.

UNIT HEATER (UH)



UNIT HEATER CONTROL- (CABINET, CONCEALED & WALL TYPE)

A DDC CONTROLLER USING ELECTRIC ACTUATION CONTROLS THE UNIT OPERATION AS FOLLOWS:

RUN CONDITIONS - SCHEDULED:
THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:
- OCCUPIED MODE: THE UNIT SHALL MAINTAIN A HEATING SETPOINT OF 70°F (ADJ.).
- UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN A HEATING SETPOINT OF 60°F (ADJ.).

FAN:
THE FAN SHALL RUN ANYTIME THE AQUASTAT SENSES WATER TEMPERATURE IS ABOVE 90°F (ADJ.) AND THE SPACE TEMPERATURE IS BELOW SETPOINT, UNLESS SHUTDOWN ON SAFETIES.

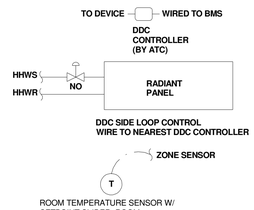
HEATING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE HEATING COIL VALVE TO MAINTAIN ITS HEATING SETPOINT. THE HEATING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- ZONE TEMPERATURE IS BELOW THE HEATING SETPOINT.

SUMMER OPERATIONS:
- THE FAN IS OFF.
- THE CONTROL VALVE IS CLOSED.

CABINET UNIT HEATER	HARDWARE POINTS				SOFTWARE POINTS							
POINT NAME	AI	AO	DI	DO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC	REMARKS
ZONE TEMP	X								X	X	X	
HEATING VALVE		X							X		X	
SPACE SETPOINT				X				X			X	
FAN START/STOP				X				X			X	
FAN STATUS			X						X	X	X	
TOTALS	1	1	1	2	0	0	0	2	3	2	5	

TOTAL HARDWARE (2) TOTAL SOFTWARE (0)

RADIATION



RADIATION AND CONVECTOR HEATING:

A DDC CONTROLLER USING ELECTRIC ACTUATION CONTROLS THE UNIT OPERATION AS FOLLOWS:

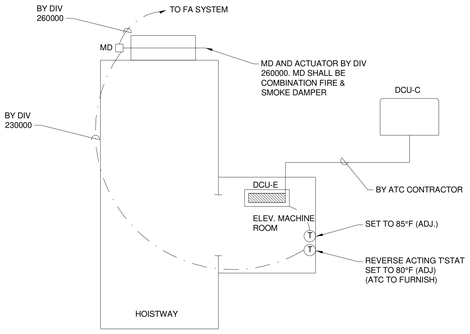
RUN CONDITIONS - SCHEDULED:
THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:
- OCCUPIED MODE: THE UNIT SHALL MAINTAIN A HEATING SETPOINT OF 70°F (ADJ.).
- UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN A HEATING SETPOINT OF 60°F (ADJ.).

HEATING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE HEATING COIL VALVE TO MAINTAIN ITS HEATING SETPOINT. THE HEATING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- THE ZONE TEMPERATURE IS BELOW THE HEATING SETPOINT.

SUMMER OPERATIONS:
- THE CONTROL VALVE IS CLOSED.

RADIATION	HARDWARE POINTS				SOFTWARE POINTS							
POINT NAME	AI	AO	DI	DO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC	REMARKS
ZONE TEMP	X								X		X	
HEATING VALVE		X							X		X	
SPACE SETPOINT				X				X			X	
TOTALS	1	1	0	1	0	0	0	1	2	0	3	

TOTAL HARDWARE (2) TOTAL SOFTWARE (0)



ELEVATOR MACHINE ROOM VENTILATION/AC CONTROL

MOTORIZED DAMPER SHALL MODULATE OPEN TO MAINTAIN ELEVATOR MACHINE ROOM SPACE TEMP OF (80° F, ADJ.); MD SHALL FAIL OPEN UPON LOSS OF POWER OR OPEN AS COMMANDED BY FIRE ALARM SYSTEM.

IF ELEVATOR MACHINE ROOM TEMPERATURE RISES ABOVE 85°F, THE DCU HEAT PUMP AC SYSTEM SHALL OPERATE TO MAINTAIN SPACE TEMPERATURE SETPOINT AND HOISTWAY MD SHALL CLOSE DURING NORMAL OPERATION. IN HEATING SEASON, IF SPACE TEMPERATURE FALLS BELOW 55°F (ADJ.) DCU HEAT PUMP UNIT SHALL OPERATE TO MAINTAIN 55°F SPACE TEMPERATURE SETPOINT.

ELEVATOR MACHINE ROOM CONTROL	AI	AO	DI	DO	ALARM	REMARKS
SPACE TEMPERATURE SENSOR	X				X	
MOTORIZED DAMPER POSITION			X	X	X	
DCU SYSTEM INDOOR S/S & STATUS			X	X	X	(1)
CONDENSATE ALARM			X		X	

(1) VIA BACNET COMPATIBLE CONTROLLER (BY DCU MANUF.)

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 3, Belmont, MA 02478
781 - 862 - 5700 FAX 508 - 998 - 0860 E - MAIL: info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

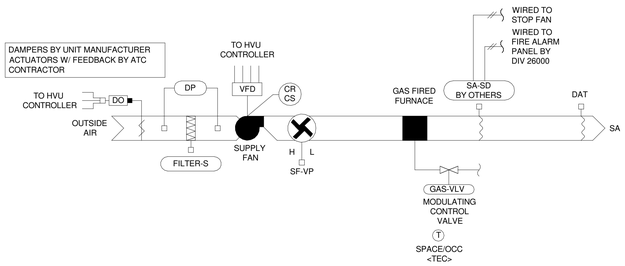
REVISIONS

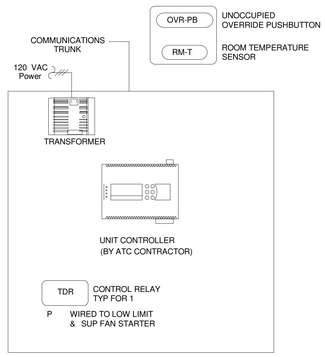
No.	Date	Description
1	2019-12-04	Addendum #5
2	2020-02-10	Conformance Set

DRAWING NAME
CONTROLS V - HVAC

PROJECT NO. 1722

DRAWING NO.
M405





MAIN KITCHEN HOOD VENTILATION CONTROL MAU-1

DDC CONTROLLER USING ELECTRIC ACTUATION CONTROLS THE MAU AND IS CONTROLLED AS FOLLOWS:

THE ROOFTOP UNIT CONSISTS OF AN OUTDOOR AIR DAMPER, FILTER, GAS FIRED FURNACE AND SUPPLY FAN.

THE ROOFTOP UNIT IS SCHEDULED FOR ON/OFF OPERATION BASED ON A PUSH TO START BUTTON IN THE KITCHEN AND PROVIDES TEMPERED MAKE UP AIR FOR THE KITCHEN HOOD.

THE MAU OPERATES IN OCCUPIED - HOOD OFF, OCCUPIED - HOOD ON, UNOCCUPIED AND SAFETY MODES AS FOLLOWS: (ALL SUGGESTED SETPOINTS AND SETTINGS ARE ADJUSTABLE.)

OCCUPIED - HOOD OFF
THE OUTDOOR AIR DAMPER IS CLOSED AND THE UNIT IS OFF.

OCCUPIED - HOOD ON
THE OUTDOOR AIR DAMPER OPENS TO ITS DESIGN "HOOD ON" POSITION, FULL OPEN AND THE GAS FURNACE CONTROL VALVE OR THE DX COOLING MODULATES TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT OF 68° WHEN OAT IS BELOW 60° & 60° WHEN OAT IS ABOVE 60°. THE KITCHEN EXHAUST FAN IS ACTIVATED & MODULATES ITS SPEED BASED ON A SIGNAL FROM THE KITCHEN MANAGEMENT SYSTEM CONTROLLER PROVIDED BY THE KITCHEN CONSULTANT. THE SUPPLY FAN MODULATES AND TRACKS THE EXHAUST FAN SPEED (HTZ) TO A SLIGHT NEGATIVE PRESSURE. THE OUTSIDE AIR DAMPER REMAINS OPEN WHILE THE MAU IS ON. THE ATC CONTRACTOR SHALL PROVIDE ALL THE NECESSARY PROGRAMMING, INTEGRATION, WIRING AND GRAPHICS FOR A COMPLETE AND FUNCTIONAL SYSTEM ASSOCIATED WITH THE KITCHEN MANAGEMENT SYSTEM CONTROLLER. COORDINATE WITH KITCHEN VENDOR FOR WIRING AND PROGRAMMING INFORMATION.

UNOCCUPIED
THE SUPPLY FAN STOPS AND THE OUTDOOR AIR DAMPER CLOSES.

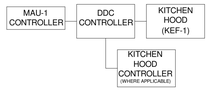
SAFETY
THE SMOKE DETECTOR IN THE SUPPLY AIRSTREAM DE-ENERGIZES THE SUPPLY FAN UPON ACTIVATION. OUTSIDE AIR DAMPER POSITIONS TO THE CLOSED POSITION AFTER THE FAN IS DE-ENERGIZED.

UPON ACTIVATION OF THE ANSUL SYSTEM THE MAU WILL ENTER THE UNOCCUPIED MODE & SHUT DOWN. THE KITCHEN EXHAUST FAN WILL ALSO SHUT DOWN. ATC CONTRACTOR TO PROVIDE RELAY WIRING & PROGRAMMING WITH THE ANSUL SYSTEM TO ACKNOWLEDGE ACTIVATION & SEQUENCE HVAC EQUIPMENT.

UPON SENSING A HIGH CO LEVEL THROUGH THE FIRE ALARM SYSTEM THE MAU WILL ENTER THE UNOCCUPIED MODE & SHUT DOWN. THE KITCHEN EXHAUST FAN WILL START OR CONTINUE TO RUN TO REMOVE ANY RESIDUAL CO. ONCE CO LEVELS RETURN TO NORMAL THE MAU & KEF WILL REVERT TO THEIR NORMAL MODE OF OPERATION.

A CURRENT SWITCH IS INSTALLED IN THE SUPPLY FAN STARTER. THE DDC SYSTEM USES THE SWITCH TO CONFIRM THE FAN IS IN THE DESIRED STATE (I.E. ON OR OFF) AND GENERATES AN ALARM IF STATUS DEVIATES FROM DDC START/STOP CONTROL.

Makeup Air Unit (MAU-1)	AI	AO	DI	DO	ALARM
SUPPLY FAN S/S & STATUS			X	X	X
OA DAMPER POS.	X	X			X
FILTER STATUS					X
DISCHARGE AIR TEMP.	X	X			
AIRFLOW CFM (SA & RA)	X	X			
GAS FURNACE (MODULATING CONTROL VALVE)		X			
OUTSIDE AIR TEMP. (FROM DDC)	X				
OUTSIDE AIR %RH (FROM DDC)	X				
SMOKE DETECTOR			X		X
SUPPLY FAN VFD	X		X	X	X
KITCHEN EXHAUST FAN VFD	X		X	X	X
ANSUL SYSTEM			X		X
CO LEVEL ALARM			X		X

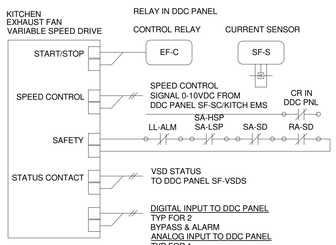


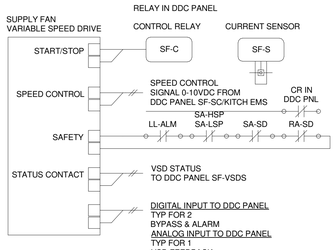
MAIN KITCHEN HOOD VENTILATION CONTROL

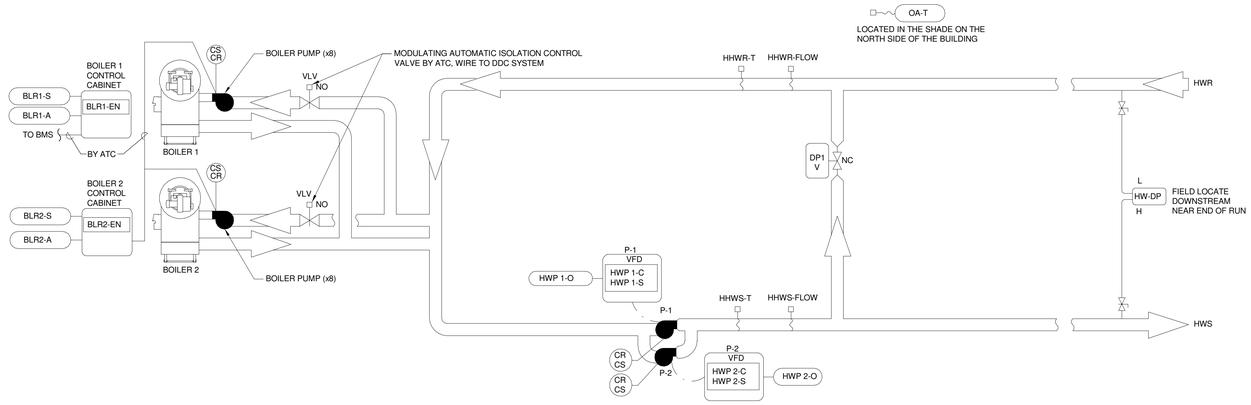
THROUGH THE "PUSH-TO-START" CONTROL PROVIDED ON THE KITCHEN HOOD THE EXHAUST FAN (KEF-1) SHALL START.

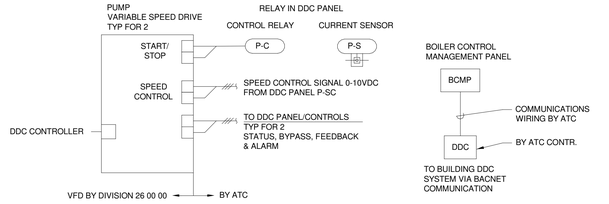
WHEN THE KITCHEN HOOD IS OFF THE REVERSE SHALL OCCUR.

THE CONTROL OF THE MAU SUPPLY AND KITCHEN EXHAUST FAN FOR THE KITCHEN HOOD SHALL BE CONTROLLED BY A "KITCHEN HOOD ENERGY MANAGEMENT CONTROL SYSTEM."









BOILER PLANT CONTROL

A DDC CONTROLLER USING ELECTRIC ACTUATION CONTROLS THE BOILER PLANT OPERATION AS FOLLOWS:

1. THROUGH THE CENTRAL AUTOMATIC TEMPERATURE CONTROL SYSTEM, WHEN THE OUTSIDE AIR TEMPERATURE (O.A.T.) IS BELOW 65°F, THE PRIMARY HEATING HOT WATER PUMP SHALL START. IF THE PRIMARY PUMP SHALL FAIL TO START, THE STANDBY PUMP SHALL START IN ITS PLACE. EACH PUMP SHALL ALSO BE CAPABLE OF DUTY CYCLING WHICH WILL BE AUTOMATICALLY CONTROLLED THROUGH THE DDC SYSTEM BASED UPON PUMP OPERATION TIME. THE DIFFERENTIAL PRESSURE SENSORS LOCATED IN THE SUPPLY AND RETURN PIPING SYSTEM SHALL MODULATE THE HOT WATER FLOW VIA THE VARIABLE FREQUENCY DRIVE TO MAINTAIN A SYSTEM PRESSURE DROP EQUAL TO 5 PSI ABOVE THE DIFFERENTIAL PRESSURE SETPOINT (ADJ.). UPON A PUMP VFD FAILURE, THE SYSTEM DIFFERENTIAL PRESSURE CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN MINIMUM FLOW THROUGH THE BOILER SYSTEM AND TO MAINTAIN A MINIMUM OF 5 PSI (ADJ.) ABOVE THE DIFFERENTIAL PRESSURE SETPOINT. DP VALVE SHALL MODULATE OPEN UPON CONDITION WHERE PUMPS ARE AT MIN SPEED/FLOW CONDITION AND THE DP IS ABOVE SET POINT. DIFFERENTIAL PRESSURE CONTROL SETPOINTS SHALL BE FIELD DETERMINED BY ATC/TAB CONTRACTORS.

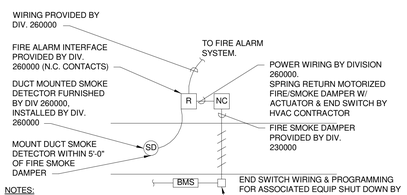
2. EACH BOILER SHALL BE CAPABLE OF CYCLING WHICH BOILER WILL BE SELECTED AS LEAD, THIS WILL BE AUTOMATICALLY CONTROLLED THROUGH THE BOILER BURNER MANUFACTURER CONTROLLER BASED UPON A DETERMINED SCHEDULE BASED UPON BOILER RUN-TIME. THE BOILER BURNER MANAGEMENT CONTROL SYSTEM SHALL DETERMINE WHEN BOILER #1, 2 OR 3 OPERATE AND AT WHICH FIRING RATE SO THAT THE BOILER PLANT OPERATES AT ITS HIGHEST EFFICIENCY.

3. RESET SCHEDULE
AN ADJUSTABLE BOILER TEMPERATURE WATER RESET SCHEDULE, THROUGH THE BURNER MANAGEMENT CONTROL SYSTEM, WILL RESET THE HEATING HOT WATER SUPPLY TEMPERATURE TO MAINTAIN A SUPPLY WATER OF 160°F AT A 0°F O.A.T. AS THE O.A.T. RISES, THE BOILER SUPPLY WATER TEMPERATURE WILL BE REDUCED BY THE BURNER MANAGEMENT CONTROL SYSTEM TO RUN AT A SUPPLY WATER TEMPERATURE OF 110°F AT AN O.A.T. OF 60°F THIS FEATURE WILL BE A LINEAR RELATIONSHIP BETWEEN 160°F TO 110°F BASED ON O.A.T. OUTDOOR AIR RESET SETPOINTS SHALL BE ADJUSTABLE AND SHALL BE COORDINATED WITH BOILER MANUFACTURE REQUIREMENTS.

4. COMBUSTION AIR CONTROL
CLOSING OF THE BOILER'S CONTACTS SHALL OPEN THE COMBUSTION AIR DAMPER ASSOCIATED WITH THE BOILER THAT IS ENABLED & READY TO FIRE. ONCE COMPLETE, THE BURNERS SHALL ENERGIZE. THE COMBUSTION AIR DAMPER SHALL CLOSE SHUT WHEN THE BURNER CIRCUITS ARE DE-ENERGIZED.

5. SAFETY
UPON A BOILER ALARM OR BOILER FAILURE THE BOILER BURNER MANAGEMENT PANEL SHALL SEND AN ALARM TO THE DDC SYSTEM. ONCE A BOILER GENERATES AN ALARM OR FAILURE THE NEXT BOILER IN LINE SHALL BE ENABLED & OPERATE AS REQUIRED TO MAINTAIN HHW SUPPLY TEMPERATURE. THE BOILER IN ALARM/FAILURE SHALL HAVE TO BE MANUALLY RESET

BOILER PLANT	AI	AO	DI	DO	ALARM	REMARKS
BOILER S/S & STATUS (EACH)			X	X	X	GENERAL ALARM
BOILER ISOLATION/CONTROL VALVE (EACH)	X	X				W/ END SWITCH
PUMP S/S & STATUS (EACH)			X	X	X	
HHWS TEMPERATURE	X	X				
HHWR TEMPERATURE	X					
OUTSIDE AIR TEMP.	X					
HHW DIFF PRESSURE BYPASS VALVE	X	X			X	W/ END SWITCH
VFD - EACH PUMP	X	X			X	
HHW BTU ENERGY (FLOW/TEMP CALC)	X	X				
BOILER (x2)			X	X	X	
BOILER PUMP START/STOP & STATUS (EACH)			X	X	X	VIA BOILER CONTROL PANEL B.O.D. QTY. = 16

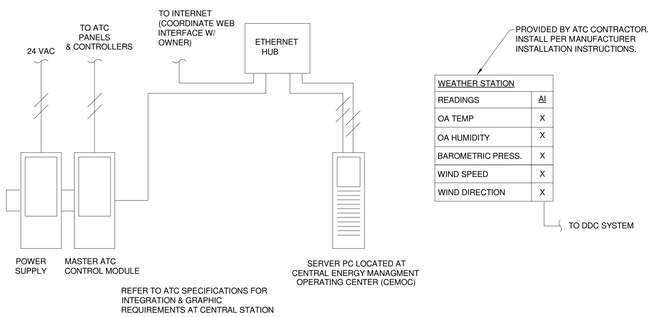


NOTES:

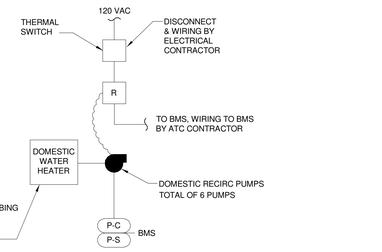
1. F/S DAMPER SHALL CLOSE IF FIRE ALARM IS TRIGGERED AND/OR ON A LOSS OF POWER.

2. ACTIVATED END SWITCH SHALL SHUT DOWN ASSOCIATED EQUIPMENT SUCH AS EXH FAN & RTU THROUGH BMS PROGRAMMING. ALARM SHALL BE CORRECTED AT THE BMS.

FIRE/SMOKE DAMPER DETAIL
(NOT TO SCALE)



ATC FRONT END INTERFACE DIAGRAM



DOMESTIC RERIC PUMPS	AI	AO	DI	DO	ALARM	REMARKS
START	X			X		
STOP	X			X		
STATUS	X			X		

DOMESTIC RECIRC PUMPS

A DDC CONTROLLER USING ELECTRIC ACTUATION CONTROLS THE DOMESTIC RERIC PUMPS.

THE PUMPS SHALL BE ENABLED BASED ON THE BUILDING SCHEDULE.

ABBREVIATIONS

AFMS	AIRFLOW MEASURING STATION
ALM	ALARM
AQ	AQUASTAT
ATC	AUTOMATIC TEMPERATURE CONTROLS
BLDG	BUILDING
BLR	BOILER
BMS	BUILDING MANAGEMENT SYSTEM (ENERGY & AUTOMATION)
COMB	COMBUSTION
CONTR	CONTROLLER
CO2	CARBON DIOXIDE
CR	CONTROL RELAY
CS	CURRENT SENSOR
CUV	CABINET UNIT VENTILATOR
D	DAMPER
DA	DISCHARGE AIR
DAS	DISCHARGE AIR SENSOR
DAT	DISCHARGE AIR TEMPERATURE
DCV	DEMAND CONTROL VENTILATION
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DDC	DIRECT DIGITAL CONTROL
DO	DAMPER OPERATOR
DP	DIFFERENTIAL PRESSURE
DPR	DAMPER
DPV	DIFFERENTIAL PRESSURE VALVE
EA	EXHAUST AIR
EF	EXHAUST FAN
F	FLOW/FARENHEIT (AS APPLICABLE)
FB	FACE & BYPASS
FD	FIRE DAMPER
H	HUMIDITY
HS	ENTHALPY SENSOR
HT	HIGH TEMPERATURE
HTG	HEATING
HR	HEAT RECOVERY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LT	LOW TEMPERATURE
M	MOTOR
MAT	MIXED AIR TEMPERATURE
NAC	NETWORK APPLICATION CONTROLLER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OVR	OVERRIDE
P	PRESSURE
PB	PUSH BUTTON
PNL	PANEL
RA	RETURN AIR
REL	RELIEF AIR
RF	RETURN FAN
RFC	RETURN FAN CONTROLLER
RM	ROOM
SA	SUPPLY AIR
SD	SMOKE DAMPER OR SMOKE DETECTOR
SF	SUPPLY FAN
SFC	SUPPLY FAN CONTROLLER
SP	STATIC PRESSURE
T	TEMPERATURE
TEC	TERMINAL EQUIPMENT CONTROLLER
UV	UNIT VENTILATOR
VAC	VOLTS - ALTERNATING CURRENT
VDC	VOLTS - DIRECT CURRENT
VFD	SEE VSD
VLV	VALVE
VP	VELOCITY PROBE (AIRFLOW)
VSD	VARIABLE SPEED (FREQUENCY) DRIVE
XFMR	TRANSFORMER

ATC/BMS GENERAL NOTES

1. ALL SETPOINTS INDICATED IN THE SEQUENCE OF OPERATIONS SHALL BE ADJUSTABLE.
2. THE CONTROL POINTS LISTED IN THE SUMMARY MATRIX ARE THE MINIMUM CONTROL POINTS REQUIRED. ATC CONTRACTOR SHALL PROVIDE ALL CONTROL POINTS AS REQUIRED FOR COMPLETE SYSTEM CONTROL PER THE SEQUENCE OF OPERATIONS.
3. ALL CONTROL WIRING, SENSORS, RELAYS, CONTROLLERS, PANELS, DAMPERS, ACTUATORS, ETC. INDICATED ON THE CONTROL DIAGRAMS SHALL BE PROVIDED BY THE ATC CONTRACTOR UNLESS NOTED OTHERWISE.
4. ALL ATC CONTROLS SHALL BE POWERED BY EMERGENCY POWER CIRCUITS CCORD W/ DIV 260000
5. ALL HHW VALVES SHALL BE FAIL OPEN ON LOSS OF POWER. ALL CHW VALVES SHALL BE FAIL CLOSE ON LOSS OF POWER.
6. ALL HHW WATER VALVES SHALL BE MODULATING TYPE FOR GPM > 1; 2-POSITION ACCEPTABLE FOR FLOWS < 1 GPM
7. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPEC FOR FURTHER INFO.
8. DUCT SMOKE DETECTORS INDICATED ARE TO BE FURNISHED & INSTALLED IN THE DUCT BY HVAC CONTRACTOR. POWER WIRING AND FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR TO PROVIDE BMS INTERLOCK TO SHUT ASSOCIATED UNIT DOWN AND INITIATE AN ALARM UPON ACTIVATION
9. ALL SMOKE DAMPERS SHALL BE COMBINATION SMOKE/FIRE DAMPERS, SHALL BE FURNISHED & INSTALLED BY HVAC CONTRACTOR, AND POWER WIRED BY ATC CONTRACTOR. DAMPERS SHALL BE MOTOR OPERATED WITH 24 VOLT / 120 VOLT ACTUATOR BY HVAC CONTRACTOR. FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. DAMPER ENDSWITCH INTEGRATION TO BMS BY ATC CONTRACTOR.
10. DURING ENERGY RESTRICTION OR EMERGENCY POWER, SUPPLY FAN TO RUN; MECHANICAL COOLING SHALL BE DE-ENERGIZED.
11. ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE CORRESPONDING MAIN ATC PANEL, OR SUB ATC PANEL. EACH ATC PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE, ALL CONTROLS SHALL BE ON EMERGENCY POWER. ALL PANELS SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THE MAIN ATC PANEL, OR SUB PANEL, & NOT THROUGH THE UNIT'S MAIN POWER SOURCE. ATC CONTRACTOR SHALL PROVIDE EMERGENCY POWER FEEDER FROM THE ELECTRICAL EMERGENCY POWER PANELS TO ANY AND ALL ATC PANELS/SUB PANELS. ATC CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR TO DETERMINE WHERE EMERGENCY POWER MAY BE DERIVED FROM.
12. ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQFT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED v.4 CREDIT IEQC1.
13. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPECIFICATION.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 3, Belmont, MA 02478
781 - 862 - 5700 FAX 862 - 5700 E - MAIL info@ggdpe.com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

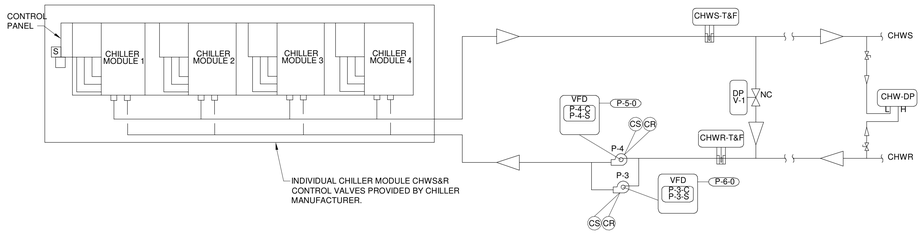
REVISIONS

No.	Date	Description
1	2019-12-04	Addendum # 5
2	2020-02-10	Conformance Set

DRAWING NAME
CONTROLS VI - HVAC

PROJECT NO. 1722

DRAWING NO.
M406



CHILLER PLANT CONTROL

A DDC CONTROLLER USING ELECTRIC ACTUATION CONTROLS THE CHILLER PUMP AS FOLLOWS:

THROUGH THE CENTRAL AUTOMATIC TEMPERATURE CONTROL SYSTEM AND/OR WHEN THE OUTSIDE TEMPERATURE IS ABOVE 65 DEGREES, THE LEAD PUMP FOR EACH PRIMARY & SECONDARY CHW LOOP SHALL START. IF THE LEAD CHILLED WATER PUMP IN EITHER SYSTEM SHALL FAIL TO START, THE STANDBY PUMP SHALL START IN IT'S PLACE. EACH PUMP SHALL ALSO BE CAPABLE OF DUTY CYCLING WHICH WILL BE AUTOMATICALLY CONTROLLED THROUGH THE DDC SYSTEM. THE DIFFERENTIAL PRESSURE SENSORS LOCATED IN THE SUPPLY AND RETURN PIPING SYSTEMS SHALL MODULATE THE ECM MOTOR TO MAINTAIN A SYSTEM PRESSURE EQUAL TO 2 PSI ABOVE THE SYSTEM PRESSURE SETPOINT. THE CHILLER PLANT SHALL CONTROL BUILDING CHILLED WATER SUPPLY TEMPERATURE. WHEN COMMANDED BY THE BMS DUE TO A COOLING DEMAND, AND THE CHILLED WATER FLOW HAS BEEN PROVEN IN THE SUPPLY WATER SYSTEM, THE CHILLER SHALL START.

RESET SCHEDULE:
AN ADJUSTABLE CHILLED WATER TEMPERATURE WATER RESET SCHEDULE BASED ON OUTDOOR AIR DRYBULB & WETBULB CONDITIONS, THROUGH THE CHILLED WATER SUPPLY SYSTEM, SHALL RESET THE CHILLED WATER SUPPLY TEMPERATURE. THE CHILLER SHALL SUPPLY CHILLED WATER AT A SUPPLY TEMPERATURE OF 43 DEGREES FAHRENHEIT (ADJ.) AT A DESIGN OUTDOOR AIR TEMPERATURE. AS THE OUTDOOR AIR TEMPERATURE DROPS BELOW 75 DEGREES F DB/ 50% RH, THE CHILLER SUPPLY WATER TEMPERATURE WILL BE INCREASED BY THE CHILLER MANAGEMENT CONTROL SYSTEM TO RUN AT A SUPPLY WATER TEMPERATURE OF 55 DEGREES F (ADJ.)

SAFETY:
IF THE CHILLER GOES OFFLINE ON A HIGH OR LOW WATER TEMPERATURE OR FLOW (ADJ.) FAILURE, AN ALARM WILL BE INDICATED BY THE CENTRAL AUTOMATIC CONTROL SYSTEM.

THE DIFFERENTIAL BYPASS VALVE ON THE PRIMARY LOOP SHALL MODULATE OPEN UPON A VFD FAILURE OR AS REQUIRED TO MEET MINIMUM CHILLED WATER FLOW REQUIREMENTS. THE DIFFERENTIAL PRESSURE CONTROL SETPOINTS SHALL BE FIELD DETERMINED BY ATC/TAB CONTRACTOR AND SHALL BE ADJUSTABLE.

CONTROL POINT	AI	AO	DI	DO	ALARM	SHOW ON GRAPHICS	REMARKS
CHILLER S/S & STATUS			X	X	X	X	
PUMP S/S & STATUS (EACH)			X	X	X	X	
CHWS TEMPERATURE	X	X				X	
CHWR TEMPERATURE	X					X	
CHWS FLOW	X				X	X	
CHWR FLOW	X				X	X	
VFD/ECM (EACH)	X	X			X	X	
CHW DIFF. PRESS. BYPASS	X	X			X	X	
PUMP SPEED (EACH)	X	X			X	X	
OUTSIDE AIR TEMP. (DB & WB)	X					X	FROM WEATHER STATION
OUTSIDE AIR HUMIDITY (% RH)	X					X	FROM WEATHER STATION
CHW BTU ENERGY (BY TEMP & FLOW CALC)	X	X					
HHW BTU ENERGY (BY TEMP & FLOW CALC)	X	X					

ATC CONTRACTOR TO PROVIDE ALL NECESSARY SENSORS, WIRING, PROGRAMMING, & MAPPING AS REQUIRED TO ACHIEVE SEQUENCE & OBTAIN ALL POINTS INDICATED ABOVE. ATC CONTRACTOR TO COORD. W/ UNIT MANUFACTURER TO PROVIDE SEAMLESS COMMUNICATION BETWEEN UNIT CONTROLS, INPUTS/OUTPUTS TO BMS SYSTEM GRAPHICS, & PROVIDE ALL READABLE/WRITEABLE POINTS.

FROM CHWS&R TEMP & FLOW SENSOR, DATA CALCULATION AS FOLLOWS:
CHW SYSTEM:
Q (BTU) = 470 x FLOW (GPM) x (CHWS - CHWR TEMP °F)
FROM HHWS&R TEMP & FLOW SENSOR, DATA CALCULATION AS FOLLOWS:
HHW SYSTEM:
Q (BTU) = 470 x FLOW (GPM) x (HHWS - HHWR TEMP °F)

MISCELLANEOUS BMS POINTS								
UNIT#	UNIT FUNCTION	UNIT LOCATION	AI	AO	DI	DO	ALARM	REMARKS
AW-1	ACID NEUTRALIZER	---	X				X	(TYP FOR 2)
FS-1	EYEWASH FLOW SWITCH	---	X				X	NOTE #1
FS-2	EYEWASH FLOW SWITCH	---	X				X	NOTE #1
FS-3	EYEWASH FLOW SWITCH	---	X				X	NOTE #1
FS-4	EYEWASH FLOW SWITCH	---	X				X	NOTE #1
FS-5	EYEWASH FLOW SWITCH	---	X				X	NOTE #1
GSM-1	GAS METER	---	X					NOTE #1
RP-1	HWR CIR	---	X				X	NOTE #1
RP-2	HWR CIR	---	X				X	NOTE #1
WH-1	HW HEATER	---	X				X	NOTE #1 (TYP FOR 2)
WH-2	HW HEATER	---	X				X	NOTE #1 (TYP FOR 2)
WH-3	HW HEATER	---	X				X	NOTE #1 (TYP FOR 2)
WH-4	NP HW HEATER	---	X				X	NOTE #1 (TYP FOR 2)
	EMERG GENSET, STATUS ON/OFF				X		X	VIA GENSET DRY CONTACTS, NOTE #2
	FREEZER ALARM				X		X	VIA DRY CONTACTS (TYP FOR 2)
	LEAK DETECTION				X	X	X	NOTE #3
	ELEC. MAIN METER		X					NOTE #4
	CITY WATER METER		X					NOTE #4, METER BY DIVISION 220000 WIRED BY ATC
	GAS METER		X					NOTE #4
	DOMESTIC HW RECIRC PUMP		X	X				NOTE #4
	DOMESTIC HW TEMP		X					NOTE #4
	ELEVATOR SUMP PUMP STATUS						X	

NOTE #1: ACTUAL METER, FLOW SWITCH & HIGH/LOW SENSOR FURNISHED & INSTALLED BY DIVISION 220000. COORDINATE INSTALLATION OF SENSORS W/ DIVISION 220000 CONTRACTOR. ATC CONTRACTOR TO PROVIDE ALL CONTROLLERS, CONDUITS, WIRING, RELAYS, ETC., AS WELL AS GRAPHICAL REPRESENTATION ON THE BMS SYSTEM OF ALL COLLECTED INFORMATION.

NOTE #2: ATC CONTRACTOR TO PROVIDE NECESSARY CONDUIT, WIRING, SENSORS, CONTROLLERS AND RELAYS FROM ATC MAIN CONTROL PANEL TO EMERGENCY GENERATOR FOR STATUS.

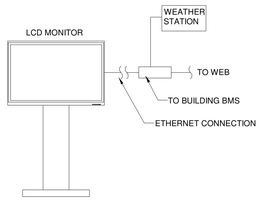
NOTE #3: ATC CONTRACTOR TO PROVIDE NECESSARY CONTROLLERS, WIRING & CONDUITS FOR COMMUNICATIONS & INTEGRATION WITH ELECTRICAL DEMAND & SERVICE METERS. ATC CONTRACTOR SHALL COORDINATE W/ ELECTRICAL CONTRACTOR & PROVIDE PROGRAMMING & GRAPHICAL REPRESENTATION OF ALL ELECTRICAL METERS & COLLECTED INFORMATION. ALSO PROVIDE INDIVIDUAL DESCRIPTIONS OF EACH DEMAND METER & ASSOCIATED CIRCUITS SUCH AS LIGHTING, PLUG LOADS, MECHANICAL EQUIPMENT, ETC. AS WELL AS THEIR LOCATION IN THE BUILDING.

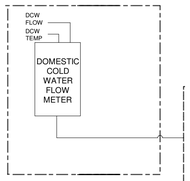
KEY: WH = WATER HEATER, RP = CIRCULATOR PUMP, NT = NEUTRALIZATION TANK, GB = GAS BOOSTER, GSM = GAS METER, FS = FLOW SWITCH, DWB = DOMESTIC WATER BOOSTER, HWSM = HOT WATER SUB METER, CWSM = COLD WATER SUB METER.

OWNERS INFORMATIONAL KIOSK:

AN OWNER INFORMATIONAL KIOSK FOR USE BY GENERAL PUBLIC SHALL BE FURNISHED BY ATC CONTRACTOR. THE WORKSTATION SHALL BE FULLY PASSWORD PROTECTED SO THAT INFORMATION ON THE SYSTEM MAY ONLY BE VIEWED AND NOT CHANGED IN ANYWAY. VISUAL GRAPHICS AND MANEUVERABILITY ON THIS WORKSTATION SHALL BE MADE AS EASY AS POSSIBLE FOR THE PUBLIC USER AND SHALL FOCUS ON DISPLAYING SYSTEM OPERATIONAL STATUS AND ENERGY CONSUMPTION OF SPECIFIED SYSTEMS. THE SYSTEM SHALL ALSO BE INTERFACED WITH LIGHT CONTROL PANEL FOR LIGHTING SYSTEM OPERATION. THE OWNERS MAIN WORKSTATION SHALL ALSO REFLECT THIS DATA.

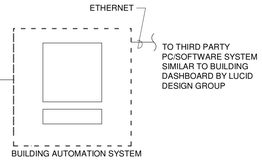
DISPLAY THE FOLLOWING BUILDING INFORMATION AND ENERGY METERING DATA:
- OUTSIDE AIR TEMPERATURE, HUMIDITY, WIND SPEED & DIRECTION, RAIN SENSOR STATUS
- BUILDING GAS CONSUMPTION, INCLUDING SUB METERS & TOTALIZATION
- BUILDING ELECTRICAL CONSUMPTION THROUGH MAIN METER
- BUILDING HEATING HOT WATER CONSUMPTION THROUGH BTU ENERGY CALCULATION.
- BUILDING CHILLED WATER CONSUMPTION THROUGH BTU ENERGY CALCULATION.
- BUILDING COLD WATER CONSUMPTION THROUGH FLOW METER
- BUILDING DOMESTIC HOT WATER CONSUMPTION THROUGH RELAY PROGRAMMING
- BUILDING CHECK METERS FOR PLUG LOADS, LIGHTING LOADS, MECHANICAL LOADS, ETC.

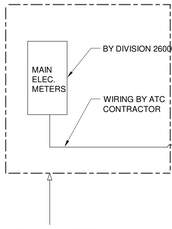


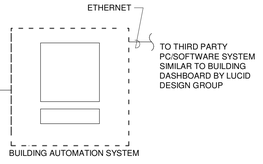


BMS INTERFACE

METERS, SENSORS & RELAYS SHALL BE FURNISHED BY THE ATC CONTRACTOR TO INPUT ENERGY CONSUMPTION (BTUH, GPM, ON/OFF STATUS) DATA TO THE BUILDING MANAGEMENT SYSTEM (BMS) FOR TRENDING ENERGY USAGE. ATC CONTRACTOR TO PROVIDE PROGRAMMING REQUIRED FOR DHW HEATER RELAYS TO DETERMINE ENERGY CONSUMED BY ON/OFF STATUS OF WATER HEATER.

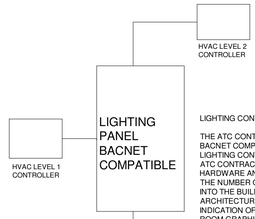






BMS INTERFACE

METERS SHALL BE FURNISHED BY ELEC. CONTRACTOR WITH BACNET OUTPUT TO INPUT ELECTRICAL CONSUMPTION DATA (KWH) TO THE BUILDING MANAGEMENT SYSTEM (BMS) FOR TRENDING ENERGY USAGE OF HVAC SYSTEMS. PROGRAMMING AND WIRING FROM METER TO BMS SHALL BE BY THE ATC CONTRACTOR.



LIGHTING CONTROL INTERFACE

THE ATC CONTRACTOR SHALL FURNISH A BACNET COMPATIBLE CONNECTION TO ALL LIGHTING CONTROL SWITCHING PANELS. THE ATC CONTRACTOR SHALL INCLUDE ALL HARDWARE AND SOFTWARE TO INTEGRATE THE NUMBER OF RELAYS INDICATED HEREIN INTO THE BUILDING MANAGEMENT SYSTEM ARCHITECTURE. THIS SHALL INCLUDE INDICATION OF RELAYS STATUS ONTO THE ROOM GRAPHICS SCREEN AND PROGRAMMING OF ON/OFF SCHEDULE.

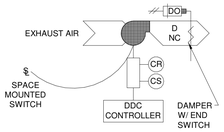
Building Management (Automatic Temperature Control) System Network
The light control system shall be capable of panel-to-panel communications over a high speed, hardwired data network. The network shall consist of wiring as required by the manufacturer to the BMS/ATC system for operator control at a single location.

BUILDING ENERGY METERING SYSTEM	AI	AO	DI	DO	ALARM	REMARKS
ELECTRICAL METER			X	X		ELEC. METER BY E.C.; PROVIDE POINTS VIA METER
DOMESTIC CW FLOW METER	X	X				

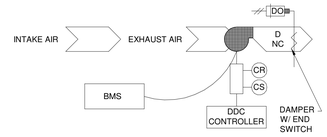
EXHAUST FAN CONTROL:

REFER TO DRAWINGS AND SCHEDULES FOR TYPE OF CONTROL REQUIRED FOR EACH FAN. ALL MOTOR OPERATED DAMPERS SHALL BE PROVIDED AND WIRED BY THIS CONTRACTOR TO OPERATE AS SEQUENCED BELOW. THESE DAMPERS SHALL ALSO BE PROVIDED WITH END SWITCHES TO CONFIRM DAMPER POSITION. UPON RECEIVING A SIGNAL THE DAMPER WILL OPEN, ONCE THE END SWITCH MAKES CONTACT THE FAN WILL START. (TYPICAL FOR ALL FANS WITH MOTORIZED DAMPERS.) ATC CONTRACTOR SHALL REFER TO EXHAUST FAN SCHEDULE FOR ALL DIRECT DRIVE FANS WITH ECM (GREENHECK VARI-GREEN OR EQUAL) MOTORS. ATC CONTRACTOR SHALL PROVIDE SPEED CONTROL SIGNAL POINT (0-10V - COORDINATED W/ MFGR) AND ASSOCIATED WIRING FROM FAN TO BMS SYSTEM.

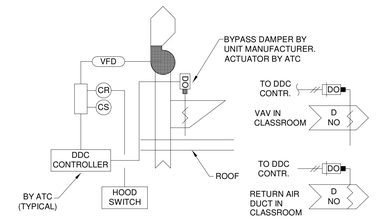
1. TYPE 1: EXHAUST FAN IS CONTROLLED FROM A WALL MOUNTED SWITCH WITH PILOT LIGHT. SWITCH AND PILOT LIGHT PROVIDED BY DIVISION 230000, WIRED BY DIVISION 260000.
2. TYPE 2: EXHAUST FAN SHALL BE CONTROLLED BY BMS SCHEDULING AND SHALL OPERATE DURING OCCUPIED CONDITIONS AND OFF DURING UNOCCUPIED CONDITIONS.
3. TYPE 3: UPON ACTIVATION OF FUME HOOD (FAN SWITCH ON HOOD) THE ASSOCIATED EXHAUST FAN SHALL ENERGIZE, ASSOCIATED VAV BOX SHALL OVERRIDE POSITION AND MODULATE TO MAX OPEN POSITION AND THE RETURN AIR MOTORIZED DAMPER SHALL CLOSE. WHEN HOOD IS OFF EXHAUST FAN SHALL DE-ENERGIZE, VAV BOX SHALL MODULATE BASED ON ROOM DEMAND AND RETURN AIR MOTORIZED DAMPER SHALL OPEN. BYPASS DAMPER ON EXH FAN SHALL MODULATE AS REQUIRED TO MAINTAIN PLUME HEIGHT.
4. TYPE 4: EXHAUST FAN IS CONTROLLED BY SPACE THERMOSTAT, ON A RISE IN SPACE TEMPERATURE, THE EXHAUST FAN SHALL START AND MAKE-UP AIR DAMPERS SHALL OPEN.
5. TYPE 5: REFER TO DRAWING M409 FOR TYPE 4 EXHAUST FAN CONTROLS.



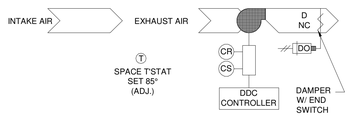
EXHAUST FAN - TYPE I CONTROLS



EXHAUST FAN - TYPE II CONTROLS



EXHAUST FAN - TYPE III CONTROLS



EXHAUST FAN - TYPE IV CONTROLS

ABBREVIATIONS

AFMS	AIRFLOW MEASURING STATION
ALM	ALARM
AQ	AQUASTAT
ATC	AUTOMATIC TEMPERATURE CONTROLS
BLDG	BUILDING
BLR	BOILER
BMS	BUILDING MANAGEMENT SYSTEM (ENERGY & AUTOMATION)
COMB	COMBUSTION
CONTR	CONTROLLER
CO2	CARBON DIOXIDE
CR	CONTROL RELAY
CS	CURRENT SENSOR
CUV	CABINET UNIT VENTILATOR
D	DAMPER
DA	DISCHARGE AIR
DAS	DISCHARGE AIR SENSOR
DAT	DISCHARGE AIR TEMPERATURE
DCV	DEMAND CONTROL VENTILATION
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DDC	DIRECT DIGITAL CONTROL
DO	DAMPER OPERATOR
DP	DIFFERENTIAL PRESSURE
DPR	DAMPER
DPV	DIFFERENTIAL PRESSURE VALVE
EA	EXHAUST AIR
EF	EXHAUST FAN
F	FLOW/FARENHEIT (AS APPLICABLE)
FB	FACE & BYPASS
FD	FIRE DAMPER
H	HUMIDITY
HS	ENTHALPY SENSOR
HT	HIGH TEMPERATURE
HTG	HEATING
HR	HEAT RECOVERY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LT	LOW TEMPERATURE
M	MOTOR
MAT	MIXED AIR TEMPERATURE
NAC	NETWORK APPLICATION CONTROLLER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OVR	OVERRIDE
P	PRESSURE
PB	PUSH BUTTON
PNL	PANEL
RA	RETURN AIR
REL	RELIEF AIR
RF	RETURN FAN
RFC	RETURN FAN CONTROLLER
RM	ROOM
SA	SUPPLY AIR
SD	SMOKE DAMPER OR SMOKE DETECTOR
SF	SUPPLY FAN
SFC	SUPPLY FAN CONTROLLER
SP	STATIC PRESSURE
T	TEMPERATURE
TEC	TERMINAL EQUIPMENT CONTROLLER
UV	UNIT VENTILATOR
VAC	VOLTS - ALTERNATING CURRENT
VDC	VOLTS - DIRECT CURRENT
VFD	SEE VSD
VLV	VALVE
VP	VELOCITY PROBE (AIRFLOW)
VSD	VARIABLE SPEED (FREQUENCY) DRIVE
XFMR	TRANSFORMER

ATC/BMS GENERAL NOTES

1. ALL SETPOINTS INDICATED IN THE SEQUENCE OF OPERATIONS SHALL BE ADJUSTABLE.
2. THE CONTROL POINTS LISTED IN THE SUMMARY MATRIX ARE THE MINIMUM CONTROL POINTS REQUIRED. ATC CONTRACTOR SHALL PROVIDE ALL CONTROL POINTS AS REQUIRED FOR COMPLETE SYSTEM CONTROL PER THE SEQUENCE OF OPERATIONS.
3. ALL CONTROL WIRING, SENSORS, RELAYS, CONTROLLERS, PANELS, DAMPERS, ACTUATORS, ETC. INDICATED ON THE CONTROL DIAGRAMS SHALL BE PROVIDED BY THE ATC CONTRACTOR UNLESS NOTED OTHERWISE.
4. ALL ATC CONTROLS SHALL BE POWERED BY EMERGENCY POWER CIRCUITS COORD W/ DIV 260000
5. ALL HHW VALVES SHALL BE FAIL OPEN ON LOSS OF POWER. ALL CHW VALVES SHALL BE FAIL CLOSE ON LOSS OF POWER.
6. ALL HHW WATER VALVES SHALL BE MODULATING TYPE FOR GPM > 1; 2-POSITION ACCEPTABLE FOR FLOWS < 1 GPM
7. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPEC FOR FURTHER INFO.
8. DUCT SMOKE DETECTORS INDICATED ARE TO BE FURNISHED & INSTALLED IN THE DUCT BY HVAC CONTRACTOR. POWER WIRING AND FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR TO PROVIDE BMS INTERLOCK TO SHUT ASSOCIATED UNIT DOWN AND INITIATE AN ALARM UPON ACTIVATION
9. ALL SMOKE DAMPERS SHALL BE COMBINATION SMOKE/FIRE DAMPERS, SHALL BE FURNISHED & INSTALLED BY HVAC CONTRACTOR, AND POWER WIRED BY ATC CONTRACTOR. DAMPERS SHALL BE MOTOR OPERATED WITH 24 VOLT / 120 VOLT ACTUATOR BY HVAC CONTRACTOR. FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. DAMPER ENDSWITCH INTEGRATION TO BMS BY ATC CONTRACTOR.
10. DURING ENERGY RESTRICTION OR EMERGENCY POWER, SUPPLY FAN TO RUN; MECHANICAL COOLING SHALL BE DE-ENERGIZED.
11. ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE CORRESPONDING MAIN ATC PANEL, OR SUB ATC PANEL. EACH ATC PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE, ALL CONTROLS SHALL BE ON EMERGENCY POWER. ALL PANELS SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THE MAIN ATC PANEL, OR SUB PANEL, & NOT THROUGH THE UNIT'S MAIN POWER SOURCE. ATC CONTRACTOR SHALL PROVIDE EMERGENCY POWER FEEDER FROM THE ELECTRICAL EMERGENCY POWER PANELS TO ANY AND ALL ATC PANELS/SUB PANELS. ATC CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR TO DETERMINE WHERE EMERGENCY POWER MAY BE DERIVED FROM.
12. ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED v.4 CREDIT IEQC1.
13. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPECIFICATION.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Pleasant Street, Suite 2, Belmont, MA 02478
781 - 489 - 5750 FAX 781 - 489 - 5780 E - MAIL: info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

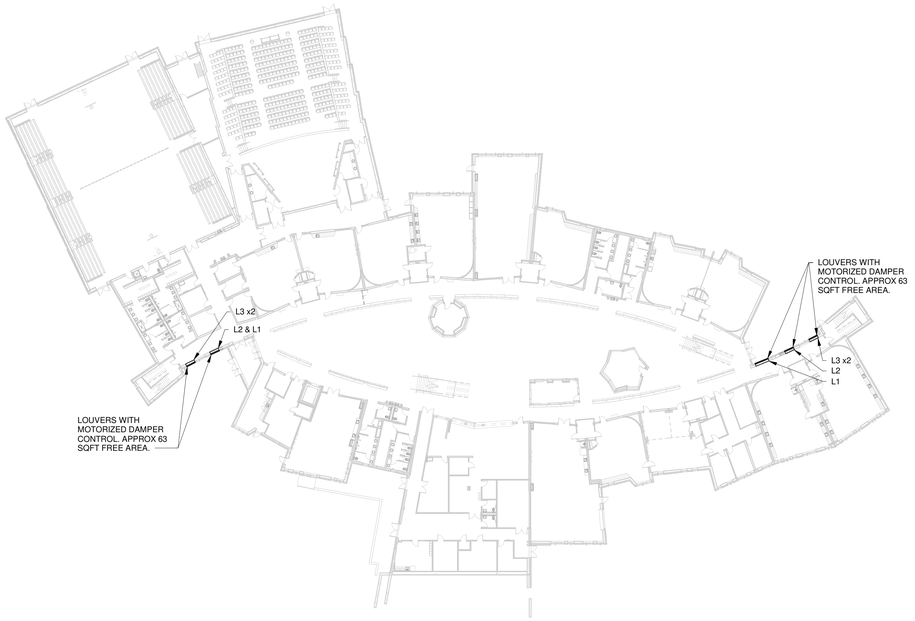
REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2019-12-13	Addendum #7
4	2020-02-10	Conformance Set

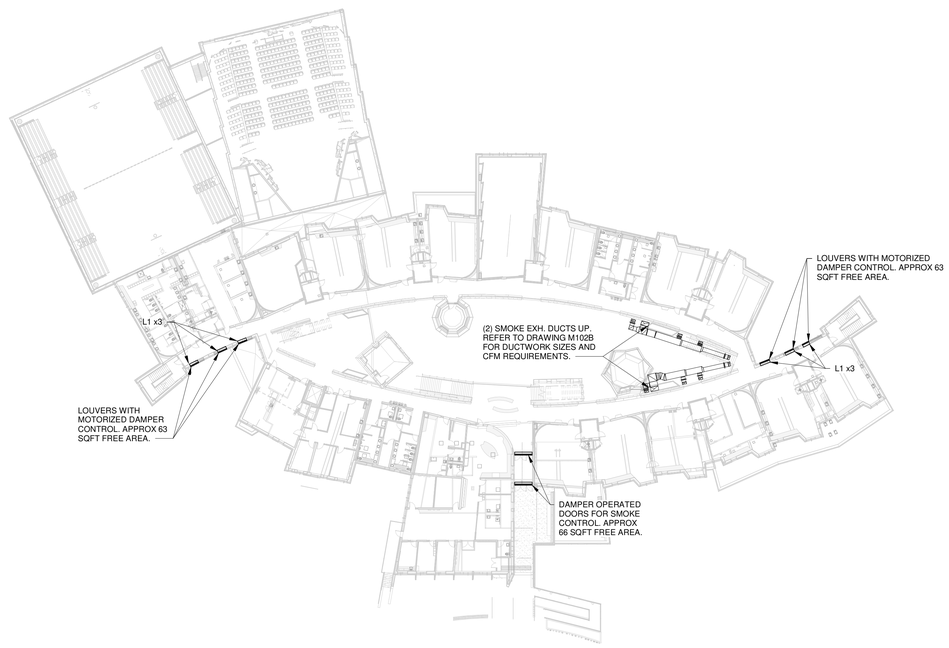
DRAWING NAME
CONTROLS VII - HVAC

PROJECT NO. 1722

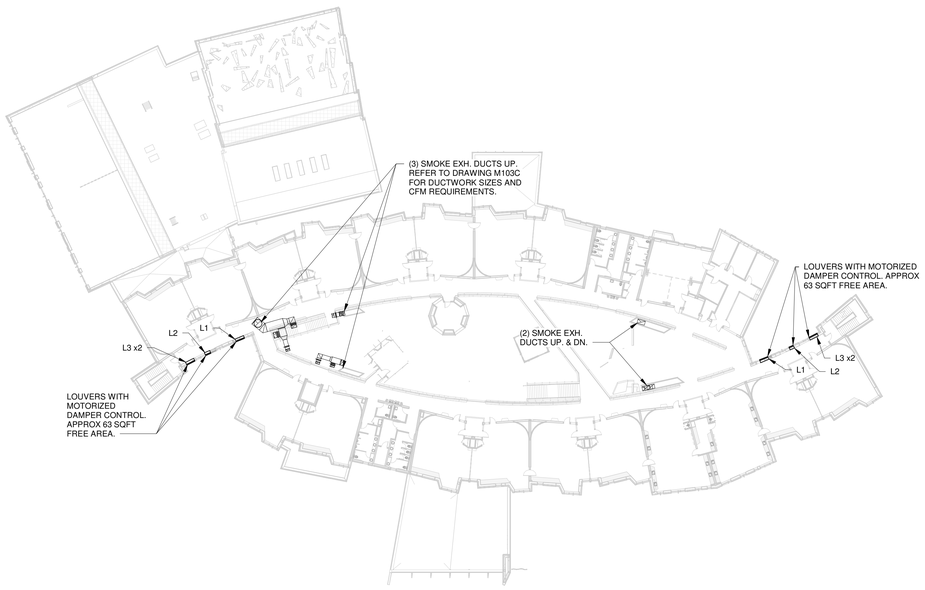
DRAWING NO.
M407



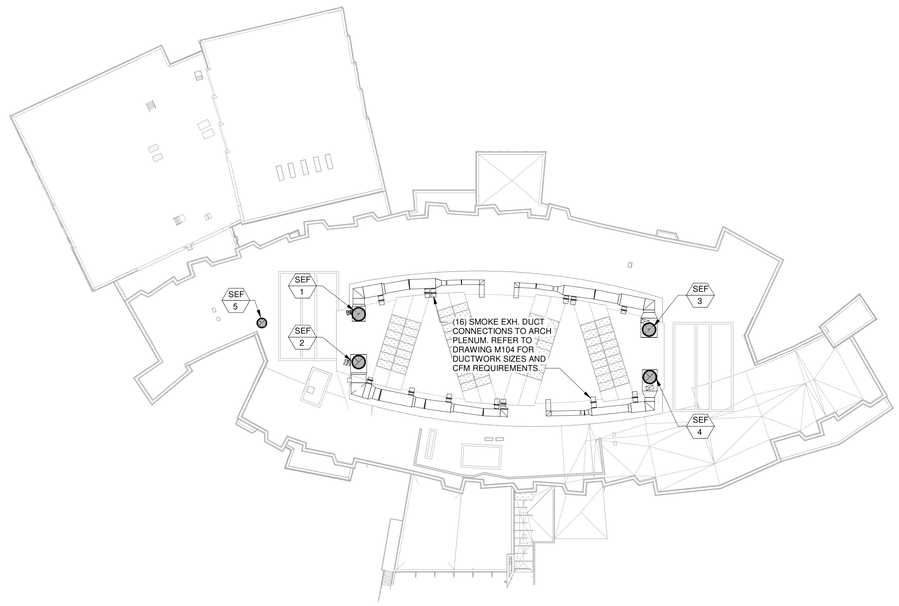
4 FLOOR 01 SMOKE CONTROL
1/32" = 1'-0"



3 FLOOR 02 SMOKE CONTROL
1/32" = 1'-0"



2 FLOOR 03 SMOKE CONTROL
1/32" = 1'-0"



1 HVAC ROOF PLAN SMOKE CONTROL
1/32" = 1'-0"

NOTE: REFER TO DRAWING M409 FOR ADDITIONAL INFORMATION & REQUIREMNTS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Faunce Corner Road - Suite O, Dartmouth, MA 02747 - 1058
508 - 998 - 5700 FAX 508 - 998 - 5982 E - MAIL: info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

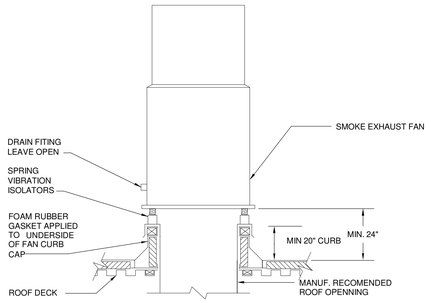
REVISIONS

No.	Date	Description
1	2019-12-13	Addendum #7
2	2020-02-10	Conformance Set

DRAWING NAME
SMOKE CONTROL I - HVAC

PROJECT NO. 1722

DRAWING NO.
M408



SMOKE EXHAUST FAN DETAIL

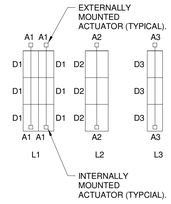
(NOT TO SCALE)

MAKE UP AIR LOUVER & DAMPER SCHEDULE

LOUVER NO.	MANUF. NO.	SIZE (W x H)	DAMPER NO.	MANUF. NO.	SIZE (W x H)	ACTUATOR NO.	MANUF. NO.	REMARKS
L-1	SCV6	4'-0" x 10'-6"	D-1	TED50V	2'-0" x 3'-6"	A-1	MS4120F	NOTE 1 & 3
L-2	SCV6	3'-0" x 10'-6"	D-2	TED50V	3'-0" x 3'-6"	A-2	MS4120F	NOTE 2 & 3
L-3	SCV6	2'-6" x 10'-6"	D-3	TED50V	2'-6" x 3'-6"	A-3	MS4120F	NOTE 2

LOUVER SELECTION BASED ON "AIROLITE", DAMPER SELECTION BASED ON "RUSKIN" & ACTUATOR SELECTION BASED ON "HONEYWELL". LOUVER SHALL BE FURNISHED BY

NOTE 1: LOUVER & DAMPER ASSEMBLY INCLUDES 2 STACKED LOUVERS, 6 STACKED DAMPERS AND 4 ACTUATORS.
NOTE 2: LOUVER & DAMPER ASSEMBLY INCLUDES 2 STACKED LOUVERS, 3 STACKED DAMPERS AND 2 ACTUATORS.
NOTE 3: PROVIDE DAMPER MANUFACTURERS JAMB FRAME SPLICE ANGLES FOR SUPPORT AT VERTICAL CONNECTION.



SMOKE CONTROL SYSTEM

THE FOLLOWING REQUIREMENTS RELATE TO THE SMOKE CONTROL EQUIPMENT INSTALLED FOR EXHAUST AIR SYSTEMS WITHIN THE ATRIUM:

SMOKE CONTROL SYSTEM FANS:
1. SMOKE CONTROL FANS ARE TO BE UL 864 LISTED.
2. 1.5 TIMES REQUIRED NUMBER OF BELTS (MINIMUM OF 2) SHALL BE PROVIDED FOR BELT DRIVEN SMOKE EXHAUST FANS.
3. FAN MOTORS SHALL HAVE A MINIMUM SERVICE FACTOR OF 1.15.
4. OPERATION OF FANS IN SMOKE MODE SHALL BE CONFIRMED POSITIVE INDICATION BY EITHER ADJUSTABLE DIFFERENTIAL PRESSURE SENSORS, ADJUSTABLE CURRENT SENSORS, OR AIRFLOW SWITCHES. ATC SHALL PROVIDE CONTROL WIRING BY FIRE ALARM.
   a. POSITIVE CONFIRMATION FOR SMOKE CONTROL FANS IS DEFINED AS THE SMOKE CONTROL FAN OPERATING IN ITS TRUE ON CONDITION, WHERE SUCH A CONFIGURATION IS NOT ACHIEVED WHEN REQUIRED, A FAULT STATUS SHALL BE DISPLAYED AT THE SMOKE CONTROL PANEL.

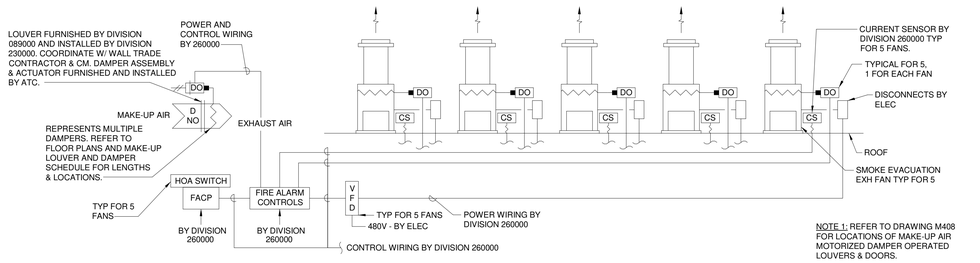
SMOKE CONTROL SYSTEM DUCTS:
5. ALL DUCTWORK MUST BE TESTED IN ACCORDANCE WITH MSBC 909.10.2.
6. DUCT LEAKAGE SHALL BE LESS THAN 5% OF DESIGN FLOW WHEN TESTED TO 1.5 TIMES MAXIMUM DESIGN PRESSURE.

SMOKE CONTROL SYSTEM SMOKE DAMPERS:
7. HVAC SYSTEMS IN THE ALARM ZONE NOT USED FOR SMOKE CONTROL MUST BE SHUT DOWN IN ACCORDANCE WITH THE SEQUENCE OF OPERATIONS.
8. DAMPERS SHALL BE CAPABLE OF OPERATING UNDER TEMPERATURES REACHING UP TO 452ºF.
9. DAMPERS ON SMOKE CONTROL EXHAUST FANS SHALL BE ARRANGED TO FAIL IN THE OPEN POSITION.
10. DAMPERS ON NON-SMOKE CONTROL RELATED EQUIPMENT SHALL BE ARRANGED TO FAIL IN THE CLOSED POSITION.

AUTOMATIC MAKE-UP DOORS/LOUVERS:
11. THE DOORS/LOUVERS UTILIZED FOR NATURAL MAKE-UP AIR FLOW PATHS SHALL BE POWER OPERATED DOORS/LOUVERS TO ALLOW FOR MAKE-UP AIR INFILTRATION FROM THE ADJACENT SPACES.
12. EACH DOOR/LOUVER SHALL BE PROVIDED WITH MONITORING MODULES FOR FULL OPEN AND CLOSED STATUSES AND CONTROL RELAYS TO ENSURE THE DOOR/LOUVER OPERATES APPROPRIATELY.
   a. POSITIVE CONFIRMATION FOR DOORS AND LOUVERS THAT ARE USED AS PART OF THE SMOKE CONTROL SYSTEM IS DEFINED AS THE DOORS/LOUVERS CONFIGURED IN THE TRUE OPEN OR TRUE CLOSED POSITION. WHERE SUCH A CONFIGURATION IS NOT ACHIEVED WHEN REQUIRED, A FAULT STATUS MUST BE DISPLAYED AT THE SMOKE CONTROL PANEL.
   b. EACH DOOR LEAF AND LOUVER MUST BE PROVIDED WITH MONITORING MODULES FOR FULLY OPEN AND FULLY CLOSED STATUSES AND CONTROL RELAYS TO ENSURE THE DOOR/LOUVER OPERATES APPROPRIATELY FOR SMOKE MODE.
13. IF ACCESSIBLE SWITCHES ARE UTILIZED TO SHUT POWER OFF TO THE DOORS/LOUVERS, THESE SWITCHES SHALL BE MONITORED FOR POSITION (REPORT A FAULT ON SMOKE CONTROL PANEL WHEN DISABLED) OR CAPABLE OF BEING OVERRIDDEN BY THE SMOKE CONTROL SYSTEM SUCH THAT THE DOORS/LOUVERS ARE STILL CAPABLE OF OPENING IN SMOKE MODE WITH THE SWITCH IN THE "DISABLE" POSITION.
14. DOORS SHALL BE CAPABLE OF OPENING AND COMPLETING TRAVEL TO THE REQUIRED SMOKE MODE POSITION WITHIN 75 SECONDS AFTER RECEIPT OF AN ALARM SIGNAL.
15. IT IS RECOMMENDED THAT A PORTION OF AUTOMATIC-OPENING INTERIOR MAKEUP AIR DOORS/LOUVERS OPEN PRIOR TO OPERATION OF THE SMOKE EXHAUST FANS TO PREVENT DAMAGE TO THE DOOR MOTORS.

SMOKE EXHAUST FAN CONTROL (TYPE V):

ALL MOTOR OPERATED DAMPERS SHALL BE FURNISHED AND INSTALLED BY HVAC CONTRACTOR (FAN MANUFACTURER) AND WIRED BY DIVISION 260000.
THESE DAMPERS SHALL ALSO BE PROVIDED WITH END SWITCHES TO CONFIRM DAMPER POSITION. UPON RECEIVING A SIGNAL THE DAMPER WILL OPEN. ONCE THE END SWITCH MAKES CONTACT THE FAN WILL START. (TYPICAL FOR ALL SMOKE EXHAUST FANS WITH MOTORIZED DAMPERS.)
UPON ACTIVATION OF THE BEAM DETECTORS LOCATED WITHIN THE ATRIUM THE FIRE ALARM WILL BE ACTIVATED, THIS IS DONE BY THE ELECTRICIAN.
ONCE THE ATRIUM BEAM DETECTOR ZONE IS ACTIVATED THE MOTORIZED DAMPERS IN THE SMOKE EXHAUST FANS SEF-1, SEF-2, SEF-3, SEF-4 & SEF-5 SHALL OPEN ALONG WITH THE MAKE UP AIR LOUVER MOTORIZED DAMPERS. ONCE THE END SWITCHES MAKE CONTACT THE EXHAUST FANS SHALL START AND CONTINUE TO OPERATE UNTIL FIRE PERSONNEL REACH THE SITE, THROUGH OPERATION OF HAND OPERATED SWITCHES AT THE FACP, THE FIRE PERSONNEL SHALL DEACTIVATE OR WILL CYCLE VARIOUS SMOKE EXHAUST FANS AND MAKE-UP AIR DAMPERS TO SUITE SITE CONDITIONS.



SMOKE EVACUATION EXHAUST FAN - TYPE V CONTROLS

NOTE 1: REFER TO DRAWING M408 FOR LOCATIONS OF MAKE-UP AIR MOTORIZED DAMPER OPERATED LOUVERS & DOORS.

NOTE 2: SMOKE EXHAUST SYSTEM SHALL COMPLY WITH THE REQUIREMENTS OF UL 864 AND IBC SECTION 909.

ABBREVIATIONS

AFMS	AIRFLOW MEASURING STATION
ALM	ALARM
AQ	AQUASTAT
ATC	AUTOMATIC TEMPERATURE CONTROLS
BLDG	BUILDING
BLR	BOILER
BMS	BUILDING MANAGEMENT SYSTEM (ENERGY & AUTOMATION)
COMB	COMBUSTION
CONTR	CONTROLLER
CO2	CARBON DIOXIDE
CR	CONTROL RELAY
CS	CURRENT SENSOR
CUV	CABINET UNIT VENTILATOR
D	DAMPER
DA	DISCHARGE AIR
DAS	DISCHARGE AIR SENSOR
DAT	DISCHARGE AIR TEMPERATURE
DCV	DEMAND CONTROL VENTILATION
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DDC	DIRECT DIGITAL CONTROL
DO	DAMPER OPERATOR
DP	DIFFERENTIAL PRESSURE
DPR	DAMPER
DPV	DIFFERENTIAL PRESSURE VALVE
EA	EXHAUST AIR
EF	EXHAUST FAN
F	FLOW/FARENHEIT (AS APPLICABLE)
FB	FACE & BYPASS
FD	FIRE DAMPER
H	HUMIDITY
HS	ENTHALPY SENSOR
HT	HIGH TEMPERATURE
HTG	HEATING
HR	HEAT RECOVERY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
LT	LOW TEMPERATURE
M	MOTOR
MAT	MIXED AIR TEMPERATURE
NAC	NETWORK APPLICATION CONTROLLER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OVR	OVERRIDE
P	PRESSURE
PB	PUSH BUTTON
PNL	PANEL
RA	RETURN AIR
REL	RELIEF AIR
RF	RETURN FAN
RFC	RETURN FAN CONTROLLER
RM	ROOM
SA	SUPPLY AIR
SD	SMOKE DAMPER OR SMOKE DETECTOR
SF	SUPPLY FAN
SFC	SUPPLY FAN CONTROLLER
SP	STATIC PRESSURE
T	TEMPERATURE
TEC	TERMINAL EQUIPMENT CONTROLLER
UV	UNIT VENTILATOR
VAC	VOLTS - ALTERNATING CURRENT
VDC	VOLTS - DIRECT CURRENT
VFD	SEE VSD
VLV	VALVE
VP	VELOCITY PROBE (AIRFLOW)
VSD	VARIABLE SPEED (FREQUENCY) DRIVE
XFMR	TRANSFORMER

ATC/BMS GENERAL NOTES

1. ALL SETPOINTS INDICATED IN THE SEQUENCE OF OPERATIONS SHALL BE ADJUSTABLE.
2. THE CONTROL POINTS LISTED IN THE SUMMARY MATRIX ARE THE MINIMUM CONTROL POINTS REQUIRED. ATC CONTRACTOR SHALL PROVIDE ALL CONTROL POINTS AS REQUIRED FOR COMPLETE SYSTEM CONTROL PER THE SEQUENCE OF OPERATIONS.
3. ALL CONTROL WIRING, SENSORS, RELAYS, CONTROLLERS, PANELS, DAMPERS, ACTUATORS, ETC. INDICATED ON THE CONTROL DIAGRAMS SHALL BE PROVIDED BY THE ATC CONTRACTOR UNLESS NOTED OTHERWISE.
4. ALL ATC CONTROLS SHALL BE POWERED BY EMERGENCY POWER CIRCUITS COORD W/ DIV 260000
5. ALL HHW VALVES SHALL BE FAIL OPEN ON LOSS OF POWER. ALL CHW VALVES SHALL BE FAIL CLOSE ON LOSS OF POWER.
6. ALL HHW WATER VALVES SHALL BE MODULATING TYPE FOR GPM > 1; 2-POSITION ACCEPTABLE FOR FLOWS < 1 GPM
7. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPEC FOR FURTHER INFO.
8. DUCT SMOKE DETECTORS INDICATED ARE TO BE FURNISHED & INSTALLED IN THE DUCT BY HVAC CONTRACTOR. POWER WIRING AND FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. ATC CONTRACTOR TO PROVIDE BMS INTERLOCK TO SHUT ASSOCIATED UNIT DOWN AND INITIATE AN ALARM UPON ACTIVATION
9. ALL SMOKE DAMPERS SHALL BE COMBINATION SMOKE/FIRE DAMPERS, SHALL BE FURNISHED & INSTALLED BY HVAC CONTRACTOR, AND POWER WIRED BY ATC CONTRACTOR. DAMPERS SHALL BE MOTOR OPERATED WITH 24 VOLT / 120 VOLT ACTUATOR BY HVAC CONTRACTOR. FIRE ALARM INTERLOCK BY ELECTRICAL CONTRACTOR. DAMPER ENDSWITCH INTEGRATION TO BMS BY ATC CONTRACTOR.
10. DURING ENERGY RESTRICTION OR EMERGENCY POWER, SUPPLY FAN TO RUN; MECHANICAL COOLING SHALL BE DE-ENERGIZED.
11. ALL ATC CONTROLS SHALL BE POWER WIRED FROM THE CORRESPONDING MAIN ATC PANEL, OR SUB ATC PANEL. EACH ATC PANEL WILL BE FED BY EMERGENCY POWER. THEREFORE, ALL CONTROLS SHALL BE ON EMERGENCY POWER. ALL PANELS SHALL BE PROVIDED BY ATC CONTRACTOR. ALL UNIT CONTROLS SHALL BE FED BY THE MAIN ATC PANEL, OR SUB PANEL, & NOT THROUGH THE UNIT'S MAIN POWER SOURCE. ATC CONTRACTOR SHALL PROVIDE EMERGENCY POWER FEEDER FROM THE ELECTRICAL EMERGENCY POWER PANELS TO ANY AND ALL ATC PANELS/SUB PANELS. ATC CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR TO DETERMINE WHERE EMERGENCY POWER MAY BE DERIVED FROM.
12. ALL DENSELY OCCUPIED SPACES WITH OCCUPANT DENSITY OF 25 PEOPLE OR MORE PER 1000 SQ/FT SHALL BE PROVIDED W/ MULTIFUNCTION SENSORS W/ TEMPERATURE & CO2 CONTROL. THIS SHALL BE PROVIDED IN COMPLIANCE WITH LEED v.4 CREDIT IEQC1.
13. ATC CONTRACTOR TO COORDINATE W/ OWNER FOR ALL COMMUNICATION & INTERFACE REQUIREMENTS TO CENTRAL OPERATING STATION. REFER TO SPECIFICATION.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Faunce Corner Road - Suite O, Dartmouth, MA 02747 - 1058
508 - 998 - 5700 FAX 508 - 998 - 5980 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2019-12-04	Addendum #5
2	2019-12-09	Addendum #6
3	2019-12-13	Addendum #7
4	2020-02-10	Conformance Set

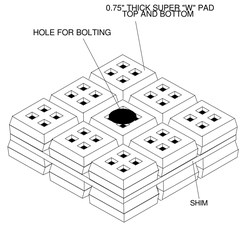
DRAWING NAME

SMOKE CONTROL II - HVAC

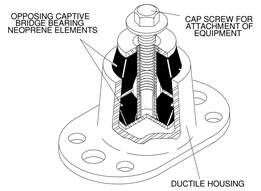
PROJECT NO. 1722

DRAWING NO.

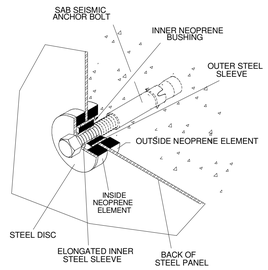
M409



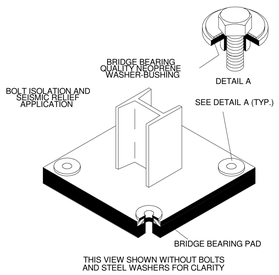
LAYERED SUPER "W" PADS WITH STEEL SHIM
SPECIFICATION 1



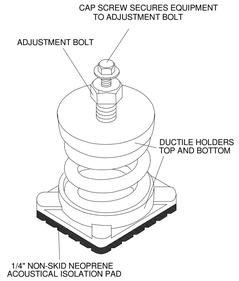
RESTRAINED BR MOUNT
SPECIFICATION 2



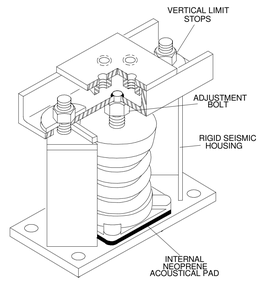
PB BUSHING
SPECIFICATION 3



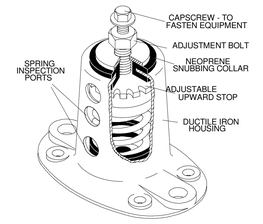
HG NEOPRENE BUSHING
SPECIFICATION 4



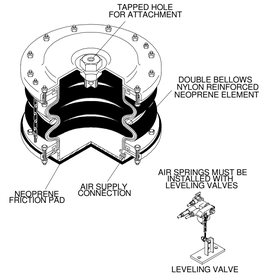
SLF SPRING MOUNT
SPECIFICATION 5



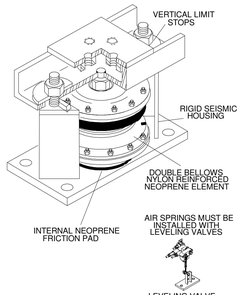
SLR SPRING MOUNT
SPECIFICATION 6



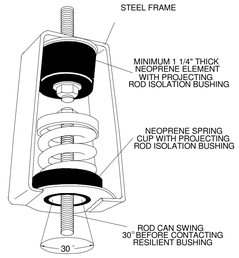
SSLFH HOUSED SPRING MOUNT
SPECIFICATION 7



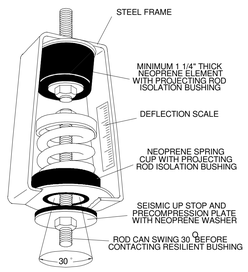
MT AIR SPRING MOUNT
SPECIFICATION 8



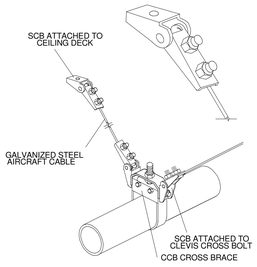
SLR AIR SPRING MOUNT
SPECIFICATION 9



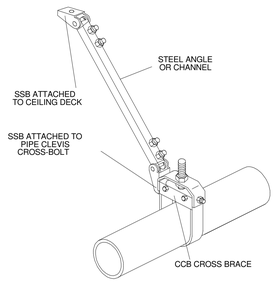
30N SPRING AND NEOPRENE HANGER
SPECIFICATION 10



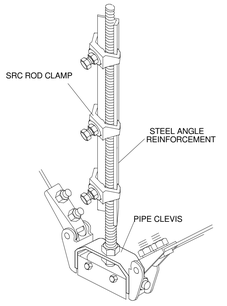
PC30N PRECOMPRESSED SPRING AND NEOPRENE HANGER
SPECIFICATION 11



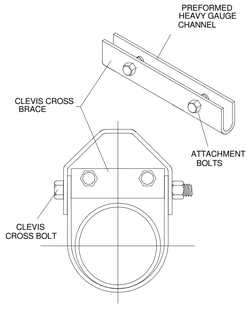
SCB, SCBH, AND SCBV CABLE RESTRAINTS OSPD PRE-APPROVAL NO. 0202
SPECIFICATION 12



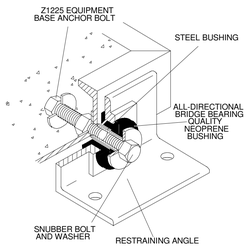
SEISMIC SOLID BRACE
SPECIFICATION 13



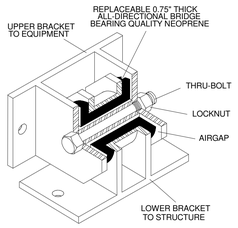
SRC SEISMIC ROD CLAMPS
SPECIFICATION 14



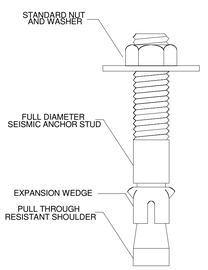
CCB CLEVIS CROSS BRACE
SPECIFICATION 15



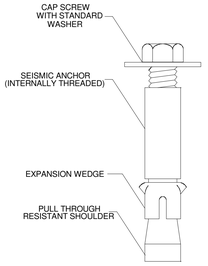
Z1225 ALL DIRECTIONAL SEISMIC SNUBBER
SPECIFICATION 16



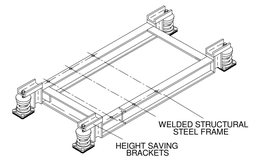
Z1011 ALL DIRECTIONAL SEISMIC SNUBBER
SPECIFICATION 17



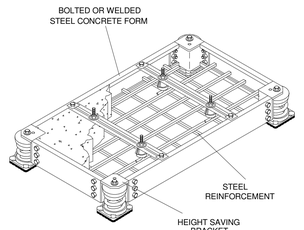
SAS SEISMIC ANCHOR STUD
SPECIFICATION 18



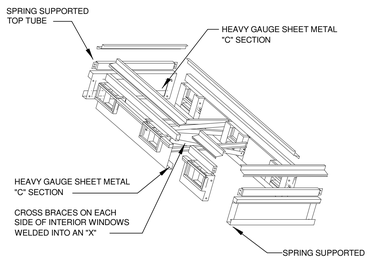
SAB SEISMIC ANCHOR BOLT
SPECIFICATION 19



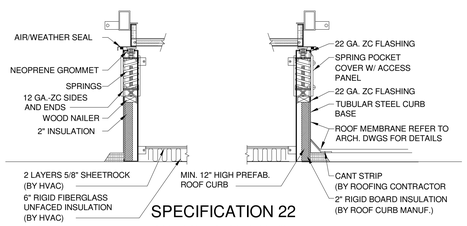
WF WIDE FLANGE STEEL BASE
SPECIFICATION 20



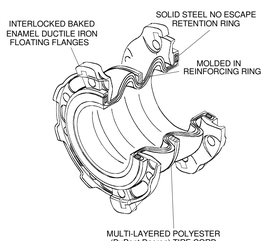
BMK CONCRETE FORM BASE
SPECIFICATION 21



RCS SEISMIC ROOFTOP CURB
SPECIFICATION 22

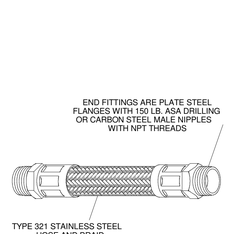


SPECIFICATION 22
SEISMIC SPRING ROOF CURB DETAIL

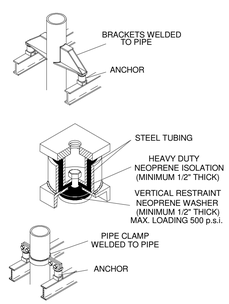


SFDEJ MOLDED EXPANSION JOINT
SPECIFICATION 23

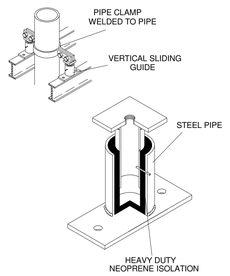
NOTE: PROVIDE 30" HIGH CURB OF SIMILAR CONSTRUCTION WITH SUPPLY AND RETURN AIR PLENUM SECTIONS AS REQUIRED TO OFFSET FOR ROOF SUPPLY AIR AND RETURN AIR OPENING LOCATIONS. PLENUMS SHALL BE OF SUFFICIENT SIZE AND AREA TO MAINTAIN LOW AIRFLOW VELOCITIES (<850 CFM) WITHIN PLENUM SECTIONS.



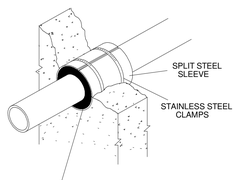
BSS STAINLESS STEEL HOSE
SPECIFICATION 24



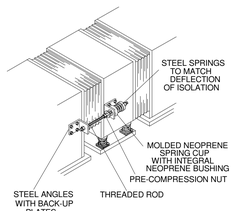
ADA ALL DIRECTIONAL ANCHOR
SPECIFICATION 25



VSG VERTICAL SLIDING GUIDES
SPECIFICATION 26



SWS ACOUSTICAL WALL, CEILING OR FLOOR SEAL
SPECIFICATION 27



WB HORIZONTAL THRUST RESTRAINTS USED IN PAIRS
SPECIFICATION 28

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
379 Faunce Corner Road - Suite O, Dartmouth, MA 02747 - 1058
508 - 998 - 5700 FAX 508 - 998 - 5980 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2020-02-10	Conformance Set

DRAWING NAME

VIBRATION & SEISMIC DETAILS

PROJECT NO. 1722

DRAWING NO.

VS101

SYMBOL LIST

LIGHTING FIXTURES

(see lighting fixture schedule)

- FLUORESCENT LIGHT FIXTURE, CEILING MOUNTED SURFACE OR RECESSED.
- FIXTURE WIRED TO NORMAL/EMERGENCY CIRCUIT.
- FLUORESCENT BARE LAMP CHANNEL STRIP OR INDUSTRIAL STRIP.
- SINGLE FACE INTERNALLY LIT EXIT SIGN, DIRECTIONAL INDICATORS OF THE 'CHEVRON' TYPE AS INDICATED ON DRAWINGS.
- DOUBLE FACE INTERNALLY LIT EXIT SIGN, DIRECTIONAL INDICATORS OF THE 'CHEVRON' TYPE AS INDICATED ON DRAWINGS.
- CEILING MOUNTED FIXTURE-RECESSED, SURFACE OR PENDANT.
- WALL MOUNTED FIXTURE.
- FIXTURE KEYING SYSTEM
- A1 = FIXTURE TYPE 32= CIRCUIT #, b= SWITCH CONTROL (A1, 32b)
- EMERGENCY BATTERY UNIT WITH INTEGRAL HEADS. (EB)
- TRACK MOUNTED FIXTURES-LENGTH OF TRACK AS INDICATED ON DRAWINGS.
- POLE MOUNTED FIXTURE-DOUBLE OR SINGLE HEAD.

SWITCHES

(typically mtd 48" AFF ℄ u.n.o)

- S_a SINGLE POLE SWITCH-"a" DESIGNATES SWITCH CONTROL (LOWER CASE).
- S_2 TWO POLE SWITCH
- S_3 THREE-WAY SWITCH.
- S_P SINGLE POLE SWITCH WITH PILOT LIGHT-GLOWS IN "OFF" POSITION WHEN IN VIEW OF LIGHTS. GLOWS IN "ON" POSITION WHEN REMOTE FROM LIGHTS.
- S_4 FOUR-WAY SWITCH.
- S_D DIMMER SWITCH; 0-10V TYPE.
- S_K KEY OPERATED SWITCH.
- S_T TIMER SWITCH-DIGITAL PROGRAMMABLE TYPE.
- S_{WP} WEATHERPROOF SINGLE POLE SWITCH.
- S_{XP} EXPLOSION PROOF SINGLE POLE SWITCH.
- S_{DT} SINGLE POLE/DOUBLE THROW SWITCH.
- S_F FAN SPEED SWITCH.
- S_{MC} THREE POSITION MOMENTARY CONTACT SWITCH-UP/DOWN/CENTER OFF.

LIGHTING CONTROLS

- SSU ALCS SYSTEM SERVER UNIT - REFER TO ALCS ONE-LINE DIAGRAM.
- ECU ALCS ENERGY CONTROL UNIT - REFER TO ALCS ONE-LINE DIAGRAM.
- NES ALCS NETWORK ETHERNET SWITCH - REFER TO ALCS ONE-LINE DIAGRAM.
- L ALCS LOCAL SWITCHING / DIMMING STATION - REFER TO ALCS RISER DIAGRAM
- L_K ALCS KEYED LOCAL SWITCHING STATION - REFER TO ALCS RISER DIAGRAM
- L_V ALCS VANDAL RESISTANT LOCAL SWITCHING STATION - REFER TO ALCS RISER DIAGRAM
- M ALCS MASTER SWITCHING / DIMMING STATION - REFER TO ALCS RISER DIAGRAM
- MTS ALCS MASTER TOUCH SCREEN - REFER TO ALCS ONE-LINE DIAGRAM.
- LTS ALCS LOCAL TOUCH SCREEN - REFER TO ALCS ONE-LINE DIAGRAM.
- DMX ALCS DMX512 CONTROL INTERFACE - REFER TO ALCS ONE-LINE DIAGRAM.
- PC ALCS EXTERIOR PHOTOCELL - REFER TO ALCS ONE-LINE DIAGRAM.
- OS ALCS CEILING OCCUPANCY SENSOR - REFER TO ALCS ONE-LINE DIAGRAM.
- PS ALCS CEILING PHOTO SENSOR - REFER TO ALCS ONE-LINE DIAGRAM.
- OS ALCS WALL OCCUPANCY SENSOR - REFER TO ALCS ONE-LINE DIAGRAM.
- IO ALCS INPUT/OUTPUT MODULE - REFER TO ALCS ONE-LINE DIAGRAM.
- E/R EMERGENCY BY-PASS RELAY - REFER TO EMERGENCY SUPERVISORY BY-PASS RELAY DETAIL
- PC PHASE CUT DIMMING MODULE - REFER TO ALCS ONE-LINE DIAGRAM

SECURITY SYSTEM

REFER TO DWG. E500 FOR SECURITY SYMBOL LIST

WIRE AND RACEWAYS

- WIRING AND RACEWAY - NO. OF DIAGONAL LINES INDICATES NO. #12 AWG CONDUCTORS. ABSENCE OF DIAGONAL LINES INDICATES 2 #12 AWG+#12AWG GROUND UNLESS NOTED OTHERWISE. GROUND WIRE IS NOT SHOWN IN COUNT BUT SHALL BE PROVIDED.
- HOMERUN TO PANEL - NO. OF ARROWS INDICATES NO. OF 20 AMP/1 POLE CIRCUITS TO PANEL - UNLESS NOTED OTHERWISE.
- NE NORMAL/EMERGENCY WIRING - MIN. 2#10 AWG + #10 AWG GROUND. RUN IN SEPARATE RACEWAY.
- 4F FIRE ALARM WIRING - "4F" INDICATES 4 #14 THHN SOLID IN 3/4" MIN. SIZE CONDUIT.
- E EMERGENCY ONLY WIRING-MINIMUM 2#10 AWG IN SEPARATE RACEWAY.
- P UNDERGROUND PRIMARY ELECTRIC SERVICE
- SE UNDERGROUND SECONDARY ELECTRIC SERVICE
- T UNDERGROUND TELEPHONE SERVICE
- CTV UNDERGROUND CABLE TV SERVICE
- F UNDERGROUND FIRE ALARM SERVICE
- 4" CONDUIT SLEEVE THRU-WAY, ACROSS CORRIDOR OR BETWEEN ROOMS FOR TEL/DATA - LOCATE ABOVE CEILING.
- 1" CONDUIT SLEEVE THRU-WAY, ACROSS CORRIDOR OR BETWEEN ROOMS FOR TEL/DATA - LOCATE ABOVE CEILING.
- CONDUIT SLEEVE EXTENDED TO NEAREST ACCESSIBLE CEILING-TERMINATE WITH INSULATED BUSHING.
- FLEXIBLE CONNECTION TO EQUIPMENT
- CABLE TRAY-CONCEALED ABOVE CEILING IN FINISHED AREAS.
- PROVIDE LATERAL SUPPORT AS REQUIRED.

MECHANICAL EQUIPMENT

(REFER TO MECHANICAL EQUIPMENT SCHEDULE)

- BB ELECTRIC BASEBOARD-FURNISHED BY HVAC, INSTALLED AND WIRED BY EC.
- CH CABINET HEATER - F & I BY HVAC, WIRED BY E.C.
- UH UNIT HEATER - F & I BY HVAC, WIRED BY E.C.
- EF EXHAUST FAN - F & I BY HVAC, WIRED BY E.C.
- C.O. J CONNECTION TO CARBON MONOXIDE MONITOR MIN. 3/#14 AWG. PER MONITOR.
- TB TERMINAL BOX-F&I BY HVAC WIRED BY E.C.
- FS D MOTORIZED FIRE/SMOKE DAMPER-F&I BY HVAC, WIRED BY E.C. TO POWER & FIRE ALARM SYSTEM.
- 2 MOTOR - NUMERAL INDICATES HORSEPOWER

TECHNOLOGY

- W VOICE OUTLET - AT 18" A.F.F., UNO - SINGLE GANG OPENING AND 4"SQ. X 2 1/2"DP J.B. WITH 1"C. WITH PULL LINE TO NEAREST ACCESSIBLE CEILING SPACE. MOUNTING DESIGNATIONS: "C"=ABOVE COUNTER. "W" WALL PHONE AT 48" A.F.F. WIRING AND JACKS BY I.T. SUBCONTRACTOR
- #V/#D VOICE/DATA OUTLET - AT 18" A.F.F., UNO - SINGLE GANG OPENING AND 4"SQ. X 2 1/2"DP J.B. WITH 1"C. WITH PULL LINE TO NEAREST ACCESSIBLE CEILING SPACE. MOUNTING DESIGNATIONS: "C"=ABOVE COUNTER. WIRING AND JACKS BY I.T. SUBCONTRACTOR.
- DATA OUTLET - AT 18" A.F.F. UNO- SINGLE GANG OPENING AND 4"SQ. X 2 1/2"DP J.B. WITH 1"C. WITH PULL LINE TO NEAREST ACCESSIBLE CEILING SPACE. MOUNTING DESIGNATIONS: "C"=ABOVE COUNTER. JACKS AND WIRING BY I.T. SUBCONTRACTOR.
- 4 DATA OUTLET - AT 18" A.F.F. UNO-SINGLE GANG OPENING AND 4"SQ. X 2 1/2"DP J.B. WITH 1 1/4"C. WITH PULL LINE TO NEAREST ACCESSIBLE CEILING SPACE. MOUNTING DESIGNATIONS: "C"=ABOVE COUNTER. JACKS AND WIRING BY I.T. SUBCONTRACTOR.
- AN WIRELESS ACCESS POINT DATA OUTLET - ABOVE CEILING UNO- SINGLE GANG OPENING AND 4"SQ. X 2 1/2"DP J.B. WITH 1 1/4"C. WITH PULL LINE TO NEAREST ACCESSIBLE CEILING SPACE. JACKS AND WIRING BY I.T. SUBCONTRACTOR.
- DATA OUTLET FLUSH FLOOR MOUNTED - PROVIDE FLOOR BOX WITH SINGLE GANG OPENING WITH 1"C. WITH PULL LINE TO NEAREST ACCESSIBLE CEILING OF SAME FLOOR. WIRING AND JACKS BY I.T. SUBCONTRACTOR.
- CLOCK, WALL MOUNTED - 120V PIGTAIL CONNECTOR FURNISHED BY I.T. SUBCONTRACTOR AND CONNECTED BY E.C. COORDINATE M.H. WITH I.T. SUBCONTRACTOR. CONNECT TO NEAREST 120V RECEPTACLE CIRCUIT OR AS SHOWN ON DRAWINGS. CLOCK FURNISHED & INSTALLED BY I.T. SUBCONTRACTOR.
- TVC VIDEO OUTLET & (2) 20AMP 120VOLT DUPLEX RECEPTACLE OUTLET PROVIDE WIREMOLD SERIES EFSB4 WALL BOX MODEL# EFSB4 OR EQUAL- AT 54"A.F.F., UNO-WITH (1)1"C. FOR DATA AND (1)2"C FOR FUTURE A/V WIRING WITH PULL LINE TO TO NEAREST ACCESSIBLE CEILING SPACE. DATA WIRING AND JACK BY I.T. SUBCONTRACTOR.
- TVE VIDEO OUTLET & (2) 20AMP 120VOLT DUPLEX RECEPTACLE OUTLET PROVIDE WIREMOLD SERIES EFSB4 WALL BOX MODEL# EFSB4 OR EQUAL- AT 54"A.F.F., UNO-WITH (1)1"C. FOR DATA AND (1)2"C FOR FUTURE A/V WIRING WITH PULL LINE TO TO NEAREST ACCESSIBLE CEILING SPACE. DATA WIRING AND JACK BY I.T. SUBCONTRACTOR.
- T VOICE/DATA OUTLET - AT 18" A.F.F., UNO - (1)DOUBLE GANG OPENING AND (1) 4"SQ.X4"DEEP J.B. WITH (2) 1 1/4"C. WITH PULL LINE T TO TO NEAREST ACCESSIBLE CEILING SPACE. (1) SINGLE GANG OPENINGS AND (1) 4"SQ. X 2 1/2"DP J.B. WITH (2) 1"C. WITH PULL LINE TO TO NEAREST ACCESSIBLE CEILING SPACE. MOUNTING DESIGNATIONS: "C"=ABOVE COUNTER. WIRING AND JACKS BY I.T. SUBCONTRACTOR.
- S CEILING FLUSH MOUNTED SPEAKER. BACKBOX FURNISHED BY IT SUBCONTRACTOR, INSTALLED BY E.C.
- S TW CEILING FLUSH MOUNTED TWO WAY TALKBACK SPEAKER. BACKBOX FURNISHED BY IT SUBCONTRACTOR, INSTALLED BY E.C.
- S P PENDANT MOUNTED SPEAKER. BACKBOX FURNISHED BY IT SUBCONTRACTOR, INSTALLED BY E.C.
- S FLUSH MOUNTED WALL MOUNTED SPEAKER. BACKBOX FURNISHED BY IT SUBCONTRACTOR, INSTALLED BY E.C.
- S WP FLUSH MOUNTED EXTERIOR SPEAKER - BACKBOX FURNISHED BY I.T. CONTRACTOR, INSTALLED BY E.C.
- S S SURFACE MOUNTED EXTERIOR SPEAKER - BACKBOX FURNISHED BY I.T. CONTRACTOR; INSTALLED BY E.C.
- S S CEILING SURFACE MOUNTED SPEAKER. BACKBOX FURNISHED BY IT SUBCONTRACTOR, INSTALLED BY E.C.
- V WALL MOUNTED VOLUME CONTROL OUTLET AS DESIGNATED- SINGLE GANG JB WITH SINGLE GANG PLASTER RING AND PULL LINE IN A 1" CONDUIT TO TO NEAREST ACCESSIBLE CEILING SPACE. MOUNTING HEIGHT AT 48" A.F.F. UNLESS OTHERWISE NOTED. WIRING AND JACKS BY I.T. SUBCONTRACTOR.
- SRP SMART RESCUE PHONE. CUSTOM BACK BOX FURNISHED BY IT SUBCONTRACTOR AND INSTALL BY E.C. 1" CONDUIT W/PULL STRING TO TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.. DEVICE AND WIRING BY I.T. SUBCONTRACTOR.
- ARA AREA OF RESCUE ASSISTANCE BUTTON. CUSTOM BACK BOX FURNISHED BY IT SUBCONTRACTOR AND INSTALL BY E.C. 1" CONDUIT W/PULL STRING TO TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.. DEVICE AND WIRING BY I.T. SUBCONTRACTOR.
- B BLUE BEACON FOR PAGING SYSTEM - AT 108" A.F.F. UNO-SINGLE GANG OPENING WITH SINGLE GANG PLASTER RING AND PULL LINE TO NEAREST ACCESSIBLE CEILING SPACE. JACKS AND WIRING BY I.T. SUBCONTRACTOR.

ONE LINE POWER

- LOAD-BREAK SWITCH.
- CIRCUIT BREAKER.
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER.
- LA LIGHTNING ARRESTER AND GROUNDING TO PROTECT ALL PHASES.
- CONTACT, NORMALLY OPEN (NO).
- CONTACT, NORMALLY CLOSED (NC).
- ST SHUNT TRIP COIL.
- CM CUSTOMER METERING, ELECTRONIC SOLID STATE, UNLESS OTHERWISE INDICATED.
- POWER TRANSFORMER.
- FUSE, SIZE AS INDICATED.
- GF GROUND FAULT SENSOR & RELAY.
- 400A / 300A SWITCH AND FUSE "400A" - INDICATES AMPERE SWITCH SIZE. "300A" - INDICATES AMPERE FUSE SIZE.
- SYSTEM GROUND OR EQUIPMENT GROUND.
- N E L AUTOMATIC TRANSFER SWITCH.
- K_1 KIRK-KEY INTERLOCK

RECEPTACLES

(typically mtd. at 18" a.f.f., uno)

TYPICAL OUTLET NOTATIONS

- "a" =SWITCHED OUTLET, "a" - INDICATES SWITCH CONTROL.
- "C" = MOUNTED 6" ABOVE COUNTER OR 42" AFF. COORDINATE EXACT MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS.
- "F" =FURNITURE MTD, COORDINATE EXACT LOCATION WITH FURNITURE PLANS.
- "GFC" =GROUND FAULT INTERRUPTER TYPE MOUNTED AT 42" AFF.
- "GFI" = GROUND FAULT INTERRUPTER TYPE.
- "H" =HORIZONTALLY MOUNTED.
- "IG" = ISOLATED GROUND RECEPTACLE WITH SEPARATE GREEN GROUND CONDUCTOR WITH YELLOW STRIPE TO ISOLATED GROUND BUS IN PANEL.
- "M" = MODULAR FURNITURE SERVICE - PROVIDE FLEXIBLE CONNECTION, COORDINATE EXACT LOCATION WITH FURNITURE PLANS.
- "SP" = SURGE PROTECTION RECEPTACLE
- "T" = TAMPER RESISTANT SAFETY RECEPTACLE.
- "TL" = TWIST LOCK TYPE.
- "WP" = WEATHERPROOF RECEPTACLE WITH "NRTL" LISTED COVERPLATE FOR WET LOCATION WITH GFI TYPE RECEPTACLE INSTALLED IN NEMA 4 ENCLOSURE W/KEY LOCK.
- "CD" = CABLE DROP RECEPTACLE- REFER TO CABLE DROP DETAIL.
- "CR" = CORD REEL - REFER TO FLOOR PLANS AND CORD REEL DETAIL.
- "P" = PEDESTAL MOUNTED ON CASEWORK WITH GFI RECEPTACLE. COORDINATE WITH EQUIPMENT DRAWINGS FOR EXACT LOCATION.
- "E" = RECEPTACLE CONNECTED TO NORMAL/EMERGENCY CIRCUIT.
- "G" = OUTLET FOR GOGGLE CABINET, MOUNTED 6'-6" A.F.F. (REFER TO ARCHITECTURAL ELEVATIONS)
- 20AMP, 120 VOLT SINGLE RECEPTACLE
- 2 20 AMP, 120 VOLT DUPLEX RECEPTACLE; "2" INDICATES CIRCUIT NUMBER.
- 20AMP, 120 VOLT DOUBLE DUPLEX RECEPTACLE.
- 20 AMP, 120 VOLT DUPLEX RECEPTACLE INTENDED FOR SWITCHED POWER. COLOR OF OUTLET TO BE SELECTED BY OWNER.
- SPECIAL PURPOSE OUTLET - RATING AS INDICATED ON DRAWINGS. EXAMPLE; ELECTRIC DRYER= 30A, 125/250V, 3 POLE, 4 WIRE, NEMA 14-30R ELECTRIC RANGE= 50A, 125/250V, 3 POLE, 4 WIRE, NEMA 14-50R
- 20 AMP, 120 VOLT DUPLEX RECEPTACLE FLUSH FLOOR MOUNTED WITH COVER.
- 20 AMP, 120 VOLT DOUBLE DUPLEX RECEPTACLE FLUSH FLOOR MOUNTED WITH COVER.
- EWC J EWC ELECTRIC WATER COOLER OUTLET OR BOTTLE FILLING STATION - 20 AMP, 120 VOLT. PROVIDE GROUND FAULT INTERRUPTER TYPE CIRCUIT BREAKER.
- 20AMP, 120VOLT DUPLEX RECEPTACLE CONNECTED TO NORMAL/ EMERGENCY CIRCUIT.
- SURFACE RACEWAY WITH BASE, COVER, AND DIVIDER "B,C&D". IVORY FINISH. PROVIDE FIBER READY 2" RADIUS FITTINGS. SOLID END INDICATES RISE TO ABOVE ACCESSIBLE CEILING SPACE WITH B,C&D.
- 20 AMP, 120 VOLT GFI, HORIZONTALLY MOUNTED ON FURNITURE DUPLEX RECEPTACLE INTENDED FOR COMPUTER USE. COLOR OF OUTLET TO BE SELECTED BY OWNER.
- 20 AMP, 120 VOLT DUPLEX RECEPTACLE INTENDED FOR COMPUTER USE. COLOR OF OUTLET TO BE SELECTED BY OWNER.
- 20AMP, 120VOLT DOUBLE DUPLEX RECEPTACLE INTENDED FOR COMPUTER USE. COLOR OF OUTLET TO BE SELECTED BY OWNER.
- TWO DUPLEX RECEPTACLES, MOUNTED AT 18" AFF AND 84" AFF.
- 20 AMP, 120 VOLT DUPLEX SWITCHED RECEPTACLE. PROVIDE IO MODULE AND CONNECTION TO OCCUPANCY SENSOR.
- 20 AMP, 120 VOLT DOUBLE DUPLEX SWITCHED RECEPTACLE. PROVIDE IO MODULE AND CONNECTION TO OCCUPANCY SENSOR.
- 2/1V/2D 4 RECESSED FLOOR BOX WITH (2) 20A, 120V DUPLEX RECEPTACLES AND PROVISIONS FOR (4) RJ45 JACKS EQUAL TO WIREMOLD EVOLUTION SERIES #RFB4-FPCTCBS (CARPET), FPBTCBS (WOOD FLOOR) AND COMMUNICATION BRACKET FOR TEL/DATA DEVICES. PROVIDE 1 1/4"C FOR TEL/DATA TO NEAREST ACCESSIBLE CEILING SPACE.
- T RECESSED FLOOR BOX WITH (2) 20A, 120V DUPLEX RECEPTACLES AND PROVISIONS FOR (4) RJ45 JACKS EQUAL TO WIREMOLD EVOLUTION SERIES #RFB6-FPCTCBS (CARPET), FPBTCBS (WOOD FLOOR) AND COMMUNICATION BRACKET FOR TEL/DATA DEVICES. PROVIDE (1)1"C FOR TEL/DATA AND (3) 1 1/4" FOR A/V WIRING TO NEAREST ACCESSIBLE CEILING SPACE. CONDUITS FOR AV WIRING SHALL BE STUB INTO SAME ACCESSIBLE CEILING SPACE AS "TVE" OUTLET.
- 1V/2D 2 4 FLUSH MOUNTED 2 HOUR RATED POKE-THRU ASSEMBLY WITH (2) DUPLEX RECEPTACLES & (4) COMMUNICATION DEVICES EQUAL TO WIREMOLD EVOLUTION 6AT SERIES WITH SOLID BRASS FINISH RING OR EQUAL. REQUIRES 6" CORED HOLE.
- T FLUSH MOUNTED 2 HOUR RATED POKE-THRU ASSEMBLY WITH (2) DUPLEX RECEPTACLES & (2) COMMUNICATION DEVICES EQUAL TO WIREMOLD EVOLUTION 8AT SERIESWITH SOLID BRASS FINISH RING. REQUIRES 8" CORED HOLE. PROVIDE (1) 1 1/4"C. & (2) 1"C. TO ABOVE ACCESSIBLE CEILING OF ROOM BEING SERVED BY THE POKE-THRU.
- CR CORD REEL - REFER TO FLOOR PLANS AND CORD REEL DETAIL.

POWER

- 120/208 VOLT, 3 PHASE, 4 WIRE PANELBOARD.
- 277/480 VOLT, 3 PHASE, 4 WIRE, PANELBOARD.
- 120/208 VOLT, 3 PHASE, 4 WIRE NORMAL/EMERGENCY SYSTEM PANELBOARD.
- 277/480 VOLT 3 PHASE, 4 WIRE NORMAL/EMERGENCY SYSTEM PANELBOARD.
- PANELBOARD FLUSH MOUNTED.
- T5 T DRY TYPE TRANSFORMER - REFER TO TRANSFORMER SCHEDULE FOR RATINGS "T5"-INDICATES 45KVA TRANSFORMER. "K13" INDICATES TRANSFORMER WITH A K13 RATING.
- E ELECTRIC MANHOLE
- T TELEPHONE MANHOLE
- C CATV MANHOLE
- M METER SOCKET
- J J JUNCTION BOX - SIZE AS REQUIRED.
- DW J JUNCTION BOX - WITH FLEXIBLE CONNECTION TO EQUIPMENT-"DW" DENOTES DISHWASHER, "H" HOOD, "WO" WALL OVEN, "D" DISPOSER, "HD" HAND DRYER.
- 3R FUSED DISCONNECT SWITCH HEAVY DUTY TYPE-"3R" INDICATES NEMA 3R; 20 — INDICATES TIME DELAY FUSE SIZE; 30 — INDICATES SAFETY SWITCH SIZE
- 3R UNFUSED DISCONNECT SWITCH HEAVY DUTY TYPE-"3R" INDICATES NEMA 3R
- RV MAGNETIC MOTOR STARTER, "RV" INDICATES REDUCED VOLTAGE.
- COMBINATION FUSED DISCONNECT AND MOTOR STARTER
- TS HORSEPOWER RATED THERMAL SWITCH WITH PILOT LIGHT
- VFD VARIABLE FREQUENCY DRIVE.
- C CP MULTI-POLE CONTACTOR IN NEMA I ENCLOSURE-RATINGS AND NUMBER OF POLES AS REQUIRED. EQUIPMENT CONTROL PANEL.
- UCP UTILITY CONTROL PANEL (LABS)
- ATS AUTOMATIC TRANSFER SWITCH.
- HOA HAND-OFF-AUTOMATIC SELECTOR SWITCH.
- THREE FUNCTION PUSHBUTTON SWITCH (UP/DOWN/STOP)-FURNISHED BY EQUIPMENT SUPPLIER, INST. & WIRED BY EC.
- ON/OFF PUSHBUTTON SWITCH.
- 70AT 100AF CB ENCLOSED CIRCUIT BREAKER-"70AT" INDICATES 70 AMP TRIP; "100AF" INDICATES 100 AMP FRAME.
- PB PULL BOX-SIZE AS REQUIRED.
- G GENERATOR.

MISCELLANEOUS-DEVICES

- EPO EMERGENCY POWER SHUNT TRIP - RED MUSHROOM HEAD WITH EXTENDED GUARD WITH EMERGENCY OFF LEGEND. MOUNT AT 48"AFF., U.O.I. PROVIDE NAMEPLATE INDICATING LOAD CONTROLLED "B" - INDICATES BREAK GLASS STATION WITH HAMMER SUPPORT CLIP AND FIVE REPLACEMENT DISCS STORED INSIDE BOX SUPPORTING DEVICE.
- HANDICAP DOOR ACTIVATE SWITCH-FURN. & INST. BY SYSTEM SUPPLIER. PROVIDE 4"SQ X 2 1/2"DP JB AND 1"C WITH PULL LINE TO ELECTRIC DOOR OPERATOR.
- SV SOLENOID VALVE - F&I BY P.C., WIRED BY E.C.
- T/C TIMECLOCK - 7 DAY DIGITAL WITH BATTERY BACK-UP.
- EFS EYE WASH FLOW SWITCH-F&I BY P.C., WIRED TO SECURITY SYSTEM BY E.C.
- TPD TEMPERATURE SENSOR - CONNECT TO SECURITY SYSTEM.
- LS LIMIT SWITCH.
- B DOOR BELL-COORDINATE MH WITH ARCHITECT.
- LOW VOLTAGE PUSHBUTTON.
- 1 / E-3 DETAIL IDENTIFIER-INDICATES DETAIL #1 ON DWG. E-3.
- GROUND BAR 24W" X 1/8" THICK X 18" LONG COPPER BUS, U.N.O.
- 1 / E-3 A A SECTION IDENTIFIER- INDICATES SECTION A-A, DETAIL #2 ON DWG. E-3.
- K2 EQUIPMENT TAG NUMBER, REFER TO EQUIPMENT SCHEDULE, "K" INDICATES KITCHEN "C" INDICATES COMPUTER.
- 1 KEYED SHEET NOTE SYMBOL, "1" INDICATES TO REFER TO NOTE #1
- 3 CIRCUIT SIZE NUMBER, REFER TO "CIRCUIT SIZE SCHEDULE".
- S S SCOREBOARD CONTROL OUTLET - WALL MOUNTED AT 18" A.F.F. OR FLOOR BOX. UNO - SINGLE GANG OPENING AND 4"SQ. X 2 1/2"DP J.B. WITH 1"C. WIRING AND JACKS BY I.T. CONTRACTOR.
- ADA CS ADA "CALL STATION", HANDS FREE. MOUNT AT 48"AFF.
- ADA MCS ADA "MASTER CALL STATION", HANDS FREE. MOUNT AT 48"AFF.
- P EMERGENCY CALL STATION - LOCATE WITHIN 3' OF WATER CLOSET WITH PULL CORD EXTENDING TO WITHIN 12" OF THE FLOOR.
- AV AUDIO/VISUAL SIGNAL FOR SINGLE TOILETS. MOUNT OVER DOOR.
- E ELECTRIC DOOR-OPERATOR. FURN. & INST. BY GC, WIRED BY EC.
- LS LIMIT SWITCH FURNISHED BY SYSTEM SUPPLIER, WIRED BY E.C.

FIRE ALARM SYSTEM

- F MANUAL PULL STATION - MTD 48" AFF TO ℄.
- F SPEAKER/VISUAL "ADA" COMPLIANT SIGNAL - MTD 80" AFF TO ℄.
- F WALL MOUNTED DUAL STROBE AMBER/CLEAR COMBINATION MASS NOTIFICATION/FIRE ALARM DEVICE - MTD 80" AFF TO ℄.
- A WALL MOUNTED MASS NOTIFICATION AMBER VISUAL STROBE ONLY SIGNAL, DEVICE MTD AT 80" AFF TO ℄. "CLG" INDICATES CEILING MOUNT TYPE
- F A WALL MOUNTED SPEAKER/VISUAL FIRE ALARM STROBE AND WALL MOUNTED MASS NOTIFICATION AMBER MOUNTED AT 80" AFF TO ℄ ADJACENT TO EACH OTHER.
- A MASS NOTIFICATION VISUAL SIGNAL - CEILING MTD.
- F SPEAKER/VISUAL "ADA" COMPLIANT SIGNAL - CEILING MTD.
- S CEILING MOUNTED PHOTOELECTRIC SMOKE DETECTOR.
- S E SMOKE DETECTOR ALSO USED FOR ELEVATOR RECALL.
- S SC SELF-CONTAINED 120 VOLT SMOKE DETECTOR.
- S D DUCT TYPE SMOKE DETECTOR WITH SAMPLING TUBE. FURNISHED BY EC, INSTALLED BY HVAC, WIRED BY EC.
- S D/FSD DUCT TYPE SMOKE DETECTOR WITH SAMPLING TUBE FOR CONTROL OF ASSOCIATED FSD AND UNIT SHUTDOWN FURNISHED BY EC, INSTALLED BY HVAC, WIRED BY EC.
- S A SPOT TYPE SMOKE DETECTOR USED TO INITIATE ATRIUM SMOKE CONTROL
- F H 135° THERMAL DETECTOR - 135˚F FIXED TEMPERATURE AND RATE OF RISE. "F" INDICATES FIXED TEMPERATURE ONLY.
- H 200° THERMAL DETECTOR - 200˚F FIXED TEMPERATURE.
- REMOTE ALARM INDICATOR-LABEL.
- T BD BEAM SMOKE DETECTOR -"T" DESIGNATES TRANSMITTER, "R" RECEIVER.
- RT KEY OPERATED REMOTE TEST STATION WITH LED-LABEL.
- FS SPRINKLER FLOW SWITCH - F&I BY F.P.C. WIRED BY E.C.
- TS SPRINKLER TAMPER SWITCH - F&I BY F.P.C. WIRED BY E.C.
- PS SPRINKLER PRESSURE SWITCH - F&I BY F.P.C. WIRED BY E.C.
- LPS SPRINKLER LOW PRESSURE SWITCH - F&I BY F.P.C. WIRED BY E.C.
- FSD FIRE SMOKE DAMPER - F&I BY HVAC CONTRACTOR, WIRED BY E.C. CONTROL MODULE AND FIRE ALARM INTERLOCK WIRED BY ELECTRICAL CONTRACTOR.
- DH MAGNETIC DOOR HOLDER - MTD 80" AFF TO ℄.
- DC ELECTRIC DOOR CLOSER-F&I BY HARDWARE, WIRED BY EC.
- FACP FIRE ALARM CONTROL PANEL.
- ANN FIRE ALARM ANNUNCIATOR.
- R RED FIRE ALARM BEACON-WEATHERPROOF.
- W WHITE FIRE ALARM BEACON-WEATHERPROOF.
- F RED FIRE ALARM LIGHT OVER MASTER BOX-WEATHERPROOF.
- MM MONITOR MODULE
- CM CONTROL MODULE
- IM ISOLATION MODULE
- K KEY REPOSITORY BOX (KNOX BOX)
- FATC FIRE ALARM TERMINAL CABINET
- EVAC FIRE ALARM VOICE EVACUATION PANEL.
- FCC FIRE COMMAND CENTER
- LOC LOCAL OPERATOR CONSOLE
- MUS ADDRESSABLE, TEXTUAL NOTIFICATION APPLIANCE LED TEXT MESSAGE DISPLAY
- FIRE FIGHTERS PHONE (PHONE AND CABINET).
- PIV POST INDICATOR VALVE-F&I BY FPC, WIRED BY EC.
- CO WALL MOUNTED CARBON MONOXIDE DETECTOR, MOUNTING HEIGHT PER MANUFACTURERS RECOMMENDATION. PROVIDE ONE MONITOR MODULE PER SENSOR.
- GD WALL MOUNTED COMBUSTIBLE GAS DETECTOR (CH4) . PROVIDE A FIRE ALARM CONTROL MODULE PER DETECTOR FOR MONITORING BY THE FACP. MOUNT 1' BELOW CEILING.
- E FIRE ALARM ELECTRIC BELL (120 VOLTS), MOUNTED ABOVE FIRE DEPARTMENT SPRINKLER CONNECTION. FURNISHED BY F.P.C., INSTALLED & WIRED BY E.C.
- CO D DUCT MOUNTED CARBON MONOXIDE DETECTOR WITH SAMPLING TUBE FURNISHED BY E.C., INSTALLED BY HVAC, WIRED BY E.C. PROVIDE (1) MONITOR MODULE PER DETECTOR. PROVIDE (1) REMOTE ACCESSORY KIT WITH KEY TEST SWITCH AND INTEGRAL AUDIBLE AND VISUAL ALARM INDICATION TO BE MOUNTED BELOW HVAC UNIT.

AUDIOVISUAL SYSTEMS SYMBOL LEGEND

SYMBOL	DESCRIPTION	BOX TYPE (H" x W" x D")	MOUNTING LOCATION
AV JUNCTION BOX SYMBOLS			
A1	WALL-MOUNTED ANTENNA, TYPE 1	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT 12'-0" AFF
A2	WALL-MOUNTED ANTENNA, TYPE 2	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT 12'-0" AFF
A3	CEILING-MOUNTED ANTENNA, TYPE 3	4" SQUARE METAL BOX WITH COVER	FLUSH MOUNT IN CEILING
A4	CEILING-MOUNTED ANTENNA, TYPE 4	4" SQUARE METAL BOX WITH COVER	FLUSH MOUNT IN CEILING
BP	WALL-MOUNTED BUTTON PANEL	2-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT SWITCH HEIGHT
C1	WALL-MOUNTED CAMERA, TYPE 1	2-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT 8'-0" AFF
D1	DISPLAY BACK BOX, TYPE 1	CHIEF PAC-526	FLUSH MOUNT IN WALL AT 5'-6" AFF
F1	FLOOR BOX	FSR FL-600P-6 WITH FINISHED COVER	MOUNT FLUSH IN FLOOR
J1	JUNCTION BOX, TYPE 1	6"X6"X24" METAL TROUGH	MOUNT AT 78" ABOVE AV EQUIPMENT RACK
J2	JUNCTION BOX, TYPE 2	18"X18"X4" NEMA 1 ENCLOSURE WITH OVERSIZED FLUSH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT
M1	CEILING-MOUNTED MICROPHONE, TYPE 1	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN CEILING
M2	CEILING-MOUNTED MICROPHONE, TYPE 2	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN CEILING
MC	MOTOR CONTROLLER	4" SQUARE METAL BOX WITH COVER	PART OF PROJECTION SCREEN CASE
MC	MOTOR CONTROLLER	4" SQUARE METAL BOX WITH COVER	PART OF PROJECTION SCREEN CASE
PC	PRODUCTION COMMUNICATION	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT SWITCH HEIGHT
PS	PRODUCTION COMMUNICATION SPEAKER STATION	4-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT SWITCH HEIGHT
R1	RECEPTACLE PANEL, TYPE 1	3-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT
R2	RECEPTACLE PANEL, TYPE 2	12"X12"X4" NEMA 1 ENCLOSURE WITH OVERSIZED FLUSH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT
R3	RECEPTACLE PANEL, TYPE 3	3-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT
R4	RECEPTACLE PANEL, TYPE 4	8"X8"X4" NEMA 1 ENCLOSURE WITH OVERSIZED FLUSH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT
R5	RECEPTACLE PANEL, TYPE 5	2-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE H

LIGHTING FIXTURE SCHEDULE ① ⑤ ⑧ ⑨ ⑩ ⑪

TYPE	MANUFACTURER	MODEL / SERIES	MTG.	VOLTAGE	LIGHT SOURCE			DESCRIPTION / REMARKS	MANUFACTURER EQUALS	SCHEDULE NOTES
					LUMENS	WATTS	SOURCE/CCT			
AL	TEMPO	20-06-XX-1-W*-T-MOUNTING-PS-SSD-120-XX	S	120 VOLT	-	2	LED/3000K	LED CARPET TO FLOOR AISLE FIXTURE PROVIDED WITH ALL REQUIRED HARDWARE FOR LOCATIONS SHOWN ON PLANS.	TIVOLI CELESTIAL	7 8 - - -
ALB	COLE	L157W-HO-XX-XX-277-DIM-BLU	W/R	120 VOLT	3.6	215	LED/BLUE	LED STEP LIGHT MOUNTED RECESSED IN WALL & PROVIDED W/ BLUE LED SOURCE FINISH TO BE SELECTED BY ARCH.	TIVOLI WINONA	7 8 - - -
ALS	BEGA	22-372-K27-XX	W/R	UNIVERSAL/120V	241	11	LED/2700K	LED STEP LIGHT MOUNTED RECESSED IN WALL & PROVIDED W/ 0-10V DIMMING DRIVER FINISH TO BE SELECTED BY ARCH.	WINONA COLE LIGHTING	7 8 - - -
EL	ECLIPSE	574-.156-40W-EBU-35K-XX-DLC-PSH WM-D7-XX	S	UNIVERSAL/277V	5200	40	LED/3500K	4' LINEAR UTILITY FIXTURE WITH POLYCARBONATE LENS & PROVIDED WITH 0-10V DIMMING CAPABLE DRIVER.	KENALL KURTZON	7 8 - - -
G4	CREE	FLD-OL-2M-D4-14-E-UL-XX-700-MOD(27K)-DIM-XX	S	UNIVERSAL/277V	6467	126	LED/2700K	4' LED LINEAR LOW PROFILE FLOOD TYPE LUMINAIRE WITH DIE CAST ALUMINUM FULLY ADJUSTABLE 360 ROTATING BODY.	INSIGHT ECOSENSE	7 8 - - -
HRL	ACCLAIM	FLEXOHI-27-ALD-XX-24 + FLX-MIN	S	UNIVERSAL/277V	504/LF	5.5/LF	LED/2700K	LED TAPE LIGHT MOUNTED IN ALUMINUM ASYMMETRIC CHANNEL W/ DIFFUSING LENS, & 0-10V DIMMING CAPABILITY.	Q-TRAN ACOLYTE	7 8 15 - -
J	ELITE-ORACLE	OVT-LED-1500L-MVOLT-40K-XX-WM	W	UNIVERSAL/277V	1500	18	LED/4000K	UTILITY FIXTURE WITH FROSTED HEAT TREATED GLASS GLOBE, CAST GUARD, & 0-10V DIMMABLE DRIVER.	PHOENIX RAB	7 8 - - -
LC3	INSIGHT	PCM-13-27K-120-SM-XX-UNV-DIM-XX-FL	S	UNIVERSAL/277V	1185/LF	13/LF	LED/2700K	LED COVE MOUNTED FIXTURE WITH FROSTED LENSING. PROVIDE ALL ACCESSORIES FOR RUNS SHOWN ON PLANS.	ECOSENSE SSL LIGHTING	7 8 15 - -
LCL	ACCLAIM	FLEXOHI-27-ALD-XX-24 + FLK-45D	S	UNIVERSAL/277V	504/LF	5.5/LF	LED/2700K	LED TAPE IN ALUMINUM CHANNEL CAPABLE OF 0-10V DIMMING PROVIDE ALL HARDWARE FOR RUNS SHOWN ON PLANS.	Q-TRAN ACOLYTE	7 8 15 - -
LK22	KURTZON	FP-R-5-2X2-2LEDR-MOD(827)-UNV-WHT-XX	R	UNIVERSAL/277V	4450	37	LED/2700K	2'X2' RECESSED TROFFER STYLE FIXTURE NSF RATED SUITABLE FOR USE IN AREAS OF FOOD PREPARATION.	KENALL CERTOLUX	7 8 - - -
LP4	LUMIUM	ND1-CS-XX-27K-LO-LO-UNV-10D-XX-XX-XX-XX-XX-XX	AC	UNIVERSAL/277V	1350/LF	12/LF	LED/2700K	LED VERY LOW PROFILE DECORATIVE PENDANT MOUNTED FIXTURE WITH DIRECT / INDIRECT SOURCE DISTRIBUTIONS	A LIGHT ALW LIGHTING	7 8 15 - -
LR2	FINELITE	HP-2-R-2-B-MOD(827)-F-277V-FE-SC-XX	R	277 VOLT	846	9.2	LED/2700K	2' APERTURE LED RECESSED SLOT FIXTURE WITH FROSTED ACRYLIC LENSING AND 0-10V DIMMING CAPABLE DRIVER.	AXIS LIGHTING MARK ARCH.	7 8 - - -
LRC	FINELITE	HP-6-R-XX-B-MOD(827)-F-277V-SC-XX	R	277 VOLT	485/LF	4.7/LF	LED/2700K	6" APERTURE LED RECESSED SLOT FIXTURE WITH FROSTED ACRYLIC LENSING AND 0-10V DIMMING CAPABLE DRIVER.	AXIS LIGHTING MARK ARCH.	7 8 15 - -
LRW	FINELITE	HP-6-R-XX-H-MOD(827)-F-277V-SC-XX	W/R	277 VOLT	733/LF	7.2/LF	LED/2700K	6" APERTURE LED RECESSED SLOT FIXTURE WITH FROSTED ACRYLIC LENSING AND 0-10V DIMMING CAPABLE DRIVER.	AXIS LIGHTING MARK ARCH.	7 8 15 - -
LRW4	FINELITE	HP-4-R-4-H-MOD(827)-F-277V-SC-XX-FE-XX	R	277 VOLT	2900	28.4	LED/2700K	4" APERTURE LED RECESSED SLOT FIXTURE WITH FROSTED ACRYLIC LENSING AND 0-10V DIMMING CAPABLE DRIVER.	AXIS LIGHTING MARK ARCH.	7 8 - - -
LRW12	FINELITE	HP-4-R-12-H-MOD(827)-F-277V-SC-XX-FE-XX	R	277 VOLT	8700	85.2	LED/2700K	4" APERTURE LED RECESSED SLOT FIXTURE WITH FROSTED ACRYLIC LENSING AND 0-10V DIMMING CAPABLE DRIVER.	AXIS LIGHTING MARK ARCH.	7 8 - - -
LS2	XTRALIGHT	SAS-2-1500L-MOD(27K)-DIM-RD-XX-BM-XX + CHAIN MOUNTING KIT	S/CH	UNIVERSAL/277V	1647	12.6	LED/2700K	2' UTILITY FIXTURE WITH FROSTED ACRYLIC DIFFUSING LENS PROVIDE CHAIN MOUNTING KIT WHERE NECESSARY.	DECO LIGHTING MERCURY LIGHTING	7 8 - - -
LS4	XTRALIGHT	SAS-4-5000L-MOD(27K)-DIM-RD-XX-BM-XX + CHAIN MOUNTING KIT	S/CH	UNIVERSAL/277V	4982	39	LED/2700K	4' UTILITY FIXTURE WITH FROSTED ACRYLIC DIFFUSING LENS PROVIDE CHAIN MOUNTING KIT WHERE NECESSARY.	DECO LIGHTING MERCURY LIGHTING	7 8 - - -
LS8	XTRALIGHT	SAS-8-10000L-MOD(27K)-DIM-RD-XX-BM-XX + CHAIN MOUNTING KIT	S/CH	UNIVERSAL/277V	10,000	78	LED/2700K	8' UTILITY FIXTURE WITH FROSTED ACRYLIC DIFFUSING LENS PROVIDE CHAIN MOUNTING KIT WHERE NECESSARY.	DECO LIGHTING MERCURY LIGHTING	7 8 - - -
LSL	ACCLAIM	FTB-1-2-XX-XX-A-A-N-ALD-XX-24-FTCHXX-FTXX-FTTK2	S	UNIVERSAL/120V	98.2/LF	3.6/LF	LED/2700K	LED TAPE FIXTURE IN FLEXIBLE MOLDED DIFFUSING FORM FACTOR PROVIDED WITH DMX DIMMING CAPABLE DRIVER.	Q-TRAN ACOLYTE	7 8 15 - -
LWW	ACCLAIM	FLEXOHI-27-ALD-XX-24 + FLX-MIN	S	UNIVERSAL/277V	504/LF	5.5/LF	LED/2700K	LED TAPE LIGHT MOUNTED IN ALUMINUM ASYMMETRIC CHANNEL W/ DIFFUSING LENS, & 0-10V DIMMING CAPABILITY.	Q-TRAN ACOLYTE	7 8 15 - -
PC1	METEOR	AS6-40-278-UNV-DMX(RJ45)-60-STD-XX-STXX-XX	P	UNIVERSAL/120V	3470	40	LED/2700K	6" PENDANT CYLINDER FIXTURE WITH STEM MOUNTING OPTION AND PROVIDED WITH DMX DIMMING CAPABILITY.	GOTHAM PATHWAY	7 8 - - -
PC2	METEOR	AS6-60-278-UNV-DMX(RJ45)-60-STD-XX-STXX-XX	P	UNIVERSAL/120V	5500	60	LED/2700K	6" PENDANT CYLINDER FIXTURE WITH STEM MOUNTING OPTION AND PROVIDED WITH DMX DIMMING CAPABILITY.	GOTHAM PATHWAY	7 8 - - -
RC1	ELITE	HH4-LED-1500L-DIM10-MVOLT-MD-27K-90+-HH4-XX-XX	R	UNIVERSAL/277V	1699	20	LED/2700K	4" APERTURE LED DOWNLIGHT FIXTURE WITH SEMI-SPECULAR FINISH AND PROVIDED WITH 0-10V DIMMING CAPABLE DRIVER.	GOTHAM PATHWAY	7 8 - - -
RC2	ELITE	HH4-LED-2000L-DIM10-MVOLT-MD-27K-90+-HH4-XX-XX	R	UNIVERSAL/277V	2144	26	LED/2700K	4" APERTURE LED DOWNLIGHT FIXTURE WITH SEMI-SPECULAR FINISH AND PROVIDED WITH 0-10V DIMMING CAPABLE DRIVER.	GOTHAM PATHWAY	7 8 - - -
RSH	GOTHAM	EVO4SH-27-10-DFF-SOL-MVOLT-EZ10-XX	R	UNIVERSAL/277V	843	8.8	LED/2700K	4" APERTURE LED DOWNLIGHT FIXTURE PROVIDED WITH DEAD FRONT TRIM AND 0-10V DIMMING CAPABLE DRIVER.	PEACHTREE PATHWAY	7 8 - - -
SC1	ELITE	SCH6-LED-WM-2000L-DIM10-MVOLT-ND-27K-90+-XX-XX-XX	S	UNIVERSAL/277V	2000	22	LED/2700K	6" APERTURE LED DOWNLIGHT FIXTURE PROVIDED, WALL MOUNTED, AND 0-10V DIMMING CAPABLE DRIVER.	CONTECH GOTHAM	7 8 - - -
SL1	US ARCHITECTURAL	RZR-PLED-III-M-40LED-1050-WW-277 -XX-TPR7 + 20'-R-T-ALUM-POLE	POLE	277 VOLT	14,870	128	LED/3000K	LED POLE MOUNTED LUMINAIRE WITH TYPE III DISTRIBUTION. MOUNTED ON 20' TALL ROUND TAPERED ALUMINUM POLE.	MCGRAW EDISON LITHONIA	4 7 8 - -
SL2A	BEGA	84-147-K3-XX + 15'-R-T-ALUM-POLE	POLE	UNIVERSAL/277V	5100	47.2	LED/3000K	EXTERIOR POST TOP FIXTURE MOUNTED ON 15' ROUND TAPERED ALUMINUM POLE WITH FINISH TO MATCH	STERNBURG LOUIS POULSEN	4 7 8 - -
SL3	LOUIS POULSEN	43,3-14W-LED/300K-120-277/60HZ-XX-XX-DIM-0-10V	BOL	UNIVERSAL/277V	494	14	LED/3000K	LED DECORATIVE BOLLARD IP65 RATED AND PROVIDE WITH 0-10V DIMMING CAPABLE DRIVER.	STERNBURG LUMEC	7 8 - - -
SL4	BEGA	33-242-XX	W	UNIVERSAL/277V	1893	22.9	LED/3000K	LED LOW PROFILE WALL MOUNTED LUMINAIRE WITH TYPE IV DISTRIBUTION AND 0-10V DIMMING CAPABLE DRIVER.	LITHONIA PERFORM.IN LTG.	7 8 - - -
SL5	GRIVEN	OX561-RGBW-UNV-US-XX-BND-3G-XX	S	UNIVERSAL/277V	12785	310	RGB/LED/6500K	IP65 RATED EXTERIOR FLOOR TYPE FIXTURE WITH RGBW SOURCE AND DMX DIMMING CAPABLE DRIVER.	LUMENPULSE COLOR KINETICS	7 8 - - -
SL7	TARGETTI	KPLM-10-GMB-SP-L1-30-S-1E2525	R	UNIVERSAL/277V	1515	29	LED/3000K	IN-GRADE SPOT LIGHT WITH 11° BEAM SPREAD. 0-10V DIMMING CAPABLE	KIM LIGHTING HYDRELL	7 8 - - -
SL8	TARGETTI	JE-R-10-WW-XX-30-XX-XX-1E35XX-1E3182-CABLES	R	UNIVERSAL/277V	869.2/LF	9.75/LF	LED/3000K	IP68 RATED IN GRADE FIXTURE WITH WALL WASH DISTRIBUTION AND 0-10V DIMMING CAPABLE DRIVER	KIM LIGHTING HYDRELL	7 8 - - -
SL10	TARGETTI	DAS-RP-SP-L2-30-24/DELV96124DQS	G	UNIVERSAL/277V	785	14	LED/3000K	LED MINI FLOOD FIXTURE CAPABLE OF 0-10V DIMMING AND PROVIDED WITH ALL NECESSARY MOUNTING HARDWARE.	LUMENPULSE INSIGHT	7 8 - - -
SLS	BEGA	33 165 K30	R	UNIVERSAL/277V	441	5.8	LED/3000K	LED RECESSED STEP LIGHT. 0-10V DIMMING CAPABLE. FINISH BY ARCHITECT.	WINONA COLE LIGHTING	7 8 - - -
SPFL	LUMENPULSE	LBM-277-27K-FL-*-DIM-SY-UL-50FT	S	277 VOLT	1428	28	LED-2700K	LED FLOOD LIGHT. FLOOD TYPE DISTRIBUTION (40°). *=COLOR BY ARCHITECT. 0-10V DIMMING CAPABLE.	INSIGHT COLOR KINETICS	7 8 - - -
SPNF	LUMENPULSE	LBM-277-27K-NF-*-DIM-SY-UL-50FT	S	277 VOLT	1428	28	LED-2700K	LED FLOOD LIGHT. NARROW FLOOD DISTRIBUTION (20°) *=COLOR BY ARCHITECT. 0-10V DIMMING CAPABLE.	INSIGHT COLOR KINETICS	7 8 - - -
UC	ACCLAIM	FLEXOHI-27-ALD-XX-24 + FLX-MIN	S	UNIVERSAL/277V	504/LF	5.5/LF	LED/2700K	LED TAPE LIGHT MOUNTED IN ALUMINUM ASYMMETRIC CHANNEL W/ DIFFUSING LENS, & 0-10V DIMMING CAPABILITY.	Q-TRAN ACOLYTE	7 8 15 - -
⊠	EVENLITE	TEXZ-AC-G-1C	U	UNIVERSAL/277V	-	2	LED	SINGLE FACED EDGE-LIT EXIT SIGN. PROVIDE ARROWS AS SHOWN ON DRAWINGS.	EMERGI-LITE DUAL-LITE	2 6 - - -
⊠	EVENLITE	TEXZ-AC-G-2M	U	UNIVERSAL/277V	-	4	LED	DOUBLE FACED EDGE-LIT EXIT SIGN. PROVIDE ARROWS AS SHOWN ON DRAWINGS.	EMERGI-LITE DUAL-LITE	2 6 - - -
⊠ HC	EVENLITE	TRE-AC-G-1	U	UNIVERSAL/277V	-	4	LED	SINGLE FACED EDGE-LIT EXIT SIGN WITH HANDICAP ACCESSIBLE GRAPHIC	EMERGI-LITE DUAL-LITE	2 6 - - -
⊠ RS	EVENLITE	RZR3-AC-G-1-WH-1B-RS	W	UNIVERSAL/277V	-	2	LED	LOW PROFILE, SINGLE FACED EXIT SIGN WITH POLYCARBOANTE SHIELD FOR ROUGH SERVICE APPLICATION	EMERGI-LITE DUAL-LITE	2 6 - - -
⊠ HL	EVENLITE	RZR3-AC-G-1-WH-1B	W	UNIVERSAL/277V	-	2	LED	LOW PROFILE, SINGLE FACED EXIT SIGN WITH POLYCARBOANTE SHIELD FOR ROUGH SERVICE APPLICATION	EMERGI-LITE DUAL-LITE	2 3 6 - -
⊠ MM	EVENLITE	TRE-AC-G-1	S	UNIVERSAL/277V	-	2	LED	SINGLE FACED EDGE-LIT EXIT SIGN FOR MULLION MOUNTING WITH REMOTE POWER SUPPLY	EMERGI-LITE DUAL-LITE	2 6 - - -
EB	EVENLITE	TCL4W-SD	W	UNIVERSAL/277V	-	-	LED	SELF-CONTAINED EMERGENCY LIGHTING FIXTURE WITH TWIN ADJUSTABLE HEADS	EMERGI-LITE DUAL-LITE	- - - - -

7

LIGHTING FIXTURE SCHEDULE NOTES ( )

1. LIGHTING FIXTURE PACKAGE SUBMITTALS SHALL BE FULLY COORDINATED BETWEEN THE ELECTRICAL CONTRACTOR, LIGHTING FIXTURE REPRESENTATIVE(S), AND LIGHTING MANUFACTURERS TO ENSURE ALL PRODUCT, INSTALLATION, AND CONTROL REQUIREMENTS ARE MET PRIOR TO SUBMISSION FOR REVIEW. IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO PROVIDE A PACKAGE MEETING ALL REQUIREMENTS OF THE PROJECT FOR A COMPLETE AND FULLY FUNCTIONAL LIGHTING SYSTEM.
2. PROVIDE EXIT SIGN THAT COMPLIES WITH NFPA 101, UL 924, 521 CMR 26.1.2 AND ALL REFERENCED STANDARDS AND CODES.
3. PROVIDE FLOOR PROXIMITY SIGN IN ADDITION TO STANDARD SIGN ABOVE DOOR; MOUNT SIGN AT 18" A.F.F. TO THE TOP ON THE STRIKE SIDE OF DOOR. SIGN SHALL BE RECESSED MOUNTED AND PROVIDED WITH FLUSH POLYCARBONATE SHIELD.
4. SITE LIGHTING POLES SHALL BE PROVIDED WITH FULL BASE COVERS TO MATCH PROFILE OF POLE; NUT COVERS ONLY ARE NOT ACCEPTABLE.
5. UNLESS OTHER NOTED, PROVIDE ALL FIXTURES WITH 0-10V DIMMING BALLAST, DRIVER, TRANSFORMER, OR LIGHT ENGINE REQUIRED FOR LAMP OR LED SOURCE SPECIFIED.
6. E.C. SHALL PROVIDE ADDITIONAL EXIT SIGNS (TO INCLUDE 100' OF MC CABLE BRANCH CIRCUITING) FOR FIELD PLACEMENT DURING CONSTRUCTION. REFER TO SPECIFICATIONS FOR QUANTITIES.
7. PROVIDE ALCS ADDRESSABLE INPUT/OUTPUT (I/O) MODULE FOR EACH FIXTURE UNLESS OTHERWISE NOTED. APPLICATIONS NOT REQUIRING INDIVIDUAL CONTROL (WHERE NOTED ON PLANS) SHALL BE PROVIDED WITH I/O MODULES ON A FIXTURE GROUPING BASIS. WHERE FIXTURES ARE LOCATED IN HARD CEILING AREAS THE I/O MODULE SHALL BE REMOTE MOUNTED IN ACCESSIBLE AREA ABOVE AN A.C.T. CEILING. WHERE FIXTURES ARE LOCATED OUTDOORS THE I/O MODULE SHALL BE LOCATED IN THE MAIN ELECTRICAL ROOM ADJACENT TO THE PANEL SERVING THE LIGHTING. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM - TYPICAL ONE-LINE DIAGRAM" AND SPECIFICATIONS FOR FURTHER INFORMATION.
8. PROVIDE LED SOURCES WITH MAXIMUM A MAXIMUM COLOR VARIATION OF 3-STEP MCADAM ELLIPSE. PROVIDE STATEMENT OF COMPLIANCE WITH SUBMITTALS.
9. PROVIDE FIXTURES WITH A MINIMUM WARRANTY COVERAGE OF 5 YEARS ON ALL PARTS, MANUFACTURER SHALL PROVIDE WRITTEN WARRANTY TO PROVIDE REPLACEMENT PARTS, INCLUDING BUT NOT LIMITED TO, LED SOURCE MODULE AND DRIVER FOR A MINIMUM OF TEN YEARS. PARTS SHALL BE FULLY COMPATIBLE WITH FIXTURE TO PROVIDE SAME LIGHT OUTPUT, DISTRIBUTION, COLOR, AND COLOR RENDERING AT OR BELOW THE ORIGINAL WATTAGE. PROVIDE STATEMENT OF COMPLIANCE WITH SUBMITTALS.
10. PROVIDE FIXTURES WITH PROJECT SPECIFIC LABELS CLEARLY INDICATING THE FIXTURE TYPE, SERVICE CONTACT INFORMATION, AND REPLACEMENT PARTS (INCLUDING BUT NOT LIMITED TO SOURCE, DRIVER, AND LENS). MANUFACTURER STANDARD OFFERING OF QR CODE OR BAR CODE CONTAINING REQUIRED INFORMATION WILL BE ACCEPTABLE. PROVIDE STATEMENT OF COMPLIANCE WITH SUBMITTALS.
11. PROVIDE FIXTURES FROM MANUFACTURERS WITH A DOCUMENTED HISTORY OF SUPPLYING PRODUCTS SPECIFIED FOR A MINIMUM OF 5 YEARS. PROVIDE STATEMENT OF COMPLIANCE WITH SUBMITTALS.
12. FIXTURES TO BE PROVIDED WITH A MINIMUM 10 YEAR WARRANTY COVERING BOTH LED'S AND DRIVERS. ALSO FIXTURE TO HAVE A MINIMUM L90 RATING OF 100,000 HOURS BASED ON TM-21 CALCULATION DATA THIS INFORMATION MUST BE SUBMITTED FOR REVIEW.
13. FIXTURE TO BE PROVIDED WITH TUNABLE WHITE DRIVER OPERATING ON A DALI INTERFACE PROTOCOL. FIXTURE SUPPLIER TO PROVIDE A LIST OF CCT SET POINTS FROM THE MANUFACTURER TO THE LIGHTING CONTROL SYSTEM PROGRAMMER.
14. FIXTURES TO BE PROVIDED WITH DMX DIMMABLE DRIVER CAPABLE OF A SMOOTH DIM TO BLACK (0% TOTAL LIGHT OUTPUT)
15. FIXTURE LENGTHS TO BE COORDINATED WITH ELECTRICAL LIGHTING PLANS. PROVIDE ALL NECESSARY MOUNTING HARDWARE, DRIVERS, CONNECTOR CABLES, ETC. FOR RUNS SHOWN.
16. FIXTURE MUST BE PROVIDED WITH ADJUSTABLE LENGTH STABILIZER / SAFETY CABLE
17. FIXTURE TO BE PROVIDED WITH INTEGRAL BATTERY BACK UP.
18. PROVIDE CURRENT LIMITER DEVICE AT FEED TO EACH RUN OF TRACK. LIMITER SHALL BE SIZED FOR LOAD OF HEADS INDICATED PLUS 100% ADDITIONAL SPARE CAPACITY (10A MAX.)

MOUNTING DESIGNATIONS

CH	CHAIN	U	UNIVERSAL
P	PENDANT	W	WALL
R	RECESSED	AC	AIRCRAFT CABLE
S	SURFACE	BOL	BOLLARD
T	TRACK/RAIL/CABLE	POLE	POLE

LIGHTING GENERAL NOTES

1. MANUFACTURERS AND CATALOG NUMBERS IDENTIFIED IN THE "LIGHTING FIXTURE SCHEDULE" SHALL SERVE TO ESTABLISH THE BASIS OF DESIGN FOR EACH LIGHTING FIXTURE TYPE. PRODUCTS OF EQUAL APPEARANCE, CONSTRUCTION, PERFORMANCE, AND WARRANTY COVERAGE FROM MANUFACTURERS OTHER THAN THOSE IDENTIFIED MAY BE PROPOSED FOR USE ON THIS PROJECT, SUBJECT TO REVIEW AND APPROVAL BY THE ARCHITECT AND ENGINEER. THE "FIXTURE MANUFACTURER OPTIONS (OR EQUAL)" LISTING IS PROVIDED FOR GUIDANCE IN IDENTIFYING MANUFACTURERS CAPABLE OF PROVIDING EQUAL PRODUCTS, BUT IN NO WAY LIMITS MANUFACTURERS OR PRODUCTS THAT MAY BE PROPOSED AS EQUALS FOR THE PROJECT.
2. "LIGHTING FIXTURE SCHEDULE" REMARKS, "LIGHTING FIXTURE SCHEDULE NOTES", "LIGHTING GENERAL NOTES", AND NOTATIONS ELSEWHERE MAY INDICATE FEATURES AND ACCESSORIES THAT ARE NOT INDICATED IN THE CATALOG NUMBER BUT ARE REQUIRED FOR THE PROJECT. PRODUCTS OTHER THAN THOSE SPECIFIED SUBMITTED SHALL BE DOCUMENTED FOR CONFORMANCE IN PERFORMANCE, CONSTRUCTION, AND APPEARANCE WITH THE CRITERIA ESTABLISHED BY THE SPECIFIED PRODUCT.
3. FURNISH ALL LIGHTING FIXTURES COMPLETE WITH MOUNTING ACCESSORIES TO MEET THE JOB REQUIREMENTS. VERIFY FROM SURFACE CONSTRUCTION AND FINISHES PRIOR TO ORDERING FIXTURES TO ENSURE PROPER MOUNTING PROVISIONS AND FIXTURE FITTINGS. REFER TO LATEST ARCHITECTURAL DRAWINGS.
4. VERIFY ALL FIXTURE MOUNTING HEIGHTS AND LOCATIONS WITH LATEST ARCHITECTURAL DRAWINGS. EXACT LOCATION OF FIXTURES SHALL BE CONFIRMED WITH THE ARCHITECT PRIOR TO START OF ROUGHING.
5. LED ARRAYS, MODULES, AND LIGHT ENGINES SHALL HAVE KELVIN COLOR TEMPERATURE AS SCHEDULED HAVING A MINIMUM COLOR RENDERING INDEX (CRI) OF 82 AND A MINIMUM L70 LIFETIME RATING OF 50,000 HOURS AT 25°C AMBIENT. LED DRIVERS SHALL HAVE 0-10V DIMMING CONTROL WITH FULLY ISOLATED CONTROL INPUTS AND MINIMUM POWER LEVEL OF 10%. LED FIXTURES WITH ARRAY / MODULE AND DRIVER PACKAGES OR LIGHT ENGINES SHALL HAVE PUBLISHED IESNA LM-79 AND LM-80 TESTING DATA AS A STANDARD MANUFACTURED OFFERING. INDIVIDUAL COMPONENT TESTING DATA WILL NOT BE ACCEPTED. ALL FIXTURES SHALL BE "DESIGN LIGHTS CONSORTIUM" (DLC) OR "ENERGYSTAR" LISTED, OR FURNISHED WITH DATA INDICATING CONFORMANCE WITH LATEST APPLICABLE LISTING CRITERIA.
6. FIXTURE LETTERS SHOWN ONCE ON A CONTINUOUS ROW OF FIXTURES SHALL BE TYPICAL FOR THAT ROW UNLESS OTHERWISE INDICATED. PROVIDE RUN LENGTH AS INDICATED (NUMERICALLY OR GRAPHICALLY) OR CONTINUOUS WHERE SHOWN BETWEEN TWO ARCHITECTURAL ELEMENTS (WALLS, SOFFITS, COLUMNS, ETC.).
7. LINEAR ROWS OF RECESSED, SURFACE, OR SUSPENDED FIXTURES SHALL BE INSTALLED TO PROVIDE CONTINUOUS RUN LENGTHS AS INDICATED ON THE DRAWINGS. PROVIDE ALL REQUIRED FITTINGS, CONNECTORS, SUPPORTS, TRIMS, ETC. SO THAT RUNS ARE A COMPLETE ASSEMBLY WITH THE APPEARANCE OF A SINGLE UNIT. ROWS SHALL BE CONFIGURED FOR MINIMUM NUMBER OF FEEDS, JOINTS, AND MOUNTINGS. PROVIDE ROW AND PATTERN CONFIGURATION DRAWINGS FOR REVIEW PRIOR AND APPROVAL PRIOR TO RELEASE OF MATERIAL ORDER.
8. PROVIDE FLAT ROUND CANOPIES FOR SUSPENDED FIXTURE LOCATIONS WHERE SUSPENSIONS MOUNTS TO UNFINISHED CEILING STRUCTURE (WHERE LOCATED IN FINISHED SPACES) AND WHERE PASSING THROUGH SUSPENDED CEILINGS (CONFIRM WHETHER IN TILE OR AT GRID). PROVIDE SWIVEL ALIGNERS FOR SUSPENSIONS WHERE REQUIRED FOR SLOPED CEILINGS. ENTIRE SUSPENSION ASSEMBLY SHALL BE SUPPLIED BY MANUFACTURER OF FIXTURES.
9. FIXTURES WITH LOUVERS SHALL BE PROVIDED WITH HIGH TRANSMISSION (95% OR BETTER) DIFFUSING LENSES OR FILMS TO OBSCURE DIRECT LAMP VIEWING.
10. FIXTURES SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE, INDEPENDENT OF HUNG CEILINGS. DO NOT TAP METAL ROOF DECK FOR SUPPORT OF ANY ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT AS REQUIRED FOR SUPPORT OF ALL ELECTRICAL EQUIPMENT.
11. REFER TO SPECIFICATIONS FOR SEISMIC SUPPORT, RESTRAINT, AND BRACING REQUIREMENTS OF THIS PROJECT.
12. PROVIDE TYPE AND QUANTITY OF DRIVERS AND TRANSFORMERS AS REQUIRED TO PROVIDE CONTROL METHOD INDICATIONS ON THE PLANS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: SWITCHING SUBSCRIPTS, NOTES, SCHEDULE REMARKS / DESCRIPTIONS, AND DETAILS. QUANTITY OF DRIVERS AND TRANSFORMERS SHALL BE THE MINIMUM REQUIRED TO PROVIDE CONTROL INDICATED TO MAINTAIN THE LOWEST CONNECTED LOAD OF LIGHTING SYSTEM POSSIBLE. TANDEM WIRING OF FIXTURES SHALL BE PROVIDED WHERE NECESSARY AND WITHIN THE WIRING DISTANCE RESTRICTIONS OF THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
13. ALL LAMPS, LED SOURCES, DRIVERS, AND CONTROLS SHALL MEET THE LATEST UTILITY COMPANY INCENTIVE REQUIREMENTS. REFER TO THE LATEST PROGRAM REQUIREMENTS DOCUMENTATION AND COORDINATE WITH THE UTILITY COMPANY TO ENSURE COMPLIANCE.
14. ALL EXIT SIGN LIGHTING SHALL BE CIRCUITED AHEAD OF ANY SWITCH CONTROL FOR CONSTANT "ON" OPERATION. PROVIDE LOCKING DEVICE ON CIRCUIT BREAKER SERVING EXIT SIGNS.
15. EXIT SIGNS TO BE PROVIDED WITH ARROWS AS INDICATED ON DRAWINGS. TYPICALLY MOUNT ON CEILING WHERE VISIBLE OR ON WALL WHERE CEILING MOUNTING IS NOT PRACTICAL. EDGE-LIT SIGNS SHALL GENERALLY HAVE CLEAR PANELS EXCEPT FOR DOUBLE FACED UNITS AND SINGLE FACED UNITS ABLE TO BE VIEWED FROM BEHIND WHICH SHALL HAVE OPAQUE / MIRRORED PANELS. REFER TO ARCHITECTURAL DRAWINGS FOR INDICATION OF MOUNTING REQUIREMENTS.
16. EXIT SIGNS SHALL BE THE SELF-CONTAINED TYPE WITH INTEGRAL BATTERY BACK-UP AND SELF-DIAGNOSTICS WHERE NO LIFE SAFETY POWER SOURCE IS AVAILABLE, REGARDLESS OF MODEL / SERIES SPECIFIED.
17. EXIT SIGNS INSTALLED IN GYMNASIUMS, LOCKER ROOMS, AND ANY OTHER DESIGNATED AREAS SHALL BE PROVIDED WITH POLYCARBONATE FACE PLATE / SHIELD AS PART OF EXIT SIGN PACKAGE FROM SAME MANUFACTURER.
18. PROVIDE A SELF CONTAINED EMERGENCY LIGHTING UNIT WITH TWIN ADJUSTABLE HEADS (TYPE "EB" WHERE SCHEDULED) AT EACH FIRE ALARM CONTROL PANEL , REMOTE FIRE ALARM ANNUNCIATOR, @ THE LIFE SAFETY TRANSFER SWITCH AND IN THE GENERATOR ROOM. EXACT MOUNTING TO BE COORDINATED IN FIELD WITH ARCHITECT OR ENGINEER.
19. FIXTURES WITH MULTI WATTAGE BALLASTS OR DRIVERS SHALL BE LABELED FROM THE FACTORY FOR THE WATTAGE SPECIFIED TO ENSURE COMPLIANCE WITH ENERGY CODE CALCULATIONS.
20. FINISH FOR ALL FIXTURES SHALL BE SELECTED BY THE ARCHITECT FROM THE MANUFACTURER'S CATALOG OPTIONS.
21. WHERE FIXTURES OTHER THAN THE SPECIFIED PRODUCTS ARE PROPOSED, THE CONTRACTOR SHALL PROVIDE LIGHT LEVEL CALCULATIONS IN ACCORDANCE WITH IESNA STANDARDS TO JUSTIFY THAT THE SUBSTITUTED FIXTURES ARE OF EQUAL PERFORMANCE (WITH EQUAL OR LOWER INPUT WATTAGE) TO THE SPECIFIED PRODUCTS (APPLIES TO ALL FIXTURES IN ALL SPACES.)
22. EVERY SPACE ENCLOSED BY FLOOR TO CEILING WALLS SHALL BE PROVIDED WITH A MINIMUM OF ONE MANUAL LIGHTING SWITCH AND ONE CEILING MOUNTED OCCUPANCY SENSOR. ADDITIONAL CONTROLS SHALL BE AS INDICATED ON THE PLAN OR AS SPECIFIED ELSEWHERE.

ELECTRICAL GENERAL NOTES

1. THE SCOPE OF WORK SHALL INCLUDE PROVIDING ALL WORK INDICATED, AND COORDINATION WITH ALL TRADES. SCOPE OF WORK IS INDICATED ON THE CONTRACT DOCUMENTS INCLUDING THE DRAWINGS AND THE SPECIFICATIONS, WHICH ARE COMPLIMENTARY. WORK INDICATED IN ANY CONTRACT DOCUMENT SHALL BE CONSIDERED PART OF THE SCOPE OF WORK. IN GENERAL, WORK REQUIREMENTS ARE NOT INDICATED IN BOTH DOCUMENTS . WHERE DOCUMENTS CONFLICT WITHIN THEMSELVES OR WITH CODES AND REGULATIONS, PROVIDE THE HIGHER QUANTITY AND QUALITY AND FOLLOW THE STRICTER REQUIREMENTS.
2. COORDINATE WITH THE GENERAL CONTRACTOR, OTHER TRADES AND OF MANUFACTURERS EQUIPMENT AND MAKE ALL FINAL CONNECTIONS AS REQUIRED, I.E., POWER, CONTROL, INTERLOCK, ETC.
3. ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH OSHA, NFPA STANDARDS, THE ELECTRICAL CODE AND THE LOCAL GOVERNING AUTHORITIES. THE DRAWINGS AND SPECIFICATIONS DO NOT ATTEMPT TO INDICATE ALL WORK REQUIRED BY C

ELECTRICAL SITE NOTES PHASE 1:

1. DO NOT RUN ANY UNDERGROUND RACEWAYS WITHIN PLANTING AREAS OR LEACHING FIELDS. REFER TO DRAWINGS FOR LOCATIONS. COORDINATE ROUTING WITH LANDSCAPE ARCHITECT.
2. REFER TO CIVIL DRAWINGS FOR EXACT ROUTING OF UTILITIES. REFER TO LANDSCAPE DRAWINGS FOR EXACT LOCATION OF 'SITE' FIXTURES.
3. ALL SITE WIRING SHALL BE 2#8&#8G,1"C MINIMUM UNLESS SHOWN OTHERWISE.
4. ALL EXTERIOR LIGHTING TO BE PROGRAMMED FOR PHOTOCELL "ON", TIMED "OFF" .
5. REMOVE ALL SITE ELECTRICS WHEN NO LONGER REQUIRED.
6. PROVIDE 17"x30"x12"D GROUND MOUNTED PULL BOX (QUAZITE #PC1730BA12 WITH COVER #PC1730CA17 OR SAME BY CARSON, HIGHLINE, STRONGWELL, OR EQUAL. RUN ALL SITE LIGHTING VIA PULL BOX. ALSO PROVIDE (1) 1"SPARE WITH PULL LINE BETWEEN PULL BOX AND NEAREST ELECTRIC ROOM. LABEL @ EACH END.
7. PROVIDE 12"x12"x12"D GROUND MOUNTED PULL BOX (QUAZITE #PC1212BG12 WITH #PC1212HG00 COVER OR SAME BY CARSON, HIGHLINE, STRONGWELL, OR EQUAL) AT ALL POLES WITH THREE PAIRS OF 1" CONDUITS APPROACHING BASE TO ALLOW FOR SINGLE PAIR TO ENTER BASE.

LIGHTING FIXTURE SCHEDULE (1)

TYPE	MANUFACTURER	MODEL / SERIES	MTG.	VOLTAGE	LIGHT SOURCE			DESCRIPTION / REMARKS	MFG. EQUALS
					WATTS	LUMENS	CCT		
SL1	U.S. ARCHITECTURAL LIGHTING	RZR-PLED-III-M-80LED-525mA-WW	POLE	277	131	16990	3000K	LED POLE MOUNTED LUMINAIRES . PROVIDE WITH 20' ROUND TAPPERED POLE.	(P)

FIXTURE MANUFACTURER OPTIONS (OR EQUAL)

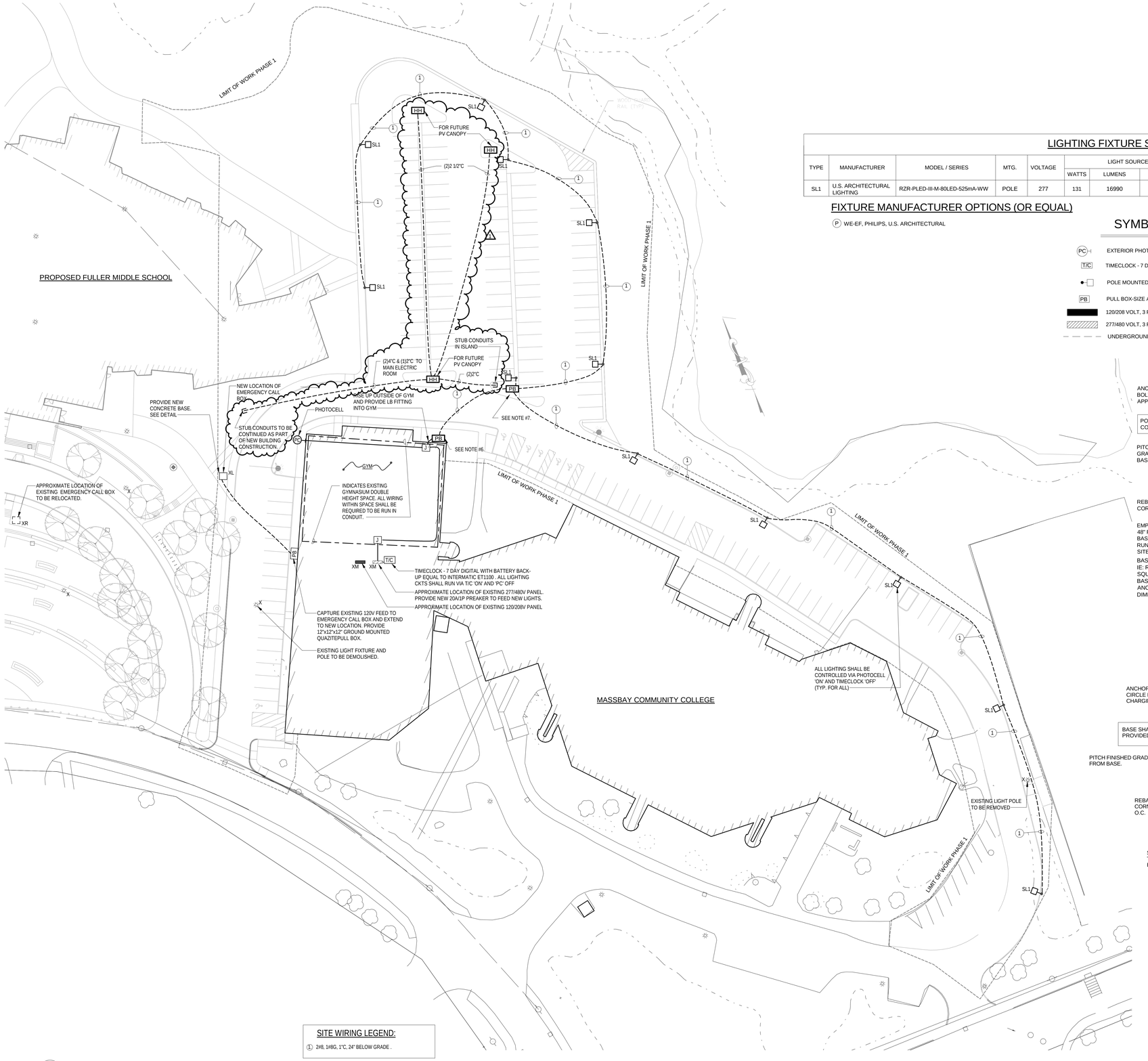
(P) WE-EF, PHILIPS, U.S. ARCHITECTURAL

SYMBOL LIST

- PC — EXTERIOR PHOTOCELL
- T/C — TIMECLOCK - 7 DAY DIGITAL WITH BATTERY BACK-UP.
- POLE MOUNTED FIXTURE-DOUBLE OR SINGLE HEAD.
- PB — PULL BOX-SIZE AS REQUIRED.
- 120/208 VOLT, 3 PHASE, 4 WIRE PANELBOARD.
- 277/480 VOLT, 3 PHASE, 4 WIRE, PANELBOARD.
- UNDERGROUND SERVICE

EXISTING EQUIPMENT

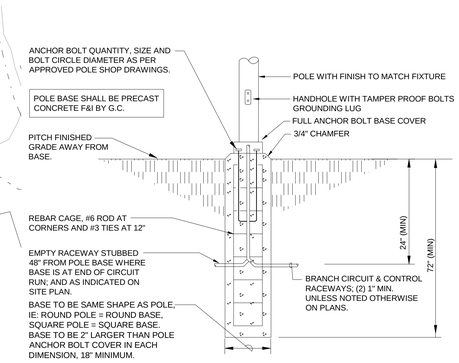
- DOTTED DENOTES EXISTING EQUIPMENT.
- X — EXISTING EQUIPMENT TO BE REMOVED AND CIRCUIT PULLED BACK TO NEXT ACTIVE OUTLET/BACK TO PANEL.
- XM — EXISTING EQUIPMENT TO REMAIN.
- XR — EXISTING EQUIPMENT TO BE REMOVED AND RELOCATED.
- XL — NEW LOCATION OF RELOCATED EXISTING EQUIPMENT.
- XN — EXISTING EQUIPMENT TO BE REMOVED AND NEW EQUIPMENT INSTALLED IN VICINITY OF EXISTING LOCATION. REFER TO DETAILS FOR MOUNTING HEIGHTS.



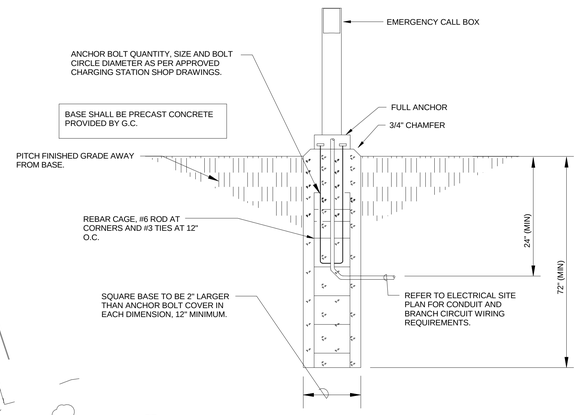
SITE WIRING LEGEND:

(1) 2#8, 1#8G, 1"C, 24" BELOW GRADE .

1 E-PH-1 ELECTRICAL EARLY SITE PLAN - PHASE 1
SCALE: 1" = 30'-0"



2 E-PH1 LIGHTING POLE BASE DETAIL
SCALE: N.T.S.



3 E-PH1 EMERGENCY CALL BOX BASE DETAIL
SCALE: N.T.S.
NOTES:
FURNISH & INSTALL PEDESTAL MOUNTED EMERGENCY CALL BOX. REFER TO SPECIFICATIONS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
EARLY SITE PACKAGE
MAY 10,2019

REVISIONS

No.	Date	Description
1	5/20/2019	Addendum # 1
8	2/10/2020	Conformance Set

DRAWING NAME
ELECTRICAL EARLY SITE PLAN - PHASE 1

PROJECT NO. 1722

DRAWING NO.
E-PH-1

ELECTRICAL SITE NOTES:

1. DO NOT RUN ANY UNDERGROUND RACEWAYS WITHIN PLANTING AREAS OR LEACHING FIELDS. REFER TO DRAWINGS FOR LOCATIONS. COORDINATE ROUTING WITH LANDSCAPE ARCHITECT.
2. REFER TO CIVIL DRAWINGS FOR EXACT ROUTING OF UTILITIES. REFER TO LANDSCAPE DRAWINGS FOR EXACT LOCATION OF 'SITE' FIXTURES.
3. ALL SITE WIRING SHALL BE 2#8&#8G,1"C MINIMUM UNLESS SHOWN OTHERWISE.
4. ALL EXTERIOR LIGHTING TO BE PROGRAMMED FOR PHOTOCELL "ON", TIMED "OFF" AND DIMMED LEVELS (VIA 0-10V SIGNAL). PROVIDE INDIVIDUAL CONTROL FOR EACH CIRCUIT. COORDINATE PROGRAMMING WITH OWNER. (REFER TO ALCS ONE-LINE DIAGRAM & SPECIFICATIONS).
5. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF EXTERIOR WALL MOUNTED LIGHTING.
6. REMOVE ALL SITE ELECTRICS WHEN NO LONGER REQUIRED.
7. PROVIDE 17"x30"x12"D GROUND MOUNTED PULL BOX (QUAZITE #PC1730BA12 WITH COVER #PC1730CA17 OR SAME BY CARSON, HIGHLINE, STRONGWELL, OR EQUAL. RUN ALL SITE LIGHTING VIA PULL BOX. ALSO PROVIDE (1) 1"SPARE WITH PULL LINE BETWEEN PULL BOX AND NEAREST ELECTRIC ROOM. LABEL @ EACH END.
8. PROVIDE LIGHTNING PROTECTION SYSTEM FOR COVERAGE OF ENTIRE FACILITY.
9. PROVIDE 12"x12"x12"D GROUND MOUNTED PULL BOX (QUAZITE #PC1212BG12 WITH #PC1212HG00 COVER OR SAME BY CARSON, HIGHLINE, STRONGWELL, OR EQUAL) AT ALL POLES WITH THREE PAIRS OF 1" CONDUITS APPROACHING BASE TO ALLOW FOR SINGLE PAIR TO ENTER BASE.
10. GENERATOR EMISSIONS EXHAUST SHALL MAINTAIN 25 FEET CLEARANCE FROM ANY OPERABLE WINDOWS OR INTAKE LOUVERS. COMPLY WITH ALL FEDERAL EPA AND STATE DEP REQUIREMENTS.
11. PROVIDE 24"X36"X24" DP DIVIDED GROUND MOUNTED PULL BOX EQUAL TO QUAZITE #PG2436BC-24 WITH TWO PIECE COVER #PF2436BG-17-12. ELECTRIC/COMMUNICATIONS. CARSON, HIGHLINE, STRONGWELL ARE ALL CONSIDERED EQUAL.

SITE WIRING LEGEND:

1. 2#8, 1#8G, 1" PVC, 24" BELOW GRADE .
2. 4#8, 1#8G, 1" PVC, 24" BELOW GRADE .

PROPOSED FULLER MIDDLE SCHOOL

SEE DWG.E003-2 FOR CONTINUATION

PROPOSED FULLER MIDDLE SCHOOL

LIMIT OF WORK DURING PHASE 1

WOOD GUARD RAIL (TYP.)

SEE NOTE #7

SEE NOTE #7

(1) 1"C TO MDF & (1) 2 1/2"C TO MAIN ELECTRIC ROOM

ELP1A-11

PULL BOX FOR FUTURE PV CANOPY, SEE NOTE 11

(1) 1"C TO MDF & (1) 2 1/2"C TO MAIN ELECTRIC ROOM

PULL BOX FOR, SEE NOTE 7

(2) 1 1/4"C FOR FUTURE EV CHARGING STATIONS

MP1A

ELP1A-13

(2) 1"C TO MDF

PULL BOX FOR, SEE NOTE 11

EP1A-89

SECURITY CAMERA POLE, REFER TO DETAIL, SEE NOTE #12 (TYP.)

PULL BOX FOR, SEE NOTE 11

(2) 1 1/4"C TO MP1A FOR FUTURE EV CHARGING STATIONS

FUTURE ELECTRIC VEHICLE CHARGING STATIONS BY OWNER (TYP.)

TYPICALLY, SEE

VIA REMOTE POWER SUPPLIES MOUNTED IN MAIN ELECTRIC ROOM.

PULL BOX FOR, SEE NOTE 11

(2) 1"C TO MDF

PULL BOX FOR, SEE NOTE 11

APPROXIMATE LOCATION OF MDF ROOM.

APPROXIMATE LOCATION OF MAIN ELECTRIC ROOM & EMERGENCY ROOM.

FA MASTER BOX

UNDERGROUND SECONDARY, SEE

UNDERGROUND GENERATOR FEEDERS, SEE

ELP1A-17

SEE NOTE #7

PAD MOUNTED TRANSFORMER BY UTILITY COMPANY, CONCRETE PAD BY G.C., GROUNDING BY E.C., REFER TO DETAIL

PROTECTIVE BOLLARDS, SEE

LOCATE TRANSFORMER MIN.20' FROM GENERATOR

TYPICALLY SEE DETAIL

EMERGENCY 450kW NATURAL GAS FIRED STANDBY GENERATOR WITH 10' EXHAUST STACK, SEE DETAILS

LOCATE GENERATOR MIN.6' FROM THE WALL

LOCATE TRANSFORMER MIN.4' FROM THE WALL

FIRE ALARM SERVICE, TOWN FIBER SERVICE, CATV SERVICE & TELECOM. SERVICE HANDHOLES, SEE DETAIL

UNDERGROUND SERVICES, SEE DETAIL

AMPHITHEATER BANDSHELL

EXACT LOCATION & MOUNTING OF WP RECEPTACLES TO BANDSHELL STRUCTURE TO BE COORDINATED w/ ARCHITECT PRIOR TO ROUGH-IN. (TYP.)

PROVIDE 4" SQUARE, 48" BOLLARD FOR MOUNTING OF DMX SPLITTER. PRE-CAST BASE TO BE FURNISHED AND INSTALLED BY E.C. BASE SHALL BE SAME AS SL3 FIXTURE.

LED IN-GRADE TREE ACCENT LIGHTING FIXTURE (TYP.), REFER TO DETAIL

POWER & DATA FOR AMPHITHEATER BAND SHELL

2"C TO IDF

PP1A-10,12

(2) 1"C TO MDF

EP1A-85

PULL BOX FOR, SEE NOTE 11

PULL BOX FOR, SEE NOTE 11

UNDERGROUND PRIMARY, SEE

PRIMARY MANHOLE, SEE

EXISTING UTILITY POLE #479/11 FEEDING EXISTING MIDDLE SCHOOL TO REMAIN.

EXISTING UTILITY POLE #479/10 TO REMAIN AND USED FOR COMMUNICATIONS RISER POLE, REFER TO DETAIL

UNDERGROUND COMMUNICATIONS, SEE

EXISTING UTILITY POLE #479/9 TO BE REPLACED BY UTILITY Co. AND USED FOR PRIMARY & FIRE ALARM RISER POLE, REFER TO DETAIL

(1)2" UNDERGROUND FIRE ALARM, SEE

SEE DWG.E003-1 FOR CONTINUATION

SEE DWG.E003-2 FOR CONTINUATION

FLAGG DRIVE

MASSBAY COMMUNITY COLLEGE

Hydroseeded Lawn

Limit of Work

1 E003-1 ELECTRICAL SITE PLAN
SCALE: 1" = 30'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME

ELECTRICAL SITE PLAN

PROJECT NO. 1722

DRAWING NO.

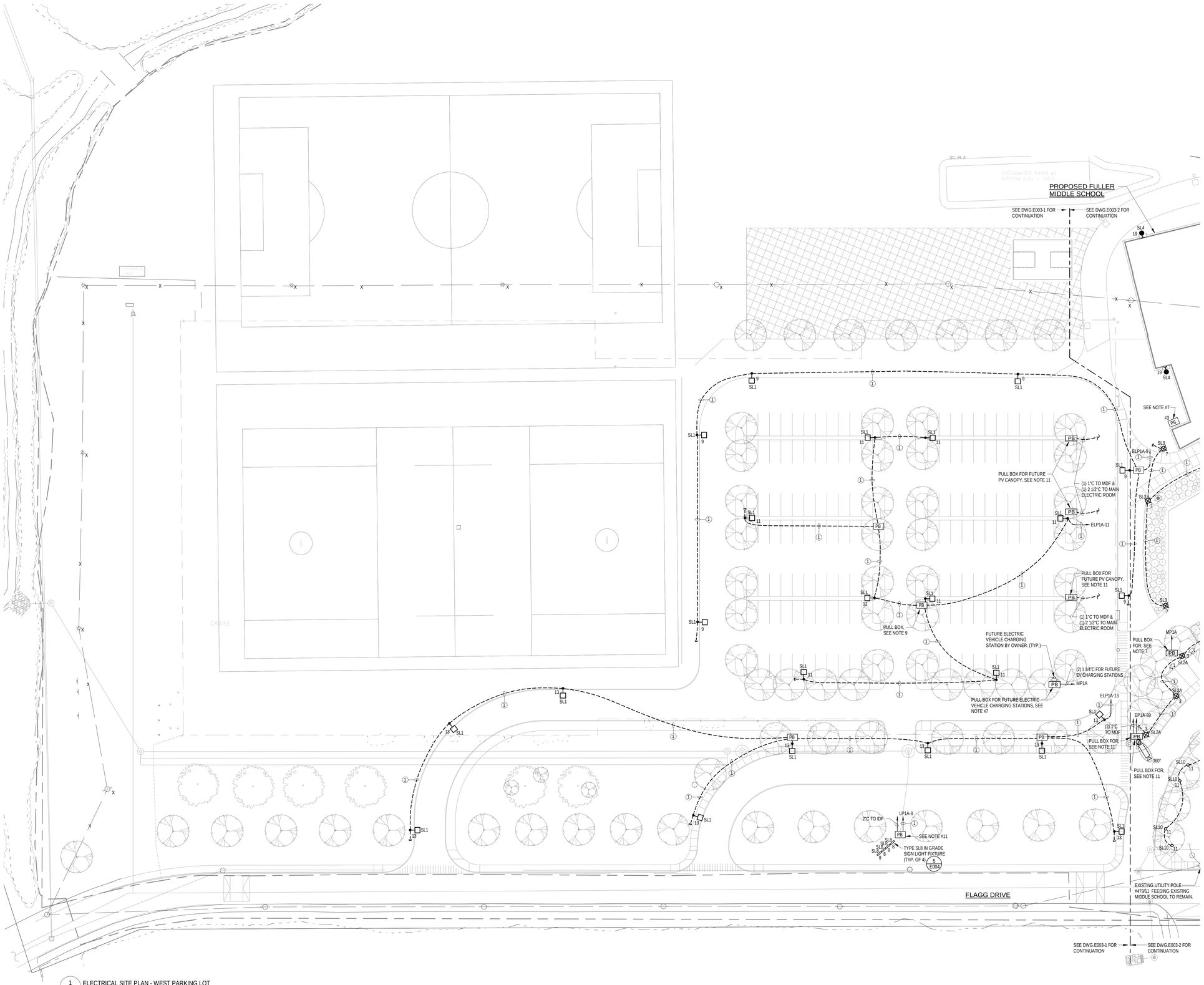
E003-1

ELECTRICAL SITE NOTES:

1. DO NOT RUN ANY UNDERGROUND RACEWAYS WITHIN PLANTING AREAS OR LEACHING FIELDS. REFER TO DRAWINGS FOR LOCATIONS. COORDINATE ROUTING WITH LANDSCAPE ARCHITECT.
2. REFER TO CIVIL DRAWINGS FOR EXACT ROUTING OF UTILITIES. REFER TO LANDSCAPE DRAWINGS FOR EXACT LOCATION OF 'SITE' FIXTURES.
3. ALL SITE WIRING SHALL BE 2#8&#8G,1"C MINIMUM UNLESS SHOWN OTHERWISE.
4. ALL EXTERIOR LIGHTING TO BE PROGRAMMED FOR PHOTOCELL "ON", TIMED "OFF" AND DIMMED LEVELS (VIA 0-10V SIGNAL). PROVIDE INDIVIDUAL CONTROL FOR EACH CIRCUIT. COORDINATE PROGRAMMING WITH OWNER. (REFER TO ALCS ONE-LINE DIAGRAM & SPECIFICATIONS).
5. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF EXTERIOR WALL MOUNTED LIGHTING.
6. REMOVE ALL SITE ELECTRICS WHEN NO LONGER REQUIRED.
7. PROVIDE 17"x30"x12"D GROUND MOUNTED PULL BOX (QUAZITE #PC1730BA12 WITH COVER #PC1730CA17 OR SAME BY CARSON, HIGHLINE, STRONGWELL, OR EQUAL. RUN ALL SITE LIGHTING VIA PULL BOX. ALSO PROVIDE (1) 1"SPARE WITH PULL LINE BETWEEN PULL BOX AND NEAREST ELECTRIC ROOM. LABEL @ EACH END.
8. PROVIDE LIGHTNING PROTECTION SYSTEM FOR COVERAGE OF ENTIRE FACILITY.
9. PROVIDE 12"x12"x12"D GROUND MOUNTED PULL BOX (QUAZITE #PC12128G12 WITH #PC1212HG00 COVER OR SAME BY CARSON, HIGHLINE, STRONGWELL, OR EQUAL) AT ALL POLES WITH THREE PAIRS OF 1" CONDUITS APPROACHING BASE TO ALLOW FOR SINGLE PAIR TO ENTER BASE.
10. GENERATOR EMISSIONS EXHAUST SHALL MAINTAIN 25 FEET CLEARANCE FROM ANY OPERABLE WINDOWS OR INTAKE LOUVERS. COMPLY WITH ALL FEDERAL EPA AND STATE DEP REQUIREMENTS.
11. PROVIDE 24"X36"X24" DP DIVIDED GROUND MOUNTED PULL BOX EQUAL TO QUAZITE #PG2436BC-24 WITH TWO PIECE COVER #PF2436BG-17-12, ELECTRIC/COMMUNICATIONS. CARSON, HIGHLINE, STRONGWELL ARE ALL CONSIDERED EQUAL.

SITE WIRING LEGEND:

1. 2#8, 1#8G, 1" PVC, 24" BELOW GRADE .
2. 4#8, 1#8G, 1" PVC, 24" BELOW GRADE .



1 E003-2 ELECTRICAL SITE PLAN - WEST PARKING LOT
SCALE: 1" = 30'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 3208
508 - 998 - 5700 FAX 508 - 998 - 0923 E - MAIL info@gg-d.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

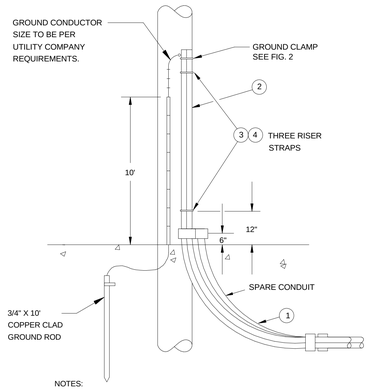
DRAWING NAME

ELECTRICAL SITE PLAN - WEST PARKING LOT

PROJECT NO. 1722

DRAWING NO.

E003-2



NOTES:

1. RISER CONDUITS SHALL BE LOCATED ON THE STREET QUARTER OF THE POLE, AND, WHEN POSSIBLE ON THE QUARTER AWAY FROM APPROACHING TRAFFIC.

CODE NUMBERS FOR PIPE SIZES OF:	
ITEM	DESCRIPTION
1	36" RADIUS SWEEP
2	CONDUIT-10' LENGTH-GALV. STEEL
3	RISER STRAPS
4	LAG SCREWS 3/8" x 3"
5	RISER PIPE CONNECTOR
6	#6 COPPER SOLID BARE (24" LONG)

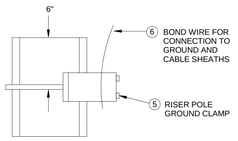
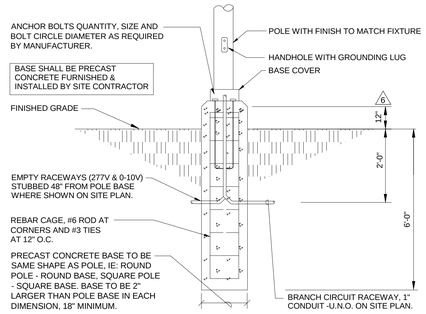


FIGURE 2 - RISER GROUND CLAMP

INSTALL GROUND CLAMP AS SHOWN. CONNECT TO POLE EQUIPMENT GROUNDING CONDUCTOR. INSTALL GROUND ROD AND RUN MINIMUM #6 SOLID COPPER UP POLE AND CONNECT TO COMMON NEUTRAL. INSTALL 8 FEET OF MOLDING OVER WIRE AND CONNECT RISER GROUND CLAMP TO GROUND WIRE ABOVE MOLDING AS SHOWN.

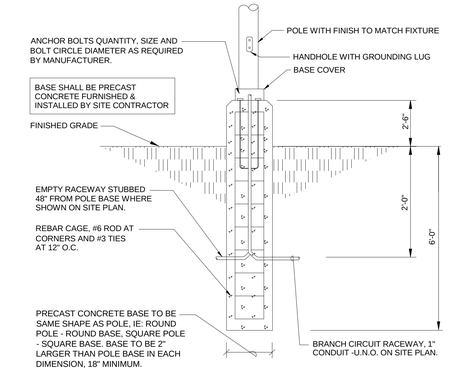
1 E004 POLE RISER DETAIL

SCALE: N.T.S.



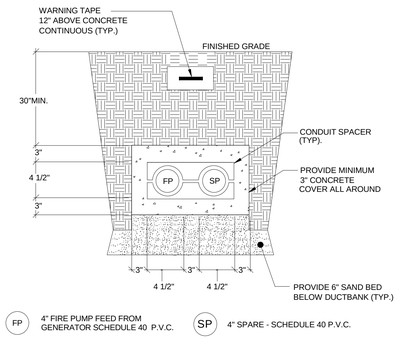
2 E004 TYPICAL PEDESTRIAN POLE BASE DETAIL

SCALE: N.T.S.



3 E004 TYPICAL PARKING/DRIVE POLE BASE DETAIL

SCALE: N.T.S.

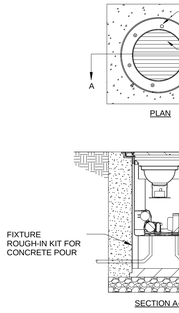


FP 4" FIRE PUMP FEED FROM GENERATOR SCHEDULE 40 P.V.C.

SP 4" SPARE - SCHEDULE 40 P.V.C.

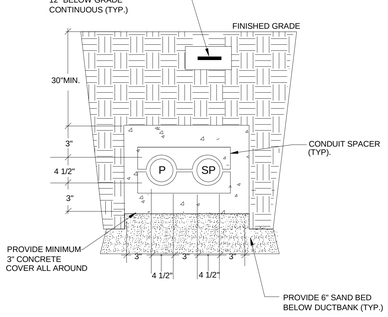
4 E004 DUCT BANK SECTION "F-F"

SCALE: N.T.S.



5 E004 GROUND MOUNTED LIGHT DETAIL

SCALE: N.T.S.

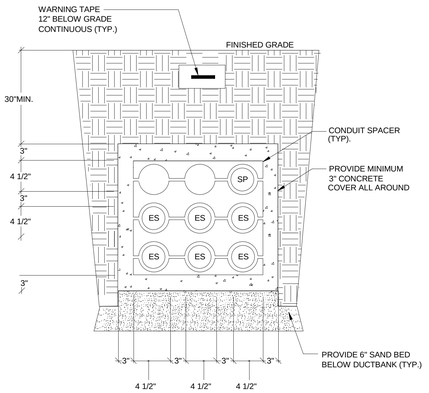


6 E004 PRIMARY DUCT BANK SECTION "A-A"

SCALE: N.T.S.

P 4" PRIMARY - SCHEDULE 40 P.V.C. (PROVIDE PULL LINE)

SP 4" SPARE - SCHEDULE 40 P.V.C. (PROVIDE PULL LINE)

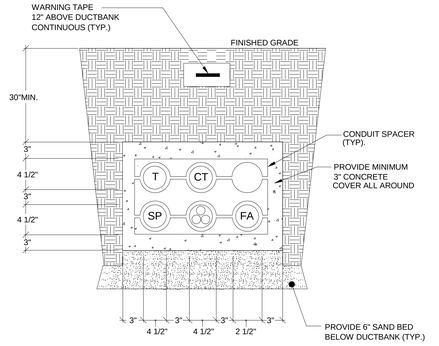


7 E004 SECONDARY DUCT-BANK DETAIL "B-B"

SCALE: N.T.S.

ES 4" ELECTRICAL SECONDARY - SCHEDULE 40 P.V.C.

SP 4" SPARE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE.



8 E004 DUCT-BANK DETAIL "C-C"

SCALE: N.T.S.

CT 4" CABLE TV - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.

SP 4" SPARE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.

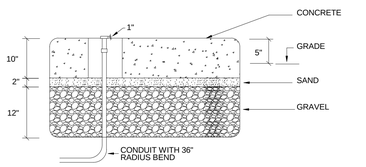
T 4" TELEPHONE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.

4" CONDUIT - SCHEDULE 40 P.V.C. (3) 1 1/4" INNER DUCTS FOR FIBER

FA 2" FIRE ALARM - SCHEDULE 40 P.V.C. WITH IMSA CABLE PER FIRE DEPT. REQUIREMENTS.

PLAN

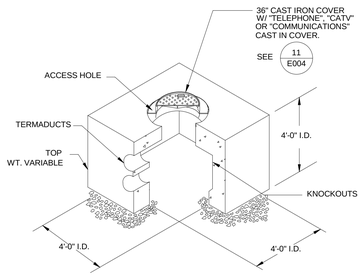
E.C. SHALL OBTAIN LATEST PAD SPECIFICATION FROM UTILITY COMPANY PRIOR TO PAD CONSTRUCTION.



SECTION A-A

9 E004 PADMOUNT TRANSFORMER PAD DETAIL

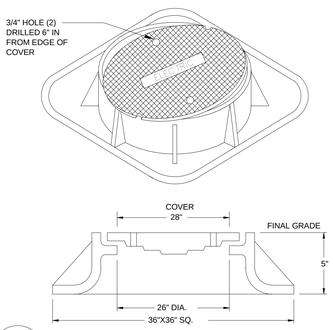
SCALE: N.T.S.



10 E004 ELECTRICAL, TELEPHONE & C.A.T.V. & COMMUNICATIONS HANDHOLE

TMH # TVMH # CMH # FA #

SCALE: N.T.S.



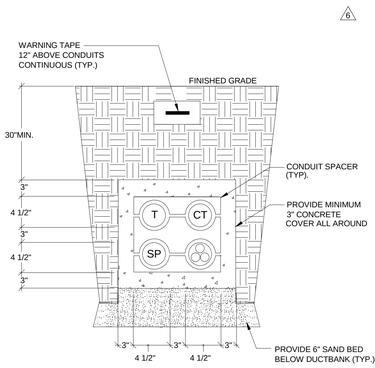
11 E004 FRAME AND COVER DETAIL

SCALE: N.T.S.

NOTES:

1. COVERS WILL HAVE "ELECTRIC", "TELEPHONE", OR "CATV" CAST IN THEM IN 3 INCH LETTERS.
2. FRAME AND COVER TO SUPPORT H2O WHEEL LOAD.
3. NO VAULT MANHOLE SHALL BE BURIED DEEPER THAN 18" BELOW FINISHED GRADE.
4. COVER SHALL BE FLUSH TO FINAL GRADE (CONCRETE, ASPHALT, GRAVEL, GRASS, ETC..)

	SUPPLIER & CATALOG#	STOCK CODE
FRAME	NACIP AE 124 LEBARON LE-285L OR APPROVED EQUAL	07-29-229
COVER	NACIP LEBARON LE-28C5 ELECTRIC OR APPROVED EQUAL	07-15-530



12 E004 DUCT-BANK DETAIL

SCALE: N.T.S.

CT 4" CABLE TV - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.

SP 4" SPARE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.

T 4" TELEPHONE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.

4" CONDUIT - SCHEDULE 40 P.V.C. (3) 1 1/4" INNER DUCTS FOR FIBER

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
6	12/09/2019	ADDENDUM # 6
8	2/10/2020	Conformance Set

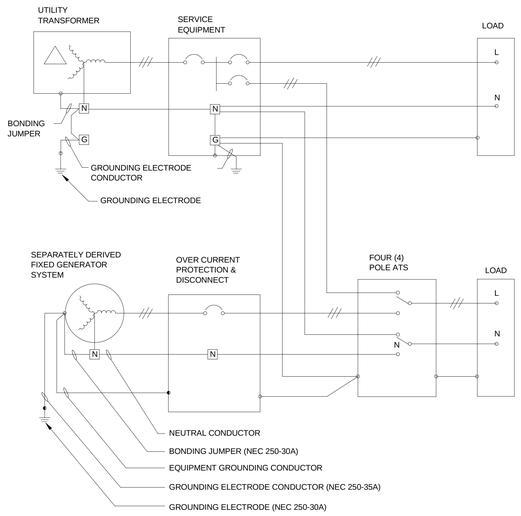
DRAWING NAME

ELECTRICAL SITE PLAN DETAILS

PROJECT NO. 1722

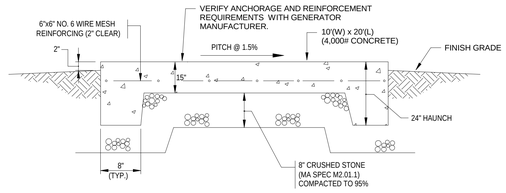
DRAWING NO.

E004



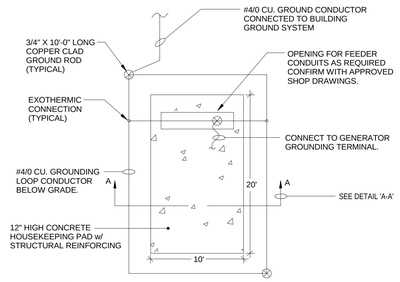
1 E005 SEPARATELY DERIVED GENERATOR SYSTEM

SCALE: N.T.S.



GENERATOR PAD DETAIL 'A-A'

SCALE: N.T.S.

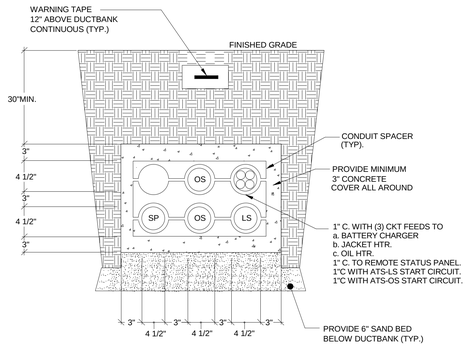


NOTE:

1. PAD SHALL BE PROVIDED IN ACCORDANCE WITH APPROVED SHOP DRAWINGS. PAD SHALL BE PROVIDED BY G.C.
2. PAD DIMENSIONS ARE APPROXIMATE. PROVIDE 12" OF PAD ALL AROUND GENERATOR.

2 E005 GENERATOR PAD DETAIL

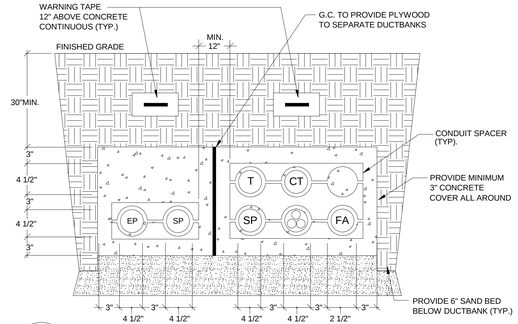
SCALE: N.T.S.



3 E005 GENERATOR DUCT-BANK DETAIL "C-C"

SCALE: N.T.S.

- OS — 4 " ATS-OS SCHEDULE 40 P.V.C.
- LS — 4" ATS-LS SCHEDULE 40 P.V.C.
- SP — 4" SPARE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE.
- (4) — SCHEDULE 40 P.V.C. (4) 1"C



4 E005 DUCT-BANK DETAIL "G-G"

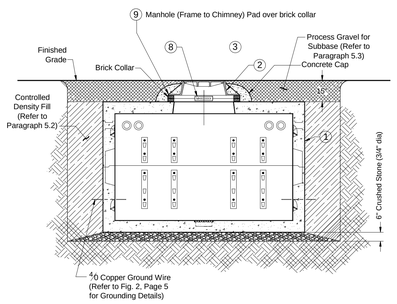
SCALE: N.T.S.

- P — 4" PRIMARY - SCHEDULE 40 P.V.C. (PROVIDE PULL LINE)
- SP — 4" SPARE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.
- (4) — 4" CONDUIT - SCHEDULE 40 P.V.C. (3) 1 1/4" INNER DUCTS FOR FIBER
- CT — 4" CABLE TV - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.
- T — 4" TELEPHONE - SCHEDULE 40 P.V.C. PROVIDE PULL LINE IN CONDUIT.
- FA — 2" FIRE ALARM - SCHEDULE 40 P.V.C. WITH IMSA CABLE PER FIRE DEPT. REQUIREMENTS.

5 E005 FIRE ALARM DUCT-BANK DETAIL

SCALE: N.T.S.

FA — 2" FIRE ALARM - SCHEDULE 40 P.V.C. WITH IMSA CABLE PER FIRE DEPT. REQUIREMENTS.



TYPICAL SECTION
Showing Manhole Frame Installation

FIGURE 1

E.C. SHALL OBTAIN LATEST MANHOLE SPECIFICATION FROM UTILITY COMPANY PRIOR TO CONSTRUCTION.

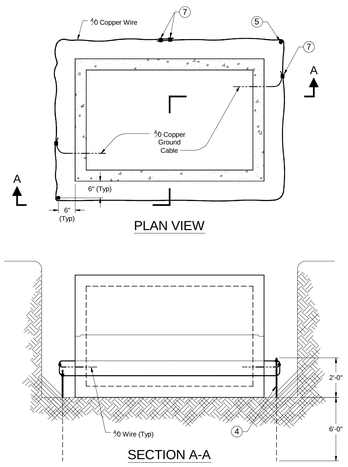


FIGURE 2
MANHOLE GROUNDING DETAILS
Note: 5'x5' and Smaller Manholes Require 1/0 Ground Wire instead of 4/0.

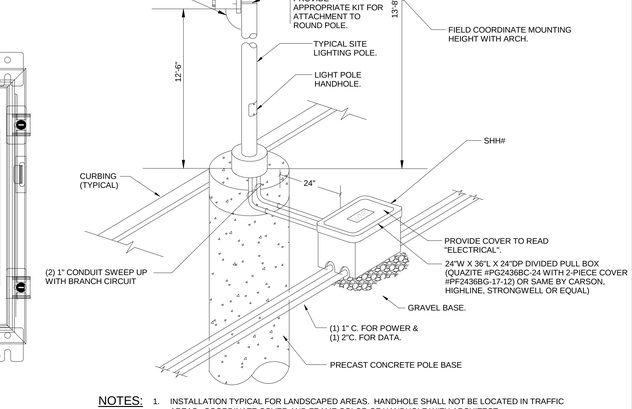
6 E005 PRIMARY MANHOLE DETAIL

PMH #

SCALE: N.T.S.

NOTES:

1. REFER TO EVERSOURCE C3813 - REVISIONS #1 FOR EQUIPMENT DESIGNATIONS ON FOOTNOTES. FURNISH MANHOLES, FRAMES & COVERS TO BE INSTALLED BY SITE CONTRACTOR.

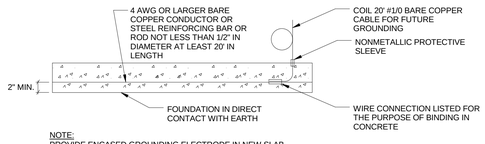


NOTES:

1. INSTALLATION TYPICAL FOR LANDSCAPED AREAS. HANDHOLE SHALL NOT BE LOCATED IN TRAFFIC AREAS. COORDINATE COVER AND FRAME COLOR OF HANDHOLE WITH ARCHITECT.
2. REFER TO TYPICAL LIGHT POLE BASE DETAIL.
3. WHERE CAMERA IS NOT MOUNTED TO A LIGHTING POLE PROVIDE A 15' ROUND ALUMINUM POLE THAT MATCHES ALL OTHER SITE POLE FOR MOUNTING OF CAMERAS.
4. WHERE CAMERA IS MOUNTED TO SPORTS FIELD LIGHTING POLE MOUNTING HEIGHT SHALL BE 25' ABOVE FIELD.

7 E005 CCTV POLE DETAIL

SCALE: N.T.S.



NOTE:
PROVIDE ENCASED GROUNDING ELECTRODE IN NEW SLAB.

8 E005 UFER GROUNDING DETAIL

SCALE: N.T.S.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

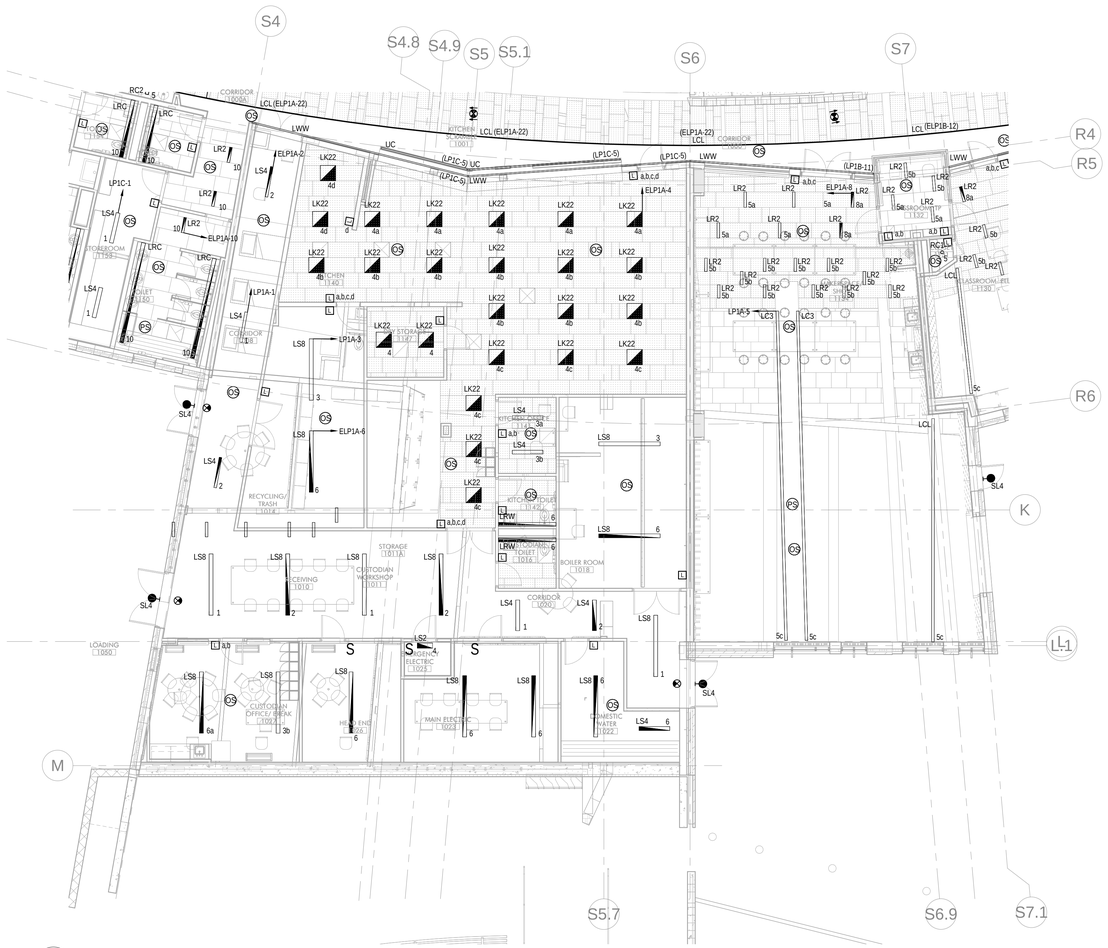
DRAWING NAME
ELECTRICAL SITE PLAN DETAILS

PROJECT NO. 1722

DRAWING NO.
E005

GENERAL LIGHTING NOTES:

1. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN.
2. WIRING AND CONDUIT OR MC CABLE SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES, SWITCHES, DIMMERS, SENSORS, POWER PACKS, RELAYS, AND OTHER AUXILIARY DEVICES. WIRING AND CONDUIT OR MC CABLE IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT AND CONTROL WIRING SYSTEM BE INSTALLED.
3. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
4. UTILITIES SHALL NOT PENETRATE STAIR ENCLOSURES, ELEVATOR SHAFTS, AND MACHINE ROOMS EXCEPT WHERE SPECIFICALLY SERVING THAT STAIR OR ELEVATOR.
5. METAL ROOF DECKS SHALL NOT BE TAPPED FOR SUPPORT OF ANY LIGHTING FIXTURES OR ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT OR OTHER SUPPLEMENTAL SUPPORT FITTINGS TO BE ATTACHED TO BUILDING STRUCTURAL FRAMING AS REQUIRED FOR SUPPORT OF ALL LIGHTING FIXTURES AND ELECTRICAL EQUIPMENT.
6. ALL EXPOSED CONDUITS, RACEWAYS, WIREWAYS, BOXES, FITTINGS AND SIMILAR COMPONENTS SHALL BE PAINTED TO MATCH SURROUNDING FINISH WITH EQUAL TYPE PRODUCT(S).
7. ALL OCCUPANCY AND DAYLIGHT HARVESTING PHOTOSENSORS SHALL BE LOCATED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR EACH INDIVIDUAL SPACE. E.C. SHALL PROVIDE A CEILING PLAN LOCATING ALL SENSORS WHICH HAS BEEN FULLY COORDINATED WITH THE WORK OF OTHER TRADES FOR FINAL REVIEW AND APPROVAL. E.C. SHALL PROVIDE THE SENSOR VENDOR(S) WITH ALL INFORMATION REQUIRED TO FULLY UNDERSTAND THE CONDITIONS OF EACH SPACE.
8. INDIRECT AND DIRECT/INDIRECT FIXTURES SHALL BE SUSPENDED WITH AIRCRAFT CABLE TO PROVIDE A MINIMUM CLEARANCE 18" FROM THE CEILING TO TOP OF EACH FIXTURE. FIELD CONDITIONS REQUIRING A SHORTER SUSPENSION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO COMMENCING WITH FIXTURE INSTALLATIONS.
9. FIXTURES ON PLANS SHALL BE PROVIDED WITH 0-10V DIMMING DRIVER(S) OR LIGHT ENGINE(S) AS REQUIRED FOR LED SOURCES SPECIFIED TO BE CONTROLLED VIA A 0-10V SIGNAL FROM THE ALCS, DAYLIGHT HARVESTING PHOTOSENSORS, THEATRICAL DIMMING SYSTEM OR OTHER CONTROLS
10. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) - TYPICAL ONE LINE DIAGRAM" AND SPECIFICATIONS FOR DETAILED LIGHTING CONTROL REQUIREMENTS.
11. ALL EXTERIOR EQUIPMENT, FIXTURES, AND DEVICES SHALL BE RATED IP65 (MINIMUM) AND BE CONSTRUCTED OF STAINLESS STEEL AND/OR MARINE GRADE ALUMINUM SUITABLE FOR COASTAL ENVIRONMENT APPLICATION. PAINTED FINISHES SHALL HAVE PASSED A MINIMUM 5,000 HOUR SALT SPRAY TEST.



1 E101A FIRST FLOOR PLAN - PART 1-A - LIGHTING
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

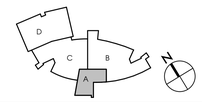
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN
PART A - LIGHTING

PROJECT NO. 1722

DRAWING NO.
E101A



GENERAL LIGHTING NOTES:

1. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN.
2. WIRING AND CONDUIT OR MC CABLE SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES, SWITCHES, DIMMERS, SENSORS, POWER PACKS, RELAYS, AND OTHER AUXILIARY DEVICES. WIRING AND CONDUIT OR MC CABLE IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT AND CONTROL WIRING SYSTEM BE INSTALLED.
3. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
4. UTILITIES SHALL NOT PENETRATE STAIR ENCLOSURES, ELEVATOR SHAFTS, AND MACHINE ROOMS EXCEPT WHERE SPECIFICALLY SERVING THAT STAIR OR ELEVATOR.
5. METAL ROOF DECKS SHALL NOT BE TAPPED FOR SUPPORT OF ANY LIGHTING FIXTURES OR ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT OR OTHER SUPPLEMENTAL SUPPORT FITTINGS TO BE ATTACHED TO BUILDING STRUCTURAL FRAMING AS REQUIRED FOR SUPPORT OF ALL LIGHTING FIXTURES AND ELECTRICAL EQUIPMENT.
6. ALL EXPOSED CONDUITS, RACEWAYS, WIREWAYS, BOXES, FITTINGS AND SIMILAR COMPONENTS SHALL BE PAINTED TO MATCH SURROUNDING FINISH WITH EQUAL TYPE PRODUCT(S).
7. ALL OCCUPANCY AND DAYLIGHT HARVESTING PHOTOSENSORS SHALL BE LOCATED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR EACH INDIVIDUAL SPACE. E.C. SHALL PROVIDE A CEILING PLAN LOCATING ALL SENSORS WHICH HAS BEEN FULLY COORDINATED WITH THE WORK OF OTHER TRADES FOR FINAL REVIEW AND APPROVAL. E.C. SHALL PROVIDE THE SENSOR VENDOR(S) WITH ALL INFORMATION REQUIRED TO FULLY UNDERSTAND THE CONDITIONS OF EACH SPACE.
8. INDIRECT AND DIRECT/INDIRECT FIXTURES SHALL BE SUSPENDED WITH AIRCRAFT CABLE TO PROVIDE A MINIMUM CLEARANCE 18" FROM THE CEILING TO TOP OF EACH FIXTURE. FIELD CONDITIONS REQUIRING A SHORTER SUSPENSION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO COMMENCING WITH FIXTURE INSTALLATIONS.
9. FIXTURES ON PLANS SHALL BE PROVIDED WITH 0-10V DIMMING DRIVER(S) OR LIGHT ENGINE(S) AS REQUIRED FOR LED SOURCES SPECIFIED TO BE CONTROLLED VIA A 0-10V SIGNAL FROM THE ALCS, DAYLIGHT HARVESTING PHOTOSENSORS, THEATRICAL DIMMING SYSTEM OR OTHER CONTROLS
10. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) - TYPICAL ONE LINE DIAGRAM" AND SPECIFICATIONS FOR DETAILED LIGHTING CONTROL REQUIREMENTS.
11. ALL EXTERIOR EQUIPMENT, FIXTURES, AND DEVICES SHALL BE RATED IP65 (MINIMUM) AND BE CONSTRUCTED OF STAINLESS STEEL AND/OR MARINE GRADE ALUMINUM SUITABLE FOR COASTAL ENVIRONMENT APPLICATION. PAINTED FINISHES SHALL HAVE PASSED A MINIMUM 5,000 HOUR SALT SPRAY TEST.

REFER TO SHEET E102B FOR ADDITIONAL LIGHTING IN THIS AREA

1 E101B FIRST FLOOR PLAN - PART 1-B - LIGHTING
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

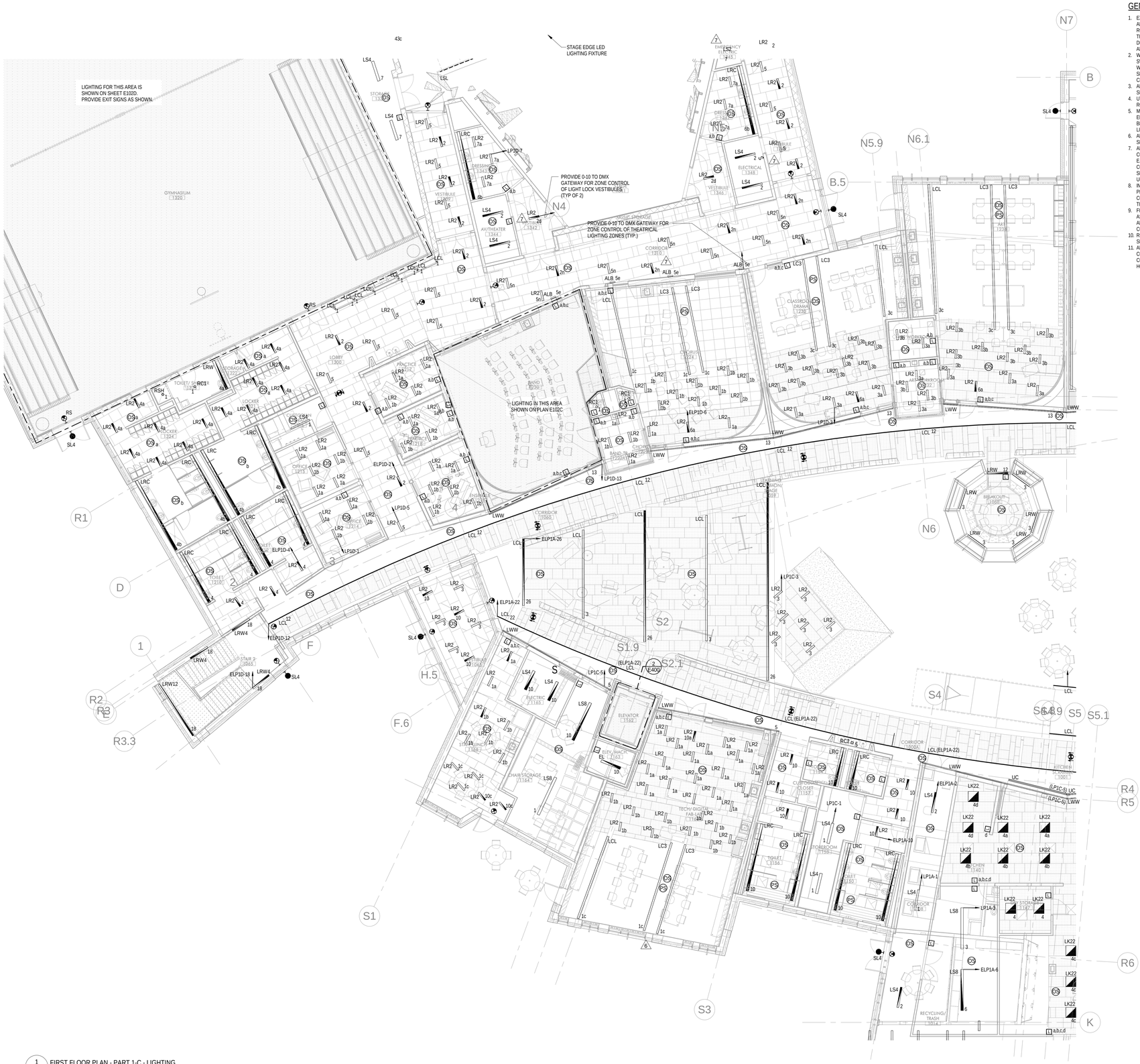
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN PART B - LIGHTING

PROJECT NO. 1722

DRAWING NO.
E101B



1 E101C FIRST FLOOR PLAN - PART 1-C - LIGHTING
SCALE: 1/8" = 1'-0"

GENERAL LIGHTING NOTES:

1. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN.
2. WIRING AND CONDUIT OR MC CABLE SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES, SWITCHES, DIMMERS, SENSORS, POWER PACKS, RELAYS, AND OTHER AUXILIARY DEVICES. WIRING AND CONDUIT OR MC CABLE IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT AND CONTROL WIRING SYSTEM BE INSTALLED.
3. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
4. UTILITIES SHALL NOT PENETRATE STAIR ENCLOSURES, ELEVATOR SHAFTS, AND MACHINE ROOMS EXCEPT WHERE SPECIFICALLY SERVING THAT STAIR OR ELEVATOR.
5. METAL ROOF DECKS SHALL NOT BE TAPPED FOR SUPPORT OF ANY LIGHTING FIXTURES OR ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT OR OTHER SUPPLEMENTAL SUPPORT FITTINGS TO BE ATTACHED TO BUILDING STRUCTURAL FRAMING AS REQUIRED FOR SUPPORT OF ALL LIGHTING FIXTURES AND ELECTRICAL EQUIPMENT.
6. ALL EXPOSED CONDUITS, RACEWAYS, WIREWAYS, BOXES, FITTINGS AND SIMILAR COMPONENTS SHALL BE PAINTED TO MATCH SURROUNDING FINISH WITH EQUAL TYPE PRODUCT(S).
7. ALL OCCUPANCY AND DAYLIGHT HARVESTING PHOTOSENSORS SHALL BE LOCATED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR EACH INDIVIDUAL SPACE. E.C. SHALL PROVIDE A CEILING PLAN LOCATING ALL SENSORS WHICH HAS BEEN FULLY COORDINATED WITH THE WORK OF OTHER TRADES FOR FINAL REVIEW AND APPROVAL. E.C. SHALL PROVIDE THE SENSOR VENDOR(S) WITH ALL INFORMATION REQUIRED TO FULLY UNDERSTAND THE CONDITIONS OF EACH SPACE.
8. INDIRECT AND DIRECT/INDIRECT FIXTURES SHALL BE SUSPENDED WITH AIRCRAFT CABLE TO PROVIDE A MINIMUM CLEARANCE 18" FROM THE CEILING TO TOP OF EACH FIXTURE. FIELD CONDITIONS REQUIRING A SHORTER SUSPENSION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO COMMENCING WITH FIXTURE INSTALLATIONS.
9. FIXTURES ON PLANS SHALL BE PROVIDED WITH 0-10V DIMMING DRIVER(S) OR LIGHT ENGINE(S) AS REQUIRED FOR LED SOURCES SPECIFIED TO BE CONTROLLED VIA A 0-10V SIGNAL FROM THE ALCS, DAYLIGHT HARVESTING PHOTOSENSORS, THEATRICAL DIMMING SYSTEM OR OTHER CONTROLS
10. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) - TYPICAL ONE LINE DIAGRAM" AND SPECIFICATIONS FOR DETAILED LIGHTING CONTROL REQUIREMENTS.
11. ALL EXTERIOR EQUIPMENT, FIXTURES, AND DEVICES SHALL BE RATED IP65 (MINIMUM) AND BE CONSTRUCTED OF STAINLESS STEEL AND/OR MARINE GRADE ALUMINUM SUITABLE FOR COASTAL ENVIRONMENT APPLICATION. PAINTED FINISHES SHALL HAVE PASSED A MINIMUM 5,000 HOUR SALT SPRAY TEST.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA
508 - 998 - 5700 FAX 508 - 998 - 0903 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

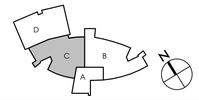
REVISIONS

No.	Date	Description
6	12/09/2019	ADDENDUM # 6
7	12/13/2019	ADDENDUM # 7
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN
PART C - LIGHTING

PROJECT NO. 1722

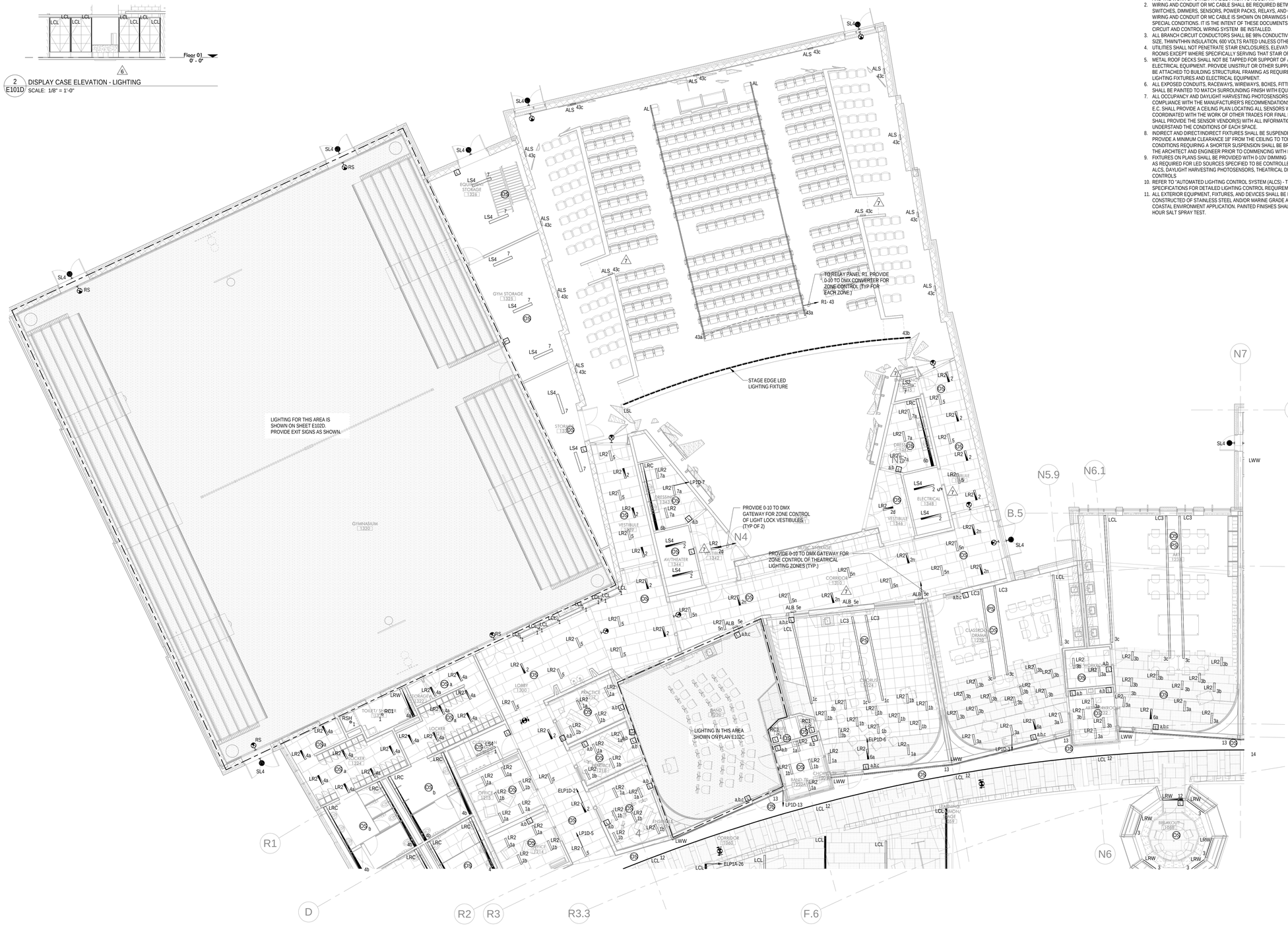
DRAWING NO.
E101C



2 / E101D DISPLAY CASE ELEVATION - LIGHTING
SCALE: 1/8" = 1'-0"

GENERAL LIGHTING NOTES:

1. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN.
2. WIRING AND CONDUIT OR MC CABLE SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES, SWITCHES, DIMMERS, SENSORS, POWER PACKS, RELAYS, AND OTHER AUXILIARY DEVICES. WIRING AND CONDUIT OR MC CABLE IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT AND CONTROL WIRING SYSTEM BE INSTALLED.
3. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
4. UTILITIES SHALL NOT PENETRATE STAIR ENCLOSURES, ELEVATOR SHAFTS, AND MACHINE ROOMS EXCEPT WHERE SPECIFICALLY SERVING THAT STAIR OR ELEVATOR.
5. METAL ROOF DECKS SHALL NOT BE TAPPED FOR SUPPORT OF ANY LIGHTING FIXTURES OR ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT OR OTHER SUPPLEMENTAL SUPPORT FITTINGS TO BE ATTACHED TO BUILDING STRUCTURAL FRAMING AS REQUIRED FOR SUPPORT OF ALL LIGHTING FIXTURES AND ELECTRICAL EQUIPMENT.
6. ALL EXPOSED CONDUITS, RACEWAYS, WIREWAYS, BOXES, FITTINGS AND SIMILAR COMPONENTS SHALL BE PAINTED TO MATCH SURROUNDING FINISH WITH EQUAL TYPE PRODUCT(S).
7. ALL OCCUPANCY AND DAYLIGHT HARVESTING PHOTOSENSORS SHALL BE LOCATED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR EACH INDIVIDUAL SPACE. E.C. SHALL PROVIDE A CEILING PLAN LOCATING ALL SENSORS WHICH HAS BEEN FULLY COORDINATED WITH THE WORK OF OTHER TRADES FOR FINAL REVIEW AND APPROVAL. E.C. SHALL PROVIDE THE SENSOR VENDOR(S) WITH ALL INFORMATION REQUIRED TO FULLY UNDERSTAND THE CONDITIONS OF EACH SPACE.
8. INDIRECT AND DIRECT/INDIRECT FIXTURES SHALL BE SUSPENDED WITH AIRCRAFT CABLE TO PROVIDE A MINIMUM CLEARANCE 18" FROM THE CEILING TO TOP OF EACH FIXTURE. FIELD CONDITIONS REQUIRING A SHORTER SUSPENSION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO COMMENCING WITH FIXTURE INSTALLATIONS.
9. FIXTURES ON PLANS SHALL BE PROVIDED WITH 0-10V DIMMING DRIVER(S) OR LIGHT ENGINE(S) AS REQUIRED FOR LED SOURCES SPECIFIED TO BE CONTROLLED VIA A 0-10V SIGNAL FROM THE ALCS, DAYLIGHT HARVESTING PHOTOSENSORS, THEATRICAL DIMMING SYSTEM OR OTHER CONTROLS
10. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) - TYPICAL ONE LINE DIAGRAM" AND SPECIFICATIONS FOR DETAILED LIGHTING CONTROL REQUIREMENTS.
11. ALL EXTERIOR EQUIPMENT, FIXTURES, AND DEVICES SHALL BE RATED IP65 (MINIMUM) AND BE CONSTRUCTED OF STAINLESS STEEL AND/OR MARINE GRADE ALUMINUM SUITABLE FOR COASTAL ENVIRONMENT APPLICATION. PAINTED FINISHES SHALL HAVE PASSED A MINIMUM 5,000 HOUR SALT SPRAY TEST.



1 / E101D FIRST FLOOR PLAN - PART 1-D - LIGHTING
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 5803 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
6	12/09/2019	ADDENDUM # 6
7	12/13/2019	ADDENDUM # 7
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN
PART D - LIGHTING

PROJECT NO. 1722

DRAWING NO.
E101D

GENERAL LIGHTING NOTES:

1. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN.
2. WIRING AND CONDUIT OR MC CABLE SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES, SWITCHES, DIMMERS, SENSORS, POWER PACKS, RELAYS, AND OTHER AUXILIARY DEVICES. WIRING AND CONDUIT OR MC CABLE IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT AND CONTROL WIRING SYSTEM BE INSTALLED.
3. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
4. UTILITIES SHALL NOT PENETRATE STAIR ENCLOSURES, ELEVATOR SHAFTS, AND MACHINE ROOMS EXCEPT WHERE SPECIFICALLY SERVING THAT STAIR OR ELEVATOR.
5. METAL ROOF DECKS SHALL NOT BE TAPPED FOR SUPPORT OF ANY LIGHTING FIXTURES OR ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT OR OTHER SUPPLEMENTAL SUPPORT FITTINGS TO BE ATTACHED TO BUILDING STRUCTURAL FRAMING AS REQUIRED FOR SUPPORT OF ALL LIGHTING FIXTURES AND ELECTRICAL EQUIPMENT.
6. ALL EXPOSED CONDUITS, RACEWAYS, WIREWAYS, BOXES, FITTINGS AND SIMILAR COMPONENTS SHALL BE PAINTED TO MATCH SURROUNDING FINISH WITH EQUAL TYPE PRODUCT(S).
7. ALL OCCUPANCY AND DAYLIGHT HARVESTING PHOTOSENSORS SHALL BE LOCATED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR EACH INDIVIDUAL SPACE. E.C. SHALL PROVIDE A CEILING PLAN LOCATING ALL SENSORS WHICH HAS BEEN FULLY COORDINATED WITH THE WORK OF OTHER TRADES FOR FINAL REVIEW AND APPROVAL. E.C. SHALL PROVIDE THE SENSOR VENDOR(S) WITH ALL INFORMATION REQUIRED TO FULLY UNDERSTAND THE CONDITIONS OF EACH SPACE.
8. INDIRECT AND DIRECT/INDIRECT FIXTURES SHALL BE SUSPENDED WITH AIRCRAFT CABLE TO PROVIDE A MINIMUM CLEARANCE 18" FROM THE CEILING TO TOP OF EACH FIXTURE. FIELD CONDITIONS REQUIRING A SHORTER SUSPENSION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO COMMENCING WITH FIXTURE INSTALLATIONS.
9. FIXTURES ON PLANS SHALL BE PROVIDED WITH 0-10V DIMMING DRIVER(S) OR LIGHT ENGINE(S) AS REQUIRED FOR LED SOURCES SPECIFIED TO BE CONTROLLED VIA A 0-10V SIGNAL FROM THE ALCS, DAYLIGHT HARVESTING PHOTOSENSORS, THEATRICAL DIMMING SYSTEM OR OTHER CONTROLS
10. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) - TYPICAL ONE LINE DIAGRAM" AND SPECIFICATIONS FOR DETAILED LIGHTING CONTROL REQUIREMENTS.
11. ALL EXTERIOR EQUIPMENT, FIXTURES, AND DEVICES SHALL BE RATED IP65 (MINIMUM) AND BE CONSTRUCTED OF STAINLESS STEEL AND/OR MARINE GRADE ALUMINUM SUITABLE FOR COASTAL ENVIRONMENT APPLICATION. PAINTED FINISHES SHALL HAVE PASSED A MINIMUM 5,000 HOUR SALT SPRAY TEST.

1 E102A SECOND FLOOR PLAN - PART 2-A - LIGHTING
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL

33 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

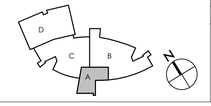
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART A - LIGHTING

PROJECT NO. 1722

DRAWING NO.
E102A



FIXTURE TO BE MOUNTED VERTICALLY ON WALL. LENGTH TO BE 14', FROM TOP TO BOTTOM OF PANEL. COORDINATE EXACT LENGTH OF FIXTURE WITH ARCHITECT PRIOR TO ORDERING.
FIXTURE TYPE 'LWW' MOUNTED ON UNDERSIDE OF TABLE. REFER TO ARCHITECT FOR MOUNTING.
N7
N8
N9
N10
N11
N12
N10.9
N11.1
N7.9
B
R1
R2
R3
F.6
F.5
R4
R5
R6
I
K
S4.9
S5
S5.1
S6
S7
S8
S8.9
S9
S9.1
S10
S10.9
S11
S11.1
S12
S5.7
S6.9
S7.1
LIBRARY 2240
CLASSROOM 2224
CLASSROOM 2223
CLASSROOM 2225
CLASSROOM 2226
CLASSROOM 2227
CLASSROOM 2228
CLASSROOM 2229
CLASSROOM 2230
CLASSROOM 2231
CLASSROOM 2232
CLASSROOM 2233
CLASSROOM 2234
CLASSROOM 2235
CLASSROOM 2236
CLASSROOM 2237
CLASSROOM 2238
CLASSROOM 2239
SPED CLASSROOM 2124
SPED CLASSROOM 2125
SPED CLASSROOM 2126
SPED CLASSROOM 2127
SPED CLASSROOM 2128
SPED CLASSROOM 2129
SPED CLASSROOM 2130
SPED CLASSROOM 2131
SPED CLASSROOM 2132
SPED CLASSROOM 2133
SPED CLASSROOM 2134
SPED CLASSROOM 2135
SPED CLASSROOM 2136
SPED CLASSROOM

GENERAL LIGHTING NOTES:

1. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN.
2. WIRING AND CONDUIT OR MC CABLE SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES, SWITCHES, DIMMERS, SENSORS, POWER PACKS, RELAYS, AND OTHER AUXILIARY DEVICES. WIRING AND CONDUIT OR MC CABLE IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT AND CONTROL WIRING SYSTEM BE INSTALLED.
3. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
4. UTILITIES SHALL NOT PENETRATE STAIR ENCLOSURES, ELEVATOR SHAFTS, AND MACHINE ROOMS EXCEPT WHERE SPECIFICALLY SERVING THAT STAIR OR ELEVATOR.
5. METAL ROOF DECKS SHALL NOT BE TAPPED FOR SUPPORT OF ANY LIGHTING FIXTURES OR ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT OR OTHER SUPPLEMENTAL SUPPORT FITTINGS TO BE ATTACHED TO BUILDING STRUCTURAL FRAMING AS REQUIRED FOR SUPPORT OF ALL LIGHTING FIXTURES AND ELECTRICAL EQUIPMENT.
6. ALL EXPOSED CONDUITS, RACEWAYS, WIREWAYS, BOXES, FITTINGS AND SIMILAR COMPONENTS SHALL BE PAINTED TO MATCH SURROUNDING FINISH WITH EQUAL TYPE PRODUCT(S).
7. ALL OCCUPANCY AND DAYLIGHT HARVESTING PHOTOSENSORS SHALL BE LOCATED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR EACH INDIVIDUAL SPACE. E.C. SHALL PROVIDE A CEILING PLAN LOCATING ALL SENSORS WHICH HAS BEEN FULLY COORDINATED WITH THE WORK OF OTHER TRADES FOR FINAL REVIEW AND APPROVAL. E.C. SHALL PROVIDE THE SENSOR VENDOR(S) WITH ALL INFORMATION REQUIRED TO FULLY UNDERSTAND THE CONDITIONS OF EACH SPACE.
8. INDIRECT AND DIRECT/INDIRECT FIXTURES SHALL BE SUSPENDED WITH AIRCRAFT CABLE TO PROVIDE A MINIMUM CLEARANCE 18" FROM THE CEILING TO TOP OF EACH FIXTURE. FIELD CONDITIONS REQUIRING A SHORTER SUSPENSION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO COMMENCING WITH FIXTURE INSTALLATIONS.
9. FIXTURES ON PLANS SHALL BE PROVIDED WITH 0-10V DIMMING DRIVER(S) OR LIGHT ENGINE(S) AS REQUIRED FOR LED SOURCES SPECIFIED TO BE CONTROLLED VIA A 0-10V SIGNAL FROM THE ALCS, DAYLIGHT HARVESTING PHOTOSENSORS, THEATRICAL DIMMING SYSTEM OR OTHER CONTROLS
10. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) - TYPICAL ONE LINE DIAGRAM" AND SPECIFICATIONS FOR DETAILED LIGHTING CONTROL REQUIREMENTS.
11. ALL EXTERIOR EQUIPMENT, FIXTURES, AND DEVICES SHALL BE RATED IP65 (MINIMUM) AND BE CONSTRUCTED OF STAINLESS STEEL AND/OR MARINE GRADE ALUMINUM SUITABLE FOR COASTAL ENVIRONMENT APPLICATION. PAINTED FINISHES SHALL HAVE PASSED A MINIMUM 5,000 HOUR SALT SPRAY TEST.

1 E102C SECOND FLOOR PLAN - PART 2-C - LIGHTING
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0903 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
7	12/13/2019	ADDENDUM # 7
8	2/10/2020	Conformance Set

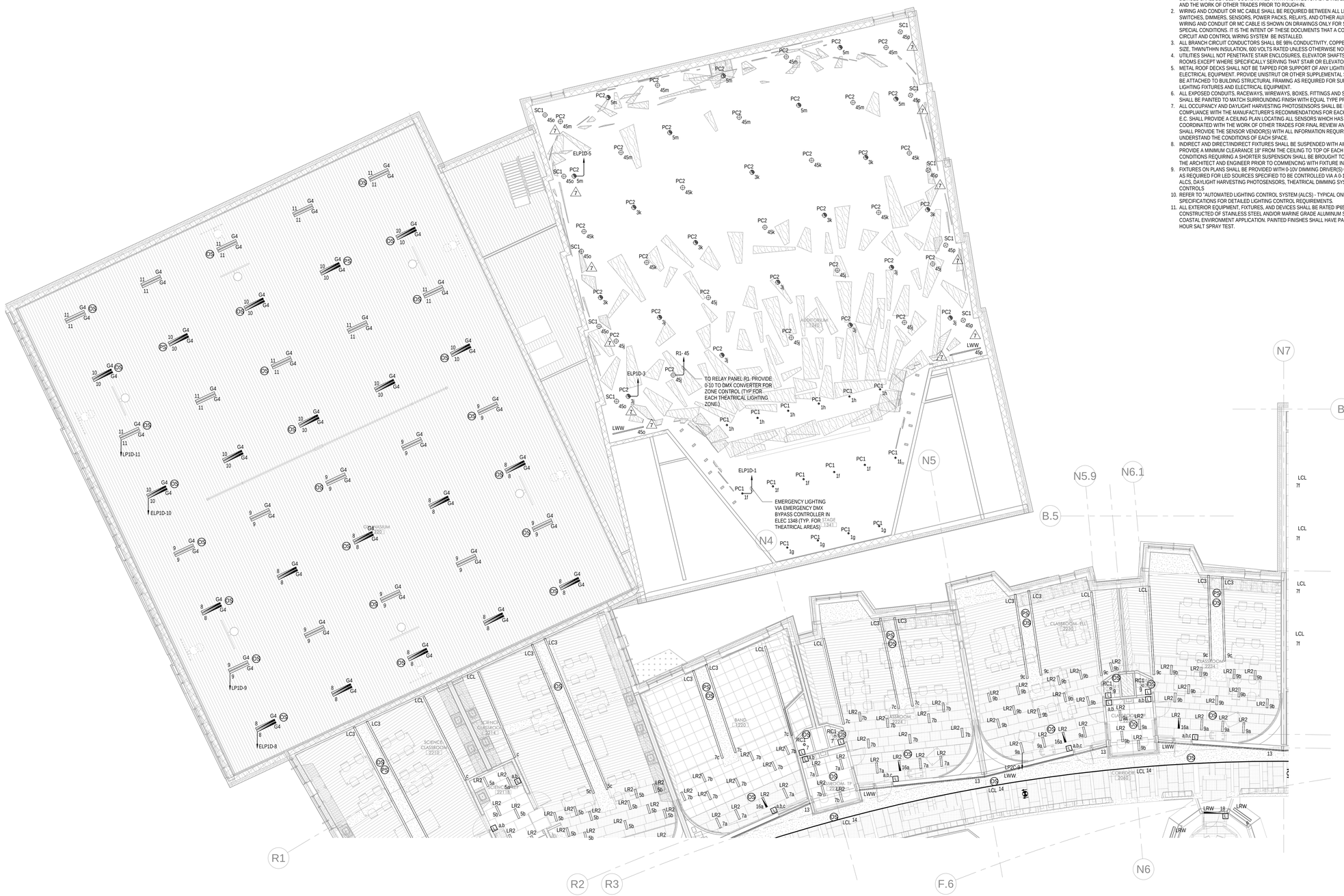
DRAWING NAME
SECOND FLOOR PLAN PART C - LIGHTING

PROJECT NO. 1722

DRAWING NO.
E102C

GENERAL LIGHTING NOTES:

1. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN.
2. WIRING AND CONDUIT OR MC CABLE SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES, SWITCHES, DIMMERS, SENSORS, POWER PACKS, RELAYS, AND OTHER AUXILIARY DEVICES. WIRING AND CONDUIT OR MC CABLE IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT AND CONTROL WIRING SYSTEM BE INSTALLED.
3. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
4. UTILITIES SHALL NOT PENETRATE STAIR ENCLOSURES, ELEVATOR SHAFTS, AND MACHINE ROOMS EXCEPT WHERE SPECIFICALLY SERVING THAT STAIR OR ELEVATOR.
5. METAL ROOF DECKS SHALL NOT BE TAPPED FOR SUPPORT OF ANY LIGHTING FIXTURES OR ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT OR OTHER SUPPLEMENTAL SUPPORT FITTINGS TO BE ATTACHED TO BUILDING STRUCTURAL FRAMING AS REQUIRED FOR SUPPORT OF ALL LIGHTING FIXTURES AND ELECTRICAL EQUIPMENT.
6. ALL EXPOSED CONDUITS, RACEWAYS, WIREWAYS, BOXES, FITTINGS AND SIMILAR COMPONENTS SHALL BE PAINTED TO MATCH SURROUNDING FINISH WITH EQUAL TYPE PRODUCT(S).
7. ALL OCCUPANCY AND DAYLIGHT HARVESTING PHOTOSENSORS SHALL BE LOCATED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR EACH INDIVIDUAL SPACE. E.C. SHALL PROVIDE A CEILING PLAN LOCATING ALL SENSORS WHICH HAS BEEN FULLY COORDINATED WITH THE WORK OF OTHER TRADES FOR FINAL REVIEW AND APPROVAL. E.C. SHALL PROVIDE THE SENSOR VENDOR(S) WITH ALL INFORMATION REQUIRED TO FULLY UNDERSTAND THE CONDITIONS OF EACH SPACE.
8. INDIRECT AND DIRECT/INDIRECT FIXTURES SHALL BE SUSPENDED WITH AIRCRAFT CABLE TO PROVIDE A MINIMUM CLEARANCE 18" FROM THE CEILING TO TOP OF EACH FIXTURE. FIELD CONDITIONS REQUIRING A SHORTER SUSPENSION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO COMMENCING WITH FIXTURE INSTALLATIONS.
9. FIXTURES ON PLANS SHALL BE PROVIDED WITH 0-10V DIMMING DRIVER(S) OR LIGHT ENGINE(S) AS REQUIRED FOR LED SOURCES SPECIFIED TO BE CONTROLLED VIA A 0-10V SIGNAL FROM THE ALCS, DAYLIGHT HARVESTING PHOTOSENSORS, THEATRICAL DIMMING SYSTEM OR OTHER CONTROLS
10. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) - TYPICAL ONE LINE DIAGRAM" AND SPECIFICATIONS FOR DETAILED LIGHTING CONTROL REQUIREMENTS.
11. ALL EXTERIOR EQUIPMENT, FIXTURES, AND DEVICES SHALL BE RATED IP65 (MINIMUM) AND BE CONSTRUCTED OF STAINLESS STEEL AND/OR MARINE GRADE ALUMINUM SUITABLE FOR COASTAL ENVIRONMENT APPLICATION. PAINTED FINISHES SHALL HAVE PASSED A MINIMUM 5,000 HOUR SALT SPRAY TEST.



1 E102D SECOND FLOOR PLAN - PART 2-D - LIGHTING
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
7	12/13/2019	ADDENDUM # 7
8	2/10/2020	Conformance Set

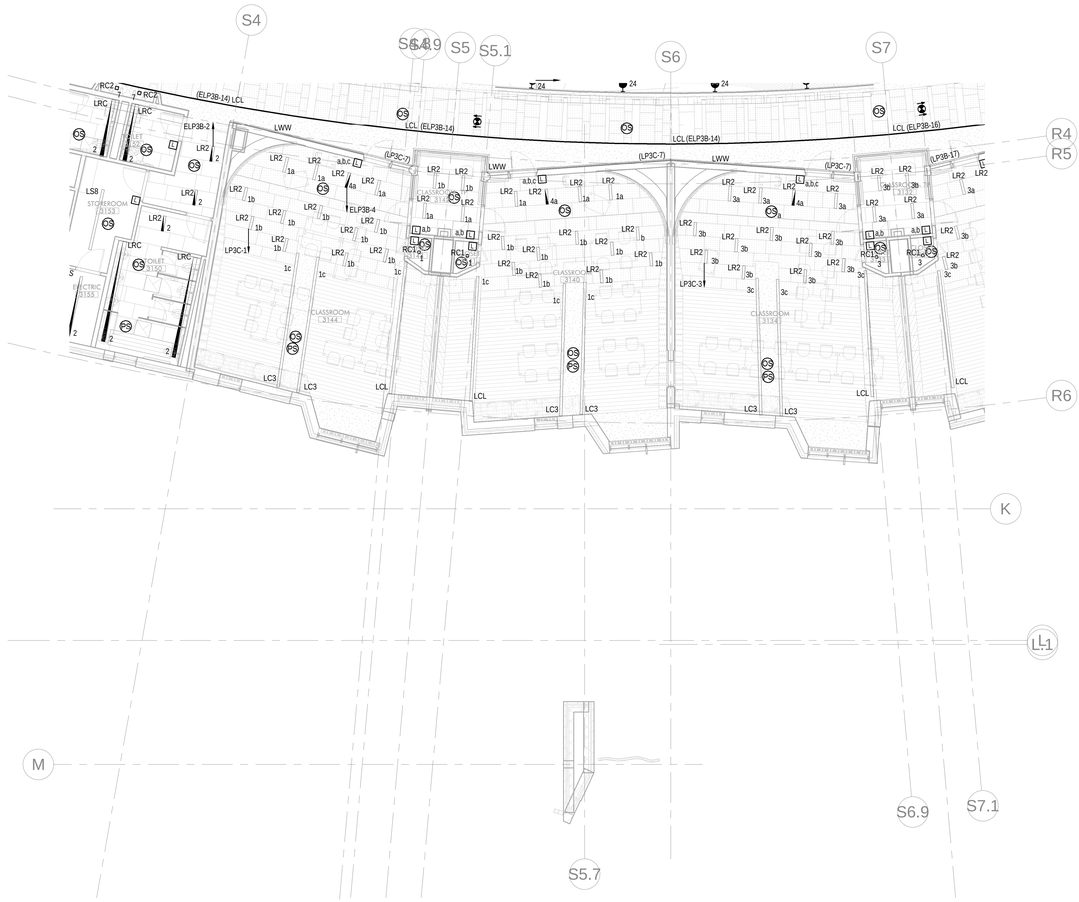
DRAWING NAME
SECOND FLOOR PLAN PART D - LIGHTING

PROJECT NO. 1722

DRAWING NO.
E102D

GENERAL LIGHTING NOTES:

1. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN.
2. WIRING AND CONDUIT OR MC CABLE SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES, SWITCHES, DIMMERS, SENSORS, POWER PACKS, RELAYS, AND OTHER AUXILIARY DEVICES. WIRING AND CONDUIT OR MC CABLE IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT AND CONTROL WIRING SYSTEM BE INSTALLED.
3. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THWN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
4. UTILITIES SHALL NOT PENETRATE STAIR ENCLOSURES, ELEVATOR SHAFTS, AND MACHINE ROOMS EXCEPT WHERE SPECIFICALLY SERVING THAT STAIR OR ELEVATOR.
5. METAL ROOF DECKS SHALL NOT BE TAPPED FOR SUPPORT OF ANY LIGHTING FIXTURES OR ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT OR OTHER SUPPLEMENTAL SUPPORT FITTINGS TO BE ATTACHED TO BUILDING STRUCTURAL FRAMING AS REQUIRED FOR SUPPORT OF ALL LIGHTING FIXTURES AND ELECTRICAL EQUIPMENT.
6. ALL EXPOSED CONDUITS, RACEWAYS, WIREWAYS, BOXES, FITTINGS AND SIMILAR COMPONENTS SHALL BE PAINTED TO MATCH SURROUNDING FINISH WITH EQUAL TYPE PRODUCT(S).
7. ALL OCCUPANCY AND DAYLIGHT HARVESTING PHOTOSENSORS SHALL BE LOCATED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR EACH INDIVIDUAL SPACE. E.C. SHALL PROVIDE A CEILING PLAN LOCATING ALL SENSORS WHICH HAS BEEN FULLY COORDINATED WITH THE WORK OF OTHER TRADES FOR FINAL REVIEW AND APPROVAL. E.C. SHALL PROVIDE THE SENSOR VENDOR(S) WITH ALL INFORMATION REQUIRED TO FULLY UNDERSTAND THE CONDITIONS OF EACH SPACE.
8. INDIRECT AND DIRECT/INDIRECT FIXTURES SHALL BE SUSPENDED WITH AIRCRAFT CABLE TO PROVIDE A MINIMUM CLEARANCE 18" FROM THE CEILING TO TOP OF EACH FIXTURE. FIELD CONDITIONS REQUIRING A SHORTER SUSPENSION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO COMMENCING WITH FIXTURE INSTALLATIONS.
9. FIXTURES ON PLANS SHALL BE PROVIDED WITH 0-10V DIMMING DRIVER(S) OR LIGHT ENGINE(S) AS REQUIRED FOR LED SOURCES SPECIFIED TO BE CONTROLLED VIA A 0-10V SIGNAL FROM THE ALCS, DAYLIGHT HARVESTING PHOTOSENSORS, THEATRICAL DIMMING SYSTEM OR OTHER CONTROLS.
10. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) - TYPICAL ONE LINE DIAGRAM" AND SPECIFICATIONS FOR DETAILED LIGHTING CONTROL REQUIREMENTS.
11. ALL EXTERIOR EQUIPMENT, FIXTURES, AND DEVICES SHALL BE RATED IP65 (MINIMUM) AND BE CONSTRUCTED OF STAINLESS STEEL AND/OR MARINE GRADE ALUMINUM SUITABLE FOR COASTAL ENVIRONMENT APPLICATION. PAINTED FINISHES SHALL HAVE PASSED A MINIMUM 5,000 HOUR SALT SPRAY TEST.



1 / E103A THIRD FLOOR PLAN - PART 3-A - LIGHTING
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Pleasant Street, Suite 2A, Northampton, MA 01060
Tel: 413-585-0032 Fax: 413-585-0031 www.ggdengineers.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

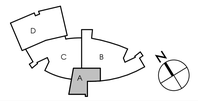
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN
PART A - LIGHTING

PROJECT NO. 1722

DRAWING NO.
E103A



GENERAL LIGHTING NOTES:

1. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN.
2. WIRING AND CONDUIT OR MC CABLE SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES, SWITCHES, DIMMERS, SENSORS, POWER PACKS, RELAYS, AND OTHER AUXILIARY DEVICES. WIRING AND CONDUIT OR MC CABLE IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT AND CONTROL WIRING SYSTEM BE INSTALLED.
3. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
4. UTILITIES SHALL NOT PENETRATE STAIR ENCLOSURES, ELEVATOR SHAFTS, AND MACHINE ROOMS EXCEPT WHERE SPECIFICALLY SERVING THAT STAIR OR ELEVATOR.
5. METAL ROOF DECKS SHALL NOT BE TAPPED FOR SUPPORT OF ANY LIGHTING FIXTURES OR ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT OR OTHER SUPPLEMENTAL SUPPORT FITTINGS TO BE ATTACHED TO BUILDING STRUCTURAL FRAMING AS REQUIRED FOR SUPPORT OF ALL LIGHTING FIXTURES AND ELECTRICAL EQUIPMENT.
6. ALL EXPOSED CONDUITS, RACEWAYS, WIREWAYS, BOXES, FITTINGS AND SIMILAR COMPONENTS SHALL BE PAINTED TO MATCH SURROUNDING FINISH WITH EQUAL TYPE PRODUCT(S).
7. ALL OCCUPANCY AND DAYLIGHT HARVESTING PHOTOSENSORS SHALL BE LOCATED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR EACH INDIVIDUAL SPACE. E.C. SHALL PROVIDE A CEILING PLAN LOCATING ALL SENSORS WHICH HAS BEEN FULLY COORDINATED WITH THE WORK OF OTHER TRADES FOR FINAL REVIEW AND APPROVAL. E.C. SHALL PROVIDE THE SENSOR VENDOR(S) WITH ALL INFORMATION REQUIRED TO FULLY UNDERSTAND THE CONDITIONS OF EACH SPACE.
8. INDIRECT AND DIRECT/INDIRECT FIXTURES SHALL BE SUSPENDED WITH AIRCRAFT CABLE TO PROVIDE A MINIMUM CLEARANCE 18" FROM THE CEILING TO TOP OF EACH FIXTURE. FIELD CONDITIONS REQUIRING A SHORTER SUSPENSION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO COMMENCING WITH FIXTURE INSTALLATIONS.
9. FIXTURES ON PLANS SHALL BE PROVIDED WITH 0-10V DIMMING DRIVER(S) OR LIGHT ENGINE(S) AS REQUIRED FOR LED SOURCES SPECIFIED TO BE CONTROLLED VIA A 0-10V SIGNAL FROM THE ALCS. DAYLIGHT HARVESTING PHOTOSENSORS, THEATRICAL DIMMING SYSTEM OR OTHER CONTROLS.
10. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) - TYPICAL ONE LINE DIAGRAM" AND SPECIFICATIONS FOR DETAILED LIGHTING CONTROL REQUIREMENTS.
11. ALL EXTERIOR EQUIPMENT, FIXTURES, AND DEVICES SHALL BE RATED IP65 (MINIMUM) AND BE CONSTRUCTED OF STAINLESS STEEL, AND/OR MARINE GRADE ALUMINUM SUITABLE FOR COASTAL ENVIRONMENT APPLICATION. PAINTED FINISHES SHALL HAVE PASSED A MINIMUM 5,000 HOUR SALT SPRAY TEST.

2 E103B ROOF ACCESS - STAIR
SCALE: 1/8" = 1'-0"

1 E103B THIRD FLOOR PLAN - PART 3-B - LIGHTING
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN
PART B - LIGHTING

PROJECT NO. 1722

DRAWING NO.
E103B

LIGHTING FOR THIS AREA IS SHOWN ON SHEET E102D.

GENERAL LIGHTING NOTES:

1. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN.
2. WIRING AND CONDUIT OR MC CABLE SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES, SWITCHES, DIMMERS, SENSORS, POWER PACKS, RELAYS, AND OTHER AUXILIARY DEVICES. WIRING AND CONDUIT OR MC CABLE IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT AND CONTROL WIRING SYSTEM BE INSTALLED.
3. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
4. UTILITIES SHALL NOT PENETRATE STAIR ENCLOSURES, ELEVATOR SHAFTS, AND MACHINE ROOMS EXCEPT WHERE SPECIFICALLY SERVING THAT STAIR OR ELEVATOR.
5. METAL ROOF DECKS SHALL NOT BE TAPPED FOR SUPPORT OF ANY LIGHTING FIXTURES OR ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT OR OTHER SUPPLEMENTAL SUPPORT FITTINGS TO BE ATTACHED TO BUILDING STRUCTURAL FRAMING AS REQUIRED FOR SUPPORT OF ALL LIGHTING FIXTURES AND ELECTRICAL EQUIPMENT.
6. ALL EXPOSED CONDUITS, RACEWAYS, WIREWAYS, BOXES, FITTINGS AND SIMILAR COMPONENTS SHALL BE PAINTED TO MATCH SURROUNDING FINISH WITH EQUAL TYPE PRODUCT(S).
7. ALL OCCUPANCY AND DAYLIGHT HARVESTING PHOTOSENSORS SHALL BE LOCATED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR EACH INDIVIDUAL SPACE. E.C. SHALL PROVIDE A CEILING PLAN LOCATING ALL SENSORS WHICH HAS BEEN FULLY COORDINATED WITH THE WORK OF OTHER TRADES FOR FINAL REVIEW AND APPROVAL. E.C. SHALL PROVIDE THE SENSOR VENDOR(S) WITH ALL INFORMATION REQUIRED TO FULLY UNDERSTAND THE CONDITIONS OF EACH SPACE.
8. INDIRECT AND DIRECT/INDIRECT FIXTURES SHALL BE SUSPENDED WITH AIRCRAFT CABLE TO PROVIDE A MINIMUM CLEARANCE 18" FROM THE CEILING TO TOP OF EACH FIXTURE. FIELD CONDITIONS REQUIRING A SHORTER SUSPENSION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO COMMENCING WITH FIXTURE INSTALLATIONS.
9. FIXTURES ON PLANS SHALL BE PROVIDED WITH 0-10V DIMMING DRIVER(S) OR LIGHT ENGINE(S) AS REQUIRED FOR LED SOURCES SPECIFIED TO BE CONTROLLED VIA A 0-10V SIGNAL FROM THE ALCS, DAYLIGHT HARVESTING PHOTOSENSORS, THEATRICAL DIMMING SYSTEM OR OTHER CONTROLS.
10. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) - TYPICAL ONE LINE DIAGRAM" AND SPECIFICATIONS FOR DETAILED LIGHTING CONTROL REQUIREMENTS.
11. ALL EXTERIOR EQUIPMENT, FIXTURES, AND DEVICES SHALL BE RATED IP65 (MINIMUM) AND BE CONSTRUCTED OF STAINLESS STEEL AND/OR MARINE GRADE ALUMINUM SUITABLE FOR COASTAL ENVIRONMENT APPLICATION. PAINTED FINISHES SHALL HAVE PASSED A MINIMUM 5,000 HOUR SALT SPRAY TEST.

2 E103C ROOF ACCESS - ELEVATOR
SCALE: 1/8" = 1'-0"

1 E103C THIRD FLOOR PLAN - PART 3-C - LIGHTING
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0903 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN
PART C - LIGHTING

PROJECT NO. 1722

DRAWING NO.
E103C

GENERAL LIGHTING NOTES:

1. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EXACT LOCATIONS OF ALL FIXTURES AND DEVICES SHALL BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, ELEVATIONS, SECTIONS AND THE WORK OF OTHER TRADES PRIOR TO ROUGH-IN.
2. WIRING AND CONDUIT OR MC CABLE SHALL BE REQUIRED BETWEEN ALL LIGHTING FIXTURES, SWITCHES, DIMMERS, SENSORS, POWER PACKS, RELAYS, AND OTHER AUXILIARY DEVICES. WIRING AND CONDUIT OR MC CABLE IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS. IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT AND CONTROL WIRING SYSTEM BE INSTALLED.
3. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
4. UTILITIES SHALL NOT PENETRATE STAIR ENCLOSURES, ELEVATOR SHAFTS, AND MACHINE ROOMS EXCEPT WHERE SPECIFICALLY SERVING THAT STAIR OR ELEVATOR.
5. METAL ROOF DECKS SHALL NOT BE TAPPED FOR SUPPORT OF ANY LIGHTING FIXTURES OR ELECTRICAL EQUIPMENT. PROVIDE UNISTRUT OR OTHER SUPPLEMENTAL SUPPORT FITTINGS TO BE ATTACHED TO BUILDING STRUCTURAL FRAMING AS REQUIRED FOR SUPPORT OF ALL LIGHTING FIXTURES AND ELECTRICAL EQUIPMENT.
6. ALL EXPOSED CONDUITS, RACEWAYS, WIREWAYS, BOXES, FITTINGS AND SIMILAR COMPONENTS SHALL BE PAINTED TO MATCH SURROUNDING FINISH WITH EQUAL TYPE PRODUCT(S).
7. ALL OCCUPANCY AND DAYLIGHT HARVESTING PHOTOSENSORS SHALL BE LOCATED IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR EACH INDIVIDUAL SPACE. E.C. SHALL PROVIDE A CEILING PLAN LOCATING ALL SENSORS WHICH HAS BEEN FULLY COORDINATED WITH THE WORK OF OTHER TRADES FOR FINAL REVIEW AND APPROVAL. E.C. SHALL PROVIDE THE SENSOR VENDOR(S) WITH ALL INFORMATION REQUIRED TO FULLY UNDERSTAND THE CONDITIONS OF EACH SPACE.
8. INDIRECT AND DIRECT/INDIRECT FIXTURES SHALL BE SUSPENDED WITH AIRCRAFT CABLE TO PROVIDE A MINIMUM CLEARANCE 18" FROM THE CEILING TO TOP OF EACH FIXTURE. FIELD CONDITIONS REQUIRING A SHORTER SUSPENSION SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO COMMENCING WITH FIXTURE INSTALLATIONS.
9. FIXTURES ON PLANS SHALL BE PROVIDED WITH 0-10V DIMMING DRIVER(S) OR LIGHT ENGINE(S) AS REQUIRED FOR LED SOURCES SPECIFIED TO BE CONTROLLED VIA A 0-10V SIGNAL FROM THE ALCS. DAYLIGHT HARVESTING PHOTOSENSORS, THEATRICAL DIMMING SYSTEM OR OTHER CONTROLS
10. REFER TO "AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) - TYPICAL ONE LINE DIAGRAM" AND SPECIFICATIONS FOR DETAILED LIGHTING CONTROL REQUIREMENTS.
11. ALL EXTERIOR EQUIPMENT, FIXTURES, AND DEVICES SHALL BE RATED IP65 (MINIMUM) AND BE CONSTRUCTED OF STAINLESS STEEL AND/OR MARINE GRADE ALUMINUM SUITABLE FOR COASTAL ENVIRONMENT APPLICATION. PAINTED FINISHES SHALL HAVE PASSED A MINIMUM 5,000 HOUR SALT SPRAY TEST.

1 E103D THIRD FLOOR PLAN - PART 3-D - LIGHTING
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

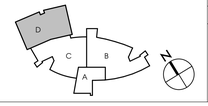
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN
PART D - LIGHTING

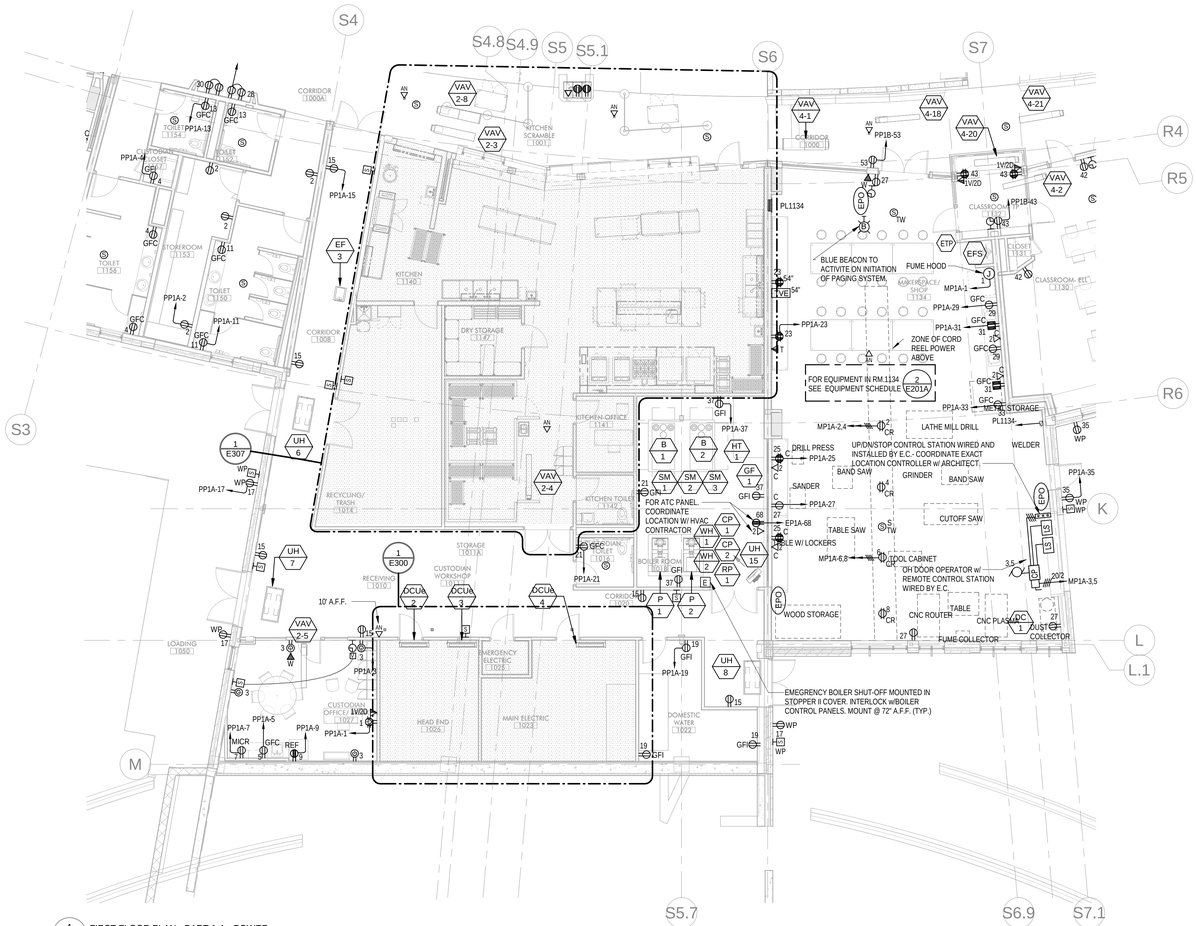
PROJECT NO. 1722

DRAWING NO.
E103D



GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIOVISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN I/O MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.



1 E201A FIRST FLOOR PLAN - PART 1-A - POWER
SCALE: 1/8" = 1'-0"

MAKERSPACE / SHOP EQUIPMENT SCHEDULE - ROOM 1134

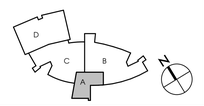
EQUIP NO.	EQUIPMENT	QTY	NEW	EXIST	HP	K.W.	AMPS.	VOLT, PHASE	PANEL	CKT. NO.	BRKR.	WIRE & COND.	EQUIPMENT AND CONNECTIONS									REMARKS
													TS						CRHD		J	
(2)(1) MS1	BAND SAW	1	X	-	-	-	-	120,1	PL1134	1	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS2	DRILL PRESS	1	X	-	-	-	-	120,1	PL1134	3	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS3	SANDER	1	X	-	-	-	-	120,1	PL1134	5	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS4	TABLE SAW	1	X	-	-	-	-	120,1	PL1134	7	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS5	DUST COLLECTOR	1	X	-	-	-	-	120,1	PL1134	9	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS6	CNC ROUTER	1	X	-	-	-	-	120,1	PL1134	11	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS7	FUME COLLECTOR	1	X	-	-	-	-	120,1	PL1134	2	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS8	CNC PLASMA	1	X	-	-	-	-	120,1	PL1134	4	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS9	DUCTLESS SPRAY BOOTH	1	X	-	-	-	-	120,1	PL1134	6	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS10	CUT-OFF SAW	1	X	-	-	-	-	120,1	PL1134	8	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS11	GRINDER	1	X	-	-	-	-	120,1	PL1134	10	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS12	BAND SAW	1	X	-	-	-	-	120,1	PL1134	12	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(2)(1) MS13	LATHE MILL DRILL	1	X	-	-	-	-	120,1	PL1134	13	20A/1P	2#12+#12G, 3/4"C	-	-	-	-	-	X	X	-	-	-
(1) MS14	WELDER	1	X	-	-	-	-	208,3	PL1134	14,16,18	60A/3P	4#4+#10G, 1 1/4"C	-	-	X	-	X	-	-	-	X	-
(2)(1) MS15	WORK TABLE	1	X	-	-	-	-	120,1	PL1134	15	20A/1P	4#4+#10G, 1 1/4"C	-	-	-	-	-	(2)X	(2)X	-	-	-

(1) FIELD CONFIRM EXACT EQUIPMENT LOCATION PRIOR TO ROUGHING. COORDINATE WITH ARCHITECT.

(2) TYPICALLY INSTALL CEILING MOUNTED RECEPTACLE AND PROVIDE CORD REEL HEAVY DUTY EQUAL TO HUBBELL ITEM #HBL45123C20, EXTENSION CORD 45 FEET 12 GAUGE WITH NEMA 5-20 SINGLE CONNECTOR. INSTALL CORD REEL ADJACENT TO RECEPTACLE. ALSO PROVIDE ALL MOUNTING BRACKETS AND STRUCTURAL SUPPORT FOR MOUNTING OF CORD REELS TO BEAMS. PROVIDE PIVOT BASE ON ALL REELS.

(3) E.C SHALL F&I #6 AWG GROUND IN CONDUIT TO BUILDING STEEL & GROUNG BUS OF PANEL PL125C, FROM LOCATION OF FLAMMABLE STORAGE CABINET. EXACT LOCATION TO BE COORDINATED WITH EQUIPMENT INSTALLER.

2 E201A MAKERSPACE / SHOP EQUIPMENT SCHEDULE - ROOM 1134
SCALE: N.T.S.



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

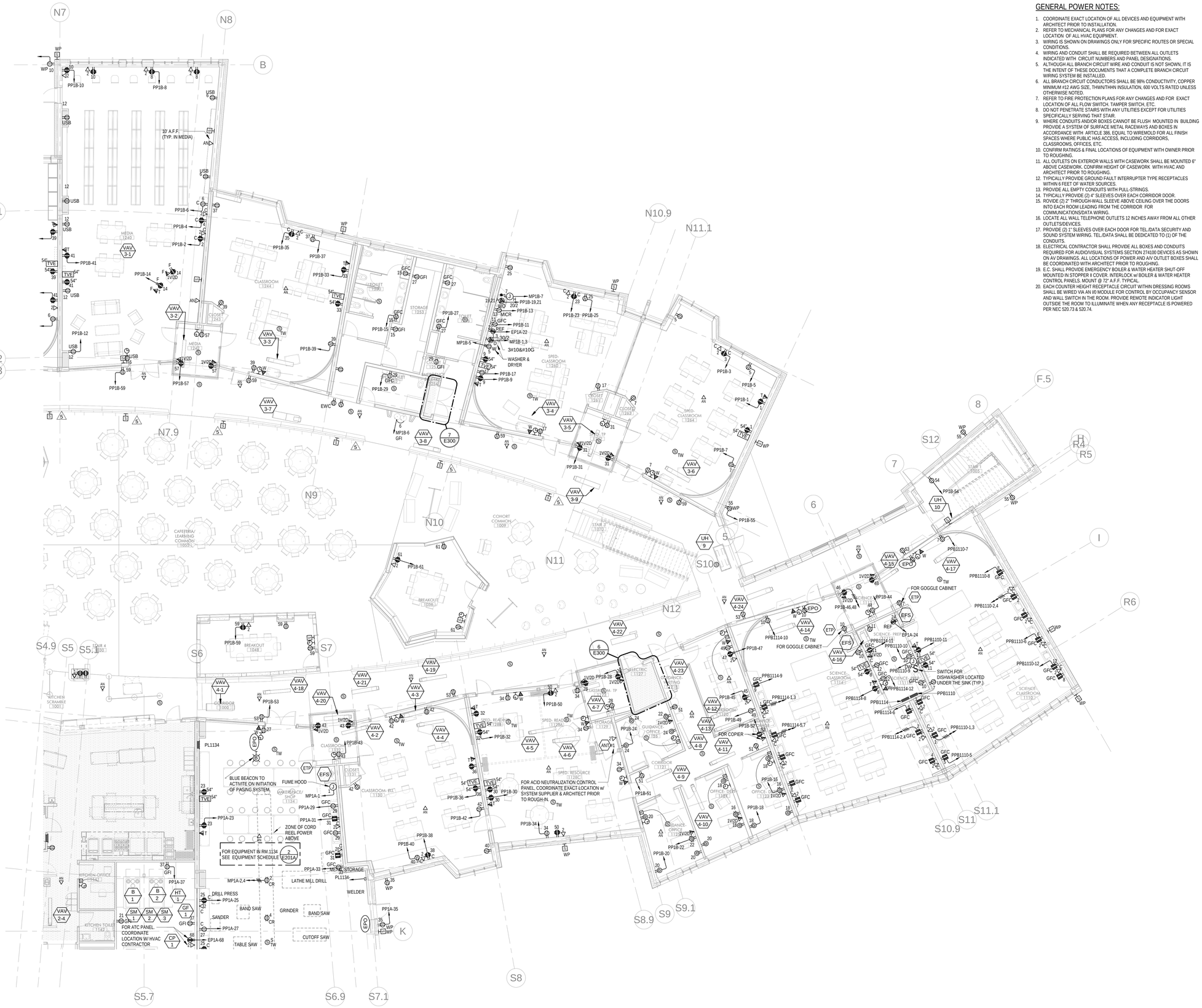
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN
PART A - POWER

PROJECT NO. 1722

DRAWING NO.
E201A



1 E201B FIRST FLOOR PLAN - PART 1-B - POWER
SCALE: 1/8" = 1'-0"

GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIO/VISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN ID MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Pearl Street Road - Suite D, Dartmouth, MA 02747 - 2208
508 - 998 - 5700 FAX 508 - 998 - 0903 E - MAIL info@gg-d.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM #5
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN
PART B - POWER

PROJECT NO. 1722

DRAWING NO.
E201B

GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIO/VISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN I/O MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.

LIQUID-TIGHT HARD-USE FLEXIBLE SO CABLE INSTALLED BELOW BLEACHERS (TYP.)

OUTLETS MOUNTED TO FACE OF BLEACHERS. COORDINATE EXACT LOCATION w/ ARCHITECT PRIOR TO ROUGH-IN (TYP.)

SEE DWG. E202D FOR ADDITIONAL EQUIPMENT ABOVE.

GYMNASIUM EQUIPMENT CONTROL STATIONS. COORDINATE LOCATION w/ ARCHITECT PRIOR TO ROUGH-IN (TYP.)

84" ABOVE TOP OF BLEACHER (TYP. IN GYM)

MOTORIZED RIGGING EMERGENCY STOP. TYPICALLY COORDINATE LOCATION WITH DIV 11 61 33 CONTRACTOR FOR ALL RIGGING EQUIPMENT.

MOTORIZED RIGGING CONTROL RECECEPTACLE FURNISHED BY DIV 11 61 33. INSTALLED AND WIRED BY E.C.

PILOT LIGHT FOR DRESSING ROOM LIGHTS & RECEPTACLES SEE NOTE 20 (TYP.)

CURTAIN MOTOR CONTROLLER FURNISHED BY DIV 11 61 33. INSTALLED AND WIRED BY E.C. CIRCUIT VIA DISCONNECT IN ELEC 1348

CABLE PASS (TYP. OF 2) SEE DETAIL 11/E305

SWITCHED RECEPTACLES & ASSOCIATED CONTROLS. SEE NOTE 20 (TYP.)

FOR AV EQUIPMENT

INTERLOCK KILN WITH ITS ASSOCIATED EXHAUST FAN (EF-5) SO WHEN KILN IS ON EXHAUST FAN IS ON, AND REMAINS ON FOR 20 MINUTE TIME DELAY AFTER KILN IS TURNED OFF. REFER TO DETAIL 2/E304

KILN DOWN DRAFT FAN NEMA 15-50R

TO CONTROL STATION, EXACT LOCATION TO BE COORDINATED w/ ARCHITECT PRIOR TO ROUGH-IN (TYP.)

PROJECTION SCREEN WIRED BY E.C.

FOR CEILING MOUNTED PROJECTOR. COORDINATE LOCATION W/ AV CONSULTANTS AND ARCH.

UP/DN/STOP MOMENTARY KEYED SWITCH (CONTROL STATION), FURNISHED BY OTHERS. WIRED AND INSTALLED BY E.C. - EXACT LOCATION TO BE COORDINATED w/ ARCHITECT PRIOR TO ROUGH-IN (TYP.)

AREA OF REFUGE BASE STATION

ICONIC CNC

MAKERBOT

LASER

1 E201C FIRST FLOOR PLAN - PART 1-C - POWER
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0903 E - Mail, info@g g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

DRAWING NAME

FIRST FLOOR PLAN
PART C - POWER

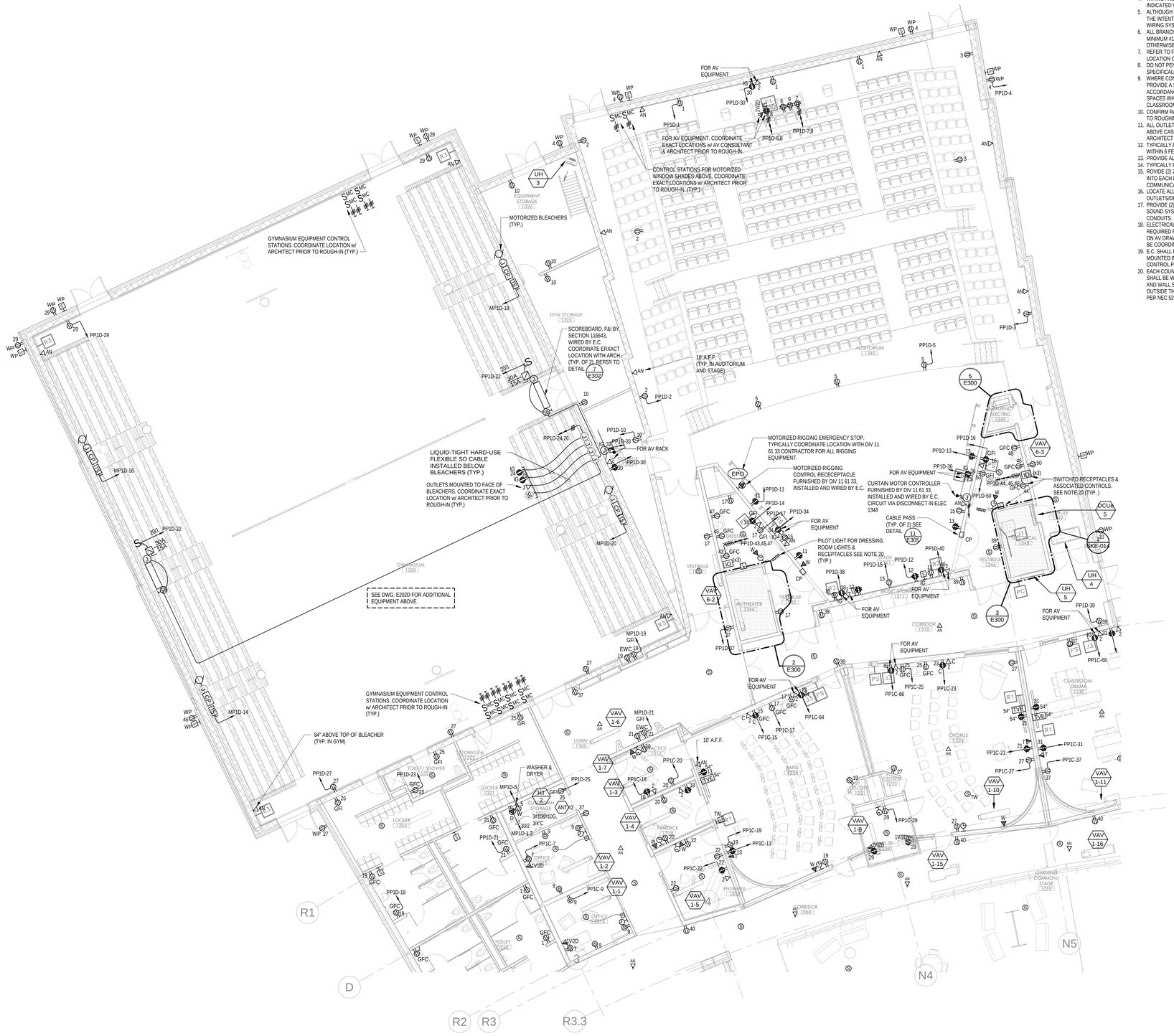
PROJECT NO. 1722

DRAWING NO.

E201C

GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIO/VISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN I/O MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.



1 / E201D FIRST FLOOR PLAN - PART 1-D - POWER
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

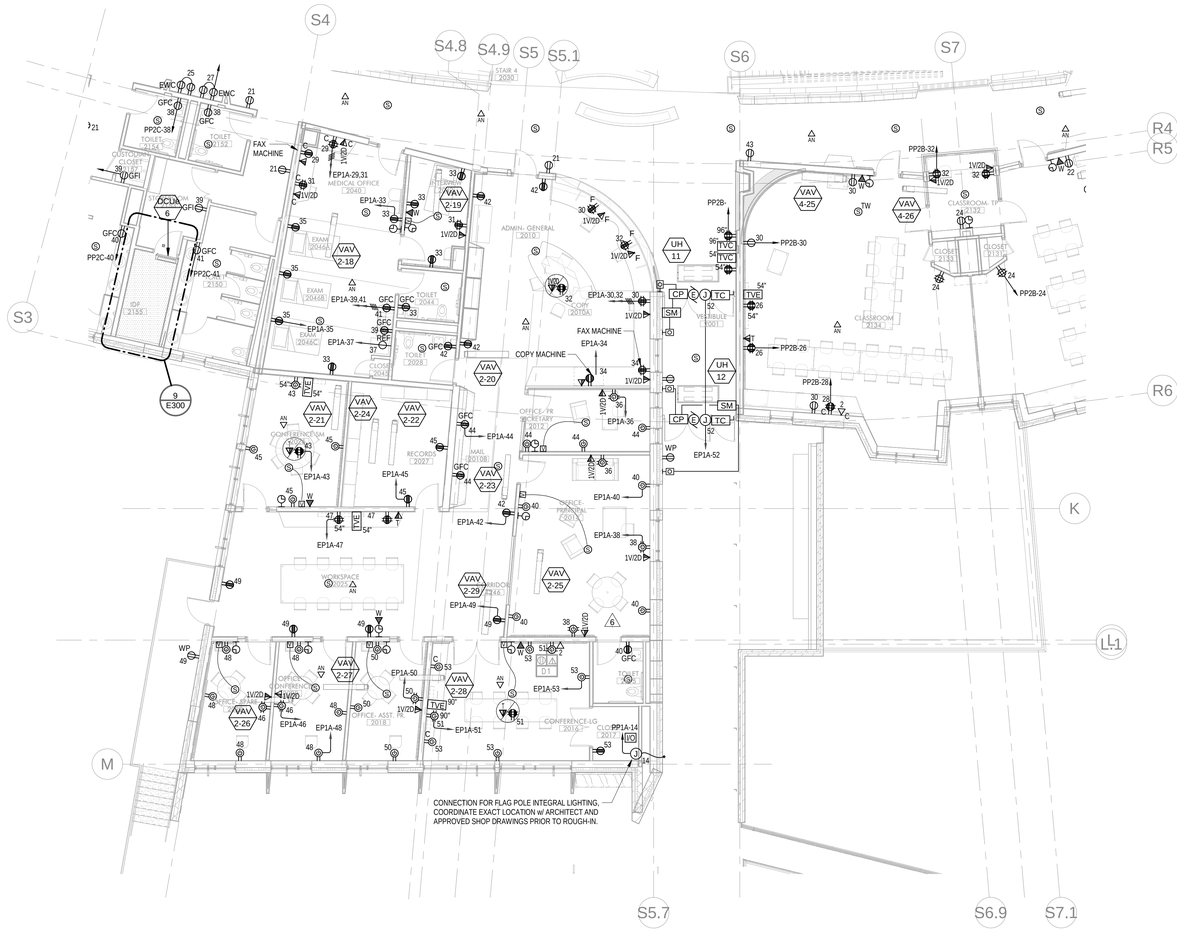
DRAWING NAME
FIRST FLOOR PLAN
PART D - POWER

PROJECT NO. 1722

DRAWING NO.
E201D

GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386. EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIOVISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN I/O MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.



1 E202A SECOND FLOOR PLAN - PART 2-A - POWER
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 - E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

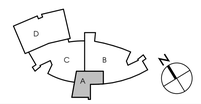
REVISIONS

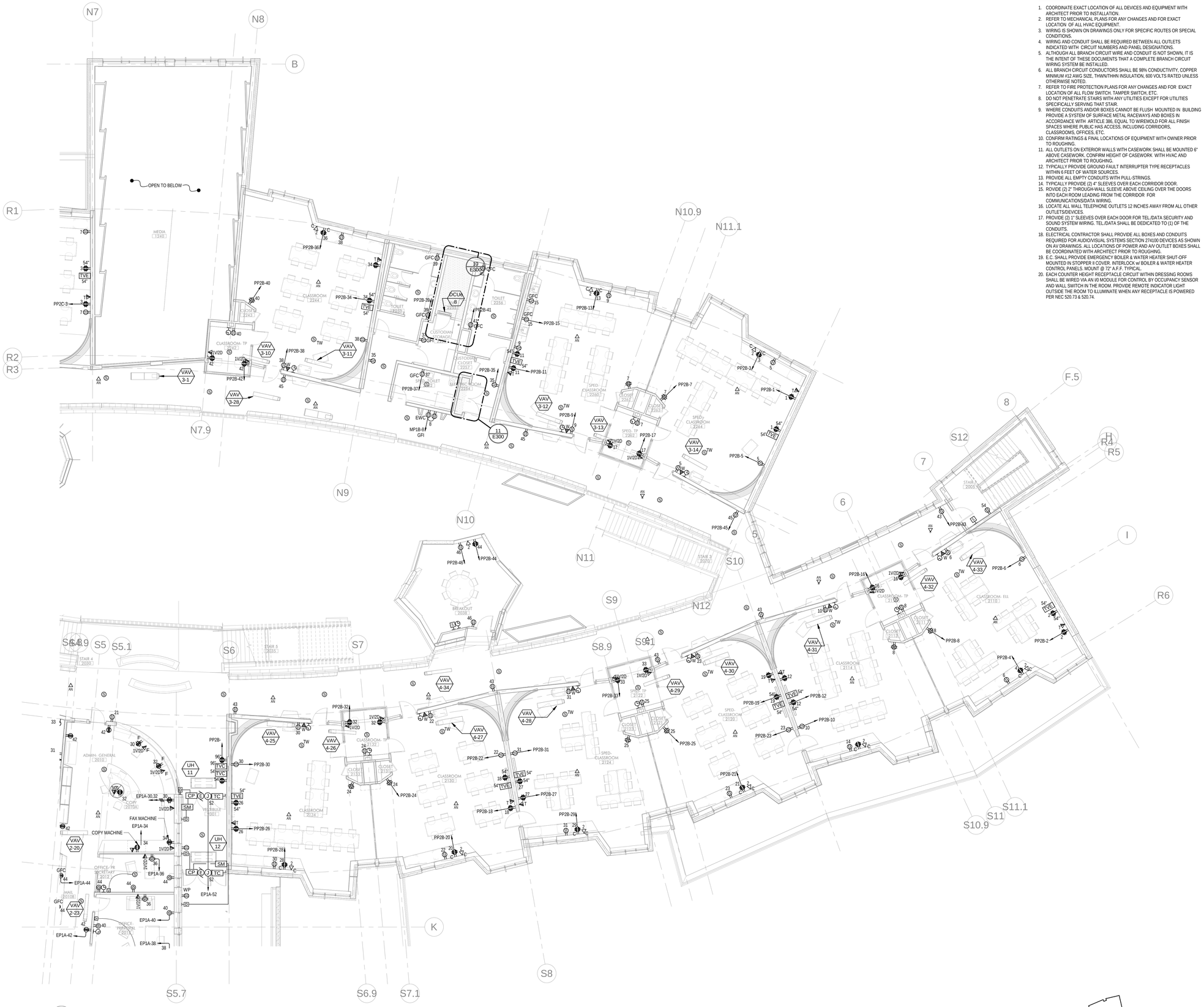
No.	Date	Description
6	12/09/2019	ADDENDUM # 6
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART A - POWER

PROJECT NO. 1722

DRAWING NO.
E202A





1 SECOND FLOOR PLAN - PART 2-B - POWER
E202B SCALE: 1/8" = 1'-0"

GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIO/VISUAL SYSTEMS SECTION 2741/00 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN IO MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 2258
508 - 998 - 5700 FAX 508 - 998 - 0883 E - MAIL info@ggd - pc.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

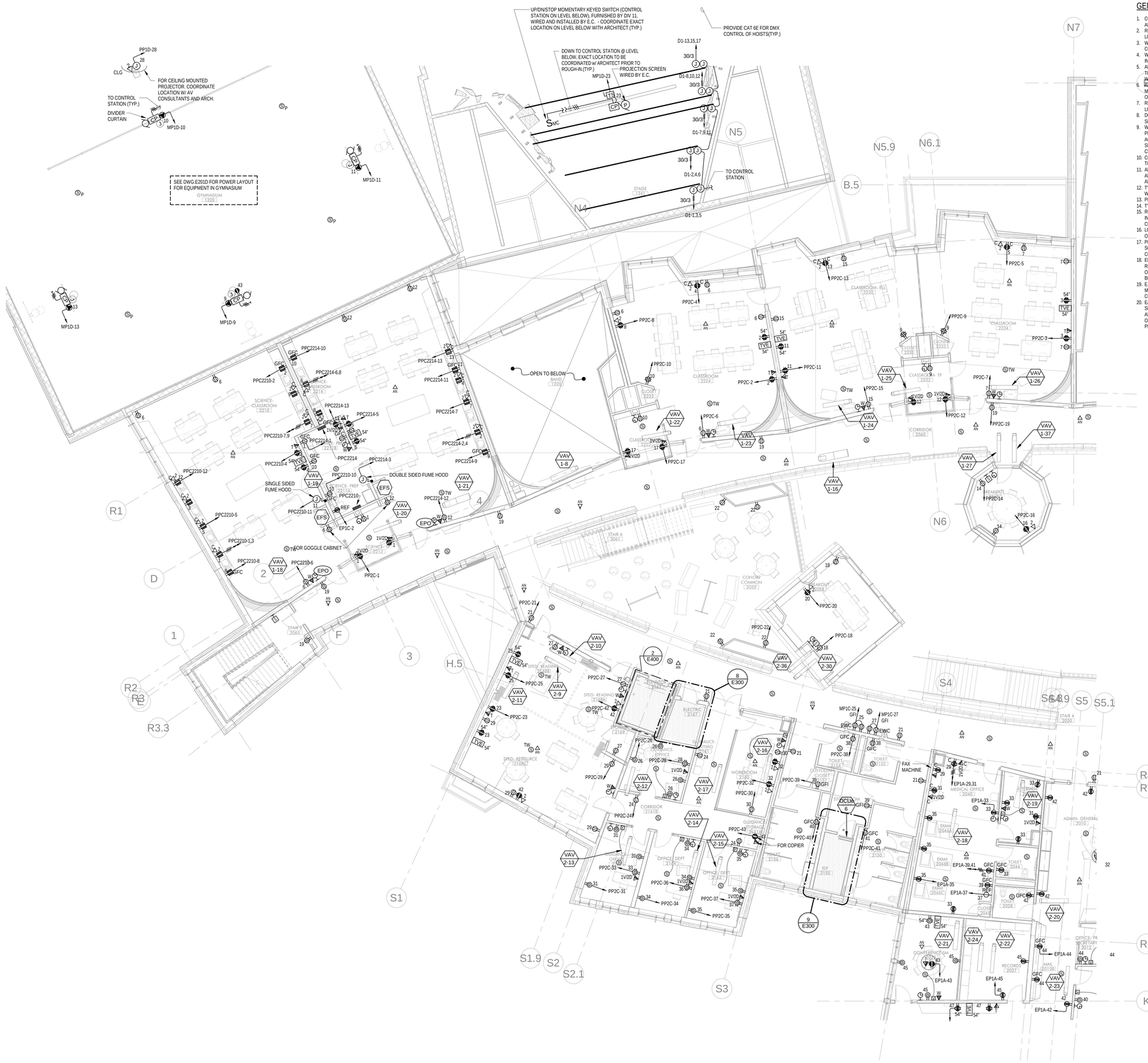
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART B - POWER

PROJECT NO. 1722

DRAWING NO.
E202B



GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIO/VISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN I/O MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.

1 E202C SECOND FLOOR PLAN - PART 2-C - POWER
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8.	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART C - POWER

PROJECT NO. 1722

DRAWING NO.
E202C

GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIO/VISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN I/O MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.

1 E202D SECOND FLOOR PLAN - PART 2-D - POWER
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

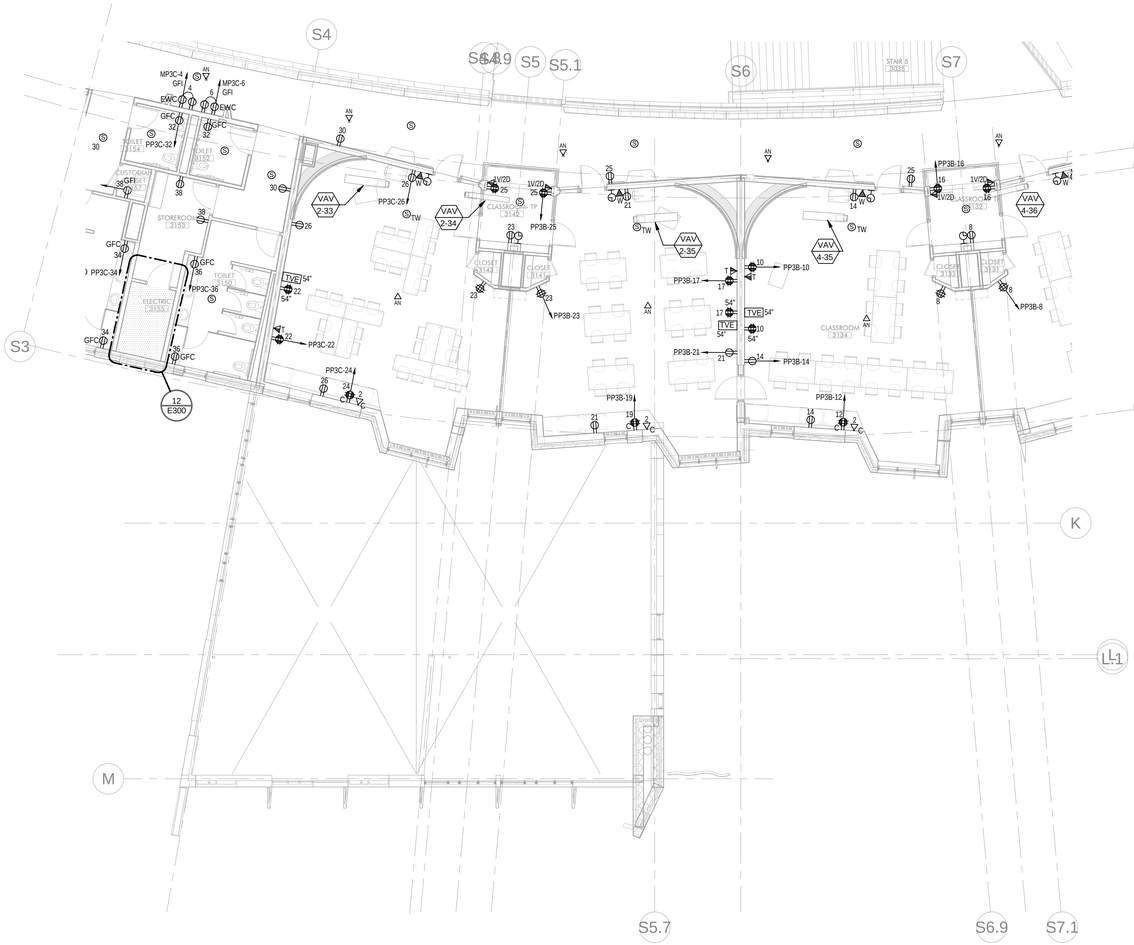
DRAWING NAME
SECOND FLOOR PLAN PART D - POWER

PROJECT NO. 1722

DRAWING NO.
E202D

GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH. TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIO/VISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER, INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN I/O MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.



1 E203A THIRD FLOOR PLAN - PART 3-A - POWER
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

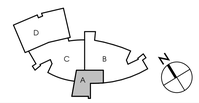
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN
PART A - POWER

PROJECT NO. 1722

DRAWING NO.
E203A



GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIOVISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN (8) MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.

1 E203B THIRD FLOOR PLAN - PART 3-B - POWER
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN
PART B - POWER

PROJECT NO. 1722

DRAWING NO.
E203B

GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIOVISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN I/O MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.

1 E203C THIRD FLOOR PLAN - PART 3-C - POWER
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0903 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

DRAWING NAME

THIRD FLOOR PLAN
PART C - POWER

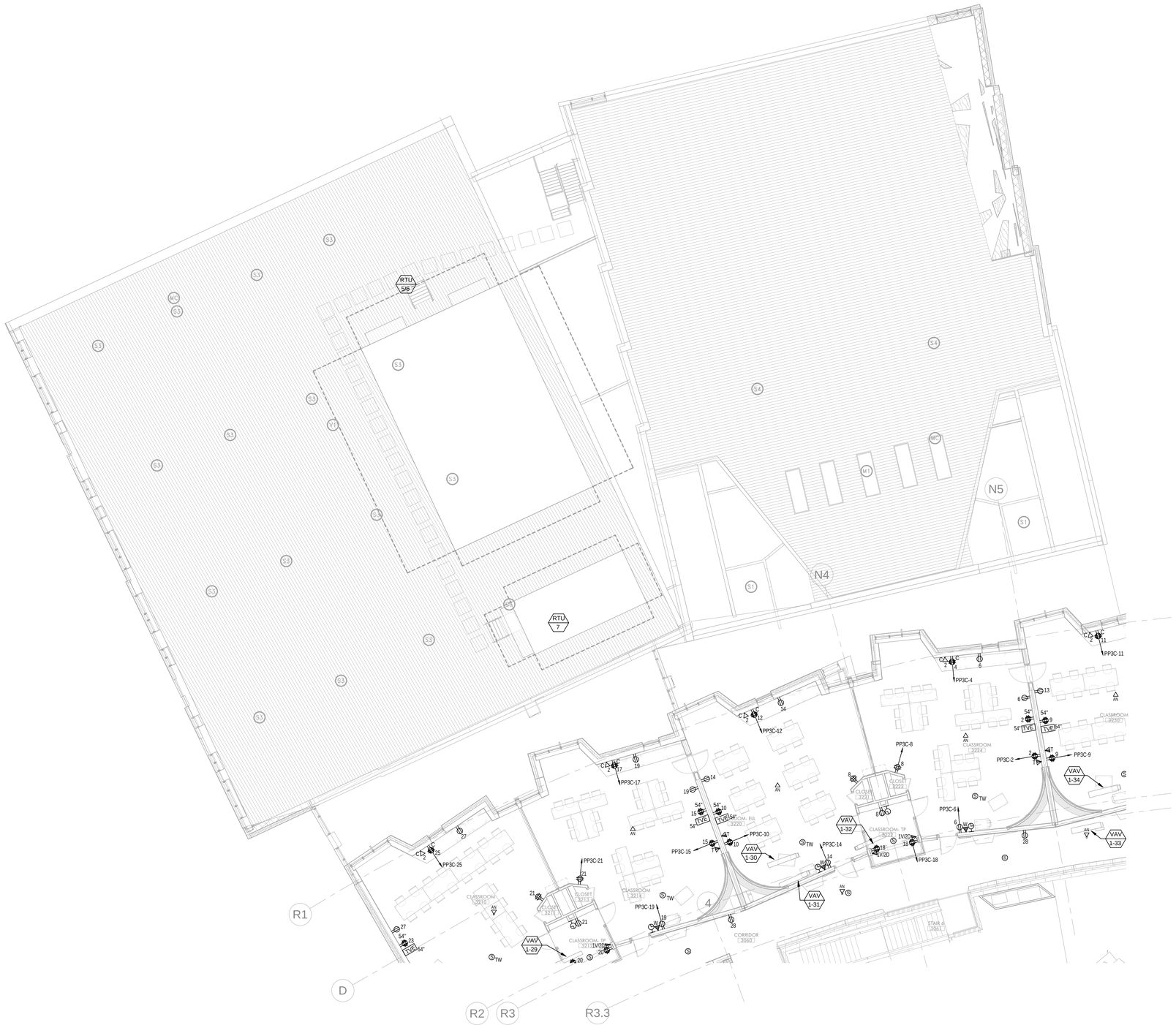
PROJECT NO. 1722

DRAWING NO.

E203C

GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIO/VISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN I/O MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.



1 / E203D THIRD FLOOR PLAN - PART 3-D - POWER
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0903 E - Mail, info@g g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

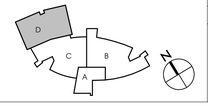
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN
PART D - POWER

PROJECT NO. 1722

DRAWING NO.
E203D

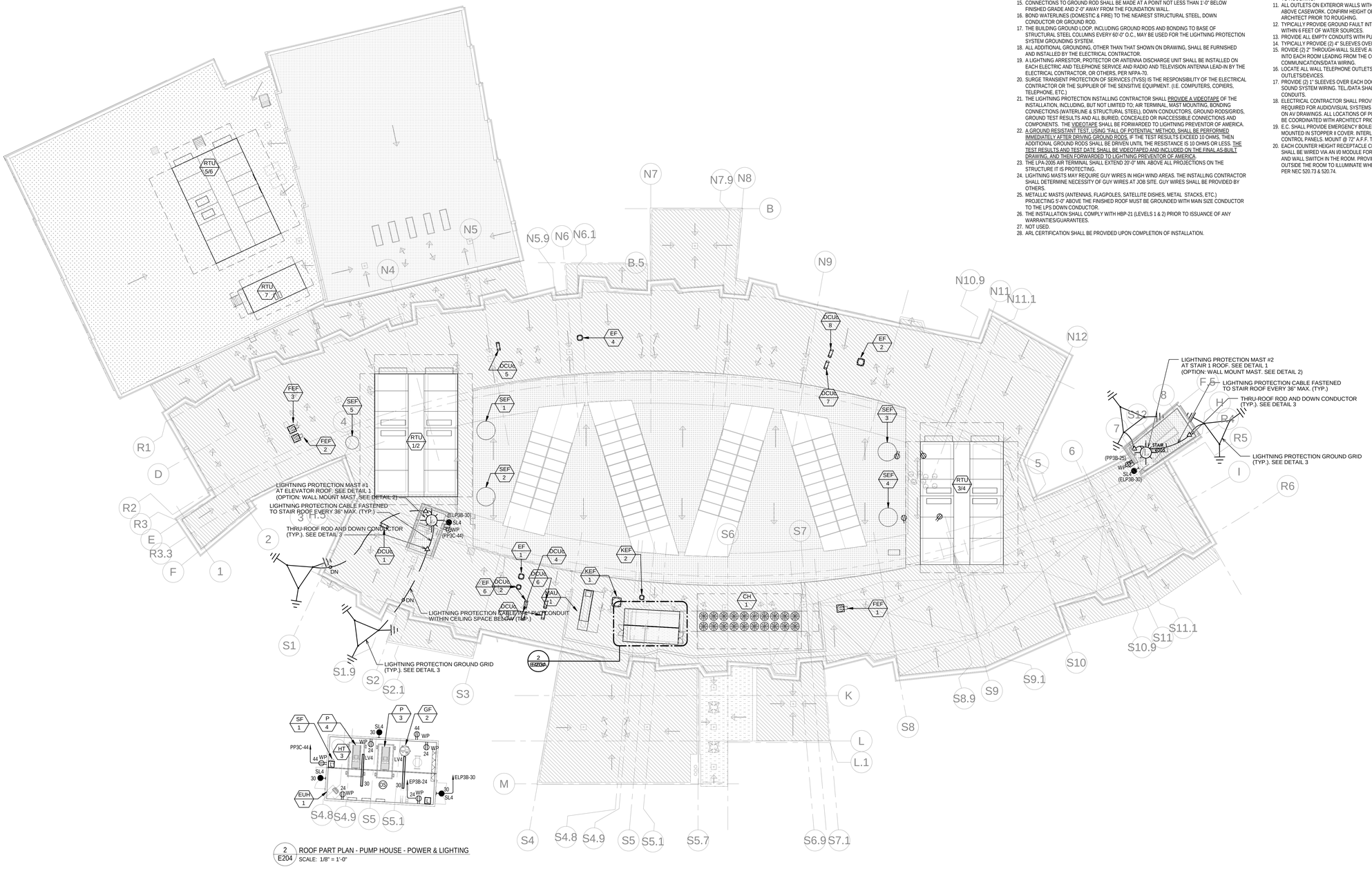


LIGHTNING PROTECTION NOTES:

1. LIGHTNING PROTECTION CONDUCTORS SHALL MAINTAIN A HORIZONTAL OR DOWNWARD COURSE, AVOIDING NUMEROUS BENDS AND TURNS CONDUCTORS SHALL ALSO BE FREE FROM "U" OR "V" (DOWN AND UP) POCKETS.
2. NO BEND OF A CONDUCTOR SHALL FORM AN ANGLE OF LESS THAN 90° NOR SHALL HAVE A RADIUS OF BEND LESS THAN 8 INCHES.
3. ALL ADHESIVE CABLE FASTENERS SHALL BE SECURED TO THE ROOF WITH AN ADHESIVE COMPOUND OR PITCH THAT COMPLIES WITH THE ROOFING BOND REQUIREMENTS PER THE ROOF MANUFACTURER'S GUARANTEE. ADHESIVE COMPOUND SHALL BE FURNISHED BY THE ROOFING CONTRACTOR.
4. ALL PROPER ROOF FLASHINGS SHALL BE FURNISHED, INSTALLED AND WEATHERPROOFED BY THE ROOFING CONTRACTOR PER THE ROOF MANUFACTURER'S GUARANTEE.
5. ALL PVC CONDUIT SHALL BE FURNISHED, INSTALLED, WEATHERPROOFED AND MAINTAINED FREE FROM OBSTRUCTIONS BY THE ELECTRICAL CONTRACTOR.
6. ACTUAL JOB SITE CONDITIONS MAY REQUIRE SLIGHT ALTERATIONS IN MAST, DOWNLEAD AND GROUND ROD LOCATIONS.
7. BARE COPPER MATERIALS SHALL NOT BE INSTALLED ON ALUMINUM OR GALVALUM SURFACES, AND ALUMINUM MATERIALS SHALL NOT BE INSTALLED ON COPPER SURFACES.
8. ALL LIGHTNING PROTECTION CONDUCTORS SHALL BE FASTENED EVERY 3'-0" MAXIMUM.
9. BOND STRUCTURAL STEEL OR REBAR TO NEAREST DOWN CONDUCTOR OR GROUND ROD.
10. ALL BOLTS ON BOLT PRESSURE CONNECTORS SHALL BE TORQUED AT 150 FT-LB.
11. ALL CONNECTIONS MUST BE USED WITH UL LISTED CABLE OF THE SAME METAL TYPE.
12. THE LIGHTNING PROTECTION SYSTEM SHALL BE INSTALLED
13. IN A NEAT WORKMANLIKE AND INCONSPICUOUS MANNER.
14. PRIOR TO GROUND CONNECTION ON ANY STRUCTURAL STEEL FRAMING, REMOVE ALL PAINT, GREASE, RUST, ETC.
15. CONNECTIONS TO GROUND ROD SHALL BE MADE AT A POINT NOT LESS THAN 1'-0" BELOW FINISHED GRADE AND 2'-0" AWAY FROM THE FOUNDATION WALL.
16. BOND WATERLINES (DOMESTIC & FIRE) TO THE NEAREST STRUCTURAL STEEL, DOWN CONDUCTOR OR GROUND ROD.
17. THE BUILDING GROUND LOOP, INCLUDING GROUND RODS AND BONDING TO BASE OF STRUCTURAL STEEL COLUMNS EVERY 60'-0" O.C., MAY BE USED FOR THE LIGHTNING PROTECTION SYSTEM GROUNDING SYSTEM.
18. ALL ADDITIONAL GROUNDING, OTHER THAN THAT SHOWN ON DRAWING, SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
19. A LIGHTNING ARRESTOR, PROTECTOR OR ANTENNA DISCHARGE UNIT SHALL BE INSTALLED ON EACH ELECTRIC AND TELEPHONE SERVICE AND RADIO AND TELEVISION ANTENNA LEAD-IN BY THE ELECTRICAL CONTRACTOR, OR OTHERS, PER NFPA-70.
20. SURGE TRANSIENT PROTECTION OF SERVICES (TVSS) IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR OR THE SUPPLIER OF THE SENSITIVE EQUIPMENT. (I.E. COMPUTERS, COPIERS, TELEPHONE, ETC.)
21. THE LIGHTNING PROTECTION INSTALLING CONTRACTOR SHALL PROVIDE A VIDEOTAPE OF THE INSTALLATION, INCLUDING, BUT NOT LIMITED TO; AIR TERMINAL, MAST MOUNTING, BONDING CONNECTIONS (WATERLINE & STRUCTURAL STEEL), DOWN CONDUCTORS, GROUND RODS/GRIDS, GROUND TEST RESULTS AND ALL BURIED, CONCEALED OR INACCESSIBLE CONNECTIONS AND COMPONENTS. THE VIDEOTAPE SHALL BE FORWARDED TO LIGHTNING PREVENTOR OF AMERICA.
22. A GROUND RESISTANT TEST, USING "FALL OF POTENTIAL" METHOD, SHALL BE PERFORMED IMMEDIATELY AFTER DRIVING GROUND RODS. IF THE TEST RESULTS EXCEED 10 OHMS, THEN ADDITIONAL GROUND RODS SHALL BE DRIVEN UNTIL THE RESISTANCE IS 10 OHMS OR LESS. THE TEST RESULTS AND TEST DATE SHALL BE VIDEOTAPED AND INCLUDED ON THE FINAL AS-BUILT DRAWING, AND THEN FORWARDED TO LIGHTNING PREVENTOR OF AMERICA.
23. THE LPA-2005 AIR TERMINAL SHALL EXTEND 20'-0" MIN. ABOVE ALL PROJECTIONS ON THE STRUCTURE IT IS PROTECTING.
24. LIGHTNING MASTS MAY REQUIRE GUY WIRES IN HIGH WIND AREAS. THE INSTALLING CONTRACTOR SHALL DETERMINE NECESSITY OF GUY WIRES AT JOB SITE. GUY WIRES SHALL BE PROVIDED BY OTHERS.
25. METALLIC MASTS (ANTENNAS, FLAGPOLES, SATELLITE DISHES, METAL STACKS, ETC.) PROJECTING 5'-0" ABOVE THE FINISHED ROOF MUST BE GROUNDED WITH MAIN SIZE CONDUCTOR TO THE LPS DOWN CONDUCTOR.
26. THE INSTALLATION SHALL COMPLY WITH HBP-21 (LEVELS 1 & 2) PRIOR TO ISSUANCE OF ANY WARRANTIES/GUARANTEES.
27. NOT USED.
28. ARL CERTIFICATION SHALL BE PROVIDED UPON COMPLETION OF INSTALLATION.

GENERAL POWER NOTES:

1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (1) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIO/VISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN (8) MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.



2 E204 ROOF PART PLAN - PUMP HOUSE - POWER & LIGHTING
SCALE: 1/8" = 1'-0"

1 E204 OVERALL ROOF PLAN - POWER & LIGHTNING PROTECTION
SCALE: 1/16" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

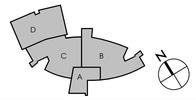
DRAWING NAME

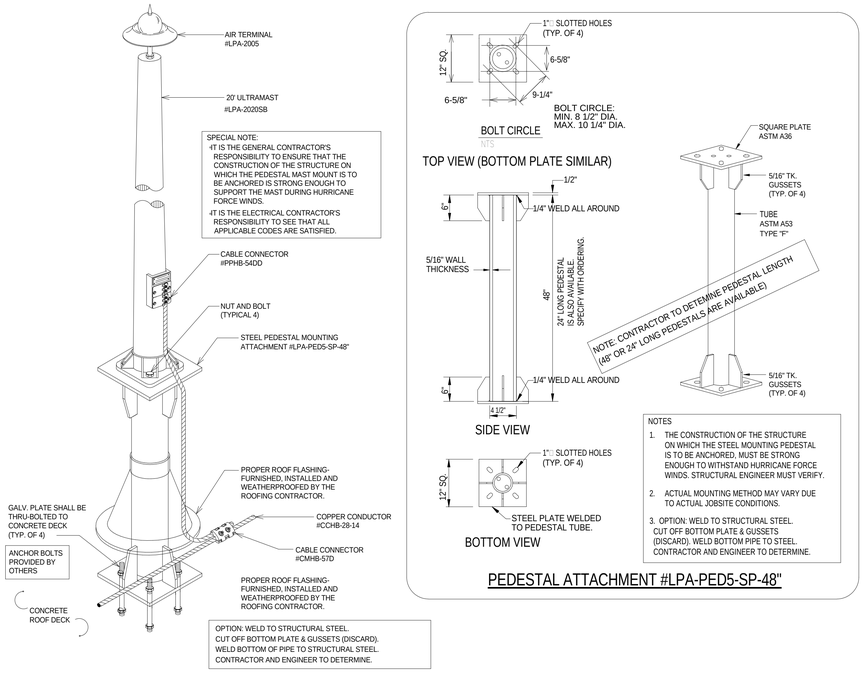
OVERALL ROOF PLAN - POWER & LIGHTNING PROTECTION

PROJECT NO. 1722

DRAWING NO.

E204

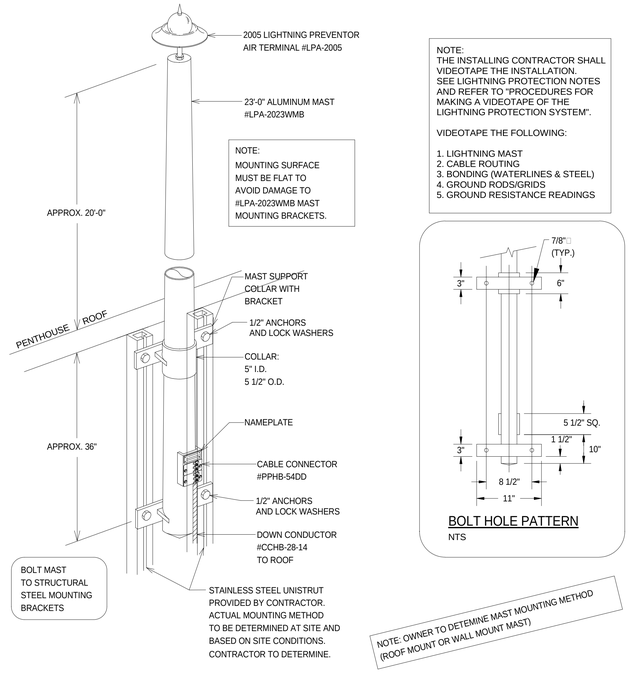




1 LIGHTNING MAST MOUNTING (ROOF MOUNT) - 48" PEDESTAL

NTS

SYMBOL



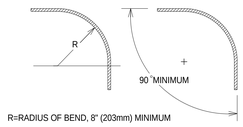
2 OPTIONAL MAST MOUNTING (WALL MOUNT LIGHTNING MAST)

NTS

SYMBOL

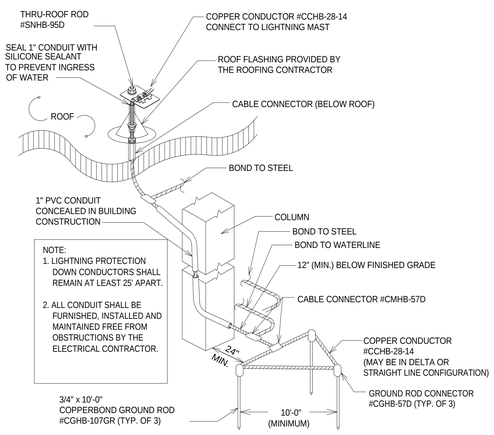
LIGHTNING PROTECTION LEGEND

	LIGHTNING PREVENTOR AIR TERMINAL 2005, 20'-0" ALUMINUM MAST AND PEDESTAL MOUNTING ATTACHMENT (ROOF MOUNT) (OR)	#LPA-2005, #LPA-2020SB, #LPA-PED5-SP-48
	LIGHTNING PREVENTOR AIR TERMINAL 2005 & 23'-0" ALUMINUM MAST (WALL MOUNT)	#LPA-2005, #LPA-2023WMB
	COPPER LIGHTNING PROTECTION CABLE	#CCHB-28-14
	CABLE FASTENERS (FASTEN CABLE EVERY 3FT. MAX.)	#CFHB-72, 64/80SS
△	THRU-ROOF ROD	#CNHB-95D
	CABLE CONNECTOR (AT BASE OF LIGHTNING MAST)	#PPHB-54DD
	BONDING PLATE (TO STEEL)	#PPHB-54D
	CABLE CONNECTOR	#CMHB-57D
	WATERLINE CONNECTOR (FIRE & DOMESTIC)	#CMHB-97D
	3/4" x 10'-0" COPPERBOND GROUND ROD AND CONNECTOR	#CGHB-107GR, #CGHB-57D



LIGHTNING CABLE SHALL REMAIN IN A HORIZONTAL OR DOWNWARD PATH AVOIDING "U" & "V" POCKETS (DOWN & UP).
NO BEND OF A CONDUCTOR SHALL FORM AN INCLUDED ANGLE OF LESS THAN 90 DEGREES OR HAVE A RADIUS OF BEND LESS THAN 8".

8" MIN. RADIUS BEND IN CABLE



NOTES:

1. PROVIDE BONDING CONNECTION #CMHB-97D TO WATERLINE (FIRE & DOMESTIC) AND CONNECT COPPER CABLE #CCHB-28-14 TO NEAREST DOWN CONDUCTOR, GROUND ROD OR STRUCTURAL STEEL FRAMEWORK.
2. PROVIDE BONDING PLATE #PPHB-54D TO STRUCTURAL STEEL OR REBAR AT EACH DOWN CONDUCTOR, AND CONNECT COPPER CABLE #CCHB-28-14 TO NEAREST DOWN CONDUCTOR OR GROUND ROD.
3. THE LIGHTNING PROTECTION SYSTEM INSTALLING CONTRACTOR SHALL PERFORM A RESISTANCE-TO-GROUND TEST IMMEDIATELY AFTER DRIVING GROUND RODS. IF THE TEST RESULTS EXCEED 10 OHMS, THEN ADDITIONAL GROUND RODS SHALL BE DRIVEN UNTIL THE RESISTANCE IS LESS THAN 10 OHMS. THE TEST RESULTS FOR EACH GROUND ROD SHALL BE VIDEOTAPED AND RECORDED ON THE AS-BUILT DRAWING AND FORWARDED TO LIGHTNING PREVENTOR OF AMERICA.
4. THE LIGHTNING PROTECTION INSTALLING CONTRACTOR SHALL PROVIDE A VIDEOTAPE OF THE INSTALLATION, INCLUDING, BUT NOT LIMITED TO; AIR TERMINAL, MAST MOUNTING, BONDING CONNECTIONS (WATERLINE & STRUCTURAL STEEL), DOWN CONDUCTORS, GROUND RODS/GRIDS, GROUND TEST RESULTS AND ALL BURIED, CONCEALED OR INACCESSIBLE CONNECTIONS AND COMPONENTS. THE VIDEOTAPE SHALL BE FORWARDED TO LIGHTNING PREVENTOR OF AMERICA.

NOTE:
1. 24" x 24" GROUND PLATES MAY BE USED IF SOIL CONDITIONS DO NOT ALLOW DRIVING OF GROUND RODS.
2. LIGHTNING PROTECTION DOWN CONDUCTORS SHALL REMAIN AT LEAST 10' APART.
3. FIBERGLASS, RGS, EMT, ETC. CONDUIT MAY BE USED IF LOCAL CODES DO NOT ALLOW USE OF PVC CONDUIT. METALLIC CONDUIT SHALL BE BONDED AT EACH END TO THE LIGHTNING DOWN CONDUCTOR.
4. ALL CONDUIT SHALL BE FURNISHED, INSTALLED AND MAINTAINED FREE FROM OBSTRUCTIONS BY THE ELECTRICAL CONTRACTOR.

3 LIGHTNING PROTECTION GROUNDING

NTS

SYMBOL △

LIGHTNING PROTECTION NOTES

1. LIGHTNING PROTECTION CONDUCTORS SHALL MAINTAIN A HORIZONTAL OR DOWNWARD COURSE, AVOIDING NUMEROUS BENDS AND TURNS CONDUCTORS SHALL ALSO BE FREE FROM "U" OR "V" (DOWN AND UP) POCKETS.
2. NO BEND OF A CONDUCTOR SHALL FORM AN ANGLE OF LESS THAN 90° NOR SHALL HAVE A RADIUS OF BEND LESS THAN 8 INCHES.
3. ALL ADHESIVE CABLE FASTENERS SHALL BE SECURED TO THE ROOF WITH AN ADHESIVE COMPOUND OR PITCH THAT COMPLIES WITH THE ROOFING BOND REQUIREMENTS PER THE ROOF MANUFACTURER'S GUARANTEE. ADHESIVE COMPOUND SHALL BE FURNISHED BY THE ROOFING CONTRACTOR.
4. ALL PROPER ROOF FLASHINGS SHALL BE FURNISHED, INSTALLED AND WEATHERPROOFED BY THE ROOFING CONTRACTOR PER THE ROOF MANUFACTURER'S GUARANTEE.
5. ALL PVC CONDUIT SHALL BE FURNISHED, INSTALLED, WEATHERPROOFED AND MAINTAINED FREE FROM OBSTRUCTIONS BY THE ELECTRICAL CONTRACTOR.
6. ACTUAL JOB SITE CONDITIONS MAY REQUIRE SLIGHT ALTERATIONS IN MAST, DOWNLEAD AND GROUND ROD LOCATIONS.
7. BARE COPPER MATERIALS SHALL NOT BE INSTALLED ON ALUMINUM OR GALVALUM SURFACES, AND ALUMINUM MATERIALS SHALL NOT BE INSTALLED ON COPPER SURFACES.
8. ALL LIGHTNING PROTECTION CONDUCTORS SHALL BE FASTENED EVERY 3'-0" MAXIMUM.
9. BOND STRUCTURAL STEEL OR REBAR TO NEAREST DOWN CONDUCTOR OR GROUND ROD.
10. ALL BOLTS ON BOLT PRESSURE CONNECTORS SHALL BE TORQUED AT 150 FT-LB.
11. ALL CONNECTIONS MUST BE USED WITH UL LISTED CABLE OF THE SAME METAL TYPE.
12. THE LIGHTNING PROTECTION SYSTEM SHALL BE INSTALLED IN A NEAT WORKMANLIKE AND INCONSPICUOUS MANNER.
13. PRIOR TO GROUND CONNECTION ON ANY STRUCTURAL STEEL FRAMING, REMOVE ALL PAINT, GREASE, RUST, ETC.
14. CONNECTIONS TO GROUND ROD SHALL BE MADE AT A POINT NOT LESS THAN 1'-0" BELOW FINISHED GRADE AND 2'-0" AWAY FROM THE FOUNDATION WALL.
15. BOND WATERLINES (DOMESTIC & FIRE) TO THE NEAREST STRUCTURAL STEEL, DOWN CONDUCTOR OR GROUND ROD.
16. THE BUILDING GROUND LOOP, INCLUDING GROUND RODS AND BONDING TO BASE OF STRUCTURAL STEEL COLUMNS EVERY 60'-0" O.C., MAY BE USED FOR THE LIGHTNING PROTECTION SYSTEM GROUNDING SYSTEM.
17. ALL ADDITIONAL GROUNDING, OTHER THAN THAT SHOWN ON DRAWING, SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
18. A LIGHTNING ARRESTOR, PROTECTOR OR ANTENNA DISCHARGE UNIT SHALL BE INSTALLED ON EACH ELECTRIC AND TELEPHONE SERVICE AND RADIO AND TELEVISION ANTENNA LEAD-IN BY THE ELECTRICAL CONTRACTOR, OR OTHERS, PER NFPA-70.
19. SURGE TRANSIENT PROTECTION OF SERVICES (TVSS) IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR OR THE SUPPLIER OF THE SENSITIVE EQUIPMENT. (I.E. COMPUTERS, COPIERS, TELEPHONE, ETC.)
20. THE LIGHTNING PROTECTION INSTALLING CONTRACTOR SHALL PROVIDE A VIDEOTAPE OF THE INSTALLATION, INCLUDING, BUT NOT LIMITED TO; AIR TERMINAL, MAST MOUNTING, BONDING CONNECTIONS (WATERLINE & STRUCTURAL STEEL), DOWN CONDUCTORS, GROUND RODS/GRIDS, GROUND TEST RESULTS AND ALL BURIED, CONCEALED OR INACCESSIBLE CONNECTIONS AND COMPONENTS. THE VIDEOTAPE SHALL BE FORWARDED TO LIGHTNING PREVENTOR OF AMERICA.
21. A GROUND RESISTANT TEST, USING "FALL OF POTENTIAL" METHOD, SHALL BE PERFORMED IMMEDIATELY AFTER DRIVING GROUND RODS. IF THE TEST RESULTS EXCEED 10 OHMS, THEN ADDITIONAL GROUND RODS SHALL BE DRIVEN UNTIL THE RESISTANCE IS 10 OHMS OR LESS. THE TEST RESULTS AND TEST DATE SHALL BE VIDEOTAPED AND INCLUDED ON THE FINAL AS-BUILT DRAWING, AND THEN FORWARDED TO LIGHTNING PREVENTOR OF AMERICA .
22. THE LPA-2005 AIR TERMINAL SHALL EXTEND 20'-0" MIN. ABOVE ALL PROJECTIONS ON THE STRUCTURE IT IS PROTECTING.
23. LIGHTNING MASTS MAY REQUIRE GUY WIRES IN HIGH WIND AREAS. THE INSTALLING CONTRACTOR SHALL DETERMINE NECESSITY OF GUY WIRES AT JOB SITE. GUY WIRES SHALL BE PROVIDED BY OTHERS.
24. METALLIC MASTS (ANTENNAS, FLAGPOLES, SATELLITE DISHES, METAL STACKS, ETC.) PROJECTING 5'-0" ABOVE THE FINISHED ROOF MUST BE GROUNDED WITH MAIN SIZE CONDUCTOR TO THE LPS DOWN CONDUCTOR.
25. THE INSTALLATION SHALL COMPLY WITH HBP-21 (LEVELS 1 & 2) PRIOR TO ISSUANCE OF ANY WARRANTIES/GUARANTEES.
26. NOT USED.
27. ARL CERTIFICATION SHALL BE PROVIDED UPON COMPLETION OF INSTALLATION.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

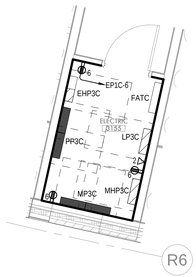
DRAWING NAME

LIGHTNING PROTECTION DETAILS

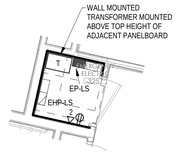
PROJECT NO. 1722

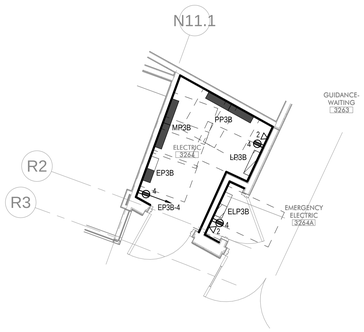
DRAWING NO.

E205



12 E300 THIRD FLOOR - PART 3-C - ELEC RM.3155 - POWER
SCALE: 1/4" = 1'-0"

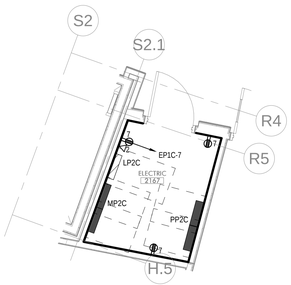




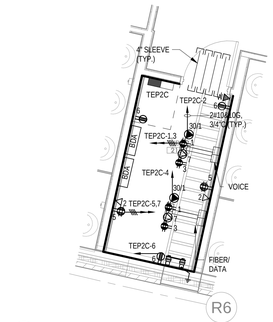
14 E300 THIRD FLOOR - PART 3-B - ELEC RM.3264 & EMERG ELE.RM.3264A - POWER
SCALE: 1/4" = 1'-0"

GENERAL POWER NOTES:

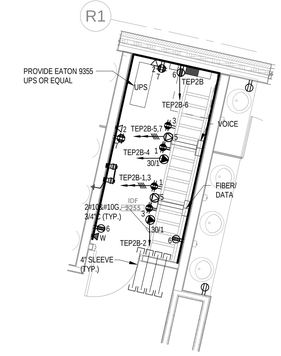
1. COORDINATE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT WITH ARCHITECT PRIOR TO INSTALLATION.
2. REFER TO MECHANICAL PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL HVAC EQUIPMENT.
3. WIRING IS SHOWN ON DRAWINGS ONLY FOR SPECIFIC ROUTES OR SPECIAL CONDITIONS.
4. WIRING AND CONDUIT SHALL BE REQUIRED BETWEEN ALL OUTLETS INDICATED WITH CIRCUIT NUMBERS AND PANEL DESIGNATIONS.
5. ALTHOUGH ALL BRANCH CIRCUIT WIRE AND CONDUIT IS NOT SHOWN, IT IS THE INTENT OF THESE DOCUMENTS THAT A COMPLETE BRANCH CIRCUIT WIRING SYSTEM BE INSTALLED.
6. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE 98% CONDUCTIVITY, COPPER MINIMUM #12 AWG SIZE, THWN/THHN INSULATION, 600 VOLTS RATED UNLESS OTHERWISE NOTED.
7. REFER TO FIRE PROTECTION PLANS FOR ANY CHANGES AND FOR EXACT LOCATION OF ALL FLOW SWITCH, TAMPER SWITCH, ETC.
8. DO NOT PENETRATE STAIRS WITH ANY UTILITIES EXCEPT FOR UTILITIES SPECIFICALLY SERVING THAT STAIR.
9. WHERE CONDUITS AND/OR BOXES CANNOT BE FLUSH MOUNTED IN BUILDING PROVIDE A SYSTEM OF SURFACE METAL RACEWAYS AND BOXES IN ACCORDANCE WITH ARTICLE 386, EQUAL TO WIREMOLD FOR ALL FINISH SPACES WHERE PUBLIC HAS ACCESS, INCLUDING CORRIDORS, CLASSROOMS, OFFICES, ETC.
10. CONFIRM RATINGS & FINAL LOCATIONS OF EQUIPMENT WITH OWNER PRIOR TO ROUGHING.
11. ALL OUTLETS ON EXTERIOR WALLS WITH CASEWORK SHALL BE MOUNTED 6" ABOVE CASEWORK. CONFIRM HEIGHT OF CASEWORK WITH HVAC AND ARCHITECT PRIOR TO ROUGHING.
12. TYPICALLY PROVIDE GROUND FAULT INTERRUPTER TYPE RECEPTACLES WITHIN 6 FEET OF WATER SOURCES.
13. PROVIDE ALL EMPTY CONDUITS WITH PULL-STRINGS.
14. TYPICALLY PROVIDE (2) 4" SLEEVES OVER EACH CORRIDOR DOOR.
15. ROVIDE (2) 2" THROUGH-WALL SLEEVE ABOVE CEILING OVER THE DOORS INTO EACH ROOM LEADING FROM THE CORRIDOR FOR COMMUNICATIONS/DATA WIRING.
16. LOCATE ALL WALL TELEPHONE OUTLETS 12 INCHES AWAY FROM ALL OTHER OUTLETS/DEVICES.
17. PROVIDE (2) 1" SLEEVES OVER EACH DOOR FOR TEL./DATA SECURITY AND SOUND SYSTEM WIRING. TEL./DATA SHALL BE DEDICATED TO (2) OF THE CONDUITS.
18. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL BOXES AND CONDUITS REQUIRED FOR AUDIO/VISUAL SYSTEMS SECTION 274100 DEVICES AS SHOWN ON AV DRAWINGS. ALL LOCATIONS OF POWER AND A/V OUTLET BOXES SHALL BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHING.
19. E.C. SHALL PROVIDE EMERGENCY BOILER & WATER HEATER SHUT-OFF MOUNTED IN STOPPER II COVER. INTERLOCK w/ BOILER & WATER HEATER CONTROL PANELS. MOUNT @ 72" A.F.F. TYPICAL.
20. EACH COUNTER HEIGHT RECEPTACLE CIRCUIT WITHIN DRESSING ROOMS SHALL BE WIRED VIA AN I/O MODULE FOR CONTROL BY OCCUPANCY SENSOR AND WALL SWITCH IN THE ROOM. PROVIDE REMOTE INDICATOR LIGHT OUTSIDE THE ROOM TO ILLUMINATE WHEN ANY RECEPTACLE IS POWERED PER NEC 520.73 & 520.74.



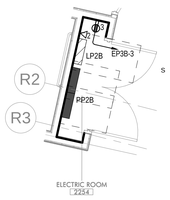
8 E300 SECOND FLOOR - PART 2-C - ELEC RM.2167 - POWER
SCALE: 1/4" = 1'-0"



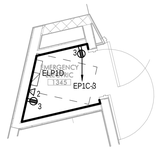
9 E300 SECOND FLOOR - PART 2-C - IDF RM.2155 - POWER
SCALE: 1/4" = 1'-0"



10 E300 SECOND FLOOR - PART 2-B - IDF RM.2255 - POWER
SCALE: 1/4" = 1'-0"



11 E300 SECOND FLOOR - PART 2-B - ELEC RM.2254 - POWER
SCALE: 1/4" = 1'-0"



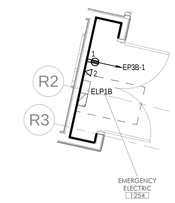
5 E300 FIRST FLOOR - PART 1-D - EMERG. ELEC.RM.1345 - POWER
SCALE: 1/4" = 1'-0"

TECHNOLOGY ROOM NOTES:

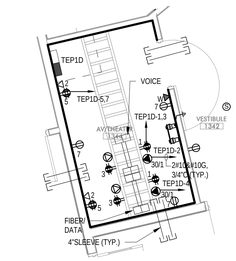
1. CONTRACTOR IS TO USE THE L5-20R RECEPTACLE MOUNTED ON CABLE TRAY FOR POWERING OF ALL EQUIPMENT RACKS.
2. ALL CABLE TRAY IS TO PROVIDED BY E.C. CABLE TRAY SHALL BE 12" W x 4" HIGH AND 6" RUNG ALUMINUM CONSTRUCTION. INSTALL CABLE TRAY 18" ABOVE EQUIPMENT RACK.
3. ELECTRICAL CONTRACTOR SHALL LABEL EACH RECEPTACLE WITH THE CIRCUIT NUMBER AND THE PHASE "A", "B" OR "C" ON THE OUTSIDE FACE OF THE FACEPLATE WITH MACHINE GENERATED LABELS. BLACK LETTERING ON WHITE TAPE. HANDWRITTEN LABELS ARE NOT ACCEPTABLE.
4. PROVIDE CONDUIT SLEEVES FROM MDF/IDF ROOM TO THE NEAREST ACCESSIBLE CEILING SPACE AS REQUIRED TO ACCOMMODATE THE QUANTITY OF CABLES TERMINATED WITHIN THE ROOM. REFER TO DETAIL 20/E3.04. TELECOMMUNICATIONS CONDUIT AND GROUNDING RISER FOR ADDITIONAL CONDUIT SLEEVE INFORMATION.

TECHNOLOGY ROOM LEGEND:

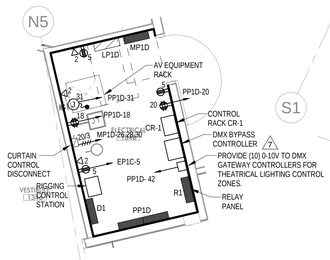
- QUADRAPLEX ELECTRICAL OUTLET WITH 20 AMP DEDICATED CIRCUIT. MOUNTED ABOVE EQUIPMENT RACK ON UNDERSIDE OF CABLE TRAY. COORDINATE EXACT LOCATION OF OUTLET WITH EQUIPMENT RACK INSTALLER.
- NEMA TYPE L5 -20R ELECTRICAL TWIST LOCK RECEPTACLE WITH DEDICATED 20 AMP CIRCUIT. MOUNTED ABOVE EQUIPMENT RACK ON UNDERSIDE OF CABLE TRAY TO RECEIVE NEMA TYPE L5-20P PLUG FROM EQUIPMENT RACK POWER STRIPS AND UNINTERRUPTIBLE POWER SUPPLIES. COORDINATE EXACT LOCATION OF OUTLET WITH EQUIPMENT RACK INSTALLER.
- NEMA TYPE L5 -30R ELECTRICAL TWIST LOCK RECEPTACLE WITH DEDICATED 30 AMP CIRCUIT. MOUNTED ABOVE EQUIPMENT RACK ON UNDERSIDE OF CABLE TRAY TO RECEIVE NEMA TYPE L5-30P PLUG FROM EQUIPMENT RACK POWER STRIPS AND UNINTERRUPTIBLE POWER SUPPLIES. COORDINATE EXACT LOCATION OF OUTLET WITH EQUIPMENT RACK INSTALLER.



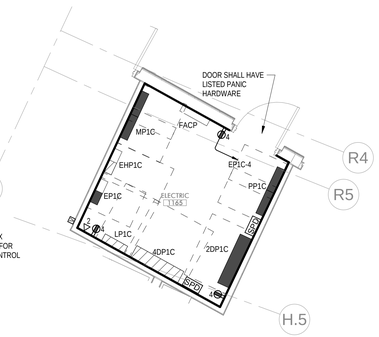
7 E300 FIRST FLOOR - PART 1-B - EMERG.ELEC RM.1254 - POWER
SCALE: 1/4" = 1'-0"



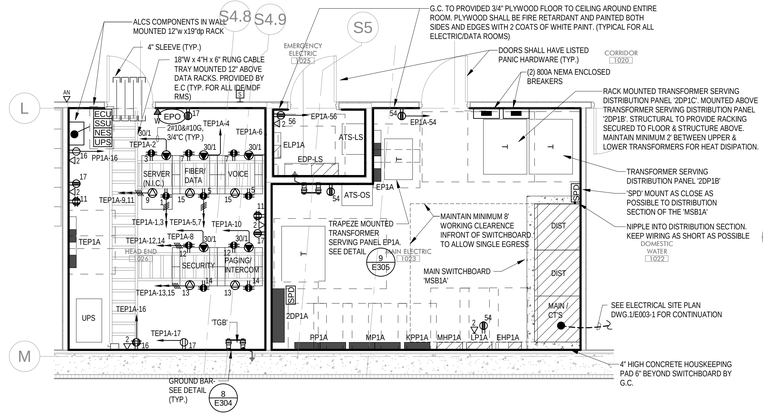
2 E300 FIRST FLOOR - PART 1-D - IDF RM. IT1344 - POWER
SCALE: 1/4" = 1'-0"



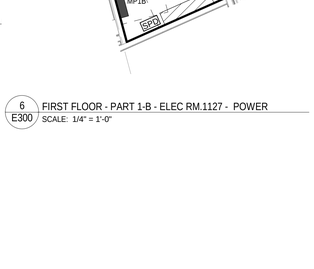
3 E300 FIRST FLOOR - PART 1-D - AV/THEATER ELEC.RM.1348 - POWER
SCALE: 1/4" = 1'-0"



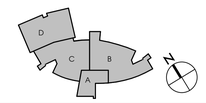
4 E300 FIRST FLOOR - PART 1-C - ELEC RM.1165 - POWER
SCALE: 1/4" = 1'-0"



1 E300 FIRST FLOOR - PART 1-A - MAIN ELEC RM.1023 & HEAD END RM.1026 - POWER
SCALE: 1/4" = 1'-0"



6 E300 FIRST FLOOR - PART 1-B - ELEC RM.1127 - POWER
SCALE: 1/4" = 1'-0"



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
7	12/13/2019	ADDENDUM # 7
8	2/10/2020	Conformance Set

DRAWING NAME
ELECTRICAL ROOMS & IDF ROOMS PLANS - POWER

PROJECT NO. 1722

DRAWING NO.
E300

ROOF

THIRD FLOOR

SECOND FLOOR

FIRST FLOOR

ELECTRICAL ROOM 3155

PANEL MP3C
PANEL PP3C
PANEL LP3C
PANEL MHP3C
PANEL EHP3C
SPD
SEC 1

EPO
PANEL PPB3120
PANEL PPB3124
ST
2DP1B

ELECTRICAL ROOM 3264

PANEL EP3B
PANEL LP3B
PANEL PP3B
PANEL MP3B
SPD
SEC 1
60A/3P

4#3/0 & 1#6G, 2"C

TO SEF-1
TO SEF-2
TO SEF-3
TO SEF-4

4#2 AWG MI CABLE (SINGLE CONDUCTORS)

T-3
K13

PANEL EHP-LS
PANEL EP-LS
PANEL ELP3B
SPD

EMERGENCY ELECTRIC CLOSET 3257

EMERGENCY ELECTRIC CLOSET 3264A

PROVIDE 24kW / 30kVA, .8PF UPS WITH 7 MINUTE BATTERY BACKUP. 208V, 3 PH, 4W INPUT-120/208V, 3 PH, 4W OUTPUT. PROVIDE GROUNDING PER NEC 250- SEPARATELY DERIVED SYSTEMS.

PROVIDE EPO PUSHBUTTON w/ GUARD IN HEAD END RM. LOCATE NEAR DOOR. CONNECT TO INTEGRAL UPS REMOTE EPO RELAY. ALSO PROVIDE (2)20A/2P RELAY, NEMA 1 TO DISCONNECT AC UNIT 'DCUe-3'. THEREFORE WHEN EPO IS ACTIVATED IT SHALL DISCONNECT UPS INCLUDING BATTERY & AC UNIT(S).

PANEL TEP2C
SPD
IDF ROOM 2155

3#2+#1/0N & #6G, 1 1/2"C

4#1 & 1#6G, 1 1/2"C

ELECTRICAL ROOM 2167

PANEL PP2C
PANEL LP2C
SPD
SEC 1

EPO
PANEL PPC2210
PANEL PPC2214
ST
2DP1C

ELECTRICAL ROOM 2254

PANEL LP2B
PANEL PP2B
SPD
SEC 1

4#4 & 1#8G, 1 1/4"C

PANEL TEP2B
SPD
UPS
EPO
60A/3P
4#2 & #8G - 1 1/4"C

IDF ROOM 2255

PROVIDE 12kW / 15kVA, .8PF UPS WITH 8 MINUTE BATTERY BACKUP. 208V, 3 PH, 4W INPUT-120/208V, 3 PH, 4W OUTPUT. PROVIDE GROUNDING PER NEC 250- SEPARATELY DERIVED SYSTEMS.

PROVIDE EPO PUSHBUTTON W/ GUARD IN IDF RM. LOCATE NEAR DOOR. CONNECT TO INTEGRAL UPS REMOTE EPO RELAY. ALSO PROVIDE 20A/2P RELAY, NEMA 1 TO DISCONNECT AC UNIT 'DCUe-9'. THEREFORE WHEN EPO IS ACTIVATED IT SHALL DISCONNECT UPS INCLUDING BATTERY & AC UNIT.

PANEL TEP1A
SPD
SEC 1
60A/3P
200A/3P
UPS
EPO
3#1+#3/0N & #6G, 2"C

HEAD END ROOM 1026

ELECTRICAL ROOM 1165

PANEL MP1C
PANEL PP1C
SEC 1
SEC 2

PANEL EP1C
PANEL LP1C
SPD

TO RTU-2
TO RTU-5
TO RTU-6

2DP1C - SEE SCHEDULE
4DP1C - SEE SCHEDULE

SEE FLOOR PLANS FOR QUANTITIES (TYP.)

4#1/0 & #6G, 2"C

PANEL PP1A
PANEL MP1A
PANEL PL1134
SPD
ST
EPO

4#3/0 & #6G, 2"C

PANEL KPP1A
SPD
SEC 1
SEC 2

2DP1A - SEE SCHEDULE

DISTRIBUTION PANEL - SEE SCHEDULE

PANEL EHP1A
SPD
200A/3P
125A/3P
150A/3P
PANEL EP1A
SEC 1
SEC 2
SEC 3

T-7

EPO
PANEL PPB1110
PANEL PPB1114
ST
2DP1B

ELECTRICAL ROOM 1127

PANEL LP1B
PANEL MP1B
PANEL PP1B
SPD
SEC 1

TO RTU-4

4DP1B - SEE SCHEDULE
2DP1B - SEE SCHEDULE

EMER. ROOM 1254

50A/3P
PANEL ELP1B
SPD

PANEL TEP1D
SPD
IDF ROOM 1343

EMER. ROOM 3254

PANEL ELP1D
SPD

ELECTRICAL ROOM 1348

MOTORIZED RIGGING PANEL D1
RELAY PANEL R1
PANEL PP1D
PANEL MP1D
PANEL LP1D
SPD
SEC 1
60A/3P

FURNISHED BY DIV. 11, INSTALLED BY E.C

4#4 & #8G, 1 1/4"C

T-8
K13

TO CHILLER CH-1

800AT
800AF
CB

T-9
K13

PANEL LP1A
PANEL MHP1A
SPD

(3) 4"C

STUB OUTS FOR FUTURE PV SYSTEM DISCONNECT. LOCATE WITHIN SIGHT OF PAD MOUNT TRANSFORMER COORDINATE EXACT LOCATION WITH UTILITY COMPANY.

SEE ELECTRICAL SITE PLAN FOR PRIMARY SERVICE CONDUIT REQUIREMENTS

PAD MOUNTED TRANSFORMER BY UTILITY CO., CONCRETE PAD BY G.C. GROUNDING BY E.C. PER UTILITY CO. STANDARDS

6 SETS OF: 4# 600KCMIL IN (6) 4"C. PLUS (1) 4"C. SPARE w/ PULL LINE

(3) 4"C BELOW SLAB

2500A.T.
2500A.F
GF
C.T.
P.T.
M

C.T'S AND P.T'S IN SWITCHBOARD BY UTILITY COMPANY

PROVIDE METER SOCKET, METER BY UTILITY Co., ON EXTERIOR.

2#14AWG, 1"C TO BMS.

N
G
MAIN BONDING JUMPER

3000A, 277/480V, 3 PHASE, 4 WIRE

PROVIDE SERVICE GROUND ELECTRODE IN ACCORDANCE WITH CODE.

SEE DETAIL 1 E304

SEE MSB-1A SCHEDULE FOR CONTINUATON

MAIN SWITCHBOARD "MSB1A" SEE SCHEDULE

PV SYSTEM CIR. BKR. (PROVISIONS)

FUTURE PV DIST. PANEL

(6) 2 1/2"C TO PV PULL BOXES (2 PER BOX), SEE SITE PLAN.

LOCATE IN MAIN ELECTRIC ROOM - COORDINATE WITH PV CONTRACTOR / PPA.

3#1 & 1#6G, 1 1/2"C

EP1A
2 E400
SEE
20A 30A

ELEVATOR CONTROLLER

125A 200A

40

ELEV. A-2 (PASSENGER)

2#14AWG, 3/4"C TO FACP

ATS-OS

2#14AWG, 3/4"C TO ELEVATOR CONTROLLER

(2) SETS: 4#350KCMIL & #1/0G, (2) 3"C

600A, 277/480V, 4P AUTOMATIC TRANSFER SWITCH

ATS-OS TO LOAD SHED OFF/ INHIBIT TRANSFER UPON SMOKE CONTROL ACTIVATION SIGNAL FROM FACP.

PROVIDE ATS-OS w/ FOUR N.O. & FOUR N.C. CONTACTS. ALSO PROVIDE #1/4AWG&1#14G-3/4"C TO DDC/ATC PANEL LOCATED IN BOILER ROOM.

2#14AWG, 1"C START CKT

(2) SETS: 4#350KCMIL & #1/0G, (2) 4"C & (1) 4"C SPARE

450kW, 562.5kVA, 0.8PF 277/480, 3 PH, 4W, NATURAL GAS GENERATOR SET WITH 10' STACK

EPO
500A
600A
G
E

ELECTRONIC ADJUSTABLE TRIP BREAKER

EP1A
TO REMOTE ANN.

SEE 12 E304

GROUND PER CODE SEE 11 E304

4#10&#10G-1"C

(2) SETS: 4#350KCMIL & #1/0G, (2) 4"C & (1) 4"C SPARE

PANEL ELP1A
SPD
ATS-LS
2#14AWG, 1"C START CKT

PANEL 4EDP-LS
100A/3P
100A/3P
400A/3P
100A/3P

600A, 277/480V, 4P AUTOMATIC TRANSFER SWITCH.

EMERGENCY ELECTRICAL CLOSET

(2) SETS: 4#350KCMIL & #1/0G, (2) 4"C

PROVIDE CONTACT CLOSURE INTERFACE TO AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) VIA A SINGLE PAIR OF 2#18 CONDUCTORS. UPON TRANSFER FROM NORMAL POWER SOURCE TO EMERGENCY SOURCE, A SIGNAL SHALL BE ISSUED TO THE ALCS TO TURN ALL INTERIOR & EXTERIOR LIGHTING "ON".

4#500KCMIL & #1G, 4"C BELOW SLAB & RISE UP WITHIN 2-HOUR RATED CHASE OR PROVIDE MI CABLE.

WP

EXTERIOR QUICK CONNECT SWITCH EQUAL TO ESL STORM SWITCH 3020 SERIES, MODEL #SSDX-600A-C-600A-C-480-311- S-C

INTERLOCKED SWITCHES

MALE CAM-LOCK CONNECTORS

ROLL-UP GENERATOR CABLE (N.I.C.)

ROLL-UP 277/480V, 3 PH, 4W EMERGENCY GENERATOR (N.I.C.)

EG

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

DRAWING NAME

POWER ONE-LINE RISER

PROJECT NO. 1722

DRAWING NO.

E301

THREE PHASE TRANSFORMER SCHEDULE (K13 RATED) COPPER CONDUCTORS

ID NO	KVA	PRIMARY 480 VOLT					SECONDARY 208 VOLT					GROUNDING ELECTRODE CONDUCTOR (250-66)*
		AMPS	WIRE (THHN)	COND.	C.B.	FUSE	AMPS	WIRE (THHN)	COND.	C.B.	FUSE	
T-1	3	3.6	3#12+#12EG	1/2"	15/3	10	8.3	4#12+#12(EG)	1/2"	15/3	15	#8
T-2	9	10.8	3#12+#12EG	1/2"	20/3	20	25	4#10+#10(EG)	3/4"	30/3	30	#8
T-3	15	18	3#10+#10EG	1/2"	30/3	30	41.6	3#6(Φ)+2#2(N)+1#6(IG)+1#8(EG)	1 1/2"	50/3	50	#8
T-4	30	36	3#6+#10EG	3/4"	60/3	45	83.3	3#2(Φ)+#3/0(N)+1#2(IG)+1#8(EG)	2"	100/3	100	#8
T-5	45	54.3	3#2+#8EG	1 1/4"	90/3	80	125	3#1/0(Φ)+2#1/0(N) +1#1/0(IG)+1#6(EG)	3"	150/3	150	#6
T-6	75	90.2	3#1/0+#6EG	1 1/2"	150/3	150	208	3#250 KCMIL(Φ)+2#250 KCMIL(N) +1#250 KCMIL(IG)+1#4(EG)	4"	250/3	250	#2
T-7	112.5	135.3	3#3/0+#6EG	2"	200/3	200	311	3#600 KCMIL(Φ)+2#600 KCMIL(N) +1#3/0(G)+1#3(EG)	4"	400/3	400	#1/0
T-8	150	180.6	3#350+#4EG	3"	300/3	300	416.8	2 SETS 3#250 KCMIL(Φ)+2#250 KCMIL(N) +1#250KCMIL(IG)+1#2(EG)	2 - 3"	500/3	500	#2/0
T-9	225	270.7	3#500+#3EG	3"	400/3	400	625	2 SETS 3#600 KCMIL(Φ)+2#600 KCMIL(N) +1#3(IG)+1#1/0(EG)	2 - 4"	800/3	800	#2/0
T-10	300	360.8	2 SETS 3#350& #1EG	2-3"	600/3	600	833	3 SETS 3#400KCMIL(Φ)+2#400 KCMIL (N) +1#400KCMIL(IG)+1#2/0(EG)	3 - 3"	1000/3	1000	#3/0

* RUN IN CODE SIZE CONDUIT TO CODE APPROVED GROUNDING ELECTRODE, i.e., BUILDING STEEL, ETC. "EG" INDICATES EQUIPMENT GROUNDING CONDUCTOR, "IG" INDICATES ISOLATED GROUNDING CONDUCTOR, "N" INDICATES NEUTRAL CONDUCTOR AND " Φ" INDICATES PHASE CONDUCTOR.

THREE PHASE TRANSFORMER SCHEDULE COPPER CONDUCTORS

ID NO	KVA	PRIMARY 480 VOLT					SECONDARY 208 VOLT					GROUNDING ELECTRODE CONDUCTOR (250-66)*
		AMPS	WIRE (THHN)	COND.	C.B.	FUSE	AMPS	WIRE (THHN)	COND.	C.B.	FUSE	
T-1	3	3.6	3#12+#12EG	1/2"	15/3	10	8.3	4#12+#12(EG)	1/2"	15/3	15	#8
T-2	9	10.8	3#12+#12EG	1/2"	20/3	20	25	4#10+#10(EG)	3/4"	30/3	30	#8
T-3	15	18	3#10+#10EG	1/2"	30/3	30	41.6	4#6+2#10(EG)	1 1/2"	50/3	50	#8
T-4	30	36	3#6+#10EG	3/4"	60/3	45	83.3	4#2+2#8(EG)	2"	100/3	100	#8
T-5	45	54.3	3#2+#8EG	1 1/4"	90/3	80	125	4#1/0+2#6(EG)	3"	150/3	150	#6
T-6	75	90.2	3#1/0+#6EG	1 1/2"	150/3	150	208	4#250KCMIL+#4(EG)	4"	250/3	250	#2
T-7	112.5	135.3	3#3/0+#6EG	2"	200/3	200	311	4#500KCMIL+#3(EG)	4"	400/3	400	#1/0
T-8	150	180.6	3#350KCMIL+#4EG	3"	300/3	300	416.8	2 SETS 4#250KCMIL+#2(EG)	2 - 3"	500/3	500	#2/0
T-9	225	270.7	3#500KCMIL+ #3EG	3"	400/3	400	625	2 SETS 4#600KCMIL+#1/0(EG)	2 - 4"	800/3	800	#3/0
T-10	300	360.8	2 SETS 3#350KCMIL+#1EG	2-3"	600/3	600	833	3 SETS 4#400KCMIL+#2/0(EG)	3 - 3"	1000/3	1000	#3/0

* RUN IN CODE SIZE CONDUIT TO CODE APPROVED GROUNDING ELECTRODE, i.e., BUILDING STEEL, ETC. "EG" INDICATES EQUIPMENT GROUNDING CONDUCTOR, "IG" INDICATES ISOLATED GROUNDING CONDUCTOR, "N" INDICATES NEUTRAL CONDUCTOR AND " Φ" INDICATES PHASE CONDUCTOR.

500A MCB, 120/208V, 3 Φ, 4W, 22 KAIC — LOCATION: MAIN ELECTRICAL ROOM
600AMP BUS

DISTRIBUTION PANEL 2DP1A SCHEDULE (1)

OVER CURRENT DEVICES No.	TRIP	FRAME	CIRCUIT	FEEDER SIZE	COND. SIZE	REMARKS
1	60	100	SURGE PROTECTION DEVICE (SPD)	4#6+#6G	1 1/4"	PER MFGR. REQUIREMENTS
2	100	100	MP1D	4#2+#8G	1 1/4"	
3	150	225	PP1D	5#1/0+#4G	2"	
4	200	225	SPARE	-	-	
5	150	225	PP1A	5#1/0+#4G	2"	
6	150	225	MP1A	4#1/0+#6G	2"	
7	100	100	SPARE	-	-	
8	150	225	PL1134	4#1/0+#6G	2"	
9	-	100	SPACE PROVISIONS	-	-	
10	-	225	SPACE PROVISIONS	-	-	
11	-	100	SPACE PROVISIONS	-	-	
					-	

(1) DOUBLE NEUTRAL.

800A MCB, 120/208V, 3 Φ, 4W, 22 KAIC — LOCATION: ELECTRICAL ROOM
800AMP BUS

DISTRIBUTION PANEL 2DP1B SCHEDULE (1)

OVER CURRENT DEVICES No.	TRIP	FRAME	CIRCUIT	FEEDER SIZE	COND. SIZE	REMARKS
1	60	100	SURGE PROTECTION DEVICE (SPD)	4#6+#6G	1 1/4"	PER MFGR. REQUIREMENTS
2	100	100	MP1B	4#2+#8G	1 1/4"	
3	150	225	PP1B	5#1/0+#4G	2"	
4	150	225	PP2B	5#1/0+#4G	2"	
5	150	225	PP3B	5#1/0+#4G	2"	
6	100	100	MP3B	4#2+#8G	1 1/4"	
7	100	100	PPB1110	4#2+#8G	1 1/4"	
8	100	100	PPB1114	4#2+#8G	1 1/4"	
9	100	100	PPB3120	4#2+#8G	1 1/4"	
10	100	100	PPB3124	4#2+#8G	1 1/4"	
11	200	225	SPARE	-	-	
12	100	100	SPARE	-	-	
13	-	225	SPACE PROVISIONS	-	-	
14	-	100	SPACE PROVISIONS			

(1) DOUBLE NEUTRAL.

800A MCB, 120/208V, 3 Φ, 4W, 22 KAIC — LOCATION: ELECTRICAL ROOM
800AMP BUS

DISTRIBUTION PANEL 2DP1C SCHEDULE (1)

OVER CURRENT DEVICES No.	TRIP	FRAME	CIRCUIT	FEEDER SIZE	COND. SIZE	REMARKS
1	60	100	SURGE PROTECTION DEVICE (SPD)	4#6+#6G	1 1/4"	PER MFGR. REQUIREMENTS
2	200	225	MP1C	4#3/0+#6G	2"	
3	150	225	PP1C	5#1/0+#6G	2"	
4	100	100	MP3C	4#2+#8G	1 1/4"	
5	150	225	PP3C	5#1/0+#6G	2"	
6	200	225	SPARE	-	-	
7	150	225	PP2C	5#1/0+#4G	2"	
8	200	225	RELAY PANEL "R1"	5#3/0+#4G	2"	
9	200	225	MP1D	4#3/0+#6G	2"	
10	150	225	PP1D	5#1/0+#6G	2"	
11	100	100	PPB1110	4#2+#8G	1 1/4"	
12	100	100	PPC2210	4#2+#8G	1 1/4"	
13	100	100	PPC2214	4#2+#8G	1 1/4"	
14	100	100	SPARE	-	-	
15	-	225	SPACE PROVISIONS	-	-	
16	-	100	SPACE PROVISIONS	-	-	

(1) DOUBLE NEUTRAL.

5

277/480V, 3 Φ, 4W, 65 KAIC
3000A BUS — FRONT ACCESSIBLE

MAIN SWITCHBOARD "MSB1A" SCHEDULE

	OVER CURRENT DEVICES No.	TRIP	FRAME	CIRCUIT	FEEDER SIZE	COND. SIZE	REMARKS
(4)	-	2500	2500	MAIN BREAKER / PULL SECTION	SEE RISER	-	100% RATED WITH GFI PROTECTION
	1	60	100	SURGE PROTECTION DEVICE (SPD)	4#6+#6G	1 1/4"	PER MFGR. REQUIREMENTS
	2	200	225	SPARE	-	-	
(1)	3	100	100	LP1D	4#2+#8G	1 1/4"	
	4	800	800	CHILLER CH-1	2 SETS OF 4#500KCMIL+#1/0G	(2) 4"	
	5	100	100	SPARE			
	6	400	400	2DP1C VIA T-9	(3)	(3)	
	7	800	800	4DP1C	2 SETS OF 4#500KCMIL+#1/0G	(2) 4"	
(1)	8	100	100	LP1A	4#2+#8G	1 1/4"	
	9	100	100	SPARE			
(1)	10	200	225	MHP1A	4#3/0+#6G	2"	
	11	300	400	2DP1A VIA T-8	(3)	(3)	
	12	800	800	4DP1B	2 SETS OF 4#500KCMIL+#1/0G	(2) 4"	
	13	400	400	2DP1B VIA T-9 (6)	(3)	(3)	
	14	100	100	CHW PUMP P-3 (25 HP)	4#2+#8G	1 1/4"	
	15	100	100	CHW PUMP P-3 (25 HP)	4#2+#8G	1 1/4"	
(2)	16	400	400	SPARE	-	-	
(2)	17	600	600	ATS-LS	2 SETS OF 4#350KCMIL+1/0G	(2) 3"	
(2)	18	600	600	ATS-OS	2 SETS OF 4#350KCMIL+1/0G	(2) 3"	
	19	100	100	SPARE			
	20	150	225	SPARE			
	21	200	225	SPARE			
	22	-	400	SPACE PROVISION			
	23	-	100	SPACE PROVISION			
	24	-	100	SPACE PROVISION			
	25	-	225	SPACE PROVISION			
	26	-	1000	SPACE PROVISION	-	-	FUTURE PV

(1) UL LISTED SERIES RATED FOR 65,000A RMS @ RATED VOLTAGE WITH DOWNSTREAM BREAKERS IS ACCEPTABLE.
(2) PROVIDE CURRENT LIMITING BREAKER.
(3) SEE TRANSFORMER SCHEDULE FOR WIRE AND CONDUIT SIZE
(4) PROVIDE ENERGY-REDUCTION MAINTENANCE SWITCH (ARMS) WITH LOCAL STATUS INDICATOR FOR ARC ENERGY REDUCTION.

800A MLO, 277/480V, 3 PHASE, 4W, 65 KAIC — LOCATION: ELECTRICAL ROOM

DISTRIBUTION PANEL 4DP1B SCHEDULE

OVER CURRENT DEVICES No.	TRIP	FRAME	CIRCUIT	FEEDER SIZE	COND. SIZE	REMARKS
1	60	100	SURGE PROTECTION DEVICE (SPD)	4#6+#6G	1 1/4"	PER MFGR. REQUIREMENTS
(1) 2	100	100	LP1B	4#2+#8G	1 1/4"	
(1) 3	100	100	LP3B	4#2+#8G	1 1/4"	
(1) 4	100	100	LP2B	4#2+#8G	1 1/4"	
5	125	225	SPARE	-	-	
6	125	225	RTU-4	3#1+#6G	1 1/2"	
7	100	100	SPARE	-	-	
8	100	100	SPARE	-	-	
9	200	225	SPARE	-	-	
10	-	100	SPACE PROVISIONS	-	-	
11	-	225	SPACE PROVISIONS	-	-	

(1) UL LISTED SERIES RATED FOR 65,000A RMS @ RATED VOLTAGE WITH DOWNSTREAM BREAKERS IS ACCEPTABLE.

800A MLO, 277/480V, 3 PHASE, 4W, 65 KAIC — LOCATION: ELECTRICAL ROOM

DISTRIBUTION PANEL 4DP1C SCHEDULE

OVER CURRENT DEVICES No.	TRIP	FRAME	CIRCUIT	FEEDER SIZE	COND. SIZE	REMARKS
1	60	100	SURGE PROTECTION DEVICE (SPD)	4#6+#6G	1 1/4"	PER MFGR. REQUIREMENTS
(1) 2	100	100	LP1C	4#2+#8G	1 1/4"	
(1) 3	100	100	LP3C	4#2+#8G	1 1/4"	
(1) 4	400	400	MHP3C	4#500KCMIL+#3G	4"	
(1) 5	100	100	LP2C	4#2+#8G	1 1/4"	
6	125	225	RTU-2	3#1+#6G	1 1/4"	
7	100	100	RTU-5	3#1+#6G	1 1/4"	
8	70	100	RTU-6	3#2+#8G	1 1/4"	
9	100	100	SPARE	-	-	
10	100	100	SPARE	-	-	
11	200	225	SPARE	-	-	
12	-	100	SPACE PROVISIONS	-	-	
13	-	225	SPACE PROVISIONS	-	-	

(1) UL LISTED SERIES RATED FOR 65,000A RMS @ RATED VOLTAGE WITH DOWNSTREAM BREAKERS IS ACCEPTABLE.

277/480V, 3 PHASE, 4W, 65 KAIC
800AMP MLO

DISTRIBUTION PANEL 4EHP1A SCHEDULE

OVER CURRENT DEVICES No.	TRIP	FRAME	CIRCUIT	FEEDER SIZE	COND. SIZE	REMARKS
1	60	100	SURGE PROTECTION DEVICE (SPD)	4#6+#6G	1 1/4"	PER MFGR. REQUIREMENTS
2	100	100	P-1 (25.0 HP)	4#2+#8G	1 1/4"	
3	100	100	P-2 (25.0 HP)	4#2+#8G	1 1/4"	
4	20	100	KEF-1 (3.0 HP)	4#10+#10G	3/4"	
5	20	100	MAU-1 (5.0 HP)	4#10+#10G	3/4"	
6	125	225	ELEVATOR	3#1+#6G	1 1/2"	
(1) 7	300	400	EHP3C	4#350KCMIL+#3G	3"	
8	200	225	EP1A VIA T-7	(3)	(3)	
9	20	100	EUH-1 (3.0 KW)	2#10+#10G	3/4"	20A/1P CIRCUIT BREAKER
10	100	100	SPARE	-	-	
11	100	100	SPARE	-	-	
12	-	100	SPACE PROVISIONS	-	-	
13	-	225	SPACE PROVISIONS	-	-	

(1) UL LISTED SERIES RATED FOR 65,000A RMS @ RATED VOLTAGE WITH DOWNSTREAM BREAKERS IS ACCEPTABLE.
(2) PROVIDE CURRENT LIMITING BREAKER.
(3) SEE TRANSFORMER SCHEDULE FOR WIRE AND CONDUIT SIZE

5

277/480V, 3 Φ, 4W, 65 KAIC — LOCATION: ELECTRICAL ROOM

PANEL SCHEDULE

	PANEL NO.	LOCATION	MTG	MAIN BUS AMPS	MAIN CB	BRANCH CKT BREAKER (AMPS) 1 POLE 15	1 POLE 20	1 POLE 30	2 POLE 15	2 POLE 20	2 POLE 30	3 POLE 15	3 POLE 20	3 POLE 30	3 POLE 60	TOTAL POLES	OTHERS
(1)	LP1A	MAIN ELECTRICAL ROOM	S	100	-	-	18									1	30	
(1)	LP1B	MAIN ELECTRICAL ROOM	S	100	-	-	18									1	30	
(1)	LP1C	ELECTRICAL ROOM	S	100	-	-	12									1	30	
(1)	LP1D	ELECTRICAL ROOM	S	100	-	-	18									1	30	
(1)	LP2B	ELECTRICAL ROOM	S	100	-	-	18									1	30	
(1)	LP2C	ELECTRICAL ROOM	S	100	-	-	18									1	30	
(1)	LP3B	ELECTRICAL ROOM	S	100	-	-	24									1	30	
(1)	LP3C	ELECTRICAL ROOM	S	100	-	-	18									1	30	
(1)	MHP1A	ELECTRICAL ROOM	S	225	-	-	2	1		1	1		3	1	1	42	(1) 40/3	
(1)	MHP3C	ELECTRICAL ROOM	S	400			2	1		1	1		4	2	2	42	(2) 70/3, (1) 40/3	
(2)	ELP1A	EMERGENCY ELEC ROOM	S	225	-	-	34									1	42	
(2)	ELP1B	EMERGENCY ELEC ROOM	S	100	-	-	24									1	42	
(2)	ELP1D	EMERGENCY ELEC ROOM	S	100	-	-	24									1	42	
(2)	ELP3B	EMERGENCY ELEC ROOM	S	100	-	-	30									1	42	
(1)	EHP3C	ELECTRICAL ROOM	S	400								1	1	1		42	(2)125/3	
(2)	EHP-LS	EMERGENCY ELEC CLOSET	S	400			2					1	2	1		42	(2)175/3, (2)125/3, (1)100/3, (1)70/3	

(1) FEED FROM CURRENT LIMITING BREAKERS. UL LISTED SERIES RATED FOR 65,000A RMS @ RATED VOLTAGE WITH UPSTRAM BREAKERS IS ACCEPTABLE.
(2) FULLY RATED PANEL.

120/208V, 3 Φ, 4W, 22 KAIC — LOCATION: ELECTRICAL ROOM

PANEL SCHEDULE

	PANEL NO.	LOCATION	MTG	MAIN BUS AMPS	MAIN CB	BRANCH CKT BREAKER (AMPS) 1 POLE 15	1 POLE 20	1 POLE 30	2 POLE 15	2 POLE 20	2 POLE 30	3 POLE 15	3 POLE 20	3 POLE 30	3 POLE 60	TOTAL POLES	OTHERS
(4) (2)	PP1A	MAIN ELECTRICAL ROOM	S	225	-	-	42	1		1						1	60	
(4)	MP1A	MAIN ELECTRICAL ROOM	S	225	-	-	28	1	2	2	1		1		1	60	(1) 40/2
(6) (2)	EP1A	MAIN ELECTRICAL ROOM	S	400	400	-	85	1	3	2	4		2	2	1	168	(2) 40/3
(4) (1)	KPP1A	MAIN ELECTRIC ROOM	S	225	200	-	40	1		6	1					2	60	
(3)	TEP1A	HEAD END ROOM	S	100	-	-	20	7		1						3	42	
(4) (2)	PP1B	ELECTRICAL ROOM	S	225	-	-	72			1	1					1	84	
	MP1B	ELECTRICAL ROOM	S	100	-	-	15	1		1	1					1	42	
(5) (2)	PP1C	ELECTRICAL ROOM	S	225	150	-	84	1		1						1	126	
(2) (4)	EP1C	ELECTRICAL ROOM	S	225	-	-	42		3	2	2		1			1	60	
(4)	MP1C	ELECTRICAL ROOM	S	225	-	-	42	1		1			1		1	60	(1) 50/3	
(2) (4)	PP1D	ELECTRICAL ROOM	S	225	-	-	62	1								1	84	
(2)	TEP1D	IDF ROOM	S	100	-	-	12	3		2						1	24	
(4)	MP1D	ELECTRICAL ROOM	S	225	-	-	40	1	2	1	3		2		2	60	
(2) (4)	PP2B	ELECTRICAL ROOM	S	225	-	-	62	1								1	84	
(2)	TEP2B	IDF ROOM	S	100	-	-	12	3		1						1	30	
(2) (4)	PP2C	ELECTRICAL ROOM	S	225	-	-	62	1		1						1	84	
(2)	TEP2C	IDF ROOM	S	100	-	-	15	3		1						1	30	
(4) (2)	PP3B	ELECTRICAL ROOM	S	225	-	-	68	1		1						1	84	
	MP3B	ELECTRICAL ROOM	S	100	-	-	12	1		1		1				1	30	
(4) (2)	PP3C	ELECTRICAL ROOM	S	225	-	-	62	1								1	84	
	MP3C	ELECTRICAL ROOM	S	100	-	-	15	2								1	30	
(4) (2)	EP3B	ELECTRICAL ROOM	S	225	-	-	30		3	2	2					2	60	
	EP-LS	EMERGENCY CLOSET	S	100	50	-	12	1		1						1	24	
	D1	ELECTRICAL ROOM	S	100	-	-	2								9		42	
(1)	PL1134	AREA-A, 1134	F	225	150		22	1							1	2	42	
(1)	PPB1110	AREA-B, 1110	F	100	100		20	1								1	30	
(1)	PPB1114	AREA-B, 1114	F	100	100		20	1								1	30	
(1)	PPC2210	AREA-C, 2210	F	100	100		20	1								1	30	
(1)	PPC2214	AREA-C, 2214	F	100	100		22	1								1	30	
(1)	PPB3120	AREA-B, 3120	F	100	100		18	1								1	30	
(1)	PPB3124	AREA-B, 3124	F	100	100		18	1								1	30	

(1) PROVIDE SHUNT TRIP MAIN CIRCUIT BREAKER.
(2) 200% NEUTRAL BUS.
(3) DOUBLE NEUTRAL BUS AND IG BUS.
(4) SINGLE TUB PANEL BUT TALLER IN HEIGHT.
(5) DOUBLE TUB PANEL BUT TALLER IN HEIGHT.
(6) TRIPLE TUB PANEL BUT TALLER IN HEIGHT.

277/480V, 3 PHASE, 4W, 65 KAIC
600AMP MLO — LOCATION: ELECTRICAL ROOM

DISTRIBUTION PANEL 4EDP-LS SCHEDULE

OVER CURRENT DEVICES No.	TRIP	FRAME	CIRCUIT	FEEDER SIZE	COND. SIZE	REMARKS
1	60	100	SURGE PROTECTION DEVICE (SPD)	4#6+#6G	1-1/4"	PER MFGR. REQUIREMENTS
(1) 2	400	400	EHP-LS	4#500KCMIL+#1G	4"	
(1) 3	150	225	ELP1A	4#1/0+#6G	2"	
(1) 4	100	100	ELP1B	4#1AWG+#6G	1-1/2"	
(1) 5	100	100	ELP1D	4#1AWG+#6G	1-1/2"	
6	60	100	SPARE	-	-	
7	100	100	SPARE	-	-	
8	-	225	SPACE PROVISIONS	-	-	
9	-	100	SPACE PROVISIONS	-	-	
10	-	100	SPACE PROVISIONS	-	-	

(1) RUN EMERGENCY FEEDER BELOW SLAB OR PROVIDE MI CABLE.

5

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
6	12/09/2019	ADDENDUM # 6
8	2/10/2020	Conformance Set

DRAWING NAME
POWER SCHEDULES & DETAILS

PROJECT NO. 1722

DRAWING NO.
E302

ELECTRICAL SCHEDULE OF MECHANICAL EQUIPMENT

UNIT NO.	DESCRIPTION	LOCATION	LOAD CHARACTERISTICS	VOLT	PH	PANEL CIRCUIT	CIRCUIT BREAKER	FEEDER	EQUIPMENT AND CONNCECTIONS: TS						WP				VFD	E	REMARKS
B-1	BOILER	BOILER ROOM	27.0 FLA	230	3	EP1A-79,81,83	40A-3P	4#8&1#10G-3/4"C	-	X	-	X	-	-	-	X	-	-	-	(2) X	- (11) (12)
B-2	BOILER	BOILER ROOM	27.0 FLA	230	3	EP1A-80,82,84	40A-3P	4#8&1#10G-3/4"C	-	X	-	X	-	-	-	X	-	-	-	(2) X	- (11) (12)
CH-1	CHILLER	ROOF PART A	632 MCA / 757 MOP	480	3	MSB1A-4	800A-3P	SEE "MSB1A" SCHEDULE	-	X	-	X	-	-	X	-	X	-	-	-	CONNECT LIGHT & RECEPTACLE TO MP1A-19
CH-1	CHILLER	ROOF PART A	-	120	1	MP1A-7	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	CONTROL POWER CONNECTION
CH-1	CHILLER	ROOF PART A	-	120	1	MP1A-9	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	HEAT TAPE POWER CONNECTION
CP-1	CONDENSATE PUMP	REFER TO FLOOR PLANS	33 WATTS	120	1	-	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	SEE DETAIL 1/E303 (TYPICAL FOR ALL DCUe's) (2) (3)
DC-1	DUST COLLECTOR	SHOP 1134	10 HP	480	3	MHP1A-1,3,5	40A-3P	4#8&1#10G-3/4"C	-	X	-	X	-	-	-	X	-	-	-	-	- (10)
DCP-1	DUST COLLECTOR CONTROL PANEL	SHOP 1134	-	120	1	MP1A-21	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	REFER TO DETAIL 5/E303
SDCP-1	SHAN DETECTION CONTROL PANEL	SHOP 1134	-	120	1	MP1A-23	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	REFER TO DETAIL 5/E303
ADCP-1	ABORT DAMPER CONTROL PANEL	SHOP 1134	-	120	1	MP1A-25	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	REFER TO DETAIL 5/E303
DCUc-1	DUCTLESS COOLING UNIT	ROOF PART C	(6) 11 MCA	208	1	EP1C-8,10	20A-2P	3#12&1#12G-3/4"C	-	X	-	X	-	X	-	X	-	-	-	-	CONNECT "WP" RECEPTACLE TO EP1C-16
DCUe-1	DUCTLESS COOLING UNIT	ELEV. MACH. RM 1163	1 AMPS	208	1	EP1C-12,14	15A-2P	3#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	PROVIDE 3#12&1#12G - 3/4"C TO DCUc-1. CONNECT CP-1 TO EP1C-16 (1) (2) (3)
DCUc-2	DUCTLESS COOLING UNIT	ROOF PART A	(6) 19 MCA	208	1	EP1A-69,71	30A-2P	3#10&1#10G-3/4"C	-	X	-	X	-	X	-	X	-	-	-	-	CONNECT "WP" RECEPTACLE TO EP1A-77
DCUe-2	DUCTLESS COOLING UNIT	HEAD END 1026	1 AMPS	208	1	EP1A-73,75	15A-2P	3#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	PROVIDE 3#12&1#12G - 3/4"C TO DCUc-2. CONNECT CP-1 TO EP1A-77 (1) (2) (3)
DCUc-3	DUCTLESS COOLING UNIT	ROOF PART A	(6) 19 MCA	208	1	EP1A-72,74	30A-2P	3#10&1#10G-3/4"C	-	X	-	X	-	X	-	X	-	-	-	-	CONNECT "WP" RECEPTACLE TO EP1A-
DCUe-3	DUCTLESS COOLING UNIT	HEAD END 1026	1 AMPS	208	1	EP1A-76,78	15A-2P	3#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	PROVIDE 3#12&1#12G - 3/4"C TO DCUc-3. CONNECT CP-1 TO EP1A-80 (1) (2) (3)
DCUc-4	DUCTLESS COOLING UNIT	ROOF PART A	25 MCA	208	1	MP1A-18,20	40A-2P	3#8&1#10G-3/4"C	-	X	-	X	-	X	-	X	-	-	-	-	CONNECT "WP" RECEPTACLE TO MP1A-26
DCUe-4	DUCTLESS COOLING UNIT	MAIN ELEC 1023	1 AMPS	208	1	MP1A-22,24	15A-2P	3#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	PROVIDE 3#12&1#12G - 3/4"C TO DCUc-4. CONNECT CP-1 TO MP1A-26 (1) (2) (3)
DCUc-5	DUCTLESS COOLING UNIT	ROOF PART D	(6) 11 MCA	208	1	MP1D-29,31	30A-2P	3#10&1#10G-3/4"C	-	X	-	X	-	X	-	X	-	-	-	-	CONNECT "WP" RECEPTACLE TO MP1D-27
DCUe-5	DUCTLESS COOLING UNIT	ELEC 1348	1 AMPS	208	1	MP1D-33,35	15A-2P	3#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	PROVIDE 3#12&1#12G - 3/4"C TO DCUc-5. CONNECT CP-1 TO MP1D-27 (1) (2) (3)
DCUc-6	DUCTLESS COOLING UNIT	ROOF PART C	(6) 11 MCA	208	1	EP1C-18,20	30A-2P	3#10&1#10G-3/4"C	-	X	-	X	-	X	-	X	-	-	-	-	CONNECT "WP" RECEPTACLE TO EP1C-26
DCUe-6	DUCTLESS COOLING UNIT	IDF 2155	1 AMPS	208	1	EP1C-22,24	15A-2P	3#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	PROVIDE 3#12&1#12G - 3/4"C TO DCUc-6. CONNECT CP-1 TO EP1C-26 (1) (2) (3)
DCUc-7	DUCTLESS COOLING UNIT	ROOF PART B	(6) 11 MCA	208	1	EP3B-7,9	20A-2P	3#12&1#12G-3/4"C	-	X	-	X	-	X	-	X	-	-	-	-	CONNECT "WP" RECEPTACLE TO EP3B-15
DCUe-7	DUCTLESS COOLING UNIT	EMERG ELEC 3257	1 AMPS	208	1	EP3B-11,13	15A-2P	3#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	PROVIDE 3#12&1#12G - 3/4"C TO DCUc-7. CONNECT CP-1 TO EP3B-15 (1) (2) (3)
DCUc-8	DUCTLESS COOLING UNIT	ROOF PART B	(6) 11 MCA	208	1	EP3B-8,10	30A-2P	3#10&1#10G-3/4"C	-	X	-	X	-	X	-	X	-	-	-	-	CONNECT "WP" RECEPTACLE TO EP3B-16
DCUe-8	DUCTLESS COOLING UNIT	IDF 2255	1 AMPS	208	1	EP3B-12,14	15A-2P	3#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	PROVIDE 3#12&1#12G - 3/4"C TO DCUc-8. CONNECT CP-1 TO EP3B-16 (1) (2) (3)
EF-1	EXHAUST FAN	ROOF PART C	(6) 1 HP	120	1	MP3C-1	30A-1P	2#10&1#10G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
EF-2	EXHAUST FAN	ROOF PART B	3/4 HP	120	1	MP3B-3	30A-1P	2#10&1#10G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
EF-3	EXHAUST FAN	1ST FLOOR PART A	(6) 1/4 HP	120	1	MP1A-15	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
EF-4	EXHAUST FAN	ROOF PART C	1/4 HP	120	1	MP3C-3	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
EF-5	EXHAUST FAN	SPARY BOOTH	-	120	1	MP1C-8	20A-1P	2#12&1#12G-3/4"C	-	-	-	-	-	X	-	-	-	-	-	-	REFER TO DRAFT FAN ON DRAWING E201C
EF-6	EXHAUST FAN	ROOF PART C	1/2 HP	120	1	MP3C-5	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
EUH-1	ELECTRIC UNIT HEATER	PUMP HOUSE	3.0 KW	277	1	4EHP1A-9	20A-1P	SEE "4EHP1A" SCHEDULE	-	-	X	X	-	-	-	X	-	-	-	-	-
FEF-1	FUME HOOD EXHAUST FAN	ROOF PART B	1.5 HP	480	3	MHP3C-20,22,24	20A-3P	4#12&1#12G-3/4"C	-	X	-	X	-	-	-	X	-	-	X	-	SERVING SPRAY BOOTH 1134
FEF-2	FUME HOOD EXHAUST FAN	ROOF PART C	3/4 HP	480	3	MHP3C-19,21,23	20A-3P	4#12&1#12G-3/4"C	-	X	-	X	-	-	-	X	-	-	X	-	SERVING SCIENCE CLASSROOM 2210
FEF-3	FUME HOOD EXHAUST FAN	ROOF PART C	(6) 1 HP	480	3	MHP1A-2,4,6	20A-3P	4#12&1#12G-3/4"C	-	X	-	X	-	-	-	X	-	-	X	-	SERVING SCIENCE CLASSROOM 2214
GF-1	GLYCOL PUMP	BOILER RM	(6) 1/3 HP	120	1	EP1A-25	20A-1P	2#12&1#12G-3/4"C	-	-	-	-	-	X	-	-	-	-	-	-	-
GF-2	GLYCOL PUMP	PUMP HOUSE	1/3 HP	120	1	EP1A-27	20A-1P	2#12&1#12G-3/4"C	-	-	-	-	-	X	-	-	-	-	-	-	-
KEF-1	KITCHEN EXHAUST FAN	ROOF PART A	3.0 HP	480	3	4EHP1A-4	20A-3P	SEE "4EHP1A" SCHEDULE	-	X	-	X	-	-	-	X	-	-	-	-	REFER TO DETAIL 4/E307 (9)
KEF-2	KITCHEN WAREWASHER FAN	ROOF PART A	(4) 1/3 HP	120	1	MP1A-17	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	INTERLOCK WITH WAREWASHER
MAU-1	MAKE UP AIR UNIT	ROOF PART A	5.0 HP	480	3	4EHP1A-5	20A-3P	SEE "4EHP1A" SCHEDULE	-	X	-	X	X	-	-	X	-	-	-	-	REFER TO DETAIL 4/E307 (4)
P-1	HHW PUMP	BOILER RM	25.0 HP	480	3	4EHP1A-2	100A-3P	SEE "4EHP1A" SCHEDULE	-	X	-	X	-	-	-	X	-	-	X	-	-
P-2	HHW PUMP	BOILER RM	(6) 25.0 HP	480	3	4EHP1A-3	100A-3P	SEE "4EHP1A" SCHEDULE	-	X	-	X	-	-	-	X	-	-	X	-	-
P-3	CHW PUMP	PUMP HOUSE	25.0 HP	480	3	MSB1A-14	100A-3P	SEE "MSB1A" SCHEDULE	-	X	-	X	-	-	-	X	-	-	X	-	-
P-4	CHW PUMP	PUMP HOUSE	25.0 HP	480	3	MSB1A-15	(6) 100A-3P	SEE "MSB1A" SCHEDULE	-	X	-	X	-	-	-	X	-	-	X	-	-
RTU-1	ROOF TOP UNIT	ROOF PART C	103 MCA / 125 MOP	480	3	EHP3C-1,3,5	125A-3P	3#1&1#6G- 1 1/2"C	-	X	-	X	(2) X	X	-	X	X	-	-	-	CONNECT FIXTURE TYPE "J" & RECEPTACLE TO EP1C-23 (4) (5) (6) (7)
RTU-2	ROOF TOP UNIT	ROOF PART C	103 MCA / 125 MOP	480	3	4DP1C-6	125A-3P	SEE "4DP1C" SCHEDULE	-	X	-	X	(2) X	X	-	X	X	-	-	-	CONNECT FIXTURE TYPE "J" & RECEPTACLE TO MP3C-7 (4) (5) (6) (7)
RTU-3	ROOF TOP UNIT	ROOF PART B	103 MCA / 125 MOP	480	3	EHP3C-2,4,6	125A-3P	3#1&1#6G- 1 1/2"C	-	X	-	X	(2) X	X	-	X	X	-	-	-	CONNECT FIXTURE TYPE "J" & RECEPTACLE TO EP3B-6 (4) (5) (6) (7)
RTU-4	ROOF TOP UNIT	ROOF PART B	103 MCA / 125 MOP	480	3	4DP1B-4	125A-3P	SEE "4DP1B" SCHEDULE	-	X	-	X	(2) X	X	-	X	X	-	-	-	CONNECT FIXTURE TYPE "J" & RECEPTACLE TO MP3B-5 (4) (5) (6) (7)
RTU-5	ROOF TOP UNIT	ROOF PART D	73 MCA / 90 MOP	480	3	4DP1C-7	100A-3P	SEE "4DP1C" SCHEDULE	-	X	-	X	(2) X	X	-	X	X	-	-	-	CONNECT FIXTURE TYPE "J" & RECEPTACLE TO MP1D-37 (4) (5) (6) (7)
RTU-6	ROOF TOP UNIT	ROOF PART D	59 MCA / 70 MOP	480	3	4DP1C-8	70A-3P	SEE "4DP1C" SCHEDULE	-	X	-	X	(2) X	X	-	X	X	-	-	-	CONNECT FIXTURE TYPE "J" & RECEPTACLE TO MP1D-39 (4) (5) (6) (7)
RTU-7	ROOF TOP UNIT	ROOF PART D	12 MCA / 15 MOP	480	3	MHP3C-14,16,18	20A-3P	3#12&1#12G-3/4"C	-	X	-	X	(2) X	X	-	X	X	-	-	-	CONNECT FIXTURE TYPE "J" & RECEPTACLE TO MP1D-41 (4) (5) (6) (7)
SEF-1	ATRIUM EXHAUST FAN (SMOKE)	ROOF PART C	40.0 HP	480	3	EHP-LS-1,3,5	125A-3P	4 #4 M CABLE (SINGLE CONDUCTORS)	-	X	-	X	-	-	-	X	-	-	X	-	SHALL BE CONTROLLED BY FIRE ALARM SYSTEM
SEF-2	ATRIUM EXHAUST FAN (SMOKE)	ROOF PART C	50.0 HP	480	3	EHP-LS-7,9,11	175A-3P	4 #1 M CABLE (SINGLE CONDUCTORS)	-	X	-	X	-	-	-	X	-	-	X	-	SHALL BE CONTROLLED BY FIRE ALARM SYSTEM
SEF-3	ATRIUM EXHAUST FAN (SMOKE)	ROOF PART B	50.0 HP	480	3	EHP-LS-2,4,6	175A-3P	4 #1 M CABLE (SINGLE CONDUCTORS)	-	X	-	X	-	-	-	X	-	-	X	-	SHALL BE CONTROLLED BY FIRE ALARM SYSTEM
SEF-4	ATRIUM EXHAUST FAN (SMOKE)	ROOF PART B	40.0 HP	480	3	EHP-LS-8,10,12	125A-3P	4 #4 M CABLE (SINGLE CONDUCTORS)	-	X	-	X	-	-	-	X	-	-	X	-	SHALL BE CONTROLLED BY FIRE ALARM SYSTEM
SEF-5	ATRIUM EXHAUST FAN (SMOKE)	ROOF PART C	20.0 HP	480	3	EHP-LS-14,16,18	70A-3P	4 #8 M CABLE (SINGLE CONDUCTORS)	-	X	-	X	-	-	-	X	-	-	X	-	SHALL BE CONTROLLED BY FIRE ALARM SYSTEM
SF-1	SUPPLY FAN	PUMP HOUSE	1.5 HP	480	3	MHP1A-7,9,11	20A-3P	4#12&1#12G-3/4"C	-	X	-	X	-	-	-	X	-	-	X	-	-
UH-1	UNIT HEATER	STAIR-2 1065	1/15 HP	120	1	MP1C-1	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-2	UNIT HEATER	VESTIBULE 1045	(4) 1/15 HP	120	1	MP1C-3	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-3	UNIT HEATER	EQUIP. STORAGE 1326	1/10 HP	120	1	MP1D-2	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-4	UNIT HEATER	VESTIBULE 1348	1/15 HP	120	1	MP1D-4	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-5	UNIT HEATER	CORRIDOR 1310	1/15 HP	120	1	MP1D-6	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-6	UNIT HEATER	CORRIDOR 1008	1/15 HP	120	1	MP1A-10	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-7	UNIT HEATER	RECEIVING 1010	1/15 HP	120	1	MP1A-12	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-8	UNIT HEATER	CORRIDOR 1020	1/15 HP	120	1	MP1A-14	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-9	UNIT HEATER	CORRIDOR 1060	1/15 HP	120	1	MP1B-2	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-10	UNIT HEATER	STAIR-1 1005	1/15 HP	120	1	MP1B-4	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-11	UNIT HEATER	CORRIDOR 2000	1/15 HP	120	1	MP1A-11	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-12	UNIT HEATER	VESTIBULE 2001	1/15 HP	120	1	MP1A-13	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-13	UNIT HEATER	STAIR-3 3065	1/15 HP	120	1	MP3C-2	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-14	UNIT HEATER	STAIR-3 3005	1/15 HP	120	1	MP3B-1	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
UH-15	UNIT HEATER	BOILER RM 1018	1/15 HP	120	1	MP1A-16	20A-1P	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	-
VAV-1-1 THRU 7	VAV BOX	1ST FLOOR PART C	-	120	1	EP1C-9	20A-1P	2#12&1#12G-3/4"C	(7) X	-	-	(7) X	-	-	-	(7) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-1-8	VAV BOX	2ND FLOOR PART C	-	120	1	EP1C-9	-	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-1-9 THRU 17	VAV BOX	1ST FLOOR PART C	-	120	1	EP1C-11	20A-1P	2#12&1#12G-3/4"C	(9) X	-	-	(9) X	-	-	-	(9) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-1-18 THRU 27	VAV BOX	2ND FLOOR PART C	-	120	1	EP1C-13	20A-1P	2#12&1#12G-3/4"C	(10) X	-	-	(10) X	-	-	-	(10) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-1-28 THRU 36	VAV BOX	3RD FLOOR PART C	-	120	1	EP1C-15	20A-1P	2#12&1#12G-3/4"C	(9) X	-	-	(9) X	-	-	-	(9) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-1-37	VAV BOX	2ND FLOOR PART C	-	120	1	EP1C-9	-	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-2-1 & 2	VAV BOX	1ST FLOOR PART C	-	120	1	EP1C-17	20A-1P	2#12&1#12G-3/4"C	(4) X	-	-	(4) X	-	-	-	(4) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-2-3, 4 & 5	VAV BOX	1ST FLOOR PART A	-	120	1	EP1A-28	20A-1P	2#12&1#12G-3/4"C	(2) X	-	-	(2) X	-	-	-	(2) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-2-6 & 7	VAV BOX	1ST FLOOR PART C	-	120	1	EP1C-17	-	2#12&1#12G-3/4"C	(3) X	-	-	(3) X	-	-	-	(3) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-2-8	VAV BOX	1ST FLOOR PART A	-	120	1	EP1A-28	-	2#12&1#12G-3/4"C	(3) X	-	-	(3) X	-	-	-	(3) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-2-9 THRU 17	VAV BOX	2ND FLOOR PART C	-	120	1	EP1C-19	20A-1P	2#12&1#12G-3/4"C	(9) X	-	-	(9) X	-	-	-	(9) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-2-18 THRU 29	VAV BOX	2ND FLOOR PART A	-	120	1	EP1A-26	20A-1P	2#12&1#12G-3/4"C	(12) X	-	-	(12) X	-	-	-	(12) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-2-30	VAV BOX	2ND FLOOR PART C	-	120	1	EP1C-19	-	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-2-31 & 32	VAV BOX	3RD FLOOR PART C	-	120	1	EP1C-21	20A-1P	2#12&1#12G-3/4"C	(2) X	-	-	(2) X	-	-	-	(2) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-2-33 THRU 36	VAV BOX	3RD FLOOR PART A	-	120	1	EP1C-21	-	2#12&1#12G-3/4"C	(4) X	-	-	(4) X	-	-	-	(4) X	-	-	-	-	SERVING UNITS RTU-1 & 2 (8)
VAV-3-1 THRU 9	VAV BOX	1ST FLOOR PART B	-	120	1	EP3B-17	20A-1P	2#12&1#12G-3/4"C	(9) X	-	-	(9) X	-	-	-	(9) X	-	-	-	-	SERVING UNITS RTU-3 & 4 (8)
VAV-3-10 THRU 14	VAV BOX	2ND FLOOR PART B	-	120	1	EP3B-19	20A-1P	2#12&1#12G-3/4"C	(4) X	-	-	(4) X	-	-	-	(4) X	-	-	-	-	SERVING UNITS RTU-3 & 4 (8)
VAV-3-15 THRU 27	VAV BOX	3RD FLOOR PART B	-	120	1	EP3B-21	20A-1P	2#12&1#12G-3/4"C	(13) X	-	-	(13) X	-	-	-	(13) X	-	-	-	-	SERVING UNITS RTU-3 & 4 (8)
VAV-3-28	VAV BOX	2ND FLOOR PART B	-	120	1	EP3B-19	-	2#12&1#12G-3/4"C	X	-	-	X	-	-	-	X	-	-	-	-	SERVING UNITS RTU-3 & 4 (8)
VAV-4-1 THRU 12	VAV BOX	1ST FLOOR PART B	-	120	1	EP3B-23	20A-1P	2#12&1#12G-3/4"C	(12) X	-	-	(12) X	-	-	-	(12) X	-	-	-	-	SERVING UNITS RTU-3 & 4 (8)
VAV-4-13 THRU 24	VAV BOX	1ST FLOOR PART B	-	120	1	EP3B-25	20A-1P	2#12&1#12G-3/4"C	(12) X	-	-	(12) X	-	-	-	(12) X	-	-	-	-	SERVING UNITS RTU-3 & 4 (8)
VAV-4-25 THRU 34	VAV BOX	2ND FLOOR PART B	-	120	1	EP3B-27	20A-1P	2#12&1#12G-3/4"C	(10) X	-	-	(10) X	-	-	-	(10) X	-	-	-	-	SERVING UNITS RTU-3 & 4 (8)
VAV-4-35 THRU 44	VAV BOX	3DR FLOOR PART B	-	120	1	EP3B-29	20A-1P	2#12&1#12G-3/4"C	(10) X	-	-	(10) X	-	-	-	(10) X	-	-	-	-	SERVING UNITS RTU-3 & 4 (8)
VAV-6-1 THRU 4	VAV BOX	1ST FLOOR PART D	-	120	1	MP1D-8	20A-1P	2#12&1#12G-3/4"C	(4) X	-	-	(4) X	-	-	-	(4) X	-	-	-	-	SERVING UNIT RTU-6 (8)

MECHANICAL SCHEDULE GENERAL NOTES:

1. DUCT SMOKE DETECTORS SHALL BE PROVIDED ON RETURN DUCT FOR ALL MECHANICAL UNITS OVER 2000CFM. PROVIDE DUCT SMOKE ON RETURN AND SUPPLY DUCTWORK FOR ALL MECHANICAL UNITS OVER 15000 CFM. PROVIDE REMOTE TEST STATION WITH EACH DETECTOR. LOCATION OF TEST STATION SHALL BE MOUNTED IN THE VICINITY OF THE UNIT SERVED. DUCT SMOKES TO INITIATE SUPERVISORY.
2. PROVIDE FLEXIBLE CONNECTION TO EQUIPMENT REFER TO SPECIFICATIONS.
3. CONTROLLERS AND DISCONNECT DEVICES SHALL BE NRTL RATED FOR USE WITH A DESIGN E MOTOR WITH A HORSE POWER RATING NOT LESS THAN 1.4 TIMES THE MOTOR HORSE POWER. (REFER TO ELECTRICAL CODE ARTICLE 430).
4. TWO SPEED MOTORS SHALL HAVE TWO MOTOR BRANCH CIRCUITS AND SIX POLE DISCONNECTS.
5. WHERE INDICATED PROVIDE WEATHERPROOF DUPLEX RECEPTACLES AT MECHANICAL EQUIPMENT. PROVIDE 3/4"C. WITH 2#12+#12G AWG TO NEAREST PANEL AND CONNECT TO 20A/1P CIRCUIT BREAKER UNLESS OTHERWISE INDICATED.
6. TYPICALLY LOCATE STARTERS IN ELECTRIC ROOM (NEAR PANEL).
7. ALL EXTERIOR MOUNTED DISCONNECT SWITCHES, JUNCTION/PULL BOXES, RACEWAYS, FLEXIBLE CONNECTION TO EQUIPMENT, ETC. SHALL BE NEMA "3R."
8. THE E.C. SHALL PROVIDE NEMA 7 DISCONNECT SWITCHES AND SEAL FITTINGS AT EXPLOSION PROOF FANS.
9. WHERE INDICATED PROVIDE 120 VOLT CIRCUIT FOR RECEPTACLE AND LIGHT FIXTURE TYPE "J" AT ROOF TOP UNIT AS NOTED. TYPICALLY CONNECT TO NEAREST 120 VOLT RECEPTACLE CIRCUIT UNLESS OTHERWISE INDICATED.
10. ALL VFD'S WILL BE FURNISHED BY ATC WITH CONNECTIONS TO BACNET DATA COMMUNICATION PROTOCOL FOR BUILDING AUTOMATION AND CONTROL NETWORK. COORDINATE WITH ATC CONTRACTOR. PROVIDE POWER WIRING.

MECHANICAL SCHEDULE KEY NOTES:

(1) PROVIDE 3/4"CONDUIT W/PULL WIRE BETWEEN INDOOR UNIT & OUTDOOR UNIT FOR EACH SPLIT SYSTEM.

(2) PROVIDE HARD CONNECTION FOR CONDENSATE PUMP (CP-1). CONNECT TO NEAREST 120V, 1-ø BRANCH CIRCUIT UNLESS OTHERWISE INDICATED. PROVIDE THERMAL SWITCH AT UNIT. FIELD COORDINATE EXACT LOCATION WITH HVAC.
SEE DETAIL 1/E303

(3) REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF CONDENSATE PUMPS CP-1.

(4) VFD FURNISHED INTEGRAL WITH UNIT BY HVAC EQUIPMENT SUPPLIER. SINGLE POINT CONNECTION BY E.C.

(5) E.C. SHALL F&I UNI-STRUT, FOR MOUNTING OF DISCONNECT SWITCH, ATTACHED TO ROOF STRUCTURE INDEPENDENT OF HVAC ROOF-TOP EQUIPMENT TO PREVENT EXCESSIVE WEAR DUE TO VIBRATIONS. LOCATE ADJACENT TO ROOFTOP UNIT BEING SERVED.
SEE DETAIL 3/E303

(6) REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF DUCT TYPE SMOKE DETECTORS.

(7) CARBON MONOXIDE DETECTOR SHALL BE MOUNTED ON SUPPLY DUCT. PROVIDE REMOTE TEST STATION WITH EACH CO DETECTOR. FIELD CONFIRM LOCATION OF REMOTE TEST STATION. ACTIVATION OF CO DETECTOR TO REPORT SUPERVISORY ALARM OF SHUT DOWN RESPECTIVE ROOF TOP UNIT.

(8) FINAL VAV BOX CONNECTION BY ATC CONTRACTOR. ALSO REFER TO MECHANICAL DRAWINGS FOR UNIT EXACT LOCATIONS AND QUANTITIES. COORDINATE WITH HVAC CONTRACTOR FOR EXACT LOCATION OF JUNCTION BOXES.

(9) VFD IS FURNISHED BY KITCHEN EQUIPMENT SUPPLIER, INSTALLED AND WIRED BY EC.

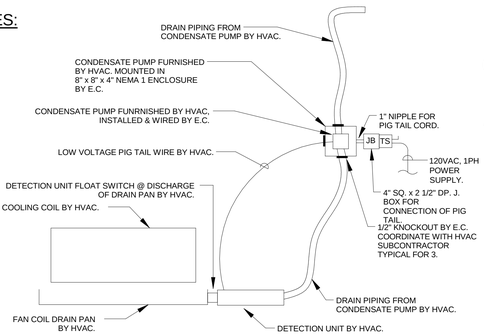
(10) FEEDER RUN VIA DUST COLLECTOR CONTROL PANEL (DCP-1 F&I BY HVAC, WIRED BY E.C.) LOCATED IN WOOD SHOP. E.C. SHALL F&I ADDITIONAL 7#12&#12G,3/4"C BETWEEN (DCP-1) & EXTERIOR UNIT (DC-1) FOR CONTROLS. INTERLOCK WITH FIRE ALARM SYSTEM TO SHUTDOWN UPON IGNITION ALARM . PROVIDE (1) FIRE ALARM MONITOR MODULE & (1) CONTROL MODULE.

(11) PROVIDE 0.5 KVA, 208V/230V, 3-PHASE BUCK-BOOST TRANSFORMER EQUAL TO JEFFERSON ELECTRIC CAT #416-11-31.

(12) EMERGENCY BOILER SHUT OFF SWITCH LOCATED OUTSIDE OF BOILER ROOM AND MOUNTED IN STOPPER II COVER, INTERLOCK WITH BOILER CONTROL PANEL. MOUNT 72" AFF AND COORDINATE EXACT LOCATION IN FIELD WITH ARCHITECT.

PLUMBING SCHEDULE NOTES

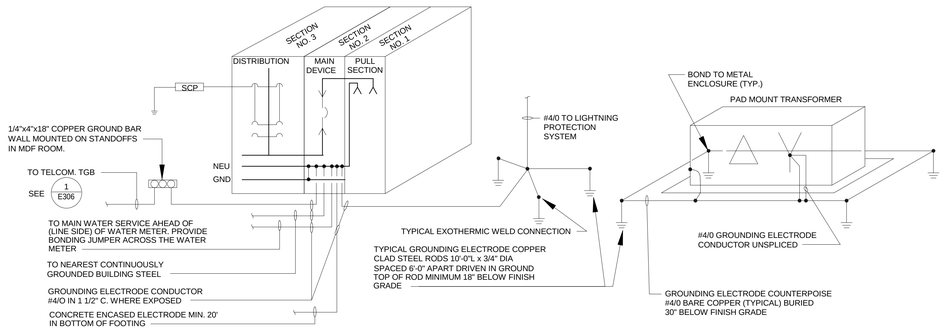
(1) PUMPS WILL RUN VIA DDC SYSTEM. COORDINATE WITH ATC CONTRACTOR.
(2) AQUASTATS FURNISHED AND INSTALLED BY PC, 120V CONNECTION BY EC.
(3) PROVIDE 2 #14, 3/4"C TO BMS SYSTEM. COORDINATE WITH ATC CONTRACTOR.
(4) PROVIDE 6 #14, 3/4"C TO TANK FOR PH SENSORS. CONNECTIONS PROVIDED BY E.C.
(5) PROVIDE GFCI TYPE CIRCUIT BREAKER.
(6) REFER TO PLUMBING DRAWINGS FOR EXACT UNIT LOCATIONS AND TOTAL QUANTITIES.



1 E303 CONDENSATE PUMP (CP-1) WIRING DETAIL

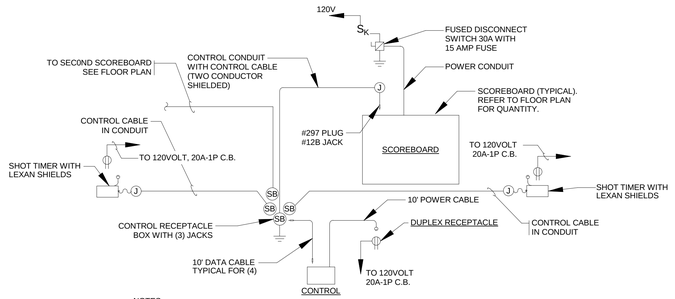
SCALE: N.T.S.

NOTE:
(1) WIRING MAY



1 E304 MAIN SWITCHBOARD GROUNDING DETAIL (TYPICAL)

SCALE: N.T.S.

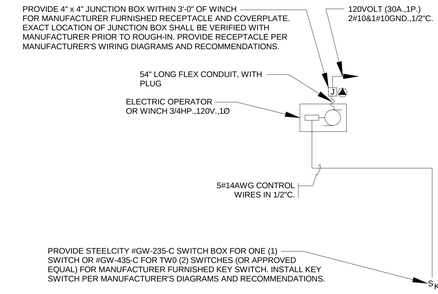


NOTES:

1. POWER WIRING SHOULD BE ROUTED IN SEPARATE CONDUIT FROM CONTROL CABLING. PROVIDE 3/4" CONDUIT FOR POWER AND 3/4" CONDUIT FOR CONTROL.
2. SCOREBOARD SHALL BE FURNISHED UNDER SECTION 116620 BY GC, INSTALLED AND WIRED BY E.C.

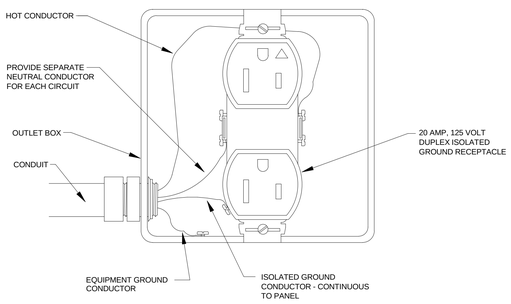
2 E304 BASKETBALL SCOREBOARD WIRING DIAGRAM

SCALE: N.T.S.



3 E304 TYPICAL ELECTRICAL WINCH WIRING FOR BACKBOARD, CURTAIN OR BLEACHER

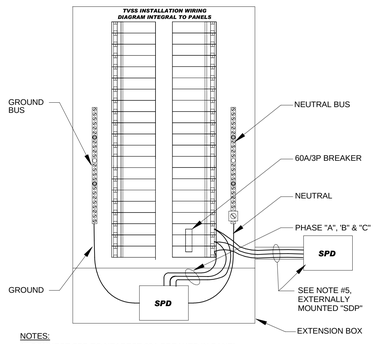
SCALE N.T.S.



4 E304 I.G. RECEPTACLE DETAIL

SCALE: N.T.S.

NOTE:
MAXIMUM OF (2) I.G. RECEPTACLES OR (1) QUADRUPLEX I.G. RECEPTACLES PER CIRCUIT

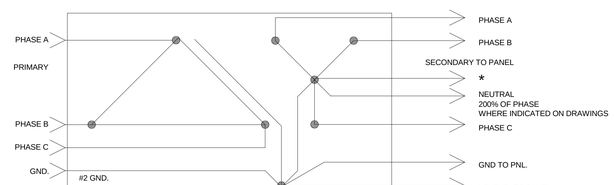


NOTES:

1. CONNECT SPD TO NEAREST 60A BREAKER IN PANEL.
2. LIMIT WIRE LENGTH TO 18" OR LESS, KEEP WIRE FREE OF ANY SHARP BENDS.
3. DIRECT CONNECTION TO PHASE BUS IS NOT PERMITTED.
4. EXTERNAL SPD IS ACCEPTABLE; PROVIDE WITH 60A/3P BREAKER. ALSO CONFIRM/COORDINATE MOUNTING SPACE FOR EXTERNAL SPD.
5. SPD FOR SWITCHBOARD(S) AND DISTRIBUTION PANEL(S) SHALL BE EXTERNAL ONLY. DIRECT BUS MOUNTED SURGE PROTECTION IS NOT ACCEPTABLE. SPD SHALL BE CONNECTED TO A CIRCUIT BREAKER.

6 E304 SPD WIRING DIAGRAM

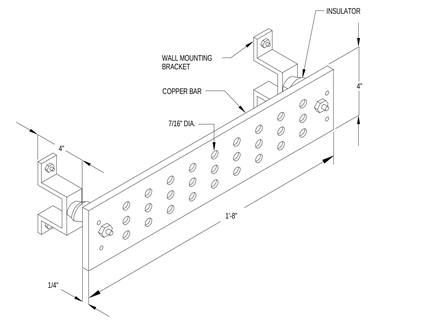
SCALE: N.T.S.



7 E304 TRANSFORMER CONNECTIONS WIRING DETAIL

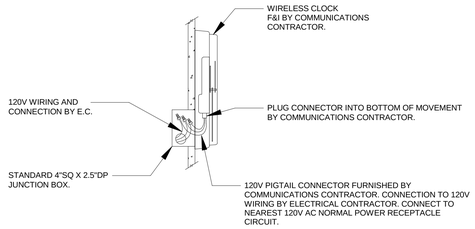
SCALE: N.T.S.

* NEUTRAL CONNECTORS #1/0 OR LARGER MAY BE PARALLELLED



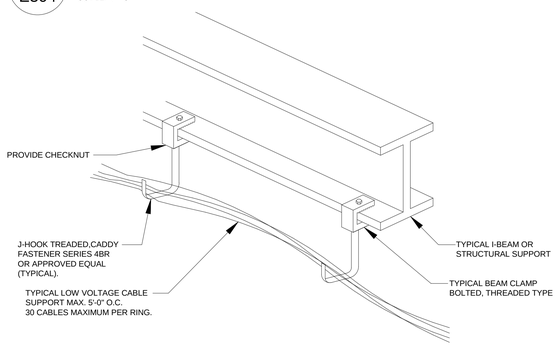
8 E304 TELECOM BAR DETAIL (TGB)

SCALE: N.T.S.



5 E304 WIRELESS CLOCK INSTALLATION DETAIL

SCALE: N.T.S.

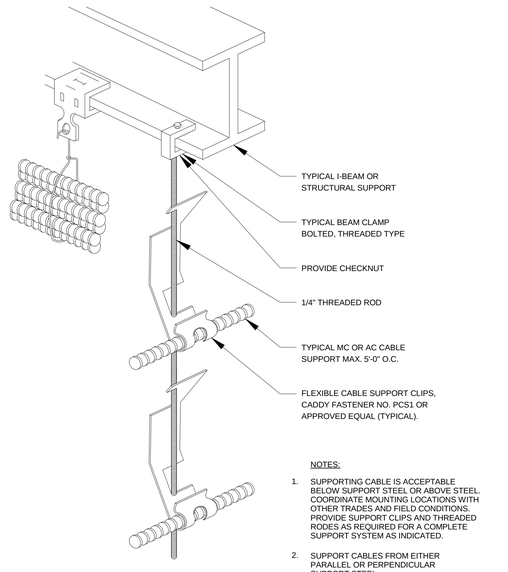


9 E304 TYPICAL LOW VOLTAGE CABLE SUPPORT DETAIL

SCALE: N.T.S.

NOTES:

1. SUPPORTING CABLE IS ACCEPTABLE BELOW SUPPORT STEEL OR ABOVE STEEL. COORDINATE MOUNTING LOCATIONS WITH OTHER TRADES AND FIELD CONDITIONS. PROVIDE SUPPORT CLIPS AND THREADED RODS AS REQUIRED FOR A COMPLETE SUPPORT SYSTEM AS INDICATED.
2. SUPPORT CABLE EITHER PARALLEL OR PERPENDICULAR TO SUPPORT STEEL.

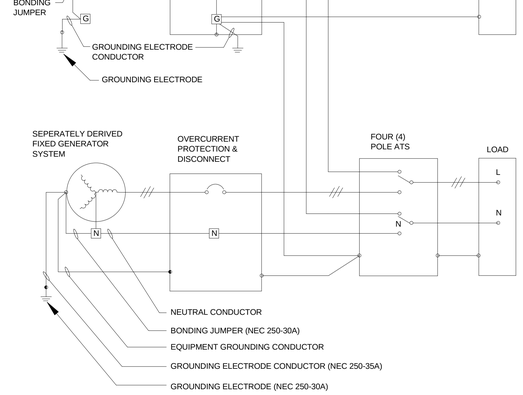


NOTES:

1. SUPPORTING CABLE IS ACCEPTABLE BELOW SUPPORT STEEL OR ABOVE STEEL. COORDINATE MOUNTING LOCATIONS WITH OTHER TRADES AND FIELD CONDITIONS. PROVIDE SUPPORT CLIPS AND THREADED RODES AS REQUIRED FOR A COMPLETE SUPPORT SYSTEM AS INDICATED.
2. SUPPORT CABLES FROM EITHER PARALLEL OR PERPENDICULAR SUPPORT STEEL.
3. BUNDLE A UP TO A MAXIMUM OF (6) SIX CABLES.

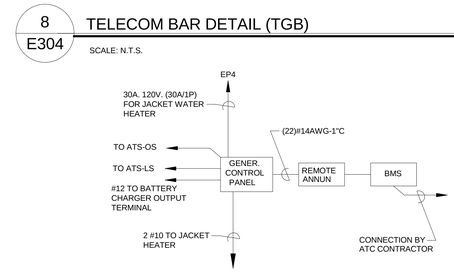
10 E304 TYPICAL MC CABLE SUPPORTING DETAIL

SCALE: N.T.S.



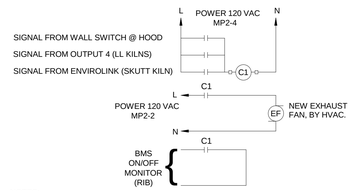
11 E304 SEPARATELY DERIVED GENERATOR SYSTEM

SCALE: N.T.S.



12 E304 TYPICAL EMERGENCY GENERATOR CONTROL WIRING

SCALE: N.T.S. (NOTE: MAY VARY BY MANUFACTURER)



NOTES:

1. C1 = DPDT WITH 120V COIL RATED AT 1 HP, 120 VOLT, NEMA 1 ENCLOSURE, BY E.C.
2. ENVIROLINK ACCESSORY FOR SKUTT KILN UNITS SHALL BE PROVIDED BY THE OWNER.
3. OWNER SHALL ADD INTERFACE SEQUENCE AND ENVIROLINK FOR EXHAUST FAN INTERFACE. WHEN EITHER KILN IS ON, EXHAUST FAN IS ON AND REMAINS ON FOR 20 MIN. TIME DELAY AFTER KILNS ARE TURNED "OFF".

13 E304 KILN EXHAUST FAN TIE-IN DETAIL

SCALE: N.T.S.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

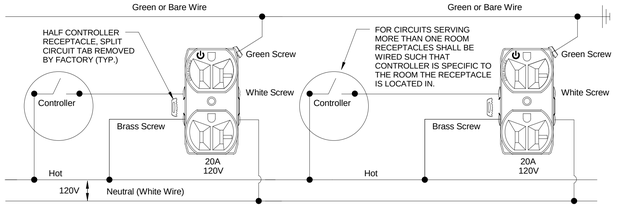
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
ELECTRICAL DETAILS

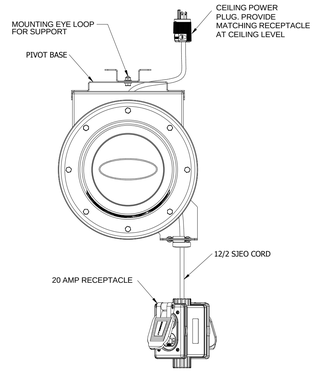
PROJECT NO. 1722

DRAWING NO.
E304



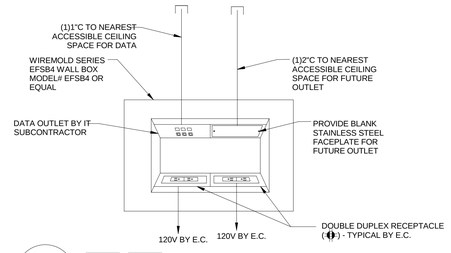
1 E305 PLUG LOAD CONTROLLED RECEPTACLE DETAIL

SCALE: N.T.S.



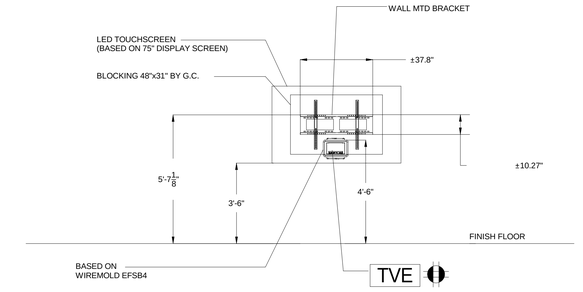
2 E305 CORD REEL DETAIL

SCALE: N.T.S.



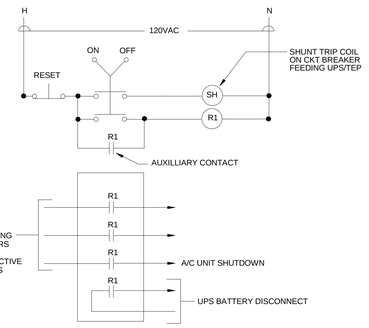
2 E305 TVE / TVC BOX AND CONDUIT PROVISION DETAIL

SCALE: N.T.S.



4 E305 TYPICAL CLASSROOM TOUCHSCREEN DISPLAY OUTLET LAYOUT

SCALE: N.T.S.

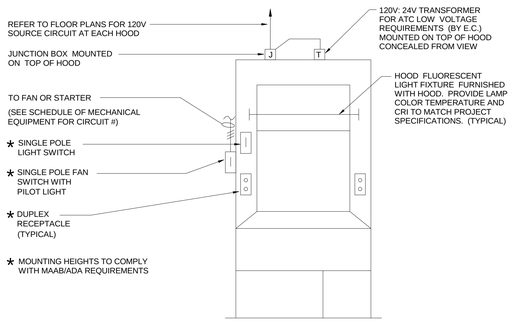


5 E305 NOT USED

SCALE: N.T.S.

6 E305 TECH MDF ROOM SHUT DOWN DETAIL

SCALE: N.T.S.

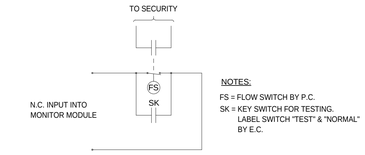


NOTES:

1. REFER TO APPROVED SHOP DRAWINGS FOR EXACT REQUIREMENTS.
2. REFER TO ARCH. DWGS. FOR FUME HOOD TYPES AND DETAILS FOR ALL COMPONENT REQUIREMENTS.
3. UNLESS NOTED OTHERWISE, ALL COMPONENTS ARE SHIPPED LOOSE AND REQUIRE ASSEMBLY & WIRING BY THE ELECTRICAL CONTRACTOR.
4. ALL LOW VOLTAGE WIRING IS THE RESPONSIBILITY OF THE ATC CONTRACTOR.

7 E305 TYPICAL LAB FUME HOOD WIRING REQUIREMENTS

SCALE: N.T.S.



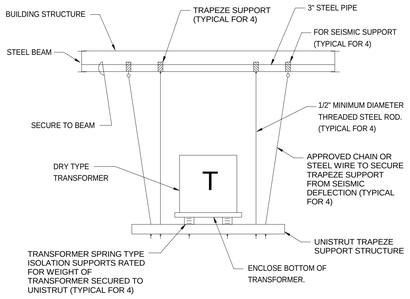
NOTES:

FS = FLOW SWITCH BY P.C.
SK = KEY SWITCH FOR TESTING. LABEL SWITCH "TEST" & "NORMAL" BY E.C.

8 E305 KEY SWITCH FOR EMERGENCY SHOWER FLOW SWITCH OVER-RIDE

SCALE : N.T.S.

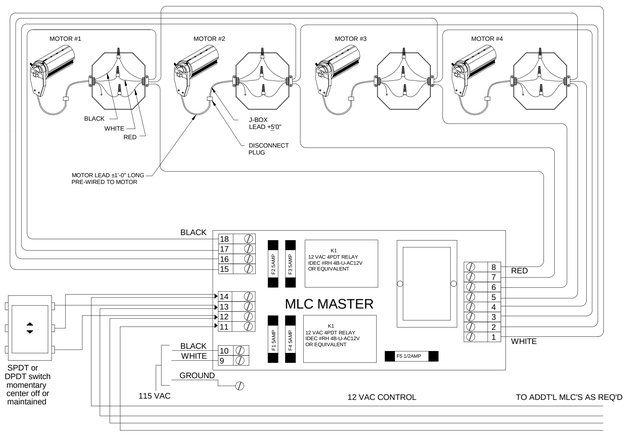
NOTE:
THE PURPOSE OF THIS DETAIL IS FOR OWNER TESTING.



9 E305 TRAPEZE MOUNTED TRANSFORMER DETAIL

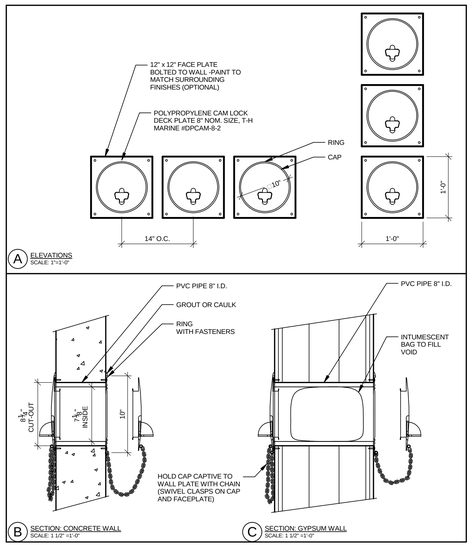
SCALE: N.T.S.

NOTE: CONFIRM WITH STRUCTURAL ENGINEER.



10 E305 MOTOR LOGIC CONTROLLER (MLC) WIRING DIAGRAM

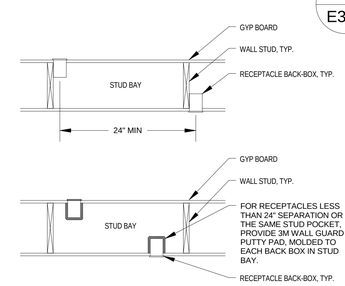
SCALE: N.T.S.



11 E305 THEATRICAL WALL CABLE PASS DETAIL

SCALE: N.T.S.

NOTE: TYPICALLY MOUNT AT 18" A.F.F. COORDINATE EXACT HEIGHT AND LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN



NOTES:

1. ALL BOXES ARE TO BE OFFSET HORIZONTALLY WHERE SPACES SHARE A STUD WALL IN WHICH OUTLETS ARE TO BE INSTALLED.

2. WHERE BACK BOXES EXCEED 100 SQUARE INCHES PER 100 SQUARE FEE OF WALL SURFACE FOR FIRE RATED WALLS, PROVIDE 3M WALL GUARD PUTTY, MOLDED TO BACK-BOX.

12 E305 ELECTRICAL BACK-BOX INSTALLATION DETAIL

SCALE: N.T.S.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

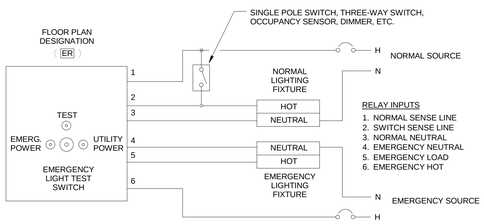
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
ELECTRICAL DETAILS

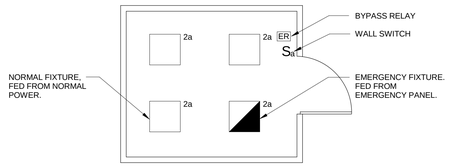
PROJECT NO. 1722

DRAWING NO.
E305



NOTES:

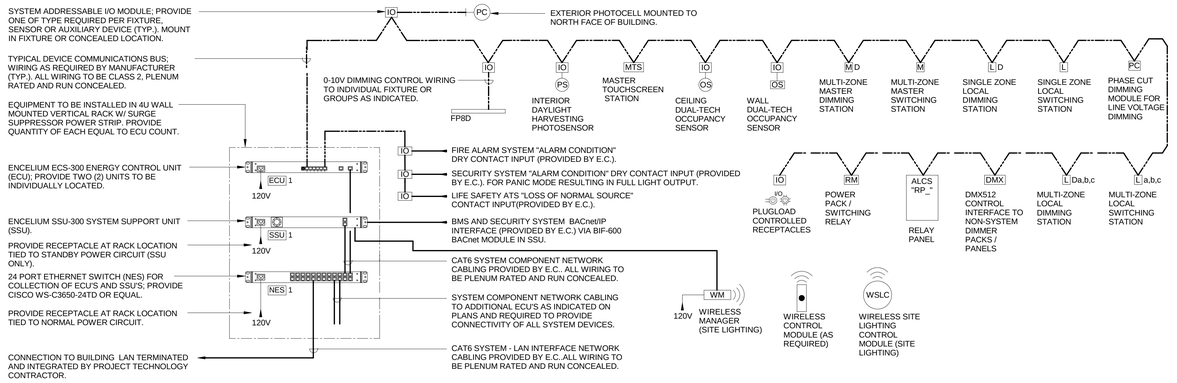
1. ALL SWITCH AND SENSOR CONTROLLED EMERGENCY LIGHTING IN PUBLIC AREAS, EGRESS ROUTES AND ALL "NORMALLY-OFF" EMERGENCY LIGHTING SHALL BE CONTROLLED BY AN EMERGENCY SUPERVISORY RELAY TO AUTOMATICALLY ENERGIZE EMERGENCY LIGHTS WHEN NORMAL (UTILITY) POWER FAILS. WHERE MORE THAN THREE CIRCUITS SERVE AN AREA, PROVIDE A HOMERUN(S) FROM RESPECTIVE LIGHTING PANEL(S) TO SENSING COIL.
2. THE EMERGENCY BYPASS RELAY TIES TO THE NORMAL CIRCUIT AND SWITCH TO MONITOR THE NORMAL SOURCE AND MIMIC THE SWITCH POSITION. THE RELAY ALLOWS THE ROOM SWITCH TO CONTROL THE EMERGENCY FIXTURE(S) DURING NORMAL OPERATION AND BYPASS THE SWITCH TO TURN LIGHTS ON DURING EMERGENCY OPERATION REGARDLESS OF THE SWITCH POSITION.
3. RELAY SHALL BE UL 924 LISTED, SOLID STATE, AND HAVE MECHANICALLY HELD RELAYS IN COMPLIANCE WITH NEC 700 AS MANUFACTURED BY BODINE, SCHNEIDER, BLTC, OR EQUAL.
4. MOUNT RELAY IN A SQUARE 4 11/16" JUNCTION BOX TO BE LOCATED ABOVE THE CEILING DIRECTLY ABOVE THE WALL SWITCH LOCATION OR IN A REMOTE LOCATION WHERE HARD CEILINGS WOULD PREVENT ACCESS. COORDINATE FINAL LOCATION WITH BUILDING CONSTRUCTION AND THE WORK OF OTHER TRADES TO ENSURE A READILY ACCESSIBLE MOUNTING LOCATION..



APPLICATION EXAMPLE

1 / E306 EMERGENCY SUPERVISORY BY-PASS RELAY DETAIL

SCALE: N.T.S.



AUTOMATED LIGHTING CONTROL SYSTEM NOTES:

1. PROVIDE SWITCHING AND 0-10V DIMMING CONTROL FOR ALL LIGHTING (REFER TO PLANS) WITH PRESETS VIA I/O MODULES AND ACCESSORY POWER PACKS..
2. PROVIDE ALL SYSTEM COMPONENTS (AND WARRANTIES) FROM A SINGLE MANUFACTURER EXCEPT WHERE OTHERWISE SPECIFIED.
3. PROVIDE GANGED MASTER AND LOCAL SWITCHES AT LOCATION AS INDICATED FOR USER CONTROL OF LIGHTING (UNDER COMMON MULTI-GANG PLATE).ALL SWITCHES SHALL BE PROVIDED WITH ENGRAVED LABELS ON PLATES DESIGNATING THEIR FUNCTION. FILL FOR ENGRAVED LETTERING SHALL BE AS DIRECTED BY THE ARCHITECT.
4. PROVIDE ENERGY MONITORING AND REPORTING MODULE TO ALLOW FOR ALL LIGHTING ELECTRICAL CONSUMPTION TO BE RECORDED, TRENDED, AND PASSED TO THE BMS SYSTEM VIA THE BACNET IP INTERFACE.
5. THE BASIS-OF-DESIGN FOR THIS SYSTEM IS THE OSRAM ENCELIUM SYSTEM (W/ POLARIS 3D AND PCS SOFTWARE) INCLUDING THE FOLLOWING COMPONENTS:

MASTER TOUCHSCREEN STATION:	#RTI-K4-M-BZW-K4-CO
LOCAL TOUCHSCREEN STATION:	#RTI-K4-L-BZW-K4-CO
SINGLE ZONE LOCAL SWITCHING / DIMMING STATION:	#EN-WS-R-GB2
SINGLE ZONE LOCAL SWITCHING STATION:	#EN-WS-R-GB2
MULTI-ZONE LOCAL SWITCHING / DIMMING STATION:	#EN-WS-SC3D-GB2
MULTI-ZONE LOCAL SWITCHING STATION:	#EN-WS-ZC3-GB2
CEILING DUAL-TECH OCCUPANCY SENSORS:	#SCM-2000
WALL DUAL-TECH OCCUPANCY SENSORS	#SCM-2000-W
CEILING PHOTOSENSOR:	#CES/I
EXTERIOR PHOTOCELL:	#CES/O
POWER PACK / SWITCHING RELAY:	#PPK-020
RELAY PANEL:	#EN-RP-24C-GB2

6. REFER TO THE "ALCS METHODS OF OPERATION NOTES" FOR SYSTEM SETUP REQUIREMENTS..
7. ALCS VENDOR SHALL ASSIST THE BMS SUB-SUB CONTRACTOR WITH ALL MAPPING OF BACNET DEVICES / POINTS.
8. LUTRON, SENSOR SWITCH, CRESTRON, PHILLIPS, COOPER OR EQUAL ARE ACCEPTABLE MANUFACTURER OPTIONS.
8. PROVIDE 0-10V TO DMX GATEWAY CONTROLLERS EQUAL TO ETC RSN-LV AND POWER SUPPLY PS-DIN24 FOR CONTROL OF THEATRICAL HOUSE LIGHTING. CONTROLLERS SHALL BE CONTROLLED VIA THEATRICAL CONTROL RACK. PROVIDE EMERGENCY CONTACT FOR CONTROL OVERRIDE UNDER LOSS OF POWER.

ALCS METHODS OF OPERATION NOTES

ZONING & PRESET LEVELS :

1. INTERIOR SPACES SHALL BE PROGRAMMED FOR 50% AND 100% DIMMING LEVELS TO BE ACTIVATED VIA LOCAL SWITCH STATIONS. LEVELS MAY BE ADJUSTED OUTSIDE OF THESE PRESETS VIA THE LOCAL WALL STATION. HOWEVER, WHERE PHOTOSENSORS ARE PRESENT THE LIGHTING SHALL NOT BE ALLOWED EXCEED THE FOOTCANDLE LEVEL ESTABLISHED BY THE SPACE'S PHOTOSENSOR BASED ON AVAILABLE DAYLIGHT CONTRIBUTION AT ANY GIVEN TIME.
2. LIGHTING WITHIN THE DAYLIGHT ZONE ADJACENT TO OPENINGS TO THE EXTERIOR SUCH AS WINDOWS AND SKYLIGHTS (DEPTH OF EACH DAYLIGHT ZONE RELATIVE TO THE DAYLIGHT OPENING SHALL BE AS DEFINED BY UTILITY COMPANY ADVANCED BUILDING PROGRAM CORE REQUIREMENTS AND COMMONWEALTH OF MASSACHUSETTS ENERGY CODE) SHALL BE PROGRAMMED TO ALLOW FOR CONTROL SEPARATE FROM THE REMAINDER OF THE SPACE.
3. EXTERIOR LIGHTING SHALL BE PROGRAMMED FOR 50% (POST-CURFEW) AND 100% (PRE-CURFEW) DIMMING LEVELS TO BE ACTIVATED VIA PHOTOCELL SETPOINTS AND TIMED SCHEDULES.
4. INTERIOR AND EXTERIOR PATHS OF EGRESS SHALL BE PROGRAMMED TO ACTIVATE AT 100% LEVELS UPON RECEIPT OF AN ALARM SIGNAL FROM THE LIFE SAFETY AUTOMATIC TRANSFER SWITCH, FIRE ALARM SYSTEM, AND SECURITY SYSTEM. LIGHTING LEVELS SHALL BE MAINTAINED AT 100% LEVELS REGARDLESS OF SUBSEQUENT INPUT REQUESTS UNTIL THE ORIGINATING ALARM SIGNAL IS RESTORED TO A NORMAL CONDITION. CONTACT CLOSURE OUTPUTS FROM EACH PIECE OF EQUIPMENT / SYSTEM SHALL BE PROVIDED BY THE RESPECTIVE VENDOR WITH COORDINATION OF ALL PROGRAMMING REQUIRED TO PROVIDE THE FUNCTIONALITY DESCRIBED.
5. REFER TO SPECIFICATIONS FOR FURTHER CONTROL SCENARIOS SUCH AS LOAD SHEDDING, PEAK LIMITING, TASK TUNING, ETC..
6. EXACT ZONING AND LEVEL PROGRAMMING SHALL BE TO MAPPED OUT (VIA BUILDING FLOOR & SITE GRAPHICS IN SYSTEM SOFTWARE) WITH THE OWNER OR THEIR REPRESENTATIVE PRIOR TO SYSTEM SETUP AND PROGRAMMING OF THE SYSTEM. ALL PROGRAMMING SHALL BE CONFIRMED AND COMPLETED PRIOR TO COMMISSIONING NO OWNER REQUESTED PROGRAMMING SHALL BE ALLOWED. WHICH WILL VIOLATE THE LEED PROGRAM REQUIREMENTS OR COMMONWEALTH OF MASSACHUSETTS BUILDING, ELECTRICAL, AND ENERGY CODES. OR ANY CODES REFERENCED THEREIN.

SWITCH STATION OPERATIONS :

1. INTERIOR SPACES SHALL BE PROVIDED WITH SWITCH STATIONS OF THE 3 BUTTON + RAISE/LOWER TYPE. BUTTONS SHALL BE PROGRAMMED GENERALLY AS FOLLOWS: BUTTON 1 = "ON" 100%, BUTTON 2 = "ON" 50%, BUTTON 3 = "ALL OFF", BUTTON 4 = RAISE/LOWER. WHERE PHOTOSENSORS ARE PRESENT THE LIGHTING SHALL NOT BE ALLOWED EXCEED THE FOOTCANDLE LEVEL ESTABLISHED BY THE SPACE'S PHOTOSENSOR BASED ON AVAILABLE DAYLIGHT CONTRIBUTION AT ANY GIVEN TIME.
2. SWITCH STATIONS SHALL BE PROGRAMMED FOR OVERRIDE OF TIMED SCHEDULE "OFF" PERIODS FOR A MAXIMUM OF 90 MINUTES.

SENSOR OPERATIONS :

1. INTERIOR PHOTOSENSORS (ADDRESSABLE): EACH PHOTOSENSOR SHALL BE PROGRAMMED TO MAINTAIN FOOTCANDLE SETPOINTS ESTABLISHED FOR EACH SPACE DURING SYSTEM SETUP AND COMMISSIONING. DIMMING DEADBANDS AND FADE/RISE RATES SHALL BE ESTABLISHED TO PROVIDE SMOOTH, NON-INTRUSIVE, CHANGES IN SPACE LIGHT LEVELS IN RESPONSE TO CHANGING DAYLIGHT CONTRIBUTIONS AT ANY GIVEN TIME.
2. EXTERIOR PHOTOCELLS (ADDRESSABLE): SENSOR SHALL BE PROGRAMMED TO TURN SITE LIGHTING "ON" AT DUSK AND TURN LIGHTS "OFF" AT DAWN. TIMED SCHEDULE PRESETS WILL DETERMINE OUTPUT LEVELS.
3. OCCUPANCY SENSORS (ADDRESSABLE): EACH OCCUPANCY SENSOR SHALL BE PROGRAMMED TO OPERATE IN A "VACANCY" MODE UNLESS OTHERWISE NOTED (CORRIDORS, STAIRS, AND ALL PORTIONS OF THE EGRESS PATH ARE GENERAL EXCEPTIONS) SO THAT MANUAL ACTIVATION OF THE LIGHTING VIA LOCAL SWITCH STATIONS IS REQUIRED. SENSORS SHALL MAINTAIN 100% DIMMING LEVELS LIGHTING FOR AS LONG AS MOTION IS DETECTED. ABSENCE OF MOTION DETECTION FOR THE FOLLOWING TIME PERIODS SHALL TRIGGER THE LIGHTING TO DIM TO THE LEVELS ASSOCIATED WITH EACH TIME PERIOD: 5 MINUTES = 50%, 10 MINUTES = 25%, 15 MINUTES = 10%, 30 MINUTES = OFF. NON-DIMMED FIXTURES SHALL SWITCH TO THE LEVELS ASSOCIATED WITH EACH TIME PERIOD: 5 MINUTES = 50%, 15 MINUTES = OFF. FADE/RISE RATES SHALL BE ESTABLISHED TO PROVIDE SMOOTH, NON-INTRUSIVE, CHANGES IN SPACE LIGHT LEVELS. MOTION DETECTED AT ANYTIME PRIOR TO THE 30 MINUTE FULL TIME-OUT SHALL RETURN THE LIGHTING TO THE 100% LEVEL.
4. SENSOR ADJUSTMENTS FOR ALL FUNCTIONS SHALL BE TURNED TO THE MINIMUM ON EACH DEVICE AND ADJUSTED SOLELY THROUGH THE SYSTEM SOFTWARE.

3 / E306 AUTOMATED LIGHTING CONTROL SYSTEM ONE-LINE DIAGRAM

SCALE: N.T.S.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

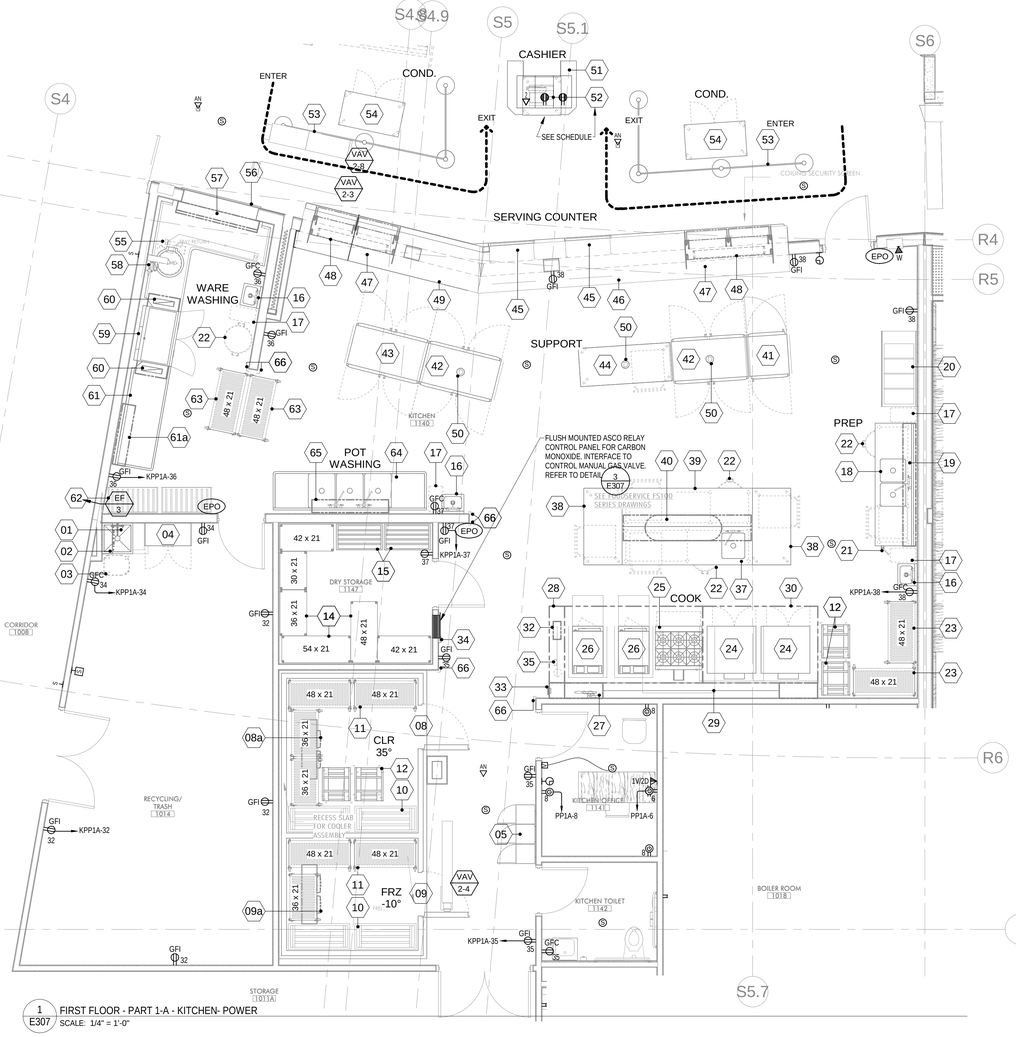
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
ELECTRICAL DETAILS

PROJECT NO. 1722

DRAWING NO.
E306

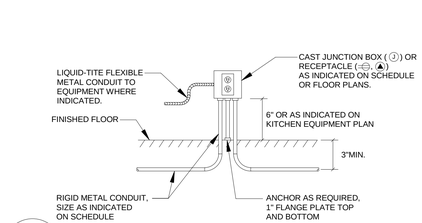


1 / E307 FIRST FLOOR - PART 1-A - KITCHEN- POWER

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

KITCHEN EQUIPMENT NOTES:

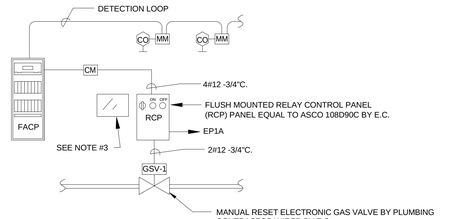
1. REFER TO KITCHEN EQUIPMENT DRAWINGS AND ARCHITECTURAL DRAWINGS FOR KITCHEN EQUIPMENT LAYOUT, ELECTRICAL CHARACTERISTICS, AND EXACT LOCATION, ROUGH-IN AND CONNECTION REQUIREMENTS.
2. COORDINATE WITH THE KITCHEN EQUIPMENT INSTALLER'S FINAL ELECTRICAL REQUIREMENTS PRIOR TO ROUGHING IN OF ANY ELECTRICAL WORK.
3. PROVIDE ALL DISCONNECTING DEVICES FOR ALL KITCHEN EQUIPMENT REQUIRED BY ELECTRICAL CODE ART. 422, PART D UNLESS PROVIDED AS PART OF KITCHEN EQUIPMENT.
4. GROUND CONDUCTORS SIZED PER ELECTRIC CODE GROUNDING CONDUCTOR TABLE 250-95 SHALL BE INCLUDED IN ALL CULINARY ARTS BRANCH CIRCUITS.
5. PROVIDE CONTROL CONNECTION FROM AUTOMATIC FIRE SUPPRESSION SYSTEM TO SHUNT TRIP AND SOLENOID CONTROLS.
6. ALL DIRECT CONNECTIONS TO KITCHEN EQUIPMENT SHALL BE MADE PER KITCHEN EQUIPMENT MANUFACTURER'S REQUIREMENTS, VERIFY LIQUITITE FLEXIBLE CONDUIT/CORD LENGTHS REQUIRED.
7. ALL SWITCHES INSTALLED AS AN EQUIPMENT DISCONNECTING MEANS SHALL BE LABELED WITH THE DESCRIPTION OF THE EQUIPMENT BEING SERVED. EXAMPLE: WALK-IN COOLER.
8. EXPOSED WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS FOR A WET AREA. MOUNT WORK OFF SURFACES TO ALLOW CLEANING. ALL WORK SHALL USE GALVANIZED OR CORROSIVE RESISTANT MATERIALS. CONDUITS PENETRATING FLOOR SHALL BE RIGID GALVANIZED STEEL.
9. CIRCUIT SIZE SHALL MATCH THE CIRCUIT BREAKER AMPACITY, REFER TO SCHEDULES.
10. TO HOOD SUPPLIED JB @ CEILING TO FEED HOOD LIGHTING FROM REMOTE SWITCH PROVIDED BY E.C. & CONTROL SWITCH FOR REMOTE FAN PROVIDED BY E.C.
11. JB MTD CEILING TO LIGHTS FROM REMOTE SWITCHES PROVIDED BY E.C. (EACH SIDE CONTROLLED SEPARATELY) CONTROL SWITCHES FOR REMOTE FANS PROVIDED BY E.C. (EACH SIDE CONTROLLED SEPARATELY).
12. INSTALL AND CONNECT LIGHT FIXTURES IN COOLER & FREEZER, FURNISHED BY KITCHEN EQUIPMENT SUPPLIER.
13. TRENCH FLOOR AS REQUIRED TO FEED KITCHEN ISLANDS (IF APPLICABLE).
14. UNLESS OTHERWISE NOTED ALL CIRCUITS SHALL BE FED FROM PANEL "KPP1A".
15. ALL FLOOR BOXES IN KITCHEN SHALL BE INSTALLED 6" AFF. FLOOR BOXES SHALL BE WATERTIGHT.
16. PROVIDE SHUTDOWN WIRING FOR GAS SOLENOID IN CULINARY ARTS FROM ANSUL SYSTEM.
17. CONNECT KITCHEN WALK-IN COOLER & FREEZER ALARMS TO LOCAL DDC SYSTEM WITH 2 #14 - 3/4"C FOR EACH ALARM. ALSO REFER TO KITCHEN DRAWINGS FOR FURTHER CLARIFICATION. FINAL CONNECTION AT BMS BY ATC CONTRACTOR.
18. ALL DISCONNECT SWITCHES LOCATED IN THE KITCHEN AREA SHALL BE NEMA 4X STAINLESS STEEL.
19. ALL SINGLE PHASE RECEPTACLES 50 AMPS OR LESS AND THREE PHASE RECEPTACLES 100 AMPS OR LESS IN THE KITCHEN SHALL BE PROVIDED WITH GROUND FAULT PROTECTION (GFI) PER NEC ARTICLE 210.8.B(2).
20. PROVIDE JUNCTION BOX FOR UNIT LIGHTS, FOR DOOR HEATER, AND AUDIO/VISUAL ALARM.
21. E.C. TO WIRE-THERMOSTATS FOR WALK-IN REFRIGERATORS AND FREEZERS REFER TO FOOD SERVICE DRAWINGS FOR FURTHER INFORMATION.
22. PROVIDE 3#12 WIRES FROM MICRO SWITCH FOR FIRE EXTINGUISHER IN CEILING TO U.D.S (ITEM #29).
23. PROVIDE THE FOLLOWING WIRING FROM THE FIRE SUPPRESSION SYSTEM:
    A) 2#12 TO VENTILATOR CONTROL PANEL (N.O.).
    B) 2#12 WIRES TO GAS VALVE AND CONTRACTOR.
    C) 3#12 WIRES TO FIRE/FUEL SHUTOFF VALVE IN U.D.S. (ITEM #29).
    D) 2#12 WIRES TO AUTO/MAN RELEASE.
24. EXTEND 1"C FOR DATA OUTLETS FOR CASH REGISTERS TO KITCHEN OFFICE (TYPICAL).



2 / E307 TYPICAL KITCHEN RAISED JUNCTION/OUTLET BOX INSTALLATION

SCALE: N.T.S.

NOTE:
THIS DETAIL DOES NOT APPLY TO P.O.S. FLOOR BOXES.



3 / E307 CARBON MONOXIDE GAS SOLENOID SHUT DOWN DETAIL

SCALE: NTS

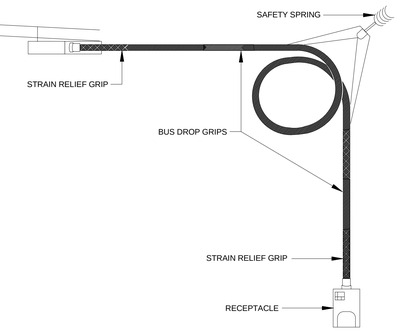
NOTES:

1. CARBON MONOXIDE (CO) DETECTORS SHALL BE PROGRAMMED AS SUPERVISORY POINTS IN THE FACP. UPON DETECTION OF CO, POWER SHALL BE INTERRUPTED TO THE (RCP) AND THE GAS SHUTOFF WILL CLOSE.
2. GAS FLOW MAY BE RESTARTED AFTER THE CO DETECTION AND THE FACP ARE RESET WHICH WILL RE-POWER THE (RCP), TURNING THE KEY SWITCH TO "ON" WILL ENERGIZE THE SOLENOID.
3. YELLOW ENGRAVED WARNING PLACARD, MOUNTED ADJACENT TO THE (RCP), WITH THE FOLLOWING"CAUTION- GAS FLOW IS RE-ESTABLISHED WHEN "ON" KEY SWITCH IS TURNED AND GAS VALVE IS MANUALLY RESET. RELIGHT ALL ASSOCIATED PILOTS IMMEDIATELY UPON RESET. CO DETECTORS AND THE FIRE ALARM SYSTEM CONTROL PANEL MUST CLEAR OF ANY CO ALARMS PRIOR TO RESET".

4 / E307 KITCHEN HOOD VENTILATOR DEMAND CONTROL SYSTEM WIRING DIAGRAM (ITEM #32)

SCALE : N.T.S.

NOTE: REFER TO APPROVED FOOD SERVICE SUBMITTALS WIRING DIAGRAM FOR FINAL COORDINATION OF ITEM #32.



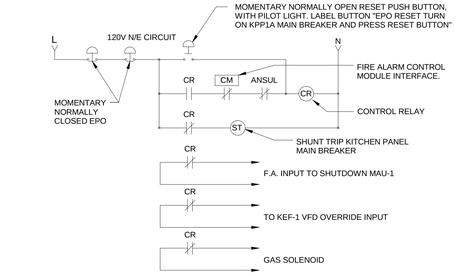
6 / E307 CABLE DROP SUPPORT DETAIL

SCALE: NTS

KITCHEN EQUIPMENT SCHEDULE

EQUIP NO.	EQUIPMENT	QTY	HP	K.W.	AMPS.	VOLT Ø	PANEL	CKT. NO.	BRKR.	WIRE & COND.	EQUIPMENT AND CONNECTIONS TS									REMARKS
08	WALK IN COOLER - LIGHTS	1	-	1.1	-	120/1	EP1A	1	20A-1P	2#12+1#12G-3/4"C	-	-	-	-	X	-	-	-	X	-
	WALK-IN COOLER - DRAIN LINE HEAT TRACE	1	-	-	-	120/1	EP1A	3	20A-1P	2#12+1#12G-3/4"C	X	-	-	-	X	-	-	-	X	-
	WALK IN COOLER - ALARM	1																		SEE NOTE #17
08A	WALK-IN COOLER - EVAPORATOR COIL	1	-	-	2.0	120/1	EP1A	5	20A-1P	2#12+1#12G-3/4"C	X	-	-	-	X	-	-	-	X	PROVIDE 6 #14 FOR INTERLOCK TO CONDENSING UNIT
08B	WALK IN COOLER - CONDENSING UNIT	1	-	-	6.5	208/3	EP1A	7,9,11	20A-3P	4#12+1#12G-3/4"C	-	-	-	X	X	-	-	-	X	-
	WALK IN FREEZER - LIGHTS	1	-	1.3	-	120/1	EP1A	2	20A-1P	2#12+1#12G-3/4"C	-	-	-	-	X	-	-	-	X	-
09	WALK-IN FREEZER - DRAIN LINE HEAT TRACE	1	-	-	-	120/1	EP1A	4	20A-1P	2#12+1#12G-3/4"C	X	-	-	-	X	-	-	-	X	-
	WALK IN COOLER - ALARM	1																		SEE NOTE #17
09A	WALK-IN FREEZER - EVAPORATOR COIL	1	-	-	8.2	208/1	EP1A	14,16	20A-2P	3#12+1#12G-3/4"C	-	-	-	X	X	-	-	-	X	PROVIDE 6 #14 FOR INTERLOCK TO CONDENSING UNIT
09B	WALK IN FREEZER - CONDENSING UNIT	1	-	-	12.0	208/3	EP1A	8,10,12	30A-3P	4#10+1#10G-3/4"C	-	-	-	X	X	-	-	-	X	-
18	PREP TABLE WITH SINKS	1	-	-	-	120/1	KPP1A	1 & 3	(2) 20A-1P	(2) 2#12+1#12G-3/4"C	-	-	-	-	-	-	(2) X	-	-	-
20	VEGETABLE WASHER	1	-	-	17.0	480/3	MHP1A	1,3,5	30A-2P	4#10+1#10G-3/4"C	-	-	-	X	-	-	-	-	-	-
24	DOUBLE CONVECTION OVEN	2	-	-	(2) 8.0	120/1	-	-	-	-	-	-	-	-	(4) X	-	-	-	-	POWER CONNECTION IS FROM ITEM #29
25	SIX-BURNER RANGE WITH OVEN	1	-	-	-	120/1	-	-	-	-	-	-	-	-	X	-	-	-	-	POWER CONNECTION IS FROM ITEM #29
26	TEN PAN CONVECTION STEAMER	2	-	0.3	-	120/1	-	-	-	-	-	-	-	-	(2) X	-	-	-	-	POWER CONNECTION IS FROM ITEM #29
27	WATER FILTER ASSEMBLY	2	-	-	-	120/1	-	-	-	-	-	-	-	-	(2) X	-	-	-	-	POWER CONNECTION IS FROM ITEM #29
28	EXHAUST VENTILATOR	1	-	-	-	120/1	-	-	-	-	-	-	-	-	X	-	-	-	X	POWER CONNECTION TO LIGHTS IS FROM ITEM #32
29	UTILITY DISTRIBUTION SYSTEM (UDS)	1	-	-	50.0	208/3	KPP1A	1,3,5	60A-3P	4#6+1#10G-1"C	-	-	X	-	X	-	-	-	X	-
30	EXHAUST VENTILATOR	1	-	-	-	120/1	-	-	-	-	-	-	-	-	X	-	-	-	X	POWER CONNECTION TO LIGHTS IS FROM ITEM #32
32	DVC CONTROL PANEL	1	-	-	-	120/1	EP1A	18 & 20	20A-1P	2#12+1#12G-3/4"C	-	-	-	-	(2) X	-	-	-	(2) X	REFER TO DETAIL 4/E307
33	DVC CONTROL INTERFACE	1																		CABLE FROM ITEM #32
34	ROOM TEMPERATURE SENSOR	1																		CABLE FROM ITEM #32
35	FIRE SUPPRESSION SYSTEM	1	-	-	-	120/1	EP1A	6	20A-1P	2#12+1#12G-3/4"C	-	-	-	-	X	-	-	-	X	-
37	COOK'S TABLE WITH SINK	1	-	-	-	120/1	KPP1A	5-7-9-11	(4) 20A-1P	(4) 2#12+1#12G-3/4"C	-	-	-	-	-	-	(4) X	-	-	-
41	PASS-THRU HEATED CABINET	1	-	-	6.3	208/1	KPP1A	8,10	20A-2P	3#12+1#12G-3/4"C	-	-	-	-	-	-	-	X	-	NEMA 6-20P
42	PASS-THRU REFRIGERATOR	2	-	-	11.0	120/1	EP1A	13 & 15	(2) 20A-1P	(2) 2#12+1#12G-3/4"C	-	-	-	-	-	(2) X	-	-	-	-
43	PASS-THRU HEATED CABINET	1	-	-	13.0	208/1	KPP1A	12,14	20A-2P	3#12+1#12G-3/4"C	-	-	-	-	-	-	-	X	-	NEMA 6-20P
45	REFRIGERATED SELF-SERVICE COUNTER CASE	2	-	-	10.7	120/1	EP1A	17 & 19	(2) 20A-1P	(2) 2#12+1#12G-3/4"C	-	-	-	-	-	(2) X	-	-	-	-
46	SERVING COUNTER	1	-	-	-	120/1	KPP1A	16 & 18	(2) 20A-1P	(2) 2#12+1#12G-3/4"C	-	-	-	-	-	-	(2) X	-	-	-
		1	-	-	-	120/1	KPP1A	20 & 22	(2) 20A-1P	(2) 2#12+1#12G-3/4"C	-	-	-	-	-	-	(2) X	-	-	-
47	HEATED BLACK GLASS SHELF	2	-	-	8.8	120/1	KPP1A	13 & 15	(2) 20A-1P	(2) 2#12+1#12G-3/4"C	-	-	-	-	-	(2) X	-	-	-	-
48	HEAT LAMP	2	-	1.25	-	208/1	KPP1A	17,19 & 21,23	(2) 20A-2P	(2) 3#12+1#12G-3/4"C	(2) X	-	-	-	(2) X	-	-	-	(2) X	-
49	SERVING COUNTER	1	-	-	-	120/1	KPP1A	24 & 26	(2) 20A-1P	(2) 2#12+1#12G-3/4"C	-	-	-	-	-	-	(2) X	-	-	-
		1	-	-	-	120/1	KPP1A	28 & 30	(2) 20A-1P	(2) 2#12+1#12G-3/4"C	-	-	-	-	-	-	(2) X	-	-	-
50	DROP CORDS	3	-	-	-	120/1	KPP1A	25-27-29	(3) 20A-1P	(3) 2#12+1#12G-3/4"C	-	-	-	-	-	-	(3) X	-	-	-
52	POS TERMINALS	1	-	-	-	120/1	EP1A	21 & 23	(2) 20A-1P	(2) 2#12+1#12G-3/4"C	-	-	-	-	-	-	(2) X	-	-	PROVIDE FLUSH FLOOR BOXES FOR POWER & DATA. ALSO PROVIDE (2) EMPTY 1"C WITH PULL STRING TO KITCHEN OFFICE FOR EACH STATION.
55	TROUGH COLLECTOR	1	-	-	5.5	208/1	KPP1A	31,33	20A-2P	3#12+1#12G-3/4"C	-	-	-	X	X	-	-	-	X	-
59	WAREWASHER - MACHINE & TANK HEAT	1	-	-	27.9	480/3	MHP1A	2,4,6	40A-3P	4#8+1#10G-3/4"C	-	-	-	X	X	-	-	-	X	-
	WAREWASHER - BOOSTER HEATER	1	-	-	40.1	480/3	MHP1A	8,10,12	60A-3P	4#6+1#10G-1"C	-	-	-	X	X	-	-	-	X	-

1 REFER TO FOOD SERVICE DRAWINGS FOR EXACT EQUIPMENT LOCATION AND ROUGHING REQUIREMENTS.



5 / E307 KITCHEN EQUIPMENT EMERGENCY POWER OFF WIRING DIAGRAM

SCALE: NTS

SEQUENCE OF OPERATIONS:

1. PROVIDE ALL RELAYS, PUSH BUTTONS, TRANSFORMERS, CONTACTORS SHUNT TRIP CIRCUIT BREAKERS, WIRING AND CONDUITS FOR A COMPLETE POWER OFF SYSTEM AND ALARM NOTIFICATION DESCRIBED IN PARAGRAPHS 2 & 3 BELOW.
2. THE ACT OF PUSHING ANY EMERGENCY POWER OFF PUSH-BUTTON, SHALL CAUSE THE FOLLOWING TO OCCUR:
   a. TURN OFF POWER TO THE GAS SOLENOID.
   b. TURN OFF POWER TO ALL ITEMS UNDER KITCHEN HOOD REQUIRING ELECTRICAL CONNECTION OR CONTROL BY TURNING OFF POWER TO KITCHEN PANEL VIA SHUNT TRIP MAIN BREAKER.
3. THE ACTIVATION OF HOOD FIRE SUPPRESSION SYSTEM, SHALL CAUSE THE FOLLOWING TO OCCUR:
   a. TURN OFF POWER TO THE GAS SOLENOID.
   b. TURN OFF POWER TO ALL ITEMS UNDER KITCHEN HOOD REQUIRING ELECTRICAL CONNECTION OR CONTROL BY TURNING OFF POWER TO KITCHEN PANEL VIA SHUNT TRIP MAIN BREAKER.
   c. SEND A SIGNAL TO THE FIRE ALARM CONTROL PANEL TO INITIATE (FACP) SYSTEM OPERATION.
4. COORDINATE WITH INSTALLERS OF FIRE SUPPRESSION SYSTEM, AND KITCHEN EQUIPMENT SUPPLIER.
5. ONE SYSTEM REQUIRED PER HOOD.
6. KITCHEN HOOD SUMMARY: THE HOOD FIRE SUPPRESSION SYSTEM CONTROL PANEL, UPON ACTIVATION, SHALL PUT THE FACP INTO "AUTO" ALARM MODE AND SHALL ALSO SHUTDOWN THE HOOD'S SUPLLY FAN, TURN OFF POWER TO THE GAS SOLENOID AND TURN OFF POWER TO ALL ITEMS UNDER THE KITCHEN HOOD. THE HOOD EXHAUST FAN SHALL CONTINUE TO OPERATE. FIRE ACTUATED DAMPERS IF INSTALLED IN THE EXHAUST OUTLET SHALL SHUT DOWN THE EXHAUST FAN UPON ACTUATION. IT SHALL NOT BE REQUIRED TO RESTART THE HOOD EXHAUST FAN WHEN THE EXTINGUISHING SYSTEM IS ACTIVATED IF THE EXHAUST FAN AND ALL COOKING EQUIPMENT SERVED BY THE FAN HAD PREVIOUSLY BEEN SHUTDOWN. SHUTOFF DEVICES SHALL REQUIRE MANUAL RESET.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

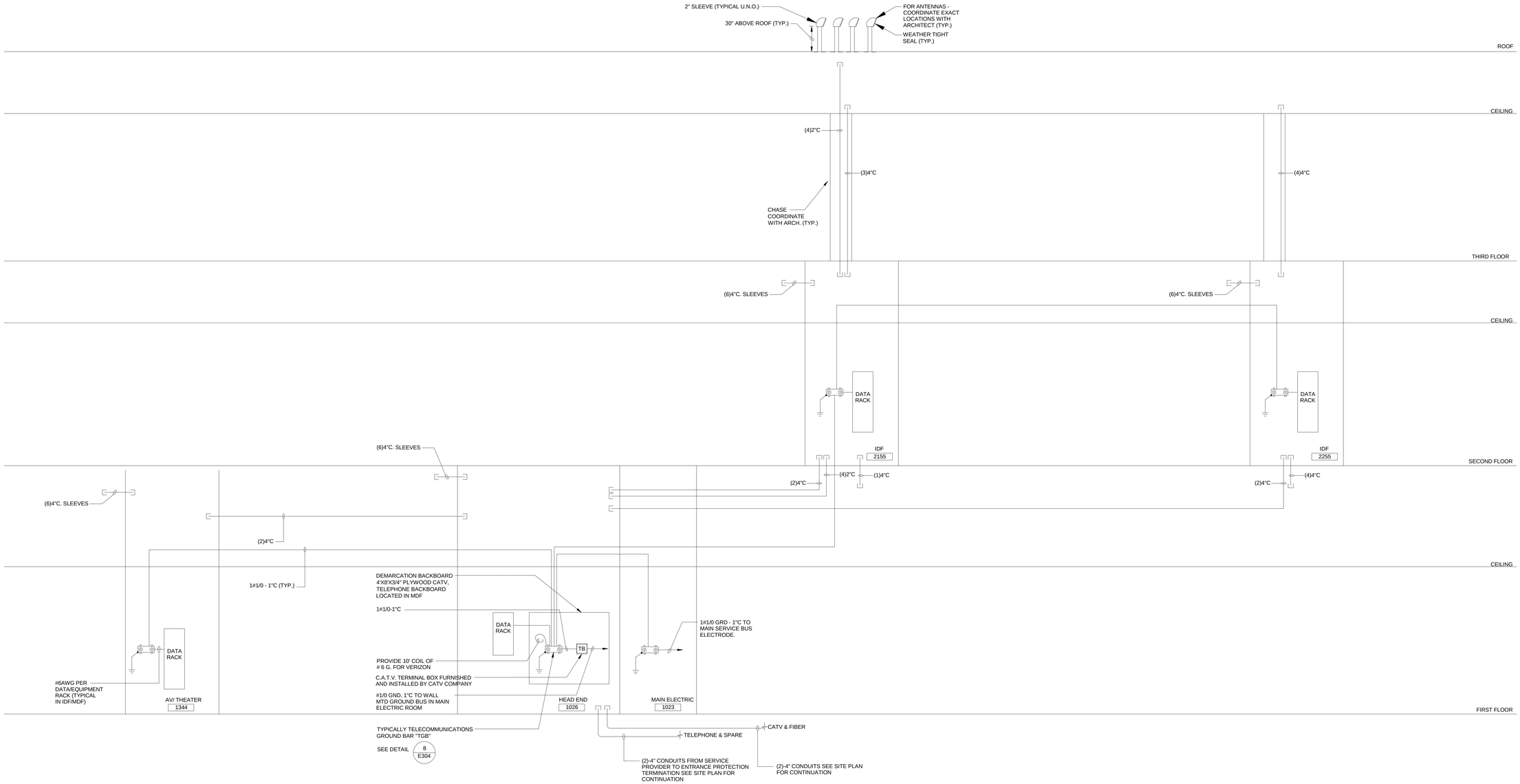
DRAWING NAME

FIRST FLOOR - PART 1-A - KITCHEN- POWER

PROJECT NO. 1722

DRAWING NO.

E307



1 E308 TELECOMMUNICATIONS CONDUIT & GROUNDING RISER DIAGRAM

SCALE: NTS

NOTES:

1. COORDINATE ALL SLEEVE LOCATIONS WITH TELECOMMUNICATIONS CONTRACTOR PRIOR TO INSTALLATION.
2. COORDINATE ALL CONDUIT ROUTING WITH TELECOMMUNICATIONS CONTRACTOR. PROVIDE PULL BOXES WHERE CONDUIT BEND EXCEEDS A TOTAL OF 180 DEGREES OR DISTANCE EXCEEDS 150'. ALWAYS ALIGN CONDUITS ON OPPOSITE ENDS OF PULL BOX.
3. PULL BOX SIZES FOR 4" CONDUITS SHALL BE MINIMUM 15" WIDE X 60" LONG X 8" DEEP. INCREASE WIDTH OF PULL BOX 8" FOR EVERY ADDITIONAL 4" CONDUIT.
4. ALL CONDUIT BENDS SHALL BE MINIMUM 36" RADIUS.
5. DO NOT RUN CONDUITS PARALLEL WITH POWER CONDUITS. MAINTAIN MINIMUM OF 4' CLEARANCE.
6. E.C. SHALL BOND ALL CABLE TRAY TO "TGB" IN RESPECTIVE DATA ROOM WITH #6 GROUND. THE CABLE TRAY SHALL BE ELECTRICALLY CONTINUOUS THROUGH. ENTIRE RUN INCLUDING ALL FITTINGS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Pleasant Corner Road - Suite D, Dartmouth, MA 02747 - 2208
508 - 998 - 5700 FAX 508 - 998 - 0903 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

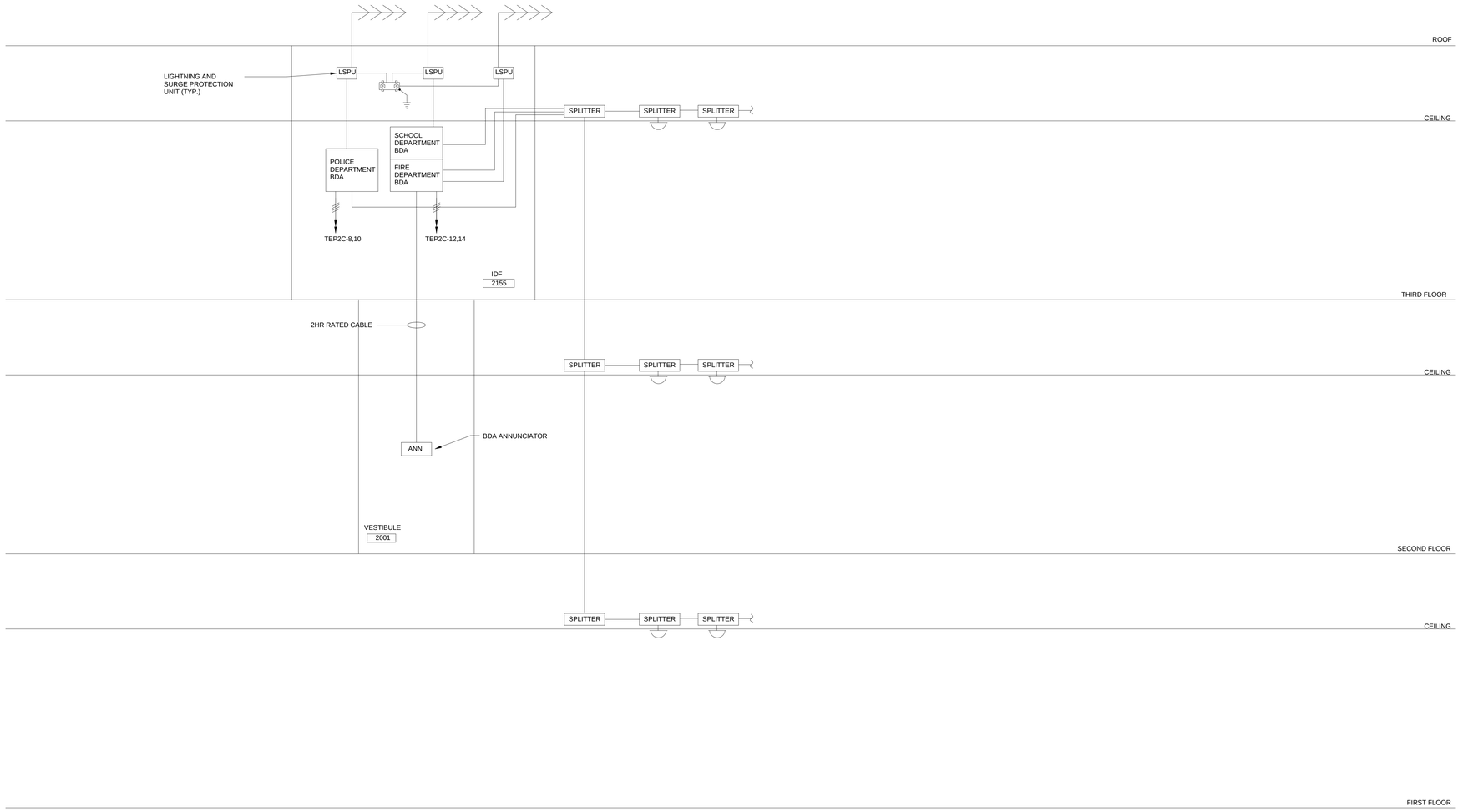
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
GROUNDING RISER DIAGRAM

PROJECT NO. 1722

DRAWING NO.
E308



1
E309

DISTRIBUTED ANTENNA SYSTEM (DAS/BDA)

SCALE: N.T.S.

DAS NOTES:

1. PROVIDE ALL BONDING HARDWARE REQUIRED FOR A COMPLETE GROUNDING SYSTEM TO ASSOCIATED PANELS, EQUIPMENT, SHELVES, RACKS, AND ANY OTHER METALLIC COMPONENTS TO ENSURE ELECTRICAL CONTINUITY BETWEEN METALIC COMPONENTS AND THE GROUNDED RACK OR CABINET.

2. MAXIMUM FOUR ANTENNAE PER REMOTE DEVICE. PROVIDE AND LOCATE DEVICES IN SUFFICIENT QUANTITY TO PROVIDE A MINIMUM SIGNAL COVERAGE OF 95% AT NEG. 85dBM WITHIN THE BUILDING.

3. PRIORITY AREAS OF COVERAGE INCLUDE THE GYMNASIUM, AUDITORIUM, COMMONS, CAFETERIA, CORRIDORS, MAIN ENTRANCE LOBBY AND STAIR WELLS.

4. ALL COMPONENTS THAT REQUIRE 120V SHALL BE FED FROM CONDITIONED/UPS POWER NEAREST "TEP" PANEL.

5. PUBLIC SAFTEY BI-DIRECTIONAL AMPLIFIERS, ANTENNAE "POLICE" "FIRE" AND "SCHOOL DEPT" SHALL BE PROVIDED. COORDINATE EXACT FREQUENCIES WITH THE TOWN/CITY PUBLIC SAFETY AUTHORITIES, AMPLIFIED DISTRIBUTION OF PUBLIC SAFETY FREQUENCIES SHALL BE OPERATIONAL AT SUBSTANTIAL COMPLETION OF THE PROJECT.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA INC.
CONSULTING ENGINEERS
215 Parkin Corner Road · Suite D, Dartmouth, MA 02747 - 2208
508 - 998 - 5700 FAX 508 - 998 - 0803 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

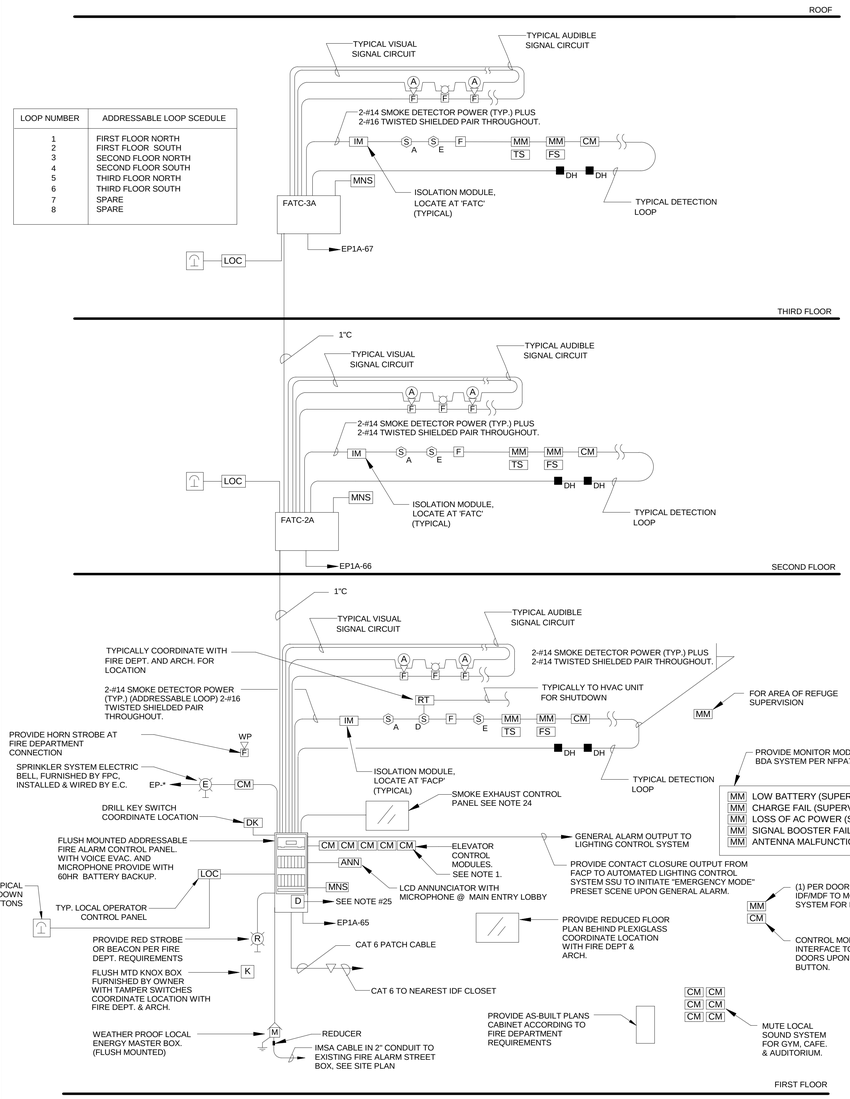
DRAWING NAME

DISTRIBUTED ANTENNA SYSTEM & DETAILS

PROJECT NO. 1722

DRAWING NO.

E309



LOOP NUMBER	ADDRESSABLE LOOP SCEDULE
1	FIRST FLOOR NORTH
2	FIRST FLOOR SOUTH
3	SECOND FLOOR NORTH
4	SECOND FLOOR SOUTH
5	THIRD FLOOR NORTH
6	THIRD FLOOR SOUTH
7	SPARE
8	SPARE

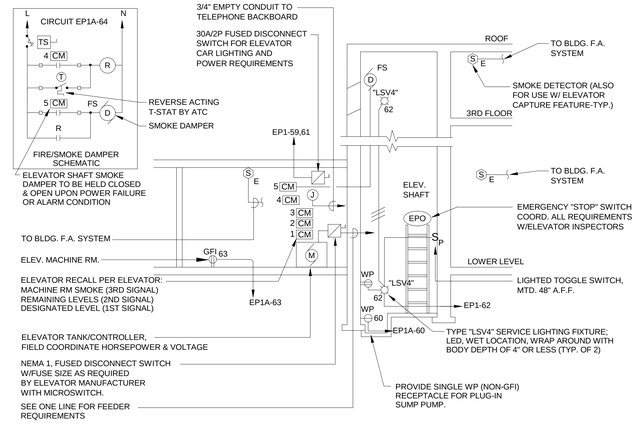
1 E400 FIRE ALARM RISER DIAGRAM
N.T.S.

ROOM SPACING FOR CEILING-MOUNTED VISIBLE APPLIANCES		
MAXIMUM ROOM SIZE	MAXIMUM LENS HEIGHT	MINIMUM REQUIRED LIGHT OUTPUT (EFFECTIVE INTENSITY) ; ONE LIGHT (cd)
20' x 20'	10	15
30' x 30'	10	30
40' x 40'	10	60
44' x 44'	10	75
50' x 50'	10	95
53' x 53'	10	110
55' x 55'	10	115
59' x 59'	10	135
63' x 63'	10	150
68' x 68'	10	177
70' x 70'	10	185
20' x 20'	20	30
30' x 30'	20	45
44' x 44'	20	75
46' x 46'	20	80
50' x 50'	20	95
53' x 53'	20	110
55' x 55'	20	115
59' x 59'	20	135
63' x 63'	20	150
68' x 68'	20	177
70' x 70'	20	185
20' x 20'	30	55
30' x 30'	30	75
50' x 50'	30	95
53' x 53'	30	110
55' x 55'	30	115
59' x 59'	30	135
63' x 63'	30	150
68' x 68'	30	177
70' x 70'	30	185

ROOM SPACING FOR WALL-MOUNTED VISIBLE APPLIANCES			
	MINIMUM REQUIRED LIGHT OUTPUT EFFECTIVE INTENSITY (cd)		
MAXIMUM ROOM SIZE	ONE LIGHT PER ROOM (CEILING HEIGHT)	TWO LIGHTS PER ROOM (LOCATED ON OPPOSITE WALLS)	FOUR LIGHTS PER ROOM ONE LIGHT PER WALLS
20' x 20'	15	NA	NA
28' x 28'	30	UNKNOWN	NA
30' x 30'	34	15	NA
40' x 40'	60	30	15
45' x 45'	75	UNKNOWN	19
50' x 50'	94	60	30
54' x 54'	110	UNKNOWN	30
55' x 55'	115	UNKNOWN	28
60' x 60'	135	95	30
63' x 63'	150	UNKNOWN	37
68' x 68'	177	UNKNOWN	43
70' x 70'	184	95	60
80' x 80'	240	135	60
90' x 90'	304	185	95
100' x 100'	375	240	95
110' x 110'	455	240	135
120' x 120'	540	305	135
130' x 130'	635	375	185

	SYSTEM INPUTS	CONTROL UNIT ANNUNCIATION: ACTUATE COMMON ALARM SIGNAL INDICATOR	ACTUATE AUDIBLE ALARM SIGNAL INDICATOR	ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTUATE AUDIBLE SUPERVISORY SIGNAL INDICATOR	ACTUATE COMMON TROUBLE SIGNAL INDICATOR	ACTUATE AUDIBLE TROUBLE SIGNAL INDICATOR	NOTIFICATION: ACTUATE ALL AUDIBLE EVACUATION SIGNALS	ACTUATE ALL VISIBLE EVACUATION SIGNALS	GENERAL TROUBLE SIGNAL - TO SUPERVISING STATION	TRANSMIT ALARM SIGNAL - TO SUPERVISING STATION	TRANSMIT SUPV. SIGNAL - TO SUPERVISING STATION	TRANSMIT TROUBLE SIGNAL - TO SUPERVISING STATION	RELEASE ELEVATOR FIRE DOORS	ELEVATOR SHUNT TRIP	MAIN FLOOR ELEVATOR RECALL	ALTERNATE FLOOR ELEVATOR RECALL	ELEVATOR MAT FLASH	ATRIUM SMOKE CONTROL ★	FAN AUTO DOWN	DAMPER SHUT DOWN	REMOTELY DISPLAY ACTIVE STATUS	ACTIVATE MASS NOTIFICATION SYSTEM		REMARKS
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W		
1	SMOKE SENSOR/DETECTOR	●	●					●	●	●	●										●	●		●	1	
2	MANUAL PULL STATION	●	●					●	●	●	●													●	2	
3	HEAT SENSOR/DETECTOR	●	●					●	●	●	●													●	3	
4	DUCT SENSOR/DETECTOR			●	●			●				●									●	●		●	4	
5	MAIN FLR. ELEV. LOBBY SMOKE DETECTOR	●	●					●	●	●	●		●			●		●			●	●		●	5	
6	ELEVATOR LOBBY SMOKE DETECTORS (EXC. MAIN FLR.)	●	●					●	●	●	●		●		●		●				●	●		●	6	
7	ELEVATOR MECH. ROOM HEAT DETECTOR	●	●					●	●	●	●					●								●	7	
8	ELEVATOR MECH. ROOM SMOKE DETECTOR	●	●					●	●	●	●						●		●		●	●		●	8	
9	ELEVATOR SHAFT SMOKE DETECTOR	●	●					●	●	●	●						●		●		●	●		●	9	
10	ELEVATOR POWER MONITOR			●	●			●			●	●												●	10	
11	WATERFLOW SWITCH	●	●					●	●	●	●													●	11	
12	TAMPER SWITCH			●	●			●			●	●												●	12	
13	GENERATOR RUNNING			●	●			●			●	●												●	13	
14	GENERATOR FAULT					●	●	●			●		●											●	14	
15	FIRE ALARM AC POWER FAILURE					●	●				●		●	●										●	15	
16	FIRE ALARM SYSTEM LOW BATTERY					●	●				●		●											●	16	
17	OPEN CIRCUIT OR GROUND FAULT					●	●				●		●											●	17	
18	CLASS A NOTIFICATION CIRCUIT (NAC) - SHORT					●	●				●		●											●	18	
19	ATRIUM SPRINKLER ZONE	●	●					●	●	●	●										●	●		●	19	
20	ATRIUM BEAM DETECTOR	●	●					●	●	●	●										●	●		●	20	
21	ATRIUM SPOT TYPE DETECTOR	●	●					●	●	●	●										●	●		●	21	
22	CARBON MONOXIDE SENSOR/DETECTOR			●	●			●			●	●												●	22	
23	METHANE SENSOR/DETECTOR			●	●			●			●	●												●	23	
24	PANIC BUTTON																						●		24	
25	MONITOR MODULE @ DOOR CONTROLLERS																						●		25	
26	LOC																						●		26	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W		

★ REFER TO DRAWING E400A FOR ATRIUM SMOKE CONTROL SEQUENCE



SEQUENCE OF OPERATION

1. SMOKE DETECTORS LOCATED IN EACH ELEVATOR LOBBY & MACHINE ROOM SHALL INITIATE ELEVATOR RECALL IN ADDITION TO SENDING SYSTEM INTO "AUTO" ALARM MODE FOR FIRE FIGHTERS SERVICE.
2. FIVE (5) CONTROL MODULES WILL BE LOCATED IN THE ELEVATOR MACHINE ROOM.
3. THE SMOKE DETECTOR LOCATED ON THE DESIGNATED LEVEL WILL ACTUATE THE FIRST CONTROL MODULE OF EACH ELEVATOR AND INITIATE THE ALTERNATE LEVEL RECALL.
4. THE SMOKE DETECTORS ON THE REMAINING ELEVATOR LEVELS WILL ACTUATE THE SECOND CONTROL MODULE FOR DESIGNATED LEVEL RECALL FOR EACH ELEVATOR.
5. THE THIRD CONTROL MODULE WILL BE ACTUATED BY A FIRE ALARM INITIATING DEVICE IN THE MACHINE ROOM, CONTROL SPACE, CONTROL ROOM AND/OR HOISTWAY AND WILL ILLUMINATE THE ASSOCIATED FIREFIGHTERS HAT.
6. WHERE THE ELEVATOR MACHINE ROOM IS LOCATED AT THE DESIGNATED LEVEL, THAT MACHINE ROOM SMOKE DETECTOR WILL ALSO ACTUATE THE FIRST CONTROL MODULE TO RECALL ELEVATOR TO THE ALTERNATE LEVEL.
7. THE FOURTH CONTROL MODULE WILL BE ACTUATED BY A FIRE ALARM INITIATING DEVICE IN THE MACHINE ROOM, CONTROL SPACE, CONTROL ROOM AND/OR HOISTWAY AND WILL ENERGIZE THE MACHINE ROOM EXHAUST FAN.
8. THE FIFTH CONTROL MODULE WILL BE ACTUATED BY A FIRE ALARM INITIATING DEVICE IN THE MACHINE ROOM, CONTROL SPACE, CONTROL ROOM AND/OR HOISTWAY AND WILL DE-ENERGIZE THE FIRE/SMOKE DAMPER CAUSING IT TO OPEN.

2 E400 ELEVATOR SHAFT AND MACHINE ROOM (NO SPRINKLER) DETAIL
N.T.S.

NOTES

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C.; INSTALLED BY HVAC.
3. TYPICALLY FIRE ALARM SYSTEM SIGNAL CONDUCTORS SHALL BE #14 AWG MINIMUM, TYPE THHN SOLID. ALL FIRE ALARM WIRING SHALL BE INSTALLED IN CONDUIT. PLENUM RATED LOW ENERGY FIRE ALARM CABLE IS ALLOWED WHERE CONCEALED AND ALLOWED BY CODE.
4. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED SO THAT THE SPEAKER/STROBES CAN BE SILENCED SIMULTANEOUSLY.
5. ALL SPEAKER/STROBES WITHIN ALL CLASSROOMS . SHALL BE MULTI-TAPPED TYPE. E.C. SHALL OWN dB AJUSTING DURING FIRE DEPARTMENT TESTING.
6. ALL SPEAKER/STROBES SHALL BE MOUNTED IN ACCORDANCE WITH ADA ROOM SPACING ALLOCATION TABLES FOR VISUAL SIGNALING DEVICES.
7. PROVIDE CONTROL MODULES TO OVERRIDE MAGLOCKS FOR CARD ACCESS. REFER TO SECURITY FLOOR PLANS FOR EXACT LOCATION AND QUANTITIES.
8. ALL DEVICES SHALL BE LABELED WITH CLEAR TAPE WITH BLACK INK. LABEL SHALL IDENTIFY LOOP# AND DEVICE NUMBER.
9. ALL REMOTE TEST STATIONS SHALL BE KEYED AND MOUNTED ADJACENT TO FACP OR AS DIRECTED BY LOCAL FIRE DEPT. LABEL EACH UNIT.
10. PULL STATIONS SHALL BE DOUBLE ACTION. PROVIDE TAMPER RESISTANT PLASTIC COVERS ON ALL PULL STATIONS.
11. A/V DEVICES SHALL NOT BE INSTALLED WITHIN MARKER BOARDS. COORDINATE EXACT LOCATION OF ALL A/V DEVICES W/ARCH. PRIOR TO INSTALLING.
12. ALL TAMPER AND SUPERVISORY SWITCHES SHALL BE WIRED AS LOCAL SUPERVISONS ALARM CONDITION UPON ACTIVATION. TROUBLE OR SUPERVISORY SHALL BE SELF RESTORING. TRANSMIT SIGNAL TO FIRE DEPT. BUT DO NOT ALARM BUILDING.
13. PRIOR TO SUBMITTING SHOP DRAWINGS, COORDINATE WITH LOCAL FIRE DEPT. FOR EXACT REQUIREMENTS. OBTAIN FIRE PREVENTION RULES AND REGULATIONS WHEN AVAILABLE AND COMPLY IN FULL.
14. COORDINATE WITH SELECTED SYSTEM MANUFACTURER FOR WIRING REQUIREMENTS.
15. ALL DETECTION &SIGNAL WIRING SHALL BE CLASS "A".
16. SUBMIT AS PART OF SHOP DRAWINGS COMPLETE FLOOR PLANS & RISERS WITH ALL DEVICES SHOWN AND WITH DEVICE ADDRESSES.
17. PROVIDE ISOLATION MODULE FOR EVERY 25 DEVICES, TYPICAL.
18. PROVIDE INTERFACE WITH SECURITY SYSTEM SO THAT ACTUATION OF FIRE ALARM SYSTEM WILL NOTIFY SECURITY SYSTEM TO UNLOCK SECURED DOORS REQUIRED BY THE FIRE DEPT. PROVIDE CONTROL MODULE AT EACH ELECTRIFIED STAIRWELL RE-ENTRY DOOR.
19. PROVIDE CONTACT CLOSURE INTERFACE TO AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) VIA A SINGLE PAIR OF 2#18 CONDUCTORS. WHEN FIRE ALARM SYSTEM GOES INTO ALARM A SIGNAL SHALL BE ISSUED TO ALLOW THE ALCS TO TURN ALL INTERIOR AND EXTERIOR LIGHTING "ON".
20. PROGRAMMING OF ADDRESSES SHALL BE COORDINATED WITH THE FIRE DEPARTMENT TO MATCH THE LOCAL FIRE DEPT. LABELING PROTOCOL. DEVICE ADDRESS DESCRIPTIONS TO BE ISSUED TO THE ARCHITECT AND FIRE DEPT. FOR APPROVAL PRIOR TO FINAL PROGRAMMING.
21. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE, GAS DETECTOR, ETC.
22. DOOR HOLDERS ARE FURNISHED BY HARDWARE, INSTALLED & WIRED BY E.C.
23. PROVIDE #18/2C TWISTED SHIELDED CABLE FROM FACP TO EACH LOCAL SOUND SYSTEM LOCATED IN CAFETORIUM, GYMNASIUM & MEDIA ROOM.
24. ALL WIRING FOR ATRIUM DETECTION AND CONTROL SYSTEM SHALL BE FULLY ENCLOSED IN CONTINUOUS RACEWAYS PER IBC 909.12.2.
25. PROVIDE CAT6 TELEPHONE CABLE, IN 3/4"C, TO DEMARCATION ALL SUPERVISORY AND TROUBLE SIGNALS TO BE SENT TO 911 COMMUNICATIONS CENTER. (COORDINATE WITH FIRE DEPT.)

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g - g - d .com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
FIRE ALARM RISER

PROJECT NO. 1722

DRAWING NO.
E400

SMOKE CONTROL PANEL
FULLER MIDDLE SCHOOL
FRAMINGHAM, MA

OPERATOR INSTRUCTIONS

1. SET MANUAL OVERRIDE KEY SWITCH TO "ON".

2. FANS: TURN ON/AUTO/OFF SWITCH TO DESIRED POSITION.

ON - MANUALLY ACTIVATES SELECTED FAN AND OPENS ASSOCIATED DAMPER.

AUTO - FIRE ALARM SYSTEM AUTOMATICALLY STARTS SMOKE EXHAUST SEQUENCE.

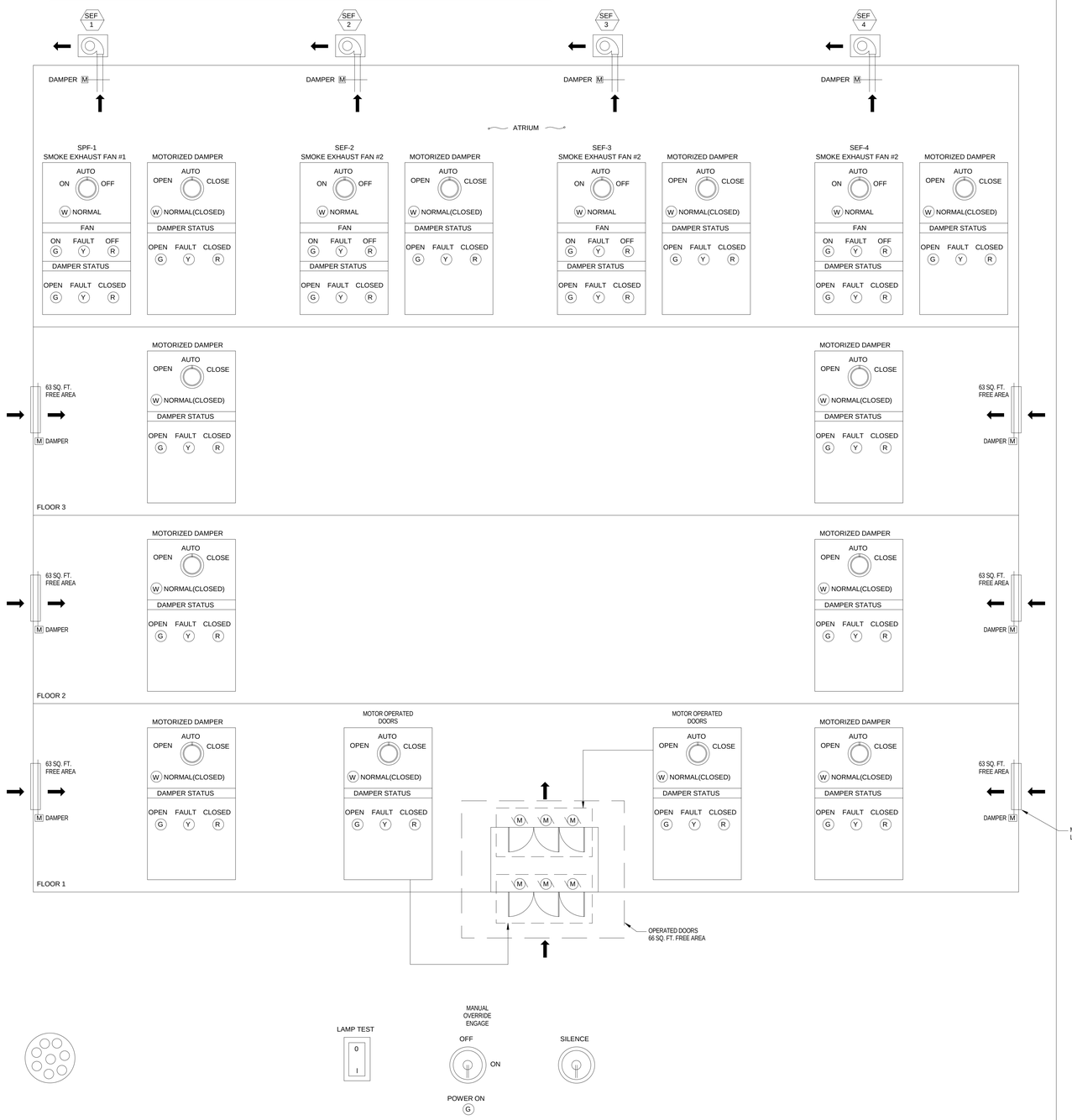
OFF - MANUALLY SHUT DOWN SELECTED FAN AND CLOSE ASSOCIATED DAMPER.

3. MOTORIZED DAMPER OPERATED LOUVERS: TURN OPEN/AUTO/CLOSE TO DESIRED POSITION.

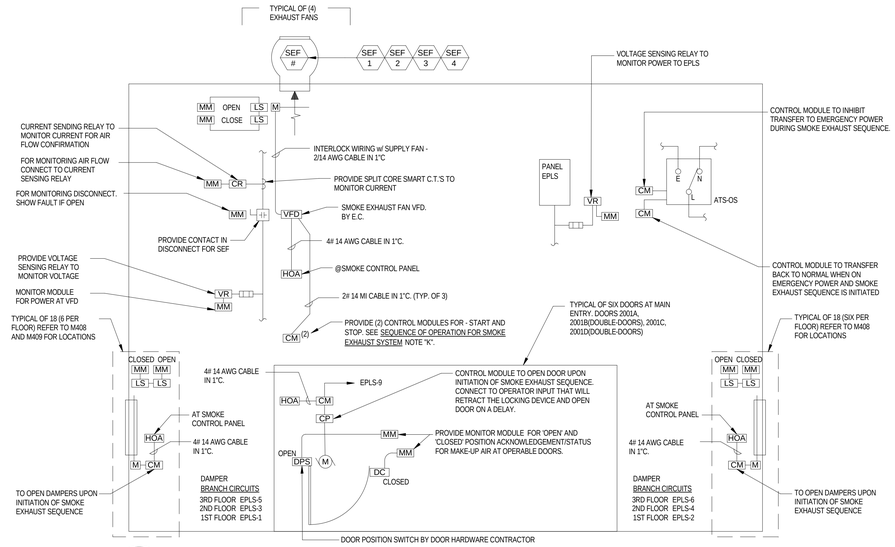
OPEN - MANUALLY OPENS SELECTED DAMPER.

AUTO - FIRE ALARM SYSTEM AUTOMATICALLY STARTS SMOKE EXHAUST SEQUENCE.

CLOSE - MANUALLY SHUT SELECTED DAMPER.



1 E400A ATRIUM SMOKE EXHAUST PANEL DETAIL
N.T.S.



2 E400A STAIR PRESSURIZATION PARTIAL FIRE ALARM RISER DIAGRAM
N.T.S.

NOTES:
1. ALL CONTROL WIRING AND POWER WIRING FOR/RELATED TO THE ATRIUM SMOKE EXHAUST SYSTEM SHALL BE ENCLOSED IN CONTINUOUS RACEWAYS PER IBC 909.12.2.

2. PROVIDE (11) HOA SWITCHES AS SHOWN ON THE ATRIUM SMOKE EXHAUST CONTROL PANEL DETAIL FOR FIRE DEPARTMENT USE. PROVIDE ALL CONTROLS, RELAYS, MONITOR MODULES, ETC. TO PROVIDE A COMPLETE AND OPERATIONAL SMOKE EXHAUST SYSTEM CONTROL SEQUENCE AS SHOWN AND DESCRIBED IN SEQUENCE OF OPERATION FOR SMOKE EXHAUST SYSTEM .

SEQUENCE OF OPERATION FOR SMOKE EXHAUST SYSTEM

1. THE ATRIUM SPACE INCLUDES A CENTRAL VERTICAL OPENING THROUGH ALL THREE FLOORS. THE BUILDING IS PROTECTED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM.
2. THE SPRINKLER ZONE SERVING THE ATRIUM, CONSISTS OF EXPOSED UPRIGHT HEADS AT ATRIUM. REFER TO FIRE PROTECTION DRAWINGS.
3. THE SPRINKLER SYSTEM IN THE NON-ATRIUM ZONES (EACH FLOOR WITH EXCEPTION TO ATRIUM) WILL BE ZONED SEPARATELY FROM THE SPRINKLER SYSTEM PROTECTING THE ATRIUM. ACTIVATION OF SPRINKLER ZONES THAT ARE NOT PART OF ATRIUM ZONE WILL NOT INITIATE ATRIUM SMOKE CONTROL SYSTEM.
4. THE SMOKE CONTROL SYSTEM CONSISTS OF FOUR ROOF MOUNTED EXHAUST FANS WITH VFD'S. THE EXHAUST DUCT FOR EACH FAN IS ROOF MOUNTED AND TRAVELS FROM EACH FAN TO FOUR SEPARATE FIRE/SMOKE DAMPERS (TOTAL OF 4) LOCATED WITHIN THE DUCTWORK PRIOR TO PENETRATING THE ATRIUM. THE MAKE-UP AIR SYSTEM CONSISTS OF OPERABLE LOUVERS LOCATED ON THE FIRST, SECOND, AND THIRD FLOORS EAST AND WEST SIDES OF THE ATRIUM AND OPERABLE DOORS ON THE FIRST FLOOR SOUTH.
5. THE AVAILABLE POWER IS MONITORED AT EACH VFD AND EACH DISCONNECT SWITCH.
6. UPON DETECTION OF SMOKE FROM ATRIUM BEAM DETECTORS, ATRIUM SPOT TYPE SMOKE DETECTOR OR ATRIUM SPRINKLER ZONE, THE SMOKE CONTROL SYSTEM SHALL OPERATE AS FOLLOWS:

   A. THE FIRE ALARM PANEL SHALL ACTIVATE AUTOMATIC SEQUENCE AND START "AUTO" MODE. AIR HANDLERS RTU-1, RTU-2, RTU-3, RTU-4 SHALL SHUT DOWN, SIGNAL TO ATS-OS SHALL BE SENT TO INHIBIT TRANSFER TO EMERGENCY POWER.
   B. THE MAKE-UP AIR SYSTEM SHALL INITIATE. THE MAKE-UP AIR SYSTEM CONSISTS OF (2) LOCATIONS OF OPERABLE DOORS LOCATED ON FIRST FLOOR. THERE ARE NINE (9) OPERABLE LOUVERS ON THE EAST SIDE OF ATRIUM AND NINE (9) OPERABLE LOUVERS ON WEST SIDE OF ATRIUM. LIMIT SWITCHES AT ALL MOTORIZED DOORS AND LOUVERS WILL CONFIRM STATUS OF DOOR/LOUVER "OPEN" AND "CLOSED" POSITION. THE TIME INTERVAL FOR DOORS/LOUVERS TO OPEN WILL TAKE 75 SECONDS. IN THE EVENT "OPEN" STATUS IS NOT ACHIEVED IN 90 SECONDS A FAULT CONDITION WILL INDICATE ON THE FIRE SMOKE CONTROL PANEL.
   C. SIMULTANEOUSLY WITH THE MAKE-UP AIR SYSTEM INITIATION, EXHAUST FIRE/SMOKE DAMPERS (TOTAL OF 3) SHALL INITIATE. LIMIT SWITCHES AT EACH FIRE/SMOKE DAMPER SHALL INDICATE STATUS AT FIRE SMOKE CONTROL PANEL. THE TIME INTERVAL FOR THE EXHAUST FIRE/SMOKE DAMPER TO OPEN WILL TAKE 45 SECONDS. IN THE EVENT OPEN STATUS IS NOT ACHIEVED IN 120 SECONDS A FAULT CONDITION WILL INDICATE ON THE FIRE SMOKE CONTROL PANEL.
   D. SMOKE EXHAUST FANS SEF-1, SEF-2, SEF-3, AND SEF-4 SHALL ACTIVATE UPON SIGNAL FROM FIRE SMOKE CONTROL PANEL ONCE "OPEN" STATUS OF FIRE/SMOKE DAMPERS AND MAKE-UP AIR SYSTEM IS CONFIRMED.
   E. THE SMOKE CONTROL SYSTEM SHALL CONTINUE TO OPERATE UNTIL FIRE PERSONNEL REACH THE SITE, AND THROUGH OPERATION OF HAND-OFF AUTOMATIC (H.O.A.) SWITCHES AT THE FIRE SMOKE CONTROL PANEL, WILL CYCLE THE SMOKE EXHAUST FANS AND MOTORIZED DOORS/LOUVERS TO SUITE SITE CONDITIONS.
   F. FOUR (4) HAND-OFF-AUTOMATIC (H.O.A.) SWITCHES WILL BE LOCATED IN THE FIRE SMOKE CONTROL PANEL FOR FIRE DEPARTMENT USE FOR MANUAL OVERRIDE OF SEF-1, SEF-2, SEF-3, AND SEF-4.
   G. H.O.A. SWITCHES FOR EXHAUST FANS SHALL ALSO OVERRIDE FIRE/SMOKE DAMPERS, RESPECTIVELY.
   H. SEVEN (7) HAND-OFF-AUTOMATIC SWITCHES WILL BE LOCATED IN THE SMOKE CONTROL PANEL FOR FIRE DEPARTMENT USE; FOR MANUAL OVERRIDE OF DAMPER OPERATED LOUVERS GROUPED IN 3 PER FLOOR ON THE EAST AND WEST OF THE ATRIUM AND 6 DOORS ON THE FIRST FLOOR SOUTH.
   I. IN THE EVENT LIMIT SWITCHES ON THE MAKEUP AIR SYSTEM AND/OR FIRE/SMOKE DAMPERS DO NOT INDICATE "OPEN" STATUS, AN ALARM SHALL BE INITIATED AT THE FIRE SMOKE CONTROL PANEL. IF AT LEAST 1/3 OF THE FIRE/SMOKE DAMPERS AND OPERABLE DOORS/LOUVERS INDICATE "OPEN" STATUS THE SMOKE CONTROL SYSTEM SHALL FUNCTION AND OPERATE PER THE SEQUENCE AT A REDUCED CAPACITY. A FAULT INDICATION SHALL BE TRANSMITTED TO THE FIRE SMOKE CONTROL PANEL IF EACH GROUP OF DOORS/LOUVERS DO NOT PROVE "OPEN" WITHIN 90 SECONDS INDICATE "FAULT" STATUS.
   J. THE SYSTEM SHALL BE FULLY OPERATIONAL WITHIN 135 SECONDS OF DETECTION OF FIRE WITHIN THE ATRIUM SMOKE ZONE.
   K. PROGRAM DELAYED START AFTER RECEIVING START SIGNAL AT EACH VFD GROUPS AS FOLLOWS:

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

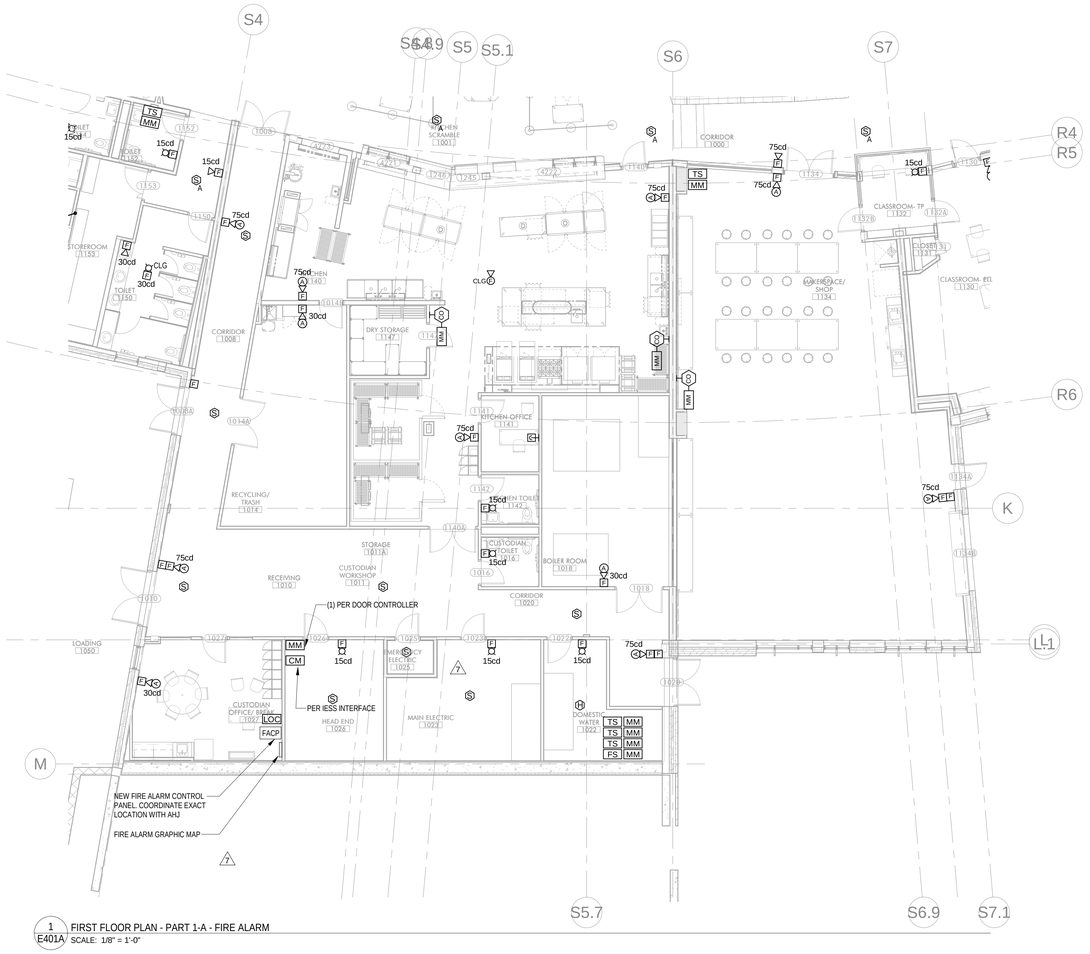
DRAWING NAME
SMOKE CONTROL PANELS & DETAILS

PROJECT NO. 1722

DRAWING NO.
E400A

GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C., INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG. TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR, WIRED BY E.C.. FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009, 607.3.3.2.1.



1 E401A FIRST FLOOR PLAN - PART 1-A - FIRE ALARM
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
7	12/13/2019	ADDENDUM # 7
8	2/10/2020	Conformance Set

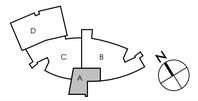
DRAWING NAME

FIRST FLOOR PLAN PART A - FIRE ALARM

PROJECT NO. 1722

DRAWING NO.

E401A



GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C.; INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG, TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR, WIRED BY E.C., FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009, 607.3.3.2.1.

1 E401B FIRST FLOOR PLAN - PART 1-B - FIRE ALARM
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g - g - d - com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN PART B - FIRE ALARM

PROJECT NO. 1722

DRAWING NO.
E401B

1 / E401C FIRST FLOOR PLAN - PART 1-C - FIRE ALARM
SCALE: 1/8" = 1'-0"

GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C.; INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG, TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR, WIRED BY E.C.. FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009; 607.3.3.2.1.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

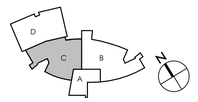
REVISIONS

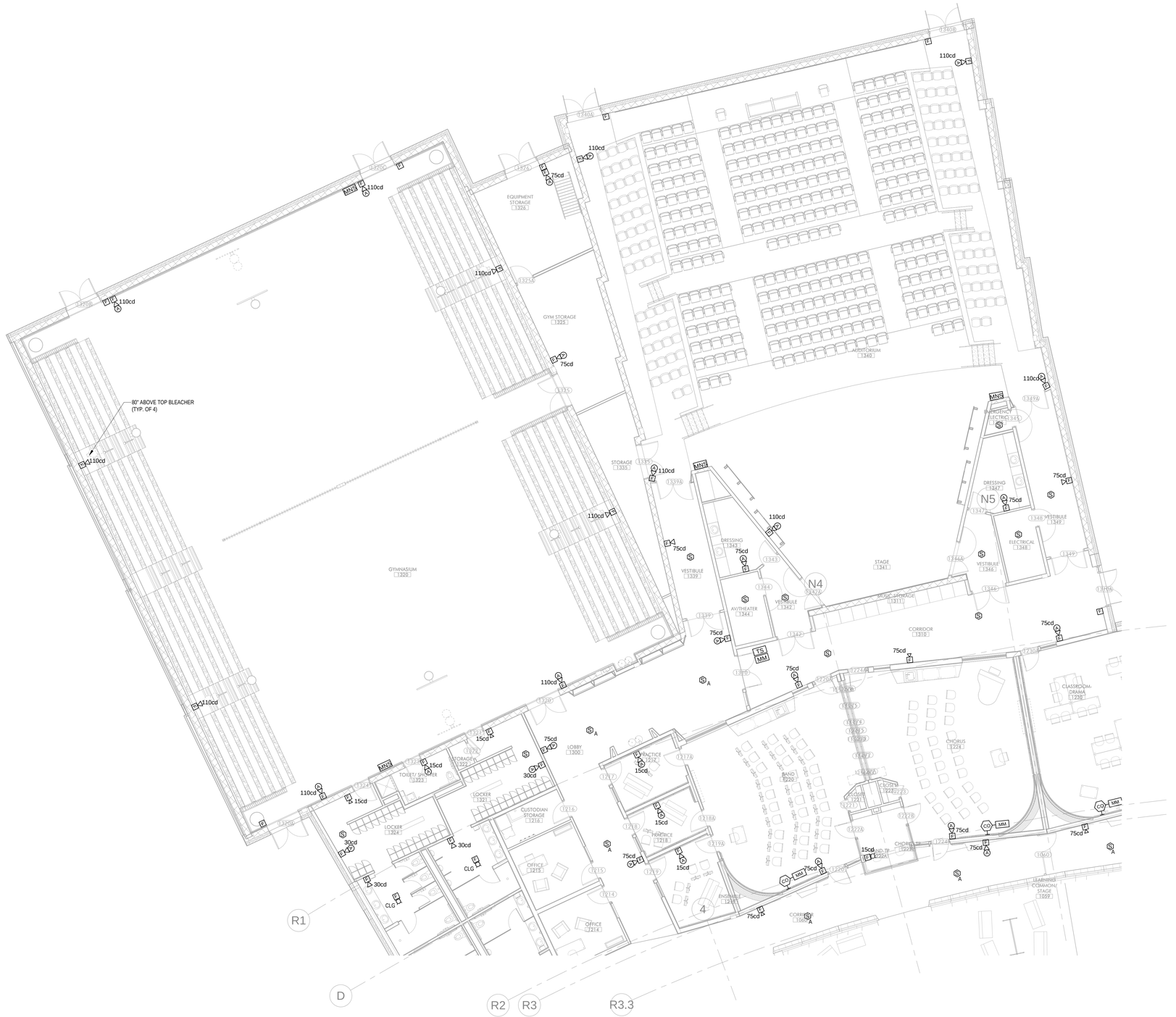
No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN PART C - FIRE ALARM

PROJECT NO. 1722

DRAWING NO.
E401C





1 E401D FIRST FLOOR PLAN - PART 1-D - FIRE ALARM
SCALE: 1/8" = 1'-0"

GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C.; INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG, TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR, WIRED BY E.C.. FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009, 607.3.2.1.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0903 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

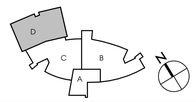
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN PART D - FIRE ALARM

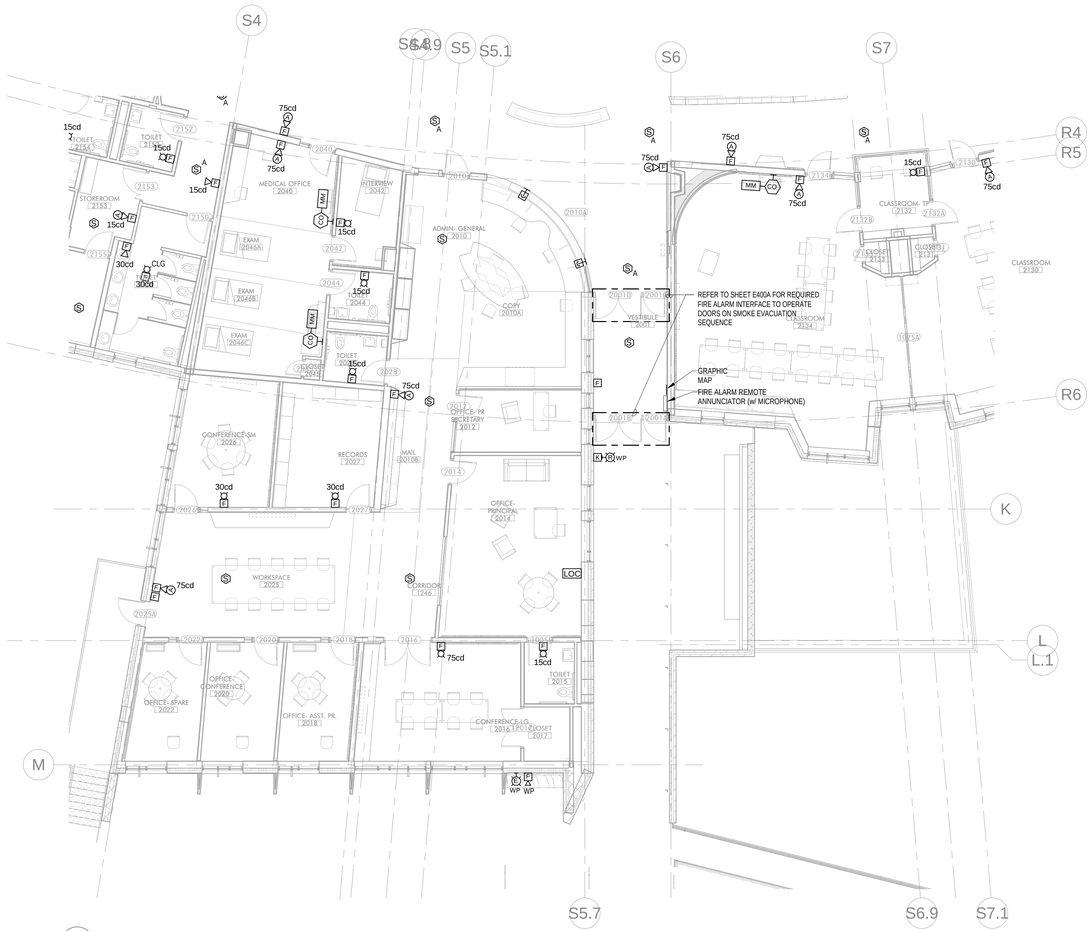
PROJECT NO. 1722

DRAWING NO.
E401D



GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C.; INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG, TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR, WIRED BY E.C.. FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009, 607.3.3.2.1.



1 E402A SECOND FLOOR PLAN - PART 2-A - FIRE ALARM
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0903 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

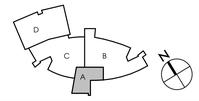
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART A - FIRE ALARM

PROJECT NO. 1722

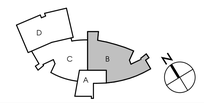
DRAWING NO.
E402A



GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C.; INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG, TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR, WIRED BY E.C., FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009, 607.3.3.2.1.

1 E402B SECOND FLOOR PLAN - PART 2-B - FIRE ALARM
SCALE: 1/8" = 1'-0"



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0903 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART B - FIRE ALARM

PROJECT NO. 1722

DRAWING NO.
E402B

GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C.; INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG, TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR; WIRED BY E.C.. FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009, 607.3.3.2.1.

SEE NOTE #15 (TYP. OF 6)

CONNECTION FOR SMOKE EXHAUST DAMPER, REFER TO (TYP.)

FOR INTERFACE W/ ACCESS CONTROL FOR RELEASE OF DOOR UPON ALARM CONDITION

1 E402C SECOND FLOOR PLAN - PART 2-C - FIRE ALARM
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0903 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART C - FIRE ALARM

PROJECT NO. 1722

DRAWING NO.
E402C

GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C.; INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG, TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR, WIRED BY E.C.. FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009, 607.3.3.2.1.
15. CONTROL MODULE TO RELEASE SMOKE VENTS UPON ACTIVATION OF SPRINKLER FLOR OR HEAT DETECTORS SERVING THE STAGE/AUDITORIUM. PROVIDE 24VDC ELECTRIC PULSE FROM FACP OF APPROXIMATELY 0.2 AMPS VIA CONTROL MODULE FOR ACTIVATION OF THE ELECTRO-THERMAL LINKS ON EACH ROOF VENT.

1 E402D SECOND FLOOR PLAN - PART 2-D - FIRE ALARM
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

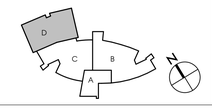
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART D - FIRE ALARM

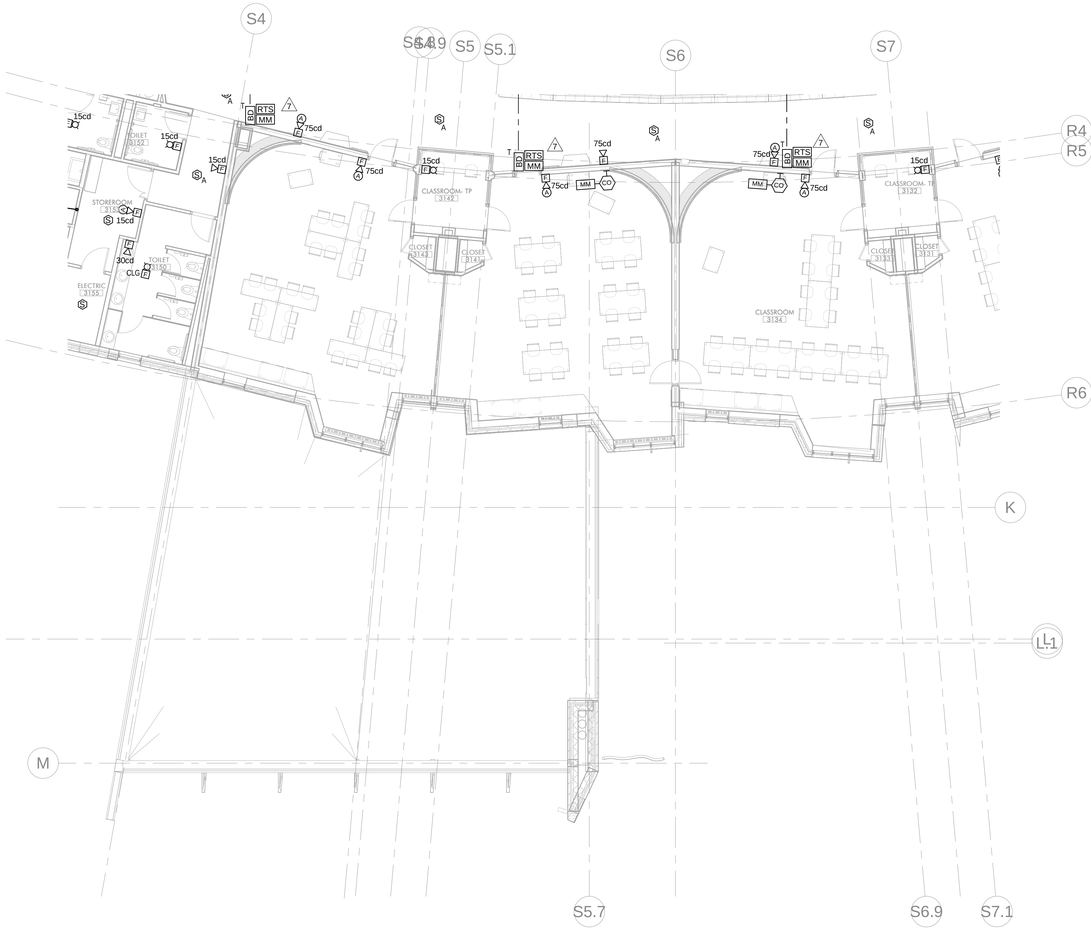
PROJECT NO. 1722

DRAWING NO.
E402D

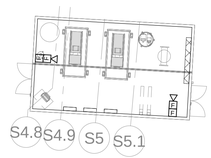


GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C.; INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG, TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR, WIRED BY E.C.. FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009, 607.3.3.2.1.



1 E403A THIRD FLOOR PLAN - PART 3-A - FIRE ALARM
SCALE: 1/8" = 1'-0"



2 E403A ROOF PART PLAN - AREA A - PUMP HOUSE - FIRE ALARM
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Pawtucket Road - Suite D, Dartmouth, MA 02747 - 2208
508 - 998 - 5700 FAX 508 - 998 - 0923 E - MAIL info@gg - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

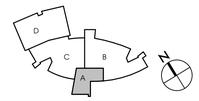
REVISIONS

No.	Date	Description
7	12/13/2019	ADDENDUM #7
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN PART A - FIRE ALARM

PROJECT NO. 1722

DRAWING NO.
E403A



1 E403B THIRD FLOOR PLAN - PART 3-B - FIRE ALARM
SCALE: 1/8" = 1'-0"

2 E403B ROOF PART PLAN - AREA B - FIRE ALARM
SCALE: 1/8" = 1'-0"

GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C.; INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG, TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR, WIRED BY E.C.. FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009, 607.3.3.2.1.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 3208
508 - 998 - 5700 FAX 508 - 998 - 0903 E - MAIL info@gg - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

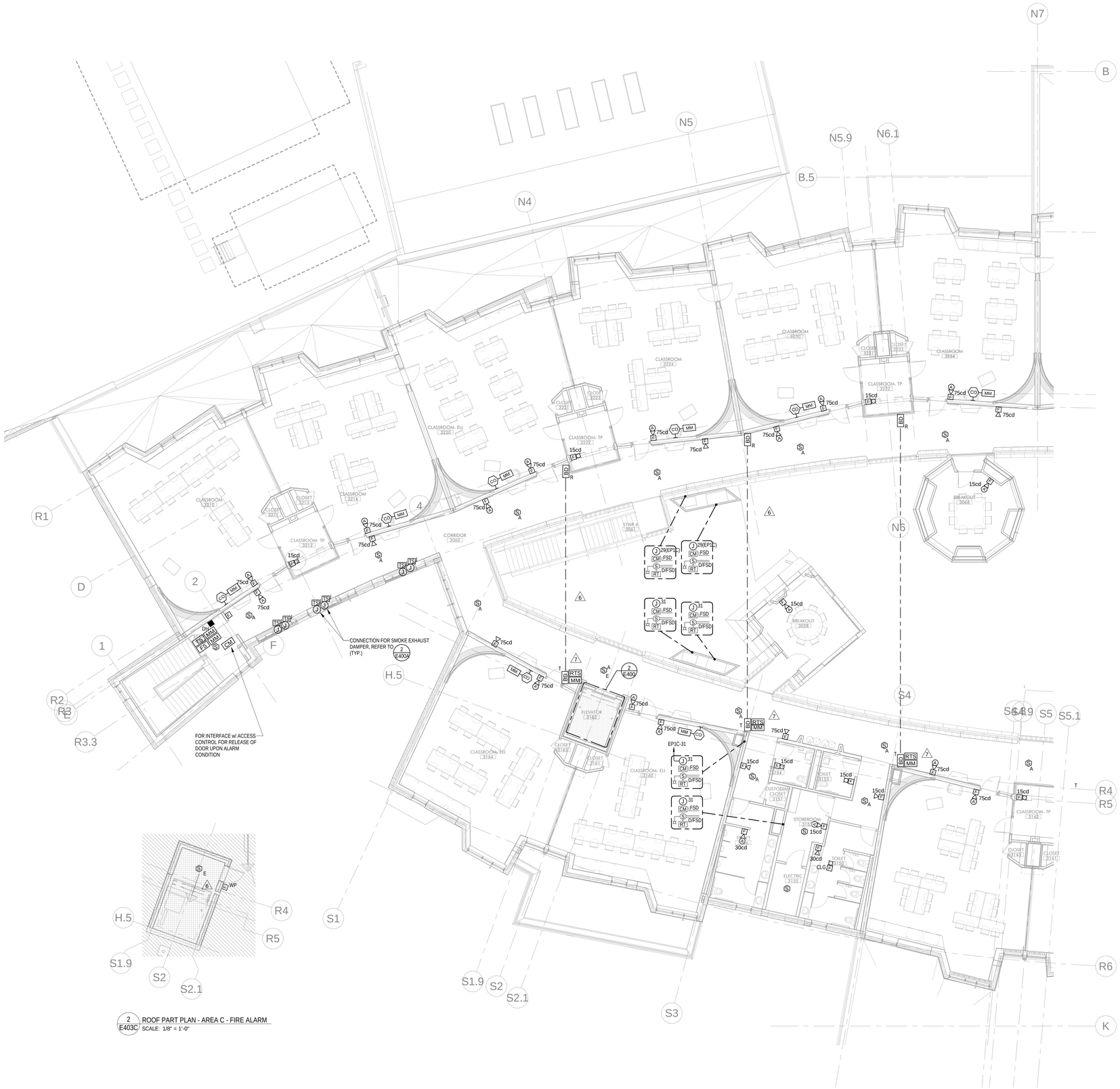
REVISIONS

No.	Date	Description
7	12/13/2019	ADDENDUM #7
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN PART B - FIRE ALARM

PROJECT NO. 1722

DRAWING NO.
E403B



2/E403C ROOF PART PLAN - AREA C - FIRE ALARM
SCALE: 1/8" = 1'-0"

1/E403C THIRD FLOOR PLAN - PART 3-C - FIRE ALARM
SCALE: 1/8" = 1'-0"

GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C.; INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG, TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR, WIRED BY E.C.. FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009, 607.3.3.2.1.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

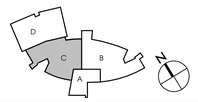
REVISIONS

No.	Date	Description
6	12/09/2019	ADDENDUM #6
7	12/13/2019	ADDENDUM #7
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN PART C - FIRE ALARM

PROJECT NO. 1722

DRAWING NO.
E403C



GENERAL FIRE ALARM NOTES:

1. E.C. SHALL REFER TO SPECIFICATIONS AND DRAWINGS FOR QUANTITY OF DEVICES, SPARE CAPACITY, PARTS, ETC.
2. E.C. SHALL REFER TO HVAC DRAWINGS FOR EXACT LOCATION OF HVAC UNITS AND FOR LOCATIONS OF DUCT MOUNTED SMOKE DETECTORS. DUCT DETECTORS FURNISHED AND WIRED BY E.C., INSTALLED BY HVAC.
3. PROVIDE EACH FIRE ALARM TERMINAL CABINET AND FIRE ALARM CONTROL PANEL WITH AN ADA POWER SUPPLY TO SERVE ALL SPEAKER/STROBE UNITS ON RESPECTIVE FLOORS.
4. TYPICALLY FIRE ALARM SYSTEM POWER CONDUCTORS SHALL BE #14 AWG, TYPE THHN SOLID. ALL WIRING SHALL BE INSTALLED IN CONDUIT OR SURFACE METAL RACEWAY. MC CABLE IS ALLOWED WHERE CONCEALED.
5. TYPICALLY ALL SPEAKER/STROBE UNITS SHALL BE WIRED IN A FASHION THAT THE SPEAKER & STROBE IS SILENCED SIMULTANEOUSLY.
6. ALL ELECTRICAL ROOMS ARE (2) HOUR RATED. FIREPROOF PENETRATIONS AS REQUIRED.
7. TYPICALLY REFER TO DOOR HARDWARE, SCHEDULES & DRAWINGS FOR LOCATIONS & QUANTITIES OF HARDWARE EQUIPMENT AFFECTING THIS SECTION. PROVIDE ALL WORK AS REQUIRED.
8. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
9. TYPICALLY PROVIDE (1) MONITOR MODULE FOR EACH CARBON MONOXIDE DETECTOR. ALSO CONNECT CO DETECTORS TO SECURITY SYSTEM FOR REMOTE CENTRAL STATION REPORTING.
10. MECHANICAL EQUIPMENT, MOTORIZED FIRE/SMOKE DAMPER - FURNISHED & INSTALLED BY HVAC CONTRACTOR. WIRED BY E.C.. FIRE ALARM INTERLOCK WIRING BY E. C. PROVIDE A CONTROL MODULE FOR EACH UNIT AND INTERLOCK EACH DAMPER SO THAT DAMPER IS POWERED OPEN AND IS SPRING CLOSED. LOCATE CONTROL MODULES ADJACENT TO DAMPERS. REFER TO HVAC DRAWINGS FOR DAMPER LOCATIONS. CONNECT TO THE NEAREST 120 VOLT BRANCH CIRCUIT.
11. ALL PULL STATIONS TO BE PROVIDED WITH TAMPERPROOF COVERS WITH LOCAL ALARM.
12. CONNECT CONTROL MODULE TO FIRE SHUTTER CONTROL PANEL TO RELEASE UPON ANY FIRE ALARM CONDITION OR AS DIRECTED BY FIRE DEPT. COORDINATE LOCATIONS OF FIRE SHUTTERS WITH ARCHITECT.
13. SMOKE DETECTORS WITH (*) SHALL BE LOCATED WITHIN 5' OF HVAC DIFFUSER SERVING THE ROOM VIA DUCT-WORK WITH FIRE/SMOKE DAMPER INSTALLED WITHIN IT.
14. E.C. SHALL FURNISH DUCT TYPE SMOKE DETECTOR FOR INSTALLATION BY HVAC. E.C. SHALL WIRE FOR ACTUATION OF ADJACENT SMOKE DAMPER PER INTERNATIONAL MECHANICAL CODE (IMC) 2009, 607.3.3.2.1.

1 E403D THIRD FLOOR PLAN - PART 3-D - FIRE ALARM
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

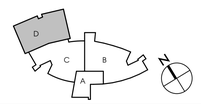
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN PART D - FIRE ALARM

PROJECT NO. 1722

DRAWING NO.
E403D



SYMBOL LIST

LEGEND NOTES:

A. THIS SHEET IS A GENERAL LIST OF SYMBOLS AND ABBREVIATIONS AND SHALL BE USED AS A DICTIONARY TO DEFINE ITEMS INDICATED ON DRAWINGS. NOT ALL SYMBOLS OR ABBREVIATIONS ARE NECESSARILY USED ON THIS PROJECT. ALL EQUIPMENT IS TO BE PROVIDED UNDER THIS SECTION UNLESS SPECIFICALLY INDICATED OTHERWISE.

SECURITY SYSTEM

DOME IP CAMERA. E.C. TO PROVIDE SINGLE GANG OPENING AND 4"SQ.X2 1/2"DP. J.B. & 3/4" CONDUIT WITH PULL STRING TO ACCESSIBLE ABOVE CEILING SPACE AT EACH LOCATION.
WP = WEATHERPROOF 180°= 180° COVERAGE CAMERA
PTZ = PAN/TILT/ZOOM 360°= 360° COVERAGE CAMERA

K — INTRUSION ALARM LCD KEYPAD SINGLE GANG BOX AT 48" A.F.F., 3/4" CONDUIT W/ PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.

PT — POWER SUPPLY FOR ELECTRIFIED HARDWARE FURNISHED BY DOOR HARDWARE CONTRACTOR. INSTALLED & WIRED BY E.C. 120VAC EMERGENCY BY E.C. INTERFACE WIRING BY E.C.

REX — REQUEST TO EXIT PANIC DEVICE SHALL BE CRASH BAR W/BUILT IN MICROSWITCH. CRASH BAR FURNISHED AND INSTALLED BY DOOR HARDWARE CONTRACTOR AND WIRED BY E.C. PROVIDE 3/4" CONDUIT W/ PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.

DC — DOOR POSITION SWITCH - GE/SENTROL 1076DB DOUBLE POLE DEVICE ONE POLE TO ACCESS CONTROL, SECOND POLE TO INTRUSION, COORDINATE HOLE WITH DOOR HARDWARE. PROVIDE 3/4" CONDUIT w/ PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.

CR — HID iCLASS RPK40 COMBINATION iCLASS READER AND KEYPAD AT 48"A.F.F. CUSTOM BACK BOX FURNISHED AND INSTALL BY E.C. 3/4" CONDUIT W/PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.,

CR E — PROXIMITY READER ELEVATOR @48"A.F.F. SINGLE GANG BOX, 3/4" CONDUIT W/PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.. COORDINATE INTERFACE WITH ELEVATOR CONTRACTOR BY SECURITY SUBCONTRACTOR.

CR LD — HID iCLASS RPK40 COMBINATION iCLASS READER AND KEYPAD FOR LOCKDOWN/ SHELTER-IN-PLACE @48"A.F.F. CUSTOM BACK BOX FURNISHED AND INSTALL BY E.C. 3/4" CONDUIT W/PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C..

EFS — EYE WASH FOW SWITH- F&I BY PLUMBING CONTRACTOR WIRED TO SECURITY SYSTEM BY E.C. SINGLE GANG BOX, 3/4" CONDUIT W/ PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.

AM — ADDRESSABLE INPUT MODULE - SEE ONE LINE FOR REQUIRED ADDRESSING - EACH DEVICE COMES WITH THE APPROPRIATE EOL RESISTOR. DOES NOT REQ/ BACK BOX

M — MOTION SENSOR - WALL MOUNTED SINGLE GANG BACK BOX W/3/4"C WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C. WIRING BY E.C.

M — MOTION SENSOR - CEILING MOUNTED, 360° SINGLE GANG BACK BOX AND 3/4"C WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C. WIRING BY E.C.

M — MOTION SENSOR - CORNER MOUNTED FOR 90° PATTERN SINGLE GANG BACK BOX AND 3/4"C WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C. WIRING BY E.C.

M — MOTION SENSOR - FOR LONG RANGE, CEILING MOUNTED SINGLE GANG BACK BOX AND 3/4"C WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C. WIRING BY E.C.

M — MOTION SENSOR - FOR 360° PATTERN SINGLE GANG BACK BOX AND 3/4"C WITH PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C. WIRING BY E.C.

716 — INTRUSION ALARM REMOTE ADDRESSABLE MODULE IN ENCLOSURE SURFACE MOUNT ENCLOSURE - INCLUDE IN LOOP AS REQUIRED/AS SHOWN

IACP — INTRUSION ALARM CONTROL PANEL WITH BUILD IN DIGITAL COMMUNICATOR DMP XR500-L-G, REQUIRES 120VAC, INTERFACE TO ACCESS CONTROL AND TELEPHONE CONNECTION TO POD WITH BATTERIES BY E.C.

IAPS — INTRUSION ALARM POWER SUPPLY - ONE LOCATED AT EACH IDF DESIGNATED - SUPPORT MOTION DETECTOR DC VOLTAGE - REQUIRES 120VAC, MODEL DMP 502-12-G W/ BATTERIES BY E.C.

B — BLUE SECURITY ALARM BEACON, WEATHERPROOF, PROVIDED BY E.C. SINGLE GANG BOX, 3/4" CONDUIT W/ PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.

DB — SECURITY DURESS BUTTON, PROVIDED BY E.C. SINGLE GANG BOX, 3/4" CONDUIT & PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.

LB — SECURITY LOCKDOWN BUTTON, PROVIDED BY E.C. SINGLE GANG BOX, 3/4" CONDUIT & PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.

IESS — INTEGRATED ELECTRONIC SAFETY & SECURITY SYSTEM HEADEND

ACP — WALL MOUNTED ACCESS CONTROLLER. E.C. SHALL PROVIDE 20A EMERGENCY CIRCUIT AND DOUBLE DUPLEX RECEPTACLE. (SEE SPECS)

KVM — RACK MOUNTED MONITOR AND KVM SWITCH

ACS — ACCESS CONTROL SYSTEM SERVER RACK MOUNT. E.C. SHALL PROVIDE 20A EMERGENCY CIRCUIT AND DOUBLE DUPLEX RECEPTACLE. (SEE SPECIFICATIONS)

TVM — 43" NEC MULTISYNC E436 LED/LCD CCTV COLOR MONITOR OR EQUAL W/ WALL MTD ACER VERITON N4640G_W12kbl MINI COMPUTER OR EQUAL, LOGITECH WIRELESS COMBO MK270 KEYBOARD AND MOUSE SET OR EQUAL & WALL/CEILING MOUNT BRACKET BY SECURITY SUBCONTRACTOR. E.C. TO PROVIDE 120 EMERGENCY VAC POWER RECEPTACLE, & 3/4" CONDUIT IN SINGLE GANG BOX W/ PULL STRING. MOUNT OUTLET AND BOX AT 84" A.F.F. U.N.O.

IC — EXTERIOR DOOR VIDEO INTERCOM STATION BY E.C. INTERFACE TO INTERCOM SYSTEM TO ALLOW FOR RECORDING, CAMERA CALL-UP IF EXTERIOR INTERCOM STATIONS ARE ACTIVATED. COORDINATE AS REQUIRED WITH SUPPLIER. DUAL GANG BOX, 3/4" CONDUIT & PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.

IMS — DOOR INTERCOM MASTER STATION, PROVIDED BY E.C. SINGLE GANG BOX, 3/4" CONDUIT & PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.

EH — ELECTRIC HINGE OR ELECTRONIC POWER TRANSFER BETWEEN DOOR AND FRAME. FURNISHED AND INSTALLED BY DOOR HARDWARE CONTRACTOR (SEE DOOR HARDWARE SECTIONS FOR DETAILS), WIRED BY E.C. 4"SQ.X2 1/2"DP. J.B. WITH 3/4" CONDUIT W/ PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.

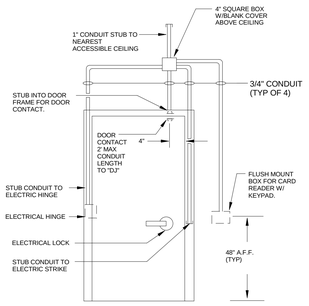
EL — ELECTRIC LOCK FURNISHED AND INSTALLED BY HARDWARE CONTRACTOR, WIRED BY E.C. 4"SQ.X2 1/2"DP. J.B. WITH 3/4" CONDUIT W/ PULL STRING TO NEAREST ACCESSIBLE CEILING SPACE BY E.C.

DJ — 4" SQ. DOOR JUNCTION BOX BY E.C.

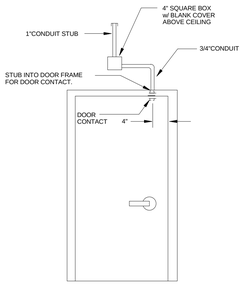
SC — SECURITY MONITOR MODULE

UPS — RACK MOUNTED UNINTERRUPTIBLE POWER SUPPLY

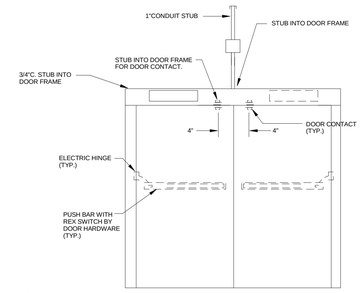
TS — HORSEPOWER RATED THERMAL SWITCH WITH PILOT LIGHT BY E.C.



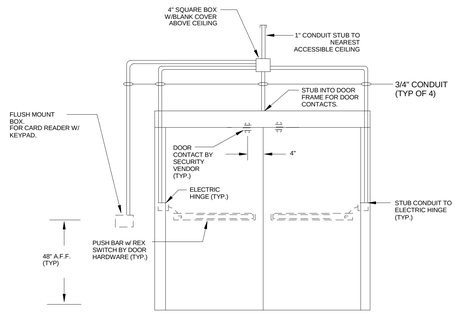
1 E500 TYPICAL DOOR WITH ACCESS CONTROL
SCALE: N.T.S.



2 E500 TYPICAL DOOR WITHOUT ACCESS CONTROL
SCALE: N.T.S.



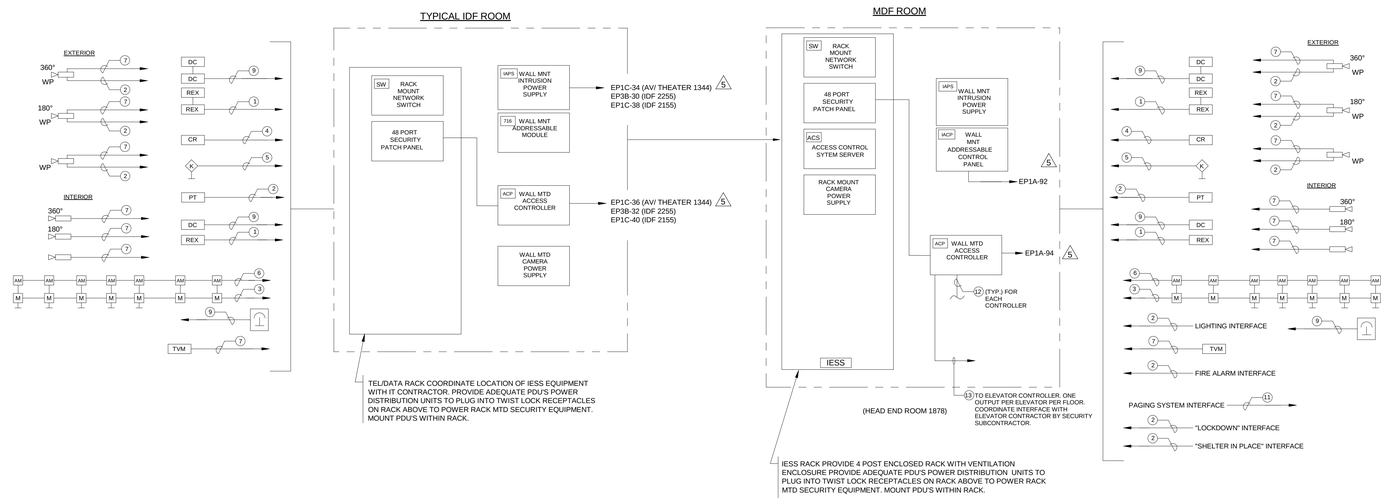
3 E500 TYPICAL DOOR WITHOUT ACCESS CONTROL
SCALE: N.T.S.



4 E500 TYPICAL EXTERIOR DOOR W/ ACCESS CONTROL
SCALE: N.T.S.

GENERAL NOTES

1. ALL HARDWARE SETS SHALL CONTAIN INTEGRAL REQUEST TO EXIT DEVICE. E.C. SHALL TIE INTO THESE DEVICES AND INSURE PROPER OPERATION.
2. ALL BOX, CONDUIT AND 120V WIRING PROVISIONS FOR SECURITY SYSTEM SHALL BE PROVIDED BY SECTION 260000. REFER TO FLOOR PLANS FOR QUANTITIES AND LOCATIONS OF EQUIPMENT.
3. REFER TO FLOOR PLAN FOR PROPOSED LOCATIONS OF ALL EQUIPMENT.



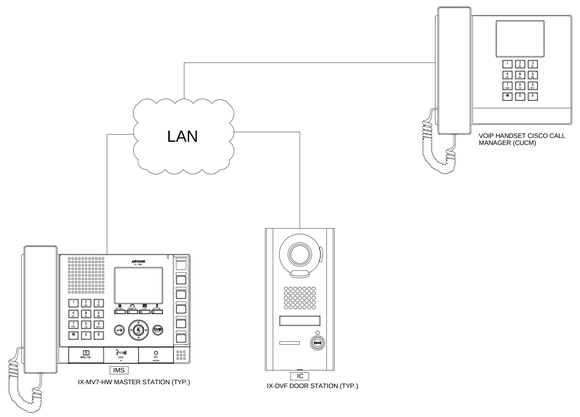
5 E500 INTEGRATED ELECTRONIC SECURITY SYSTEM PARTIAL RISER DIAGRAM
SCALE: N.T.S.

KEY NOTES

1. E.C. SHALL INTERFACE IESS TO NETWORK TO ALLOW ANY NETWORKED PC TO VIEW ALARM EVENTS, LIVE OR RECORDED VIDEO AND SYSTEM SCHEDULES. VIEWING SOFTWARE TO BE WEB-BASED.
2. ALL DOOR CONTACTS SHALL BE INDIVIDUALLY ADDRESSED AND ANNUNCIATED ON CONTROL PANEL.
3. TYPICALLY EXTERIOR CAMERA LOCATIONS FURNISH AND INSTALL DAY/NIGHT DOME CAMERAS WITH HEATER BLOWERS AT THESE LOCATIONS. SEE SPECIFICATIONS FOR ADDITIONAL DETAILS.
4. INTERFACE IESS TO INTERCOM SYSTEM TO ALLOW FOR RECORDING, CAMERA CALL-UP IF EXTERIOR INTERCOM STATIONS ARE ACTIVATED. COORDINATE AS REQUIRED WITH SUPPLIER.
5. PROVIDE DIGITAL COMMUNICATOR CONNECTION TO UL CENTRAL STATION. PROVIDE CONTACT ID FOR ALL POINTS TO MONITORING STATION. PROVIDE 4 YEARS MONITORING WITH CONTRACT.
6. PROVIDE FIRE ALARM INTERFACE. PROVIDE FIRE ALARM OVERRIDE AS REQUIRED, (2#18GAUGE WIRES BY E.C.)
7. PROVIDE INTEGRATED ELECTRONIC SECURITY SERVER COMPLETE WITH 4 HOUR UPS BACK-UP. PROVIDE SOFTWARE FOR UNLIMITED NUMBER OF USERS, DOORS, AND 100 WORKSTATIONS.
8. INTERFACE TO AUTOMATED LIGHTING SYSTEM, WHEN INTRUSION SYSTEM GOES INTO ALARM ALL HALLWAY LIGHTS SHALL TURN-ON.
9. PROVIDE (3) KEYFOBS/PROX CARDS IN ADDITION TO THE AMOUNT SPECIFIED IN EACH KNOX BOX FOR FIRE DEPT. AND POLICE USE. FOBS/CARDS SHALL BE PROGRAMMED FOR FULL ACCESS TO THE BUILDING.
10. PROVIDE CONTACT CLOSURE INTERFACE TO AUTOMATED LIGHTING CONTROL SYSTEM (ALCS) VIA A SINGLE PAIR OF 2#18 CONDUCTORS. WHEN INTRUSION SYSTEM GOES INTO ALARM A SIGNAL SHALL BE ISSUED TO DIRECT THE ALCS TO TURN ALL INTERIOR AND EXTERIOR LIGHTING "ON".
11. PROVIDE INTEGRATION WITH FIRE ALARM SYSTEM TO RELEASE DOOR HOLDERS DURING LOCK DOWN AND ON A SCHEDULE.
12. SECURITY INTEGRATOR SHALL COORDINATE LOCK DOWN PROCEDURE w/ OWNER AND PROGRAM THE SYSTEM ACCORDINGLY.
13. INTEGRATE THE INTRUSION SYSTEM WITH THE ACCESS CONTROL SYSTEM SO THAT THE KEY FOB PRESENTED AT THE EXTERIOR CARD READER CAN DISARM THE COMMON ZONE, AND INTERIOR CARD READERS WILL DISARM THE ZONE THAT ARE ASSOCIATED WITH THEIR LOCATION. THE SYSTEM SHALL BE CAPABLE OF MINIMUM OF EIGHT (8) PARTITIONS.
14. INTEGRATE THE ACCESS CONTROL SYSTEM WITH THE BUILDING PAGING SYSTEM TO GIVE (5) DISTINCT INPUTS TO TONE GENERATOR (PART OF PAGING SYSTEM) FOR ALARMS TO BE SELECTED BY OWNER SUCH AS PANIC AND LOCK DOWN.
15. FACILITATE AND PROVIDE REMOTE ACCESS TO SYSTEM FOR POLICE DEPT. AND FIRE DEPT.
16. PANIC BUTTONS SHALL ALSO TIE INTO A ZONE ON THE FIRE ALARM DET RADIO BOX TO TRANSMIT TO FIRE DEPT.
17. PROGRAM PROPPED DOOR ALARM SO THAT ANY DOOR PROPPED OPEN BEYOND A SET TIME WILL SEND AN AUDIBLE ALARM TO STAFF AND A TEXT MESSAGE TO THE SECURITY OFFICER.

WIRING LEGEND

1. INPUT - CABLE REQUIREMENTS 18AWG FOUR CONDUCTOR STRANDED NON-SHIELDED FOR DPS ONE PAIR PER POLE, FOR REX ONE PAIR SPARE
2. OUTPUT - CABLE REQUIREMENTS 18AWG TWO CONDUCTOR STRANDED, NON-SHIELDED
3. MOTION DETECTOR - CABLE REQUIREMENTS 18AWG TWO CONDUCTOR STRANDED NON SHIELDED (THIS IS FOR DC POWER ONLY IN DESIGN)
4. READER - CABLE REQUIREMENTS 20AWG THREE PAIR SHIELDED REFERENCE MODEL BELDEN 82777 FOR PLENUM RATED APPLICATIONS
5. KEYPAD - CABLE REQUIREMENTS 18AWG FOUR CONDUCTOR STRANDED NON SHIELDED
6. INTRUSION ALARM BUS - CABLE REQUIREMENT 18AWG FOUR CONDUCTOR STRANDED NON SHIELDED
7. CAT 6A NON-PLENUM RATED UTP CABLE TO SECURITY PATCH PANEL
8. POWER SUPPLY CABLE AND CONTROL FOR EXTERIOR PTZ CAMERA. 2#18&2#18TSP.
9. INPUT - CABLE REQUIREMENTS 18AWG TWO CONDUCTOR STRANDED NON-SHIELDED
10. (2)CAT 6A NON-PLENUM RATED UTP CABLE TO SECURITY PATCH PANEL
11. OUTPUT - CABLE REQUIREMENTS 14AWG TWO CONDUCTOR STRANDED, NON-SHIELDED
12. (2) 24AWG TWISTED PAIR STRANDED (BELDEN 9501)
13. TO ELEVATOR CONTROLLER - CABLE REQUIREMENT TWISTED SHIELDED 22AWG BELDEN #9462 OR EQUAL



6 E500 IP DOOR INTERCOM SYSTEM
SCALE: N.T.S.

NOTES:

1. INTERFACE SIP INTERCOM STATIONS WITH OWNERS CISCO CALL MANAGER FOR OPERATION WITH VOIP HANDSETS TO ANSWER AND ALLOW TO UNLOCK DOORS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite G, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 e - www. info@g - g - d - com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

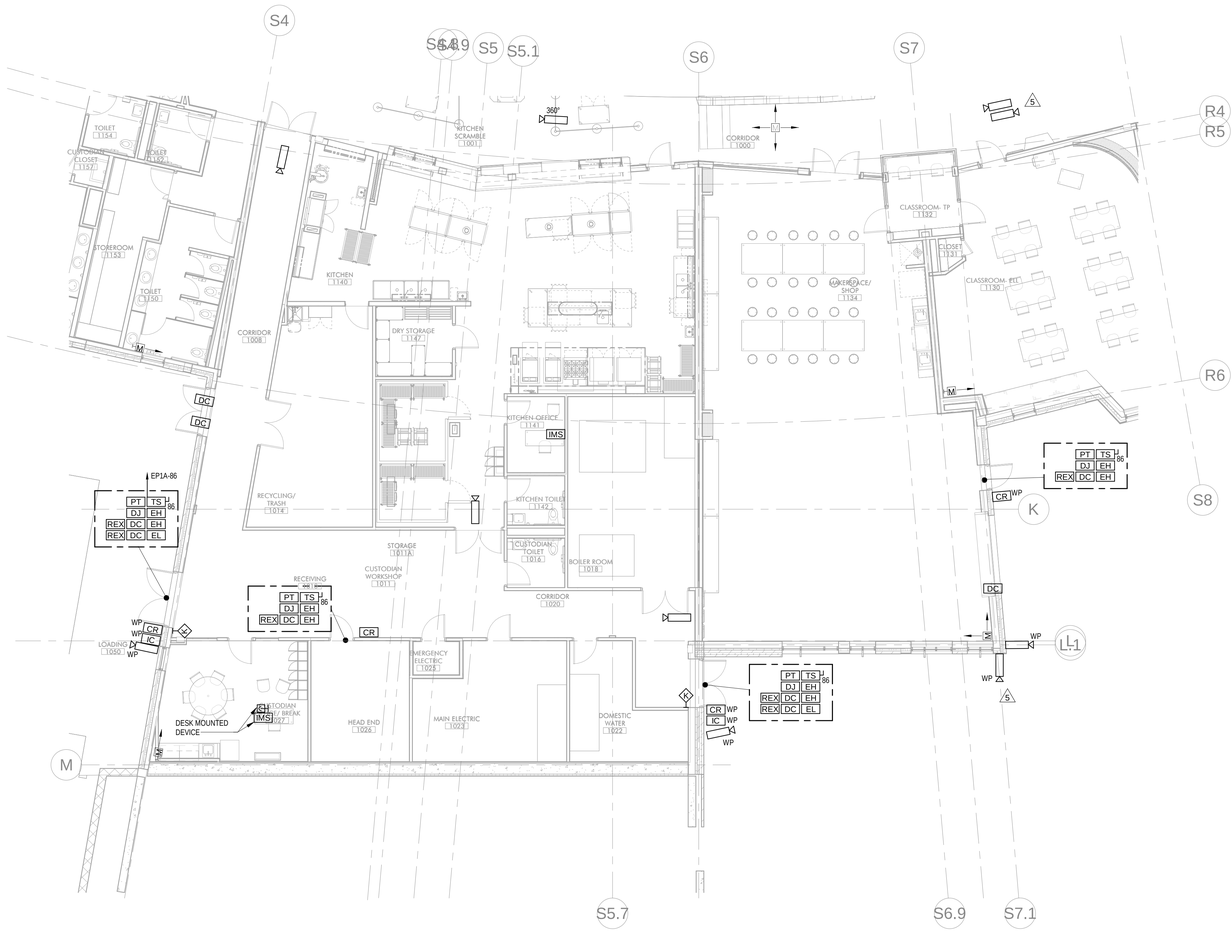
DRAWING NAME
SECURITY RISER

PROJECT NO. 1722

DRAWING NO.
E500

GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.



1 E501A FIRST FLOOR PLAN - PART 1-A - SECURITY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

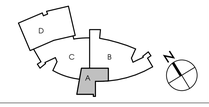
REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM #5
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN
PART A - SECURITY

PROJECT NO. 1722

DRAWING NO.
E501A



GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.

1 E501B FIRST FLOOR PLAN - PART 1-B - SECURITY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

DRAWING NAME

FIRST FLOOR PLAN
PART B - SECURITY

PROJECT NO. 1722

DRAWING NO.

E501B

1 E501C FIRST FLOOR PLAN - PART 1-C - SECURITY
SCALE: 1/8" = 1'-0"

GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

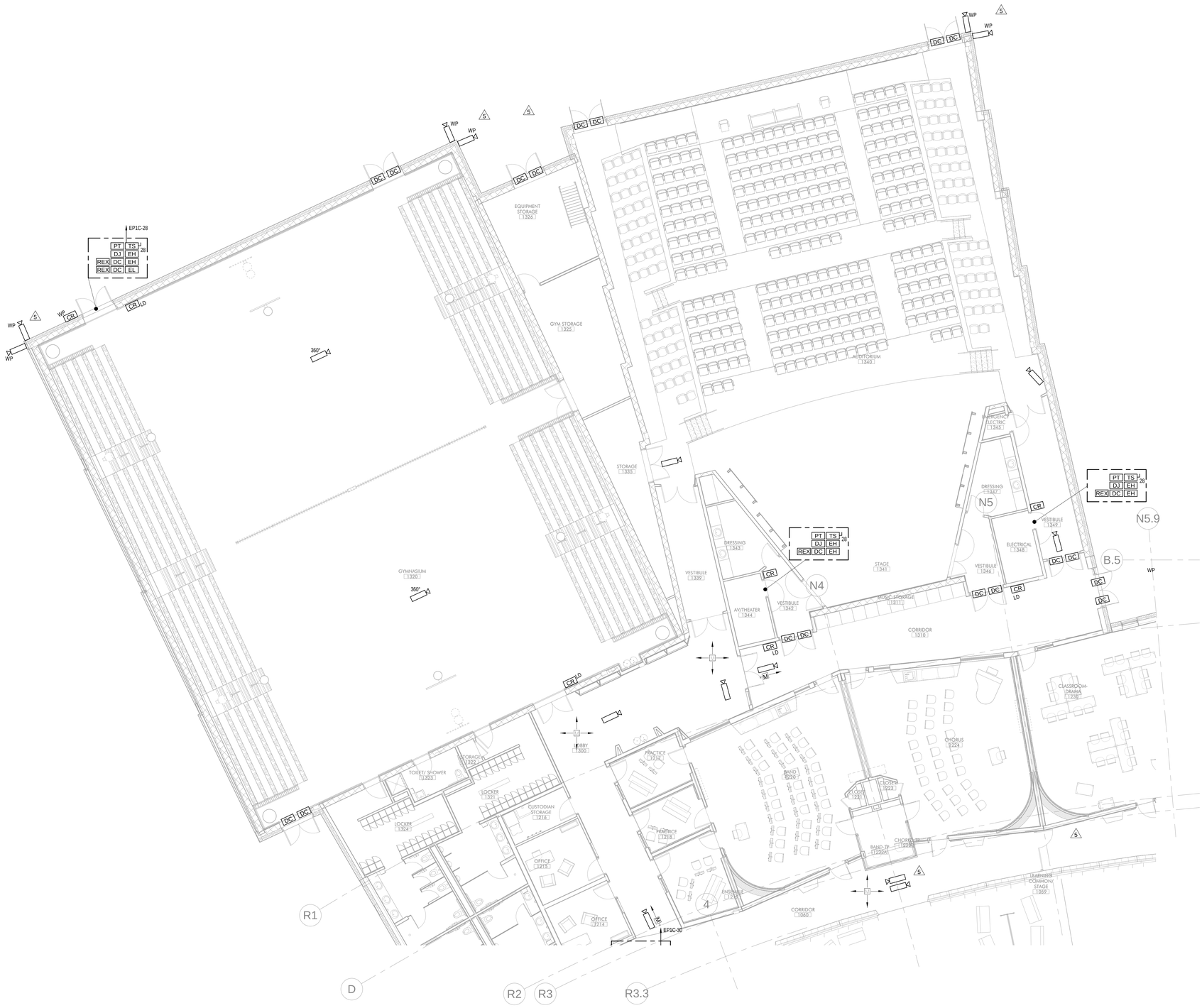
DRAWING NAME
FIRST FLOOR PLAN
PART C - SECURITY

PROJECT NO. 1722

DRAWING NO.
E501C

GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.



1 E501D FIRST FLOOR PLAN - PART 1-D - SECURITY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

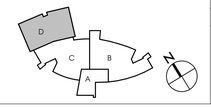
DRAWING NAME

FIRST FLOOR PLAN
PART D - SECURITY

PROJECT NO. 1722

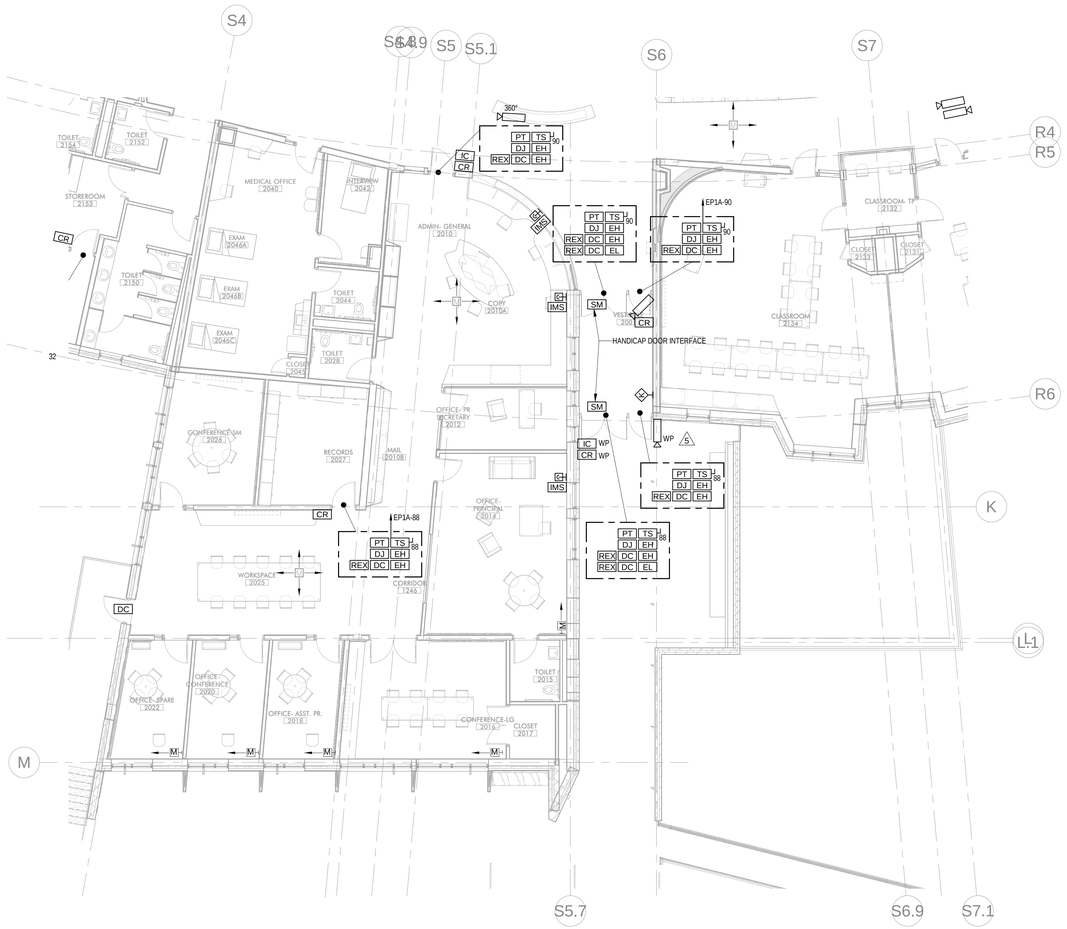
DRAWING NO.

E501D



GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.



1 E502A SECOND FLOOR PLAN - PART 2-A - SECURITY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Pawtucket Road - Suite D, Dartmouth, MA 02747 - 2208
508 - 998 - 5700 FAX 508 - 998 - 5803 E - Mail: info@g - g - d .com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

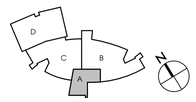
REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM #5
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART A - SECURITY

PROJECT NO. 1722

DRAWING NO.
E502A



GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.

MOUNTED TO UNDERSIDE OF BRIDGE

HANDICAP DOOR INTERFACE

1 E502B SECOND FLOOR PLAN - PART 2-B - SECURITY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

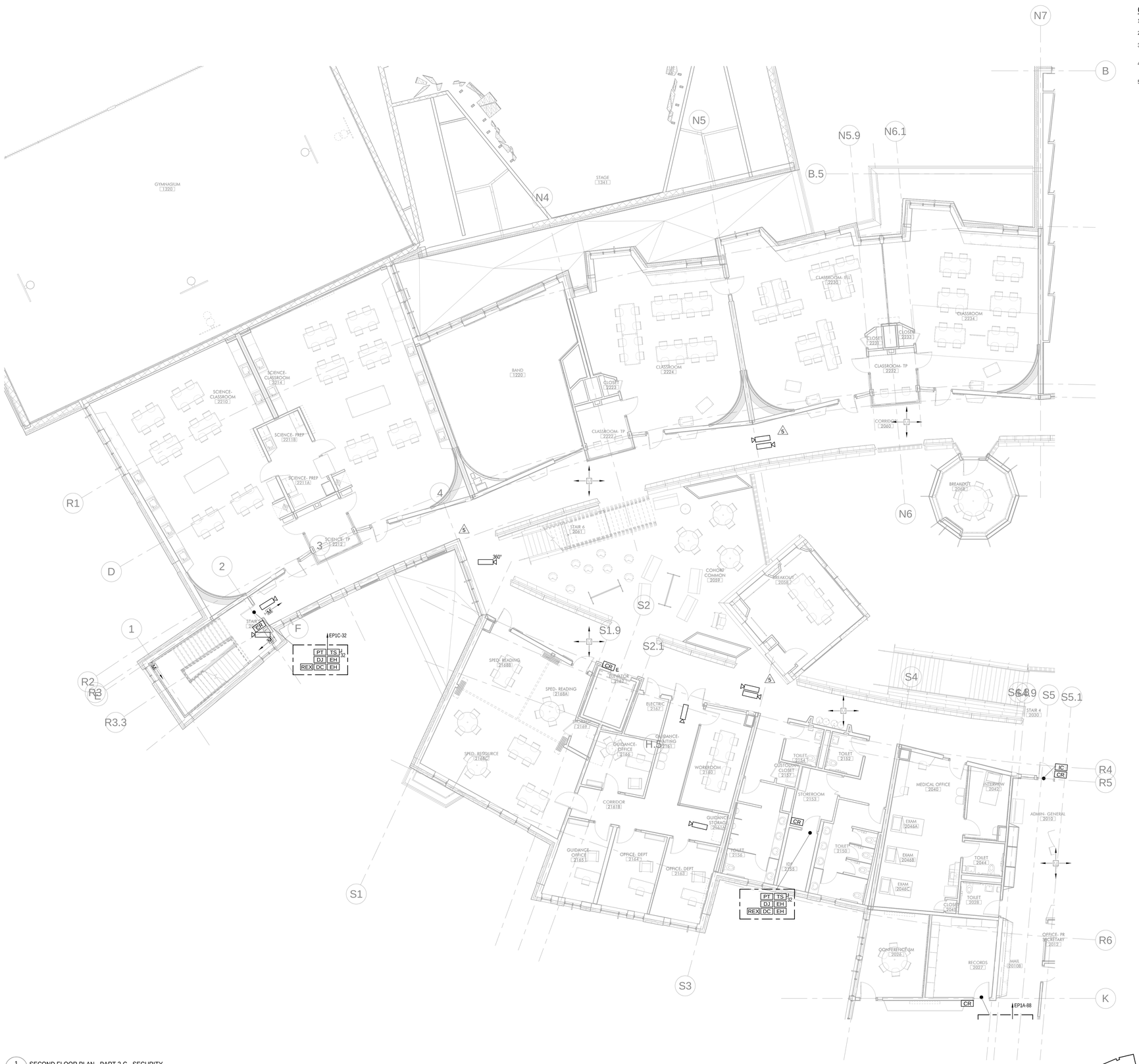
DRAWING NAME
SECOND FLOOR PLAN PART B - SECURITY

PROJECT NO. 1722

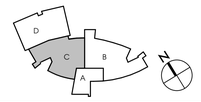
DRAWING NO.
E502B

GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.



1 E502C SECOND FLOOR PLAN - PART 2-C - SECURITY
SCALE: 1/8" = 1'-0"



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Pleasant Corner Road · Suite D, Dartmouth, MA 02747 - 3208
508 - 998 - 5700 FAX 508 - 998 - 0923 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM #5
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART C - SECURITY

PROJECT NO. 1722

DRAWING NO.
E502C

GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.

1 E502D SECOND FLOOR PLAN - PART 2-D - SECURITY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA INC.
CONSULTING ENGINEERS
375 Pleasant Corner Road - Suite D, Dartmouth, MA 02747 - 1208
508 - 998 - 5700 FAX 508 - 998 - 0923 E - MAIL info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

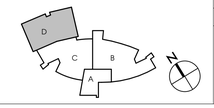
REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM #5
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART D - SECURITY

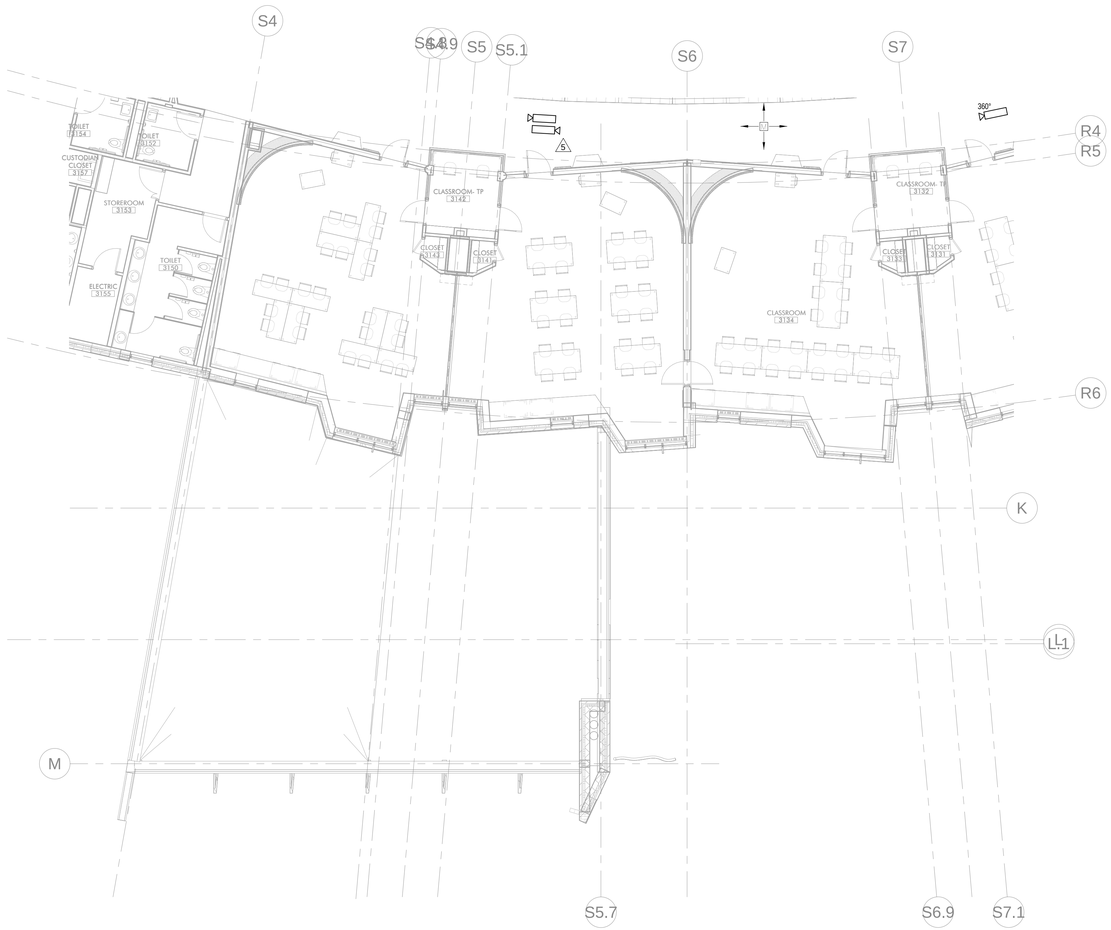
PROJECT NO. 1722

DRAWING NO.
E502D



GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.



1 / E503A THIRD FLOOR PLAN - PART 3-A - SECURITY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

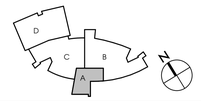
REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM #5
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN
PART A - SECURITY

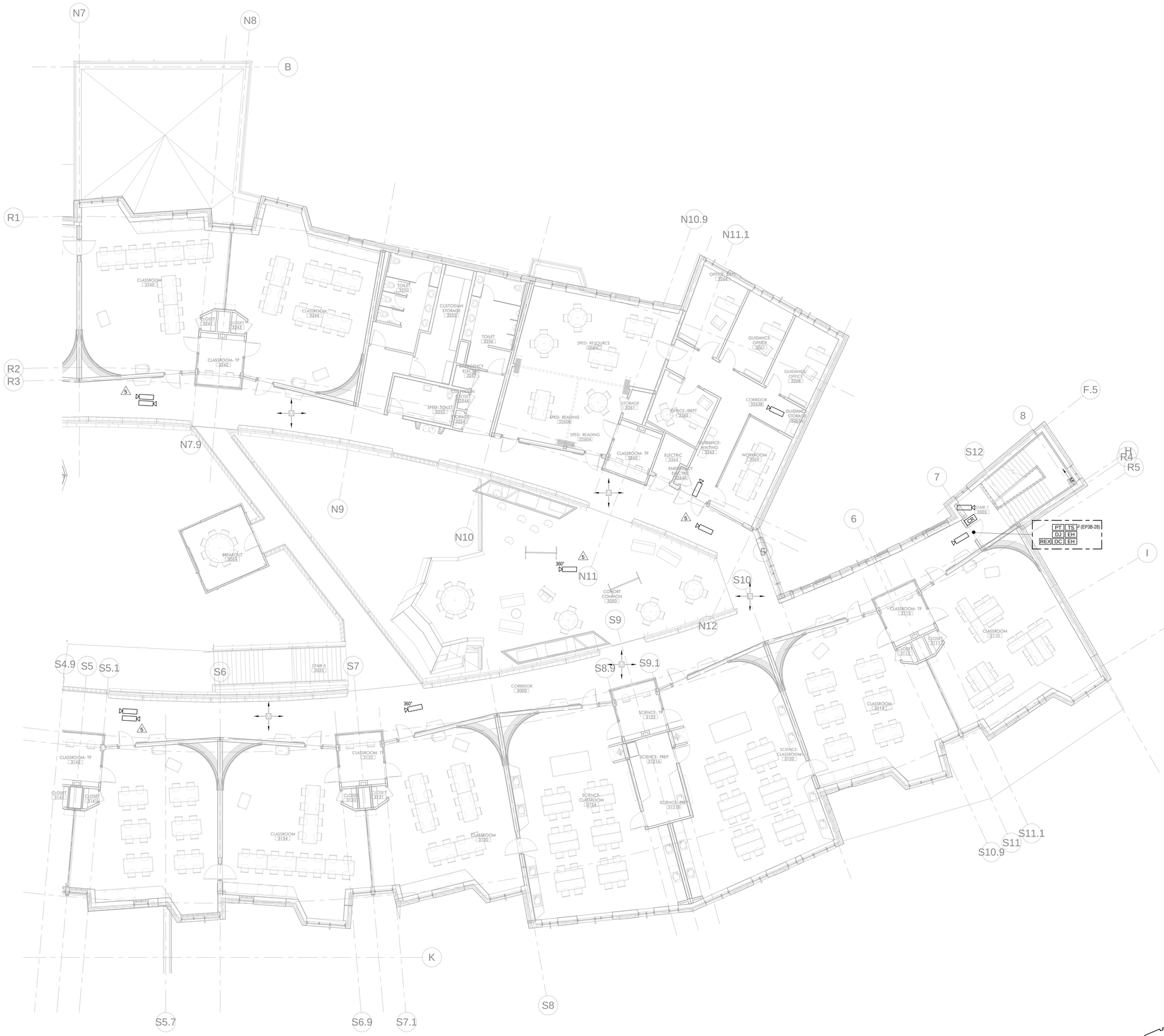
PROJECT NO. 1722

DRAWING NO.
E503A

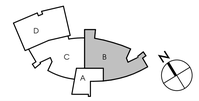


GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH: DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.



1 E503B THIRD FLOOR PLAN - PART 3-B - SECURITY
SCALE: 1/8" = 1'-0"



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

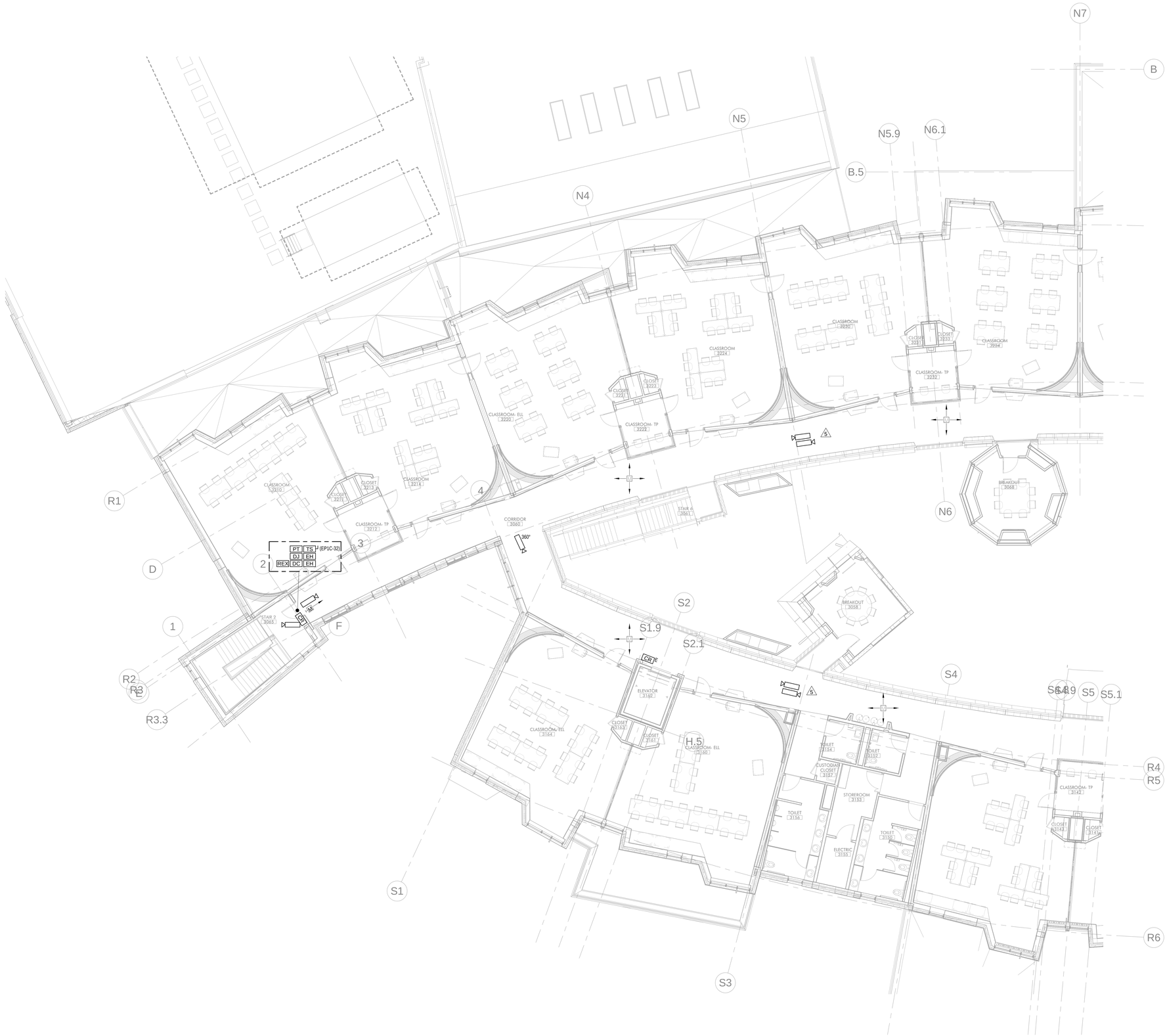
DRAWING NAME

THIRD FLOOR PLAN
PART B - SECURITY

PROJECT NO. 1722

DRAWING NO.

E503B



1 E503C THIRD FLOOR PLAN - PART 3-C - SECURITY
SCALE: 1/8" = 1'-0"

GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA INC.
CONSULTING ENGINEERS
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 2208
508 - 998 - 5700 FAX 508 - 998 - 0923 E - MAIL info@gg-d.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM #5
8	2/10/2020	Conformance Set

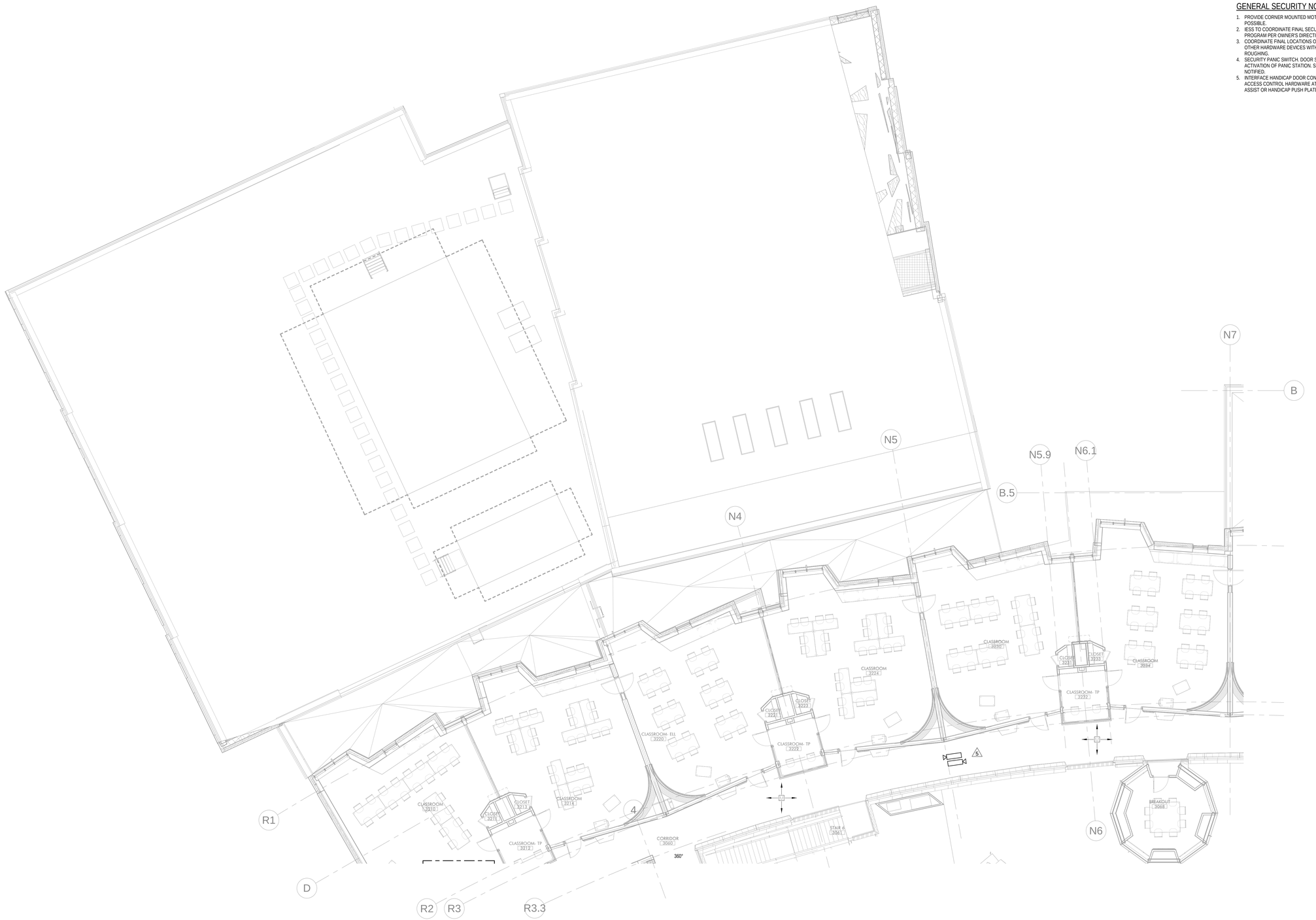
DRAWING NAME
THIRD FLOOR PLAN
PART C - SECURITY

PROJECT NO. 1722

DRAWING NO.
E503C

GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.



1 E503D THIRD FLOOR PLAN - PART 3-D - SECURITY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL: info@g g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

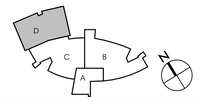
DRAWING NAME

THIRD FLOOR PLAN
PART D - SECURITY

PROJECT NO. 1722

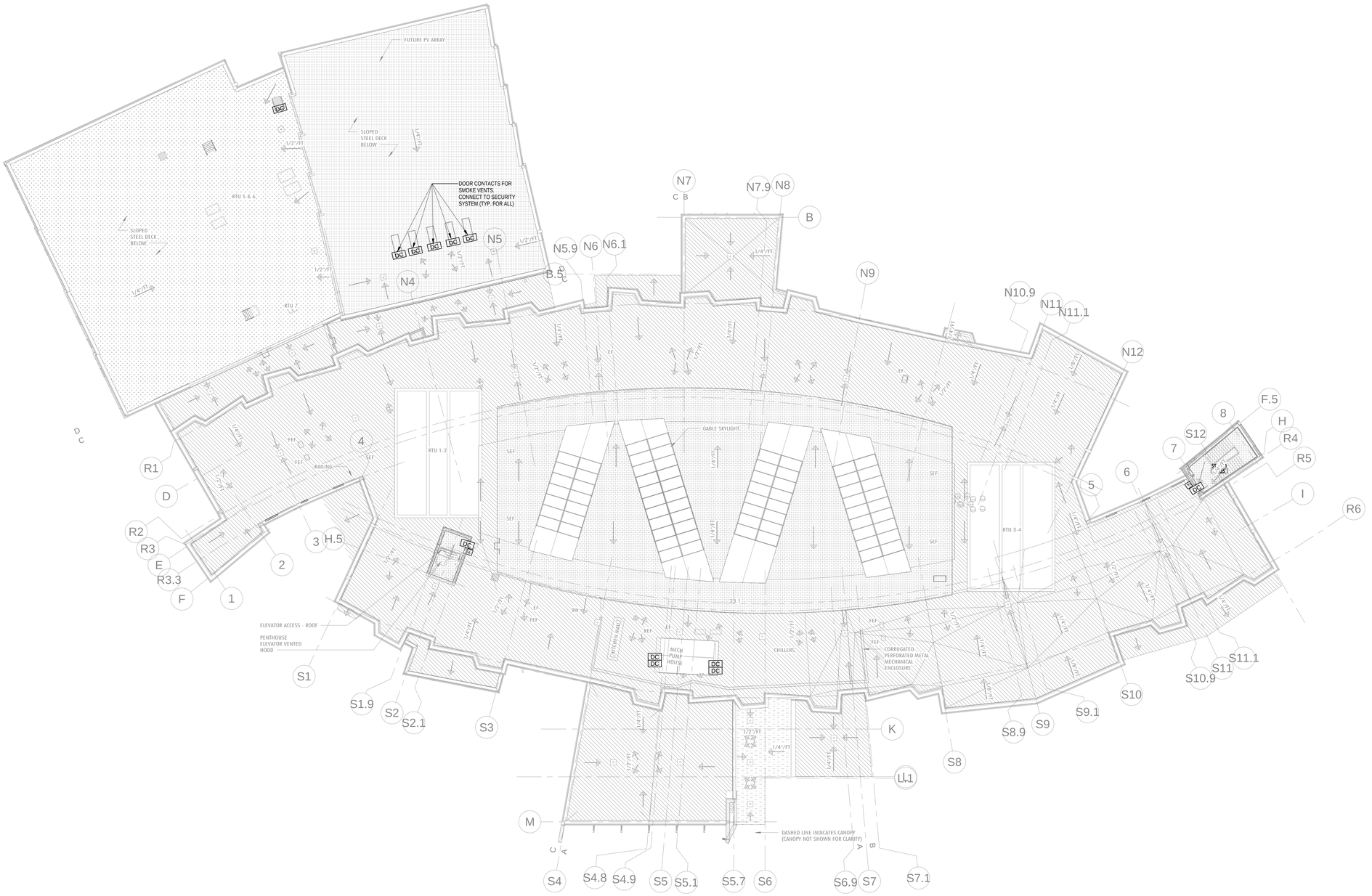
DRAWING NO.

E503D



GENERAL SECURITY NOTES:

1. PROVIDE CORNER MOUNTED MOTION SENSOR WHENEVER POSSIBLE.
2. IESS TO COORDINATE FINAL SECURITY ZONES WITH OWNER. PROGRAM PER OWNER'S DIRECTIONS.
3. COORDINATE FINAL LOCATIONS OF MAGNETIC DOOR HOLDERS AND OTHER HARDWARE DEVICES WITH HARDWARE SUPPLIER PRIOR TO ROUGHING.
4. SECURITY PANIC SWITCH. DOOR SHALL REMAIN SECURED UPON ACTIVATION OF PANIC STATION. SECURITY PERSONEL SHALL BE NOTIFIED.
5. INTERFACE HANDICAP DOOR CONTROLLER WITH RESPECTIVE ACCESS CONTROL HARDWARE AT EACH DOOR WITH EITHER POWER ASSIST OR HANDICAP PUSH PLATE.



1 / E504 OVERALL ROOF PLAN - SECURITY
SCALE: 1/16" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
OVERALL ROOF PLAN - SECURITY

PROJECT NO. 1722

DRAWING NO.
E504

SYMBOL LIST

TEL/DATA OUTLETS

W — WALL MOUNTED TELEPHONE OUTLET @ 48" A.F.F. REFER TO TEL/DATA RISER FOR WIRING REQUIREMENTS. COVER PLATES SHALL BE STAINLESS STEEL.

— WALL MOUNTED DATA OUTLET @ 18" A.F.F
REFER TO TEL/DATA RISER FOR WIRING REQUIREMENTS.
NUMERAL INDICATES NUMBER OF RJ45 JACKS ON SAME FACEPLATE.
COVER PLATES SHALL BE STAINLESS STEEL.

#V/#D — COMBINATION TEL/DATA OUTLET @ 18" A.F.F.
#V INDICATES NUMBER OF RJ45 VOICE JACKS, #D INDICATES NUMBER OF RJ45 DATA JACKS ON SAME FACEPLATE.
(1) VOICE & (1) DATA IF #V/#D IS NOT SHOWN (TYPICAL).
REFER TO TEL/DATA RISER FOR WIRING REQUIREMENTS.
COVER PLATES SHALL BE STAINLESS STEEL.

"C" = MOUNTED 6" ABOVE COUNTER OR 42" AFF. COORDINATE EXACT MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS.

"F" = FURNITURE MTD, COORDINATE EXACT LOCATION WITH FURNITURE PLANS.

AN — WIRELESS ACCESS NODE - DATA
REFER TO TEL/DATA RISER FOR WIRING REQUIREMENTS.
COVER PLATES SHALL BE STAINLESS STEEL.
MOUNTED ABOVE CEILING U.N.O.

TVC — CABLE/DATA OUTLET
REFER TO TEL/DATA RISER FOR WIRING REQUIREMENTS
COVER PLATES SHALL BE STAINLESS STEEL.
MOUNTED @ 84" A.F.F. U.N.O.

TVE — VIDEO PROJECTOR OUTLET
REFER TO TEL/DATA RISER FOR WIRING REQUIREMENTS. COVER PLATES SHALL BE STAINLESS STEEL. CEILING MOUNTED U.N.O.

T — TEACHER'S STATION
REFER TO TEL/DATA RISER FOR WIRING REQUIREMENTS
COVER PLATES SHALL BE STAINLESS STEEL. MOUNTED @ 18" A.F.F. U.N.O.

IDF — INTERMEDIATE DISTRIBUTION FRAME

MDF — MAIN DISTRIBUTION FRAME

SQUARE WIRELESS SYSTEM CLOCK

(S) — FLUSH MOUNTED CEILING SPEAKER

(S)TW — FLUSH MOUNTED CEILING TWO WAY TALKBACK SPEAKER

(S)P — PENDANT MOUNTED CEILING SPEAKER

S — FLUSH WALL MOUNTED SPEAKER

S WP — WEATHER PROOF FLUSH MOUNTED SPEAKER. FINISH TO BE SELECTED BY ARCH.

S S — SURFACE MOUNTED SPEAKER. FINISH TO BE SELECTED BY ARCH.

(S)S — SPEAKER CEILING TYPE
SUBSCRIPT 'S' DENOTES SURFACE MOUNTED

B — BLUE BEACON FOR PAGING SYSTEM

SRP — SMART RESCUE PHONE

ARA — AREA RESCUE ASSISTANCE BUTTON

RECEPTACLES

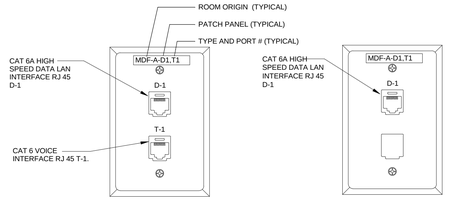
FLUSH FLOOR OUTLET BOXES WITH BOTH 120 VOLT & TELE/DATA COMPARTMENTS
FLOOR BOX BY OTHERS. BRASS COVER PLATE BY I.T. CONTRACTOR.

FLUSH FLOOR OUTLET BOXES WITH BOTH 120 VOLT & DATA COMPARTMENTS.
FLOOR BOX BY OTHERS. BRASS COVER PLATE BY I.T. CONTRACTOR.

WIREMOLD RACEWAY PROVIDED UNDER SECTION 260000

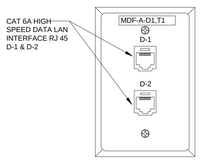
ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR	P.C.	PLUMBING CONTRACTOR
A.F.G.	ABOVE FINISHED GRADE	M.H.	MOUNTING HEIGHT
APC	ANGLE POLISHED CONNECTOR	W.P.	WEATHER PROOF
ARCH.	ARCHITECT	U.N.O.	UNLESS NOTED OTHERWISE
A.T.C.	AUTO-TEMP CONTROL CONTRACTOR	WG	WIRE GUARD
℄	CENTERLINE	CATV	CABLE TELEVISION
CLG.	CEILING	DH	DOOR HOLDER
E.C.	ELECTRICAL CONTRACTOR	F.A.C.P.	FIRE ALARM CONTROL PANEL
F&I	FURNISHED AND INSTALLED	PAC	PUBLIC ACCESS COMPUTER
F.P.C.	FIRE PROTECTION CONTRACTOR	MAC	MACINTOSH COMPUTER
G.C.	GENERAL CONTRACTOR	I.T.	INFORMATION TECHNOLOGY
H.V.A.C.	HEATING, VENTILATION, AND AIR CONDITIONING CONTRACTOR	IESS	INTEGRATED ELECTRONIC SECURITY SYSTEM INTEGRATOR

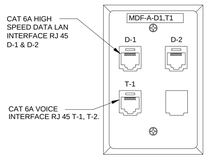


1 / T001 — TYPICAL WALL MTD VOICE/DATA OUTLET (W) DETAIL
SCALE: NTS

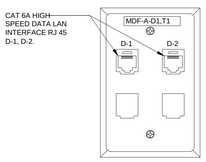
2 / T001 — TYPICAL DATA OUTLET (▽) DETAIL
SCALE: NTS



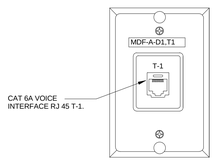
3 / T001 — TYPICAL DATA OUTLET (2▽) DETAIL
SCALE: NTS



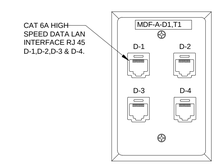
4 / T001 — TYPICAL DATA OUTLET (1V/2D▽) DETAIL
SCALE: NTS



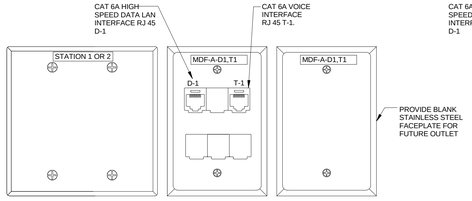
5 / T001 — TYPICAL CABLE/DATA JACK OUTLET (TVC) DETAIL
SCALE: NTS



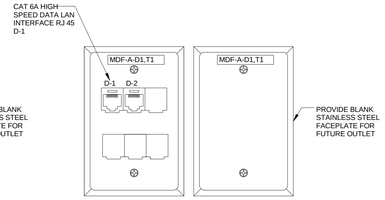
6 / T001 — TYPICAL WALL PHONE OUTLET (W▼) DETAIL
SCALE: NTS



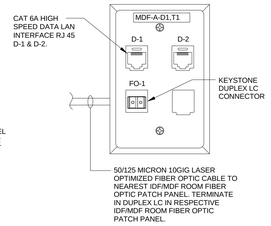
7 / T001 — TYPICAL DATA OUTLET (4▽) DETAIL
SCALE: NTS



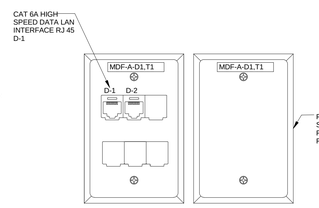
8 / T001 — TYPICAL TEACHER STATION OUTLET(T▼) DETAIL
SCALE: NTS



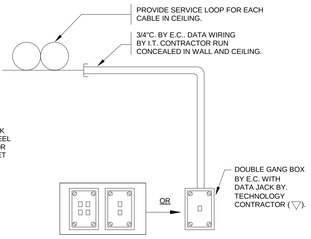
9 / T001 — LCD PROJECTOR JACK OUTLET(TVE) DETAIL
SCALE: NTS



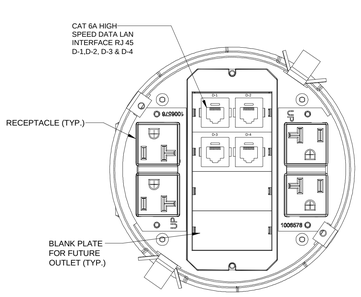
10 / T001 — TYPICAL OUTLET (AN▽) DETAIL
SCALE: NTS



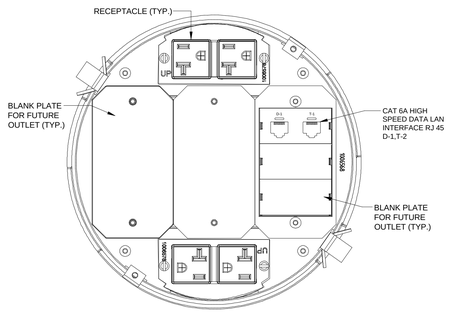
11 / T001 — LCD/LED DISPLAY JACK OUTLET(TVC) DETAIL
SCALE: NTS



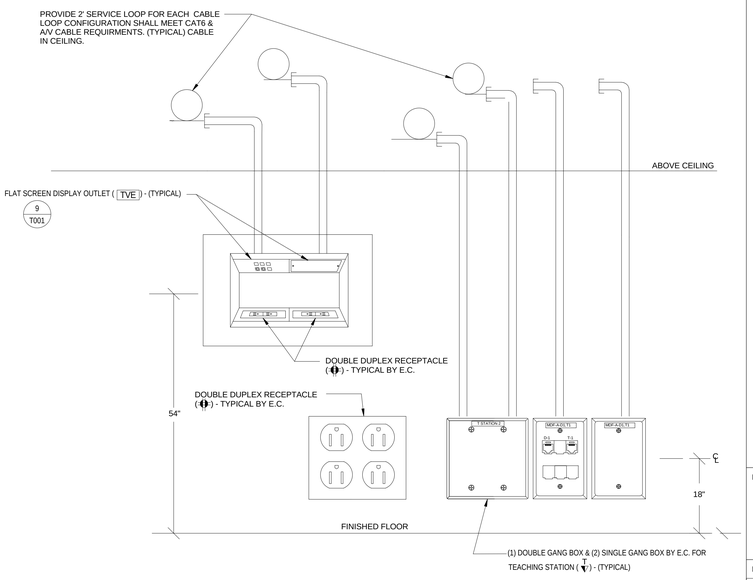
12 / T001 — DATA OUTLET DETAIL
SCALE: NTS



14 / T001 — TYPICAL 6" POKE THRU DATA & VOICE OUTLET (2▽,4▽) DETAIL
SCALE: NTS



15 / T001 — TYPICAL 8" POKE THRU DATA OUTLET (T▼) DETAIL
NOT TO SCALE



16 / T001 — TYPICAL TEACHER STATION JACK OUTLET (T▼ TVE) DETAIL
SCALE: NTS

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

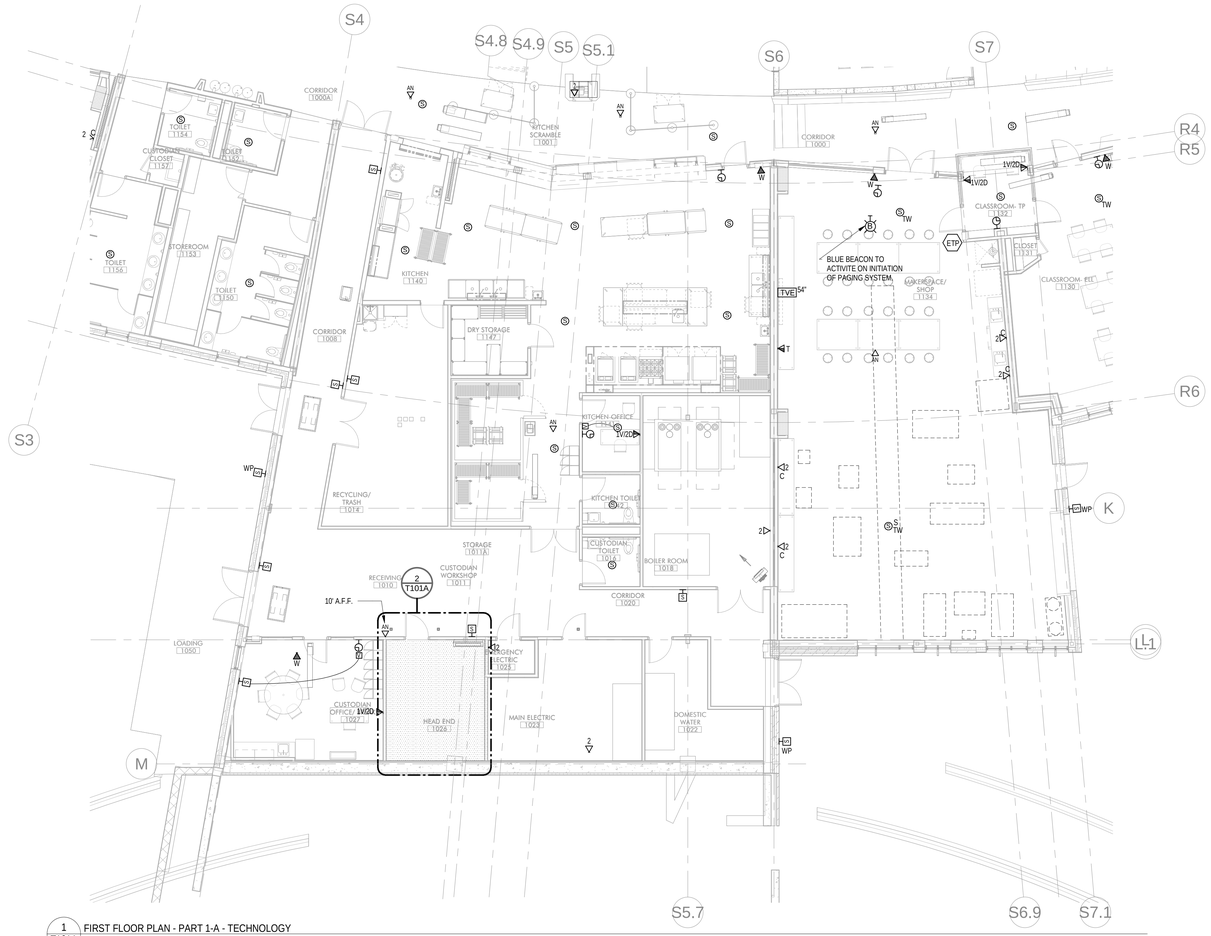
DRAWING NAME
TECHNOLOGY SYMBOL LIST

PROJECT NO. 1722

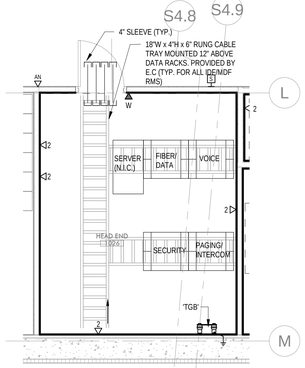
DRAWING NO.
T001

GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.



1 T101A FIRST FLOOR PLAN - PART 1-A - TECHNOLOGY
SCALE: 1/8" = 1'-0"



2 T101A FIRST FLOOR - PART 1-A - HEAD END RM.1026 - TECHNOLOGY
SCALE: 1/4" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

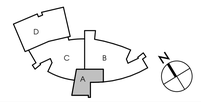
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN PART A - TECHNOLOGY

PROJECT NO. 1722

DRAWING NO.
T101A



GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.

1 T101B FIRST FLOOR PLAN - PART 1-B - TECHNOLOGY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA
508 - 998 - 5700 FAX 508 - 998 - 5903 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

DRAWING NAME
FIRST FLOOR PLAN PART B - TECHNOLOGY

PROJECT NO. 1722

DRAWING NO.
T101B

1 T101C FIRST FLOOR PLAN - PART 1-C - TECHNOLOGY
SCALE: 1/8" = 1'-0"

GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Faulkner Corner Road · Suite D, Dartmouth, MA 02747 - 1208
508 - 998 - 5700 FAX 508 - 998 - 0803 E - Mail, info@g-g-d.com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM #5
8	2/10/2020	Conformance Set

DRAWING NAME

FIRST FLOOR PLAN PART C - TECHNOLOGY

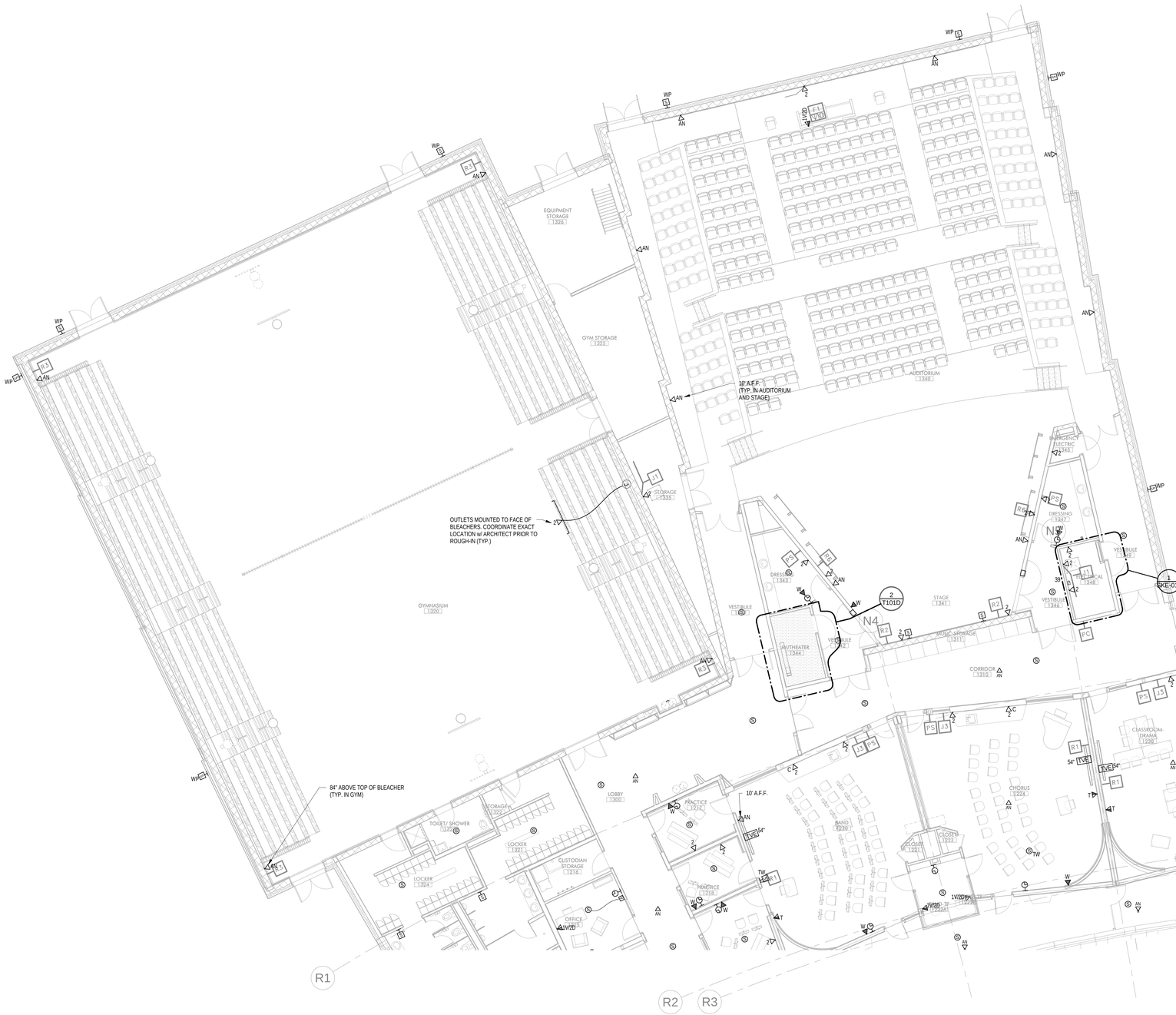
PROJECT NO. 1722

DRAWING NO.

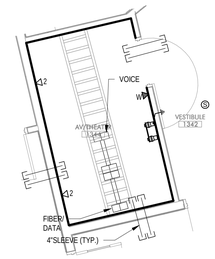
T101C

GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.



1 T101D FIRST FLOOR PLAN - PART 1-D - TECHNOLOGY
SCALE: 1/8" = 1'-0"



2 T101D FIRST FLOOR - PART 1-D - IDF RM. IT1344 - TECHNOLOGY
SCALE: 1/4" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1208
508 - 998 - 5700 FAX 508 - 998 - 0923 E - Mail: info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

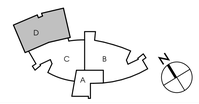
DRAWING NAME

FIRST FLOOR PLAN PART D - TECHNOLOGY

PROJECT NO. 1722

DRAWING NO.

T101D



GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.

1 T102A SECOND FLOOR PLAN - PART 2-A - TECHNOLOGY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - MAIL info@g g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

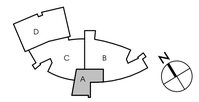
REVISIONS

No.	Date	Description
6	12/09/2019	ADDENDUM # 6
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART A - TECHNOLOGY

PROJECT NO. 1722

DRAWING NO.
T102A

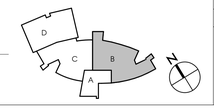


GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.

2 T102B SECOND FLOOR - PART 2-B - IDF RM.2255 - TECHNOLOGY
SCALE: 1/4" = 1'-0"

1 T102B SECOND FLOOR PLAN - PART 2-B - TECHNOLOGY
SCALE: 1/8" = 1'-0"



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 5903 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
SECOND FLOOR PLAN PART B - TECHNOLOGY

PROJECT NO. 1722

DRAWING NO.
T102B

GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.

CLG 2 — FOR CEILING MOUNTED PROJECTOR. COORDINATE LOCATION W/ AV CONSULTANTS AND ARCH.

SEE DWG.T201D FOR TECHNOLOGY LAYOUT IN THE GYMNASIUM

GYMNASIUM 1320

STAGE 1341

OPEN TO BELOW

BAND 1204

SCIENCE-CLASSROOM 2210

SCIENCE-CLASSROOM 2214

SCIENCE - PREP 2211B

SCIENCE - PREP 2211A

SCIENCE - TP 2212

STAIR 6 2061

STAIR 5 2065

CLASSROOM 2224

CLOSET 2223

CLASSROOM - TP 2232

CLASSROOM - ELL 2230

CLASSROOM 2234

CLOSET 2233

CLOSET 2231

CORRIDOR 2060

COHORT COMMON 2059

BREAKOUT 2058

BREAKOUT 2060

STAIR 4 2030

SPED - READING 2168A

SPED - RESOURCE 2168C

GUIDANCE - TESTING 2161

GUIDANCE - OFFICE 2166

GUIDANCE - OFFICE 2165

GUIDANCE - OFFICE 2163

GUIDANCE - STORAGE 2641

ELECTRIC 2167

ELEVATOR 2160

STORAGE 2167

WORKROOM 2169

CORRIDOR 2161B

STOREROOM 2153

CUSTODIAL CLOSET 2187

TOILET 2152

TOILET 2151

TOILET 2150

TOILET 2158

TOILET 2044

TOILET 2028

MEDICAL OFFICE 2040

INTERVIEW 2042

EXAM 2046A

EXAM 2046B

EXAM 2046C

CLOSET 2045

ISF 2155

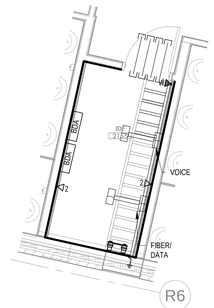
CONFERENCE/SM 2029

RECORDS 2027

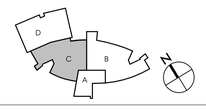
MAIL 2001B

1V/2D — TVE 54" — T — TW — W — AN — 2 — 4T

2 T102C — SECOND FLOOR - PART 2-C - IDF RM.2155 - TECHNOLOGY
SCALE: 1/4" = 1'-0"



1 T102C — SECOND FLOOR PLAN - PART 2-C - TECHNOLOGY
SCALE: 1/8" = 1'-0"



Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0800 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME

SECOND FLOOR PLAN PART C - TECHNOLOGY

PROJECT NO. 1722

DRAWING NO.

T102C

GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.

1 T102D SECOND FLOOR PLAN - PART 2-D - TECHNOLOGY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0903 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

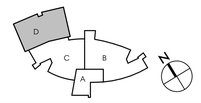
DRAWING NAME

SECOND FLOOR PLAN PART D - TECHNOLOGY

PROJECT NO. 1722

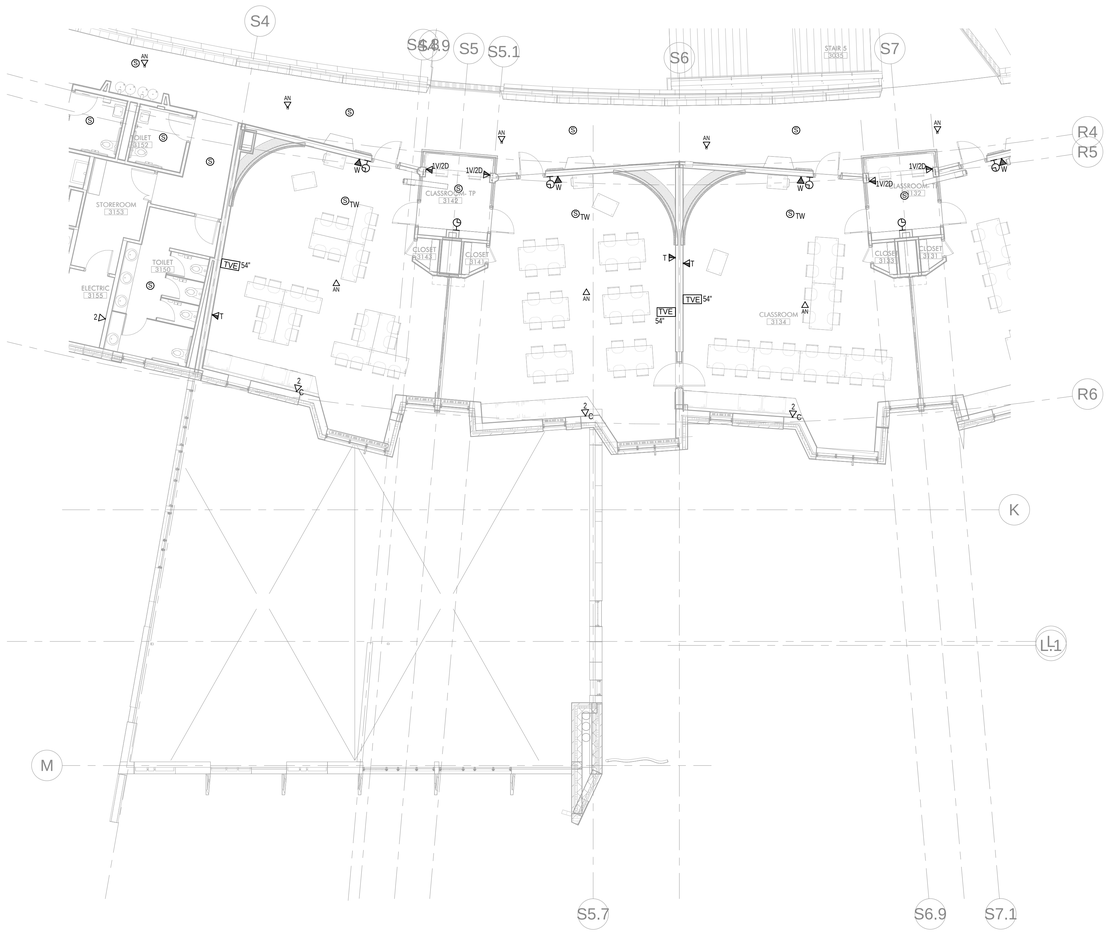
DRAWING NO.

T102D



GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.



1 / T103A THIRD FLOOR PLAN - PART 3-A - TECHNOLOGY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

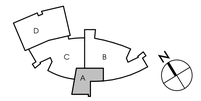
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN PART A - TECHNOLOGY

PROJECT NO. 1722

DRAWING NO.
T103A



GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.

1 T103B THIRD FLOOR PLAN - PART 3-B - TECHNOLOGY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 5903 E - MAIL info@g g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

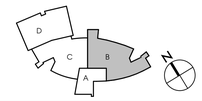
REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN PART B - TECHNOLOGY

PROJECT NO. 1722

DRAWING NO.
T103B



GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.

1 T103C THIRD FLOOR PLAN - PART 3-C - TECHNOLOGY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
5	12/03/2019	ADDENDUM # 5
8	2/10/2020	Conformance Set

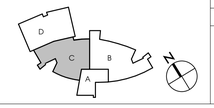
DRAWING NAME

THIRD FLOOR PLAN PART C - TECHNOLOGY

PROJECT NO. 1722

DRAWING NO.

T103C



GENERAL TECHNOLOGY NOTES:

1. COMMUNICATIONS OUTLETS ARE SHOWN FOR REFERENCE PURPOSES. EXACT LOCATIONS WILL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE INSTALLATION OF ALL CABLING WITH ELECTRICAL SUBCONTRACTOR.
2. KEEP COMMUNICATIONS CABLING AT LEAST 12" AWAY FROM POWER WIRING.
3. ALL CONDUITS AND JUNCTION BOXES TO BE PROVIDED UNDER DIVISION 260000. CONDUITS SHOWN ARE FOR REFERENCE ONLY.

1 / T103D THIRD FLOOR PLAN - PART 3-D - TECHNOLOGY
SCALE: 1/8" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0903 E - MAIL info@g g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

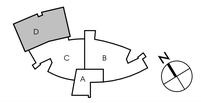
REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME
THIRD FLOOR PLAN PART D - TECHNOLOGY

PROJECT NO. 1722

DRAWING NO.
T103D



ROOF

THIRD FLOOR

SECOND FLOOR

TO GPS MASTER CLOCK

ROOF MTD ANTENNA FOR MASTER CLOCK SYSTEM GPS UNIT.
COORDINATE EXACT LOCATION WITH ARCHITECT & SYSTEM SUPPLIER.

HEAD END 1026 (MDF)

CLASSROOM- ELL 1130

SPED- READING 1128A

SPED- READING 1128B

SPED RESOURCE 1128C

CLASSROOM - TP 1132

BREAKOUT 1038

BREAKOUT 1048

MAKERSPACE/ SHOP 1134

BOILER ROOM 1018

CUSTODIAN TOILET 1016

MAIN ELECTRIC 1023

EMERGENCY ELECTRIC 1025

HEAD END 1026

CUSTODIAN OFFICE/ BREAK 1027

CORRIDOR 1008

RECEIVING 1010

CORRIDOR 1020

RECYCLING/ TRASH 1014

KITCHEN- OFFICE 1141

KITCHEN TOILET 1142

KITCHEN 1140

KITCHEN SCRAMBLE 1001

TOILET 1150

TOILET 1152

TOILET 1154

TOILET 1156

TECH/ DIGITAL FAB-LAB 1160

ELEV. MACH. 1163

ELECTRIC 1165

STAFF LUNCH 1166

LEARNING COMMON/ STAGE 1059

VESTIBULE 1145

CORRIDOR 1000A

OUTDOOR -

SPEAKER BAFFLE & BACKBOX CEILING MOUNTED (TYPICAL)

WIRELESS CLOCKS (TYPICAL FOR ALL CLOCKS)

12"SQUARE WIRELESS CLOCK

1 TYP.

5 TYP.

2 TYP.

4 TYP.

7 TYP.

6 TYP.

CABLE FOR LOCAL SYSTEMS' TIE-IN: (1) TWISTED SHIELDED PAIR 22AWG AND (1) TWISTED PAIR 22 AWG (1) REQUIRED PER LOCAL SYSTEM

RS-485 COMMUNICATION CABLE TO WIRELESS CLOCK REPEATER IN IDF (TYP.)

RG-8U COAXIAL CABLE TO GPS ANTENNA MOUNTED ON ROOF. DO NOT EXCEED 75' OF CABLE FROM GPS UNIT TO ANTENNA ON ROOF.

WIRELESS CLOCK TRANSCEIVER

GPS MASTER CLOCK

AM/FM/CD/ DVD TUNER

INTERCOM

EPBA TO FACP

FIBER/DATA RACK VOICE RACK

MDF (MAIN DISTRIBUTION FRAME)

MDF (MAIN DISTRIBUTION FRAME)

LOCATED IN HEAD END ROOM

ADMINISTRATIVE DESKTOP CONTROL STATION LOCATED IN HEAD END

CROSS CONNECT WIRING

TELEPHONE PROCESSOR (N.I.C.)

PROVIDE (3)25 PAIR 110 BLOCKS FOR CONNECTION TO OWNER PBX

I.T. CONTRACTOR SHALL PROVIDE ALL CROSS-CONNECTION REQUIRED BY PBX SWITCH VENDOR.

PROVIDE (1)100 PAIR 66-BLOCKS FOR SERVICE ENTRANCE TERMINATION

CATV SPLITTER/ AMPLIFIERS.

PROVIDE #2 AWG TELEPHONE SERVICE GROUND TO MAIN ELECTRIC SERVICE GROUNDING ELECTRODE.

TO CATV SERVICE

TO MAIN TELEPHONE SERVICE

AV/ THEATER 1344 (IDF-1D)

TOILET 1210

TOILET 1212

OFFICE 1214

OFFICE 1215

PRACTICE 1217

PRACTICE 1218

ENSEMBLE 1219

BAND 1220

BAND- TP 1222A

CHORUS 1224

CLASSROOM- DRAMA 1230

ART WORKROOM 1232

STAIR 2 1065

LOCKER 1321

TOILET/ SHOWER 1323

LOCKER 1324

GYMNASIUM 1320

STORAGE 1335

DRESSING 1343

AV/ THEATER 1344

AUDITORIUM 1340

STAGE 1341

DRESSING 1347

ELECTRICAL 1348

EMERGENCY ELECTRIC 1345

VESTIBULE 1339

VESTIBULE 1342

VESTIBULE 1346

VESTIBULE 1349

CORRIDOR 1310

LOBBY 1300

CORRIDOR 1060

OUTDOOR -

WIRELESS CLOCK REPEATER

RS-485 COMMUNICATION CABLE TO WIRELESS CLOCK TRANSCEIVER IN HEAD END ROOM

VOICE RACK DATA/FIBER RACK

IDF-1D (INTER DISTR. FRAME)

IDF-1D (INTER DISTR. FRAME)

PROVIDE (1)25 PAIR 110 BLOCKS

(1) SETS OF "25 PAIR CABLE (TYP.)" CAT5E RISER CABLING PLENUM RATED (TYPICAL)

A B MDF

MDF 110 BLOCKS

FIRST FLOOR

NOTES:

1. (1) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF DATA RACK IN BLOCKED AREA (TYPICAL)
2. (2) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF DATA RACK IN BLOCKED AREA (TYPICAL)
3. (4) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF DATA RACK IN BLOCKED AREA (TYPICAL)
4. (1) CAT 6A UTP CABLE PLENUM RATED TO IDF/MDF DATA RACK IN BLOCKED AREA & (1) CAT 6A UTP CABLE PLENUM RATED TO IDF/MDF VOICE RACK IN BLOCKED AREA (TYPICAL)
5. (2) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF DATA RACK IN BLOCKED AREA & (1) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF VOICE RACK IN BLOCKED AREA
6. (2) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF IN BLOCKED AREA. 2 STRAND MULTI-MODE LASER OPTIMIZED ARMORED FIBER CABLE TO IDF/MDF IN BLOCKED AREA (TYPICAL)
7. (1) CAT 6A UTP CABLE PLENUM RATED TO IDF/MDF VOICE RACK IN BLOCKED AREA (TYPICAL)
8. 2 STRAND SINGLE MODE OPTIMIZED ARMORED FIBER CABLE TO TV BOOTH 1281 (TYPICAL)
9. (2) 2 STRAND SINGLE MODE OPTIMIZED ARMORED FIBER CABLE TO TV BOOTH 1281 (TYPICAL)

A. 12 STRAND MULTI-MODE FIBER CABLE TO MDF. INSTALL PLENUM RATED INNER-DUCT.

B. 6 STRAND SINGLE MODE 8/9 MICRON FIBER CABLE TO MDF. INSTALL PLENUM RATED INNER-DUCT.

C. 6 STRAND OUTSIDE PLANT SINGLE MODE 8/9 MICRON FIBER CABLE TO MDF. INSTALL PLENUM RATED INNER-DUCT.

D. 4 STRAND OUTSIDE PLANT SINGLE MODE 8/9 MICRON FIBER CABLE TO MDF. INSTALL PLENUM RATED INNER-DUCT.

NOTE:

1. THIS CONTRACTOR SHALL PROVIDE FOR A COMPLETE INSTALLATION. FURNISH ALL EQUIP. LABOR, WIRING AND OUTLETS REQUIRED FOR A COMPLETELY OPERATIONAL SYSTEM.
2. ALL WIRING SHALL BE IN ACCORDANCE WITH EQUIPMENT SUPPLIER. COORDINATE ALL WIRING REQUIREMENTS PRIOR TO ROUGHING-IN.
3. PROVIDE APPROPRIATE QUANTITIES OF DATA PATCH PANELS TO ACCOMODATE ALL RESPECTIVE DATA CIRCUITS.
4. PROVIDE CAT 6A PATCH CORDS TO MATCH TOTAL QUANTITY OF PATCH PANEL PORTS. AT BOTH MDF/IDF AND WORK STATION.
5. PROVIDE CAT 6A WIRING AND PATCH CORDS COLOR AS SHOWN BELOW BLUE FOR VOICE/DATA GREEN FOR WIRELESS (AN OUTLET)

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA
508 - 998 - 5700 FAX 508 - 998 - 0983 E - MAIL info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME

TECHNOLOGY RISER

PROJECT NO. 1722

DRAWING NO.

T201

ROOF MTD ANTENNA FOR MASTER CLOCK SYSTEM GPS UNIT.
COORDINATE EXACT LOCATION WITH ARCHITECT & SYSTEM SUPPLIER.

ROOF

IDF 2155 (IDF-2C)

CLASSROOM 3134

SPEAKER BAFFLE & BACKBOX CEILING MOUNTED (TYPICAL)

WIRELESS CLOCKS (TYPICAL FOR ALL CLOCKS)

12"SQUARE WIRELESS CLOCK

1 TYP.

T TVE — 2 TYP.

AN W — 7 TYP.

2 — 2 TYP.

4 TYP.

6 TYP.

CLASSROOM - TP 3132	CLASSROOM 3140	CLASSROOM - TP 3142	CLASSROOM 3144	CLASSROOM 3130
1V/2D 1V/2D S	T 2 TVE W AN TW S	1V/2D 1V/2D S	T 2 TVE W AN TW S	T 2 TVE W AN TW S
TOILET 3150	TOILET 3152	TOILET 3154	ELECTRIC 3155	TOILET 3156
S	S	S	2	S
CLASSROOM - ELL 3160	CLASSROOM - ELL 3164	CLASSROOM 3210	CLASSROOM - TP 3212	CLASSROOM 3214
T 2 TVE W AN TW S	T 2 TVE W AN TW S	T 2 TVE W AN TW S	1V/2D 1V/2D S	T 2 TVE W AN TW S
CLASSROOM 3220	CLASSROOM - TP 3222	STAIR 2 3065	CORRIDOR 3060	CORRIDOR 3000	BREAKOUT 3058
T 2 TVE W AN TW S	1V/2D 1V/2D S	S	AN AN S S S	AN AN AN AN S S S S S AN AN AN S S S S S	2 S

IDF 2255 (IDF-2B)

CLASSROOM 3240	CLASSROOM - TP 3242	CLASSROOM 3144	TOILET 3250	TOILET 3252	TOILET 3256	ELECTRIC 3257	SPED- READING 3260A
T 2 TVE W AN TW S	1V/2D 1V/2D S	T 2 TVE W AN TW S	S	S	S	2	2 W TW S
SPED- READING 3260B	SPED RESOURCE 3260C	CLASSROOM - TP 3262	ELECTRIC 3264	EMERGENCY ELECTRIC 3264A	OFFICE- DEPT 3265	OFFICE- DEPT 3266	GUIDANCE- OFFICE 3267
T 2 TVE W TW S	T 2 TVE W AN TW S	1V/2D 1V/2D S	2	2	1V/2D V S	1V/2D V S	1V/2D V S
GUIDANCE- OFFICE 3268	WORKROOM 3269	GUIDANCE- WAITING 3263	GUIDANCE- STORAGE 3263A	CORRIDOR 3263B	STAIR 1 3005	CLASSROOM 3110	CLASSROOM - TP 3112
1V/2D V S	2 2 AN W V S	AN S		S	S	T 2 TVE W AN TW S	1V/2D 1V/2D S
CLASSROOM 3114	SCIENCE- CLASSROOM 3120	SCIENCE- PREP 3121A	SCIENCE - TP 3122	SCIENCE- CLASSROOM 3124	BREAKOUT 3054	CLASSROOM 3234	CLASSROOM - TP 3232
T 2 TVE W AN TW S	T 2 2 2 2 2 2 TVE W AN TW S	1V/2D W S	1V/2D 1V/2D S	T 2 2 2 2 2 2 TVE W AN TW S	2 S	T 2 TVE W AN TW S	1V/2D S
CLASSROOM 3230	CLASSROOM 3224	BREAKOUT 3068	CORRIDOR 3000	CORRIDOR 3060
T 2 TVE W AN TW S	T 2 TVE W AN TW S	2 S	AN AN AN AN S S S S	AN AN AN AN S S S S S S AN AN AN S S S S S S

THIRD FLOOR

SPED-CLASSROOM 2124	CLASSROOM 2130	SPED - TP 2132	CLASSROOM 2134	BREAKOUT 2038
T 2 TVE W AN TW S	T 2 TVE W AN TW S	1V/2D 1V/2D S	T 2 TVE W AN TW S	2 S
ADMIN- GENERAL 2010	MAIL 2010B	OFFICE- PR SECRETARY 2012	OFFICE- PRINCIPAL 2014	TOILET 2015
1V/2D 1V/2D 1V/2D AN 1V/2D 1V/2D V S	S	1V/2D V S	1V/2D 1V/2D V S 1V/2D	S
CONFERENCE- LG 2016	OFFICE- ASST. PR. 2018	OFFICE- CONFERENCE 2020	OFFICE- SPARE 2022	WORKSPACE 2025	CONFERENCE- SM 2026	TOILET 2028
T 2 TVE W AN V S	1V/2D V S	1V/2D V S	1V/2D V S	T TVE W AN S	T TVE W AN V S	S
MEDICAL OFFICE 2040	INTERVIEW 2042	TOILET 2044	VESTIBULE 2001	TOILET 2150	TOILET 2152	TOILET 2154	IDF 2155	TOILET 2156
1V/2D 1V/2D AN V S S	1V/2D V S	S	S	S	S	S	2 2 W	S
WORKROOM 2160	GUIDANCE- WAITING 2161	CORRIDOR 2161B	OFFICE- DEPT 2163	OFFICE- DEPT 2164	GUIDANCE- OFFICE 2165	GUIDANCE- OFFICE 2166	ELECTRIC 2167	SPED- READING 2168A
2 2 AN W V S	AN S	S 4 TYP.	1V/2D V S	1V/2D V S	1V/2D V S	1V/2D V S	2	2 W TW S
SPED- READING 2168B	SPED RESOURCE 2168C	SCIENCE- CLASSROOM 2214	SCIENCE - TP 2212	SCIENCE- PREP 2211A	SCIENCE- CLASSROOM 2210	BREAKOUT 2058	STAIR 2 2065	VESTIBULE 2001
T TVE W TW S	T 2 TVE W AN TW S	T TVE W AN TW S 2 2 2 2 2 2	1V/2D 1V/2D S	1V/2D W S	T TVE W AN TW S 2 2 2 2 2 2	2 S	S	S
CORRIDOR 2060	CORRIDOR 2000
AN AN S S	AN AN AN AN S S S S AN AN AN S S S S TVC TVC 2 TYP.

WIRELESS CLOCK REPEATER

RS-485 COMMUNICATION CABLE TO WIRELESS CLOCK TRANSCEIVER IN HEAD END ROOM

VOICE RACK: IDF-2C (INTER DISTR. FRAME)

DATA/FIBER RACK: IDF-2C (INTER DISTR. FRAME)

PROVIDE (1)25 PAIR 110 BLOCKS

(1) SETS OF "25 PAIR CABLE (TYP.)" CATSE RISER CABLING PLENUM RATED (TYPICAL)

A B MDF

MDF 110 BLOCKS

CLASSROOM- ELL 2110	CLASSROOM - TP 2112	CLASSROOM 2114	SPED- CLASSROOM 2120	SPED - TP 2122
T 2 TVE W AN TW S	1V/2D 1V/2D S	T 2 TVE W AN TW S	T 2 TVE W AN TW S	1V/2D 1V/2D S
SPED- CLASSROOM 2264	SPED - TP 2262	SPED- CLASSROOM 2260	TOILET 2250	SPED- TOILET 2252
T 2 TVE W AN TW S	1V/2D 1V/2D S	T 2 TVE W AN TW S	S	S
ELECTRIC ROOM 2254	IDF 2255	TOILET 2256	CLASSROOM 2244	CLASSROOM - TP 2242
2	2 2 W	S	T 2 TVE W AN TW S	1V/2D 1V/2D S
STAIR 1 2005	CORRIDOR 2000	CORRIDOR 2060	CLASSROOM 2234	CLASSROOM- TP 2232
S	AN AN AN S S S S	AN AN AN AN S S S S AN AN AN S S S S	T 2 TVE W AN TW S	1V/2D 1V/2D S
CLASSROOM- ELL 2230	CLASSROOM 2224	CLASSROOM- TP 2222	BREAKOUT 2068
T 2 TVE W AN TW S	T 2 TVE W AN TW S	1V/2D 1V/2D S	2 S

WIRELESS CLOCK REPEATER

RS-485 COMMUNICATION CABLE TO WIRELESS CLOCK TRANSCEIVER IN HEAD END ROOM

VOICE RACK: IDF-2B (INTER DISTR. FRAME)

DATA/FIBER RACK: IDF-2B (INTER DISTR. FRAME)

PROVIDE (1)25 PAIR 110 BLOCKS

(1) SETS OF "25 PAIR CABLE (TYP.)" CATSE RISER CABLING PLENUM RATED (TYPICAL)

A B MDF

MDF 110 BLOCKS

SECOND FLOOR

ART 1234	BREAKOUT 1068	MEDIA 1240	MEDIA 1242	CLASSROOM 1244	TOILET 1250	SPED- TOILET 1252	TOILET 1256
T 2 TVE W AN TW S	2 S	T T TVE 1V/2D 2 2 2 2 2 AN AN S S S	1V/2D 1V/2D S	T 2 TVE W AN TW S	S	S	S
EMERGENCY ELECTRIC 1254	SPED- CLASSROOM 1260	SPED- TP 1262	SPED- CLASSROOM 1264	SCIENCE- CLASSROOM 1110	SCIENCE- PREP 1111A	SCIENCE- TP 1112	SCIENCE- CLASSROOM 1114	WORKROOM 1120
2	T 2 TVE W AN TW S	1V/2D 1V/2D S	T 2 TVE W AN TW S	T TVE W AN TW S 2 2 2 2 2 2	1V/2D W S	1V/2D 1V/2D S	T TVE W AN TW S 2 2 2 2 2 2	2 2 AN W V S
GUIDANCE- WAITING 1121B	GUIDANCE- STORAGE 1121A	OFFICE- DEPT 1123	OFFICE- DEPT 1124	GUIDANCE- OFFICE 1125	GUIDANCE- OFFICE 1126	ELECTRIC 1127	CLASSROOM- TP 1122	STAIR 1 1005
AN S		1V/2D V S	1V/2D V S	1V/2D V S	1V/2D V S	2	1V/2D 1V/2D S	S
CORRIDOR 1000	CORRIDOR 1060	CAFETERIA/ LEARNING COMMON 1055	OUTDOOR -
AN AN S S	AN AN AN S S S S S	S S S S S S	S S S S S S

FIRST FLOOR

NOTES:

1. - (1) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF DATA RACK IN BLOCKED AREA (TYPICAL)
2. - (2) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF DATA RACK IN BLOCKED AREA (TYPICAL)
3. - (4) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF DATA RACK IN BLOCKED AREA (TYPICAL)
4. - (1) CAT 6A UTP CABLE PLENUM RATED TO IDF/MDF DATA RACK IN BLOCKED AREA & (1) CAT 6A UTP CABLE PLENUM RATED TO IDF/MDF VOICE RACK IN BLOCKED AREA (TYPICAL)
5. - (2) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF DATA RACK IN BLOCKED AREA & (1) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF VOICE RACK IN BLOCKED AREA
6. - (2) CAT 6A UTP CABLES PLENUM RATED TO IDF/MDF IN BLOCKED AREA. 2 STRAND MULTI-MODE LASER OPTIMIZED ARMORED FIBER CABLE TO IDF/MDF IN BLOCKED AREA (TYPICAL)
7. - (1) CAT 6A UTP CABLE PLENUM RATED TO IDF/MDF VOICE RACK IN BLOCKED AREA (TYPICAL)
8. - 2 STRAND SINGLE MODE OPTIMIZED ARMORED FIBER CABLE TO TV BOOTH 1281 (TYPICAL)
9. - (2) 2 STRAND SINGLE MODE OPTIMIZED ARMORED FIBER CABLE TO TV BOOTH 1281 (TYPICAL)

A 12 STRAND MULTI-MODE FIBER CABLE TO MDF. INSTALL PLENUM RATED INNER-DUCT.

B 6 STRAND SINGLE MODE 8/9 MICRON FIBER CABLE TO MDF. INSTALL PLENUM RATED INNER-DUCT.

C 6 STRAND OUTSIDE PLANT SINGLE MODE 8/9 MICRON FIBER CABLE TO MDF. INSTALL PLENUM RATED INNER-DUCT.

NOTE:

1. THIS CONTRACTOR SHALL PROVIDE FOR A COMPLETE INSTALLATION. FURNISH ALL EQUIP. LABOR, WIRING AND OUTLETS REQUIRED FOR A COMPLETELY OPERATIONAL SYSTEM.
2. ALL WIRING SHALL BE IN ACCORDANCE WITH EQUIPMENT SUPPLIER. COORDINATE ALL WIRING REQUIREMENTS PRIOR TO ROUGHING-IN.
3. PROVIDE APPROPRIATE QUANTITIES OF DATA PATCH PANELS TO ACCOMODATE ALL RESPECTIVE DATA CIRCUITS.
4. PROVIDE CAT 6A PATCH CORDS TO MATCH TOTAL QUANTITY OF PATCH PANEL PORTS. AT BOTH MDF/IDF AND WORK STATION.
5. PROVIDE CAT 6A WIRING AND PATCH CORDS COLOR AS SHOWN BELOW BLUE FOR VOICE/DATA GREEN FOR WIRELESS (AN OUTLET)

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0883 E - Mail, info@g - g - d - com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE

11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME

TECHNOLOGY RISER

PROJECT NO. 1722

DRAWING NO.

T202

MAIN DISTRIBUTION FRAME MDF

LOCATION: HEAD END 1026 (MDF)

CAT 6A (RJ45) VOICE PORT/ AN ▽ / Ⓢ TW			CAT 6A (RJ45) DATA PORTS		
USED	SPARE	PATCH PANEL SIZE	USED	SPARE	PATCH PANEL SIZE
47	49	(2) 48 PORT	90	6	(2) 48 PORT

INTERMEDIATE DISTRIBUTION FRAME IDF

LOCATION: AV/ THEATER 1344 (IDF-1D)

71	25	(2) 48 PORT	73	23	(2) 48 PORT

INTERMEDIATE DISTRIBUTION FRAME IDF

LOCATION: IDF 2255 (IDF-2B)

254	34	(6) 48 PORT	282	6	(6) 48 PORT

INTERMEDIATE DISTRIBUTION FRAME IDF

LOCATION: IDF 2155 (IDF-2C)

174	18	(4) 48 PORT	200	40	(5) 48 PORT

QUANTITY OF DEVICES

HEAD END 1026 (MDF)

	DATA	VOICE/ AN ▽ / Ⓢ TW	2 STRAND MM FIBER
2 ▽ = 29	58	-	-
AN ▽ = 14	-	28	14
▽ = -	-	-	-
1V/2D ▼ = 4	8	4	-
W ▼ = 11	-	11	-
T ▼ = 8	8	-	-
TVE = 8	16	-	-
TVC = -	-	-	-
Ⓢ TW = 7	7	-	-
TOTAL	90	47	14

QUANTITY OF DEVICES

AV/ THEATER 1344 (IDF-1D)

	DATA	VOICE/ AN ▽ / Ⓢ TW	2 STRAND MM FIBER
2 ▽ = 25	50	-	-
AN ▽ = 24	-	48	24
▽ = -	-	-	-
1V/2D ▼ = 7	14	7	-
W ▼ = 10	-	10	-
T ▼ = 3	3	3	-
TVE = 3	6	-	-
TVC = -	-	-	-
Ⓢ TW = 3	-	3	-
TOTAL	73	71	24

QUANTITY OF DEVICES

IDF 2255 (IDF-2B)

	DATA	VOICE/ AN ▽ / Ⓢ TW	2 STRAND MM FIBER
2 ▽ = 62	124	-	-
AN ▽ = 65	-	130	65
▽ = -	-	-	-
1V/2D ▼ = 38	76	38	-
W ▼ = 32	-	32	-
T ▼ = 28	28	28	-
TVE = 27	54	-	-
TVC = -	-	-	-
Ⓢ TW = 26	-	26	-
TOTAL	282	254	65

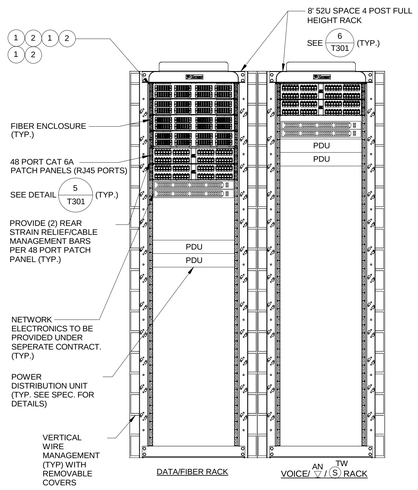
QUANTITY OF DEVICES

IDF 2155 (IDF-2C)

	DATA	VOICE/ AN ▽ / Ⓢ TW	2 STRAND MM FIBER
2 ▽ = 36	72	-	-
AN ▽ = 40	-	80	40
▽ = 3	3	3	-
1V/2D ▼ = 32	64	32	-
W ▼ = 23	-	23	-
T ▼ = 19	19	19	-
TVE = 19	38	-	-
TVC = 2	4	-	-
Ⓢ TW = 17	-	17	-
TOTAL	200	174	40

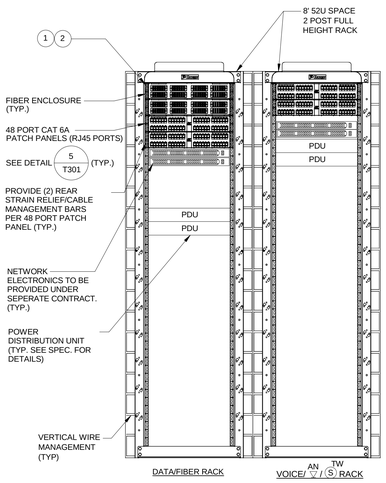
CABLE/FIBER SCHEDULE

1. FIBER OPTIC MULTIMODE LIU (LIGHTGUIDE INTERFACE UNIT) PATCH PANEL (12 PORT - SC CONNECTORS) - PREMISES DISTRIBUTION
2. FIBER OPTIC SINGLEMODE LIU (LIGHTGUIDE INTERFACE UNIT) PATCH PANEL (6 PORT - ST CONNECTORS) - PREMISES DISTRIBUTION
3. FIBER OPTIC SINGLEMODE LIU (LIGHTGUIDE INTERFACE UNIT) PATCH PANEL (12 PORT - ST CONNECTORS) - PREMISES DISTRIBUTION



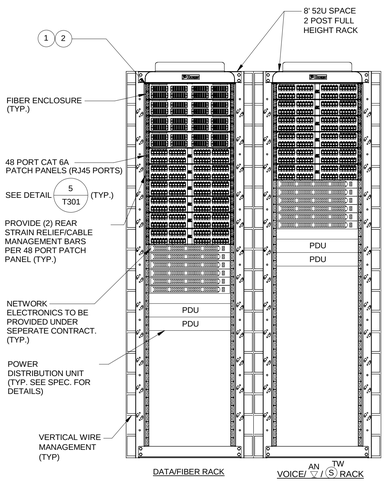
1 T300 MDF (HEAD END 1026) DETAIL

NOT TO SCALE



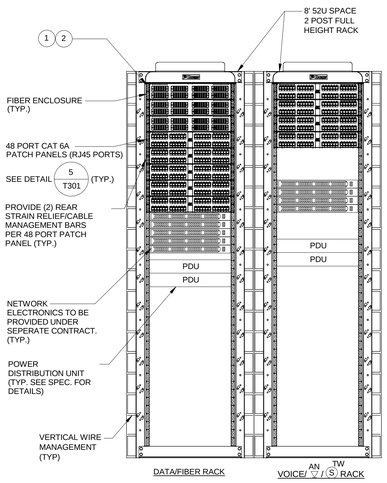
2 T300 IDF-1D (AV/ THEATER 1344)DETAIL

NOT TO SCALE



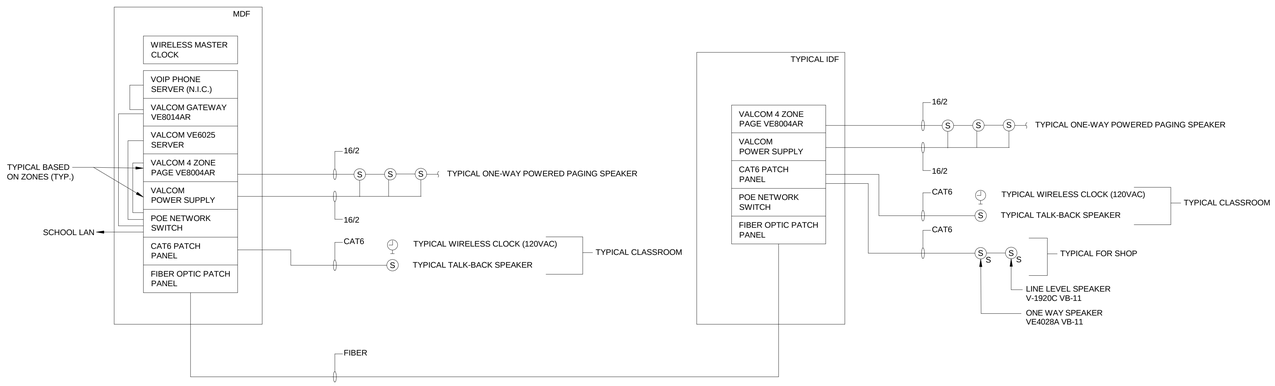
3 T300 IDF-2B (IDF 2255)DETAIL

NOT TO SCALE



4 T300 IDF-2C (IDF 2155)DETAIL

NOT TO SCALE



5 T300 PAGING/INTERCOM AND CLOCK SYSTEM RISER DIAGRAM

NOT TO SCALE

NOTE:
THE FOLLOWING PAGING ZONES SHALL BE PROVIDED.
(ALL PAGING ZONES SHALL BE COORDINATED W/ OWNER PRIOR PAGING SPEAKER INSTALLATION)

a. OUTSIDE SPEAKERS ONLY
b. INSIDE SPEAKERS ONLY
c. GYMNASIUM
d. CAFETERIA/LEARNING COMMON
e. AUDITORIUM/STAGE
f. ALL CALL INSIDE AND OUTSIDE SPEAKERS
g. MEDIA
h. ADMIN. SPACES ONLY
i. PER OFFICE SUITE
j. OUTDOOR LOADING DOCK
k. BY GRADE (COORDINATE W/ OWNER)
l. BY FLOOR (COORDINATE W/ OWNER)

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

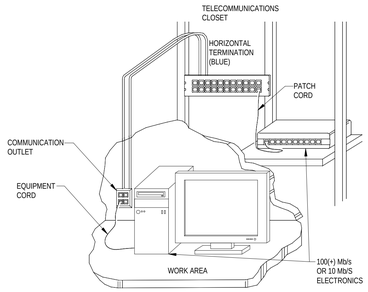
DRAWING NAME

TECHNOLOGY DETAILS

PROJECT NO. 1722

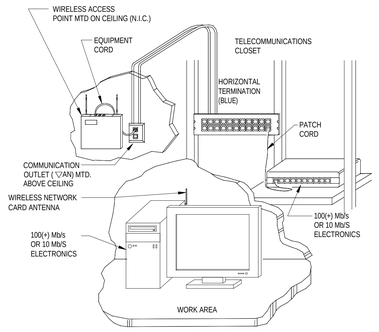
DRAWING NO.

T300



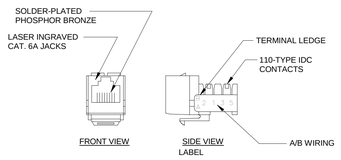
1 T301 TYPICAL INTERCONNECTION ARCHITECTURE

SCALE: N.T.S.



2 T301 TYPICAL WIRELESS INTERCONNECTION ARCHITECTURE

SCALE: N.T.S.

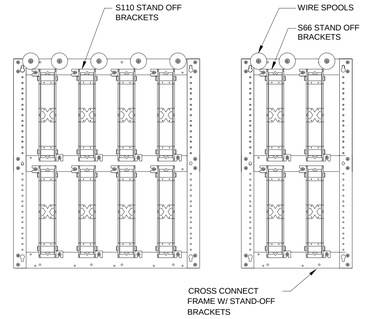


3 T301 RJ45 CONNECTION DETAILS

SCALE: N.T.S.

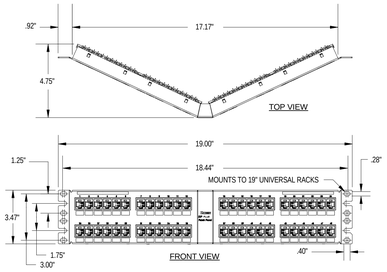
NOTE

PANELS SHALL BE UL LITSED; MEET NATIONAL ELECTRICAL CODE REQUIREMENTS AND SPECIFICATIONS FOR UL 1863; AND FULLY COMPLY WITH FCC PART 68 AND TIA-568-A CATEGORY 5E.



4 T301 TYPICAL CROSS CONNECT

SCALE: N.T.S.

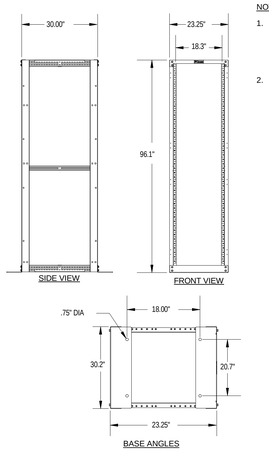


5 T301 48 PORT CAT 6A PATCH PANEL

SCALE: N.T.S.

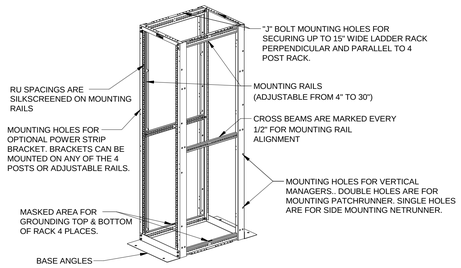
NOTE

PANELS SHALL BE UL LISTED; MEET NATIONAL ELECTRICAL CODE REQUIREMENTS AND SPECIFICATIONS FOR UL 1863; AND FULLY COMPLY WITH FCC PART 68 AND TIA-568-A CATEGORY 6A.



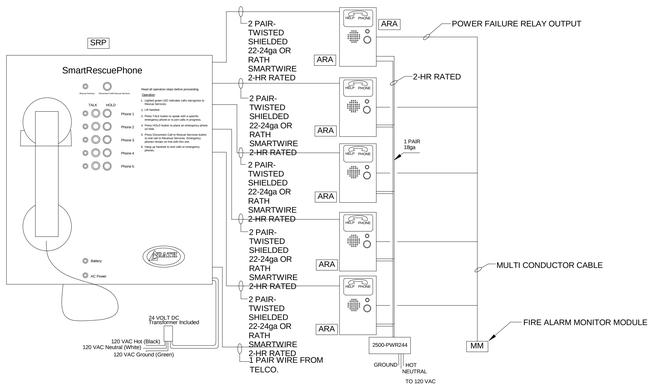
NOTES:

1. CAN BE USED WITH ANY EIA STANDARD COMPONENT IN ADDITION TO ALL PANDUIT HORIZONTAL CABLE MANAGEMENT AND PATCH PANEL PRODUCTS.
2. 52 AVAILABLE RACK SPACES.
3. RU SPACING NUMBERS ARE CLEARLY PRINTER ON MOUNTING RAILS.
4. EASY ASSEMBLY. ONE WRENCH NEEDED TO INSTALL BOLTS INTO WELDNUTS IN ALL 8 CORNERS.
5. FULLY BONDED STRUCTURE WHEN ASSEMBLED PER INSTRUCTIONS.
6. LOAD RATING - 2000 LBS.



6 T301 4 POST RACK

SCALE: N.T.S.



7 T301 SMARTRESCUE BASE STATION WIRING DIAGRAM

SCALE: N.T.S.

SRP SMART RESCUE PHONE

ARA AREA RESCUE ASSISTANCE BUTTON

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

GARCIA GALUSKA DESOUSA
CONSULTING ENGINEERS, INC.
375 Faunce Corner Road - Suite D, Dartmouth, MA 02747 - 1258
508 - 998 - 5700 FAX 508 - 998 - 0983 E - Mail, info@g - g - d . com

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
8	2/10/2020	Conformance Set

DRAWING NAME

TECHNOLOGY DETAILS

PROJECT NO. 1722

DRAWING NO.

T301

FULLER MIDDLE SCHOOL
AUDIOVISUAL SYSTEMS

NOTES FOR GENERAL CONTRACTOR:

1. VERIFY EXACT LOCATION OF AUDIOVISUAL DEVICES AND THEIR MOUNTING WITH ARCHITECTURAL DRAWINGS.
2. PROVIDE ALL MISCELLANEOUS MATERIALS IN ORDER TO PROVIDE A COMPLETE AND OPERABLE AUDIOVISUAL SYSTEM.
3. PROVIDE BLOCKING FOR WALL MOUNTED AUDIOVISUAL DEVICES AS INDICATED OR REQUIRED.
4. SUPPLY MILLWORK FOR AUDIOVISUAL SYSTEMS AS INDICATED OR REQUIRED.
5. PROVIDE ATTACHMENT POINTS AT SUPERSTRUCTURE FOR MOUNTING LOUDSPEAKERS, VIDEO PROJECTORS, ETC. AS REQUIRED.
6. AUDIOVISUAL BOXES SHALL NOT BE INSTALLED BACK TO BACK WITH ANY OTHER DEVICE IN A WALL WITHIN A GIVEN STUD BAY.

NOTES FOR ELECTRICAL CONTRACTOR:

1. ELECTRICAL CONTRACTOR SHALL PROVIDE A COMPLETE CONDUIT SYSTEM FOR THE AUDIOVISUAL SYSTEM, INCLUDING ALL CONDUITS, JUNCTION BOXES, CABLE TRAY, FLOOR BOXES, AND AUDIOVISUAL OUTLETS BOXES UNLESS OTHERWISE NOTED. REFER TO AUDIOVISUAL SYSTEM SYMBOL LEGEND AND CONDUIT RISER DIAGRAMS FOR DETAILS. AV DRAWINGS DO NOT SHOW ALL REQUIRED COMPONENTS FOR A COMPLETE SYSTEM (I.E. ; PULL BOXES, CONDUIT FITTINGS, ETC.).
2. AC POWER, CONDUIT, AND TELECOMMUNICATION REQUIREMENTS SHOWN ON AUDIOVISUAL DRAWINGS ARE PROVIDED FOR COORDINATION AND REFERENCE ONLY AND ARE NOT PART OF THE AUDIOVISUAL CONTRACTOR'S SCOPE OF WORK.
3. SEE ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR AC POWER AND CONDUIT DETAILS.
4. SEE TECHNOLOGY (IT) DRAWINGS AND SPECIFICATIONS FOR TELECOMMUNICATION DETAILS.
5. PROVIDE AN AC POWER SYSTEM FOR THE AUDIOVISUAL SYSTEM. AC SYSTEM INCLUDES A DEDICATED POWER PANEL WITH TRANSIENT VOLTAGE SURGE SUPPRESSORS, AND A SEPARATE ISOLATED GROUND.
6. AC POWER FOR GIVEN AUDIOVISUAL SYSTEM WILL BE FED FROM A COMMON AC PANEL WITH TRANSIENT VOLTAGE SURGE SUPPRESSION AND ON THE SAME PHASE.
7. EACH 120 VAC CIRCUIT SHALL BE 3-WIRE WITH A HOT, DEDICATED NEUTRAL, AND GROUND.
8. DEDICATED AC CIRCUITS TERMINATE IN THE AUDIOVISUAL EQUIPMENT RACKS UNLESS OTHERWISE INDICATED. AC CIRCUITS TERMINATE IN A RACEWAY SYSTEM PROVIDED BY THE AUDIOVISUAL CONTRACTOR.
9. INSULATE AUDIOVISUAL EQUIPMENT RACKS FROM INCOMING METAL CONDUITS WITH PVC TO EMT CONNECTOR IN TOP OF RACK OR USING OTHER APPROVED MEANS.
10. TELECOMMUNICATION AND AC POWER OUTLETS ARE TO BE MOUNTED ADJACENT TO ASSOCIATED AUDIOVISUAL DEVICES UNLESS OTHERWISE NOTED.
11. PROVIDE A COMPLETE CONDUIT SYSTEM FOR THE AUDIOVISUAL SYSTEM WITH A PULL LINE IN AUDIOVISUAL SYSTEM CONDUITS.
12. PROVIDE A PULLBOX IN AUDIOVISUAL SYSTEM CONDUIT RUNS OVER 100 FEET OR THAT CONTAIN MORE THAN (2) CONSECUTIVE 90° BENDS.
13. ALL CONDUITS CARRYING AUDIOVISUAL SYSTEM SIGNALS ARE NOT TO BE RUN PARALLEL TO POWER CONDUITS UNLESS THE SPACING EXCEEDS 2'-0" AND THE RUN IS LESS THAN 50'-0".
14. ALL CONDUITS CARRYING AUDIOVISUAL SYSTEM SIGNALS SHALL BE FERROUS METALS, BONDED TO GROUND EVEN IN OR BELOW SLABS. CONDUITS IN OR BELOW SLABS SHALL BE RIGID METALLIC CONDUITS. SEAL ALL JOINTS TO PREVENT LEAKING.
15. NO FLEX CONDUIT SHALL BE USED IN AUDIOVISUAL SYSTEMS UNLESS OTHERWISE NOTED.
16. ALL CONDUITS TO BE 3/4" UNLESS OTHERWISE NOTED.
17. VERIFY SIZE OF PULL BOXES AND JUNCTION BOXES WILL ACCEPT REQUIRED CONDUIT CONNECTIONS, AND SUPPLY LARGER BOXES IF REQUIRED.
18. ALL GANG BOXES ARE 2-1/2" DEEP WITH 13/16" GANG COVER FOR DRY WALL OR PLASTER WALL CONSTRUCTION, OR 3- 1/2" DEEP FOR MASONRY WALL CONSTRUCTION UNLESS OTHERWISE NOTED.
19. ALL AUDIOVISUAL SYSTEM CONDUIT STUBS SHALL BE TERMINATED WITH PLASTIC BUSHINGS AND SHALL BE STUBBED INTO ACCESSIBLE LOCATIONS.
20. ALL AUDIOVISUAL SYSTEM CONDUIT QUANTITIES AND SIZES HAVE BEEN CHOSEN BASED UPON SYSTEM REQUIREMENTS AND TO MAINTAIN SIGNAL SEPARATION. DO NOT COMBINE MULTIPLE RUNS INTO LARGER CONDUITS.

NOTES FOR AUDIOVISUAL CONTRACTOR:

1. VERIFY EXACT LOCATION OF AUDIOVISUAL DEVICES WITH ARCHITECTURAL DRAWINGS.
2. THE SIGNAL LEVEL SEPARATION INDICATED ON DRAWINGS (MICROPHONE, LINE, SPEAKER, INTERCOM, VIDEO, CONTROL, RF, AND AC) IS TO BE MAINTAINED.
3. NO SPLICES SHALL BE PERMITTED. ALL CABLE RUNS SHALL BE CONTINUOUS FROM POINT OF ORIGIN TO TERMINATION POINT.
4. WIRING ENTERING A PLENUM SPACE FROM A CONDUIT STUB SHALL BE PLENUM RATED IN ITS ENTIRETY.
5. AUDIOVISUAL SYSTEM CONTRACTOR PROVIDES MOUNTING HARDWARE AS REQUIRED TO ATTACH AUDIOVISUAL EQUIPMENT TO ATTACHMENT POINTS SUPPLIED BY THE GENERAL CONTRACTOR.
6. LAYOUTS OF EQUIPMENT RACKS, RECEPTACLE PLATES, AND PANELS ARE DIAGRAMMATIC. ACTUAL LAYOUTS AND LABELS SHALL BE SUBMITTED TO THE ARCHITECT AND THE AUDIOVISUAL CONSULTANT FOR APPROVAL PRIOR TO FABRICATION.
7. LAYOUTS OF MULTIPLE PLATES/PANELS ARE SIMILAR OR TYPICAL AS NOTED. VERIFY AND SUBMIT EXACT CONFIGURATION THAT DETAILS CONNECTORS AND LABELING SCHEME FOR ALL RECEPTACLE PANELS AND RACK PANELS WITH FUNCTIONAL DIAGRAM TO ARCHITECT AND AUDIOVISUAL CONSULTANT FOR APPROVAL PRIOR TO FABRICATION.
8. PROVIDE SECURITY COVERS FOR FRONT ACCESSIBLE CONTROLS THAT DO NOT REQUIRE USER ACCESS OR ADJUSTMENT.
9. SUPPLY AUDIOVISUAL EQUIPMENT RACKS WITH AC RECEPTACLES, LACING BARS, AND REAR RACK RAILS. USE SPECIFIED AC RECEPTACLES WITHIN AUDIOVISUAL EQUIPMENT RACKS.
10. PROVIDE NON-CONDUCTIVE FIRE-RATED PLINTH UNDER FIXED EQUIPMENT RACKS AND SECURE PLINTH TO FLOOR. PLINTH TO BE MASONITE OR SIMILAR.
11. EQUIPMENT RACK WIRING MUST MEET INDUSTRY STANDARDS FOR NEATNESS AND SEPARATION OF SIGNAL TYPES (MIC, LINE, VIDEO, LOUDSPEAKER, AC POWER).
12. PROVIDE ENGRAVED LABELS ON EQUIPMENT RACKS THAT CLEARLY INDICATE THE EQUIPMENT TYPE AND FUNCTION. SECURE LABELS BELOW EQUIPMENT ON VENT OR BLANK PANEL.
13. ALL CONNECTION PANELS ARE FINISHED 1/8" ALUMINUM ANODIZED WITH ENGRAVED LETTERING FILLED WITH ENAMEL PAINT. COORDINATE FINISH WITH ARCHITECT AND AUDIOVISUAL CONSULTANT PRIOR TO FABRICATION AND INSTALLATION OF PANELS.
14. RACK PANELS ARE FINISHED 1/8" ALUMINUM ANODIZED BLACK WITH ENGRAVED LETTERING FILLED WITH WHITE ENAMEL PAINT. COORDINATE FINISH WITH ARCHITECT AND AUDIOVISUAL CONSULTANT PRIOR TO FABRICATION AND INSTALLATION OF PANELS.
15. USE INSULATED JACKS ON RACK PANELS, CONNECTION PANELS, AND WALL PLATES.
16. PROVIDE FLUSH FITTING COVERS FOR ALL SURFACE MOUNT RECEPTACLE BOXES.

AV SHEET INDEX

SHEET NUMBER	SHEET TITLE
AV000	AV SYSTEMS - SYMBOLS AND LEGENDS
AV101C	AV SYSTEMS - PLAN FLOOR 1 - C
AV101D	AV SYSTEMS - PLAN FLOOR 1 - D
AV201C	AV SYSTEMS - RCP FLOOR 1 - C
AV201D	AV SYSTEMS - RCP FLOOR 1 - D
AV300	AV SYSTEMS - INTERIOR ELEVATIONS AUDITORIUM
AV301	AV SYSTEMS - INTERIOR ELEVATIONS GYM
AV303	AV SYSTEMS - INTERIOR ELEVATIONS
AV400	AV SYSTEMS - CONDUIT RISER DIAGRAMS
AV500	AV SYSTEMS - AUDITORIUM AUDIO FUNCTIONAL DIAGRAM
AV501	AV SYSTEMS - AUDITORIUM VIDEO FUNCTIONAL DIAGRAM
AV502	AV SYSTEMS - FUNCTIONAL DIAGRAMS 2
AV503	AV SYSTEMS - FUNCTIONAL DIAGRAMS 3
AV600	AV SYSTEMS - RACKS AND PLATE DETAILS 1
AV601	AV SYSTEMS - RACKS AND PLATE DETAILS 2

SYMBOL	DESCRIPTION	BOX TYPE	MOUNTING LOCATION	ADDITIONAL NOTES
AV ELECTRICAL SYMBOLS (COORDINATION ONLY)		NOTE: I.G. = ISOLATED GROUND RECEPTACLE		
	DUPLEX AC RECEPTACLE	1-GANG METAL BOX	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT	
	DOUBLE DUPLEX AC RECEPTACLE	2-GANG METAL BOX	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT	
	HARDWIRED AC POWER	PROVIDE JUNCTION BOX AS REQUIRED	HARDWIRE TO AV DEVICE AS INDICATED	COORDINATE WITH AV DEVICE MANUFACTURERS SPECIFICATIONS
	CEILING MOUNTED DUPLEX AC RECEPTACLE	1-GANG METAL BOX	FLUSH MOUNT IN CEILING UNLESS OTHERWISE NOTED	
	CEILING MOUNTED DOUBLE DUPLEX AC RECEPTACLE	2-GANG METAL BOX	FLUSH MOUNT IN CEILING UNLESS OTHERWISE NOTED	
	CEILING MOUNTED HARDWIRED AC POWER	PROVIDE JUNCTION BOX AS REQUIRED	HARDWIRE TO AV DEVICE AS INDICATED	COORDINATE WITH AV DEVICE MANUFACTURERS SPECIFICATIONS
	FLOOR MOUNTED DUPLEX AC POWER	PROVIDE JUNCTION BOX AS REQUIRED	FLUSH MOUNT IN FLOOR BOX	
DB	AV DISPLAY BOX DUPLEX AC RECEPTACLE	1 GANG DISPLAY BOX INSERT	MOUNT TO SIDE OF DISPLAY BOX	COORDINATE WITH AV AND TELE/DATA
F#	AV FLOOR BOX DUPLEX AC RECEPTACLE	1 GANG FLOOR BOX INSERT	FLUSH MOUNT IN FLOOR BOX	COORDINATE WITH AV AND TELE/DATA
V#	AV CEILING BOX DUPLEX AC RECEPTACLE	1 GANG CEILING BOX INSERT	MOUNT TO SIDE OF CEILING BOX	COORDINATE WITH AV AND TELE/DATA
AV TEL/DATA SYMBOLS (COORDINATION ONLY)				
	DATA DROP	1-GANG METAL BOX	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT	PROVIDE DROPS PER PROJECT STANDARD
	CEILING MOUNT ONE DATA DROP	1-GANG METAL BOX	FLUSH MOUNT IN CEILING	PROVIDE DROPS PER PROJECT STANDARD
	FLOOR BOX COMPONENT	1-GANG METAL BOX	FLUSH MOUNT IN FLOOR AS INDICATED	PROVIDE DROPS PER PROJECT STANDARD
DB	AV DISPLAY BOX TELE/DATA OUTLET	1 GANG DISPLAY BOX INSERT	MOUNT TO SIDE OF DISPLAY BOX	PROVIDE DROPS PER PROJECT STANDARD
F#	AV FLOOR BOX TELE/DATA OUTLET	1 GANG FLOOR BOX INSERT	FLUSH MOUNT IN FLOOR BOX	PROVIDE DROPS PER PROJECT STANDARD
V#	AV CEILING BOX TELE/DATA OUTLET	1 GANG CEILING BOX INSERT	MOUNT TO SIDE OF CEILING BOX	PROVIDE DROPS PER PROJECT STANDARD

AUDIOVISUAL SYSTEMS SYMBOL LEGEND

SYMBOL	DESCRIPTION	BOX TYPE (H" x W" x D")	MOUNTING LOCATION	ADDITIONAL NOTES
AV JUNCTION BOX SYMBOLS				
A1	WALL-MOUNTED ANTENNA, TYPE 1	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT 12'-0" AFF	
A2	WALL-MOUNTED ANTENNA, TYPE 2	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT 12'-0" AFF	
A3	CEILING-MOUNTED ANTENNA, TYPE 3	4" SQUARE METAL BOX WITH COVER	MOUNT TO CEILING	
A4	CEILING-MOUNTED ANTENNA, TYPE 4	4" SQUARE METAL BOX WITH COVER	MOUNT TO CEILING	
A5	CEILING-MOUNTED ANTENNA, TYPE 5	4" SQUARE METAL BOX WITH COVER	FLUSH MOUNT IN CEILING	
BP	WALL-MOUNTED BUTTON PANEL	2-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT SWITCH HEIGHT	
C1	WALL-MOUNTED CAMERA, TYPE 1	2-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT 8'-0" AFF	
DB1 V10	DISPLAY BACK BOX, TYPE 1	CHIEF PAC-526	FLUSH MOUNT IN WALL AT 5'-6" AFF	TELE/DATA AND POWER REQUIREMENTS BY OTHERS
F1 V10	FLOOR BOX	FSR FL-600P-6 WITH FINISHED COVER	MOUNT FLUSH IN FLOOR	TELE/DATA AND POWER REQUIREMENTS BY OTHERS
J1	JUNCTION BOX, TYPE 1	6"X6"X24" METAL TROUGH	MOUNT AT 78" ABOVE AV EQUIPMENT RACK	
J2	JUNCTION BOX, TYPE 2	18"X18"X4" NEMA 1 ENCLOSURE WITH OVERSIZED FLUSH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT	
J3	JUNCTION BOX, TYPE 2	18"X18"X4" NEMA 1 ENCLOSURE WITH OVERSIZED FLUSH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT	
M1	CEILING-MOUNTED MICROPHONE, TYPE 1	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN CEILING	
M2	CEILING-MOUNTED MICROPHONE, TYPE 2	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN CEILING	
MC	MOTOR CONTROLLER	4" SQUARE METAL BOX WITH COVER	PART OF PROJECTION SCREEN CASE	
MC	MOTOR CONTROLLER	4" SQUARE METAL BOX WITH COVER	PART OF PROJECTION SCREEN CASE	
PC	PRODUCTION COMMUNICATION	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT SWITCH HEIGHT	
PS	PRODUCTION COMMUNICATION SPEAKER STATION	4-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT SWITCH HEIGHT	
R1	RECEPTACLE PANEL, TYPE 1	8"X8"X4" NEMA 1 ENCLOSURE WITH OVERSIZED FLUSH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT	
R2	RECEPTACLE PANEL, TYPE 2	12"X12"X4" NEMA 1 ENCLOSURE WITH OVERSIZED FLUSH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT	
R3	RECEPTACLE PANEL, TYPE 3	3-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT	
R4	RECEPTACLE PANEL, TYPE 4	8"X8"X4" NEMA 1 ENCLOSURE WITH OVERSIZED FLUSH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT	
R5	RECEPTACLE PANEL, TYPE 5	3-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT	
R6	RECEPTACLE PANEL, TYPE 6	12"X12"X4" NEMA 1 ENCLOSURE WITH OVERSIZED FLUSH COVER	FLUSH MOUNT IN WALL AT RECEPTACLE HEIGHT	
S1	CEILING LOUDSPEAKER, TYPE 1	4" SQUARE METAL BOX WITH COVER	MOUNT ABOVE FINISHED CEILING AT LOUDSPEAKER LOCATION	
S2	WALL MOUNTED LOUDSPEAKER, TYPE 2	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT 7'-0" AFF	
S3	CEILING LOUDSPEAKER, GYMNASIUM - TYPE 3	4" SQUARE METAL BOX WITH COVER	MOUNT TO STRUCTURE ABOVE LOUDSPEAKER LOCATION	
S4	CEILING LOUDSPEAKER, TYPE 4	4" SQUARE METAL BOX WITH COVER	MOUNT ABOVE FINISHED CEILING AT LOUDSPEAKER LOCATION	
S5	CEILING LOUDSPEAKER, TYPE 5	4" SQUARE METAL BOX WITH COVER	MOUNT IN LOUDSPEAKER NICHE AT LOUDSPEAKER LOCATION	
SS	VIDEO PROJECTOR SCREEN SWITCH	1-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT SWITCH HEIGHT	
T1	WALL-MOUNTED TOUCH PANEL	3-GANG DEEP METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT SWITCH HEIGHT	
V1	CEILING-MOUNTED VIDEO PROJECTOR, TYPE 1	4" SQUARE METAL BOX WITH COVER	MOUNT TO STRUCTURE ABOVE VIDEO PROJECTOR LOCATION	
V2	WALL-MOUNTED VIDEO PROJECTOR, TYPE 2	4" SQUARE METAL BOX WITH COVER	FLUSH MOUNT IN WALL AT 16'-6" AFF	
V3	CEILING-MOUNTED VIDEO PROJECTOR, TYPE 3	4" SQUARE METAL BOX WITH COVER	MOUNT ABOVE CEILING AT PROJECTOR LIFT LOCATION	
VC	WALL-MOUNTED AUDIO VOLUME CONTROL	1-GANG DEEP METAL BOX	FLUSH MOUNT IN WALL AT SWITCH HEIGHT UNLESS NOTED OTHERWISE	

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME
AV SYSTEMS - SYMBOLS AND LEGENDS

PROJECT NO. 1722

DRAWING NO.
AV000

1 AV SYSTEMS FLOOR PLAN - FLOOR 1 - C

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

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

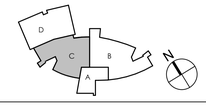
DRAWING NAME

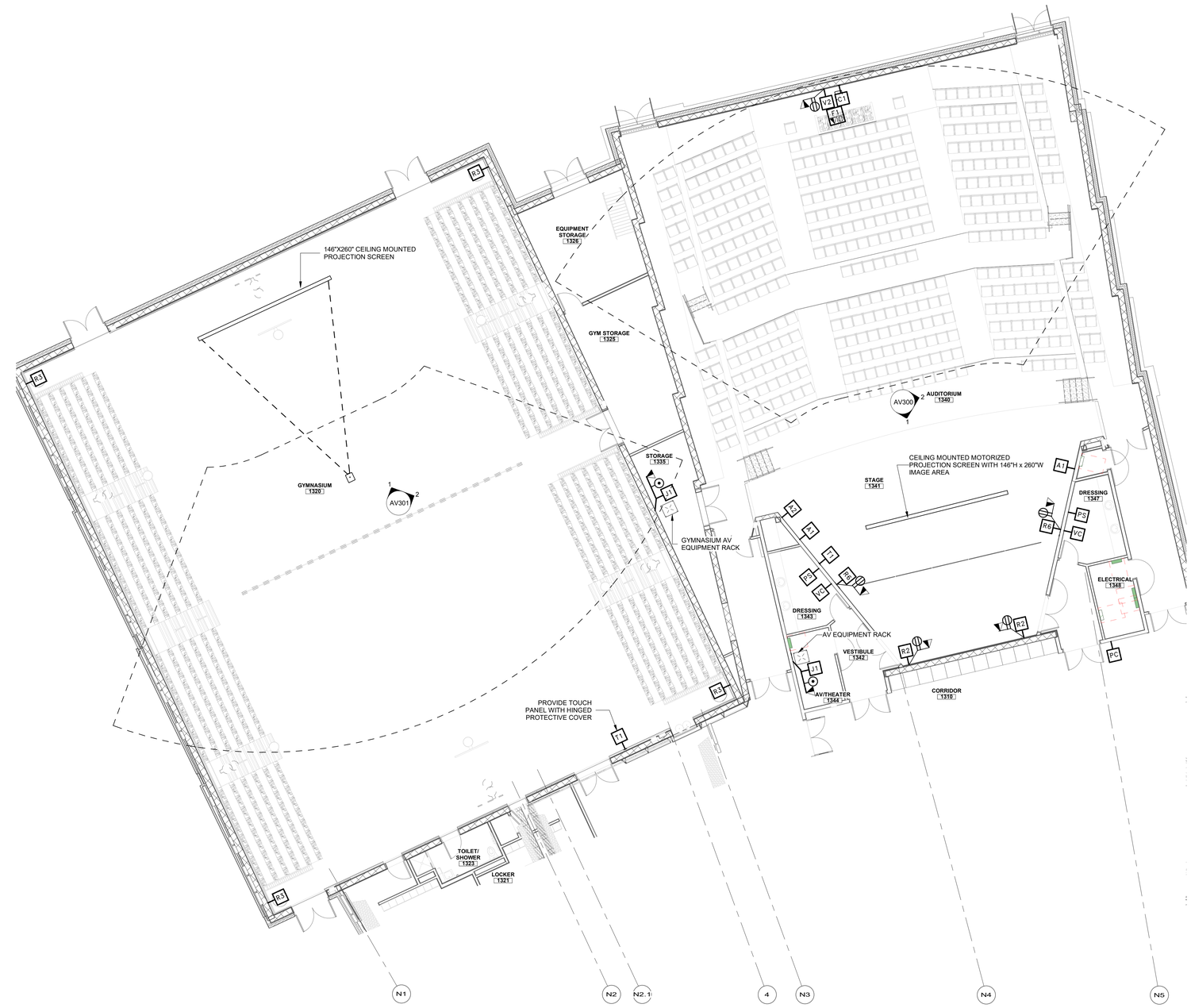
AV SYSTEMS - PLAN FLOOR 1 - C

PROJECT NO. 1722

DRAWING NO.

AV101C





1 AV SYSTEMS FLOOR PLAN - FLOOR 1 - D

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

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

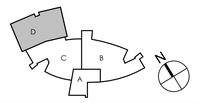
DRAWING NAME

AV SYSTEMS - PLAN FLOOR 1 - D

PROJECT NO. 1722

DRAWING NO.

AV101D



1 AV SYSTEMS RCP - FLOOR 1 - C

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

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS
PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

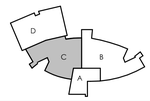
DRAWING NAME

AV SYSTEMS - RCP
FLOOR 1 - C

PROJECT NO. 1722

DRAWING NO.

AV201C



1 AV SYSTEMS RCP - FLOOR 1 - D

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

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

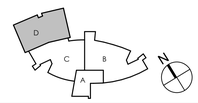
DRAWING NAME

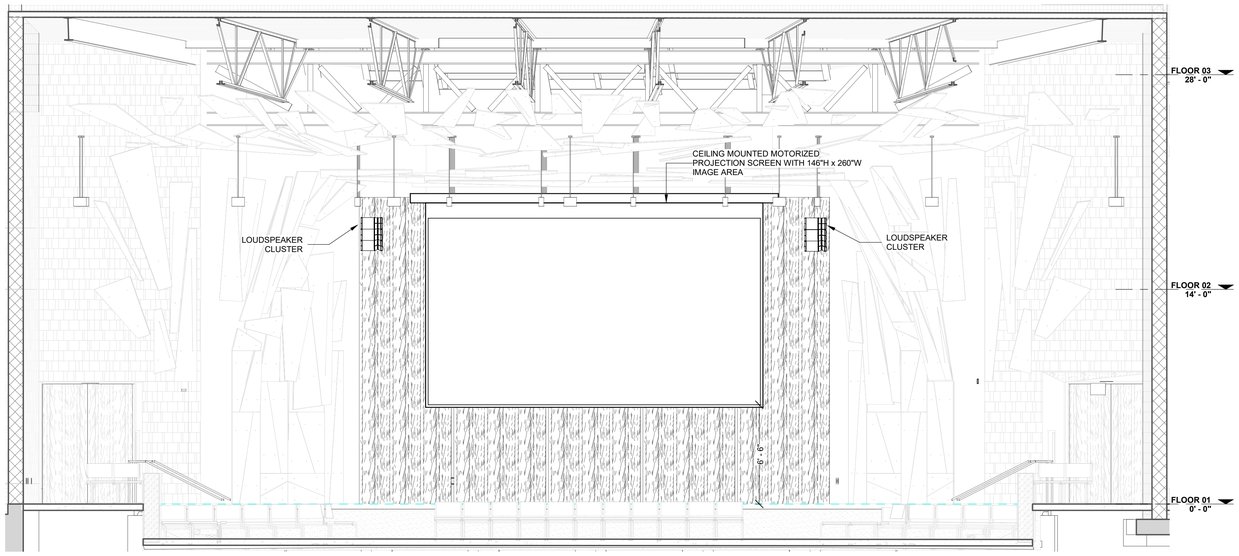
AV SYSTEMS - RCP
FLOOR 1 - D

PROJECT NO. 1722

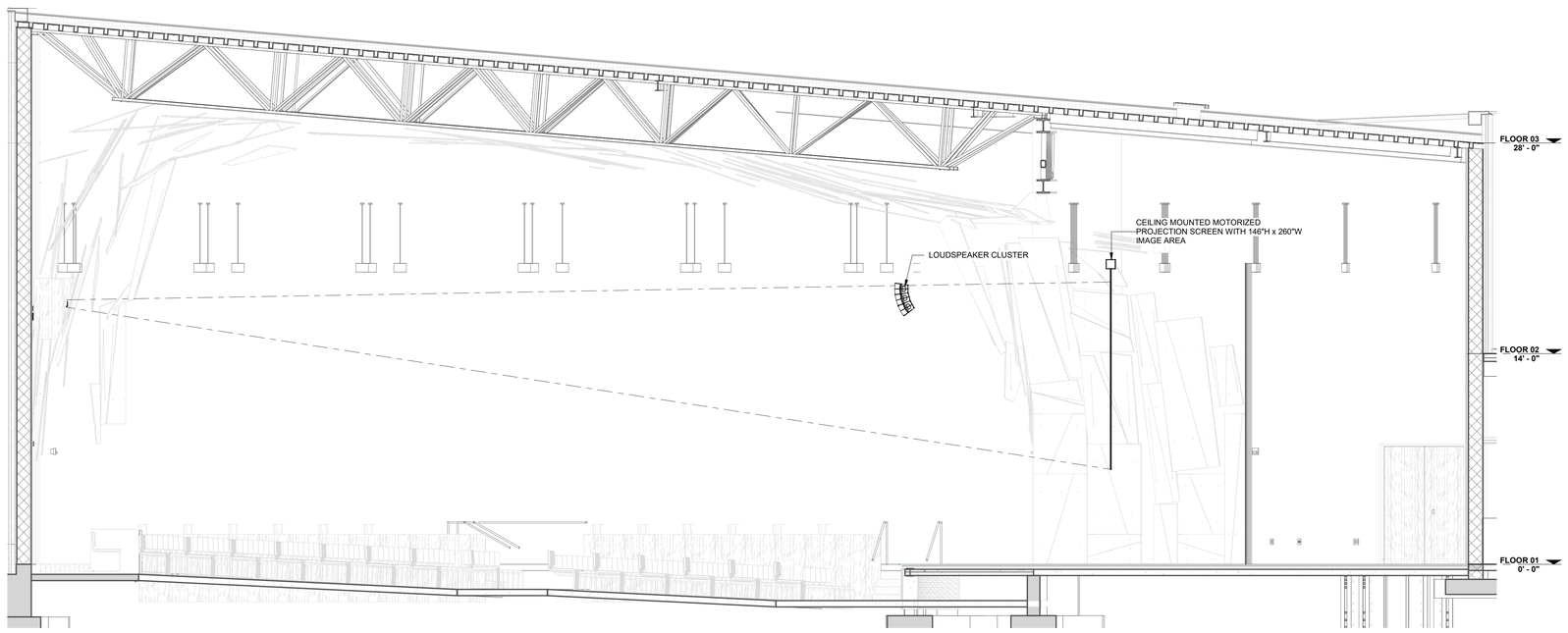
DRAWING NO.

AV201D





1 AUDITORIUM 1340-SOUTH
SCALE: 1/4" = 1'-0"



2 AUDITORIUM 1340-EAST
SCALE: 1/4" = 1'-0"

LOUDSPEAKER RIGGING NOTES:

1. DESIGN THE LOUDSPEAKER CLUSTER MOUNTS USED TO ATTACH THEM TO THE SUPERSTRUCTURE. PROVIDE DRAWING OR DRAWINGS, THAT HAVE BEEN SEALED BY A STRUCTURAL ENGINEER, LICENSED IN THE STATE OF THIS PROJECT DETAILING THE LOUDSPEAKER SYSTEM MOUNTING TO THE ARCHITECT AND THE CONSULTANT FOR APPROVAL PRIOR TO PURCHASE OR FABRICATION OF MOUNTS OR INSTALLATION OF THE LOUDSPEAKERS.
2. COORDINATE EXACT LOCATION OF THE RIGGING POINTS WITH THE ARCHITECT. NOTIFY ARCHITECT AND AUDIOVISUAL CONTRACTOR, OF ANY DISCREPANCIES WITH AUDIOVISUAL DRAWINGS IMMEDIATELY FOR CONFLICT RESOLUTION.
3. TAKE INTO ACCOUNT ALL SAFETY FACTORS, KNOT EFFICIENCIES, LOAD ANGLES, AND ALL HARDWARE AND WIRE ROPE LOAD RATINGS WHEN DESIGNING RIGGING SYSTEM.
4. EMPLOY STANDARD SAFE RIGGING PRACTICES.
5. VERIFY ALL CONNECTIONS (INCLUDING SHACKLE TIGHTNESS) BEFORE LIFTING LOAD. REPLACE ANY DEFECTIVE HARDWARE. APPLY LOAD AND VERIFY ALL CONNECTIONS JUST OFF THE GROUND (PRIOR TO LIFTING INTO FINAL POSITION).
6. USE ONLY FORGED HARDWARE IN RIGGING SYSTEM. PROVIDE ONLY SHOULDER OR PAD TYPE EYE BOLTS AND SAE GRADE 8 BOLTS.
7. USE PACKING WASHERS AS NECESSARY TO CENTER NARROW LOADS WHERE APPLICABLE.
8. WRAP OR PAD CORNERS OF BEAMS IN ANY BEAM WRAP TYPE CONDITIONS WITH NEOPRENE OR BURLAP OR OTHER APPROVED MEANS.
9. ALL AIRCRAFT CABLES SHALL BE SECURED USING NICROPRESS FITTINGS AND THIMBLES. PROVIDE FORGED EYE BOLTS AND FORGED EYE PADS AS REQUIRED.
10. PROVIDE SEPARATE SAFETY CABLE, SIZED AS REQUIRED, AFFIXED TO INDEPENDENT SUPERSTRUCTURE AND DEVICE ATTACHMENT POINTS.
11. SAFETY CABLE LINE(S) ARE TO BE TAUT (NO SLACK ALLOWED).
12. USE A SAFETY FACTOR OF NO LESS THAN (5) FOR EACH SUSPENSION POINT ON THE LOAD AND ON BUILDING SUPERSTRUCTURE ATTACHMENT POINTS. PROVIDE INDIVIDUAL SAFETY CABLES ON EACH LOUDSPEAKER TO INDEPENDENT SUSPENSION POINT. VERIFY EXACT WEIGHT OF LOUDSPEAKER CLUSTERS WITH HARDWARE PRIOR TO FABRICATION OR PURCHASE OF MOUNTING HARDWARE.
13. ALL LOUDSPEAKER CLUSTERS SHALL BE MOUNTED WITH ATM FLYWARE TYPE MOUNTING HARDWARE OR APPROVED EQUAL AND SUSPENDED WITH MINIMUM 1/16" AIRCRAFT CABLE (OR APPROVED EQUAL) OR AS REQUIRED TO SUPPORT LOAD.
14. RIGGING MOUNTING SYSTEM SHALL PROVIDE +/- 5° UP/DOWN AND LEFT/RIGHT FIELD ADJUSTMENT ON EACH LOUDSPEAKER.
15. SUPPLY MOUNTING RIGGING COMPONENTS IN FINISH APPROVED BY THE ARCHITECT.

LOUDSPEAKER NOTES:

1. LOUDSPEAKER LAYOUTS SHOWN ON AUDIOVISUAL DRAWINGS ARE CONCEPTUAL AND ARE FOR ILLUSTRATIVE PURPOSE ONLY.
2. EXACT LOUDSPEAKER MOUNTING & AIMING DETAILS TO BE COORDINATED BETWEEN AV CONSULTANT AND AV CONTRACTOR.
3. PROVIDE ATTACHMENT POINTS FOR LOUDSPEAKER RIGGING IF NECESSARY.
4. LOOSELY AFFIX LOUDSPEAKER CABLE TO AIRCRAFT CABLE.
5. STRUCTURAL MEMBERS ARE NOT BE ALLOWED WITHIN THE COVERAGE PATTERN OF THE HIGH FREQUENCY COMPONENTS IN THE LOUDSPEAKER SYSTEM.
6. AUDIOVISUAL SYSTEM CONTRACTOR PROVIDES ALL MOUNTING HARDWARE, INCLUDING WIRE, ROPE, TURNBUCKLES, CRIMPS, ETC. FOR A COMPLETE MOUNTING SYSTEM.
7. PAINT LOUDSPEAKER CABINETS, GRILLES AND MOUNTING HARDWARE AS REQUIRED. COORDINATE EXACT FINISHES WITH ARCHITECT AND CONSULTANT PRIOR TO PAINTING. REMOVE SPEAKER GRILLES AND PAINT SEPARATELY AND PROTECT LOUDSPEAKER COMPONENTS.

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

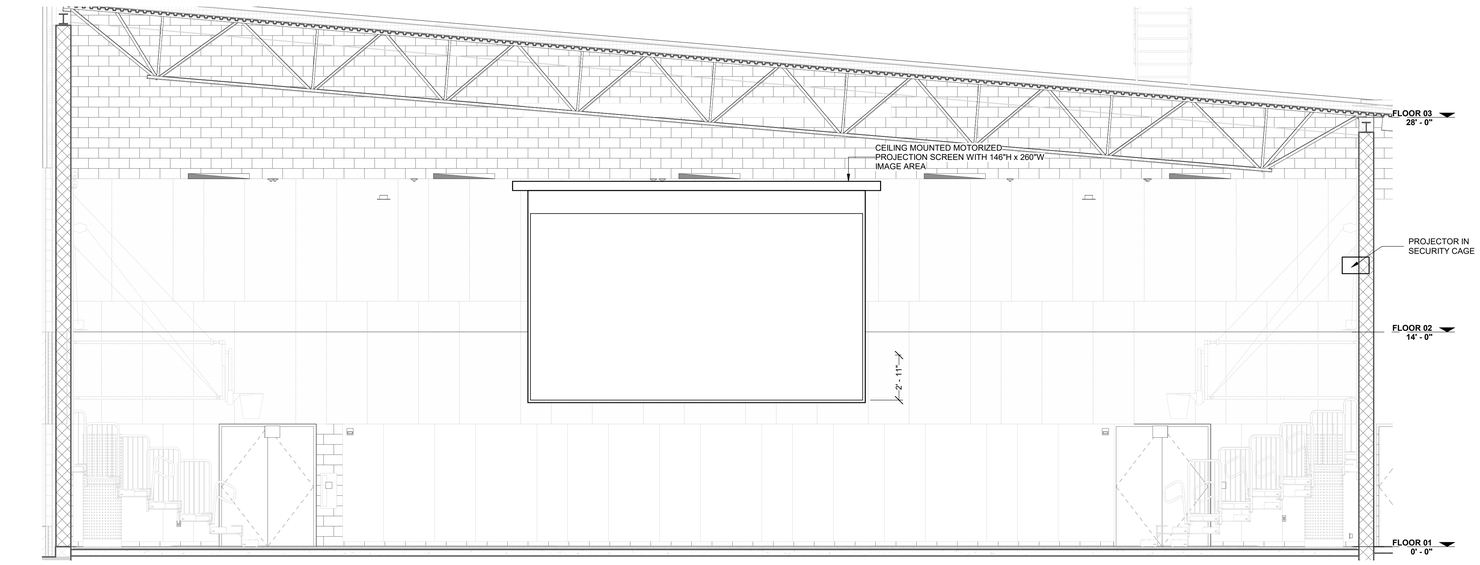
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

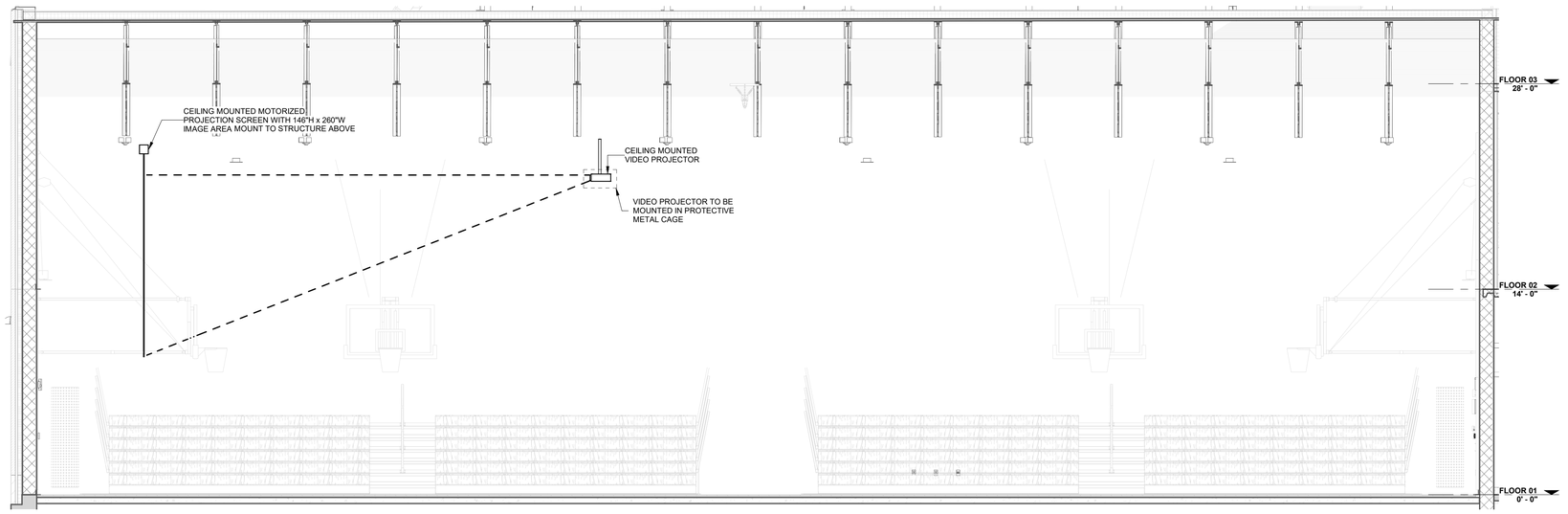
DRAWING NAME
AV SYSTEMS - INTERIOR ELEVATIONS AUDITORIUM

PROJECT NO. 1722

DRAWING NO.
AV300



1 **GYMNASIUM 1320-NW**
SCALE: 1/4" = 1'-0"



2 **GYMNASIUM 1320-NE**
SCALE: 1/4" = 1'-0"

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

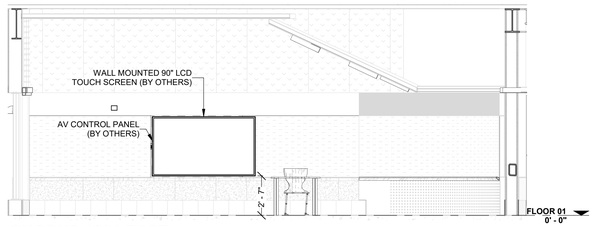
DRAWING NAME

AV SYSTEMS - INTERIOR ELEVATIONS GYM

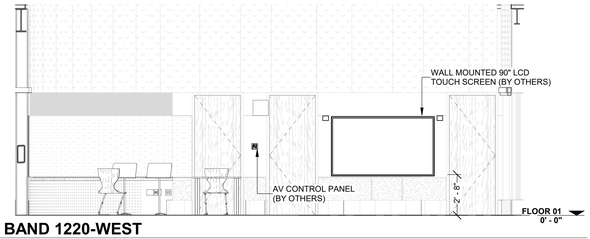
PROJECT NO. 1722

DRAWING NO.

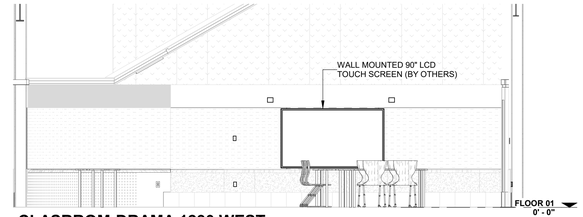
AV301



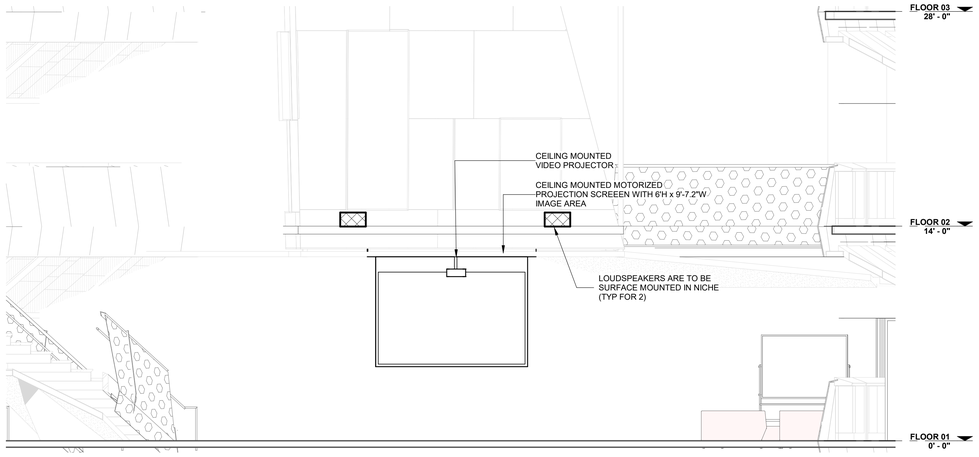
1 **CHORUS 1224-EAST**
SCALE: 1/4" = 1'-0"



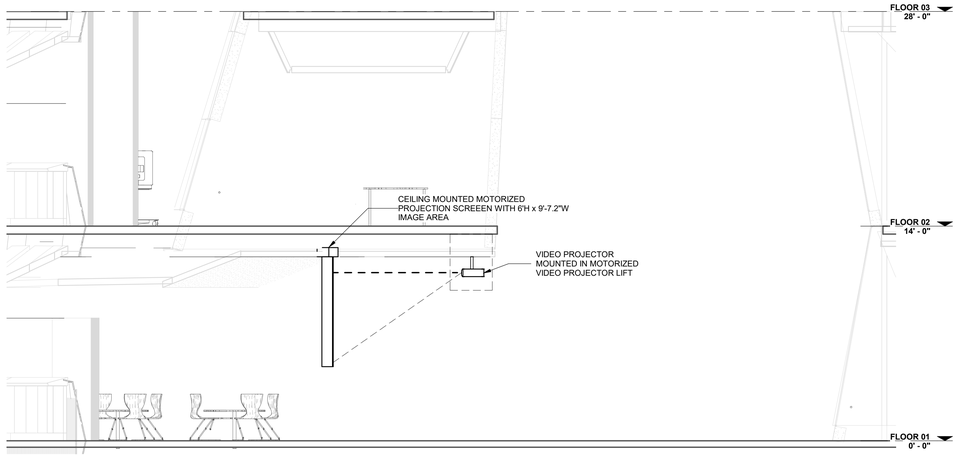
2 **BAND 1220-WEST**
SCALE: 1/4" = 1'-0"



3 **CLASRROM-DRAMA 1230 WEST**
SCALE: 1/4" = 1'-0"



4 **LEARNING COMMONS SCREEN ELEVATION**
SCALE: 1/4" = 1'-0"



5 **LEARNING COMMONS SIDE ELEVATION**
SCALE: 1/4" = 1'-0"

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

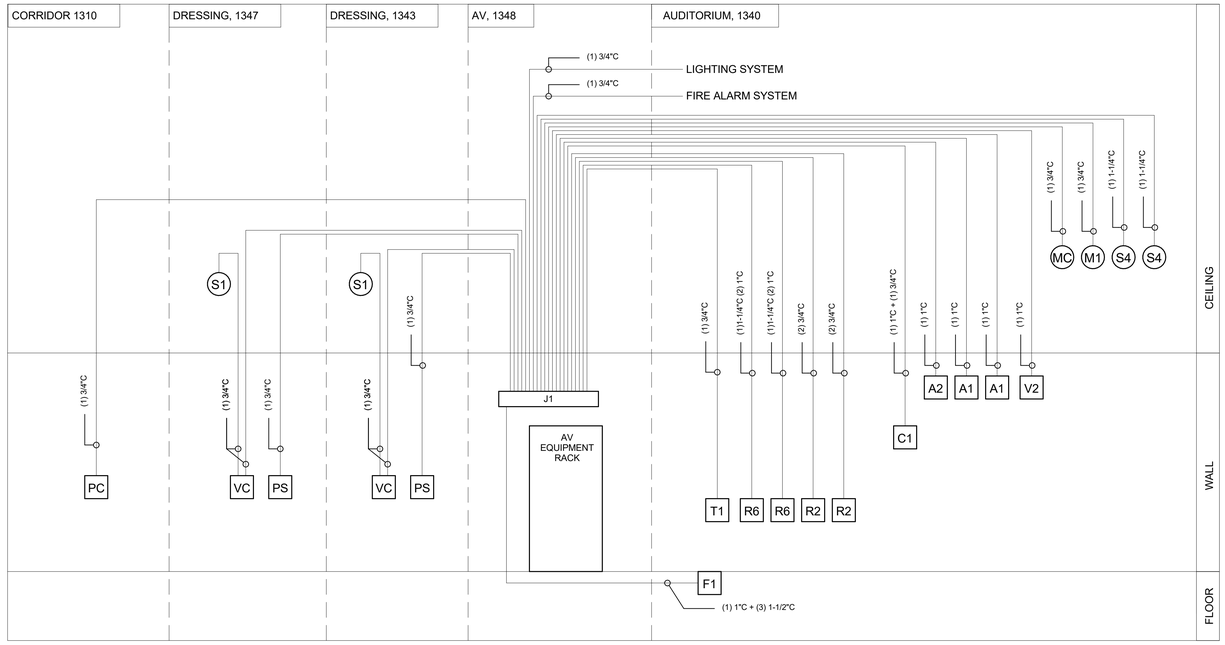
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

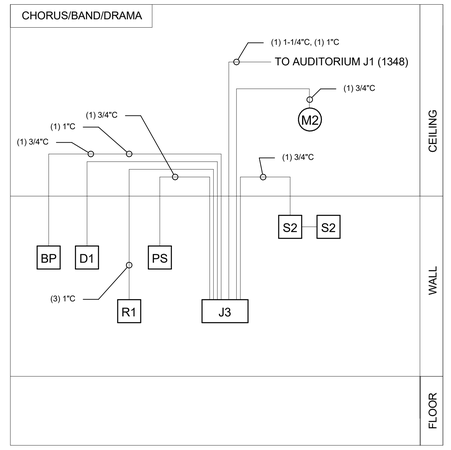
DRAWING NAME
AV SYSTEMS - INTERIOR ELEVATIONS

PROJECT NO. 1722

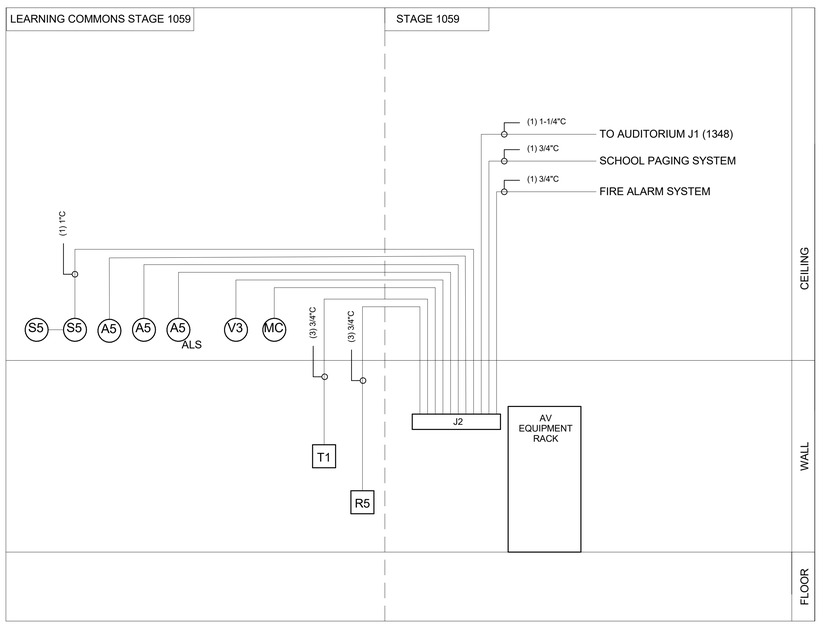
DRAWING NO.
AV303



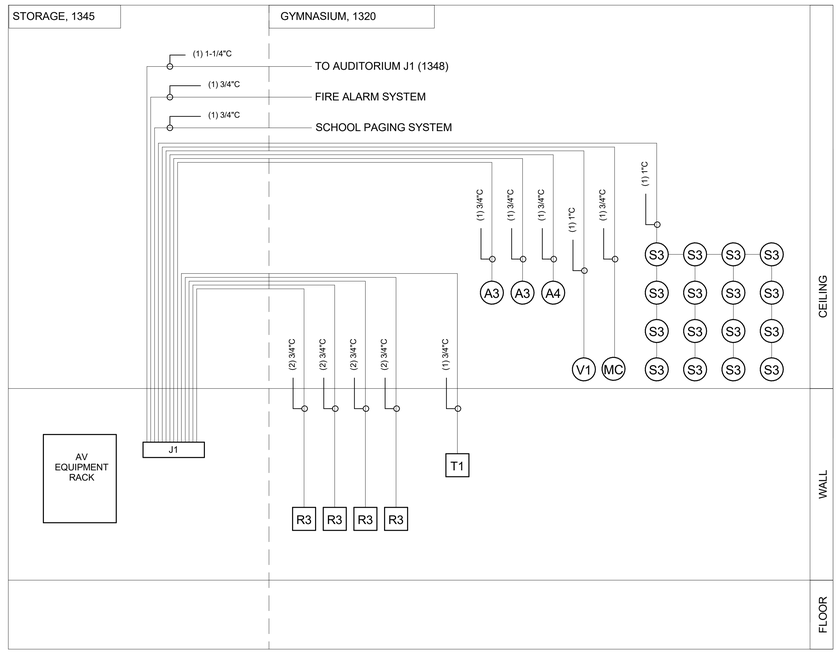
1 **AV RISER - AUDITORIUM**
SCALE: NOT TO SCALE



2 **AV RISER - BAND, CHORUS AND DRAMA**
SCALE: NOT TO SCALE



4 **AV RISER - CAFETERIA / LEARNING COMMONS**
SCALE: NOT TO SCALE



5 **AV RISER - GYMNASIUM**
SCALE: NOT TO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

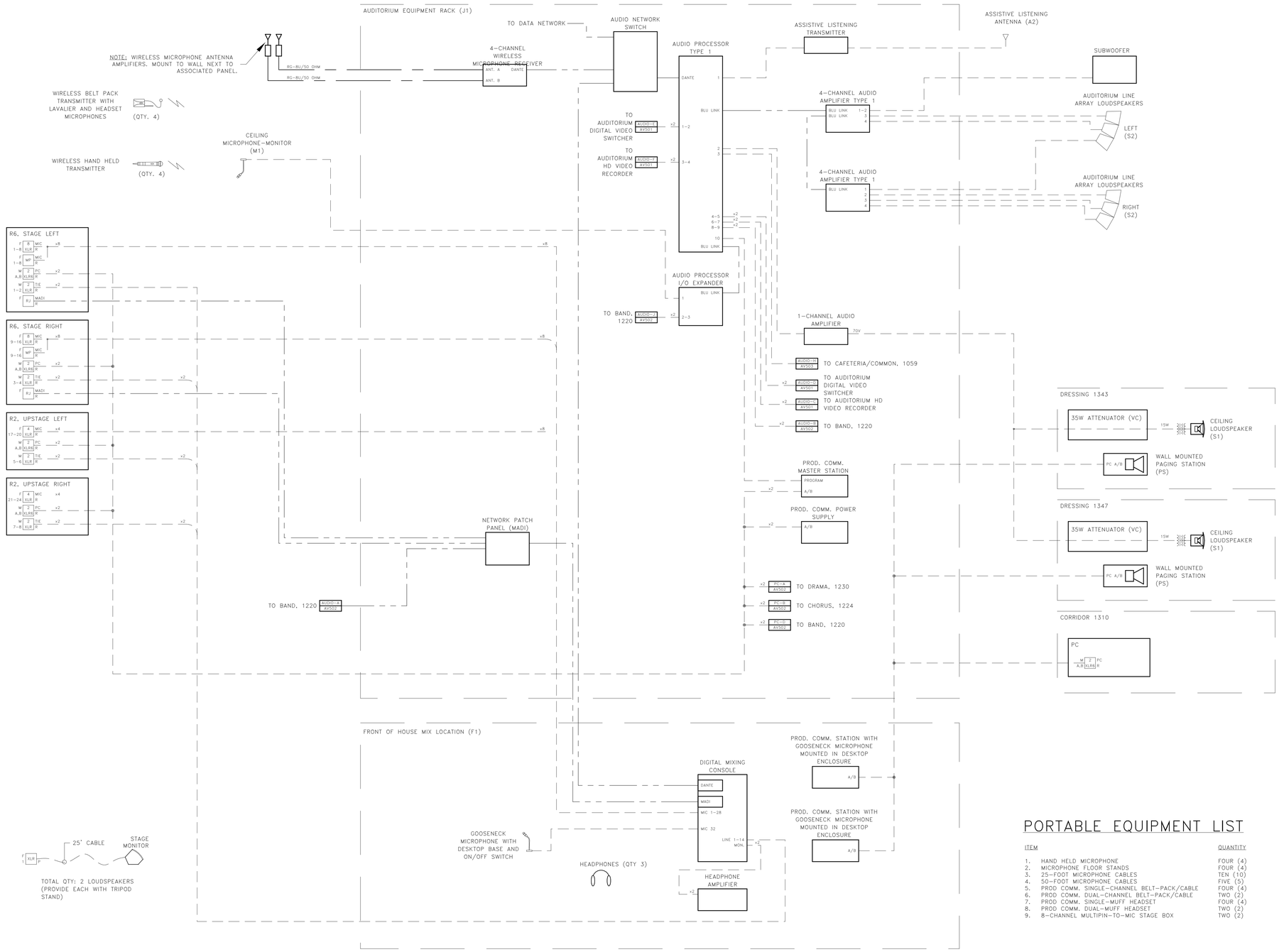
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME
AV SYSTEMS - CONDUIT RISER DIAGRAMS

PROJECT NO. 1722

DRAWING NO.
AV400



PORTABLE EQUIPMENT LIST

ITEM		QUANTITY
1.	HAND HELD MICROPHONE	FOUR (4)
2.	MICROPHONE FLOOR STANDS	FOUR (4)
3.	25-FOOT MICROPHONE CABLES	TEN (10)
4.	50-FOOT MICROPHONE CABLES	FIVE (5)
5.	PROD COMM. SINGLE-CHANNEL BELT-PACK/CABLE	FOUR (4)
6.	PROD COMM. DUAL-CHANNEL BELT-PACK/CABLE	TWO (2)
7.	PROD COMM. SINGLE-MUFF HEADSET	FOUR (4)
8.	PROD COMM. DUAL-MUFF HEADSET	TWO (2)
9.	8-CHANNEL MULTIPIN-TO-MIC STAGE BOX	TWO (2)

1 **AUDIOTORIUM AUDIO FUNCTIONAL**
SCALE: NOT TO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

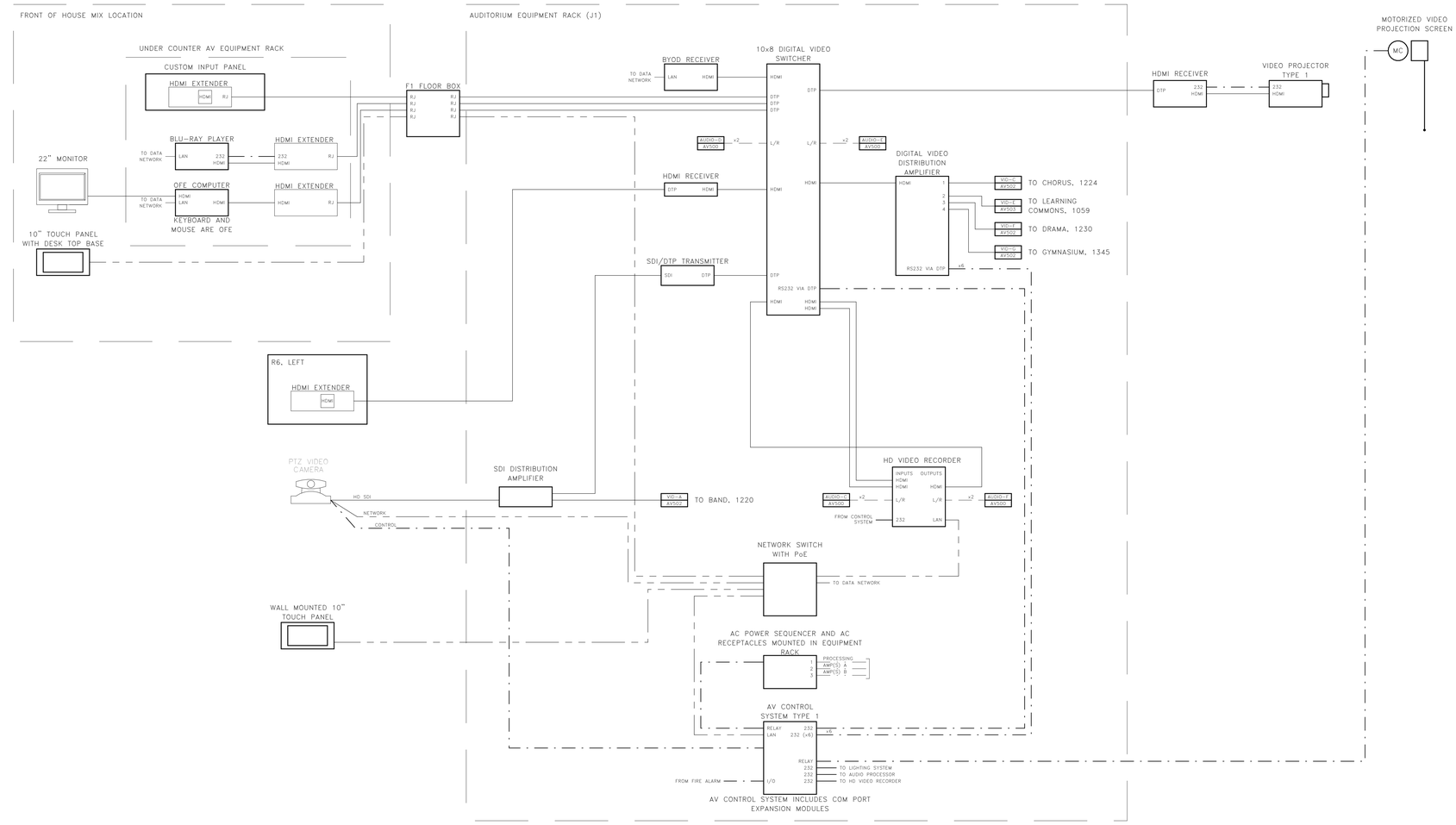
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME
AV SYSTEMS - AUDITORIUM AUDIO FUNCTIONAL DIAGRAM

PROJECT NO. 1722

DRAWING NO.
AV500



1 AUDITORIUM VIDEO FUNCTIONAL

SCALE: 12" = 1'-0"

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

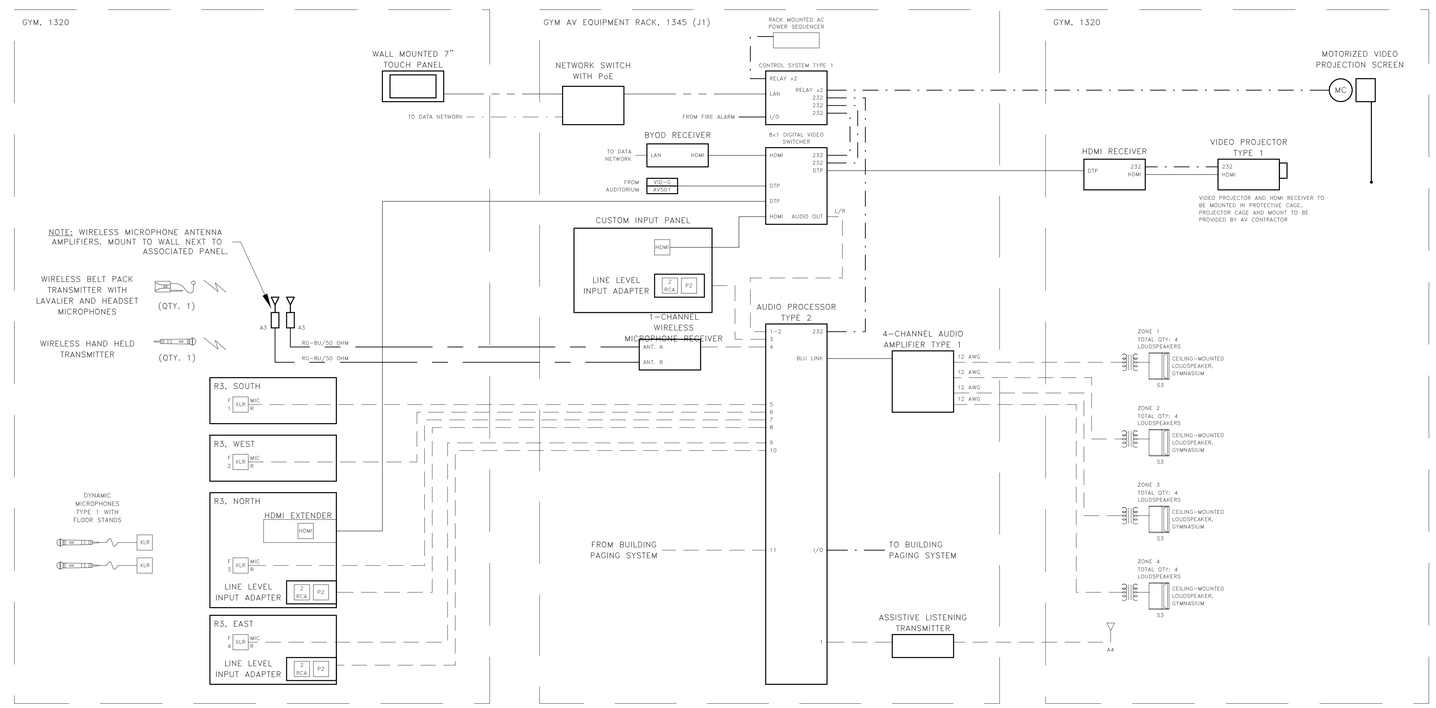
DRAWING NAME

AV SYSTEMS - AUDITORIUM VIDEO FUNCTIONAL DIAGRAM

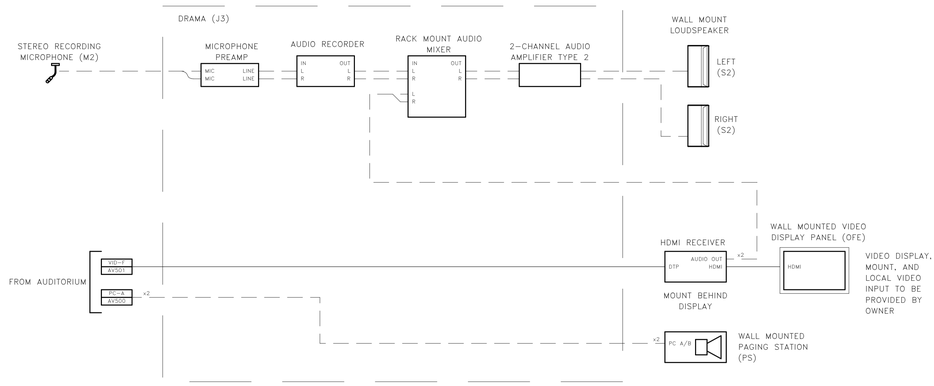
PROJECT NO. 1722

DRAWING NO.

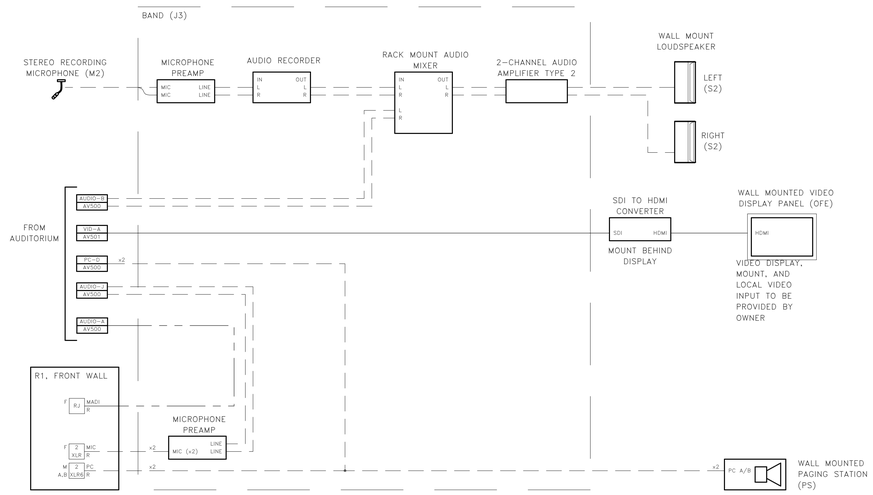
AV501



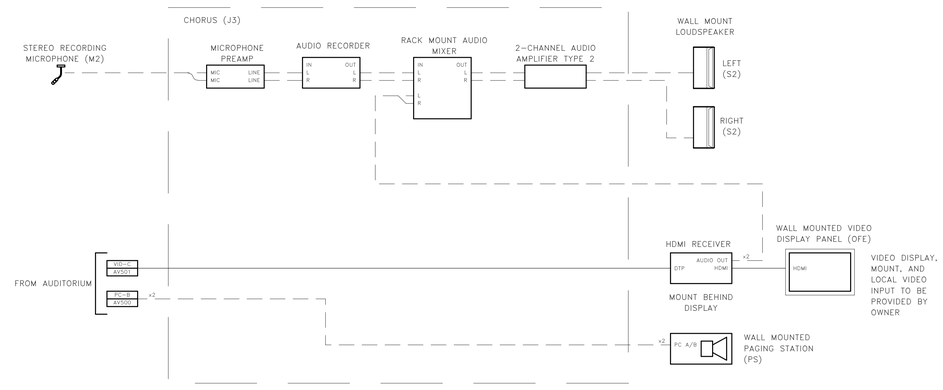
1 GYMNASIUM FUNCTIONAL
SCALE: NOT TO SCALE



4 DRAMA FUNCTIONAL
SCALE: NOT TO SCALE



3 BAND FUNCTIONAL
SCALE: NOT TO SCALE



2 CHORUS FUNCTIONAL
SCALE: NOT TO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

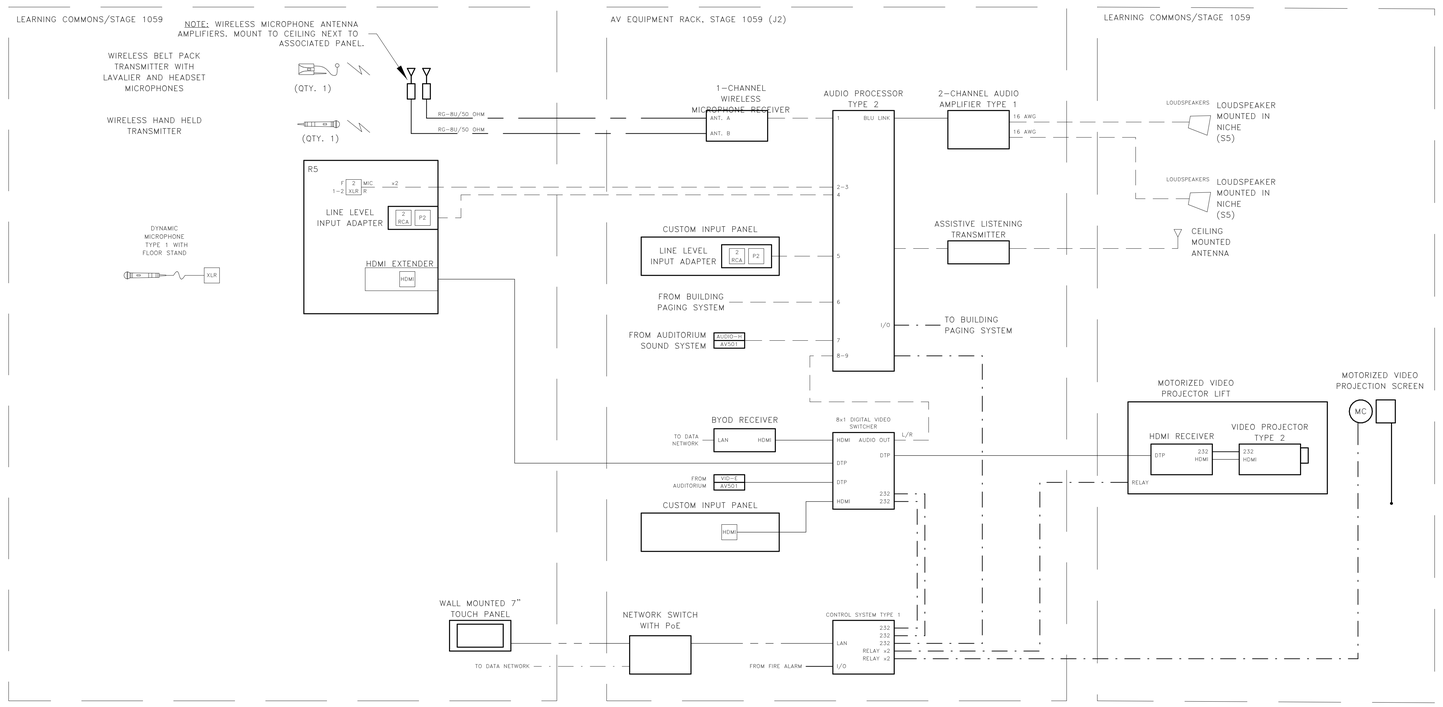
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME
AV SYSTEMS - FUNCTIONAL DIAGRAMS 2

PROJECT NO. 1722

DRAWING NO.
AV502



1 **LEARNING COMMONS FUNCTIONAL**
SCALE: NOT TO SCALE

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

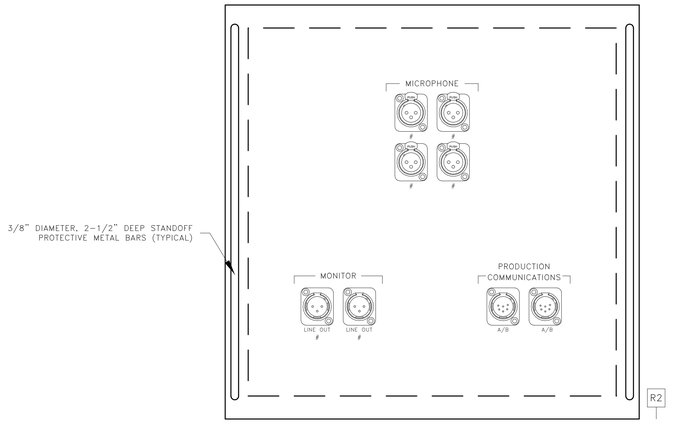
REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME
AV SYSTEMS - FUNCTIONAL DIAGRAMS 3

PROJECT NO. 1722

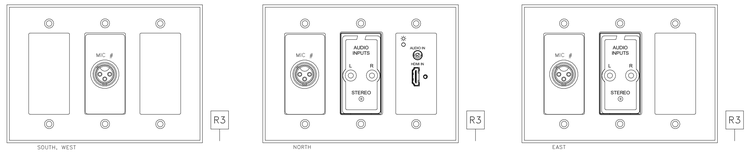
DRAWING NO.
AV503



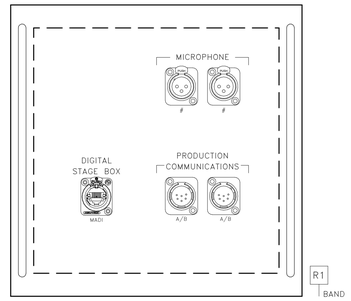
1 **PLATE DETAIL - R2-AUDITORIUM**
SCALE: NOT TO SCALE

NOTE:

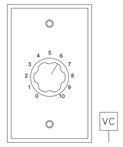
ALL VISIBLE FACEPLATES/RECEPTACLE PANEL IN AUDITORIUM ARE TO BE SATIN BRONZE.



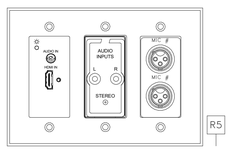
2 **PLATE DETAIL - R3-GYMNASIUM**
SCALE: NOT TO SCALE



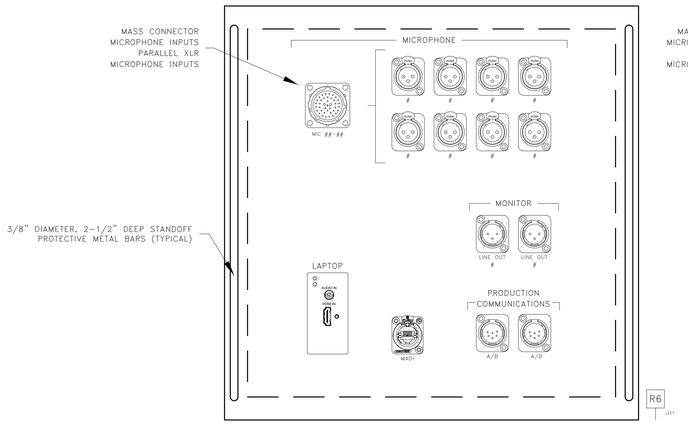
3 **PLATE DETAIL - R1-BAND**
SCALE: NOT TO SCALE



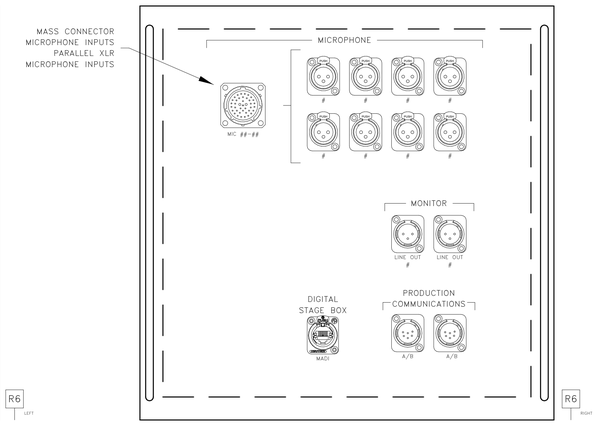
7 **PLATE DETAIL - VC**
SCALE: NOT TO SCALE

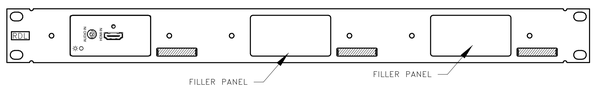


5 **PLATE DETAIL - R5-CAFETERIA / COMMONS**
SCALE: NOT TO SCALE

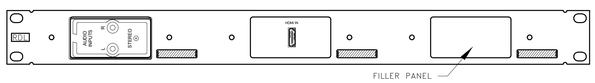


6 **PLATE DETAIL - R6-AUDITORIUM**
SCALE: NOT TO SCALE





9 **PLATE DETAIL - CUSTOM RACK PANEL-AUDITORIUM MIX LOCATION**
SCALE: NOT TO SCALE



8 **PLATE DETAIL - CUSTOM RACK PANEL - LEARNING COMMON AND GYMNASIUM**
SCALE: NOT TO SCALE

4 **PLATE DETAIL - ID PANEL**
SCALE: NOT TO SCALE

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

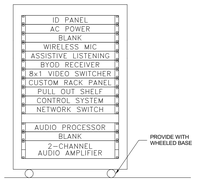
DRAWING NAME

AV SYSTEMS - RACKS AND PLATE DETAILS 1

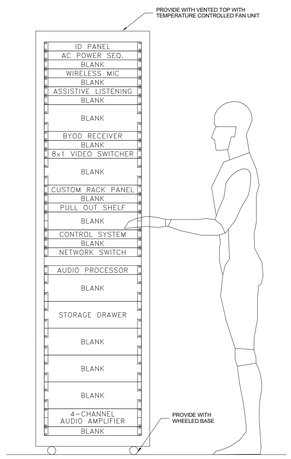
PROJECT NO. 1722

DRAWING NO.

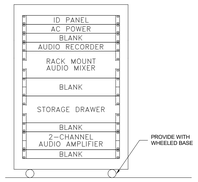
AV600



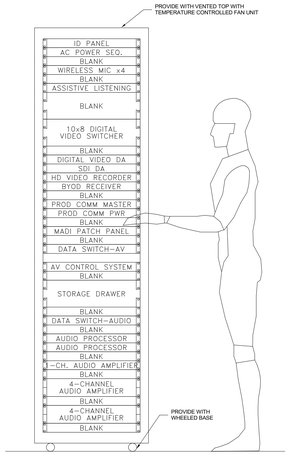
4 RACK DETAIL - LEARNING COMMONS
SCALE: NOT TO SCALE



3 RACK DETAIL - GYMNASIUM
SCALE: NOT TO SCALE



2 RACK DETAIL - BAND/DRAMA/CHORUS
SCALE: NOT TO SCALE



1 RACK DETAIL - AUDITORIUM
SCALE: NOT TO SCALE

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS
PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	2/10/2020	Conformance Set

DRAWING NAME
AV SYSTEMS - RACKS AND PLATE DETAILS 2

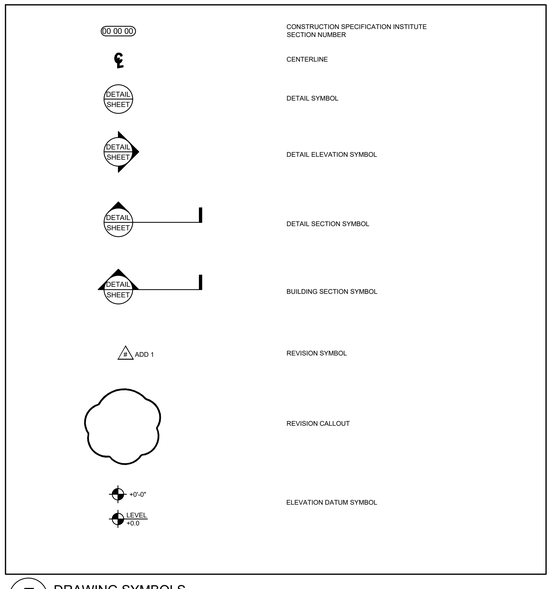
PROJECT NO. 1722

DRAWING NO.
AV601

@	AT
A	AMPS
AFF	ABOVE FINISHED FLOOR
ALD	ARCHITECTURAL LIGHTING DESIGNER
ARCH	ARCHITECTURAL
AUD	AUDITORIUM
AUX	AUXILIARY
BATS	BRANCH CIRCUIT AUTOMATIC TRANSFER SWITCH
C	CONDUIT
CKT	CIRCUIT
CL	CENTERLINE
CS	COMPANY SWITCH
D	DISCONNECT
DC	DOWN CENTER STAGE
DIA	DIAMETER
DIM	DIMMER
DIV	DIVISION
DMX	DIGITAL MULTIPLEXED LIGHTING CONTROL SIGNAL
DS	DOWNSTAGE
DSL	DOWN STAGE LEFT
DSR	DOWN STAGE RIGHT
DUP	DUPLICATE
DWG	DRAWING
EA	EACH
EE	ELECTRICAL ENGINEER
ELEC	ELECTRICAL
ELEV	ELEVATION
ELTS	EMERGENCY LIGHTING TRANSFER SWITCH
ENET	ETHERNET
EQ	EQUAL
F/S	FOLLOWSPOT
FOH	FRONT OF HOUSE
FRT	FRONT
FS	FORESTAGE
FT	FEET
HL	HOUSE LEFT
HLM	HOUSE LIGHT MASTER
HP	HORSE POWER
HR	HOUSE RIGHT
HVAC	HEATING VENTILATION AND AIR CONDITIONING
I.D.	INSIDE DIAMETER
IFR	INHERENTLY FLAME RETARDANT
IG	ISOLATED GROUND
IMS	INTEGRATED MOTOR STARTER
JB	JUNCTION BOX
KW	KILOWATT
LED	LIGHT EMITTING DIODE
LTG	LIGHTING
MAX	MAXIMUM
MCP	MOTOR CONTROL PANEL
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
u	MICROSECOND
MS	MICROSECOND
MTD	MOUNTED
MTG	MOUNTING
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
OPP	OPPOSITE
PB	PULL BOX
PCP	PRODUCTION CONTROL PANEL
PERF	PERFORMANCE
PH	PHASE
PL	PERFORMANCE LIGHTING
PNL	PANEL BOARD
PROD	PRODUCTION
PSVC	PERFORMANCE SOUND VIDEO AND COMMUNICATIONS
REF	REFER TO
REQ	REQUIRED
REQ'D	REQUIRED
RFU	REMOTE FOCUS UNIT
SIM	SIMILAR
SL	STAGE LEFT
SMP	STAGE MANAGERS PANEL
SQ	SQUARE
SR	STAGE RIGHT
STRUCT	STRUCTURAL
TBD	TO BE DETERMINED
TYP	TYPICAL
U/S	UNDERSIDE
UC	UP CENTER STAGE
US	UPSTAGE
USL	UP STAGE LEFT
USR	UP STAGE RIGHT
V	VOLT
VAC	VOLTS A.C.
VIF	VERIFY IN FIELD
W/	WITH
WL	WORK LIGHT DEVICE
WLM	WORK LIGHT MASTER

NOTE:
THE ABBREVIATIONS REPRESENTED ARE TYPICAL AND MAY NOT BE USED IN THIS DRAWING SET.

4 TYPICAL ABBREVIATIONS
NTS



5 DRAWING SYMBOLS
NTS

1 NOT USED

1. ALL CONDUIT, BACK BOXES, PULL BOXES, WIREWAYS, CABLE TRAYS, AND CABLE MANAGEMENT DEVICES ARE SPECIFIED AND PROVIDED UNDER DIVISION 26, UNLESS NOTED OTHERWISE. SIZES OF ALL JUNCTION BOXES AND BACK BOXES FOR DIVISION 11 EQUIPMENT ARE TO BE CONFIRMED BY THE EQUIPMENT MANUFACTURER.
2. ALL ELECTRICAL SERVICES ARE SPECIFIED AND PROVIDED UNDER DIVISION 26, UNLESS NOTED OTHERWISE.
3. PERFORMANCE DIMMING AND CONTROLS ARE SPECIFIED AND PROVIDED UNDER DIVISION 26.
4. MATERIAL AND EQUIPMENT SCHEDULES ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. VERIFY ALL QUANTITIES AND PROVIDE ALL REQUIRED MATERIAL, WHETHER SCHEDULED OR NOT.

2 GENERAL NOTES
NTS

TE000	THEATRE EQUIPMENT: DRAWING INDEX, TYPICAL ABBREVIATIONS, SYMBOLS, AND KEYS
TE001	THEATRE EQUIPMENT: COORDINATION ZONES
TE111	THEATRE EQUIPMENT: THEATRE PLAN
TE112	THEATRE EQUIPMENT: THEATRE RCP
TE121	THEATRE EQUIPMENT: THEATRE CENTERLINE SECTION
TE122	THEATRE EQUIPMENT: THEATRE TRANSVERSE SECTIONS
TE141	THEATRE EQUIPMENT: SCHEDULES AND DETAILS
TL100	PERFORMANCE LIGHTING: PERFORMANCE LIGHTING POSITIONS
TL111	PERFORMANCE DIMMING AND CONTROL: BOX SCHEDULE AND CONTROL RISER
TL121	PERFORMANCE DIMMING AND CONTROL: FACEPLATE DETAILS
TL131	PERFORMANCE DIMMING AND CONTROL: LCD TOUCHSCREEN - SCREEN SHOTS

3 DRAWING INDEX
NTS

47 Water Street
South Norwalk
Connecticut 06854
United States
+1 203 299 0690
www.theatreprojects.com

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	12/9/2019	Adden. 6
2	2/10/2020	Conformance Set

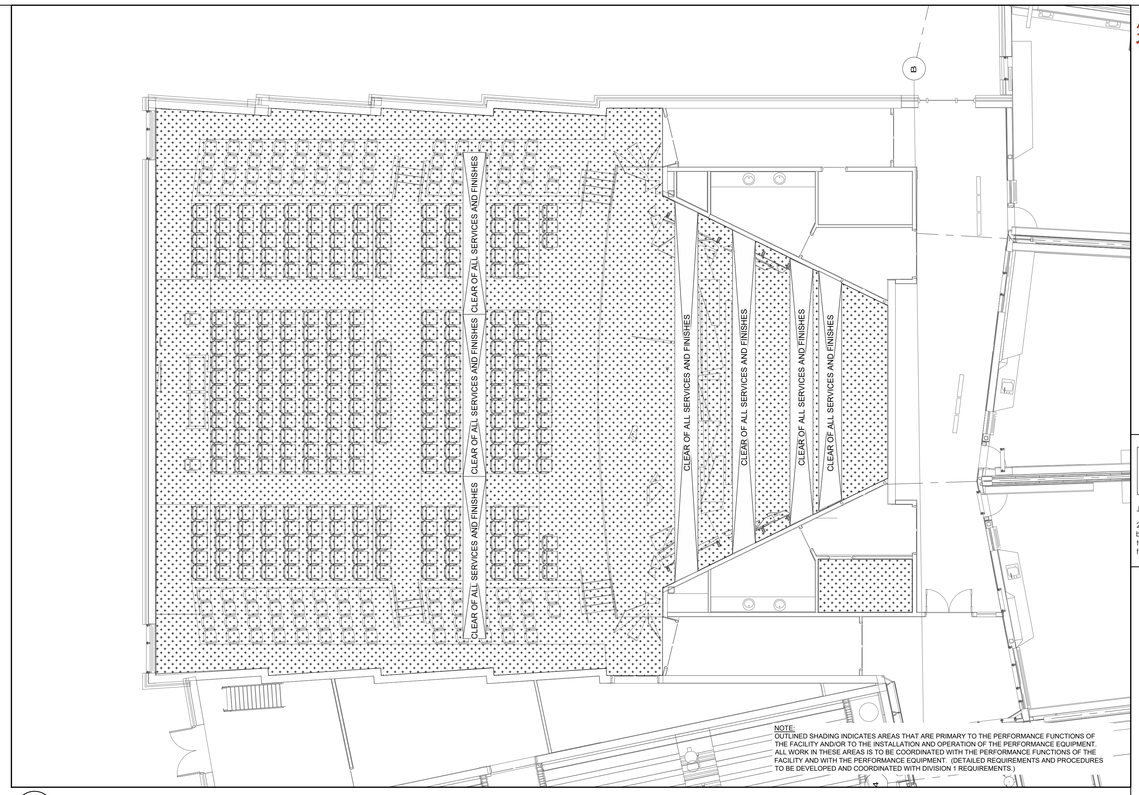
DRAWING NAME
THEATRE EQUIPMENT: DRAWING INDEX, TYPICAL ABBREVIATIONS, SYMBOLS, AND KEYS

PROJECT NO. 1722

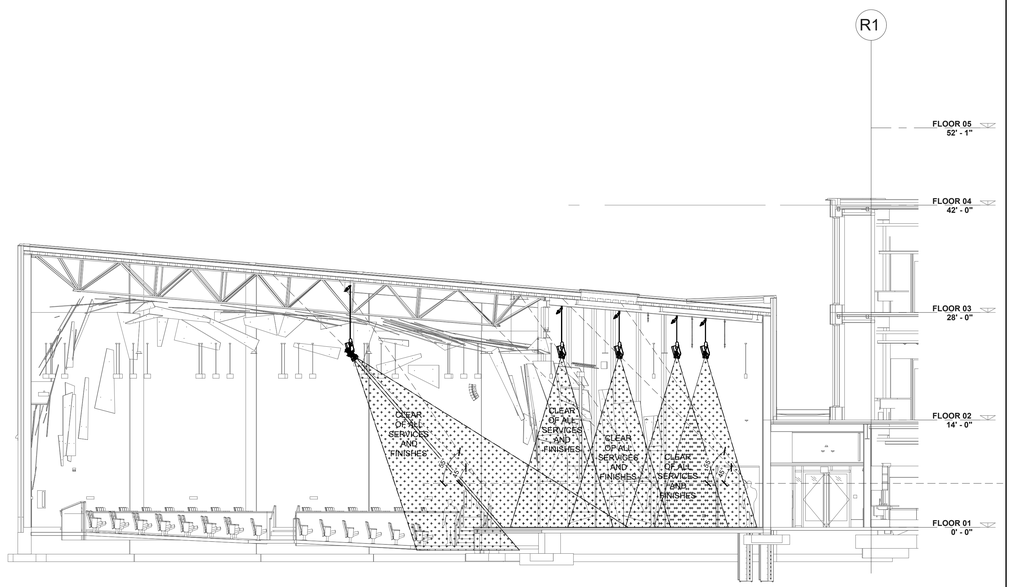
DRAWING NO.
TE000

XREFS = 19027B-ARCH TP-PLAN 01, TP-RCP, TP-SECTION CL, 19027TE111, 19022-GRID.dwg
PLOT DATE = 19027 JULIUS RABOTEAU SCHOOL 19022 ALGOLA DWG\19027 DRAWINGS\19027TE000.DWG

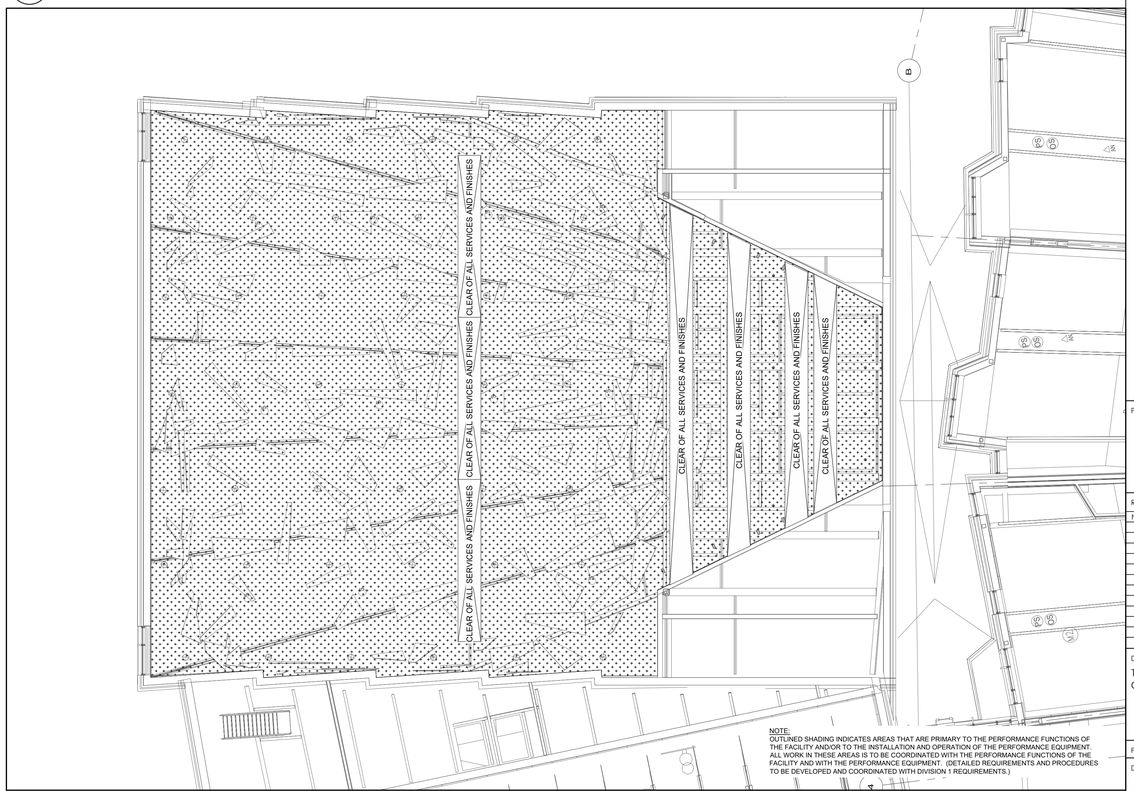
3 COORDINATION - LEVEL 1 PLAN
1/8"=1'-0"



1 COORDINATION ZONES - LEVEL 1 PLAN
1/8"=1'-0"



4 COORDINATION - CENTERLINE SECTION
1/8"=1'-0"



2 COORDINATION ZONES - LEVEL 1 RCP
1/8"=1'-0"

THEATRE PROJECTS
47 Water Street
South Norwalk
Connecticut 06854
United States
+1 203 299 0690
www.theatreprojects.com

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

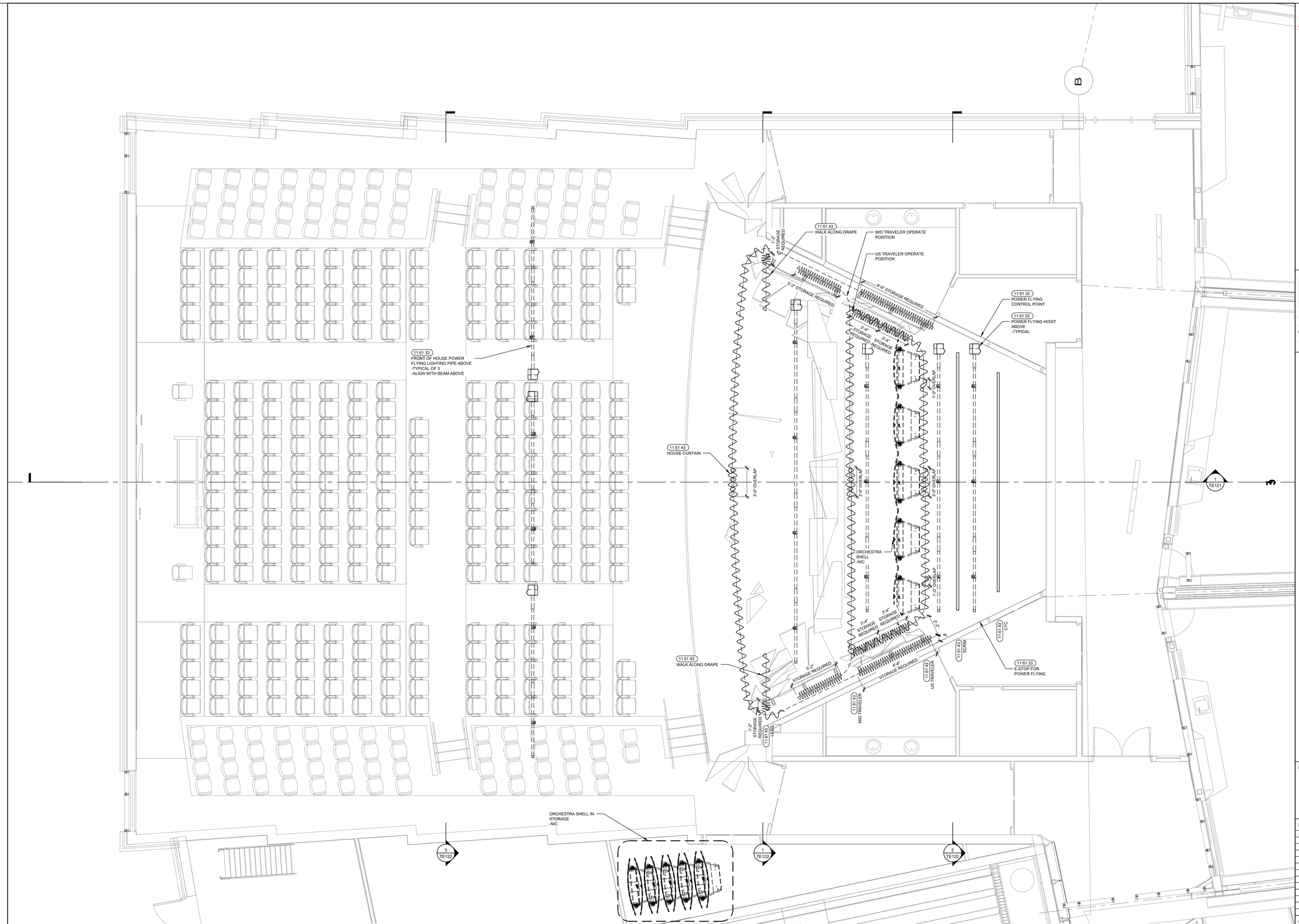
No.	Date	Description
1	12/9/2019	Adden. 6
2	2/10/2020	Conformance Set

DRAWING NAME
THEATRE EQUIPMENT: COORDINATION ZONES

PROJECT NO. 1722

DRAWING NO.
TE001

XREFS = 19SCTTB.XREF, TP-PLAN-01, TP-RCP, TP-SECTION-CL, 19SCTTE111, 19SCD-GRIDLINEXP
DWGS: ALL 19SCDT-LLEA-MIDDLE SCHOOL MSD JM-MSD-ARCHITECTURAL-20191127TE000.DWG



1 THEATRE - PLAN 01
SCALE=1/4"=1'-0"

THEATRE PROJECTS
47 Water Street
South Norwalk
Connecticut 06854
United States
+1 203 299 0690
www.theatreprojects.com

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

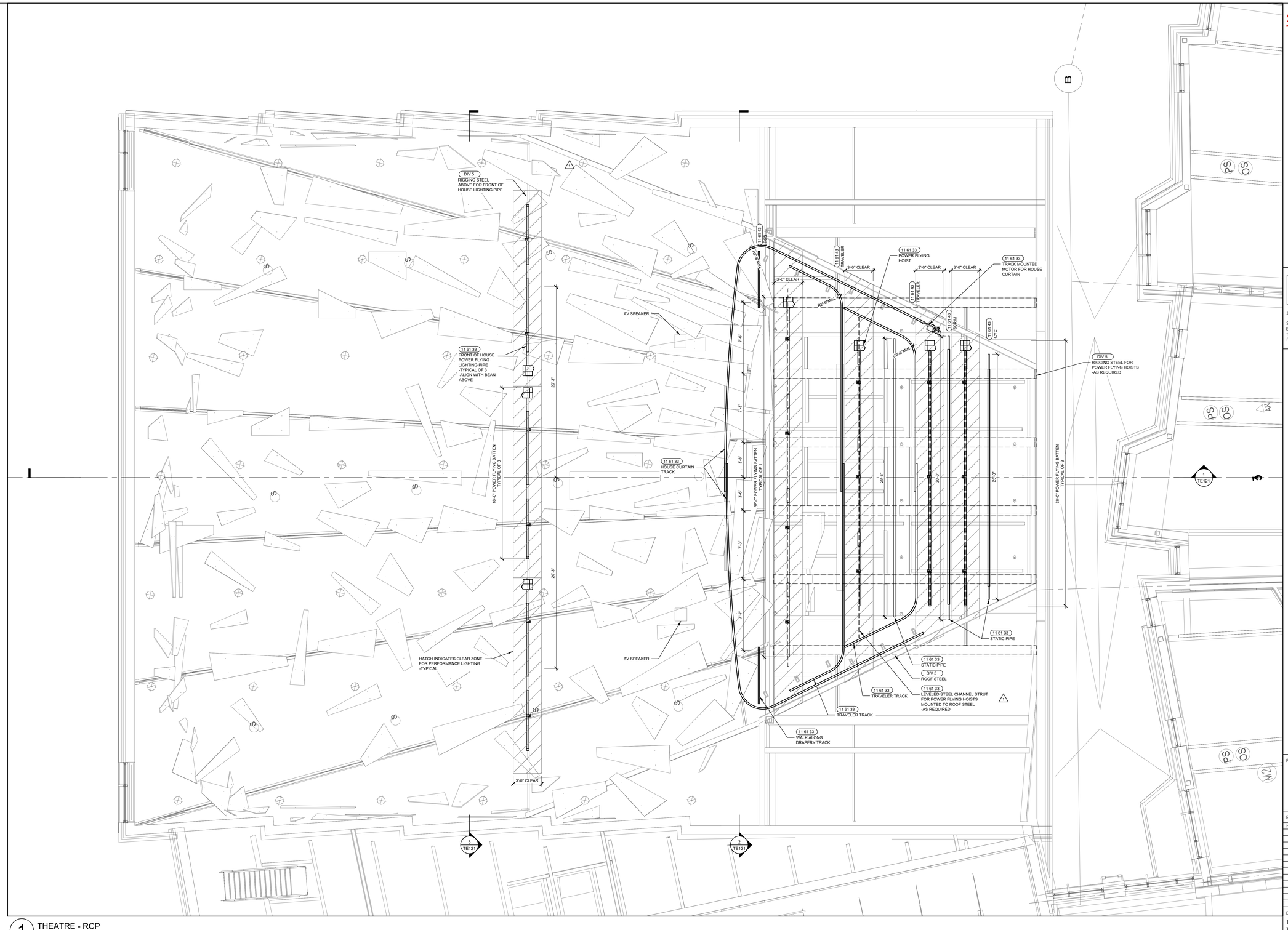
No.	Date	Description
1	12/9/2019	Adden. 6
2	2/10/2020	Conformance Set

DRAWING NAME
THEATRE EQUIPMENT: THEATRE PLAN

PROJECT NO. 1722

DRAWING NO.
TE111

XREFS = 19SCTBUKRE1 TP-PLAN 01 TP-SECTION CL TP-RCP- 19SCGRID.XREF TP-SECTION TRANSVERSE AT FOH PIPE TP-SECTION TRANSVERSE US WALL US BEAMS
PDMS SEL = 19SCF-LLL00 19SCLL1 DOOOU 19SCAR00 19SCAR00 DOOOAR00 19SCAR00 DOOOAR00 19SCAR00 DOOO



1 THEATRE - RCP
SCALE=1/4"=1'-0"

THEATRE PROJECTS
47 Water Street
South Norwalk
Connecticut 06854
United States
+1 203 299 0690
www.theatreprojects.com

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

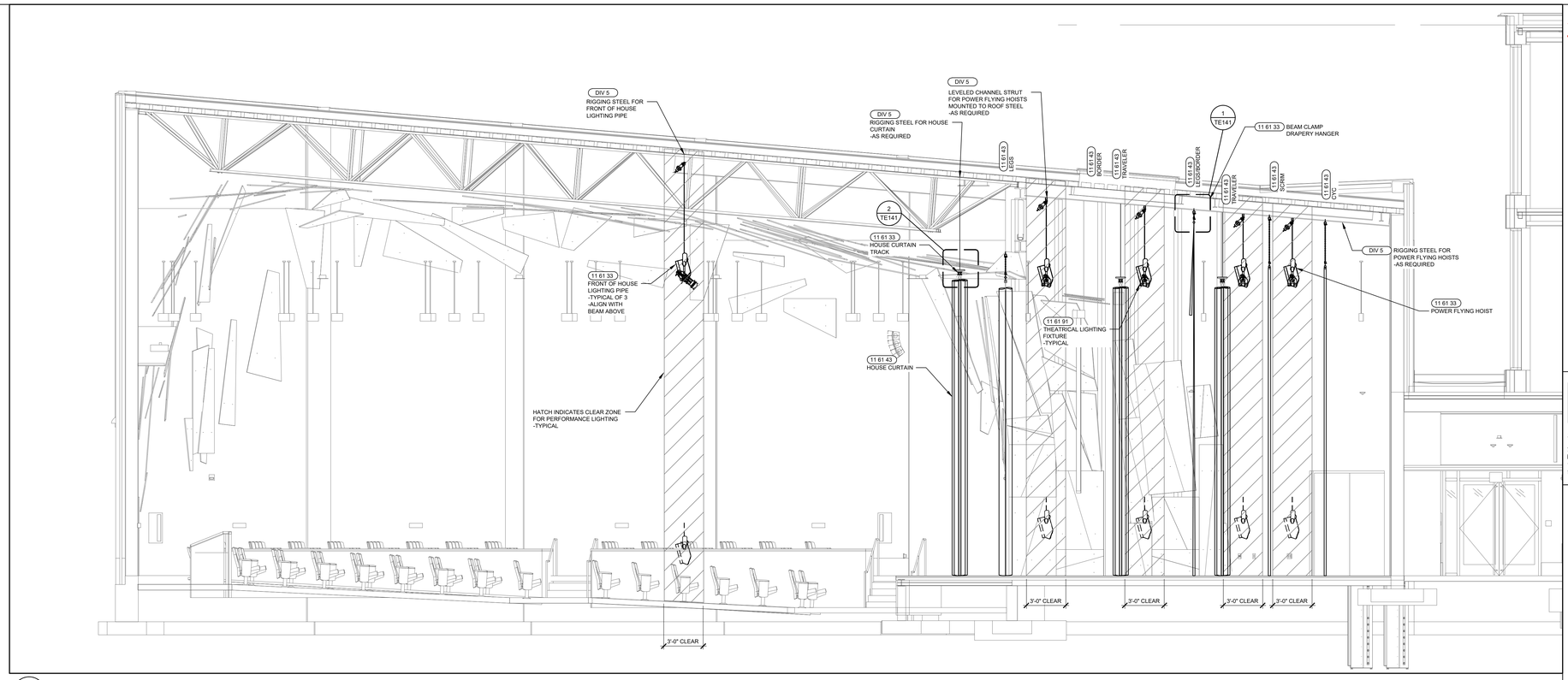
No.	Date	Description
1	12/9/2019	Adden. 6
2	2/10/2020	Conformance Set

DRAWING NAME
THEATRE EQUIPMENT: THEATRE RCP

PROJECT NO. 1722

DRAWING NO.
TE112

XREFS = 1922TS.XREF | TP PLAN ET | TP SECTION CL | TP-RCP - 1922-2000.XREF | TP-SECTION TRANSVERSE AT FOH PIPE | TP-SECTION TRANSVERSE US WALL US BEAMS
2020.02.10 - 1922 JLA LEVI ROOKS EVOLVE 1922.RVT 2020.02.07 DRAWING SET 1922TE112 1.DWG



1 THEATRE - CENTERLINE SECTION
1/4"=1'-0"

THEATRE PROJECTS

47 Water Street
South Norwalk
Connecticut 06854
United States
+1 203 299 0800
www.theatreprojects.com

Jonathan Levi Architects

266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	12/9/2019	Adden. 6
2	2/10/2020	Conformance Set

DRAWING NAME

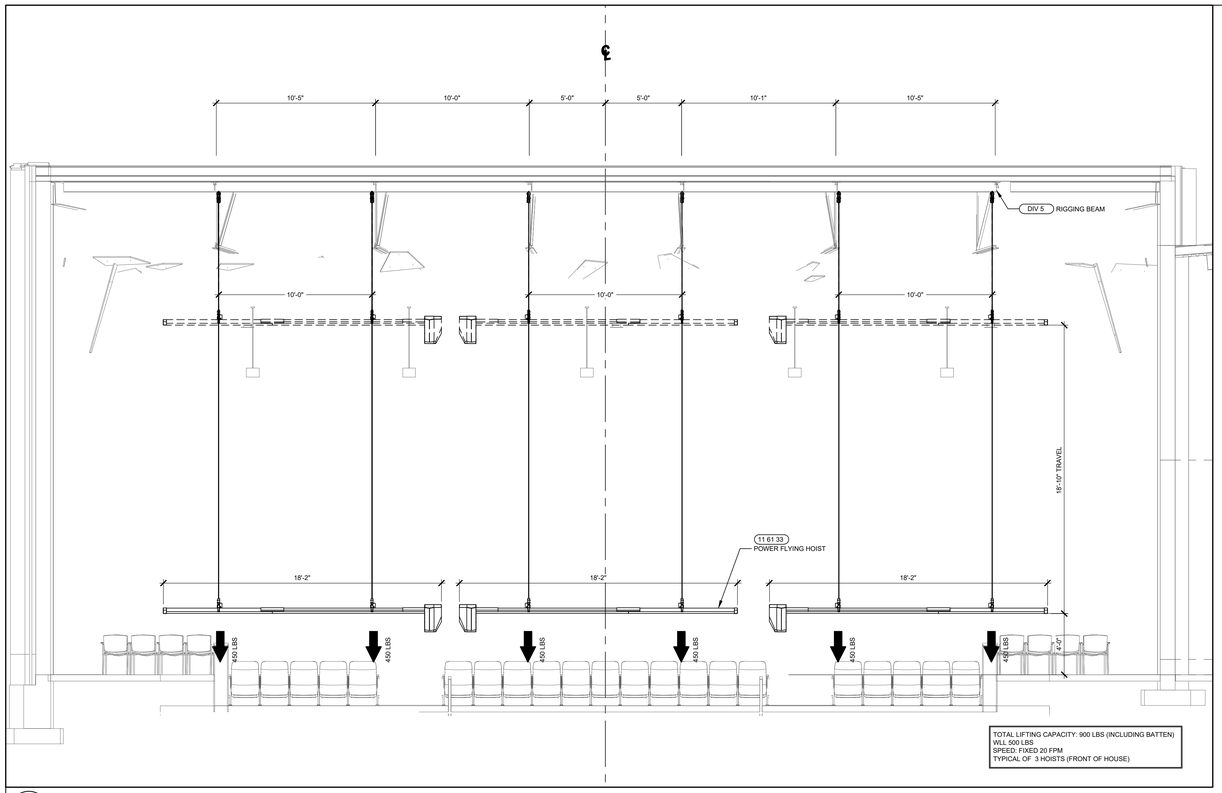
THEATRE EQUIPMENT: THEATRE CENTERLINE SECTION

PROJECT NO. 1722

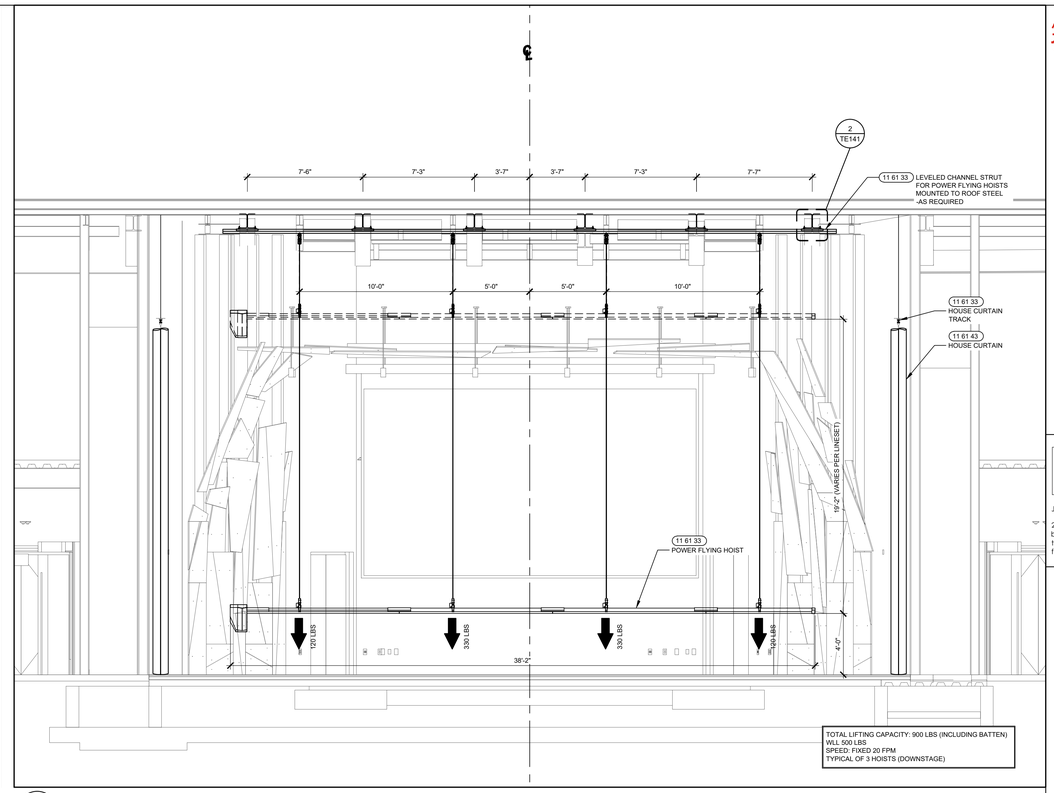
DRAWING NO.

TE121

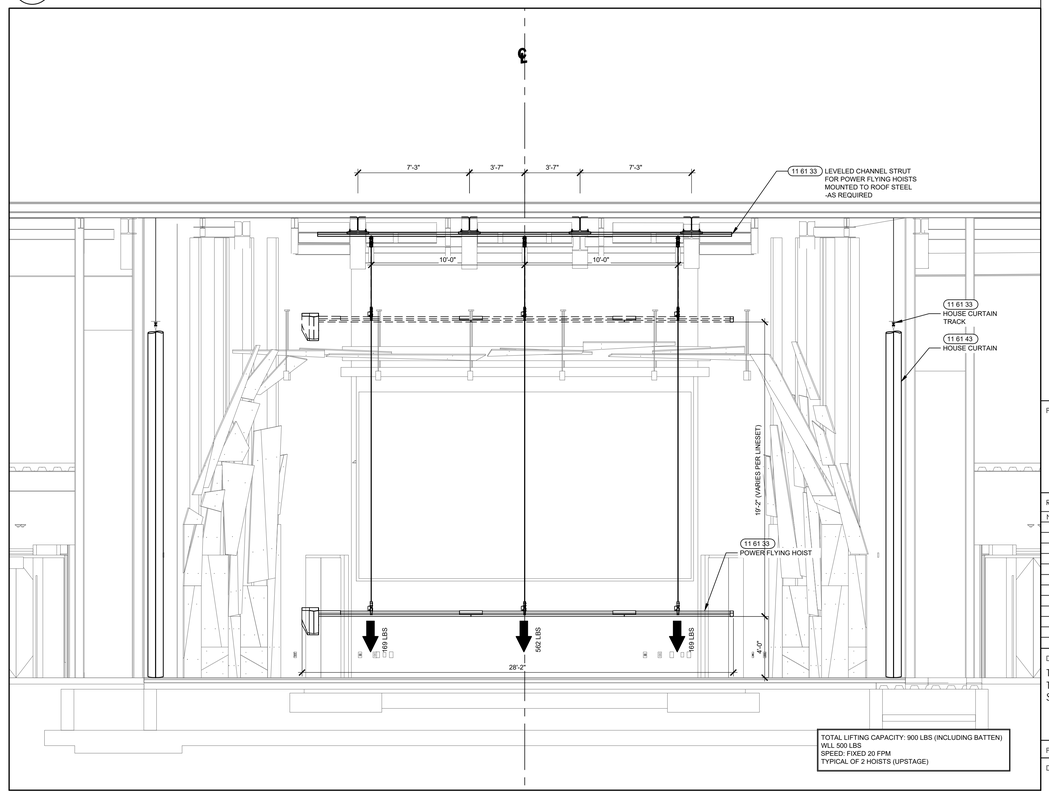
XREFS = 18SETS-XREF TP-PLAN 01, TP-SECTION 02, TP-MOP - 18SQUARD.XREF, TP-SECTION TRANSVERSE AT FOH PIPE, TP-SECTION TRANSVERSE US WALL US BEAMS
PSNS SEAL = 18SET-ALLEA PSNS2 CONTOL 18SET-MVSSH-SYSCAP-DRAWING SET TO SHEET TE121.DWG



3 FRONT OF HOUSE LIGHTING RIGGING
1/4"=1'-0"



1 TYPICAL RIGGING - DOWNSTAGE HOISTS
1/4"=1'-0"



2 TYPICAL RIGGING - UPSTAGE HOISTS
1/4"=1'-0"

THEATRE PROJECTS
47 Water Street
South Norwalk
Connecticut 06854
United States
+1 203 299 0690
www.theatreprojects.com

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	12/9/2019	Adden. 6
2	2/10/2020	Conformance Set

DRAWING NAME
THEATRE EQUIPMENT: THEATRE TRANSVERSE SECTIONS

PROJECT NO. 1722

DRAWING NO.
TE122

XREFS = 19SCETB-XREF_TP-PLAN 01_TP-SECTIONAL_TP-RCP_19SCGRID-XREF_TP-SECTION TRANSVERSE AT FOH PPE_TP-SECTION TRANSVERSE (@ WALL LIB BEAM)
PLOTTED: 2/10/2020 11:55:58 AM BY: ROLLE, DONOVAN

DIAGRAM KEY

IMS	INTEGRATED MOTOR STARTER BY DIV 11
JB	JUNCTION BOX BY DIV 26
D ## — 480 V 3 PH 4 WIRE	POWER DISCONNECT BY DIV 26
## HP	AC MOTOR BY DIV. 11
DEVICE	DEVICE AND WIRING BY DIV. 11
D — 208V	SAFETY DISCONNECT BY DIV. 11
	CONTROL RECEPTACLE BY DIV. 11
	PENDANT CONTROL BY DIV 11

WIRETYPE KEY

FOR PERFORMANCE MACHINERY RISER DIAGRAM

A - POSITION (ENCODER) FEEDBACK BELDEN 9388*

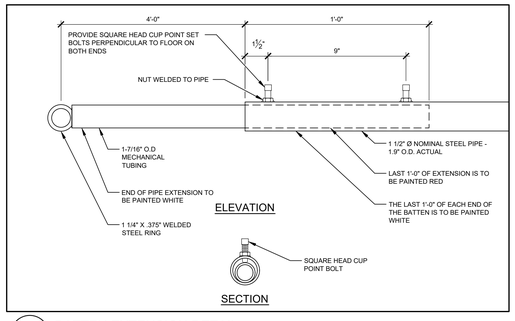
B - CONTROL SYSTEM COMMUNICATION BELDEN 9831 PLUS 2 #16 AWG*

* ACTUAL WIRE SPECIFICATION AND CONTROL WIRING TOPOLOGY IS DEPENDENT UPON THE EQUIPMENT MANUFACTURER. PROVIDE CONTROL WIRING IN ACCORDANCE WITH MANUFACTURER'S SUBMITTALS.

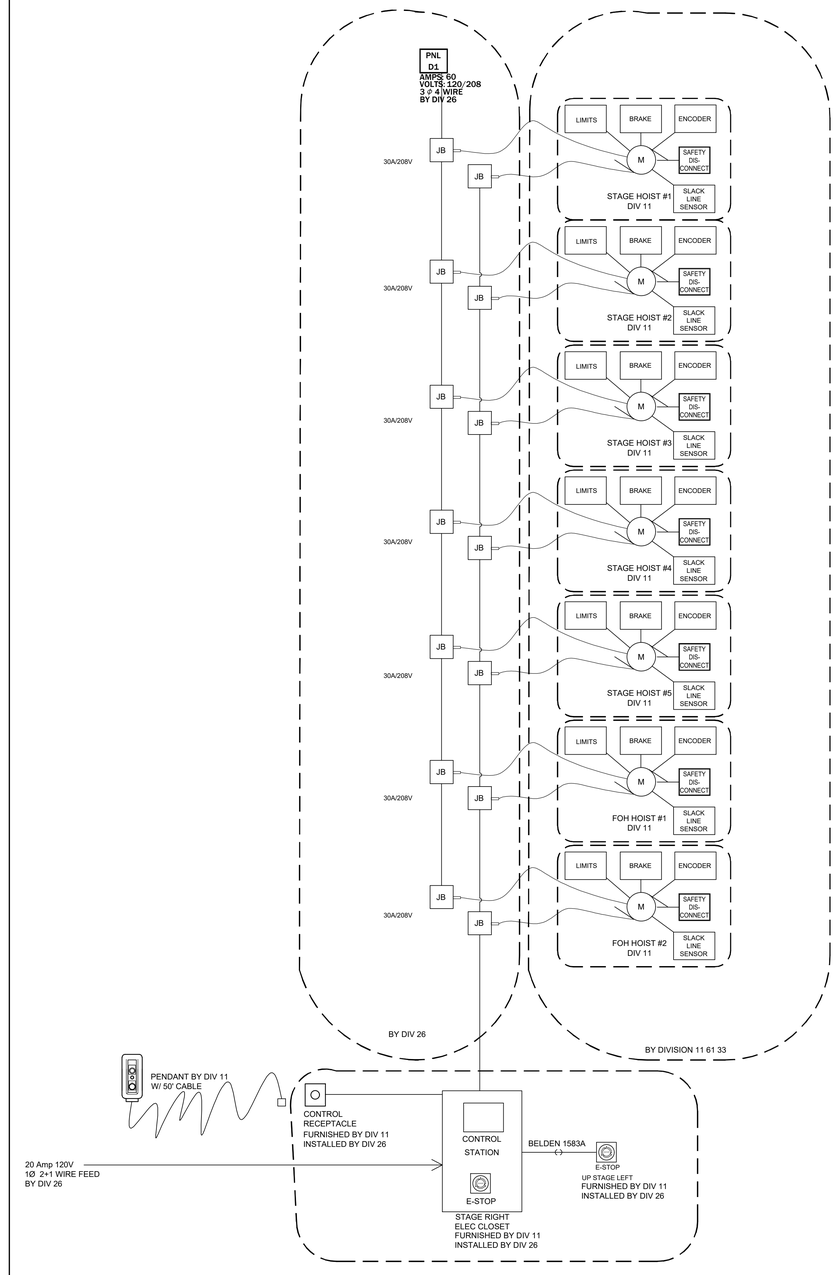
COORDINATION NOTE:

PLACEMENT OF DEVICES AND ROUTING OF CONDUIT ON THE PROSCENIUM WALL AT STAGE LEVEL IS CRITICAL. COORDINATE WITH ARCHITECTURAL ELEVATION DETAILS. SUBMIT ELEVATION SHOWING SIZE AND LOCATION OF ALL EQUIPMENT TO BE MOUNTED ON PROSCENIUM WALL AT STAGE LEVEL.

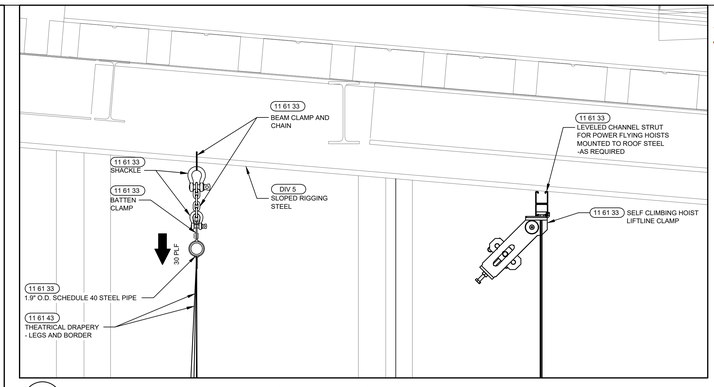
7 DIAGRAM KEY
NTS



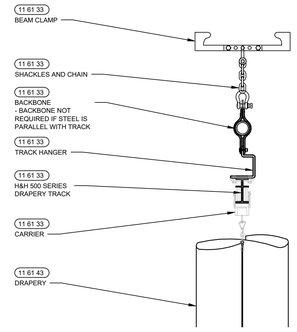
8 BATTEN EXTENSION DETAIL
SCALE: 3" = 1'-0"



6 MOTORIZED RIGGING ELECTRICAL LINE DIAGRAM
NTS



1 FIXED DRAPERY PIPE AND MOTORIZED PIPE CONNECTION DETAIL
1 1/2"=1'-0"



2 DRAPERY TRACK DETAIL
1 1/2"=1'-0"

DRAPE TYPE	QUANTITY	HEIGHT - VIF	WIDTH - VIF	FABRIC	FULLNESS	COLOR	NOTES
HOUSE CURTAIN	1 PAIR	22'-0"	29'-2"	25 OZ IFR VELOUR	100%	PER ARCH	
LEGS	1 PAIR	22'-0"	6'-0"	22 OZ IFR VELOUR	100%	PER ARCH	
BORDER	4	7'-0"	48'-0"	22 OZ IFR VELOUR	100%	PER ARCH	
CYC	1	23'-6"	23'-0"	IFR MUSLIN	FLAT	WHITE	
SCRIM	1	23'-6"	27'-0"	IFR SHARKSTOOTH SCRIM	FLAT	BLACK	
MID TRAVELER	1 PAIR	22'-0"	20'-0"	22 OZ IFR VELOUR	100%	PER ARCH	
US TRAVELER	4	22'-0"	12'-10"	22 OZ IFR VELOUR	100%	PER ARCH	
VIF = VERIFY IN FIELD							
NOTE: ACCURATE FIELD DIMENSIONAL INFORMATION MUST BE CONFIRMED BY THE CONTRACTOR PRIOR TO FABRICATION OF ANY PERMANENT OR TEMPORARY DRAPERY.							

3 DRAPERY SCHEDULE
NTS

No.	Distance	Purpose	Use	Notes
# 1	-3'-9"	(GP)	HOUSE CURTAIN	TRAVELER WITH TRACK
# 2	+0'-0"	(GP)	LEGS	TRAVELER WITH TRACK
# 3	+3'-1"	ELECTRIC	MOTORIZED	WITH RACEWAY
# 4	+8'-10"	(GP)	DRAPERY	TRAVELER WITH TRACK
# 5	+10'-7"	ELECTRIC	MOTORIZED	WITH RACEWAY
# 6	+14'-4"	(GP)	DRAPERY	STATIC PIPE
# 7	+16'-7"	(GP)	DRAPERY	TRAVELER WITH TRACK
# 8	+18'-1"	ELECTRIC	MOTORIZED	WITH RACEWAY
# 9	+20'-1"	(GP)	DRAPERY	STATIC PIPE
# 10	+21'-10"	ELECTRIC	MOTORIZED	WITH RACEWAY
# 11	+24'-4"	(GP)	DRAPERY	STATIC PIPE

4 LINESET SCHEDULE
NTS

ITEM	QTY	NOTES
STEEL PIPE CLAMP	18 EA	90 DEGREE 1-1/2" 0
SHACKLES	36 EA	ALLOY STEEL GALVANIZED 5/8" ANCHOR SHACKLES SCREW PIN
BEAM CLAMPS	18	PLATE & ADJUSTABLE 350 IB 0
BATTEN EXTENSIONS	10 EA	0 5' 0
BATTEN	15 EA	SCHEDULE 40 1-1/2" 10' LONG W/A SLEEVE

5 LOOSE EQUIPMENT SCHEDULE
NTS

47 Water Street
South Norwalk
Connecticut 06854
United States
+1 203 299 0830
www.theatreprojects.com

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS
CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

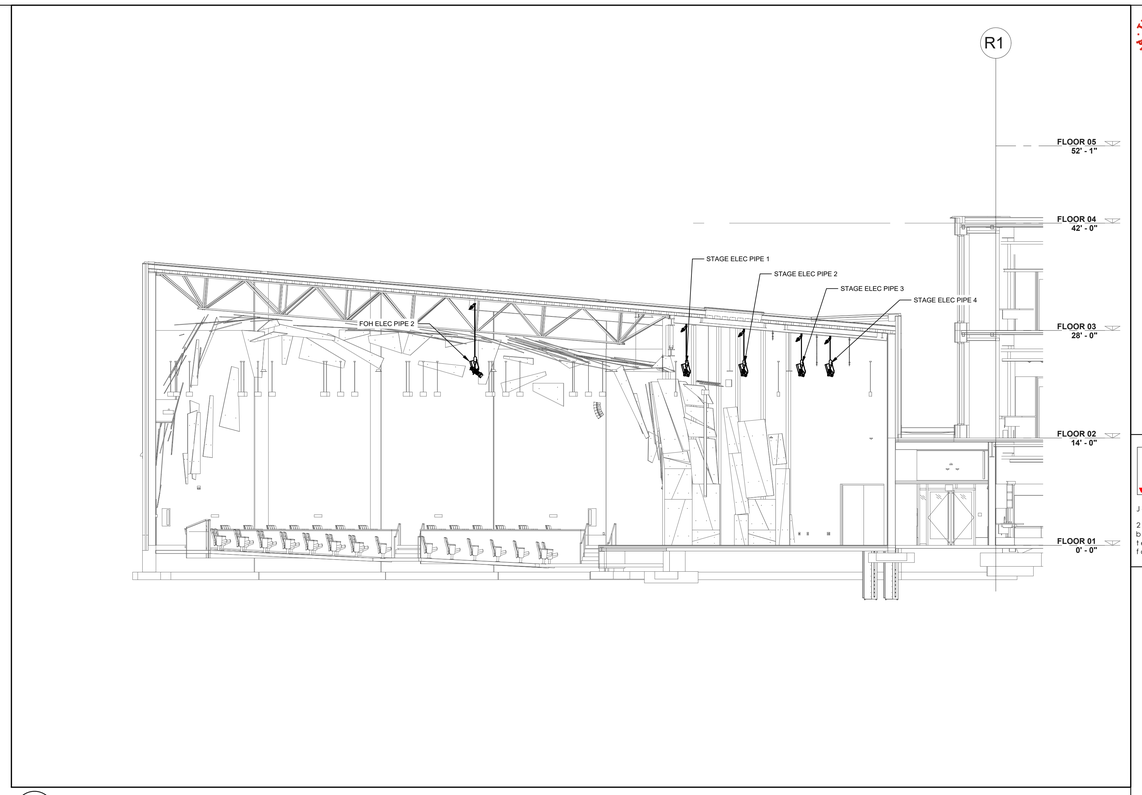
No.	Date	Description
1	12/9/2019	Adden. 6
2	2/10/2020	Conformance Set

DRAWING NAME
THEATRE EQUIPMENT: SCHEDULES AND DETAILS

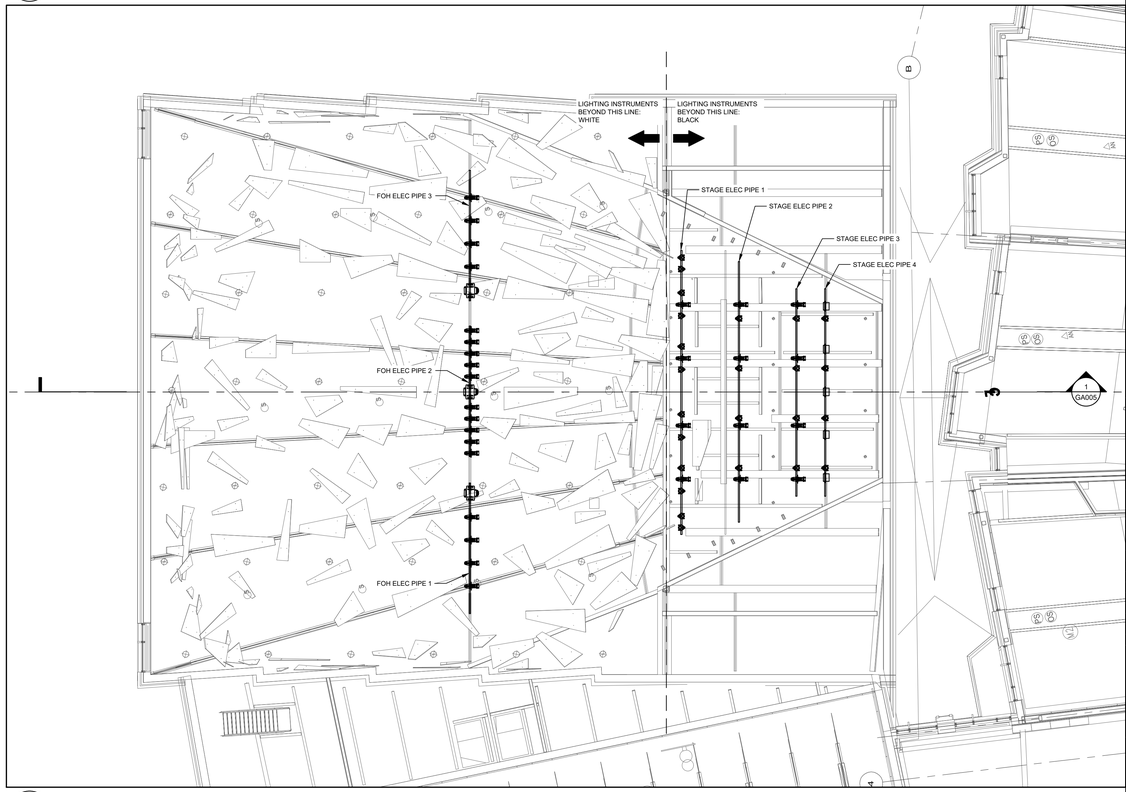
PROJECT NO. 1722

DRAWING NO.
TE141

XREFS: 1-16027B.XREF - TP PLAN FT - TP SECTION CL - TP-PCP - 16X24 ANSI.XREF - TP-SECTION TRANSVERSE AT FOH PIPE - TP-SECTION TRANSVERSE US WALL US BEAMS
2020.02.10 - 16027 JULIAN RHODES SCHOOL - MEDIA & ASSEMBLY ADDITION - SD - TE141.DWG



1 AUDITORIUM CENTERLINE SECTION
1/8"=1'-0"



2 COORDINATION ZONES - LEVEL 1 RCP
1/8"=1'-0"

THEATRE PROJECTS
47 Water Street
South Norwalk
Connecticut 06854
United States
+1 203 299 0830
www.theatreprojects.com

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	12/9/2019	Adden. 6
2	2/10/2020	Conformance Set

DRAWING NAME
PERFORMANCE LIGHTING: PERFORMANCE LIGHTING POSITIONS

PROJECT NO. 1722

DRAWING NO.
TL100

XREFS = 19027TB-XREF; TP-PLAN 01; TP-RCP; TP-SECTION CL; 19027TE11; 19027-GRID-XREF
2020.02.05, 1:19:02 PM FULLER MIDDLE SCHOOL 19022.99-2020-02-05-CONFORMANCE SET\19027TL100.DWG

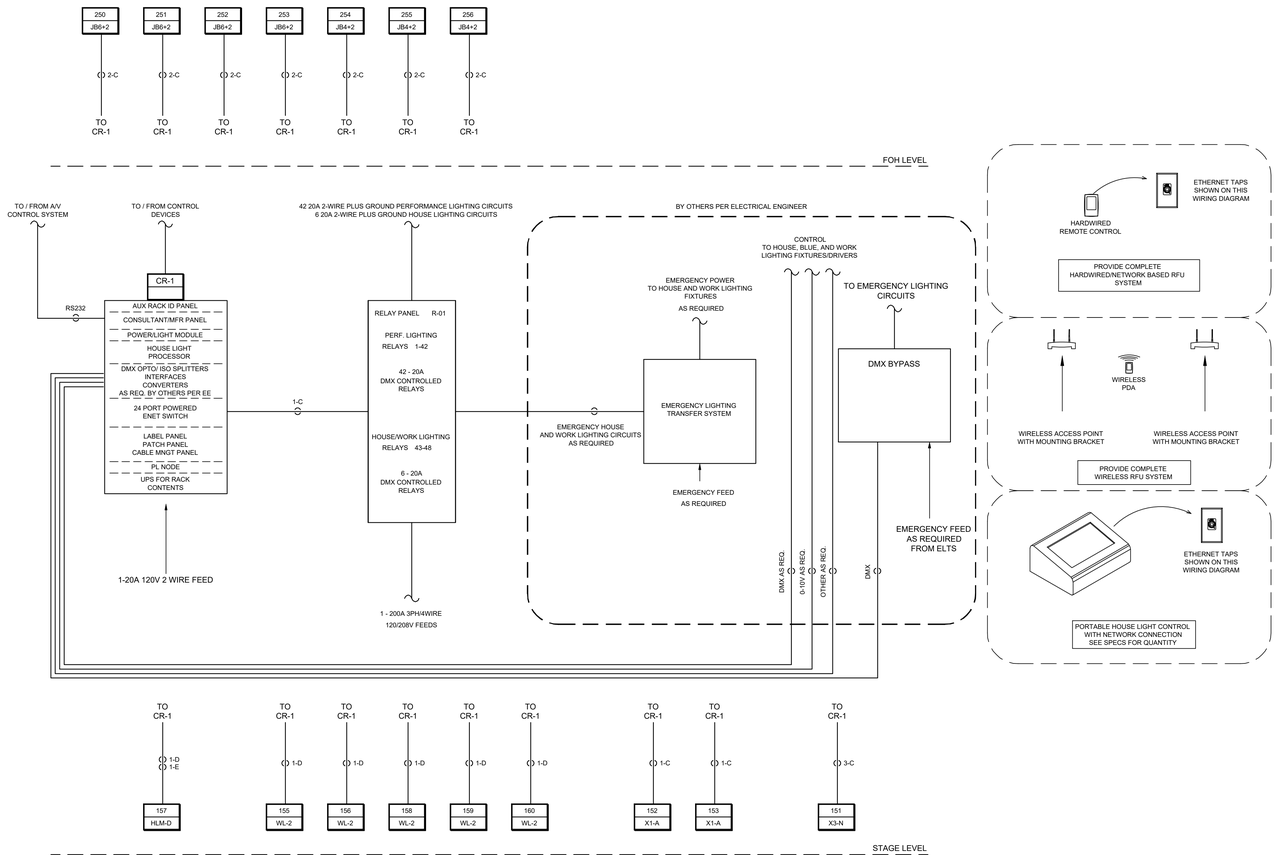
BOX #	FACEPLATE	LOCATION	MOUNTING	BOX SIZE	HEIGHT	RELAY CK#	DMX ADDRESS	20A RELAY	ENET	ARCH	FINISH	NOTES
POWER RECEPTACLES												
101	E1	STAGE - DSL	SURFACE	2.75"x4.5"x4"	18" AFF			1			PER ARCH	
102	E1	STAGE - DSR	SURFACE	2.75"x4.5"x4"	18" AFF			1			PER ARCH	
103	E2	STAGE - USL	FLUSH	4.75"x4.5"x4"	18" AFF			2			PER ARCH	
104	E2	STAGE - USR	FLUSH	4.75"x4.5"x4"	18" AFF			2			PER ARCH	
250	JB6+2	FIRST ELECTRIC	SURFACE	JBOX	CEILING			6	2		PER ARCH	INTEGRATED RACEWAY PROVIDED BY DIV 11. SEE TE SHEETS FOR DETAILS
251	JB6+2	SECOND ELECTRIC	SURFACE	JBOX	CEILING			6	2		PER ARCH	
252	JB6+2	THIRD ELECTRIC	SURFACE	JBOX	CEILING			6	2		PER ARCH	
253	JB6+2	FOURTH ELECTRIC	SURFACE	JBOX	CEILING			6	2		PER ARCH	
254	JB4+2	FOH PIPE	SURFACE	JBOX	CEILING			4	2		PER ARCH	
255	JB4+2	FOH PIPE	SURFACE	JBOX	CEILING			4	2		PER ARCH	
256	JB4+2	FOH PIPE	SURFACE	JBOX	CEILING			4	2		PER ARCH	
TOTAL 20A RELAY CIRCUITS								**42**				
TOTAL 20A HOUSE/WORK LIGHT RELAY CIRCUITS								**6**				

BOX #	FACEPLATE	LOCATION	MOUNTING	BOX SIZE	HEIGHT	RELAY CK#	DMX ADDRESS	20A RELAY	ENET	ARCH	FINISH	NOTES
CONTROL RECEPTACLES												
CR-1	AUX	ELECTRICAL ROOM										
151	X3-N	TECH POSITION	FLUSH	3 GANG	18" AFF				3		PER ARCH	
152	X1-A	STAGE - DSL	FLUSH	1 GANG	18" AFF				1		PER ARCH	
153	X1-A	STAGE - DSR	FLUSH	1 GANG	18" AFF				1		PER ARCH	
154	NOT USED											
155	WL-2	AUDITORIUM ENTRANCE	FLUSH	1 GANG	48" AFF					1	PER ARCH	HOUSE LIGHTS / WORK LIGHTS
156	WL-2	AUDITORIUM ENTRANCE	FLUSH	1 GANG	48" AFF					1	PER ARCH	HOUSE LIGHTS / WORK LIGHTS
157	HLM-D	AUDITORIUM ENTRANCE	FLUSH	PER MFR.	60" AFF					1	PER ARCH	HOUSE LIGHT MASTER
158	WL-2	AUDITORIUM ENTRANCE	FLUSH	1 GANG	48" AFF					1	PER ARCH	HOUSE LIGHTS / WORK LIGHTS
159	WL-2	STAGE - USR	FLUSH	1 GANG	48" AFF					1	PER ARCH	
160	WL-2	STAGE - USL	FLUSH	1 GANG	48" AFF					1	PER ARCH	
TOTAL CONTROL RECEPTACLES									19	6		
NOTE: HEIGHT IS VERTICAL DISTANCE BETWEEN FINISHED FLOOR AND CENTER OF FACEPLATE.												

GENERAL NOTES:

1. BOX SCHEDULES ARE SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF QUANTITIES AND SHALL FURNISH ALL MATERIALS, WHETHER SPECIFIED OR NOT, TO PRODUCE A COMPLETE AND WORKING SYSTEM.
2. CONTRACTOR SHALL CONFIRM LOCATIONS, MOUNTING HEIGHTS, AND MOUNTING CONDITIONS WITH ARCHITECT AND THEATRE CONSULTANT PRIOR TO BOX ROUGH-IN.
3. CONTROL RECEPTACLE BACK BOX SIZES MAY VARY FROM SIZES LISTED ON SCHEDULES, DEPENDING ON MANUFACTURER. CONTRACTOR SHALL PROVIDE BACK BOXES IN ACCORDANCE WITH MANUFACTURER'S SUBMITTALS.
4. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
5. EMERGENCY LIGHTING SYSTEM DESIGN AND DEVICES SHOWN ON ELECTRICAL DRAWINGS.

1 PERFORMANCE DIMMING AND CONTROL: BOX SCHEDULE
NTS



2 PERFORMANCE DIMMING AND CONTROL: CRONTROL RISER
NTS

KEY

FOR PERFORMANCE LIGHTING RISER DIAGRAM

A - DMX CONTROL
BELDEN 9829*

B - REMOTE FOCUS
BELDEN 9728
PLUS 2 #16 AWG*

C - CATEGORY 6 ETHERNET
BELDEN 2412*
300 FEET MAXIMUM RUN

D - ARCHITECTURAL CONTROL
BELDEN 8471 PLUS 3 #14 AWG*

E - ARCHITECTURAL LCD POWER
2 #16 AWG

F - KEYSWITCH CONTROL
6 #16 AWG

G - MULTIPLE Q LIGHT CONTROL
BELDEN 8466*

H - CUE LIGHT POWER - 2 #14 AWG

J - 4 FIBER MULTI-MODE ETHERNET
BELDEN 89C039*

* ACTUAL WIRE SPECIFICATION AND CONTROL WIRING TOPOLOGY IS DEPENDENT UPON THE DIMMING MANUFACTURER. PROVIDE CONTROL WIRING IN ACCORDANCE WITH MANUFACTURER'S SUBMITTALS.

NOTE:
EMERGENCY LIGHTING SYSTEM DESIGN AND DEVICES SHOWN ON ELECTRICAL DRAWINGS.

SYMBOLS KEY:

PERFORMANCE LIGHTING

LIGHTING CONTROL CIRCUIT BOX

999 / XX — BOX NUMBER / FACEPLATE

1-D — WIRE TYPE (SEE KEY)

47 Water Street
South Norwalk
Connecticut 06854
United States
+1 203 299 0890
www.theatreprojects.com

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	12/9/2019	Adden. 6
2	2/10/2020	Conformance Set

DRAWING NAME

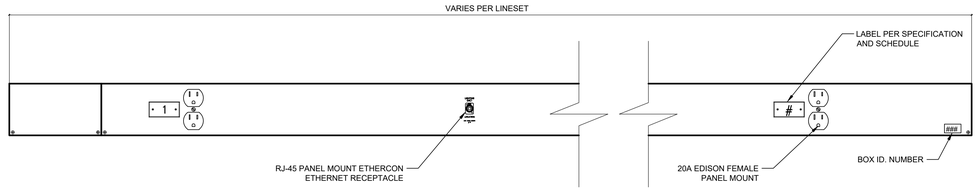
PERFORMANCE DIMMING AND CONTROL: BOX SCHEDULE AND CONTROL RISER

PROJECT NO. 1722

DRAWING NO.

TL111

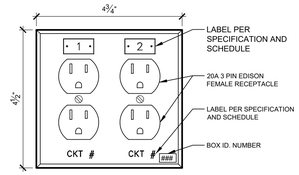
XREFS = 190427B-XREF
DGN:TL111-TOC07 (LLER MIDDLE SCHOOL\190228-MK-2020-02\A-CONFORMANCE SET\190227TL111.DWG)



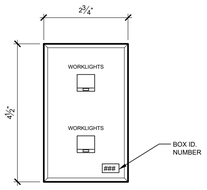
EVENLY DISTRIBUTE RECEPTACLES AS SHOWN IN THE DRAWINGS EVENLY ACROSS THE RACEWAY FOR EACH POSITION 2 RECEPTACLES PER CIRCUIT, FROM OPPOSITE ENDS.. THIS INCLUDES INCOPORATION OF ML2 BOXES SHOWN AT 1/3 POINTS.

PROVIDE 2 DUPLEX 120v RECEPTACLES FOR EACH EDISON CIRCUIT SHOWN ON THE RACEWAY. FOR EXAMPLE JB6 REQUIRES 12 DUPLEX RECEPTACLES DISTRIBUTED ALONG THE RACEWAY.

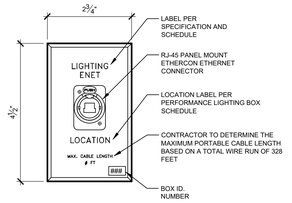
7 LIGHTING RACEWAY DETAIL
SCALE: 3"=1'-0"



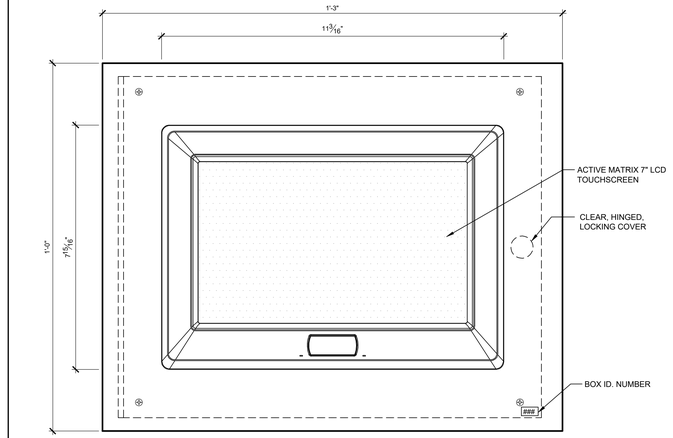
4 E2 FACEPLATE DETAIL
SCALE: 6"=1'-0"



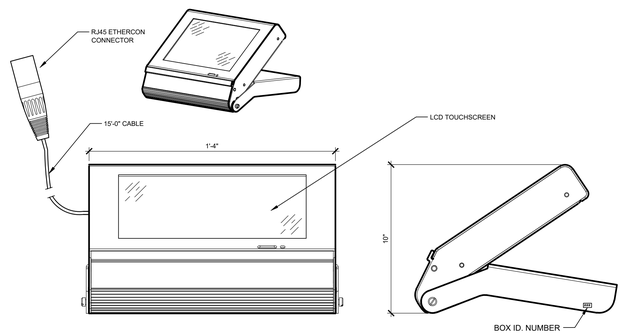
5 WL-2 FACEPLATE DETAIL
SCALE: 6" = 1' -0"



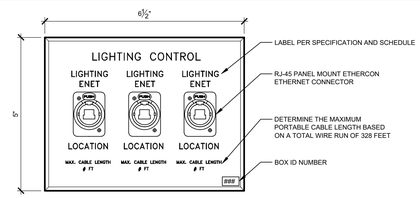
6 X1-A FACEPLATE DETAIL
SCALE: 6" = 1' -0"



1 HLM-D FACEPLATE DETAIL
SCALE: 6" = 1' -0"



2 HLM-P FACEPLATE DETAIL
SCALE: 3" = 1' -0"



3 X3-N FACEPLATE DETAIL
SCALE: 6" = 1' -0"

47 Water Street
South Norwalk
Connecticut 06854
United States
+1 203 299 0830
www.theatreprojects.com

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL
31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	12/9/2019	Addm. 6
2	2/10/2020	Conformance Set

DRAWING NAME
PERFORMANCE DIMMING AND CONTROL: FACEPLATE DETAILS

PROJECT NO. 1722

DRAWING NO.
TL121

XREFS = XREFS-XREF
DGN:[DEL1.1700]FULLER MIDDLE SCHOOL (1802)-08-2020-02-04-CONFORMANCE SET-TR02TTL1.11.DWG

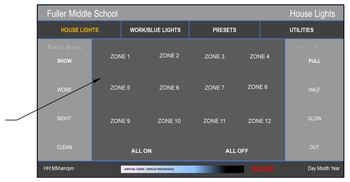
SPLASH SCREEN:

LEADS TO USER PRESET PAGE DEFAULT SCREEN AFTER FIVE MINUTE TIME OUT

DISPLAYS CURRENT TIME

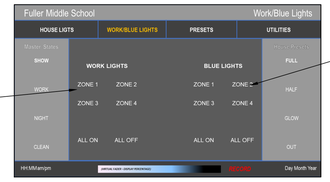
DISPLAYS CURRENT DATE

HOUSE LIGHTS SCREEN:



HOUSE LIGHT ZONES AS DETERMINED BY ARCHITECTURAL LIGHTING DESIGNER

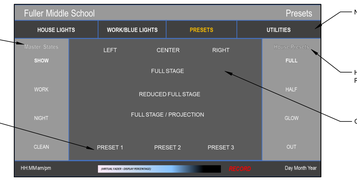
WORK/BLUE LIGHTS SCREEN:



WORK LIGHT ZONES

BLUE LIGHT ZONES

USER PRESETS SCREEN:



MASTER STATE PRESETS

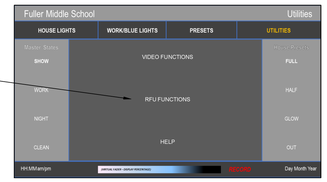
USER DEFINED PRESETS

NAVIGATION BUTTONS

HOUSE LIGHT PRESETS

QUICK SELECT PRESETS

UTILITIES/SETTINGS SCREEN:



SETTINGS AND UTILITIES PAGE

THESE SCREEN SHOTS ARE SHOWN FOR BASIC PROGRAMMING PARAMETERS. TO BE REFINED BEFORE PROGRAMMING.

SCREEN SHOTS ARE TO BE USED FOR ALL THEATRICAL LIGHTING TOUCH SCREENS.

1 TOUCH SCREEN LAYOUTS
NTS

THEATRE PROJECTS
47 Water Street
South Norwalk
Connecticut 06854
United States
+1 203 299 0830
www.theatreprojects.com

Jonathan Levi Architects
266 beacon street
boston ma 02116
tel 617 437 9458
fax 617 437 1965

FULLER MIDDLE SCHOOL

31 FLAGG DRIVE, FRAMINGHAM, MA

PROJECT STATUS

CONSTRUCTION DOCUMENTS PACKAGE
11/22/2019

REVISIONS

No.	Date	Description
1	12/9/2019	Addm. 6
2	2/10/2020	Conformance Set

DRAWING NAME

PERFORMANCE DIMMING AND CONTROL: LCD TOUCHSCREEN - SCREEN SHOTS

PROJECT NO. 1722

DRAWING NO.

TL131

XREFS = 1902FBLINDEF
DWGS SEL'D FOR PLOT: FULLER MIDDLE SCHOOL (1902).09-2020.02-ACOM\PERFORMANCE SET\1902TTL111.DWG