ABBREVIATIONS

#	POUND OR NUMBER
&	AND
@	AT
ACP	ACOUSTICAL CEILING PANEL
AD	AREA DRAIN
ADJ	ADJUSTABLE
AF	ACCESS FLOORING SYSTEM
AFF	ABOVE FINISH FLOOR
AGGR	AGGREGATE
ALUM	ALUMINUM
APROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASB	ASBESTOS
ASPH	ASPHALT
AWP	ACOUSTIC WALL PANEL
AXON	AXONOMETRIC
BA	BASE
BC	BACK OF CURB
BD	BOARD
BITUM	BITUMINOUS
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BO	BOTTOM OF
BOT	BOTTOM
BR	BULLET RESISTANT
BTB	BACK TO BACK
C	CHANNEL
CA	CARPET
CAB	CABINET
CB	CATCH BASIN
CEM	CEMENTIOUS
CER	CERAMIC
CI	CAST IRON
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CLG	CEILING
CLO	CLOSET
CLR	CLEAR
CM	CONSTRUCTION MANAGER
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
CO	CONCRETE
COL	COLUMN
CONC	CONCRETE
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CORR	CORRIDOR
CPT	CARPET
CS	CEILING SYSTEM
CT	CERAMIC TILE
CTR	CENTER
CTSK	COUNTERSUNK
(D)	DEMOLISH
DBL	DOUBLE
DEMO	DEMOLISH
DEPT	DEPARTMENT
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIM	DIMENSION
DISP	DISPENSER
DM	DECORATIVE MASONRY
DN	DOWN
DO	DOOR OPENING
DR	DOOR
DS	DOWNSPOUT
DWG	DRAWING
DWR	DRAWER
(E)	EXISTING
E	EAST
EA	EACH
EEOR	ELECTRICAL ENGINEER OF RECORD
EGD	EXPERIENTIAL DESIGN
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATION
ELVTR	ELEVATOR
EMER	EMERGENCY
ENCL	ENCLOSURE
EPNL	ELECTRICAL PANEL
EQ	EQUAL
EQPT	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EXG	EXISTING
EXT	EXTERIOR
F/A	FIRE ALARM
FA	FABRIC
FAB	FABRIC
FB	FLAT BAR
FC	FACE OF CURB
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FIN	FINISH
FL	FLOOR
FLSHG	FLASHING
FLUOR	FLUORESCENT
FO	FACE OF
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOS	FACE OF STUDS
FPRF	FIREPROOFING
FRP	FIBERGLASS REINFORCED PLASTIC
FRT	FIRE RETARDANT TREATED
FT	FOOT / FEET / FINISH TRANSITION
FTG	FOOTING
FURR	FURRING
FUT	FUTURE
FWP	FABRIC WALL PANEL
GA	GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GD	GRADE
GF	GLAZING FILM
GL	GLASS / GLAZING
GND	GROUND
GR	GROUT
GWB	GYPSUM BOARD
GYP	GYPSUM
HB	HOSE BIB
HDWD	HARDWOOD
HDWR	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HPC	HIGH PERFORMANCE COATINGS
HR	HOUR
HT	HEIGHT
ID	INSIDE DIAMETER (DIM)
INSUL	INSULATION
INT	INTERIOR
JAN	JANITOR
JT	JOINT
KIT	KITCHEN
L	ANGLE
LAB	LABORATORY
LAM	LAMINATE
LAV	LAVATORY
LKR	LOCKER
LT	LIGHT
MAX	MAXIMUM
MC	MEDICINE CABINET
ME	METAL
MECH	MECHANICAL
MEMB	MEMBRANE
MEOR	MECHANICAL ENGINEER OF RECORD
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
MUL	MULLION
(N)	NEW
N	NORTH
NAT	NATURAL
NC	NOISE CRITERION (NOISE LEVEL LIMIT)
NIC	NOT IN CONTRACT
NOM	NOMINAL
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
OA	OVERALL
OC	ON CENTER
OCC	OCCUPANCY
OD	OUTSIDE DIAMETER (DIM)
OFF	OFFICE
OPNG	OPENING
OPP	OPPOSITE
OTS	OPEN TO STRUCTURE
PA	PAINT
PC	PERFORMANCE COATING
PERP	PERPENDICULAR
PG	PROTECTIVE GUARDS
PL	PLASTIC LAMINATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLUMB	PLUMBING
PLWD	PLYWOOD
PP	POWER POLE
PR	PAIR
PRCST	PRECAST
PT	PRESSURE TREATED
PTD	PAPER TOWEL DISPENSER
PTD/R	COMBINATION PAPER TOWEL DISPENSER AND WASTE RECEPTACLE
PVB	POLYVINYL BUTYRAL
PVC	POLYVINYL CHLORIDE (PLASTIC)
QT	QUARRY TILE
(R)	RELOCATE
RAD	RADIUS
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REINF	REINFORCED
REQ'D	REQUIRED
RESIL	RESILIENT
RF	RESILIENT FLOORING
RM	ROOM
RO	ROUGH OPENING
RWL	RAIN WATER LEADER
S	SOUTH
S/D	SOAP DISPENSER
S/S	STAINLESS STEEL
SAB	SOUND ATTENUATION BLANKET
SAFB	SOUND ATTENUATION FIRE BLANKET
SC	SOLID CORE
SCD	SEAT COVER DISPENSER
SCHED	SCHEDULE
SD	STATIC DISSIPATIVE
SEC	SECURITY
SECT	SECTION
SEOR	STRUCTURAL ENGINEER OF RECORD
SF	SPECIAL FINISH / SQUARE FOOT / SQUARE FEET
SFRM	SPRAY FIRE-RESISTIVE MATERIAL
SG	SAFETY GLAZING
SH	SHELF
SHT	SHEET
SHTG	SHEATHING
SHWR	SHOWER
SIM	SIMILAR
SLT	SEALANT
SND	SANITARY NAPKIN DISPENSER
SNR	SANITARY NAPKIN RECEPTACLE
SOB	SYMBOL ON BACKGROUND
SPEC	SPECIFICATION
SQ	SQUARE
SS	SOLID SURFACE MATERIAL
SSD	SEE STRUCTURAL DRAWINGS
SSK	SERVICE SINK
ST	STONE
STA	STATION
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPENDED
T	TREAD
T&G	TONGUE AND GROOVE
TB	TOWEL BAR
TBD	TO BE DETERMINED
TCOM	TELECOMMUNICATION
TEL	TELEPHONE
TER	TERRAZZO
THK	THICK
TI	TILE
TOC	TOP OF CONCRETE
TOW	TOP OF WALL
TPD	TOILET PAPER DISPENSER
TR	TRANSITION
TV	TELEVISION
TYP	TYPICAL
UNF	UNFINISHED
UON	UNLESS OTHERWISE NOTED
UR	URINAL
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VNR	VENEER
W	WEST
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET / WALL COVERING
WD	WOOD
WF	WOOD FLOORING
WLD	WELDED
WO	WHERE OCCURS
WP	WATERPROOF
WP	WALL PANELING
WRB	WEATHER RESISTANT BARRIER
WS	WOOD SOLID
WT	WEIGHT / WINDOW TREATMENT
WV	WOOD VENEER

GENERAL NOTES

1. CONTRACT DOCUMENTS
THE CONTRACT DOCUMENTS ARE COMPLEMENTARY AND WHAT IS CALLED FOR BY ANY WILL BE AS BINDING AS IF CALLED FOR BY ALL. THE CONTRACT DOCUMENTS CONVEY THE DESIGN INTENT FOR THE PROJECT. THE CONTRACTOR SHALL CAREFULLY STUDY AND COMPARE THE CONTRACT DOCUMENTS AND SHALL COORDINATE THE WORK OF THE DOCUMENTS WITH THE WORK OF VENDOR PROVIDED INFORMATION ASSOCIATE WITH THE PROJECT. THE CONTRACTOR SHALL DISTRIBUTE COMPLETE CONTRACT DOCUMENTS TO PARTIES RESPONSIBLE FOR PERFORMING THE WORK SO THAT NO PARTY RECEIVES LIMITED INFORMATION.

2. COORDINATION OF THE WORK
THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR REVIEW AND VERIFICATION OF THE CONTRACT DOCUMENTS, FIELD CONDITIONS, VENDOR DESIGN DRAWINGS INCLUDING DELEGATED DESIGN WORK BY OTHERS, AND DIMENSIONS FOR ACCURACY AND FOR CONFIRMING THE WORK IS CONSTRUCTIBLE PRIOR TO PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL COORDINATE THE WORK WITH THE BUILDING OWNER SO AS NOT TO DISTURB OR CAUSE DAMAGE TO OTHER TENANT SPACES OR BUILDING AREAS. THE CONTRACTOR SHALL SECURE A CURRENT COPY OF PUBLISHED CONSTRUCTION/CONTRACTOR BUILDING GUIDELINES AND REGULATIONS FROM THE BUILDING MANAGEMENT AND COMPLY. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OF RECORD IN WRITING OF CONFLICTS AND OBTAIN A WRITTEN CLARIFICATION FROM THE ARCHITECT OF RECORD PRIOR TO PROCEEDING WITH THE WORK.

3. DIMENSIONS
DO NOT SCALE DRAWINGS. DIMENSIONS AND WORKPOINTS PROVIDED ARE TO STRUCTURAL GRID OR TO EXPOSED FACE OF A FINISH, UNLESS OTHERWISE NOTED. CONTRACTOR SHALL VERIFY DIMENSIONS WITH CONDITIONS IN THE FIELD AND SHALL SECURE WRITTEN RESOLUTION OF CONFLICTS FROM THE ARCHITECT PRIOR TO INITIATING THE WORK. DO NOT ADJUST DIMENSIONS INDICATED AS "CLEAR" OR "HOLD" WITHOUT WRITTEN DIRECTION FROM ARCHITECT. CONTRACTOR TO NOTIFY ARCHITECT OF ANY DIMENSIONS THAT DIFFER BY MORE THAN "1 INCH", INCLUDING THOSE MARKED "VIF" AND "+/-".

4. DELEGATED DESIGN WORK BY OTHERS
SYSTEMS INDICATED AS DELEGATED DESIGN SHALL BE ENGINEERED, AND STAMPED BY QUALIFIED PROFESSIONAL ENGINEERS LICENSED IN THE JURISDICTION OF THE WORK. IT IS THE RESPONSIBILITY OF THE ENGINEER OF RECORD FOR THESE SYSTEMS TO SECURE AGENCY APPROVALS, INCLUDING REQUIRED FEES ASSOCIATED WITH PERMIT APPROVAL. THESE SYSTEMS SHALL BE COORDINATED WITH THE CONTRACT DOCUMENTS AND SHALL COMPLY WITH APPLICABLE LEGAL REQUIREMENTS INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS UTILIZING PERFORMANCE AND DESIGN CRITERIA INDICATED IN THE CONTRACT DOCUMENTS.

DEFINITIONS

ALIGN	TO ACCURATELY LOCATE FINISH FACES IN THE SAME PLANE
CLEAR / CLR / HOLD	DIMENSIONS ARE ABSOLUTES, UNOBSTRUCTED FROM FACE OF EXPOSED FINISH SURFACES.
DEMOLISH	TO DECONSTRUCT COMPLETE SYSTEM, HAUL, AND DISPOSE OF MATERIAL, INCLUDING APPROPRIATE PULL BACK AND TERMINATION/CAPPING OF RELATED BUILDING SERVICES
SALVAGE	DIS-ASSEMBLE, CONVEY OR STORE MATERIAL PER OWNERS INSTRUCTIONS
REUSE	SALVAGE, STORE ON SITE, RE-INSTALL
INSTALL	ON-SITE OPERATIONS INCLUDING UNLOADING, TEMPORARY STORAGE, UN-PACKING, ASSEMBLY, PLACING, ANCHORING, APPLYING, FINISHING, PROTECTING, AND CLEANING COMPLETE AND OPERATIONAL ELEMENTS, EQUIPMENT, AND SYSTEMS
FURNISH	PROCURE AND STORE ON-SITE MATERIAL FOR INSTALLATION BY OTHERS
PROVIDE	FURNISH AND INSTALL COMPLETE AND OPERATIONAL SYSTEM
NOTIFY	TO INFORM THE STATED PARTIES IN WRITING AND SEEK RESOLUTION PRIOR TO COMENCING WORK

HAZARDOUS MATERIALS NOTES

- INTERIOR ARCHITECTS SHALL HAVE NO RESPONSIBILITY FOR THE DISCOVERY, REMOVAL, PRESENCE, HANDLING, DISPOSAL OF, OR EXPOSURE OF PERSONS TO HAZARDOUS SUBSTANCES, MATERIALS, AND WASTES IN ANY FORM AT THE PROJECT SITE, INCLUDING BUT NOT LIMITED TO: ASBESTOS, ASBESTOS PRODUCTS, PCB MOLD, OR OTHER TOXIC OR HARMFUL SUBSTANCES.
- QUESTIONS THAT ARISE RELATED TO HAZARDOUS MATERIALS SHALL BE REFERRED TO THE OWNER FOR RESOLUTION. INTERIOR ARCHITECTS SHALL NOT BE REQUIRED TO DO WORK NOR RENDER OPINIONS RELATED TO HAZARDOUS MATERIALS.
- CONTRACTORS SHALL REPORT THE PRESENCE OF MATERIAL OR ASSEMBLIES SUSPECTED TO CONTAIN HAZARDOUS MATERIALS UPON DISCOVERY TO THE OWNER. WORK SHALL BE HALTED UNTIL WRITTEN CLEARANCE TO CONTINUE HAS BEEN PROVIDED BY THE OWNER'S CERTIFIED HAZARDOUS MATERIALS CONSULTANTS.

FURNITURE, FLOOR CORE & LIGHTING COORDINATION

CONTRACTOR, FURNITURE VENDOR, DESIGN BUILD SUB-CONTRACTORS AND OWNER'S SUBCONTRACTORS ARE ALL REQUIRED TO USE THE ARCHITECTURAL DIMENSION WORK POINTS ESTABLISHED FOR OPEN PLAN PENDANT LIGHTING AND FURNITURE CENTERLINES WHERE APPLICABLE. CONTRACTOR AND VENDOR PREPARED SHOP DRAWINGS SHALL DOCUMENT THE ARCHITECTURAL DIMENSION WORK POINTS FOR THE ARCHITECT'S REVIEW PRIOR TO START OF WORK. FIELD LAYOUT REVIEW REQUESTED OF THE ARCHITECT MUST UTILIZE ON ESTABLISHED WORK POINTS. FLOOR CORE LOCATIONS SERVING FURNITURE ARE THE SOLE RESPONSIBILITY OF THE FURNITURE VENDOR, INCLUDING FIELD VERIFICATION OF LAYOUT CONSISTENT WITH THE FLOOR CORING REQUIREMENTS IDENTIFIED HEREIN.

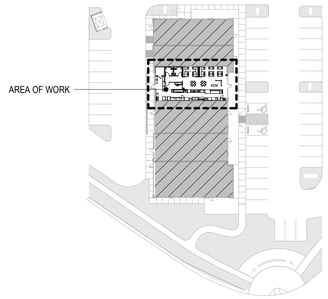
CODE REFERENCES

- 2018 INTERNATIONAL BUILDING CODE
- 2018 INTERNATIONAL EXISTING BUILDING CODE
- 2018 INTERNATIONAL MECHANICAL CODE
- 2018 INTERNATIONAL PLUMBING CODE
- 2018 INTERNATIONAL FIRE CODE
- 2018 INTERNATIONAL FUEL GAS CODE
- 2018 INTERNATIONAL ENERGY CONSERVATION CODE
- 2023 NATIONAL ELECTRIC CODE
- 2009 INTERNATIONAL PROPERTY MAINTENANCE CODE
- 2017 ICC A117.1 ACCESSIBLE AND USEABLE BUILDING AND FACILITIES
- LOCAL CODES AND ORDINANCES

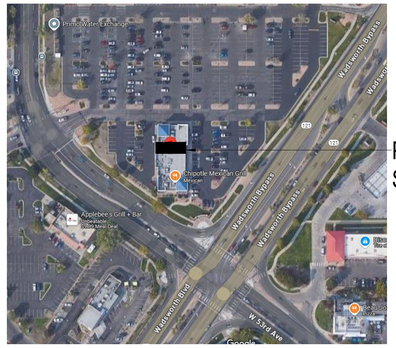
PROJECT MANUAL

IA'S PROJECT MANUAL IS HEREBY MADE A PART OF THE CONTRACT DOCUMENTS.

KEY PLAN



SITE LOCATION



PROJECT SITE

SYMBOLS

GRID NUMBER
STRUCTURAL GRID LINE
ROOM NAME / 101 / 150 SF — ROOM TAG
AREA NAME / 150 SF — AREA TAG
X'-X" — CEILING HEIGHT TAG (AFF)
1 / A8.6 SIM — SECTION REFERENCE
1 / A-8.6 SIM — DETAIL SECTION REF
1 View Name / 1/8" = 1'-0" — VIEW NUMBER, DRAWING SCALE
Ref 1 / A-7.0 / 1 Ref — ELEVATION VIEW REF, ELEVATION NUMBER ON SHEET, SHEET NUMBER
1 / A101 — AXON/PERSPECTIVE VIEW REF, VIEW NUMBER ON SHEET, SHEET NUMBER, VIEW DIRECTION
FINISH GRAIN DIRECTION
FINISH TRANSITION
BREAKLINE
DOUBLE BREAKLINE
℄ CENTERLINE SYMBOL
MATCHLINE — 1 / A101 VIEW / SHEET NUMBER FOR CORRESPONDING PLAN CONTINUATION

NOT IN CONTRACT
101 KEYNOTE
B01 A PARTITION TYPE (SEE PARTITION SCHEDULE), INSULATION TYPE, WHERE OCCURS
A GLAZING SYSTEM TYPE
REVISION CLOUD — CLOUD, DELTA
1 / A-8.6 ENLARGED CALLOUT ON SHEET, SHEET NUMBER, ZONE TO BE CALLED OUT
ALIGN — ALIGN
DATUM
TRUE NORTH / PLAN NORTH — NORTH ARROW
XX EQUIPMENT/ACCESSORY TAG
F-01 LIGHT FIXTURE / FURNITURE TAG
NEW 1HR FIRE RESISTANT RATED PARTITION
NEW 2HR FIRE RESISTANT RATED PARTITION
EXISTING 1HR FIRE RESISTANT RATED PARTITION
EXISTING 2HR FIRE RESISTANT RATED PARTITION

PROJECT INFORMATION

PROJECT ADDRESS:	5324 WADSWORTH BLVD SUITE C ARVADA, COLORADO 80002
PARCEL / PIN #:	39-141-13-020 / 300453481
PROJECT DESCRIPTION:	TENANT IMPROVEMENT IN SINGLE STORY BUILDING, INCLUDING CONSTRUCTION OF NON-STRUCTURAL PARTITIONS, CEILINGS, FINISHES, FURNITURE / EQUIPMENT AND ASSOCIATED MEP IMPROVEMENTS. WORK IS FOR RETAIL DESSERT CHAIN SELLING MILKSHAKES AND CHOCOLATE CANDIES; NO COOKING OR FOOD PREPARATION IS CONDUCTED ON SITE.
TYPE OF CONSTRUCTION:	IIB
BUILDING OCCUPANCY:	B
PROJECT AREA:	1,603 SF
BUILDING NO. OF STORIES:	1
AREA PER FLOOR:	9,700 SF
SEISMIC DESIGN CATEGORY:	B
BUILDING LIFE SAFETY INFO:	NON-SPRINKLERED
ADDITIONAL REQUIREMENTS:	1. ALL INTERIOR FINISHES SHALL COMPLY WITH THE REFERENCED CODE REQUIREMENTS FOR FLAMMABILITY AND SMOKE DEVELOPED RATINGS AS WELL AS TOXICITY. **WALL AND CEILINGS (PER ASTM E84 OR UL723)** INTERIOR EXIT STAIRWAYS, RAMPS AND EXIT PASSAGEWAYS B OCCUPANCY - CLASS A CORRIDORS AND ENCLOSURE FOR EXIT ACCESS STAIRWAYS AND RAMPS: B OCCUPANCY - CLASS B ROOMS AND ENCLOSED SPACES: B OCCUPANCY - CLASS C **FLOORING (PER ASTM E648 OR NFPA 253): CLASS II** CRITICAL RADIANT FLUX OF NOT LESS THAN 0.22 WATTS PER SQUARE CENTIMETER **FLAME SPREAD AND SMOKE-DEVELOPED INDEX** CLASS A: FLAME SPREAD: 0 - 25; SMOKE-DEVELOPED: 0 - 450 CLASS B: FLAME SPREAD: 26 - 75; SMOKE-DEVELOPED: 0 - 450 CLASS C: FLAME SPREAD: 76 - 200; SMOKE-DEVELOPED: 0 - 450
DEFERRED SUBMITTALS & DELEGATED DESIGN WORK BY OTHERS UNDER SEPARATE PERMIT:	

PROJECT DIRECTORY

ARCHITECT OF RECORD
INTERIOR ARCHITECTS, PC
STEPHEN FURNSTAHL
100 BROADWAY, 12TH FLOOR
NEW YORK CITY, NY 10005
212-682-6909
S.FURNSTAHL@INTERIORARCHITECTS.COM

IA PROJECT CONTACT:
INTERIOR ARCHITECTS, PC
PETER KOZLOSKI
615 S COLLEGE STREET, SUITE 725
CHARLOTTE, NC 28202
704-908-1559
P.KOZLOSKI@INTERIORARCHITECTS.COM

MEP ENGINEER
BARRETT WOODYARD & ASSOCIATES
HARRISON WARD
420 MINUET LANE
CHARLOTTE, NC 28217
704-965-0702
HWARD@BARRETTWOODYARD.COM

PM/CLIENT REP
REPM GROUP
CHADWICK BROWN
19924 JETTON ROAD, SUITE 203
CORNELIUS, NC 28031
1.423.612.1453
CHADWICK@REPMGROUP.COM

SHEET INDEX

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUE FOR CONSTRUCTION	2/20/2025

INTERIOR ARCHITECTS

DENVER
1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

Owner Approval

27MSHF.0030.000 — Job No.
As indicated — Scale

PROJECT INFORMATION

AN-1.0

2/19/2025 3:57:10 PM 23.7.1

RESPONSIBILITIES MATRIX

ITEM	PROVIDED BY: FRANCHISE OWNER	PROVIDED BY: LANDLORD	PROVIDED BY: GENERAL CONTRACTOR	PROVIDED BY: MILLWORK VENDOR	INSTALLED BY: FRANCHISE OWNER	INSTALLED BY: LANDLORD	INSTALLED BY: GENERAL CONTRACTOR	INSTALLED BY: MILLWORK VENDOR	EXISTING TO REMAIN	REMARKS
GENERAL										
BUILDING PERMITS & INSPECTIONS			•				•			
CONSTRUCTION BARRICADES (IF REQUIRED)			•				•			
BARRICADE PERMITS (IF REQUIRED)			•				•			
BARRICADE GRAPHICS (IF REQUIRED)			•				•			
DEMISING WALLS									•	11
DEMOLITION			•				•			
IN-WALL BLOCKING FOR DRYWALL PARTITIONS			•				•			
PROTECTION			•				•			
MISC. STEEL (IF REQUIRED)			•				•			
FLOOR LEVELING			•				•			
FIREPROOFING (IF REQUIRED)			•				•		•	1
ROOF PENETRATIONS			•				•		•	
CONCRETE FLOOR PATCHING & GRINDING			•				•			
SIGNAGE										
EXTERIOR LOGO SIGNAGE	•				•		•			6
BLADE SIGNS (IF REQUIRED)	•				•		•			6
INTERIOR LOGO SIGNAGE	•				•		•			6
TACTILE SIGNAGE (CODE REQUIRED)			•				•			
MENU BOARDS	•				•					
BRAND / MARKETING GRAPHICS	•				•					
DRYWALL & CARPENTRY										
DRYWALL PARTITIONS			•				•			
CAULKING			•				•			
CEILINGS										
CEILING PAINT			•				•			
ACOUSTIC SPRAY INSULATION			•				•			
SUSPENDED CEILINGS			•				•			
METAL & GLASS										
ORNAMENTAL METALS			•				•			
STOREFRONT									•	
ARCHITECTURAL GLASS / MIRRORS			•				•			
SNEEZE GUARDS			•				•			
MILLWORK										
SERVICE COUNTER			•	•			•			3
TRASH & STRAW CABINET				•			•			
MILK BOTTLE CEILING/WALL (WHERE OCCURS)				•			•			
BANQUETTE (WHERE OCCURS)	•				•					7
MILKSHAKE BAR (WHERE OCCURS)				•			•			
STANDING BAR (WHERE OCCURS)				•			•			
OFFICE DESK			•				•			
OFFICE SHELVING			•				•			
KITCHEN SHELVING			•				•			
CLOSET SHELVING (WHERE OCCURS)			•				•			
FLOORING										
RESILIENT FLOORING (LVT)			•				•			
CERAMIC TILE FLOORING & BASE			•				•			
QUARRY TILE FLOORING & BASE			•				•			
RESILIENT WALL BASE			•				•			
FLOORING TRANSITIONS			•				•			
WALL FINISHES										
PAINT			•				•			
WALL TILE			•				•			
FRP PANELS			•				•			
WALLCOVERING			•				•			
DOORS, FRAMES, AND HARDWARE										
INTERIOR DOORS & FRAMES			•				•			
INTERIOR DOOR HARDWARE			•				•			
STOREFRONT DOORS									•	
STOREFRONT DOOR HARDWARE									•	
REAR EXIT / SERVICE ENTRY DOOR & FRAME									•	
REAR EXIT / SERVICE ENTRY DOOR HARDWARE									•	5
SPECIALTIES & EQUIPMENT										
KITCHEN APPLIANCES & EQUIPMENT			•		•		•			4
WALK-IN COOLER	•		•		•		•			8
FREESTANDING STORAGE SHELVES			•		•					7
RESTROOM ACCESSORIES	•		•		•		•			9
FIRE EXTINGUISHERS & CABINETS			•				•			
TRASH RECEPTACLES	•				•					
POS TERMINALS	•				•					
COMPUTERS & MONITORS	•				•					
TELEPHONES	•				•					
PRINTER / COPIER	•				•					
FURNITURE										
DINING TABLES, CHAIRS, & STOOLS	•				•					
RETAIL DISPLAY TABLES	•				•					
QUEUE LINE STANCHIONS	•				•					
OFFICE CHAIR(S)	•				•					
OFFICE STORAGE CABINET(S)	•				•					
SAFE	•				•					
PLUMBING										
RESTROOM FIXTURES			•				•			
GREASE TRAP			•				•			
DISH SINK & FAUCETS	•						•			10
WATER HEATER			•				•			
FLOOR DRAINS & FLOOR SINKS			•				•			
DOMESTIC & SANITARY LINES			•				•			
MOP SINK & FAUCET			•				•			
HVAC / MECHANICAL										
AIR HANDLER / CONDENSING UNITS			•				•			
AIR SUPPLY			•				•			
DISTRIBUTION DUCTWORK			•				•			

ITEM	PROVIDED BY: FRANCHISE OWNER	PROVIDED BY: LANDLORD	PROVIDED BY: GENERAL CONTRACTOR	PROVIDED BY: MILLWORK VENDOR	INSTALLED BY: FRANCHISE OWNER	INSTALLED BY: LANDLORD	INSTALLED BY: GENERAL CONTRACTOR	INSTALLED BY: MILLWORK VENDOR	EXISTING TO REMAIN	REMARKS
HVAC / MECHANICAL (CONT'D)										
SUPPLY AND RETURN GRILLES			•				•			
TEMPERATURE CONTROLS / SENSORS			•				•			
DEHUMIDIFICATION SYSTEM			•				•			
ELECTRICAL										
INTERIOR LIGHT FIXTURES			•				•			
EXTERIOR LIGHT FIXTURES									•	
LIGHTING CONTROLS			•				•			
ILLUMINATED SIGNAGE			•				•			
ELECTRICAL PANELS			•				•		•	
DISTRIBUTION			•				•			
RECEPTACLES			•				•			
CONDUIT			•				•			
FIRE ALARM SYSTEM									•	
FIRE ALARM DEVICES			•				•			
LOW VOLTAGE										
DATA DEVICES	•				•					2
DATA CABLING	•				•					2
CONDUIT AND PULL STRING			•				•			
AUDIO VISUAL										
SPEAKERS	•				•					2
SOUND SYSTEM	•				•					2
IT										
WIRELESS ACCESS POINT(S)	•				•					2
NETWORK EQUIPMENT	•				•					2
IT RACK AND CABLES	•				•					2
EXTERIOR DESIGN										
N/A										1

NOTES:
1) GC to patch, repair, and/or replace any fireproofing damaged by construction activities.
2) Refer to Required & Preferred Vendors list.
3) Millwork panels by MilkShake Factory's National Millwork Vendor; Countertops by GC. GC to coordinate grommet holes in countertop with owner for all owner-provided equipment.
4) Coordinate with owner for specific owner-furnished items to be installed by GC. GC to hook up ice cream machines.
5) GC to provide and install doorbell and chime.
6) Signage to be provided and installed by MilkShake Factory's National Sign Vendor. GC to install power.
7) Provided in MilkShake Factory's equipment package. Installed/put in place by franchisee owner.
8) Provided by MilkShake Factory's National Equipment Vendor. GC's Electrician to provide and hook up to power.
9) Coordinate with owner for owner's vendor furnished and installed items. Refer to Accessories Schedule for additional info.
10) Provided by MilkShake Factory's Equipment Vendor. Installed by GC.
11) Site specific condition. Refer to architectural partition plan for possible demising wall work and responsibilities.

MILLWORK NOTES

1. BLOCKING
ALL BLOCKING REQUIRED SHALL BE SCRIBED TO WALL OR CEILING, G.C. TO CHECK JOB PROGRESS AND COORDINATE WITH OTHER TRADES INVOLVED. G.C. IS RESPONSIBLE FOR ALL BLOCKING REQUIRED; UNDER NO CIRCUMSTANCES WILL "EXTRA" WORK BE AUTHORIZED FOR EXTRA BLOCKING.

2. SHOP DRAWINGS
THE G.C. SHALL SUBMIT SHOP DRAWINGS AND SAMPLES TO THE ARCHITECT FOR REVIEW.

3. FIELD CONDITIONS
PRIOR TO THE START OF FABRICATION, THE G.C. SHALL CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS AT JOB SITE AND SHALL BE RESPONSIBLE FOR SAME.

4. JOINERY
WHERE MEMBERS ARE MITERED OR BUTTED, THEY SHALL BE JOINED AND SECURED IN A MANNER TO INSURE AGAINST THE JOINT OPENING.

5. FABRICATION
ALL OF THE WORK SHALL BE FABRICATED, ASSEMBLED, FINISHED, AND ERECTED IN THE BEST METHOD KNOWN TO THE CABINET TRADE. SURFACES SHALL BE TRUE, STRAIGHT, AND FREE FROM ALL MACHINE AND TOOLS MARKINGS, BRUISES, INDENTATIONS, CHIPS, OR ABRASIONS.

6. FIELD VERIFICATION
IT SHALL BE THE G.C.'S RESPONSIBILITY TO HAVE EXAMINED THE JOB SITE IN CONJUNCTION WITH THE PROJECT DOCUMENTS SO AS TO BE SATISFIED AS TO THE CONDITIONS UNDER WHICH THE WORK WILL BE PERFORMED, INCLUDING SUCH MATTERS AS UNLOADING FACILITIES, LOCATIONS AND SIZES OF ELEVATORS, EQUIPMENT, OR FACILITIES NEEDED PRELIMINARY TO AND DURING THE WORK, AND OTHER CONDITIONS WHICH MAY AFFECT THE WORK.

7. PROTECTION
THE G.C. SHALL MAINTAIN REASONABLE PROTECTION TO SAFEGUARD HIS WORK FROM DAMAGE AND TO PROTECT BUILDING OWNER'S PROPERTY FROM INJURY OR LOSS ARISING IN CONNECTION WITH ALL PROJECT WORK.

8. GUARANTEE
THE G.C. SHALL GUARANTEE THAT ALL MATERIALS AND WORKMANSHIP SHALL BE OF THE QUALITY SPECIFIED AND SHOWN AND THAT ANY DEFECT DUE TO IMPROPER WORKMANSHIP OR MATERIALS DISCOVERED AND MADE KNOWN WITHIN ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE INSTALLATION SHALL BE REPAIRED OR REPLACED WITH REASONABLE PROMPTNESS WITHOUT ADDITIONAL COST. ARCHITECT WILL GIVE NOTICE OF SUCH OBSERVED DEFECTS WITH REASONABLE PROMPTNESS.

9. INSTALLATION
G.C. SHALL SHIM AND LEVEL COUNTERTOPS ABOVE FILES AFTER FILES ARE INSTALLED BY OTHERS. FILES IN OPERATIONS AREA TO BE SHIMMED AND SECURED TO MILLWORK AFTER THEY ARE SET IN PLACE. G.C. TO LEVEL FLOOR UNDER FILES IN ALL AREAS WHERE FILES ARE GANGED OR INSTALLED BELOW FIXED CABINETRY. (PLASTIC LAMINATED SHIMS AS REQUIRED AT FILE CABINET AREA).

10. FINISH
ALL MILLWORK SHALL RECEIVE FINAL FINISH AT THE SHOP OR FACTORY PRIOR TO DELIVERY. G.C. SHALL PROTECT ALL FINISHED AND INSTALLED MILLWORK FROM DAMAGE BY OTHER TRADES. DAMAGED OR DEFECTIVE MILLWORK SHALL BE REPLACED BY THE G.C. AT HIS EXPENSE.

11. COORDINATION
MILLWORK CONTRACTOR TO COORDINATE LOCATION OF ELECTRICAL, TELEPHONE, AND COMMUNICATIONS OUTLETS AND INSTALL GROMMETS IN COUNTERTOP SURFACES AS REQUIRED TO CONCEAL CABLES.

12. SHELVING
NO UNBRACED LENGTH OF SHELVING AND OR COUNTER WORK SHALL EXCEED 3'-0" WITHOUT ADDITIONAL SUPPORTS AND OR BLOCKING. ALL END CONDITIONS SHALL BE PROPERLY BLOCKED AND OR SUPPORTED.

13. OVERHEAD CABINETS
ALL BLOCKING AND WOOD CLEATS FOR OVERHEAD CABINETS TO BE SCREWED AND SECURED TO FULL HEIGHT OR BRACED CEILING HEIGHT METAL STUDS AND WOOD GROUNDS.

14. WOOD ORIGINS:
ALL WOOD UTILIZED ON THE JOB (SOLID LUMBER AND TIMBER PANEL PRODUCTS PLUS FINISHED WOOD) SHALL ORIGINATE FROM REGIONAL SOURCES AND FROM CERTIFIED AND SUSTAINABLE SOURCES (SUCH AS SUSTAINABLE FORESTRY INITIATIVE, CSA, FORESTRY STEWARDSHIP COUNCIL, OR AMERICAN TREE FARM SYSTEMS).

15. ADHESIVES & SEALANTS:
THE VOC CONTENT OF ADHESIVES AND SEALANTS USED SHALL BE LESS THAN THE CURRENT VOC CONTENT LIMITS OF SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) RULE #1168, AND ALL SEALANTS USED AS FILLERS SHALL MEET OR EXCEED THE REQUIREMENTS OF THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT REGULATION 8, RULE 51.

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DEMOLITION NOTES

1. SUMMARY
WORK NECESSARY FOR COMPLETE DEMOLITION INCLUDES FURNISHING LABOR FOR DEMOLITION, REMOVAL OF DEBRIS, PATCHING AS REQUIRED, CONTROL DUST, AND NECESSARY PERMITS.

2. HAZARDOUS MATERIALS
IF ASBESTOS OR OTHER HAZARDOUS MATERIALS ARE DISCOVERED DURING CONSTRUCTION THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING, THEN WAIT FOR DIRECTION FROM THE OWNER. OTHER MATERIALS AND WASTE IN ANY FORM AT THE PROJECT SITE MAY BE LOCATED ON THE PROJECT SITE, WHICH MAY INCLUDE, BUT NOT BE LIMITED TO ACBM, PCB'S OR OTHER TOXIC SUBSTANCES.

3. SCHEDULE
SUBMIT SCHEDULE INDICATING PROPOSED SEQUENCE OF OPERATIONS FOR SELECTIVE DEMOLITION WORK TO ARCHITECT AND THEIR CONSULTANTS, AND THE OWNER'S REPRESENTATIVE CITY BUILDING OFFICIALS, AND BUILDING MANAGEMENT FOR REVIEW. INCLUDE COORDINATION FOR SHUT OFF, CAPPING, AND CONTINUATION OF UTILITY SERVICES AS REQUIRED TOGETHER WITH DETAILS FOR DUST AND NOISE CONTROL. PROVIDE DETAILED SEQUENCE OF DEMOLITION, FLOOR BY FLOOR, AND REMOVAL WORK TO ENSURE UNINTERRUPTED PROGRESS OF OWNER'S ON-SITE OPERATIONS, AND BUILDING OPERATIONS.

4. CONDITION OF STRUCTURES
OWNER ASSUMES NO RESPONSIBILITY FOR ACTUAL CONDITION OF ITEMS OR STRUCTURES TO BE DEMOLISHED. CONDITIONS EXISTING AT THE TIME OF COMMENCEMENT OF CONTRACT WILL BE MAINTAINED BY OWNER INSOFAR AS PRACTICAL. VARIATIONS WITHIN STRUCTURE MAY OCCUR BY OWNER'S REMOVAL AND SALVAGE OPERATIONS PRIOR TO START OF SELECTIVE DEMOLITION WORK.

5. PARTIAL DEMOLITION AND REMOVAL
STORAGE OF REMOVED ITEMS WILL BE PERMITTED AS DIRECTED BY THE OWNER.

6. PROTECTIONS
PROVIDE PROTECTIVE BARRICADES, PROTECTIVE CANOPIES, AND OTHER FORMS OF PROTECTION AS REQUIRED TO PROTECT OWNER'S PERSONNEL AND GENERAL PUBLIC FROM INJURY DUE TO SELECTIVE DEMOLITION WORK.
PROVIDE PROTECTIVE MEASURES AS REQUIRED TO PROVIDE FREE AND SAFE PASSAGE OF OWNER'S PERSONNEL, TENANT, THEIR EMPLOYEES AND THEIR INVITEES, AND GENERAL PUBLIC TO AND FROM OCCUPIED PORTIONS OF BUILDING. PROTECT FROM DAMAGE EXISTING FINISH WORK THAT IS TO REMAIN IN PLACE AND BECOMES EXPOSED DURING DEMOLITION OPERATIONS. PROTECT FLOORS WITH SUITABLE COVERINGS WHEN NECESSARY. CONSTRUCT TEMPORARY INSULATED SOLID DUST PROOF PARTITIONS WHERE REQUIRED TO SEPARATE AREAS WHERE NOISY OR EXTENSIVE DIRT OR DUST OPERATIONS ARE PERFORMED. EQUIP PARTITIONS WITH DUST PROOF DOORS AND SECURITY LOCKS IF REQUIRED. ROVIDE TEMPORARY WEATHER PROTECTION WHEN APPLICABLE DURING INTERVAL BETWEEN DEMOLITION AND REMOVAL OF EXISTING CONSTRUCTION ON EXTERIOR SURFACES AND INSTALLATION OF NEW CONSTRUCTION TO ENSURE THAT NO WATER LEAKAGE OR DAMAGE OCCURS TO STRUCTURE OR INTERIOR AREAS OF EXISTING BUILDING. REMOVE PROTECTIONS AT COMPLETION OF WORK.

7. DAMAGES
PROMPTLY REPAIR DAMAGES CAUSED TO ADJACENT FACILITIES BY DEMOLITION WORK AT NO ADDITIONAL COST TO OWNER.

8. TRAFFIC
CONDUCT SELECTIVE DEMOLITION OPERATIONS AND DEBRIS REMOVAL IN A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES.

9. UTILITY SERVICES
MAINTAIN EXISTING FIRE PROTECTION SYSTEM AND UTILITIES TO REMAIN, KEEP IN SERVICE, IDENTITY, AND PROTECT AGAINST DAMAGE DURING DEMOLITION OPERATIONS. PROVIDE TEMPORARY LIGHT AND POWER AS REQUIRED. SEE DRAWINGS FOR EXISTING STANDPIPE LOCATIONS. REMOVAL OF ANY EQUIPMENT, CABLING SWITCHES, AND CONDUIT PERTAINING TO DATA/COMMUNICATIONS AND TELEPHONE SHALL BE VERIFIED WITH TELEPHONE COMPANIES SERVICE OWNER OR TENANT DATA/COMMUNICATIONS REPRESENTATIVE AS REQUIRED TO PREVENT NEW CONSTRUCTION DELAYS. REMOVE TO SOURCE ALL PIPES, VENTS, APPLIANCES, OR DRAINS NOT BEING RE-USED.

10. ENVIRONMENTAL CONTROLS
USE TEMPORARY ENCLOSURES AND OTHER SUITABLE METHODS TO ISOLATE DUST AND DIRT RISING AND SCATTERING. COMPLY WITH BUILDING MANAGEMENT REGULATIONS AND GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.

11. INSPECTION
PRIOR TO COMMENCEMENT OF SELECTIVE DEMOLITION WORK, INSPECT AREAS IN WHICH WORK WILL BE PERFORMED IF NECESSARY. PHOTOGRAPH EXISTING CONDITIONS TO STRUCTURE SURFACES, EQUIPMENT, OR TO SURROUNDING PROPERTIES WHICH COULD BE MISCONSTRUCTED AS DAMAGE RESULTING FROM DEMOLITION WORK. FILE WITH OWNER PRIOR TO STARTING WORK.

12. PREPARATION
CONTRACTOR IS SOLELY RESPONSIBLE FOR ANY INTERIOR AND EXTERIOR SHORING, BRACING, OR SUPPORT TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF STRUCTURES TO BE DEMOLISHED AND ADJACENT FACILITIES TO REMAIN. WORK SHALL BE DONE UNDER THE SUPERVISION OF A LICENSED STRUCTURAL ENGINEER PROVIDED BY THE CONTRACTOR AT THE PROJECT SITE.

CONTRACTOR SHALL CEASE OPERATIONS AT HIS/HER DISCRETION AND NOTIFY OWNER AND BUILDING MANAGEMENT IMMEDIATELY IF SAFETY OF STRUCTURE APPEARS TO BE ENDANGERED. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS AS DIRECTED BY THE CONTRACTORS LICENSED STRUCTURAL ENGINEER TO SAFELY SUPPORT THE STRUCTURE UNTIL A DETERMINATION IS MADE FOR CONTINUING THE WORK AS DIRECTED BY THE CONTRACTOR'S LICENSED STRUCTURAL ENGINEER.TAKE PRECAUTIONS TO SUPPORT STRUCTURE UNTIL DETERMINATION IS MADE FOR CONTINUING OPERATIONS. CONTRACTOR IS SOLELY RESPONSIBLE FOR DEMOLITION MEANS AND METHODS.

13. COVER AND PROTECT
COVER AND PROTECT FURNITURE, EQUIPMENT AND FIXTURES, AND OTHER ITEMS TO REMAIN FROM SOILING OR DAMAGE WHEN DEMOLITION WORK IS PERFORMED IN ROOMS OR AREAS FROM WHICH SUCH ITEMS HAVE BEEN REMOVED.

14. CLEAN UP
AT COMPLETION OF DEMOLITION WORK, THE CONSTRUCTION AREAS SHALL BE LEFT IN BROOMED AND CLEAN CONDITION. CARPETED AREAS TO BE LEFT IN A VACUUM CLEAN CONDITION. VINYL FLOORING SHALL BE DAMP MOPPED AT THE END OF EACH WORK DAY. ALL DEBRIS AND MISCELLANEOUS MATERIAL SHALL BE REMOVED AT THE END OF EACH WORK DAY.

15. EXISTING ELECTRICAL
IN PARTITIONS TO BE REMOVED, REMOVE AND CAP ALL OUTLETS, SWITCHES, WIRES, THERMOSTATS, ETC. TO THEIR SOURCE AS REQUIRED. ALL EXISTING FLOOR MOUNTED OUTLETS, WHERE NOTED TO BE REMOVED OR RELOCATED, SHALL BE CAPPED OFF TO THE NEAREST JUNCTION BOX. FILL AND LEVEL FLOOR TO ACCEPT NEW FLOOR COVERING. REMOVAL OF ANY EQUIPMENT, CABLING SWITCHES, AND CONDUIT PERTAINING TO DATA/COMMUNICATIONS AND TELEPHONE SHALL BE VERIFIED WITH TELEPHONE COMPANIES, SERVICE OWNER, OR TENANT DATA/COMMUNICATIONS REPRESENTATIVE AS REQUIRED TO PREVENT NEW CONSTRUCTION DELAYS.

16. PATCHING
CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING AND/OR REPAIRING ANY DAMAGE CAUSED BY HIM OR HIS SUBCONTRACTORS TO EXISTING CONSTRUCTION IN ELEVATOR LOBBY, PUBLIC CORRIDORS, RESTROOMS, OR TENANT SPACES. REFINISH TO MATCH EXISTING ADJACENT FINISH, OR AS NOTED HEREIN.

17. PIPES AND VENTS
REMOVE TO SOURCE ALL ANCILLARY PIPES, VENTS, APPLIANCES AND DRAINS SCHEDULED FOR DEMOLITION. WHERE APPLICABLE, CAP AT RISER AND FIRESAFE PER UL EXISTING PENETRATIONS.

18. FLOORING
REMOVE ALL EXISTING IRREGULAR MATERIALS WHICH CAUSE RISES AND DEPRESSIONS IN FLOORING SURFACE, SUCH AS FASTENERS, OUTLET CORES, COVER PLATES, RESILIENT FLOOR COVERINGS, CARPET, CARPET PAD, FLASH PATCH, CONCRETE FILL, PLYWOOD, ETC.

19. WALL COVERING
SHOULD PAPER LAYER OF EXISTING GYP BD BE DAMAGED, REMOVE AND REPLACE EXISTING GYP BD AT SCHEDULED WALL COVERING REMOVAL, LOCATIONS.

20. DEMOLITION
DEMOLITION IS NOT NECESSARILY LIMITED TO WHAT IS SHOWN ON DRAWINGS. THE INTENT IS TO INDICATE THE GENERAL SCOPE OF DEMOLITION REQUIRED TO COMPLETE THE WORK HEREIN. IF QUESTIONS ARISE AS TO THE REMOVAL OF ANY MATERIAL IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, CLARIFY THE POINT IN QUESTION WITH THE ARCHITECT BEFORE PROCEEDING.

21. STAIRWAYS & EXITS
STAIRWAYS AND/OR EXIT DOORS MUST REMAIN ACCESSIBLE INCLUDING A CLEAR PATH OF EGRESS AT ALL TIMES DURING DEMOLITION.

22. GRAPHICS
REMOVE EXISTING SIGNAGE/GRAPHICS AND STORE FOR RE-USE WHERE APPLICABLE.

23. FIRE AND LIFE SAFETY SYSTEM
NO EXISTING SMOKE DETECTOR, PUBLIC ADDRESS SPEAKER, FIRE ALARM BOX, OR SIMILAR DEVICE, INCLUDING THE ASSOCIATED WIRING, SHALL BE DAMAGED DURING DEMOLITION AND SUBSEQUENT CONSTRUCTION. RELOCATION OF SMOKE DETECTORS, PUBLIC ADDRESS SPEAKERS, AND FIRE ALARM EQUIPMENT, NECESSITATED BY NEW CONSTRUCTION, SHALL BE ACCOMPLISHED AS A FIRST PRIORITY, AND PER THE PLANS. NO ACTIVE SMOKE DETECTOR SHALL BE COVERED OR OTHERWISE REMOVED OR USED FOR OTHER THAN ITS INTENDED PURPOSE.

24. CONSTRUCTION WASTE MANAGEMENT:
WHERE LOCAL GREEN BUILDING ORDINANCE DOES NOT DICTATE TO THE CONTRARY AND LEED CERTIFICATION IS NOT REQUIRED BY THE OWNER, REDIRECT CONSTRUCTION, DEMOLITION & PACKAGING DEBRIS TO SOURCES OTHER THAN LANDFILL. STRATEGIES MAY INCLUDE:
REDIRECT PACKAGING DEBRIS BACK TO THE MANUFACTURER, DONATE SALVAGEABLE MATERIALS TO A RECLAMATION SITE OR NON-PROFIT CHARITY SUCH AS HABITAT FOR HUMANITY, DESIGNATE RECYCLING AREAS DURING DEMOLITION AND CONSTRUCTION, IDENTIFY CONSTRUCTION HAULERS & RECYCLERS TO HANDLE THE DESIGNATED MATERIALS AS INTENDED, CONTACT A REGIONAL CARPET RECLAMATION FACILITY FOR SALVAGE OF CARPETING

PARTITION PLAN NOTES

1. DIMENSIONS
DO NOT SCALE DRAWINGS, WRITTEN DIMENSIONS GOVERN. ALL PARTITION LOCATIONS SHALL BE AS SHOWN ON PARTITION PLAN. IN CASE OF CONFLICT, NOTIFY ARCHITECT. PARTITION PLAN BY ARCHITECT TAKES PRECEDENCE OVER ALL OTHER PLANS.

2. PARTITIONS
ALL GYPSUM BOARD PARTITIONS SHALL BE TAPED AND SANDED SMOOTH WITH NO VISIBLE JOINTS OR LINES. ALL SCREWS OR OTHER ATTACHMENT DEVICES SHALL BE PATCHED AND NOT VISIBLE. PATCH AND REPAIR SURFACES TO MATCH ADJACENT OR ADJOINING SURFACES WHERE REQUIRED. ALL SURFACES SHALL BE ALIGNED AND SANDED SMOOTH.

3. DIMENSION REFERENCE POINTS
ALL PARTITIONS ARE DIMENSIONED FROM FINISH FACE OF GYPSUM BOARD TO FINISH FACE OF GYPSUM BOARD, U.O.N. ALL DIMENSIONS MARKED "CLEAR" OR "CLR" SHALL BE MAINTAINED AND SHALL ALLOW FOR THICKNESS OF ALL WALL FINISHES, U.O.N.

ALL DIMENSIONS TO THE EXTERIOR WINDOW WALL ARE TO THE INSIDE FACE OF WINDOW FRAME ASSEMBLY, U.O.N.

4. CLEAR DIMENSIONS
DIMENSIONS NOTED "CLEAR" OR "CLR" MUST BE ACCURATELY MAINTAINED, AND SHALL NOT VARY MORE THAN ±1/8" WITHOUT WRITTEN INSTRUCTION FROM ARCHITECT.

5. DIMENSION TOLERANCES
DIMENSIONS TOLERANCES SHALL NOT EXCEED (LOCAL JURISDICTION CODE DEFINED CRITERIA). VERIFY FIELD DIMENSIONS EXCEEDING TOLERANCE WITH THE ARCHITECT AND SECURE ARCHITECT'S APPROVAL.

6. DISCREPANCIES
NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES OR CONFLICTS IN THE LOCATION(S) OF NEW CONSTRUCTION. UPON COMPLETION OF PARTITION OF THE LAYOUT, NOTIFY THE ARCHITECT. VERIFICATION OF THE LAYOUT TO BE PROVIDED BY THE ARCHITECT PRIOR TO PARTITION INSTALLATION. FOR BID PRICING, G.C. TO PRICE HIGHER OPTION REQUIRED BY ANY DISCREPANCY NOTED IN CONTRACT DOCUMENTS. NOTIFY ARCHITECT FOR FINAL SCOPE DECISION FOR THESE ITEMS PRIOR TO PURCHASING.

7. EXPOSED EDGES
ALL EXPOSED GYPSUM BOARD EDGES TO RECEIVE CONTINUOUS TAPE-ON METAL CORNER BEAD.

8. ALIGNMENT
ALL WORK SHALL BE ERECTED AND INSTALLED PLUMB, LEVEL, SQUARE AND TRUE, AND IN PROPER ALIGNMENT.

"ALIGN" MEANS TO ACCURATELY LOCATE FINISHED FACES IN THE SAME PLANE.

9. MILLWORK
REFER TO MILLWORK SHOP DRAWINGS FOR SPECIFIC DETAILS OF COORDINATION BETWEEN DRYWALL/MILLWORK CONDITIONS.

10. NOTES AND REFERENCES
REFER TO SHEET A-1.0 FOR ADDITIONAL NOTES, LEGENDS, SYMBOLS, ABBREVIATIONS, AND SCHEDULES.

11. ARCHITECT APPROVAL
OBTAIN APPROVAL FROM ARCHITECT PRIOR TO MODIFYING COLUMN FURRING, RELOCATING PIPES, AND SIMILAR SYSTEMS AND ITEMS, ADJUSTING ANY AND ALL OTHER FIELD CONDITIONS REQUIRED TO FIT PLANS.

12. SLAB WORK
ALL EXISTING AND NEW UL RATED FLOOR SLAB PENETRATIONS FOR PIPING AND CONDUIT SHALL BE FULLY PACKED AND SEALED IN ACCORDANCE WITH THE APPLICABLE BUILDING AND FIRE CODES.

13. DOOR CLEARANCES
TRIM THE BOTTOMS OF DOORS TO CLEAR THE TOP OF FINISHED FLOOR, AS APPLICABLE, BY 1/4" INCH MAXIMUM, U.O.N. VERIFY SLAB CONDITIONS AND TRIM EACH DOOR TO FIT CONDITIONS. WHERE RADICAL VARIATIONS IN FLOOR ELEVATION EXIST, DOORS SHALL BE ORDERED WITH BOTTOM STILE SIZED TO ACCOMMODATE THESE UNDERCUT CONDITIONS.

14. GLASS WORK
ALL GLASS SHALL BE CLEAR TEMPERED GLASS, U.O.N. GLAZING TONG MARKS SHALL NOT BE VISIBLE. CLEAN AND POLISH ALL GLASS PRIOR TO PROJECT DELIVERY.

15. CEILING HEIGHT PARTITIONS
CEILING HEIGHT PARTITIONS (WHERE OCCURS) SHALL BE INSTALLED TIGHT TO FINISHED CEILING; WITH NO JOINTS VARYING MORE THAN 1/8" OVER 6'-0" AND NO JOINTS GREATER THAN 3/16", U.O.N.

16. DOOR DIMENSIONS
DIMENSIONS LOCATING DOORS ARE TO THE INSIDE EDGE OF JAMB, U.O.N.

ALL INTERIOR DOORS SHALL HAVE MIN. 1'-6" CLEAR ON STRIKE/PULL SIDE OF DOOR UON. VERIFY AND ADVISE ARCHITECT OF EXCEPTIONS PRIOR TO CLOSING OUT PARTITIONS. ALL EXTERIOR DOORS TO HAVE 2'-0" CLEAR ON STRIKE/PULL SIDE OF DOOR U.O.N.

17. MILLWORK
ALL MILLWORK TO BE FASTENED TO THE PARTITION. PROVIDE BLOCKING FOR ALL MILLWORK NOT SUPPORTED BY SLABS OR ABOVE 4'-0" HEIGHT. ALL CONCEALED LUMBER AND BLOCKING TO BE FIRE TREATED.

18. WHERE NOT STATED IN THE SHEET SPECIFICATIONS AND THERE IS NO PROJECT MANUAL, AT A MINIMUM PROVIDE SHOP DRAWINGS FOR:
A. MILLWORK
B. DOORS/FRAMES/HARDWARE
C. GLAZING
D. LIGHT FIXTURES & CONTROLS
E. SPECIAL CONSTRUCTION

19. PATCH AND REPAIR
AT ALL PERIMETER CONDITIONS WHERE DEMO OCCURS SHALL BE PATCHED AND REPAIRED. ALL EXISTING WALLS DAMAGED SHALL BE REPAIRED AS REQUIRED TO RECEIVE SCHEDULED FINISH.

20. GYPSUM WALLBOARD ASSEMBLIES:
WHERE LOCAL GREEN BUILDING ORDINANCE DOES NOT DICTATE TO THE CONTRARY AND LEED CERTIFICATION IS NOT REQUIRED BY THE OWNER;
STEEL FRAMING: MINIMUM RECYCLED CONTENT SHALL INCLUDE 25% POST-CONSUMER RECYCLED CONTENT LAMINATING ADHESIVE: ADHESIVE OR JOINT COMPOUND RECOMMENDED FOR DIRECTLY ADHERING GYPSUM PANELS TO CONTINUOUS SUBSTRATE. ADHESIVES SHALL HAVE A VOC CONTENT OF 50 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).
GYPSUM WALLBOARD: RECYCLED CONTENT SHOULD BE A PRIORITY, LOCALLY MANUFACTURED PRODUCTS SHALL BE SOURCED WHERE POSSIBLE.

21. EQ STUDS:
ALL LIGHT GAGE COLD FORMED METAL FRAMING SHALL MEET OR EXCEED PROPERTIES SPECIFIED FOR THE CORRESPONDING MEMBER SIZE IN STEEL MANUFACTURERS ASSOCIATION [SSMA] PRODUCT TECHNICAL INFORMATION [ICC-ES REPORT NO. ER-4943P] AND SHALL COMPLY WITH APPLICABLE AMERICAN SOCIETY FOR TESTING AND MATERIALS, AMERICAN IRON AND STEEL INSTITUTE S100 AND SPECIFIED TRUE GAGE FLAT STEEL MIL THICKNESS THAT ONLY TRUE GAUGE FLAT STEEL CAN SATISFY. USE OF "EFFECTIVE THICKNESS" COLD REDUCED AFTERMARKET EQUIVALENT PRODUCT (EQ) STUDS FURNISHED BY EQ STUD MANUFACTURERS, VENDORS OR SUPPLIERS MAY BE PERMITTED PENDING REVIEW OF THE FOLLOWING MATERIAL PROVIDED THROUGH A FORMAL SUBSTITUTION REQUEST.

"EQ" TYPE STUDS WILL BE ACCEPTED AS A SUBSTITUTION FOR THE SPECIFIED STANDARD STUDS (PER SSMA STANDARDS), AT NOTED LOCATIONS AND APPLICATIONS, SUBJECT TO THE FOLLOWING CONDITIONS. SUBMISSION OF DOCUMENTATION IS REQUIRED FOR FURTHER REVIEW.

GENERAL
A. STEEL REQUIREMENTS:
B. 50 KSI (MINIMUM)
C. HOT-DIPPED GALVANIZED:
D. INTERIOR TENANT IMPROVEMENT PARTITION, CEILING AND SOFFIT FRAMING - G40 ASTM 645 (U.O.N.)
E. INTERIOR WET / DAMP LOCATIONS (SUCH AS PLUMBING CHASES) - G60 ASTM 645
F. EXTERIOR LOCATIONS - G90 ASTM 645
G. GALVANIC PAINT WILL NOT BE ACCEPTED

ACCEPTED MANUFACTURERS INCLUDE:
A. SFIA MEMBERS
B. CLARK DIETRICH

SUBMITTALS
A. UL DESIGN ASSEMBLIES MEETING FIRE RATING REQUIREMENTS WITH LISTED EQ STUD MANUFACTURERS.
B. STUD SPAN TABLES, WITH STUD TYPES, GAGES AND PARTITION TYPES INDICATED, STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF THE PROJECT IF THEY ARE NOT SSMA TABLES.
C. CATALOG INFORMATION AND PRODUCT DATA WITH COATINGS AND STEEL STRENGTH IDENTIFIED.
D. SUBMITTAL LETTER FROM THE MANUFACTURER CERTIFYING COMPLIANCE WITH THE LATEST ASTM C645 EDITION, SFIA MEMBERSHIP, AND PRODUCT DATA WITH COATINGS AND STEEL STRENGTH TO BE PROVIDED.
E. THIRD PARTY CERTIFICATION AND EVALUATION REPORT.

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUE FOR CONSTRUCTION	2/20/2025

INTERIOR ARCHITECTS

DENVER
1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

Owner Approval

Job No.	Scale
27MSHF.0030.000	1/8" = 1'-0"

GENERAL NOTES

AN-2.0

POWER AND SIGNAL PLAN NOTES

1. OVERTIME WORK
WHEN FLOOR BELOW IS OCCUPIED, PRICE EXTENSIVE FLOOR SLAB PENETRATIONS AND/OR CORING ON AN OVERTIME BASIS.

ALL CORE AND/OR FLOOR TRENCHING FOR TELEPHONE/ELECTRICAL CONDUITING SHALL BE PERFORMED AFTER HOURS AS REQUIRED AND COORDINATED WITH BUILDING OWNER FOR APPROVAL.

2. COORDINATION OF THE WORK
SURVEY FIELD CONDITIONS AND VERIFY THAT WORK IS FEASIBLE AS SHOWN. VERIFY LOCATION OF FLOOR OUTLETS AND OTHER OUTLETS IN RELATION TO STRUCTURAL AND OTHER ELEMENTS AS REQUIRED. NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.

ELECTRICAL SWITCH AND OUTLET COVER PLATES, SURFACE HARDWARE, ETC., SHALL BE INSTALLED AFTER PAINTING AND/OR APPLICATION OF WALLCOVERINGS AND CARPET SPECIFIED.

3. OUTLET LOCATIONS
ARCHITECTURAL DRAWINGS DETERMINE LOCATION AND TYPE (ARCHITECT TO VERIFY WITH ENGINEER) OF ALL OUTLETS AND TAKE PRECEDENCE OVER ALL OTHERS, U.O.N. ELECTRICAL ENGINEER'S POWER PLAN SHALL GOVERN THE WIRING LAYOUT AND INSTALLATION IN COMPLIANCE WITH ALL LAWS APPLICABLE AND ENFORCED BY GOVERNING AUTHORITIES.

4. WALL MOUNTED OUTLETS
OUTLETS SHOWN BACK TO BACK ON PARTITION WALLS SHALL BE OFFSET 1'-0" MAXIMUM, OR MOUNTED AT DIFFERENT HEIGHTS IF INDICATED.

5. FURNITURE LAYOUT
FURNITURE, IF SHOWN, IS FOR REFERENCE ONLY AND IS NOT IN CONTRACT, U.O.N.

6. EQUIPMENT COORDINATION
COORDINATE ALL WORK RELATED TO EQUIPMENT WITH MANUFACTURER'S RECOMMENDATIONS, SPECIFICATIONS, AND INSTRUCTIONS.

7. EXISTING FLOOR PENETRATIONS
ALL EXISTING AND NEW UL RATED FLOOR SLAB PENETRATIONS FOR CONDUIT SHALL BE FULLY PACKED AND SEALED IN ACCORDANCE WITH THE APPLICABLE BUILDING AND FIRE CODES.

8. OUTLET FINISHES
REFER TO FINISH PLAN FOR OUTLET AND SWITCH COVERPLATE FINISH. VERIFY SELECTION AND CHOICE WITH THE ARCHITECT PRIOR TO ORDERING MATERIALS.

9. ELECTRICAL COORDINATION
COORDINATE NEW ELECTRICAL WITH EXISTING, WHERE OCCURS.

10. OUTLET LAYOUT
UPON COMPLETION OF OUTLET LAYOUT, NOTIFY THE ARCHITECT. ARCHITECT SHALL SITE VERIFY ALL OUTLET LOCATIONS PRIOR TO COMMENCEMENT OF CORING OR OUTLET INSTALLATION. G.C. TO PROVIDE AND INSTALL COVER PLATES FOR ALL WALL MOUNTED ELECTRICAL AND COMMUNICATIONS OUTLETS.

11. UL RATED ASSEMBLIES
FURNISH AND INSTALL UNDERWRITERS LABORATORIES, INC. (UL) LABELED DEVICES THROUGHOUT.

12. MOUNTING HEIGHTS
INSTALL WALL MOUNTED OUTLETS 18 INCHES ABOVE FINISHED FLOOR, U.O.N. HEIGHTS SHALL BE DETERMINED FROM FINISHED FLOOR TO THE CENTERLINE OF COVERPLATE, INSTALLED VERTICALLY, GROUNDING POLE AT BOTTOM, U.O.N. OUTLETS MOUNTED HIGHER THAN 27" SHALL BE INSTALLED HORIZONTALLY, GROUNDING POLE AT LEFT, U.O.N. FOURPLEX OUTLETS TO BE INSTALLED VERTICALLY, U.O.N.

13. HORIZONTAL CLEARANCES
MAINTAIN A 4-INCH HORIZONTAL CLEARANCE IN ALL DIRECTIONS, MIN. FROM EDGE OF COVERPLATE, FOR WALL MOUNTED OUTLETS, OR FROM EDGE OF MONUMENT FOR FLOOR MOUNTED OUTLETS, WHEN ADJACENT TO A WALL, COLUMN, OR SIMILAR ELEMENTS, U.O.N.

14. DIMENSIONS
INDICATED DIMENSIONS ARE TO THE CENTER OF THE COVERPLATE OR MONUMENT; CLUSTERS OF OUTLETS ARE DIMENSIONED TO THE CENTER OF THE CLUSTER, U.O.N.; GANG COVERPLATES SHALL BE ONE-PIECE TYPE, U.O.N.

15. CABINETRY
OUTLETS INSIDE AND/OR ATTACHED TO CABINETRY SHALL BE FURNISHED AND INSTALLED TO MATCH SIMILAR CONDITIONS SUCH AS WALL, FLOOR, AND THE LIKE. FURNISH AND INSTALL BOX EXTENSION OR OTHER APPROPRIATE DEVICES AS REQUIRED. ADJACENT OUTLETS SHALL NOT BE GREATER THAN 6" O.C. APART, U.O.N.

16. PANEL BOARDS
CIRCUIT BREAKERS SHALL BE NEATLY TAGGED AND NUMBERED BY G.C. TO CORRESPOND WITH CIRCUITING OUTLINED ON ENGINEERING DRAWINGS.

17. DATA AND RECEPTACLES
ALL WALL MOUNTED DATA AND VOICE RECEPTACLES TO HAVE 3/4" CONDUIT STUB UP AND TERMINATED 6" ABOVE HUNG CEILING.

18. MILLWORK
THE G.C. SHALL COORDINATE ANY ELECTRICAL WORK OR LIGHTING INSTALLATION INTO CABINET WORK IF AND AS REQUIRED.

19. PULL STRINGS
G.C. TO PROVIDE PULL STRINGS IN ALL EMPTY CONDUIT.

20. SLAB ON GRADE
WHERE FLOOR OUTLETS ARE SHOWN AT SLAB ON GRADE LOCATIONS, SAW CUT AND DEMO EXISTING SLAB AS REQUIRED FOR NEW WORK. EXPOSE (E) SLAB REINFORCING 1'-0" MIN. BACK FROM EA. SAWCUT. PROVIDE NEW SLAB REINFORCING TO MATCH EXISTING. REPAIR AND TAPE JOINTS AT VAPOR BARRIER WHERE ENCOUNTERED. PROVIDE CRUSHED AGGREGATE TO MATCH EXISTING. PROVIDE 3,000 PSI CONCRETE. FINISH TO MATCH EXISTING PER APPLICABLE ACI CRITERIA.

21. ABANDONED CORE/FLOOR PENETRATIONS
ALL ABANDONED CORE AND ABANDONED FLOOR PENETRATIONS THAT ARE NOT SCHEDULED TO BE REUSED ARE TO BE REMOVED. FLOOR TO BE REPAIRED AS REQUIRED PER UL AND LOCAL CODE.

22. EXISTING LIFE SAFETY DEVICES
GENERAL CONTRACTOR TO COORDINATE LOCATIONS OF EXISTING LIFE SAFETY DEVICES WITH ENGINEERING AND ARCHITECTURAL PLANS AND FURNITURE AND WALL MOUNTED EQUIPMENT. ALL DEVICES THAT ARE IN CONFLICTS WITH CONSTRUCTION DOCUMENTS, FURNITURE AND WALL MOUNTED EQUIPMENT ARE TO BE RELOCATED, NOTIFY ARCHITECTS IN WRITING TO CONFIRM NEW LOCATION PRIOR TO RELOCATION OF DEVICES.

23. ENGINEERING DOCUMENTS
REFER TO ENGINEERING PLANS FOR ADDITIONAL NOTES AND SPECIFICATIONS.

REFLECTED CEILING PLAN NOTES

1. COORDINATION
COORDINATE THE WORK OF ALL TRADES INVOLVED IN THE CEILING WORK TO INSURE CLEARANCES FOR FIXTURES, DUCTS, PIPING, CEILING SUSPENSION SYSTEM, ETC., NECESSARY TO MAINTAIN THE FINISHED CEILING HEIGHTS. SEE REFLECTED CEILING PLANS FOR FINISHED CEILING HEIGHTS. VERIFY IN FIELD.

2. PERIMETER CEILING ANGLES
PERIMETER CEILING ANGLE, WHERE OCCURS, SHALL BE INSTALLED TIGHT TO VERTICAL SURFACES, FREE FROM CURVES, BREAKS, OR OTHER IRREGULARITIES, AND PAINTED TO MATCH CEILING FINISH.

3. FIXTURE TRIM
FURNISH AND INSTALL ALL FIXTURES, ASSOCIATED TRIM, FIXTURE LAMPS, AND SEISMIC BRACING AS REQUIRED.

4. FIXTURE LOCATIONS
LIGHT FIXTURES, EXIT SIGNS, SPRINKLERS, AND OTHER CEILING ELEMENTS SHALL BE LOCATED IN CENTER OF INDIVIDUAL CEILING TILE, U.O.N.

MULTIPLE SWITCHES AT ONE LOCATION SHALL BE GANGED TOGETHER AND FINISHED WITH ONE COVER PLATE, U.O.N.

5. CEILING ACCESS
PROVIDE CEILING ACCESS AS REQUIRED FOR EQUIPMENT AND SYSTEM MAINTENANCE, AND MATCH ADJACENT CEILING FINISH, U.O.N.

6. SOFFITS AND CEILING HEIGHTS DIMENSIONS
ALL SOFFITS AND CEILING HEIGHTS ARE DIMENSIONED FROM TOP OF FINISHED FLOOR TO BOTTOM OF FINISHED GYPBOARD OR CEILING TILE AND SHALL ALLOW FOR THICKNESS OF ALL FLOOR FINISHES.

7. COORDINATION
THE REFLECTED CEILING PLAN INDICATES THE LOCATION OF CEILING HEIGHTS, LIGHT TYPES, LIGHT FIXTURES, SWITCH LOCATIONS, AND ASSOCIATED ITEMS. REFER TO ENGINEERING DRAWING (LIGHTING PLAN) FOR CIRCUITING, WIRING LAYOUT, AND ADDITIONAL INFORMATION.

8. DISCREPANCIES
IN THE EVENT OF DISCREPANCIES BETWEEN THE ARCHITECT'S REFLECTED CEILING PLAN AND THE ENGINEER'S LIGHTING PLAN, IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING BEFORE ORDERING MATERIALS OR PROCEEDING WITH WORK.

9. PLENUM
ALL SPECIFIC INFORMATION CONCERNING INSTALLATION OF VARIOUS ABOVE-CEILING ELEMENTS ARE TO BE FOUND IN THE HVAC, PLUMBING, FIRE PROTECTION, ELECTRICAL, AND LIGHTING DRAWINGS.

10. CONFLICT
NOTIFY ARCHITECT OF ANY CONFLICTS OF LIGHT FIXTURE LOCATIONS WITH MAIN RUNNERS, DUCTS, STRUCTURES, HVAC, AND/OR (E)CONDUIT, PRIOR TO FRAMING FOR LIGHTS. ANY DISCREPANCIES BETWEEN ARCHITECT'S CEILING GRID LOCATION AND ACTUAL FIELD CONDITIONS ARE TO BE CLARIFIED WITH THE ARCHITECT PRIOR TO FRAMING.

11. FIXTURE LAYOUT
SUBMIT GRILLE, SPRINKLER, THERMOSTAT, AND OTHER FIXTURE AND ELEMENT LAYOUTS TO THE ARCHITECT FOR REVIEW AT LEAST 2 WEEKS PRIOR TO INSTALLATION.

12. FIELD VERIFICATION OF WORK
VERIFY FIELD CONDITIONS AND LOCATIONS OF ALL PLUMBING, MECHANICAL DUCTS, STRUCTURAL ELEMENTS, AND ANY AND ALL OTHER APPLICABLE ITEMS; INSTALL APPLICABLE NEW PLUMBING, MECHANICAL FANS, DUCTS, CONDUITS, AND OTHER RELATED AND APPURTENANT ITEMS SO AS TO NOT CONFLICT WITH LUMINARIES AND ANY AND ALL FIELD CONDITIONS.

13. UL RATED ASSEMBLIES
FURNISH AND INSTALL UNDERWRITERS LABORATORIES INC. (UL) LABELED DEVICES THROUGHOUT.

14. LIGHTING FIXTURES
INSTALL LIGHT FIXTURES WITH PROTECTIVE FILM OR SIMILAR COVER OVER LOUVER, LENS, BAFFLE, AND THE LIKE, TO AVOID FIXTURE SOILING OR DAMAGE; FIXTURES SHALL BE MAINTAINED CLEAN AND AS NEW; LAMPS SHALL BE NEW AT PROJECT COMPLETION.

15. LIFE SAFETY DEVICES
REFER TO ENGINEERING DRAWINGS FOR ALL LIFE SAFETY DEVICES REQUIRED BY CODE AND ALL EMERGENCY LIGHT FIXTURES. ARCHITECTURAL DRAWINGS SHALL GOVERN LOCATION OF THESE DEVICES. COORDINATE LOCATION OF DEVICES WITH ALL ARCHITECTURAL DOCUMENTS PRIOR TO INSTALLATION OF BACK BOXES. REVIEW ALL ARCHITECTURAL AND ENGINEERING DOCUMENTS AND NOTIFY ARCHITECT OF ANY CONFLICTS. GENERAL CONTRACTOR TO COORDINATE AND VERIFY LOCATIONS OF EXISTING DEVICES TO REMAIN WITH ARCHITECTURAL PLANS AND NOTIFY ARCHITECT OF ANY CONFLICTS DURING THE ROUGH-IN PHASE OF PROJECT.

16. WALL SWITCH LOCATIONS
TO BE COORDINATED WITH FURNITURE AND WALL MOUNTED EQUIPMENT LOCATIONS PRIOR TO BOX ROUGH-INS. NOTIFY ARCHITECT OF ANY CONFLICTS PRIOR TO INSTALLATION OF ROUGH-INS.

17. ENGINEERING DOCUMENTS
REFER TO ENGINEERING PLANS FOR ADDITIONAL NOTES AND SPECIFICATIONS.

18. SUSPENDED CEILING GRID LAYOUT
CENTER FULL TILES IN ROOM IN BOTH DIRECTIONS AS INDICATED ON DRAWINGS UNLESS DIMENSIONED OR NOTED OTHERWISE.

FINISH PLAN NOTES

1. FINISHES
NO PAINTING OR INTERIOR FINISHING SHALL BE DONE UNDER CONDITIONS WHICH WILL JEOPARDIZE THE QUALITY OR APPEARANCE OF SUCH WORK. ALL WORKMANSHIP WHICH IS JUDGED LESS THAN FIRST QUALITY BY THE ARCHITECT WILL BE REJECTED.

2. COLOR SELECTION
ALL COLORS ARE TO BE SELECTED BY THE ARCHITECT, U.O.N.

3. FINISH PREPARATION
ALL SURFACES SHALL BE PREPARED TO RECEIVE THE SCHEDULED FINISH PER MANUFACTURERS' RECOMMENDATIONS. ALL GYPSUM BOARD PARTITIONS SHALL BE TAPED AND SANDED SMOOTH. PAINT GRADE WOODWORK SHALL BE HAND SANDED BETWEEN COATS AND DUSTED CLEAN. ALL HOLES, PITCH POCKETS, OR SAPPY PORTIONS SHALL BE SCRAPED AND SEALED WITH KNOT SEALER. NAIL HOLES, CRACKS, OR DEFECTS SHALL BE PUTTIED AFTER FIRST COAT, WITH PUTTY MATCHING COLOR OF STAIN OR PAINT FINISH. REMOVE OIL OR GREASE WITH MINERAL SPIRITS.

ALL CRACKS, HOLES, IMPERFECTIONS IN EXISTING WALLS, PARTITIONS, OR GYPSUM WALLBOARD SHALL BE FILLED WITH PATCHING PLASTER AND SMOOTHED OFF TO MATCH ADJOINING SURFACES.

INTERIOR GYPSUM WALLBOARD SURFACES SHALL BE WIPED WITH A DAMP CLOTH JUST PRIOR TO APPLICATION OF THE FIRST COAT, IN ORDER TO LAY FLAT ANY NAP WHICH MAY HAVE FORMED IN SANDING PROCESS.

WHERE APPLICABLE EXISTING PLASTER AND CONCRETE STRUCTURE SCHEDULED TO BE EXPOSED SHALL BE FINISHED TO PROVIDE A LEVEL 3 FINISH UNO.

4. WORK AREA CLEAN UP
UPON COMPLETION, REMOVE ALL PAINT FROM WHERE IT HAS SPILLED, SPLASHED, OR SPLATTERED ON EXPOSED SURFACES.

5. STAINING VENEER
ALL VENEER STAINS SHALL HAVE UNIFORM COLOR.

6. TOUCH UP
EXAMINE ALL FINISH SURFACES AFTER COMPLETION OF WORK, INCLUDING WOOD FLOORING AND MILLWORK INSTALLATION, AND PROCEED WITH "TOUCH-UP" AS REQUIRED.

7. FINISH APPROVAL
PROVIDE ARCHITECT WITH A MINIMUM OF (3) 8" X 10" BRUSH-OUTS OF EACH COLOR AND FINISH FOR ARCHITECT'S APPROVAL AT LEAST 2 WEEKS PRIOR TO SITE APPLICATION. ON-SITE APPLICATION WILL BE REQUIRED ONE WEEK PRIOR TO FINAL APPROVAL. ARCHITECT RESERVES THE RIGHT TO ADJUST ANY COLOR/FINISH ONCE THE WALL TEST HAS BEEN MADE.

PRIOR TO SITE APPLICATION, PROVIDE ARCHITECT WITH 8" X 10" SAMPLE CUTTINGS FROM ACTUAL DYE LOTS OF ALL SPECIFIED WALLCOVERINGS FOR ARCHITECT'S APPROVAL AND PROVIDE EXPECTED DELIVERY DATE TO JOB SITE.

8. SOFFITS
UNDERSIDE OF SOFFITS (WHERE OCCURS) TO RECEIVE A FINISH TO MATCH ADJACENT VERTICAL FINISH, U.O.N.

9. DELIVERY LEAD TIME
CONTRACTOR SHALL BE RESPONSIBLE FOR ALLOWING FOR DELIVERY LEAD TIMES FOR ALL FABRICS AND OTHER CUSTOM FINISHES WITHIN THE CONSTRUCTION SCHEDULE. ALL DELIVERY TIMES MUST BE CONFIRMED, AND ANY EXCESSIVE LEAD TIME MUST BE BROUGHT TO THE ARCHITECT'S ATTENTION IMMEDIATELY TO ALLOW FOR RE-SPECIFICATION IF NECESSARY.

10. FLOOR SURFACE MODIFICATIONS
MODIFY EXISTING FLOOR SURFACES AS REQUIRED TO INSTALL NEW FLOORING MATERIALS, THUS PREVENTING NOTICEABLE LUMPS OR DEPRESSIONS.

11. FINISHES
SEE FINISH PLAN, ELEVATIONS, AND DETAILS FOR CLARIFICATION OF EXTENT OF FINISH MATERIALS.

12. JOINTS
STAINED AND PAINTED SURFACES SHALL BE FINISHED SUCH THAT JOINTS ARE NOT VISIBLE WHEN VIEWED FROM ANY REASONABLE ANGLE.

13. FLOOR FINISHES
ALL INTERSECTIONS OF FLOOR FINISH MATERIALS SHALL BE LOCATED DIRECTLY UNDER CENTER OF DOOR, WHERE OCCURS, U.O.N.

14. CABINETRY
ALL OPEN CABINETRY SHALL BE PLASTIC LAMINATE ON ALL EXPOSED SURFACES, U.O.N. APPLY WHITE MELAMINE TO INTERIOR OF CABINETRY WITH DOORS AND DRAWERS, U.O.N.

15. CARPET SEAMING PLAN
SUBMIT CARPET SEAMING PLAN TO ARCHITECT PRIOR TO ORDERING AND AT LEAST (4) WEEKS PRIOR TO INSTALLATION FOR ARCHITECT'S REVIEW AND APPROVAL.

16. EXISTING FINISHES
EXISTING FINISHES IN BUILDING SERVICE/CORE AREA TO REMAIN, U.O.N.

17. WOOD ORIGINS:
ALL WOOD UTILIZED ON THE JOB (SOLID LUMBER AND TIMBER PANEL PRODUCTS PLUS FINISHED WOOD) SHALL ORIGINATE FROM REGIONAL SOURCES AND FROM CERTIFIED AND SUSTAINABLE SOURCES (SUCH AS SUSTAINABLE FORESTRY INITIATIVE, CSA, FORESTRY STEWARDSHIP COUNCIL, OR AMERICAN TREE FARM SYSTEMS).

18. ADHESIVES & SEALANTS:
THE VOC CONTENT OF ADHESIVES AND SEALANTS USED SHALL BE LESS THAN THE CURRENT VOC CONTENT LIMITS OF SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) RULE #1168, AND CALIFORNIA CODE OF REGULATIONS TITLE 17 FOR AEROSOL ADHESIVES (CALGREEN 5.504.4.1). ALL SEALANTS USED AS FILLERS MUST MEET OR EXCEED THE REQUIREMENTS OF THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT REGULATION 8, RULE 51.

19. PAINT:
CONTRACTOR SHALL USE PAINT SPECIFIED BY ARCHITECT AND SHALL PROPERLY PREPARE ALL SURFACES TO RECEIVE ONE (1) PRIME COAT AND (2) FINISH COATS (MIN) OF PAINT IN COLOR SPECIFIED BY ARCHITECT." PROVIDE ADDITIONAL PREPARATION AND FINISH PAINT COATS AS REQUIRED BY PAINT MANUFACTURER. REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.

20. PAINT MANUFACTURE TO BE AS INDICATED ON THE FINISH SCHEDULE - NO SUBSTITUTIONS U.O.N.

21. EXTRA MATERIALS:
FURNISH EXTRA MATERIALS DESCRIBED IN CONTRACT DOCUMENTS THAT ARE FROM THE SAME PRODUCTION RUN (BATCH MIX) AS MATERIALS APPLIED AND ARE PACKAGED FOR STORAGE. IDENTIFIED WITH LABELS DESCRIBING CONTENTS. STORE IN LOCATION MAINTAINING AN AMBIENT TEMPERATURE OF NOT LESS THAN 45 DEGREES F.
-QUANTITY: FURNISH AN ADDITIONAL (5) PERCENT OF EACH MATERIAL AND COLOR SPECIFIED.

22. PAINTS AND COATINGS:
PAINT TO COMPLY WITH VOC LIMITS IN THE AIR RESOURCES BOARD ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE AND CALIFORNIA CODE OF REGULATIONS TITLE 17 FOR AEROSOL PAINTS (CALGREEN 5.504.4.3.1).

23. CARPET:
ALL CARPET MUST MEET ONE OF THE FOLLOWING:
A. CARPET AND RUG INSTITUTE GREEN LABEL PLUS PROGRAM; 2. CALIFORNIA DEPARTMENT OF PUBLIC HEALTH STANDARD PRACTICE FOR TESTING OF VOCs (SPECIFICATION 01350); 3. NSF/ANSI 140 AT THE GOLD LEVEL; 4. SCIENTIFIC CERTIFICATIONS SYSTEMS SUSTAINABLE CHOICE; OR 5. CALIFORNIA COLLABORATIVE FOR HIGH PERFORMANCE SCHOOLS EQ 2.2 AND LISTED IN THE CHPS HIGH PERFORMANCE PRODUCT DATABASE.

AND:

CARPET CUSHION MUST MEET CARPET AND RUG INSTITUTE GREEN LABEL.
INDOOR CARPET ADHESIVE AND CARPET PAD ADHESIVE MUST NOT EXCEED 50 G/L VOC CONTENT.

24. COMPOSITE WOOD:
COMPOSITE WOOD MUST MEET CARB AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD INCLUDING MEETING THE EMISSIONS LIMITS IN CALGREEN TABLE 5.504.4.5.

25. RESILIENT FLOORING SYSTEMS:
FOR 80% OF FLOOR AREA RECEIVING RESILIENT FLOORING, INSTALL RESILIENT FLOORING COMPLYING WITH:
A. CERTIFIED UNDER THE RESILIENT FLOOR COVERING INSTITUTE (RFCI) FLOORSCORE PROGRAM; 2. COMPLIANT WITH THE VOC-EMISSION LIMITS AND TESTING REQUIREMENTS OF CALIFORNIA DEPARTMENT OF PUBLIC HEALTH 2010 STANDARD METHOD FOR TESTING AND EVALUATION CHAMBERS V.1.1; 3. COMPLIANT WITH THE COLLABORATIVE FOR HIGH PERFORMANCE SCHOOLS (CHPS) EQ2.2 AND LISTED IN THE CHPS HIGH PERFORMANCE PRODUCT DATABASE, OR 4. CERTIFIED UNDER THE GREENGUARD CHILDREN AND SCHOOLS PROGRAM TO COMPLY WITH CALIFORNIA DEPARTMENT OF PUBLIC HEALTH CRITERIA (CALGREEN 5.504.4.4 AND 5.504.4.6).

HARDWARE NOTES

1. LOCKSETS
ALL LOCKSETS SHALL HAVE LIPS OF SUFFICIENT LENGTH TO CLEAR TRIM AND PROTECT CLOTHING.

2. COORDINATION
GENERAL CONTRACTOR TO COORDINATE HARDWARE PURCHASE, SPECIFICATION, AND INSTALLATION WITH BUILDING MANAGEMENT.

3. KEYING
KEYING OF CYLINDER LOCKS SHALL BE COORDINATED WITH THE OWNER; FOR ESTIMATE USE GRANDMASTER KEYING CHARGE. UNDER OWNER'S DIRECTION, KEY TO NEW OR EXISTING SYSTEM TO BE APPROVED BY OWNER'S REPRESENTATIVE IN WRITING. FURNISH CONSTRUCTION KEY SYSTEM WITH KEYS WHICH CAN BE RENDERED INOPERATIVE BY THE TURN OF THE CHANGE KEY. STAMP ALL KEYS "DO NOT DUPLICATE". FOR PROTECTION OF THE OWNER, ALL LOCKS AND CYLINDERS SHALL BE KEYED AT THE FACTORY OF THE LOCK MANUFACTURER WHERE PERMANENT RECORDS ARE MAINTAINED.

4. HINGES
FURNISH TWO PAIR HINGES PER LEAF, U.O.N. FURNISH HINGES WITH STAINLESS STEEL PINS AND CONCEALED BEARINGS. SIZE LISTED IN HARDWARE SETS INDICATE HEIGHT.

5. SILENCERS
FURNISH SILENCERS FOR ALL INTERIOR FRAMES: 3 FOR SINGLE DOORS, 4 FOR PAIR OF DOORS. OMIT WHERE SOUND OR LIGHT SEAL OCCURS.

6. LOCKS
LOCK TO BE 38" FROM BOTTOM OF DOOR TO CENTER OF LEVER U.N.O.

INSTALLATION:
A. INSTALL EACH HARDWARE ITEM PER MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS. DO NOT INSTALL SURFACE MOUNTED ITEMS UNTIL FINISHES HAVE BEEN COMPLETED ON THE SUBSTRATE. SET UNITS LEVEL, PLUMB, AND TRUE TO LINE AND LOCATION. ADJUST AND REINFORCE THE ATTACHMENT SUBSTRATE AS NECESSARY FOR PROPER INSTALLATION AND OPERATION.

B. ADJUST AND CHECK EACH OPERATING ITEM OF HARDWARE AND EACH DOOR TO ENSURE PROPER OPERATION OR FUNCTION OF EVERY UNIT. REPLACE UNITS WHICH CANNOT BE ADJUSTED TO OPERATE FREELY AND SMOOTHLY.

7. FAILSAFE
ALL ELECTRONIC HARDWARE SHALL BE FAILSAFE AND TIED INTO THE LIFE SAFETY SYSTEM UNLESS OTHERWISE NOTED. SEE DOOR SCHEDULE, HARDWARE GROUPS AND SEQUENCE OF OPERATION FOR COMPLETE OPERATION.

8. ELECTRONIC HARDWARE
ALL EXIT DOORS SCHEDULED WITH ELECTRONIC HARDWARE SHALL UNLOCK UPON THE ACTUATION OF A LIFE SAFETY DEVICE. ALL DOORS REQUIRED AS EXITS WITH ELECTRONIC HARDWARE UNLOCK UPON THE LOSS OF POWER CONTROLLING THE LOCK OR LOCK MECHANISM. ALL DOORS REQUIRED AS EXITS WITH ELECTRONIC HARDWARE SHALL HAVE THE CAPABILITY OF BEING UNLOCKED BY A SIGNAL FROM THE FIRE COMMAND CENTER IN HIGHRISE BUILDINGS WHERE APPLICABLE. SEE DOOR SCHEDULE, HARDWARE GROUPS AND SEQUENCE OF OPERATION FOR COMPLETE DESCRIPTION.

9. DELAYED EGRESS ELECTRIC HARDWARE
EMERGENCY LIGHTING AND AUDIBLE ALARM SHALL BE PROVIDED AT ALL DOORS REQUIRED AS EXITS WITH DELAYED EGRESS ELECTRIC HARDWARE. ALARM SHALL NOTIFY TENANT FLOOR AND CUSTOMER'S BURGLAR ALARM SYSTEM.

10. DOOR HANDLES
ALL DOORS WITH LOCK SETS AND LATCH SETS SHALL HAVE A LEVER HANDLE.

11. MOUNTING HEIGHTS
HAND-ACTIVATED DOOR OPENING HARDWARE MUST BE MOUNTED BETWEEN 34 AND 48 INCHES ABOVE FINISH FLOOR.

12. DOOR HARDWARE
DOOR HARDWARE SHALL BE OPERABLE WITH A SINGLE EFFORT WITHOUT REQUIRING THE ABILITY TO GRASP THE HARDWARE (LEVER OR PUSH TYPE IS ACCEPTABLE PER LOCAL JURISDICTION CODE DEFINED CRITERIA)

13. CARD READERS
CARD READER DEVICES TO BE PROVIDED AS REFERENCED IN DOOR SCHEDULE. ALL DEVICES AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES. SEE DOOR SCHEDULE, HARDWARE GROUPS AND SEQUENCE OF OPERATION FOR COMPLETE DESCRIPTION.

DOOR NOTES

1. DOOR SCHEDULE
REFER TO DOOR SCHEDULE FOR ALL DOOR/HARDWARE SPECIFICATIONS.

2. FIELD MEASURE
FIELD MEASURE FLOOR TO CEILING DOORS FOR PROPER FIT.

3. SLOPE
EXTERIOR LEVEL LANDING MAY SLOPE UP TO 1/4" PER FOOT MAX. IN ANY DIRECTION FOR SURFACE DRAINAGE.

4. THRESHOLDS
THE FLOOR OR LANDING SHALL NOT BE MORE THAN 1/2" LOWER THAN THE THRESHOLD OF THE DOORWAY. BEVEL (1:2 MAX. SLOPE) WHERE THE THRESHOLD EXCEEDS 1/4" IN HEIGHT.

5. DOOR OPENINGS
DOOR OPENINGS IN PARTITIONS NOT DIMENSIONED ARE TO BE LOCATED WITHIN 4" OF ADJOINING PARTITION, U.O.N.

6. GLASS
ALL GLASS IN DOORS SHALL BE TEMPERED SAFETY GLASS, U.O.N.

7. HOLLOW METAL DOORS
HOLLOW METAL DOORS SHALL BE FINISHED WITH SEMI-GLOSS PAINT. REFER TO FINISH SCHEDULE FOR ADDITIONAL INFORMATION.

8. EXIT CORRIDORS
DOORS OPENING INTO REQUIRED EXIT CORRIDORS DO NOT RESTRICT THE REQUIRED WIDTH WHEN OPENED IN ANY POSITION.

9. DOOR SWINGS
ALL DOORS REQUIRED AS EXITS SHALL SWING IN THE DIRECTION OF TRAVEL.

10. WOOD SPECIES FOR DOOR FACINGS
PROVIDE DOORS MADE WITH ADHESIVES AND COMPOSITE WOOD PRODUCTS WHERE POSSIBLE THAT DO NOT CONTAIN UREA FORMALDEHYDE.

11. WOOD ORIGINS:
ALL WOOD UTILIZED ON THE JOB (SOLID LUMBER AND TIMBER PANEL PRODUCTS PLUS FINISHED WOOD) SHOULD ORIGINATE FROM REGIONAL SOURCES AND FROM CERTIFIED AND SUSTAINABLE SOURCES (SUCH AS SUSTAINABLE FORESTRY INITIATIVE, CSA, FORESTRY STEWARDSHIP COUNCIL, OR AMERICAN TREE FARM SYSTEMS).

12. ADHESIVES & SEALANTS:
THE VOC CONTENT OF ADHESIVES AND SEALANTS USED SHALL BE LESS THAN THE CURRENT VOC CONTENT LIMITS OF SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) RULE #1168, AND ALL SEALANTS USED AS FILLERS SHALL MEET OR EXCEED THE REQUIREMENTS OF THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT REGULATION 8, RULE 51.

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUE FOR CONSTRUCTION	2/20/2025

IA INTERIOR ARCHITECTS

DENVER
1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

Owner Approval

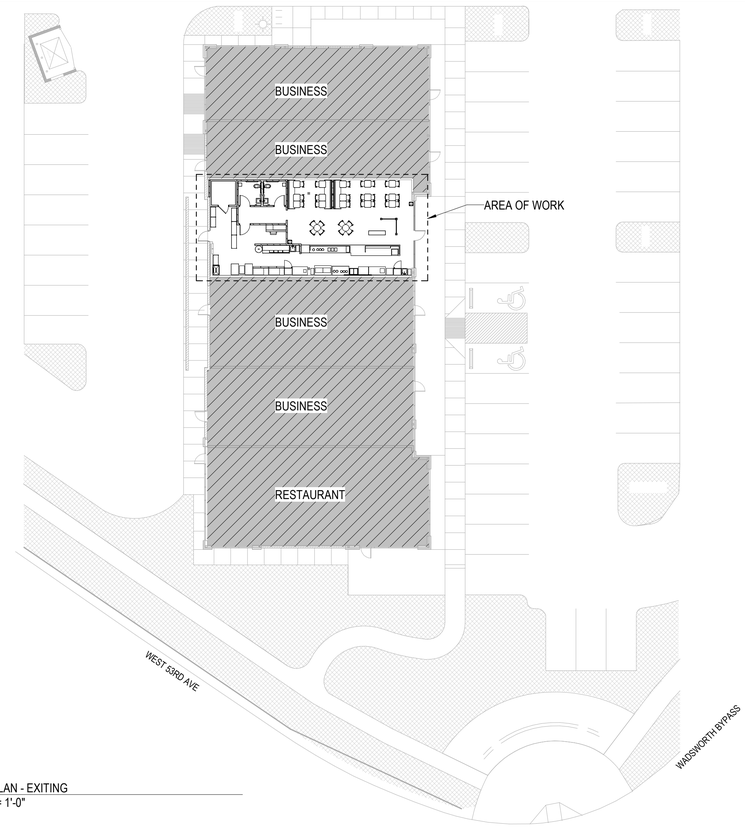
27MSHF.0030.000 — Job No.

1/8" = 1'-0" — Scale

GENERAL NOTES

AN-2.1

2/19/2025 3:57:17 PM 23.1.1



2 KEY PLAN - EXITING
3/64" = 1'-0"

LEGEND

- NEW CONSTRUCTION
- EXISTING CONSTRUCTION TO REMAIN
- EXISTING 1HR FIRE RESISTANT RATED PARTITION
- EXIT ACCESS = LESS THAN 200' AT B OCCUPANCY IN SPRINKLERED BUILDING
- COMMON PATH OF EGRESS = LESS THAN 75' AT B OCCUPANCY IN SPRINKLERED BUILDING WITH OL GREATER THAN 30
- EXIT SIGNAGE
- EXIT / ACCESS TO EXIT
- FEC FIRE EXTINGUISHER AND CABINET
- FE FIRE EXTINGUISHER
- PH PANIC HARDWARE

- BUSINESS 1:150
- ACCESSORY STORAGE / MECH. EQUIP. 1:300
- SMALL ASSEMBLY - UNCONCETRATED 1:15
- SMALL ASSEMBLY - STANDING SPACE 1:5
- KITCHEN 1:200
- NOT IN CONTRACT

SIGNAGE

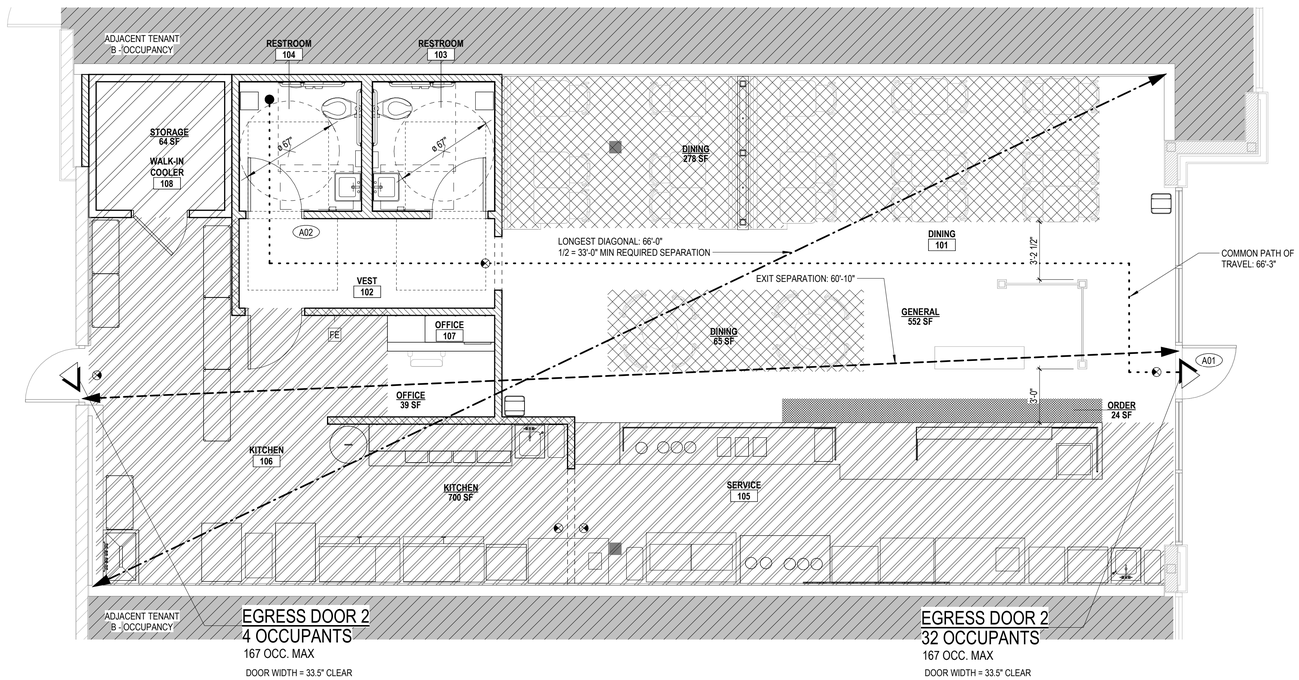
COMPLETE INTERIOR ACCESSIBLE SIGNAGE SHALL BE PROVIDED AT LOCATIONS INCLUDING BUT NOT LIMITED TO:
- ROOM IDENTIFICATION
- DIRECTIONAL AND INFORMATIONAL
- ACCESSIBLE ENTRANCE AT MAIN ENTRY LOBBY
- ELEVATOR CAB OPERATING PANEL
- ELEVATOR ENTRANCE FLOOR IDENTIFICATION AT JAMB
- RESTROOMS
- ELEVATOR LOBBY EMERGENCY EVACUATION

TACTILE EXIT SIGNS SHALL BE PROVIDED AT LOCATIONS INCLUDING BUT NOT LIMITED TO:
- GRADE LEVEL EXIT DOORS "EXIT"
- EXIT DOORS LEADING TO GRADE LEVEL EXIT DOORS (STAIRWELL DOORS) "EXIT STAIR DOWN"
- EXIT DOORS LEADING TO GRADE LEVEL EXTERIOR EXIT "EXIT"
- EXIT ACCESS DOOR LEADING FROM ROOM OR AREA WITH VISUAL EXIT SIGN; "EXIT ROUTE"

PROVIDE "EMERGENCY EVACUATION MAPS" AND SIGNS WHERE REQUIRED PER LOCAL JURISDICTION.

ACCESSIBLE SIGNAGE SHALL BE PROVIDED AS NON-GLARE OVER CONTRASTING BACKGROUND, 1/32" RAISED CHARACTERS, TEXT HEIGHT 5/8" TO 2" AND PICTOGRAMS SHALL BE 6" HIGH MIN. MOUNTING HEIGHT MIN. 4'-0" ABOVE FINISHED FLOOR TO LOWEST BRAILLE AND MAX. 5'-0" TO BOTTOM OF HIGHEST LINE OF RAISED TEXT. MOUNT SIGNS TO LATCH SIDE OF DOOR. AT DOUBLE DOORS AT THE NEAREST WALL PREFERABLE AT THE RIGHT OF THE OPENING.

SELF ILLUMINATING FLOOR LEVEL EXIT SIGNS SHALL BE PROVIDED AT "I" AND "A" OCCUPANCY. E.G. TRITIUM SELF ILLUMINATING FOR 10 YEARS, GREEN FACE, WHITE HOUSING OR SIMILAR.



1 01 EXITING DIAGRAM
1/4" = 1'-0"

EXITING REQUIREMENTS

EXITING REQUIREMENTS FOR BUSINESS PER 2018 INTERNATIONAL BUILDING CODE

COMPONENT	REQUIREMENT	REFERENCE CODE SECTION
NUMBER OF EXITS	SINGLE EXIT ACCESS IF < 50 PEOPLE WITH 100' MAX. COMMON PATH OF TRAVEL (SPRINKLERED). 2 EXITS REQUIRED IF > 49 PEOPLE WITH 100' MAX. COMMON PATH OF TRAVEL (SPRINKLERED)	1006.2.1 TABLE 1006.2.1
MAX. TRAVEL DIST.	200' (UNSPRINKLERED)	TABLE 1017.2
MAX. COMMON PATH	75' (UNSPRINKLERED OL >30)	TABLE 1006.2.1
MAX. DEAD END CORRIDOR	20' (UNSPRINKLERED)	1020.5 EXCEPTION 2
ARRANGEMENT OF EXIT ACCESS DOORS	1/2 THE DIAGONAL DISTANCE (UNSPRINKLERED)	1007.1.1 EXCEPTION 2
DOOR SWING DIRECTION	IN THE DIRECTION OF TRAVEL > 50 PEOPLE	1010.1.2.1
DOOR SWING DIRECTION	SIDE HINGED SWINGING; SLIDING DOORS ALLOWED IN BUSINESS AREAS WITH AN OCCUPANT LOAD ≤ 10 PEOPLE	1010.1.2 1010.1.2 EXCEPTION 1 AND 9
DOOR PROJECTIONS	SHALL NOT REDUCE THE REQUIRED MEANS OF EGRESS BY < 1/2 DURING SWING; WHEN FULLY OPEN SHALL NOT PROJECT INTO THE MEANS OF EGRESS BY > 7"	1005.7.1
MEANS OF EGRSS WIDTH	36" IF < 50 PEOPLE; 44" IF > 50 PEOPLE	TABLE 1020.3
MIN. DOOR WIDTH	32" MIN; 36" WIDE DOORS PROVIDE 34" CLEARANCE AND MEET 32" REQUIREMENT	1010.1.1
EXIT ACCESS COMPONENT	0.3"/PERSON STAIRS 0.2"/PERSON DOORS	1005.3.1 1005.3.2

SHEET NOTES

1. CONTRACTOR SHALL FIELD VERIFY EXISTING FIRE RATED CONSTRUCTION ASSEMBLIES DENOTED IN THE DRAWINGS. CONTRACTOR SHALL NOTIFY ARCHITECT IN WRITING OF CONFLICTS BETWEEN THE AS-BUILT CONDITION AND THE DRAWINGS. PRIOR TO PROCEEDING WITH THE WORK THE CONTRACTOR SHALL SUBMIT A PROPOSAL FOR THE COST AND SCHEDULE OF UPGRADING EXISTING ASSEMBLIES DENOTED AS FIRE RATED TO A CODE COMPLIANT LEVEL.
2. PROVIDE AT MINIMUM ONE (1) ACCESSIBLE SEATING LOCATION.

KEYNOTES

NO.	DESCRIPTION
A01	INDICATED DOORS SHALL REMAIN UNLOCKED AND ALLOW FREE EGRESS AT ALL TIMES WHEN SUITE IS OCCUPIED.
A02	REFERENCE ENLARGED RESTROOM PLAN FOR ACCESSIBILITY INFORMATION.

OCCUPANCY CALCULATIONS

OCCUPANCY SUMMARY BY COMPARTMENT & GROUP

OCCUPANCY GROUP	SPACE FUNCTION	AREA	OCCUPANT LOAD FACTOR	OCCUPANT LOAD CALCULATED
B	ACCESSORY STORAGE/MECH. EQUIPMENT	64 SF	300	.21
B	BUSINESS	591 SF	150	3.77
B	COMMERCIAL KITCHEN	700 SF	200	3.50
B	SMALL ASSEMBLY - STANDING SPACE	24 SF	5	4.80
B	SMALL ASSEMBLY - UNCONCENTRATED	343 SF	15	22.87
FLOOR TOTAL:		1,722 SF		35.15

PLUMBING COUNTS

WATER CLOSETS: 1 PER 25 FOR THE FIRST 50 & 1 PER 50 FOR THE REMAINING EXCEEDING 50
LAVATORY: 1 PER 40 FOR THE FIRST 80 AND 1 PER 80 FOR THE REMAINDER EXCEEDING 80

PER 2018 INTERNATIONAL PLUMBING CODE 410.4: WHERE RESTAURANTS PROVIDE DRINKING WATER IN A CONTAINER FREE OF CHARGE, DRINKING FOUNTAINS SHALL NOT BE REQUIRED IN THOSE RESTAURANTS.

SEPARATE FACILITIES ARE NOT REQUIRED IN BUSINESS OCCUPANCIES WITH 25 OR FEWER OCCUPANTS, PER 20204 OHIO BUILDING CODE 2902.2, EXCEPTION 4.

PLUMBING CALCULATIONS FOR BUSINESS OCCUPANCY	
Total Occupancy	**36**
Water Closets	
1/25 for the first 50	2.00
1/50 for the remainder	0.00
Total	2.00
Lavatories	
1/40 for the first 80	1.00
1/80 for the remainder	
Total	1.00
Drinking Fountains	
1/100	EXEMPT
Total	-
Service Sink	

TOTAL REQUIRED PLUMBING FIXTURES	
Water Closets	
TOTAL REQUIRED	**2**
TOTAL PROVIDED	**2**
Lavatories	
TOTAL REQUIRED	**1**
TOTAL PROVIDED	**2**
Drinking Fountains	
Total Persons/100	**EXEMPT**
TOTAL REQUIRED	-
TOTAL PROVIDED	-
Service Sink	
TOTAL REQUIRED	**1**
TOTAL PROVIDED	**1**

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

1 ISSUE FOR CONSTRUCTION 2/20/2025

DELTA	ISSUE	DESCRIPTION	DATE

IA INTERIOR ARCHITECTS

DENVER
1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

Owner Approval

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As indicated — Scale

EXITING DIAGRAM

AN-4.0

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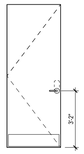
DOOR SCHEDULE

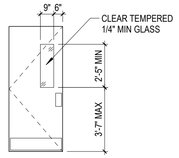
NO.	ROOM NAME	CONFIGURATION	DOOR PANEL WIDTH	DOOR PANEL HEIGHT	DOOR PANEL THICKNESS	DOOR HARDWARE GROUP	DOOR PANEL TYPE	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	OPENING FIRE RATING	DOOR REMARKS
D101	DINING	SINGLE	3' - 0"	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	NONE	EXISTING DOOR AND HARDWARE TO REMAIN, UON. PROVIDE FREE EGRESS AT ALL TIMES
D102	KITCHEN	SINGLE	3' - 0"	7' - 0"	1 3/4"	2	R	SOLID CORE WOOD	PAINT TO MATCH WALL	01	HOLLOW METAL	PAINT TO MATCH WALL	NONE	
D103	RESTROOM	SINGLE	3' - 0"	7' - 0"	1 3/4"	1	F	SOLID CORE WOOD	PAINT TO MATCH WALL	01	HOLLOW METAL	PAINT TO MATCH WALL	NONE	
D104	RESTROOM	SINGLE	3' - 0"	7' - 0"	1 3/4"	1	F	SOLID CORE WOOD	PAINT TO MATCH WALL	01	HOLLOW METAL	PAINT TO MATCH WALL	NONE	
D106	KITCHEN	SINGLE	3' - 0"	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	PAINT TO MATCH WALL	NONE	EXISTING DOOR AND HARDWARE TO REMAIN, UON. PROVIDE FREE EGRESS AT ALL TIMES

DOOR PANEL TYPES

NOTE: 10" (MIN) BOTTOM RAIL REQUIRED IF GLASS SURFACE IS MORE THAN 1/16" RECESSED FROM THE RAIL FACE ON THE PUSH SIDE OF A DOOR.

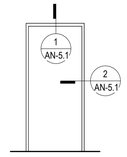


SINGLE
TYPE F



SINGLE
TYPE R

DOOR FRAME TYPES



TYPE 01

DOOR HARDWARE SCHEDULE

MILKSHAKE FACTORY - STANDARD DOOR HARDWARE SCHEDULE

DESCRIPTION	MANUFACTURER	CATALOG NUMBER	FINISH
GROUP 1 - RESTROOM			
HINGES	HAGER	BB1279 4-1/2" X 4-1/2" US26D	SATIN CHROME
PRIVACY LOCKSET W/ OCC. INDICATOR	SCHLAGE	ND40-P6-BRK-626-10D	SATIN CHROME
EMERGENCY RELEASE KEY	SCHLAGE		SATIN CHROME
SURFACE CLOSER	SARGENT	1431 CPS EN	ALUMINUM
SILENCER	IVES	SR64	GRAY
WALL STOP	ROCKWOOD	409 US32D	SATIN STAINLESS STEEL
GROUP 2 - KITCHEN TO FRONT-OF-HOUSE DOOR			
HINGES	HAGER	BB1279 4-1/2" X 4-1/2" US26D	SATIN CHROME
PIN PAD LOCKSET	SCHLAGE AD-200 OFFLINE	AD-200-CY-70-KP-BRK-626-P6-S123-RH -4B-13-049-10-025-1 3/4	SATIN CHROME
SURFACE CLOSER	SARGENT	1431 CPS EN	ALUMINUM
SILENCER	IVES	SR64	GRAY
WALL STOP	ROCKWOOD	409 US32D	SATIN STAINLESS STEEL

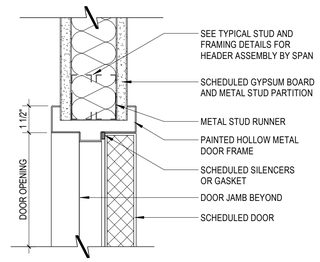
NOTE: CONTRACTOR SHALL PROGRAM LOCK PER OWNER'S INSTRUCTIONS

DOOR & HARDWARE NOTES

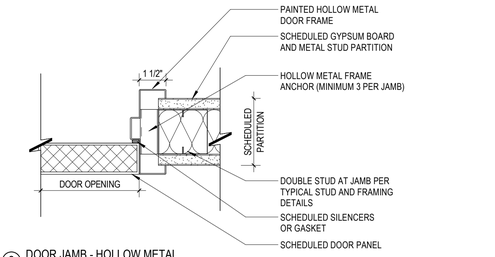
1. ALL (E) DOORS REQUIRING HARDWARE UPDATE/MODIFICATION: REPLACE DOOR AS REQUIRED TO MATCH (E) WITH NEWLY PREPARED DOORS AS SCHEDULED FOR NEW WORK. G.C. TO BE RESPONSIBLE TO MAINTAIN (E) UL-RATING OF DOOR AND FRAME ASSEMBLY AT RATED LOCATIONS.
2. ALL HARDWARE SHALL BE UNLOCKED IN THE DIRECTION OF EGRESS, REGARDLESS OF OTHER LOCK FUNCTIONS.
3. ALL 20 MIN. UL RATED DOORS AND FRAME ASSEMBLIES TO HAVE S-LABEL.
4. ALL RATED DOOR ASSEMBLIES SHALL BE U.L. AND NFPA APPROVED.
5. ALL DOORS AND FRAMES TO BE INSTALLED PLUMB, STRAIGHT AND TRUE. MAINTAIN ADEQUATE TOLERANCES AND CLEARANCES SO THAT ALL DOORS FIT AS SPECIFIED AND SWING/SLIDE PROPERLY. ANY DEVIATION FROM THIS WILL BE REJECTED BY OWNER AS UNACCEPTABLE AND WILL BE REPLACED AT SUPPLIER'S AND INSTALLER'S SOLE COST.
6. PROVIDE ALL PARTS NECESSARY FOR PROPER OPERATION OF ALL DOORS.
7. MAXIMUM DOOR OPENING EFFORT OF 5 LBS. AT INTERIOR DOORS, 15 LBS. AT FIRE RATED DOORS, AND XX LBS. AT EXTERIOR DOORS.
8. ALL DOORS ARE EQUIPPED WITH SINGLE-EFFORT, NON-GRASP HARDWARE (I.E., LEVER OR LOOP) CENTERED BETWEEN 34" AND 44" ABOVE THE FLOOR.
9. ALL DOORS MUST BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF KEY, SPECIAL KNOWLEDGE OR EFFORT.
10. ALL GLAZING AND SIDELITES TO BE CLEAR TEMPERED GLASS, UON.
11. ALL KEYED LOCKSETS TO BE SUPPLIED WITH BUILDING STANDARD CYLINDER.
12. FIRE RATED DOORS AND FRAMES TO HAVE APPROVED FIRE RETARDANT BACKING. CONTRACTOR TO PROVIDE CERTIFICATION OF FIRE RETARDANT TREATMENT TO THE FIRE MARSHAL.
13. DOOR HEIGHTS GIVEN IN THE DOOR SCHEDULE DO NOT INCLUDE THE DOOR FRAME.
14. DO NOT UNDERCUT UL RATED DOORS, PROVIDE MINIMUM CLEARANCE ABOVE THRESHOLD OR ABOVE FINISHED FLOOR.
15. SEE AN-SERIES SHEETS FOR ADDITIONAL NOTES AND ABBREVIATIONS.
16. CONTRACTOR TO PREP ALL DOORS AND FRAMES TO RECEIVE ELECTRIFIED HARDWARE AS REQUIRED FOR CARD READERS, INCLUDING CABLING, PROVIDING A RACEWAY FROM ELECTRIFIED HINGE TO POWER TRANSFER AND PROVIDING ALL HARDWARE INCLUDING ELECTRIFIED HINGES. ALL CARD READER DEVICES ARE FAIL-SAFE UNLESS OTHERWISE NOTED. ALL DOORS SCHEDULED TO RECEIVE CARD READERS PROVIDE FREE EGRESS AT ALL TIMES. CARD KEY ACCESS IS NEVER REQUIRED TO EXIT/EGRESS OUT OF ANY AREA OF THE BUILDING.
17. AT PAINTED WOOD DOORS, PAINT DOOR AND FRAME AS INDICATED ON FINISH PLAN.
18. PROVIDE THREE JAMB ANCHORS MINIMUM AT APPROXIMATE HINGE POINTS FOR DOORS UP TO 7'-6" H MAX. AND ONE BASE ANCHOR WITH TWO POWER ACTUATED FASTENERS PER JAMB.
19. PROVIDE FRAME ROUGH OPENING DIMENSIONS AS RECOMMENDED BY FRAME MANUFACTURER.
20. PROVIDE STANDARD FRAME PROFILE THROAT DIMENSIONS COMPATIBLE WITH AND AS DETERMINED BY SCHEDULED PARTITION TYPES.
21. PROVIDE STRAPS, ANCHORS AND FRAMING ACCESSORIES AS REQUIRED FOR AS-BUILT FIELD CONDITIONS AS RECOMMENDED BY THE MANUFACTURER AND INDUSTRY STANDARDS.
22. DOOR FRAMES SHALL BE SECURED IN PLACE WITH TWO FULL HEIGHT STUDS PER JAMB MIN.
23. DOOR UNDERCUTS SHALL BE KEPT TO A MINIMAL DIMENSION BASED ON FLOOR FINISH MATERIAL, AND SHALL BE UNIFORM THROUGHOUT PROJECT, UON.
24. THROUGH-BOLTING WILL NOT BE ACCEPTED. REINFORCE DOORS INTERNALLY.
25. ALL DOORS SHALL COMPLY WITH THE DOOR LANDING CLEARANCES FOR APPROACHES MEETING MINIMUM ADA REQUIREMENTS.
26. INSTALL DOOR 4" FROM ADJACENT WALL (MEASURED TO INSIDE OF JAMB), TYP. UNLESS OTHERWISE NOTED.

GLAZING NOTES

1. GLAZING TYPES PROVIDED ARE FOR DESIGN INTENT ONLY. CONTRACTOR SHALL FIELD VERIFY EACH APPLICATION, SUPPLY STRUCTURALLY APPROPRIATE MATERIAL APPROVED BY THE GLAZING MANUFACTURER OF A MINIMUM THICKNESS GREATER THAN OR EQUAL TO THE THICKNESS INDICATED, AND SHALL NOTIFY THE ARCHITECT OF DISCREPANCIES.
2. GLASS HEIGHTS (H) INDICATED ARE UNSUPPORTED SPANS FROM BOTTOM TO TOP OF GLASS UNIT.
3. HEAT STRENGTHENED GLASS CANNOT BE DRILLED, SANDED, ETCHED, AFTER FORMING.
4. FOR ALL GLASS APPLICATIONS NOT LISTED, VERIFY SPECIFICATION WITH GLAZING MANUFACTURER.
5. WHERE BOTTOM EDGE IS CLOSER TO THE FLOOR THAN INDICATED, USE NEXT THICKER SIZE OF GLASS (IN 1/8" INCREMENTS)
6. NO WIRED GLASS ALLOWED.
7. ALL GLASS SHALL BE TEMPERED UON.



1 DOOR FRAME HEAD - HOLLOW METAL
3" = 1'-0"



2 DOOR JAMB - HOLLOW METAL
3" = 1'-0"

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DOOR AND HARDWARE SCHEDULES

AN-5.1

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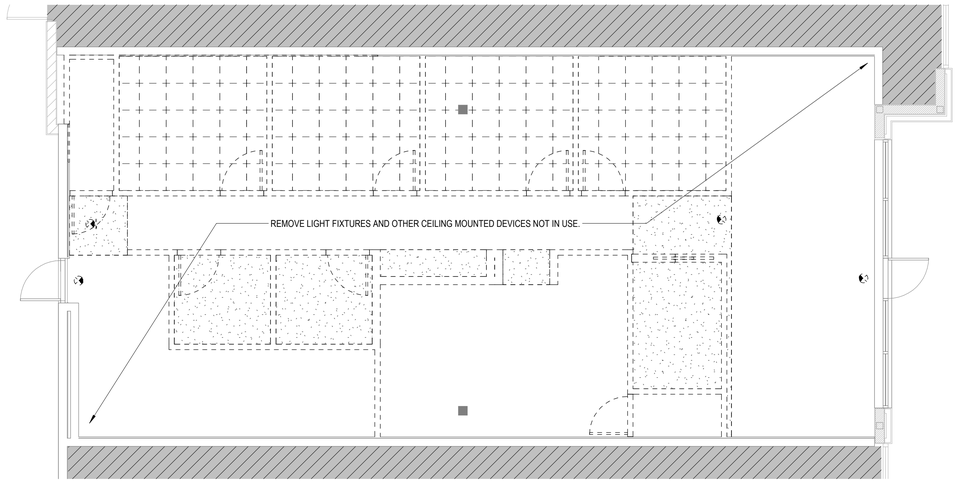
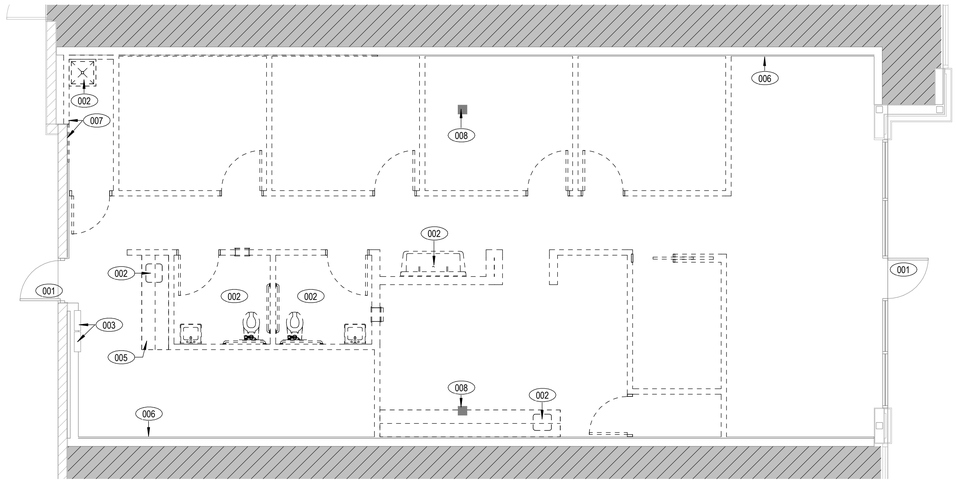


2 01 DEMO RCP
3/16" = 1'-0"



1 01 DEMOLITION PLAN
3/16" = 1'-0"

TRUE

DEMOLITION LEGEND

- EXISTING CONSTRUCTION TO BE DEMOLISHED
- EXISTING CONSTRUCTION TO REMAIN
- TYP. CEILING GRID AND LIGHT FIXTURE TO BE REMOVED
- GWB CEILINGS AND LIGHT FIXTURES TO BE REMOVED
- EXIT SIGN TO BE REMOVED

DEMOLITION SHEET NOTES

1. SEE AN SHEET SERIES FOR ADDITIONAL NOTES AND ABBREVIATIONS.
2. EXISTING ELEMENTS TO REMAIN UON.
3. REMOVE FINISH MATERIALS (INCLUDING WALLCOVERING, ETC) THROUGHOUT, UON PREPARE SURFACES FOR NEW FINISHES.
4. REMOVE MATERIALS CREATING UNEVEN, OUT OF TOLERANCE SUBSTRATE INCLUDING BUT NOT LIMITED TO FASTENERS, COVER PLATES, RESILIENT FLOORING, CARPET PAD, ETC.
5. LIFE SAFETY DEVICES SHALL REMAIN OPERATIONAL DURING DEMOLITION AND CONSTRUCTION.
6. REMOVE CEILINGS, TYP, UON. REMOVE WIRING AND SUPPORTS, CLEAN & PREPARE FOR NEW WORK. BRACING TO REMAIN AT EXISTING CEILING HEIGHT PARTITIONS SCHEDULED TO REMAIN.
7. SEE ENGINEER'S DRAWINGS FOR ADDITIONAL INFORMATION REGARDING REMOVAL OF MEP EQUIPMENT.
8. REMOVE GYPSUM BOARD SOFFITS AND FRAMING.
9. SALVAGE EXISTING COMPLIANT FIRE ALARM DEVICES, EXIT SIGNS, LIGHTING AND HVAC DEVICES THAT ARE INDICATED FOR REMOVAL FOR REUSE, UON.
10. REMOVE LIGHT FIXTURES AND LENSES THROUGHOUT AREA OF WORK.
11. REMOVE ABANDONED PLENUM RATED TELEPHONE AND DATA CABLING WHERE DIRECTED BY OWNER AND/OR APPLICABLE OWNERS DATA/TELECOM VENDOR/SUBCONTRACTOR.

DEMOLITION KEYNOTES

NO.	DESCRIPTION
001	EXISTING DOOR, FRAME, AND HARDWARE TO REMAIN.
002	REMOVE PLUMBING FIXTURES, ASSOCIATED DOMESTIC/SANITARY LINES BACK TO SOURCE AND CAP (SEE PLUMBING ENGINEERING DRAWINGS FOR DETAILS). REMOVE AND DISPOSE ALL RESTROOM ACCESSORIES.
003	ELECTRICAL PANELS TO REMAIN. REFER TO ENGINEERING DOCUMENTS FOR MORE INFORMATION.
005	REMOVE AND DISPOSE OF EXISTING MILLWORK.
006	EXISTING SOUND BREAK FURRING TO REMAIN.
007	REMOVE A PORTION OF THE FURRING PARTITIONS AS NEEDED FOR NEW WORK.
008	GC TO VERIFY COLUMN LOCATIONS DURING DEMOLITION AND REPORT TO ARCHITECT FOR EXACT LOCATIONS PRIOR TO BEGIN ANY CONSTRUCTION.

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DEMOLITION PLANS

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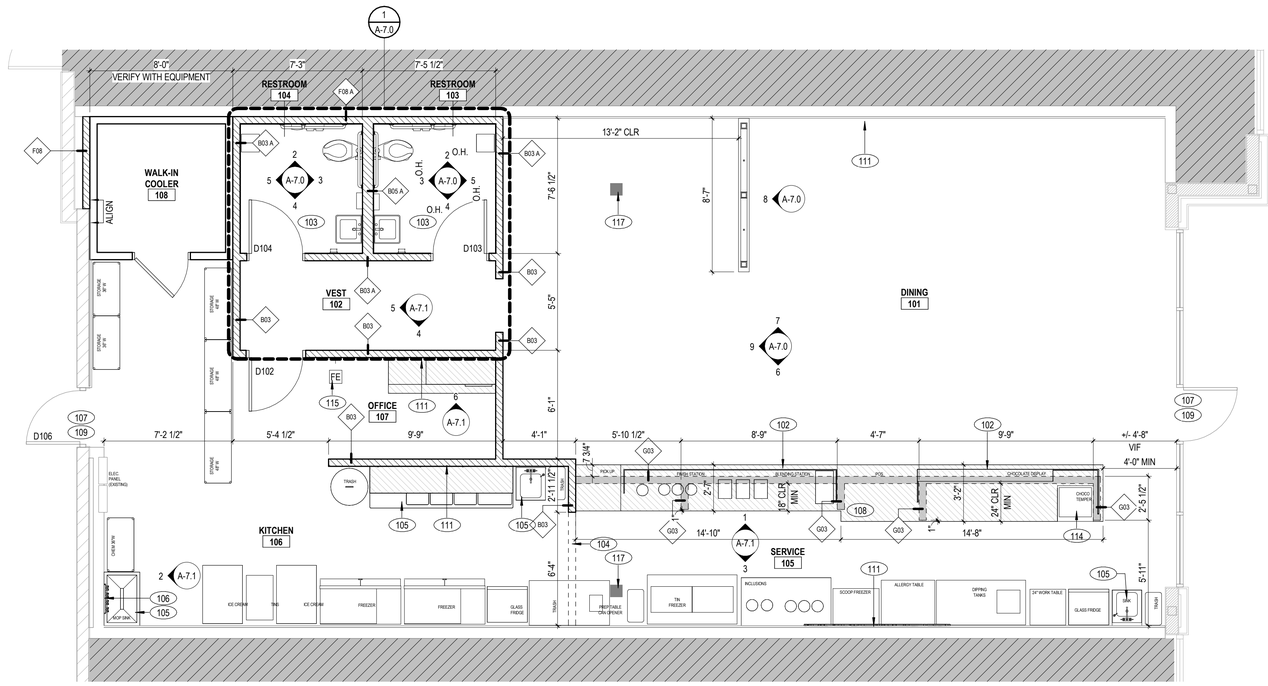


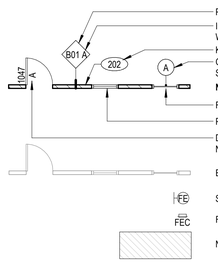
1 01 PARTITION PLAN
1/4" = 1'-0"

TRUE

PARTITION SCHEDULE

TYPE	FIRE RATING	UL #	DESCRIPTION	SSMA #	STUD SPACING (IN)	MAX DEFLECTION	MAX HT	THICKNESS	DETAIL REF.
B03	NR	NR	NON-RATED 3 5/8" METAL STUDS, FULL HEIGHT [SLAB-TO-SLAB] WITH ONE LAYER 5/8" GYPBOARD EACH SIDE.	362S125-33	16	L/240	17' - 5"	4 7/8"	7/A-8.3
B05	NR	NR	NON-RATED 6" METAL STUDS, FULL HEIGHT [SLAB-TO-SLAB] WITH ONE LAYER 5/8" GYPBOARD EACH SIDE.	600S125-33	16	L/240	25' - 6"	7 1/4"	7/A-8.3
F08	NR	NR	3 5/8" METAL STUD FURRING WITH ONE LAYER 5/8" GYPBOARD ON EXTERIOR (1/2" AIR SPACE BETWEEN STUD AND WALL).	362S125-33	16	L/240	16' - 0"	4 3/4"	8/A-8.3
G03	NR	NR	3 5/8" METAL STUDS WITH ONE LAYER 5/8" GYPBOARD EACH SIDE. PARTIAL-HEIGHT WALL - SEE PLANS/ELEVATIONS FOR HEIGHT.	362S125-33	16	L/240	17' - 5"	4 7/8"	9/A-8.3
G05	NR	NR	6" METAL STUDS WITH ONE LAYER 5/8" GYPBOARD EACH SIDE. PARTIAL-HEIGHT WALL - SEE PLANS/ELEVATIONS FOR HEIGHT.	600S125-33	16	L/240	25' - 6"	7 1/4"	9/A-8.3

PARTITION LEGEND



- PARTITION TYPE (SEE PARTITION SCHEDULE)
- INSULATION TYPE, WHERE OCCURS — TYPE: - NONE; A ACOUSTIC; T THERMAL; M MINERAL WOOL
- KEYNOTE
- GLAZED OPENING SYSTEM TYPE
- **NEW CONSTRUCTION**
- FLOOR TO CEILING WINDOW
- PARTIAL HEIGHT WINDOW (WITH SILL)
- DOOR TAG (DOOR NUMBER BASED ON ROOM NUMBER WITH ALPHA SUFFIX IF MULTIPLE)
- EXISTING CONSTRUCTION TO REMAIN
- FE — SURFACE MTD FIRE EXTINGUISHER
- FEC — FIRE EXTINGUISHER AND CABINET
- NEW MILLWORK

PARTITION SHEET NOTES

1. DRAWINGS SHALL NOT BE SCALED. VERIFY ALL DIMENSIONS AND EXISTING AS BUILT FIELD CONDITIONS, INCLUDING FIELD MEASUREMENTS PRIOR TO START OF WORK, NOTIFY ARCHITECT WHERE DISCREPANCIES OCCUR.
2. USE TYPE "X" GWB ON FIRE RATED PARTITIONS.
3. PROVIDE INSULATION FULL DEPTH OF STUD OF A TYPE AND IN LOCATIONS INDICATED IN THE PLAN. INSULATION AT RATED PARTITIONS TO BE NON-COMBUSTABLE, MINERAL WOOL OR EQUIVALENT APPROVED IN THE PROJECT JURISDICTION.
4. SEE A-8 DETAIL SHEET SERIES FOR TYPICAL PARTITION DETAILS, EXTENTS OF FRAMING AND FINISHES.
5. FIRE SAFE PENETRATIONS AT FIRE RESISTANT RATED PARTITIONS PER APPLICABLE UL ASSEMBLY. SEE A-8 SHEET SERIES FOR DETAILS.
6. MAINTAIN INTEGRITY OF EXISTING FIRE RESISTANT RATED ASSEMBLIES FOR PENETRATIONS.
7. PROVIDE BLOCKING AS REQUIRED AT LOCATIONS INCLUDING, BUT NOT LIMITED TO: GRAB BARS, SHELVING, OVERHEAD CABINETS, SIGNAGE, TOILET ROOM ACCESSORIES, WALL MOUNT. EQUIPMENT, ETC. ALL BLOCKING TO BE FIRE RETARDANT TREATED WOOD OR 16 GA (MIN) SHEET METAL.
8. REFER TO A-2 SHEET SERIES FOR POWER & SIGNAL DEVICE LOCATIONS.
9. EXPOSED GYPSUM BOARD OUTSIDE CORNERS SHALL HAVE A CONTINUOUS METAL CORNER BEAD.
10. DIMENSIONS TAKEN FROM PERIMETER EXTERIOR WINDOW WALL ARE TAKEN FROM THE INSIDE FACE OF THE VERTICAL MULLION UON. DIMENSIONS MARKED "VERIFY" SHALL BE VERIFIED PRIOR TO START OF WORK UNLESS OTHERWISE NOTED.
11. CONTRACTOR SHALL COORDINATE WORK WITH HVAC, MECHANICAL, ELECTRICAL, PLUMBING, DELEGATED DESIGN FIRE PROTECTION AND STRUCTURAL DRAWINGS AS APPLICABLE AND REPORT TO THE ARCHITECT DISCREPANCIES FOR CORRECTION AND ADJUSTMENT PRIOR TO START OF WORK. NO ALLOWANCE WILL BE MADE FOR INCREASED COST DUE TO THE CONTRACTOR'S LACK OF COORDINATION.
12. CONTRACTOR SHALL FIELD VERIFY EXISTING FIRE RATED CONSTRUCTION ASSEMBLIES DENOTED IN THE DRAWINGS. CONTRACTOR SHALL NOTIFY ARCHITECT IN WRITING OF CONFLICTS BETWEEN THE AS-BUILT CONDITION AND THE DRAWINGS. PRIOR TO PROCEEDING WITH THE WORK THE CONTRACTOR SHALL SUBMIT A PROPOSAL FOR THE COST AND SCHEDULE OF UPGRADING EXISTING ASSEMBLIES DENOTED AS FIRE RATED TO A CODE COMPLIANT LEVEL.
13. PATCH AND REPAIR PARTITIONS AFTER DEMOLITION WHERE DAMAGE HAS OCCURRED AT UNPROTECTED LOCATIONS. PLEASE NOTE THAT DEMOLITION ACTIVITY MAY OCCUR BEYOND WORK LIMITS SHOWN ON DEMOLITION PLAN DUE TO CONCEALED CONDITIONS.
14. REQUIRED MARKING AND IDENTIFICATION OF PARTITIONS: WHERE THERE IS AN ACCESSIBLE CONCEALED FLOOR, FLOOR-CEILING OR ATTIC SPACE, FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS AND SMOKE PARTITIONS OR ANY OTHER WALL REQUIRED TO HAVE PROTECTED OPENINGS OR PENETRATIONS SHALL BE EFFECTIVELY AND PERMANENTLY IDENTIFIED WITH SIGNS OR STENCILING IN THE CONCEALED SPACE. SUCH IDENTIFICATION SHALL BE LOCATED WITHIN 15 FEET (4572 MM) OF THE END OF EACH WALL AND AT INTERVALS NOT EXCEEDING 30 FEET (9144 MM) MEASURED HORIZONTALLY ALONG THE WALL OR PARTITION AND INCLUDE LETTERING NOT LESS THAN 3 INCHES (76 MM) IN HEIGHT WITH A MINIMUM 3/8-INCH (9.5 MM) STROKE IN A CONTRASTING COLOR INCORPORATING THE SUGGESTED WORDING, "FIRE AND/OR SMOKE BARRIER — PROTECT ALL OPENINGS," OR OTHER WORDING BASED ON LOCAL JURISDICTION. REFER TO PARTITION SCHEDULE, PLAN AND LEGEND TO IDENTIFY APPLICABLE PARTITIONS.
15. PARTITIONS TO BE TYPE B03 UNLESS OTHERWISE NOTED.
16. INSTALL NEW 5/8" DRYWALL OVER ANY EXPOSED FRAMING WITHIN THE SPACE. EXPOSED MASONRY WALLS SHALL BE MINIMAL FURRED OUT WITH 7/8" HAT CHANNEL AND 5/8" GWB UON. PATCH AND REPAIR ALL WALLS AS REQUIRED TO ENSURE ALL WALLS ARE A LEVEL 4 FINISH.

PARTITION KEYNOTES

NO.	DESCRIPTION
102	PROVIDE AND INSTALL CLEAR TEMPERED GLASS SNEEZEGUARD IN ALUMINUM CHANNEL; REFER TO ELEVATIONS FOR DETAILS.
103	PROVIDE LEVEL 5 FINISH.
104	DASHED LINE INDICATES BULKHEAD ABOVE. SEE RCP.
105	PROVIDE HOT/COLD WATER LINES, DRAIN LINES, AND ASSOCIATED INFRASTRUCTURE FOR NEW PLUMBING FIXTURE. SEE ENGINEERING DRAWINGS.
106	WATER HEATER ABOVE. SEE ENGINEERING DRAWINGS.
107	EXISTING EXTERIOR DOOR TO REMAIN.
108	GC TO COORDINATE LOCATION OF ALL G03 AND G05 LOW PARTITIONS WITH UNDERCOUNTER EQUIPMENT AND ALL ASSOCIATED TRADES PRIOR TO FRAMING.
109	GC TO VIF THE EXISTING THRESHOLDS ARE CODE AND ADA COMPLIANT AND TO REPLACE WITH NEW IF REQUIRED.
111	PROVIDE FRT PLYWOOD BLOCKING FOR WALL MOUNTED SIGNAGE OR SHELVING. COORDINATE WITH OWNER AND REFERENCE DETAILS.
114	PROVIDE 24" x 24" CUTOUT IN COUNTERTOP FOR EQUIPMENT. MILLWORKER TO VERIFY CUTOUT SIZE WITH EQUIPMENT SIZE.
115	COORDINATE FINAL LOCATION OF FIRE EXTINGUISHER WITH FIRE MARSHAL OR LOCAL AHJ PRIOR TO FRAMING.
117	EXISTING COLUMNS TO BE FIELD VERIFIED PRIOR TO WORK. COLUMNS TO BE LEFT AS IS AND PAINTED PA-01.

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

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SUITE C
ARVADA, COLORADO
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DENVER
1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

Owner Approval

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PARTITION PLAN

A-1.0

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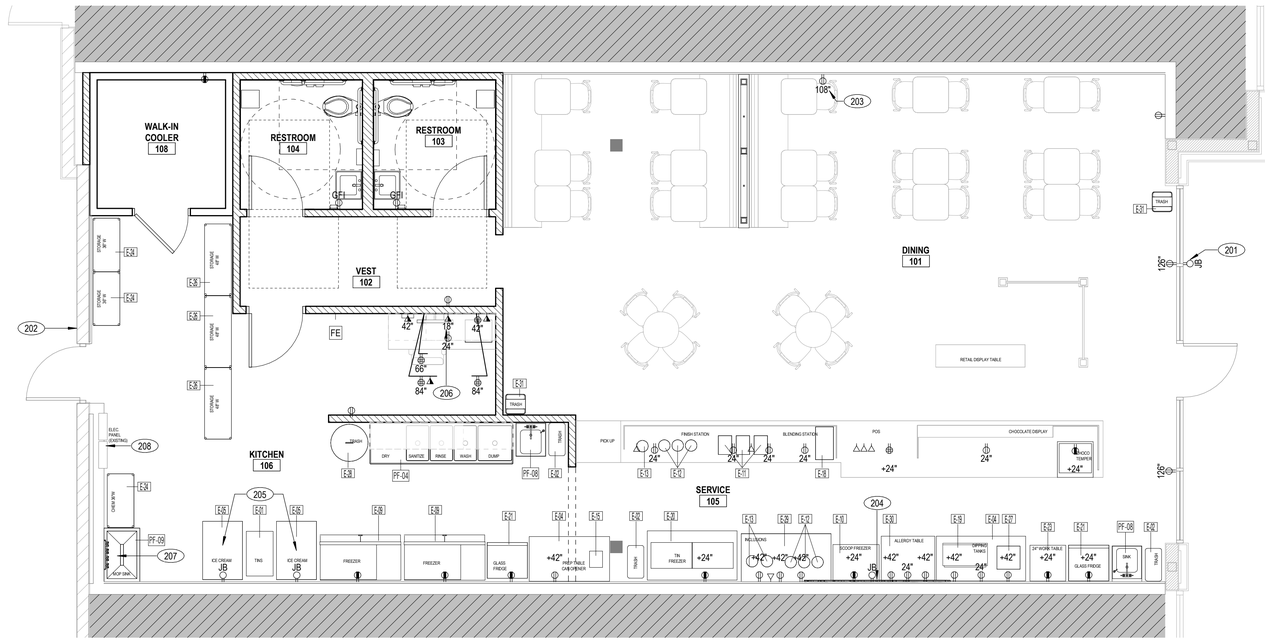

1 01 POWER SIGNAL PLAN
1/4" = 1'-0"

TRUE

REFERENCE FURNITURE AND EQUIPMENT PLAN FOR EQUIPMENT SCHEDULE

POWER & SIGNAL LEGEND

- WALL MOUNTED DUPLEX OUTLET
- WALL MOUNTED DEDICATED OUTLET
- WALL MOUNTED QUAD OUTLET
- JB — WALL MOUNTED JUNCTION BOX
- WALL MOUNTED TELEPHONE OUTLET
- WALL MOUNTED DATA OUTLET
- WALL MOUNTED TELEPHONE/DATA OUTLET
- [X] — EQUIPMENT DESIGNATION

POWER & SIGNAL SHEET NOTES

1. SEE ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION. NOTIFY ARCHITECT AND ENGINEER OF DISCREPANCIES PRIOR TO STARTING THE WORK. THE ARCHITECTURAL POWER PLAN INCLUDES CRITICAL INFORMATION WHICH MAY NOT BE SHOWN ON THE ELECTRICAL PLANS INCLUDING DEVICE HEIGHTS AND LOCATIONS AND DEVICE AND COVER PLATE COLORS. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND ELECTRICAL CONTRACTOR TO REVIEW AND COORDINATE BETWEEN THE ARCHITECTURAL AND ELECTRICAL PLANS AND ALERT ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES. NO CHANGE ORDERS WILL BE ACCEPTED DUE TO A FAILURE TO FULLY REVIEW AND COORDINATE THE CONTRACT DRAWINGS.
2. CONTRACTOR TO COORDINATE ALL FINAL FLOOR CORE LOCATIONS WITH FURNITURE VENDOR, OWNER AND ARCHITECT PRIOR TO START OF WORK. FLOOR AND WALL CORING SHALL BE SCHEDULED DURING OFF HOURS UNLESS OTHERWISE ALLOWED BY OWNER.
3. CONTRACTOR TO MAINTAIN EXISTING UL FIRE RATED ASSEMBLY FOR PENETRATIONS.
4. NEW COVER PLATES, STROBES, SWITCHES, AND PLUGS, ETC. TO BE WHITE UON.
5. REPLACE EXISTING COVER PLATES, PLUGS, SWITCHES, ETC. WITH NEW.
6. COORDINATE DEVICE LOCATIONS PRIOR TO START OF WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING CONDITIONS SYSTEM FURNITURE LAYOUT, FREE STANDING AND BUILT-IN FURNITURE, MILLWORK , STRUCTURAL COLUMN LINES AT 'POKE-THROUGH' LOCATIONS & FACE OF FINISH AT PARTITIONS AND FLOOR. WHERE APPLICABLE CONDUCT PRE-INSTALLATION CONFERENCE.
7. PROVIDE NEMA RECEPTACLE TYPES BASED ON ELECTRICAL AND COMMUNICATION EQUIPMENT SPECIFICATIONS AS COORDINATED PRIOR TO START OF WORK
8. RECEPTACLE, SWITCH AND OUTLET MOUNTING HEIGHT DIMENSIONS ARE MEASURED FROM FINISHED FLOOR TO OUTLET CENTERLINE MOUNTED VERTICALLY, UNLESS NOTED OTHERWISE.
9. PRIOR TO START OF WORK VERIFY AND COORDINATE ELECTRICAL BUS DUCT AND CONDUIT, RISER AND HORIZONTAL ROUTING, RUN LOCATIONS, CIRCUITING AND WIRING FOR NEW WORK TO VALIDATE REQUIRED CLEARANCES BASED ON AS-BUILT FIELD CONDITIONS. NOTIFY ARCHITECT OF CONFLICTS.
10. ALL ELECTRICAL WORK AND MATERIALS SHALL BE IN COMPLIANCE WITH THE CURRENT RULES AND REGULATIONS OF THE NATIONAL BOARD OF FIRE UNDERWRITERS, THE STATE FIRE MARSHALL, THE SAFETY ORDERS OF THE DIVISION OF INDUSTRIAL SAFETY, DEPARTMENT OF INDUSTRIAL RELATIONS AND APPLICABLE CODES. ALL EQUIPMENT SHALL BE UL LABELED.
11. BUILDING SERVICES AND UTILITY DISRUPTIONS TO THE BUILDING, INCLUDING ADJACENT TENANTS IN MULTI-TENANT BUILDINGS ARE NOT PERMITTED DURING NORMAL BUSINESS HOURS AND SHALL BE AUTHORIZED BY THE PROPERTY MANAGER 48 HOURS MINIMUM PRIOR TO THE DISRUPTION (EXCEPT AS OTHERWISE PERMITTED BY THE PROPERTY MANAGER) IN ALL INSTANCES. ALL FIRE / LIFE SAFETY SYSTEMS SHALL REMAIN OPERATIONAL DURING DEMOLITION AND CONSTRUCTION ACTIVITIES DURING NORMAL BUSINESS HOURS. FOR TEMPORARY DISRUPTIONS LIMITED TO THE AREA OR WORK, AFTER HOURS AS NEEDED TO COMPLETE THE WORK, SCHEDULE DAY AND TIME WITH OWNER IN ADVANCE, IN WRITING ON AN OVERTIME BASIS. REESTABLISH ALL BUILDING SERVICES AND UTILITIES AT CONCLUSION OF TEMPORARY SHUT OFF, AS SOON AS PRACTICAL.

KEYNOTES

NO.	DESCRIPTION
201	PROVIDE ELECTRICAL CONNECTION FOR EXTERIOR TENANT SIGNAGE (BY OTHERS). COORDINATE WITH TENANT'S SIGN VENDOR FOR EXACT LOCATION AND ELECTRICAL REQUIREMENTS. EXISTING SIGN POWER MAY BE REUSED IF APPLICABLE.
202	PROVIDE AND INSTALL DOORBELL AND CHIME FOR REAR DOOR.
203	PROVIDE AND INSTALL OUTLET AT INDICATED HEIGHT FOR FUTURE ILLUMINATED WALL FEATURE. REFER TO ELEVATION AND COORDINATE EXACT LOCATION WITH OWNER.
204	PROVIDE AND INSTALL JUNCTION BOX ABOVE CEILING FOR INTERIOR TENANT SIGNAGE. PROVIDE CONDUIT WITHIN PARTITION FOR SIGNAGE WIRING. COORDINATE EXACT LOCATION WITH TENANT'S SIGN VENDOR.
205	REFER TO ELECTRICAL DRAWINGS FOR EQUIPMENT REQUIREMENTS AT ICE CREAM MACHINES.
206	REFERENCE ELEVATION FOR OUTLET LOCATIONS.
207	REFER TO ENGINEERING DOCUMENTS FOR WATER HEATER POWER.
208	EXISTING ELECTRICAL PANELS AND BREAKERS TO REMAIN. REFER TO ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.

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POWER & SIGNAL PLAN

A-2.0

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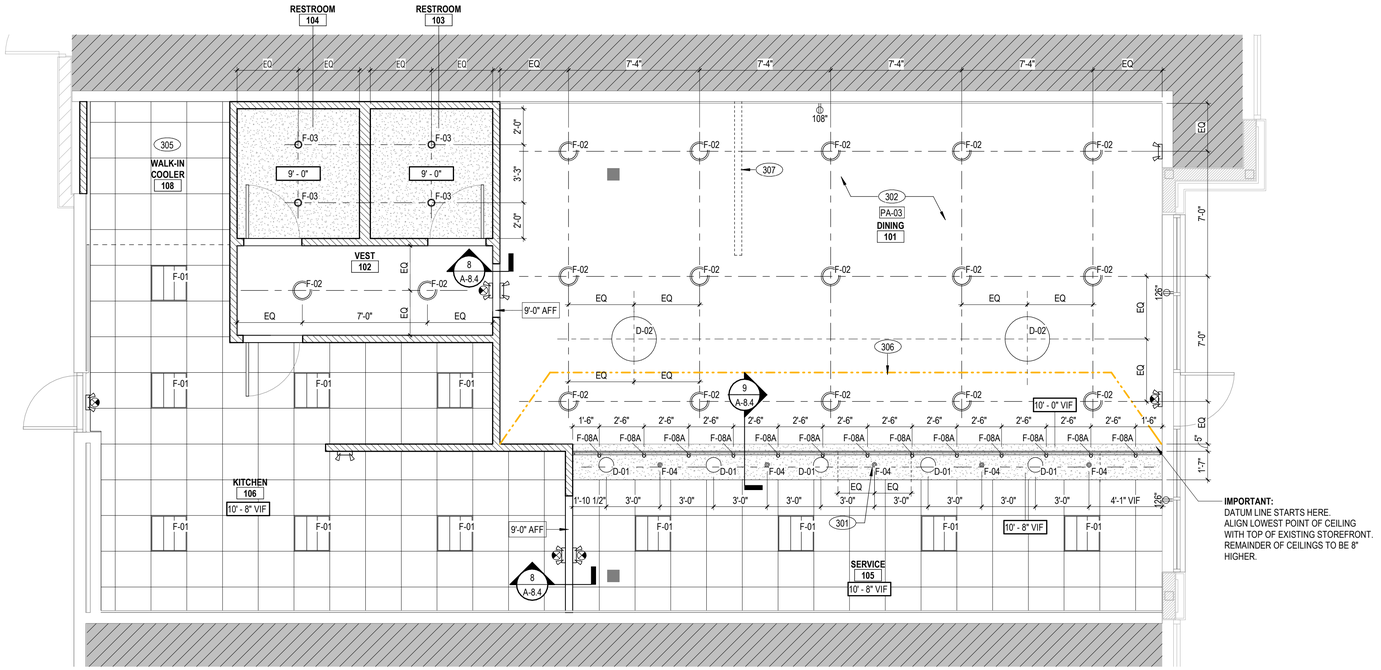

1 01 RCP
1/4" = 1'-0"

TRUE

LIGHT FIXTURE SCHEDULE

MILKSHAKE FACTORY - LIGTHING FIXTURE SCHEDULE

TAG	DESCRIPTION	MANUFACTURER	MODEL#	FINISH	COLOR TEMP.	MOUNTING HEIGHT (AFF)	REMARKS
F-01	2X2 TROFFER	COLUMBIA LIGHTING	LCAT22-40-MW-G-E-U	-	4000K LED	-	
F-02	GENERAL LIGHTING PENDANT	BROWNLEE	METRO PENDANT - 2681-19-BL-R34-FL2-CC1-BLC-30K	BLACK	3000K LED	10'-0"	CORD AND SINGLE PENDANT (CC1) - PROVIDE CE1 CABLE EXTENSION AS NEEDED PER SITE CONDITIONS
F-03	4" RECESSED DOWNLIGHT	PACLIGHTS	FDLA04D12-8	WHITE	4000K LED	-	
F-04	1" RECESSED DOWNLIGHT	CSL LIGHTING	ED1NC-709010-12S	WHITE	4000K LED	-	INSTALL WITH ED1-RST TRIM
F-08A	TRACK-LITES 13W LED CYLINDER	JUNO	R606L - DIMMABLE NARROW FLOOD	WHITE	4000K LED	-	USE WITH SURFACE MOUNTED TRAC-LITES SYSTEM (WHITE) CUT TO FIT FIELD CONDITION. COORDINATE WITH OWNER FOR ANGLE OF TRACK HEADS.
F-08B/ NOT USED	TRACK-LITES 13W LED CYLINDER	JUNO	R606L - DIMMABLE NARROW FLOOD	BLACK	4000K LED	-	USE WITH CABLE HUNG TRAC-LITES SYSTEM (BLACK) 6'-0" LENGTH. COORDINATE WITH OWNER FOR ANGLE OF TRACK HEADS.
D-01	DECORATIVE PENDANT	KOHLER	EMBRA PENDANT, 10"	BRUSHED NICKEL	4000K LED	7'-4"	INSTALL WITH TYPE A19 "Edison" style LED bulb, 3000K EmeryAllen EA-A19-7.0W-E26-3090-D, or equal
D-02	DECORATIVE PENDANT	SHADES OF LIGHT	ALGONAC SPHERES CHANDELIER (CH24249)	AGED GOLD / CLEAR GLASS	3000K LED	8'-6"	INSTALL WITH TYPE B10 5.0W LED bulb, 3000K EmeryAllen EA-B10-5.0W-3090-D, or equal GC TO PROVIDE CONDUIT TO SUSPENDED JBOX TO ENSURE CORRECT HT., PAINT TO MATCH DECK PAINT COLOR
EM-1	EMERGENCY LIGHT	LITHONIA LIGHTING	ELM2L	WHITE	N/A		
X-1	EXIT SIGN	LITHONIA LIGHTING	LQM-S-W-3-R-MVOLT-ELN	WHITE HOUSING, RED LETTERS	N/A		CEILING MOUNTED INSTALLATION; PROVIDE STEM KIT WHERE INSTALLED IN EXPOSED CEILING AREAS
X-2	EXIT SIGN / EMERGENCY LIGHT COMBO	LITHONIA LIGHTING	LHQM-LED-R	WHITE HOUSING, RED LETTERS	N/A		CEILING MOUNTED INSTALLATION; PROVIDE STEM KIT WHERE INSTALLED IN EXPOSED CEILING AREAS

RCP SHEET NOTES

1. VERIFY AS-BUILT FIELD CONDITIONS AND LOCATIONS FOR EXISTING AND NEW PLUMBING, AUDIO VISUAL, HVAC DUCTWORK AND PIPING, STRUCTURAL FRAMING, ELECTRICAL BUS DUCT AND CONDUIT BANKS, ELECTRICAL PULL BOXES, FIRE PROTECTION LINES AND RELATED WORK TO DETERMINE AND COORDINATE BEST CEILING FRAMING, POINTS OF ACCESS AND CLEARANCES AS REQUIRED FOR NEW WORK.
2. THE ARCHITECTURAL REFLECTED CEILING PLAN INCLUDES CRITICAL INFORMATION WHICH MAY NOT BE SHOWN ON THE ELECTRICAL PLANS INCLUDING FIXTURE HEIGHTS AND LOCATIONS AND DEVICE AND COVER PLATE COLORS. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND ELECTRICAL CONTRACTOR TO REVIEW AND COORDINATE BETWEEN THE ARCHITECTURAL AND ELECTRICAL PLANS AND ALERT ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES. NO CHANGE ORDERS WILL BE ACCEPTED DUE TO A FAILURE TO FULLY REVIEW AND COORDINATE THE CONTRACT DRAWINGS.
3. PROVIDE ACCESS PANELS WHERE REQUIRED IN GYP.BD. CEILING INCLUDING, BUT NOT LIMITED TO FIRE SMOKE DAMPERS, FIRE LIFE SAFETY J-BOXES, FAN COILS AND VAV BOXES PER MANUFACTURER'S WRITTEN RECOMMENDATIONS, CONDUIT BANK PULL BOXES AND CONTROL AND SHUTOFF VALVES.
4. CEILING MOUNTED ELECTRICAL DEVICES SHALL BEAR UL LABEL AND FREE OF DEFECTS.
5. LIGHTING CONTROL COVER PLATES SHALL BE WHITE AT GYP BD CEILINGS, SOFFITS AND CEILING MOUNTED FABRIC WRAPPED PANEL LOCATIONS, UNLESS NOTED OTHERWISE.
6. AT EXPOSED STRUCTURE AREAS IN STEEL BUILDINGS WITH EXPOSED SPRAY FIREPROOFING, PROVIDE PROTECTIVE OVERSPRAY AT SPRAY- FIREPROOFING TO PREVENT DUSTING WHERE PAINT IS SCHEDULED AT EXPOSED CONSTRUCTION. PROVIDE PRIMER/SEALER UNDERCOAT PER MANUFACTURER'S WRITTEN RECOMMENDATIONS.
7. CONTRACTOR TO COORDINATE FIRE SPRINKLER AND FIRE ALARM DEVICE LOCATIONS WITH ARCHITECT PRIOR TO SUBMITTING FOR PERMIT. WHERE APPLICABLE CENTER SPRINKLER HEADS IN CEILING PANEL/TILE. ALIGN SPEAKERS, SMOKE DETECTORS, MOTION SENSORS AND RELATED CEILING MOUNTED DEVICES WITH LIGHTING FIXTURE CENTERLINES AND CENTER OF CEILING PANEL/TILE. LOCATE HVAC DIFFUSERS IN GYP BD CEILINGS AS SHOW ON ARCHITECTURAL R.C.P.
8. LOCATE EXIT SIGNS VERTICALLY ABOVE THE FINISH FLOOR TO INSURE SIGHT LINES ARE NOT BLOCKED BY LIGHT FIXTURES, BEAMS, SOFFITS, DROPPED CEILINGS, DUCTWORK, CONDUIT BANKS, PIPING AND RELATED OVERHEAD WORK.
9. GYPSUM BOARD CEILINGS TO BE PAINTED PA-02, UON. SEE FINISH SCHEDULE FOR SPECIFIC PRODUCT.
10. ALL CEILING HEIGHT DIMENSIONS PROVIDED ARE AFF, UNLESS OTHERWISE NOTED.
11. CEILING MOUNTED DEVICES IN DINING AREA, INCLUDING BUT NOT LIMITED TO, OCCUPANCY SENSORS, FA STROBES (IF REQUIRED), ETC TO BE PENDANT MOUNTED AND INSTALLED IN-LINE WITH AND AT MIDPOINTS BETWEEN L-05 LIGHTING FIXTURES. LIMIT WALL MOUNTED DEVICES.
12. INDICATED CEILING HEIGHTS ARE DESIGN INTENT. CONTRACTOR SHALL VERIFY IN FIELD PRIOR TO CONSTRUCTION COMMENCEMENT AND ENSURE SPECIFIED HEIGHTS ARE FEASIBLE AND ALERT ARCHITECT IF ADJUSTMENT IS REQUIRED.

KEYNOTES

NO.	DESCRIPTION
301	CENTER FIXTURE ON POINT OF SALE COUNTER BELOW.
302	EXPOSED CEILING AREA: PAINT ALL EXPOSED STRUCTURE, DUCTWORK, CONDUIT, SPRINKLERS, ETC. AS INDICATED ON RCP. ALL EXPOSED CABLES AND WIRES SHALL BE NEATLY INSTALLED WITH ALL EXCESS LENGTHS TRIMMED AND COILED. ADD ALTERNATE: PROVIDE AS-01 ACOUSTIC SPRAY INSULATION ON EXPOSED STRUCTURE. SEE FINISH SCHEDULE FOR SPECIFICATIONS.
305	SPECIFIED CEILING TILE SYSTEM TO CONTINUE AT INDICATED HEIGHT OVER WALK-IN COOLER EQUIPMENT. SEE EQUIPMENT SCHEDULE FOR ADDTITIONAL COOLER INFORMATION.
306	WP-03 ACOUSTIC FAUX WOOD PANELS TO BE INSTALLED ABOVE SOFFIT WHERE INDICATED. REFER TO FINISH PLAN AND INTERIOR ELEVATIONS FOR DETAILS.
307	INDICATES LOW HT. PARTITION BELOW.

RCP LEGEND

- 2X4 LED TROFFER
- 2X2 LED TROFFER
- RECESSED DOWNLIGHT
- CEILING-MOUNTED PENDANT
- LED STRIP COVE LIGHTING
- TRACK LIGHTING
- OPEN TO DECK
- NEW GWB CEILING / SOFFIT
- CEILING MOUNTED ONE SIDED EXIT SIGN
- CEILING MOUNTED TWO SIDED EXIT SIGN
- WALL MOUNTED EXIT SIGN
- WALL MOUNTED EXIT SIGN /EMERGENCY LIGHT COMBO
- WALL MOUNTED EMERGENCY LIGHT
- NEW CEILING GRID (SEE ACP-01 IN FINISH SCHEDULE)

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REFLECTED CEILING PLAN

A-3.0

2/18/2025 3:57:25 PM 23.1

FINISH SCHEDULE

RESILIENT FLOOR

VT-01
MANUFACTURER: KARNDEAN
PRODUCT: OPUS WOOD
STYLE: WP511
COLOR: WEATHERED ELM
SIZE [W / L / H]: 36" x 4" x 2.5mm thick
INSTALL PATTERN: HERRINGBONE
INSTALL METHOD: DIRECT GLUE
ASTM D2047: 0.89 SCOF
NOTE: DCOF 0.42 (MIN)

BASE

RB-01
MANUFACTURER: TARKETT
PRODUCT: INFLECTIONS
PRODUCT NUMBER: MW 50 G
HEIGHT: 5-1/4"
MATERIAL: RUBBER
STYLE: DECORATIVE / MILLWORK PROFILE
COLOR: SNOWBOUND

GLASS

GL-01
MANUFACTURER: TBD BY GC
PRODUCT: TEMPERED, LOW IRON GLASS
COLOR: CLEAR
SIZE: 1/2" THICK
EDGES: FLAT POLISHED EDGES
LOCATION: SNEEZE GUARDS
NOTE: GLASS MANUFACTURERS TO ADJUST THICKNESS FOR LONGER SPANS

PAINT

PA-01
MANUFACTURER: BENJAMIN MOORE
COLOR: WHITE DIAMOND OC-61
FINISH/SHEEN: EGGSHELL UON
LOCATION: THROUGHOUT UON
WALL BASE: RB-01 UON

PA-02
MANUFACTURER: BENJAMIN MOORE
COLOR: SUPER WHITE OC-152
FINISH/SHEEN: FLAT
LOCATION: GYP. BD. CEILINGS/SOFFITS

PA-03
MANUFACTURER: BENJAMIN MOORE
COLOR: KENDALL CHARCOAL HC-166
FINISH/SHEEN: FLAT
LOCATION: EXPOSED CEILINGS

PA-04
MANUFACTURER: TBD
COLOR: TBD
FINISH/SHEEN: EGGSHELL
LOCATION: ACCENT PAINT

WALL COVERING

WC-01
MANUFACTURER: *OWNER'S VENDOR*
PRODUCT: CUSTOM PRINTED WALLCOVERING
COLOR: MILKSHAKE FACTORY "WARHOL" SHAKE GRAPHIC
LOCATION: RESTROOM WALLS (ABOVE TILE)
WALL BASE: TL-02B
NOTE: PROVIDED AND INSTALLED BY OWNER'S GRAPHICS/SIGNAGE VENDOR; GC RESPONSIBLE FOR PREPPING WALL (PROVIDE LEVEL 5 DRYWALL FINISH)

CEILING SYSTEMS

ACP-01
MANUFACTURER: ARMSTRONG
PRODUCT: KITCHEN ZONE
SIZE: 24" x 24"
COLOR & FINISH: WHITE
SUSP. SYSTEM/GRID: SQUARE LAY-IN 15/16"
NOTE: MEETS USDA/FSIS GUIDELINES FOR KITCHEN/PREP AREAS

AS-01
MANUFACTURER: INTERNATIONAL CELLULOSE
PRODUCT: K-13
SIZE: 1/2" THICK
COLOR & FINISH: COLOR TO MATCH PA-03
LOCATION: EXPOSED CEILING

AS-01 ALT 1
MANUFACTURER: INTERNATIONAL CELLULOSE
PRODUCT: SONASPRAY FC
SIZE: 1/2" THICK
COLOR & FINISH: COLOR TO MATCH PA-03
LOCATION: EXPOSED CEILING
NOTE: ALTERNATE TO AS-01

PLASTIC LAMINATE

PL-01
MANUFACTURER: WILSONART
PRODUCT NUMBER: 1573
COLOR: FROSTY WHITE
FINISH: 60 MATTE FINISH
LOCATION: SERVICE COUNTER

PL-02
MANUFACTURER: WILSONART
PRODUCT NUMBER: D8226
COLOR: DERING FOREST
FINISH: 79 RIDGEWOOD FINISH WITH AEON
GRAIN: REFER TO ELEVATIONS
LOCATION: MILK BOTTLE FEATURES

COUNTERTOP

QZ-01
MANUFACTURER: DALTILE
PRODUCT: NIAGRA 3CM
COLOR: OQ32
FINISH: POLISHED WITH EASED EDGES
LOCATION: SERVICE COUNTER
CONTACT: CONTACT: JONATHAN STUDIOSO
JONATHAN.STUDIOSO@DALTILE.COM
704-516-6310

TILE

TL-02
MANUFACTURER: DALTILE
PRODUCT: COLOR WHEEL CLASSIC
STYLE / FINISH: GLOSSY
COLOR: ARCTIC WHITE 0190
SIZE [W / H / D]: 4" x 4"
INSTALL PATTERN: STACKED
GROUT COLOR: LATICRETE PERMACOLOR - RAVEN
GROUT WIDTH: 1/16"
LOCATION: RESTROOM WALL TILE
TRANSITION STRIP: ME-01

TL-02B
MANUFACTURER: DALTILE
PRODUCT: COLOR WHEEL CLASSIC FLAT TOP COVE BASE
STYLE / FINISH: GLOSSY
COLOR: ARCTIC WHITE 0190
SIZE [W / H / D]: 4" x 4"
INSTALL PATTERN: STACKED
GROUT COLOR: LATICRETE PERMACOLOR - RAVEN
GROUT WIDTH: 1/16"
LOCATION: RESTROOM WALL TILE BASE

TL-03
MANUFACTURER: DALTILE
PRODUCT: PORTFOLIO
STYLE / FINISH: PF-09
COLOR: CHARCOAL
SIZE [W / H / D]: 12" x 24"
INSTALL PATTERN: RUNNING BOND 1/3 OFFSET
GROUT COLOR: LATICRETE PERMACOLOR - RAVEN
GROUT WIDTH: 1/8"
DCOF: ≥0.55
LOCATION: RESTROOM FLOOR TILE
TRANSITION STRIP: ME-02

TL-04
MANUFACTURER: DALTILE
PRODUCT: QUARRY TEXTURES
STYLE / FINISH: ABRASIVE
COLOR: ASHEN GRAY SQUARE 0T03
SIZE [W / H / D]: 8" x 8"
INSTALL PATTERN: GRID
GROUT COLOR: LATICRETE PERMACOLOR - RAVEN
GROUT WIDTH: 1/8"
DCOF: ≥0.42
LOCATION: BACK OF HOUSE
TRANSITION STRIP: PROVIDE ADA-COMPLIANT TRANSITION / REDUCER AS NEEDED WHERE TILE TRANSITIONS TO OTHER FLOORING MATERIALS

TL-04B
MANUFACTURER: DALTILE
PRODUCT: QUARRY TILE ROUND TOP COVE BASE / CORNER RIGHT / CORNER LEFT / INSIDE CORNER
STYLE / FINISH: MATTE
COLOR: ARID GRAY SQUARE QL1665 & QCRL1665
SIZE [W / H / D]: 5" x 8" / 1" x 5"
INSTALL PATTERN: -
GROUT COLOR: LATICRETE PERMACOLOR - RAVEN
GROUT WIDTH: 1/8"
LOCATION: BACK OF HOUSE

ME-01
MANUFACTURER: SCHLUTER
PRODUCT: JOLLY-P
COLOR: BRIGHT WHITE
NOTES: GC TO COORDINATE SIZE WITH SCHEDULED TILE

ME-02
MANUFACTURER: SCHLUTER
PRODUCT: RENO-U
COLOR: SATIN ANODIZED
NOTES: GC TO COORDINATE SIZE WITH SCHEDULED TILE

ME-03
MANUFACTURER: CONSTRUCTION SPECIALTIES
PRODUCT: ACROVYN CO-8 CORNER GUARD (16-GUAGE)
COLOR: STAINLESS STEEL
SIZE: 6' - 0" L
NOTES: OR APPROVED EQUAL

ME-04
MANUFACTURER: CONSTRUCTION SPECIALTIES
PRODUCT: ACROVYN SCO-8 END WALL GUARD (16-GUAGE)
COLOR: STAINLESS STEEL
SIZE: 6' - 0" L
NOTES: OR APPROVED EQUAL

WALL PANELING

WP-01
MANUFACTURER: MARLITE
PRODUCT: SYMMETRIX
STYLE: SUBWAY VERTICAL
COLOR: WHITE
TYPE: CUSTOM PANEL (#215032 - SYM SS1050 G28R MILK WHITE 48X120 HG2)
SIZE [W / L / H]: 2" x 8" TILE CONFIGURATION
4' x 8' PANEL SIZE
WALL BASE: TL-04B
LOCATION: FRONT OF HOUSE
NOTES: WHITE GROUT. FRP TO EXTEND FROM TOP OF BASE TO CEILING. INSTALL WITH MANUFACTURER'S MATCHING EDGE TRIM.

WP-02
MANUFACTURER: MARLITE
PRODUCT: STANDARD FRP
STYLE: P 100 PEBBLED
COLOR: WHITE
SIZE [W / L / H]: 4' x 10' PANEL SIZE
WALL BASE: TL-04B
LOCATION: BACK OF HOUSE
NOTES: FRP TO EXTEND FROM TOP OF BASE TO CEILING. INSTALL WITH MANUFACTURER'S MATCHING EDGE TRIM.

WP-03
MANUFACTURER: MPS ACOUSTICS
PRODUCT: WANDER (HORIZONTAL)
COLOR: TBD - SUBMIT RFI PRIOR TO PLACING ORDER FOR COLOR SELECTION
SIZE: 42"W X 81"H PANEL
LOCATION: SOFFIT ABOVE FRONT COUNTER; SEE ELEVATIONS
NOTES: DIRECT GLUE TO WALL PER MANUFACTURER'S INSTRUCTIONS; USE CONTACT BELOW FOR SPECIAL MILKSHAKE FACTORY ACCOUNT PRICING
FLAME SPREAD RATING TO BE CLASS C MIN.
CONTACT: MEGAN WEBER; 540-354-3847; MWEBER@MRGSE.COM

SHEET NOTES

1. FOR FINISH MATERIAL DEFINITIONS REFER TO FINISH SCHEDULE AND THE SPECIFICATIONS.
2. FOR CEILING FINISHES REFER TO RCP.
3. UNLESS OTHERWISE NOTED, TYPICAL FINISHES SHALL BE AS FOLLOWS:
   WALLS: PA-01
   WALL BASE: BA-01
4. DYNAMIC COEFFICIENT OF FRICTION (DCOF) FOR WET AND DRY LEVEL INTERIOR FLOORING SURFACES (INCLUDING SEALED CONCRETE) TO BE 0.42 MIN. MANUFACTURER'S DOCUMENTATION TO BE INCLUDED IN MATERIAL SUBMITTALS.
5. UNLESS OTHERWISE NOTED, THE DEFINED STARTING POINT OF A UNITIZED FINISH MATERIAL SHALL BE A FINISHED EDGE OF THE UNIT.
6. IN ALL BACK-OF-HOUSE AREAS (KITCHEN, SERVICE AREA) INSTALL ME-03 STAINLESS STEEL CORNER GUARDS ON OUTSIDE WALL CORNERS AND ME-04 END WALL GUARD ON END WALL EDGES. SEE FINISH SCHEDULE FOR DETAILS.

LEGEND

P-1 — FINISH MATERIAL DEFINITION
P-1 — FINISH MATERIAL TAG
FLOOR FINISH TRANSITION
FLOOR FINISH DIRECTION
START TILE — PATTERN START TILE

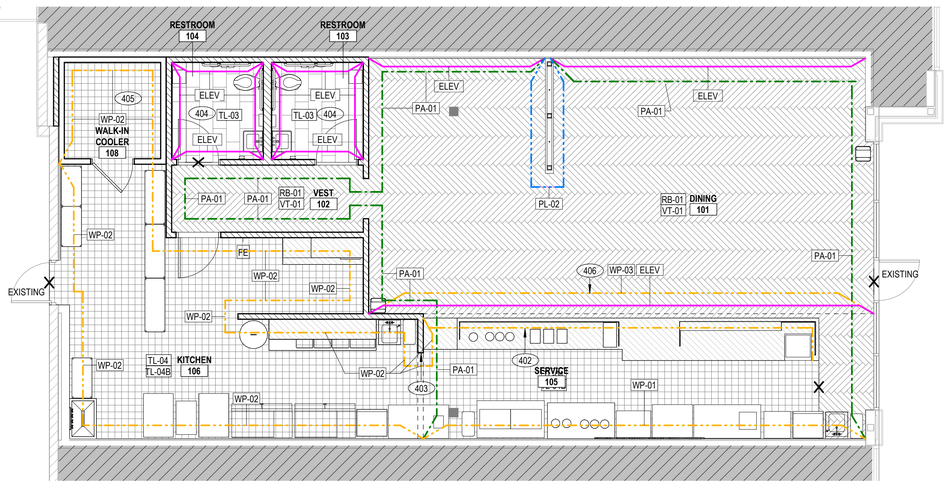
WALL FINISH DEFINITIONS
SEE ELEVATION — ELEV
PAINT — PA-0X
PLASTIC LAMINATE — PL-0X
WALL PANELING — XX-01

KEYNOTES

NO.	DESCRIPTION
402	INSTALL WP-02 ON ALL EXPOSED SURFACES BELOW FRONT COUNTER (EMPLOYEE SIDE ONLY).
403	INSTALL ME-04 U-SHAPED GUARDS AT PASS-THRU.
404	PREP DRYWALL TO RECEIVE LEVEL 5 FINISH FOR WALLCOVERING. REFER TO ELEVATIONS FOR ADDTITIONAL INFORMATION.
405	SPECIFIED FLOOR AND WALL FINISHES TO BE INSTALLED PRIOR TO EQUIPMENT INSTALLATION.
406	WP-03 ACOUSTIC FAUX WOOD PANELS TO BE INSTALLED ABOVE SOFFIT WHERE INDICATED. REFER TO INTERIOR ELEVATIONS FOR DETAILS.

FINISH CODES

AF	ACCESS FLOORING SYSTEM	GF	GLAZING FILM	SD	STATIC DISSIPATIVE
BA	BASE	GL	GLASS	SF	SPECIAL FINISH
CA	CARPET	GR	GROUT	SS	SOLID SURFACE
CO	CONCRETE	ME	METAL	ST	STONE
CS	CEILING SYSTEMS	PA	PAINT	TI	TILE
DM	DECORATIVE MASONRY	PC	PERFORMANCE COATING	WC	WALL COVERING
EGD	EXPERIENTIAL DESIGN	PG	PROTECTIVE GUARDS	WF	WOOD FLOORING
ELEV	REFER TO ELEVATIONS	PL	PLASTIC LAMINATE	WP	WALL PANELING
EM	ENTRANCE MATS	RF	RESILIENT FLOOR	WS	WOOD SOLID
FA	FABRIC			WT	WINDOW TREATMENT
FT	FINISH TRANSITION			WV	WOOD VENEER



1 01 FINISH PLAN
3/16" = 1'-0"

TRUE

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUE FOR CONSTRUCTION	2/20/2025

INTERIOR ARCHITECTS
DENVER
1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

Owner Approval

27MSHF.0030.000 — Job No.
As indicated — Scale

FINISH PLAN & SCHEDULE

A-4.0

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SHEET NOTES

1. FURNITURE PLAN IS FOR REFERENCE ONLY. ALL FURNITURE SHALL BE PROVIDED AND INSTALLED BY OWNER.
2. REFER TO RESPONSIBILITIES MATRIX, SHEET AN-2.0, FOR FURTHER INFORMATION.
3. THE PLUMBING FIXTURE SCHEDULE IS PROVIDED FOR COORDINATION PURPOSES ONLY, AND MAY NOT INCLUDE ALL PLUMBING COMPONENTS. REFER TO PLUMBING DRAWINGS FOR COMPLETE SPECIFICATIONS.
4. PER 2021 IBC, A MINIMUM OF 5% AND NOT LESS THAN 1 OF THE DINING SURFACES SHALL BE ACCESSIBLE.

LEGEND

[X] EQUIPMENT / FURNITURE DESIGNATION

KEYNOTES

NO.	DESCRIPTION
501	PROVIDE 24" x 24" CUTOUT IN COUNTERTOP FOR EQUIPMENT. MILLWORKER TO VERIFY CUTOUT SIZE WITH EQUIPMENT SIZE.
502	EMPLOYEE PERSONAL ITEMS TO BE STORED ONLY IN THIS AREA; NO FOOD SERVICE STORAGE WILL BE PERMITTED.
503	CHEMICALS AND CLEANING SUPPLIES TO BE STORED ONLY IN THIS AREA; NO FOOD SERVICE STORAGE WILL BE PERMITTED.

CONTRACTOR SHALL COORDINATE AND VERIFY ALL EQUIPMENT INFORMATION WITH THE OWNER AND MANUFACTURER PRIOR TO PROCURING MATERIALS AND ROUGH-IN OF RELATED SERVICES.

FURNITURE SCHEDULE

MILKSHAKE FACTORY - STANDARD FURNITURE SCHEDULE (FOR REFERENCE ONLY)

MARK	DESCRIPTION	VENDOR	BRAND	FINISH	MODEL NO.	PROVIDED...	INSTALLE...	COMMENTS
CH-01	DINING CHAIR	CENTRAL RESTAURANT PRODUCTS	BFM SEATING	CLEAR COAT	2160C-CL W	OWNER	OWNER	WALNUT SEAT FINISH 17.5" SEAT HEIGHT SATISFIES ADA REQUIREMENTS
CH-02	BARSTOOL	CENTRAL RESTAURANT PRODUCTS	FLASH FURNITURE	BLUE	CH-31320-24-BL-GG	OWNER	OWNER	
CH-03	TASK CHAIR	AMAZON	FURMAX	BLACK	T-OCNC	OWNER	OWNER	
CH-04	BANQUETTE	CENTRAL RESTAURANT PRODUCTS	ATS MFG	WALNUT	AS36-WBB-PSW GR4	OWNER	OWNER	ARMADA VINYL FOR SEAT SECURE TO FLOOR WHERE NOTED
TB-01	24"DIA. X 30"H TABLE	CENTRAL RESTAURANT PRODUCTS	FLASH FURNITURE; VITRO SEATING	TOP: WHITE; BASE: BLACK	XU-T2222-GG; TF-125	OWNER	OWNER	30" HEIGHT MAX SATISFIES 2009 ANSI A117.1 SEC 902 REQUIREMENTS
TB-02	76"L X 24"H TRAINING TABLE	TBD		TOP: WHITE; BASE: BLACK	-	OWNER	OWNER	
TB-03	24"L X 24"W X 30"H TABLE	CENTRAL RESTAURANT PRODUCTS	FLASH FURNITURE; OAK STREET	TOP: DARK WALNUT; BASE: BLACK	XU-T2222-GG; WDL2424-DW	OWNER	OWNER	30" HEIGHT MAX SATISFIES 2009 ANSI A117.1 SEC 902 REQUIREMENTS
TB-04	RETAIL DISPLAY TABLE	CUSTOM MILLWORK		WALNUT TOP, PAINTED WHITE LEGS	-	OWNER	OWNER	DESIGN TO MATCH EXISTING MSF STORES; MAY BE IN FURNITURE OR MILLWORK SCOPE - TBD
TB-05	18"W X 30"H TABLE	CUSTOM MILLWORK		TBD	-	OWNER	OWNER	30" HEIGHT MAX SATISFIES 2009 ANSI A117.1 SEC 902 REQUIREMENTS. DESIGN TO MATCH EXISTING MSF STORES; MAY BE IN FURNITURE OR MILLWORK SCOPE - TBD. SEE PLAN FOR CUSTOM LENGTH DIMENSION.

ACCESSORIES SCHEDULE

MARK	MANUF.	DESCRIPTION	FINISH	MODEL NO.	PROVIDED BY	INSTALLED BY	COMMENTS
TA-01a	BOBRICK	GRAB BAR - 42"	STAINLESS STEEL	B-5806x42	GC	GC	
TA-01b	BOBRICK	GRAB BAR - 36"	STAINLESS STEEL	B-5806x36	GC	GC	
TA-01c	BOBRICK	GRAB BAR - 18"	STAINLESS STEEL	B-5806x18	GC	GC	
TA-02	BOBRICK	MIRROR - 24"x36"	STAINLESS STEEL	B-165 2436	GC	GC	
TA-03	*BY OWNER*	PAPER TOWEL DISPENSER	*BY OWNER*	*BY OWNER*	OWNER	GC	PROVIDED BY OWNER'S VENDOR
TA-04	*BY OWNER*	AUTOMATIC SOAP DISPENSER	*BY OWNER*	*BY OWNER*	OWNER	GC	PROVIDED BY OWNER'S VENDOR
TA-05	*BY OWNER*	DOUBLE-ROLL TOILET TISSUE HOLDER	*BY OWNER*	*BY OWNER*	OWNER	GC	PROVIDED BY OWNER'S VENDOR
TA-06	BOBRICK	SANITARY NAPKIN DISPOSAL	STAINLESS STEEL	B-318	GC	GC	
TA-07	BOBRICK	COAT HOOK	STAINLESS STEEL	B-9542	GC	GC	
TA-08	*BY OWNER*	TRASH CAN	*BY OWNER*	*BY OWNER*	OWNER	GC	PROVIDED BY OWNER'S VENDOR
TA-09	FOUNDATIONS WORLDWIDE	BABY CHANGING STATION - HORIZONTAL SURFACE MOUNTED	WHITE GRANITE	200-EH-03	GC	GC	PROVIDE WHERE REQUIRED BY CODE

PLUMBING FIXTURE SCHEDULE

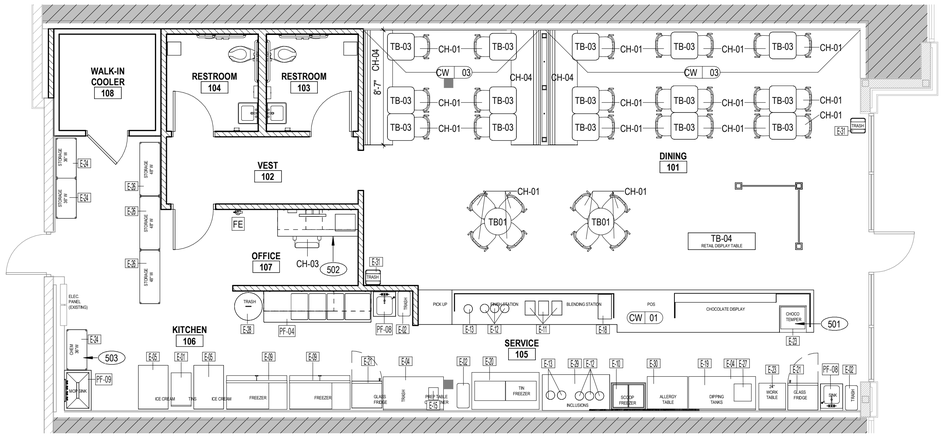
MARK	DESCRIPTION	MANUF.	MODEL NO.	FINISH	PROVIDED BY	INSTALLED BY	COMMENTS
PF-01	TOILET (FLOOR MOUNTED) W/ AUTOMATIC FLUSH VALVE	AMERICAN STANDARD	3043528.02	WHITE	GC	GC	
PF-02	LAVATORY	AMERICAN STANDARD	DECORUM 9024001EC.020	WHITE	GC	GC	
PF-03	RESTROOM FAUCET (AUTOMATIC)	AMERICAN STANDARD	605B105.002	CHROME	GC	GC	INSTALL W/ HARDWIRE KIT PK00.HAC
PF-04	4-COMPARTMENT SINK	ADVANCE TABCO	9-24-80-18R	STAINLESS STEEL	GC	GC	RIGHT OR LEFT HAND CONFIGURATION - LOCATE DRAINBOARD ADJACENT TO HAND SINK - REQUIRES INSINKERATOR GARBAGE DISPOSAL - LC-50 & HAMILTON BEACH CONTAINER RINSER - BCR100. COORDINATE SPEC WITH OWNER PRIOR TO PURCHASE
PF-05	KITCHEN FAUCET	T&S BRASS AND BRONZE WORKS, INC	B-0133-12V15-B	POLISHED CHROME	GC	GC	
PF-06	LAVATORY DRAIN	ZURN	Z8743-PC	CHROME	GC	GC	
PF-07	WATER HEATER	-	-	-	GC	GC	TBD BY MEP ENGINEER
PF-08	KITCHEN SINK	ELKAY	CHSB1716C	BUFFED SATIN	GC	GC	
PF-09	MOP SINK	MUSTEE	65M (24" X 36" X 10")	WHITE	GC	GC	OR EQUIVALENT WHITE 2'X3' FIBERGLASS MOP SINK

CASEWORK SCHEDULE (FOR REF. ONLY)

TAG	DESCRIPTION	COMMENTS
CW-01	FRONT COUNTER	CABINETRY ONLY BY MILLWORK VENDOR; COUNTERTOP AND PONY WALL PROVIDED AND INSTALLED BY GC
CW-03	WAINSCOTING	SEE ELEVATION FOR DETAILS
CW-04	LEGACY WALL TRIM	SEE ELEVATION FOR DETAILS

EQUIPMENT SCHEDULE (FOR REF. ONLY)

MARK	MANUF.	DESCRIPTION	FINISH	MODEL NO.	PROVIDED BY	INSTALLED BY	COMMENTS
E-01	KRATOS	18" X 30" STAINLESS STEEL WORKTABLES	STAINLESS STEEL	28W-094	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-02	SLIM JIM	23 GAL CONTAINER, 30" HEIGHT	BLACK	FG354060BLA	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-03	CENPRO	24" X 48" MSF 4-SHELF KIT WITH 74" POSTS	GREEN EPOXY	30V-085 /30V-102	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	LOCATED IN WALK-IN COOLER ONLY
E-04	KRATOS	60" x 30" 18-GAUGE COMMERCIAL WORK TABLE WITH 4" BACKSPLASH AND UNDERSHELF	STAINLESS STEEL	28W-019	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-05	STOELTING	U421 SOFT SERVE PRESSURE-FED SINGLE FLAVOR FLOOR MACHINE	STAINLESS STEEL	U421-3812	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-08	TURBOAIR	SOLID DOOR REFRIGERATOR REACH-IN TOP MOUONT M3 SERIES	STAINLESS STEEL	TSR-49SD-N6	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-09	TURBOAIR	SOLID DOOR FREEZER REACH-IN TOP MOUONT M3 SERIES	STAINLESS STEEL	TSF-49SD-N	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-10	EXCELLENCE INDUSTRIES	HB DUAL TEMP COOLER AND FREEZER	WHITE	HB-7HC	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-11	HAMILTON BEACH COMMERCIAL	TRIPLE SPINDLE DRINK MIXER	STAINLESS STEEL	HMD400	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-12	SERVER ESSENTIALS	CHILLER SAUCE PUMPS	STAINLESS STEEL	MMS 94070	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-13	SERVER ESSENTIALS	HOT SAUCE PUMPS	STAINLESS STEEL	FSP 82060	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-14	SERVER ESSENTIALS	CONSERVEWELL UTENSIL HOLDER	STAINLESS STEEL	CW 87750	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-15	ROBO COUPE	FOOD PROCESSOR	CHROME	R 2 B CLR	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-16	PLASTIC BOTTLE CRUSHER	ONE GALLON JUG CRUSHER	STAINLESS STEEL	5000-38	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-18	SURESHOT	REFRIGERATED LIQUID DISPENSER	STAINLESS STEEL	AC320-FP	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-19	AMANA COMMERCIAL	MICROWAVE RMS SERIES	STAINLESS STEEL	RMS10TSA	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-20	NELSON	INCLUSION STATION	STAINLESS STEEL	BD8 SE-RB	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	120V 5-15R - PROVIDE TELESCOPING LIDS AND CUSTOM INCLUSION RACK
E-21	MARKETEER MERCHANDISERS	GLASS REFRIGERATOR - LEFT HINGE	BLACK	MT10-1B	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	RIGHT HINGE - KRATOS - 32M-001
E-22	AMERIKOOLER	WALK-IN COOLER	TBD	QC080872WRNBSC	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	CONDENSOR TO BE INSTALLED PER MFG SPECS AND MEP DRAWINGS- CLIMATE CONTROL - PTN - ZB06KAE / REQUIRES ALTA WIRELESS TEMPERATURE SENSOR - MNS2-9-W2-TS-ST-L03 & SMALL BUSINESS MONITORING KIT - MNK2-9-EG-SMB
E-23	CHOCOTEMPER	CHOCOLATE TEMPERING TOP 11	STAINLESS STEEL	14.1.CHOCOTOP11	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	REQUIRES KRATOS EQUIPMENT STAND 28W-086
E-24	CENPRO	36" WIDE SHELVING SYSTEM	CHROME	30V-062	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-25	CENPRO	24" X 36" MSF 4-SHELF KIT WITH 74" POSTS	GREEN EPOXY	30V-085 /30V-094	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	LOCATED IN WALK-IN COOLER ONLY
E-26	CENPRO	48" WIDE SHELVING SYSTEM	CHROME	30V-070	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-27	CHOCOVISION	9LB CAPACITY CHOCOLATE TEMPERING MACHINE	STAINLESS STEEL	C11110REV5	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-28	RUBBERMAID	WHEELED BRUTE - 44 GAL CONTAINER	GRAY	H-10733	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-29	TURBOAIR	60" WORKTOP REFRIGERATOR SUPER DELUX SERIES	STAINLESS STEEL	TWR-60SD-N	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-30	KRATOS	30" x 36" 18-GAUGE COMMERCIAL WORK TABLE WITH 4" BACKSPLASH...	STAINLESS STEEL	28W-039	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	
E-31	WITT	21 GALLON SWING TOP TRASH CAN	WHITE	1411HTWH	SEE RESPONSIBILITIES MATRIX	SEE RESPONSIBILITIES MATRIX	



1 FURNITURE & EQUIPMENT PLAN
3/16" = 1'-0"

TRUE

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
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80002

DELTA	ISSUE	DESCRIPTION	DATE
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INTERIOR ARCHITECTS

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1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

Owner Approval

27MSHF.0030.000 — Job No.
As indicated — Scale

FURNITURE & EQUIPMENT PLAN

A-5.0

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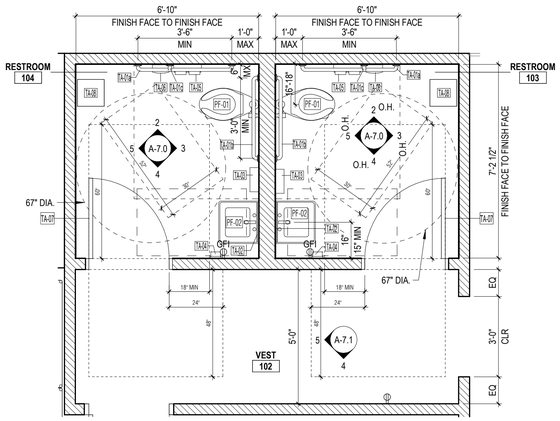
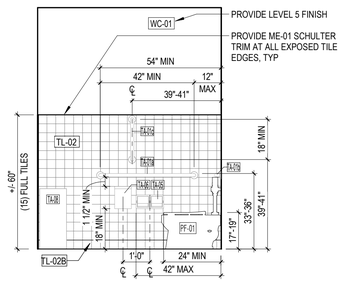
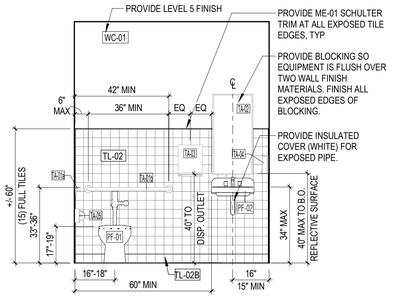


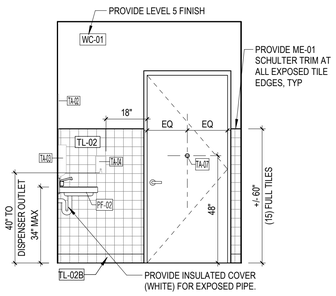
1 ENLARGED RESTROOMS PLAN
3/8" = 1'-0"



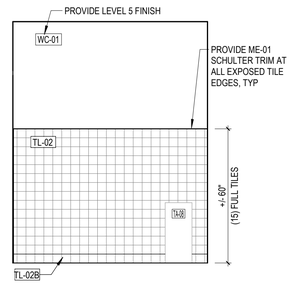
2 RESTROOM ELEVATION - NORTH
3/8" = 1'-0"



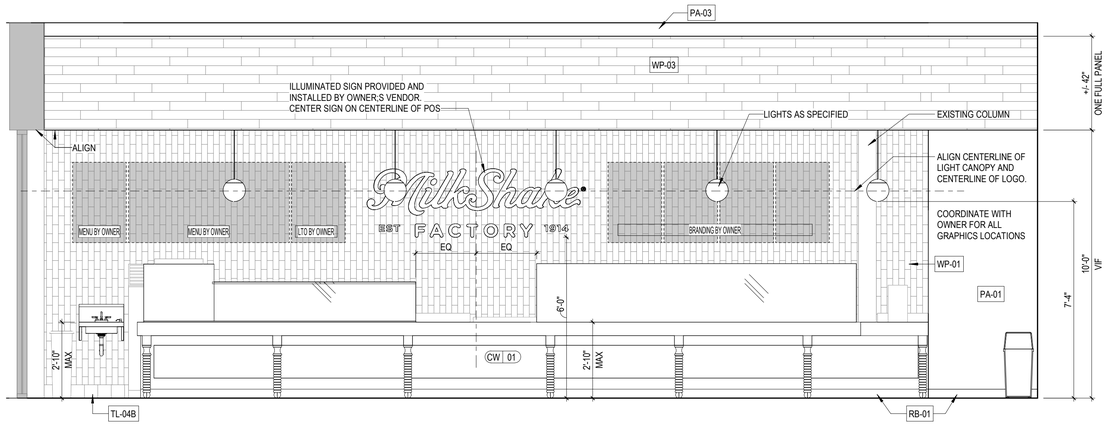
3 RESTROOM ELEVATION - EAST
3/8" = 1'-0"



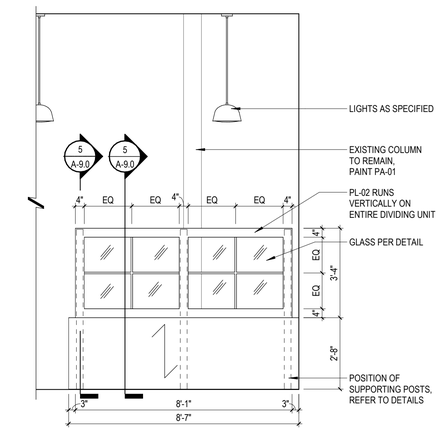
4 RESTROOM ELEVATION - SOUTH
3/8" = 1'-0"



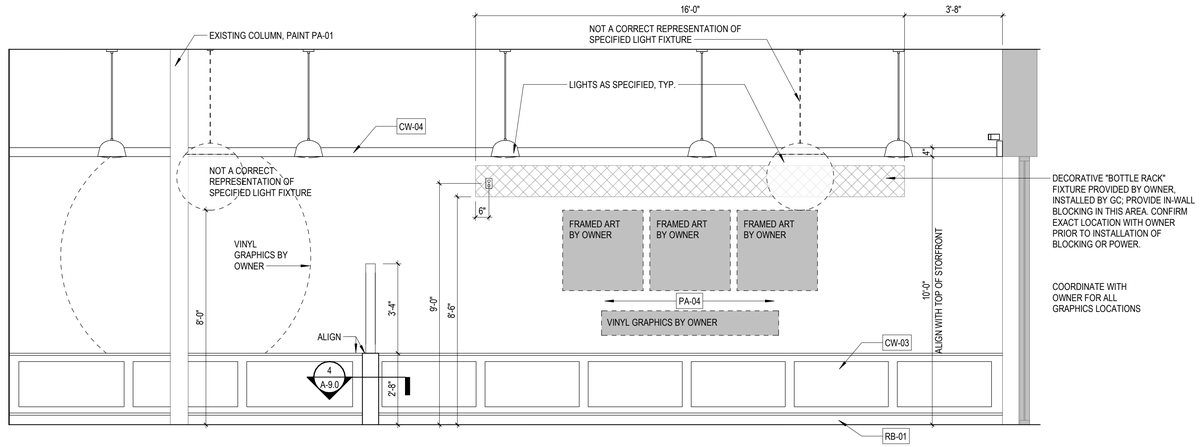
5 RESTROOM ELEVATION - WEST
3/8" = 1'-0"



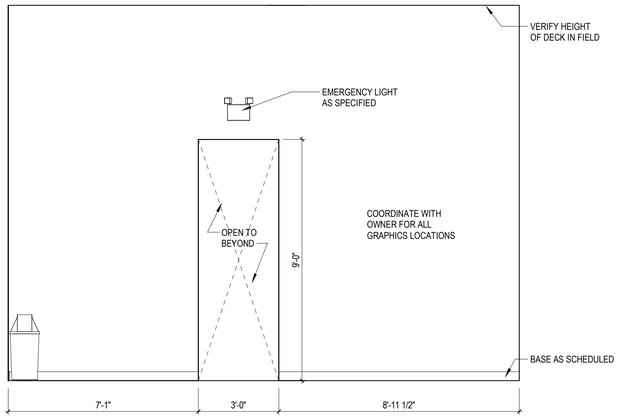
6 FRONT COUNTER ELEVATION - CLIENT SIDE
3/8" = 1'-0"



8 ELEVATION AT DIVIDER WALL
3/8" = 1'-0"



7 DINING AREA ELEVATION - NORTH
3/8" = 1'-0"



9 DINING AREA ELEVATION - WEST
3/8" = 1'-0"

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MILKSHAKE FACTORY
DENVER, CO

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Owner Approval	
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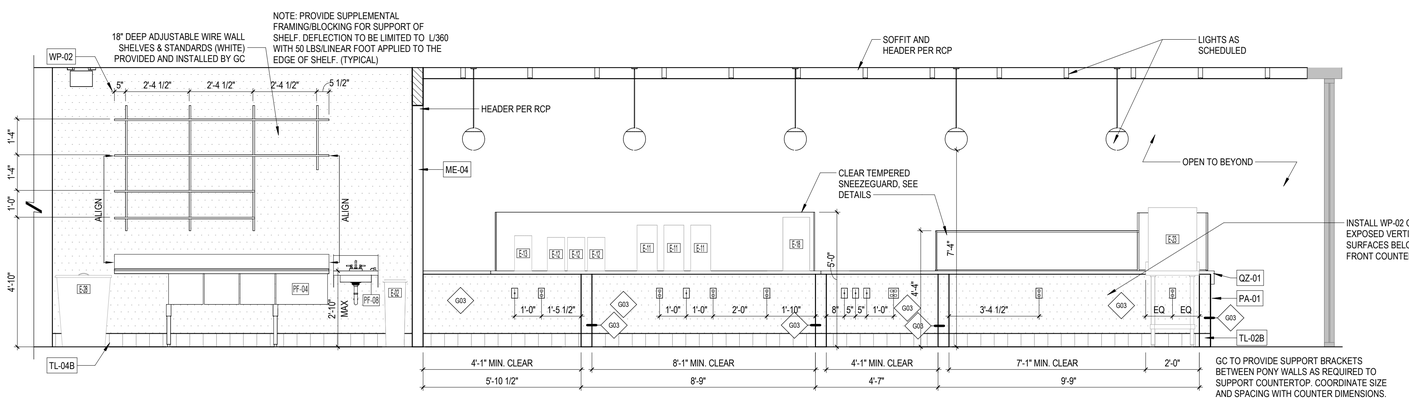
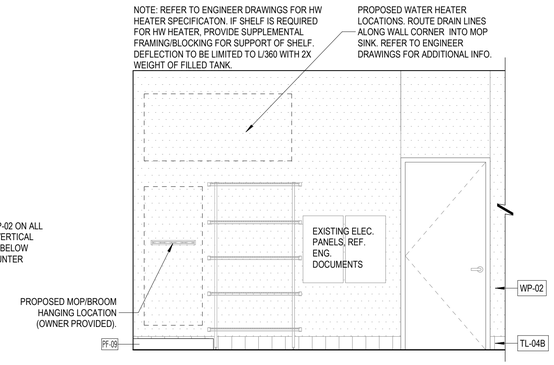
Job No.	Scale

ELEVATIONS

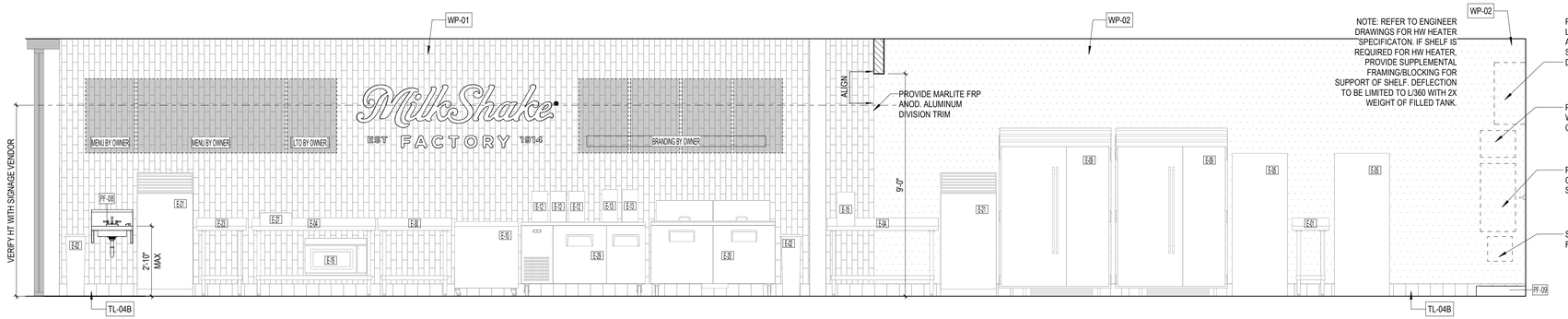
A-7.0



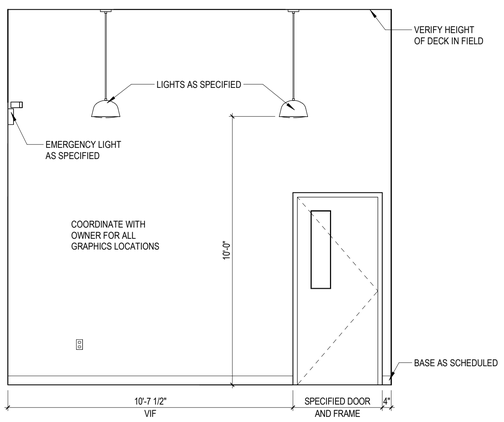
1 FRONT COUNTER ELEVATION - SERVE SIDE
3/8" = 1'-0"



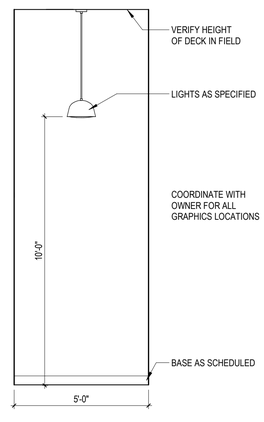
2 MOP SINK ELEVATION - WEST
3/8" = 1'-0"



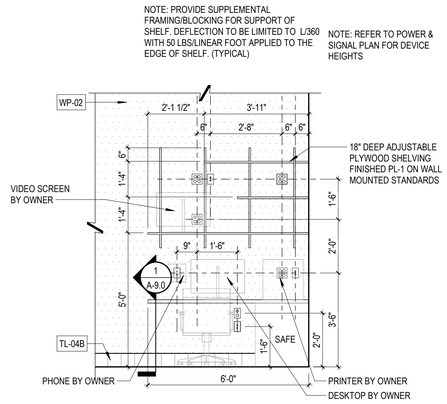
3 MONEY WALL / BACK OF HOUSE ELEVATION
3/8" = 1'-0"



4 VESTIBULE ELEVATION - SOUTH
3/8" = 1'-0"



5 VESTIBULE ELEVATION - WEST
3/8" = 1'-0"



6 OFFICE ELEVATION
3/8" = 1'-0"

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

DELTA	ISSUE	DESCRIPTION	DATE
1		ISSUE FOR CONSTRUCTION	2/20/2025

INTERIOR ARCHITECTS

DENVER
1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

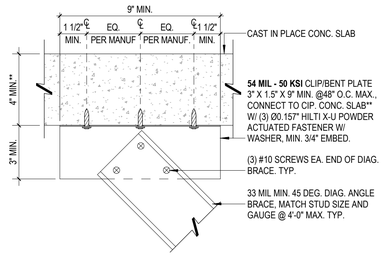
Owner Approval

27MSHF.0030.000	3/8" = 1'-0"
Job No.	Scale

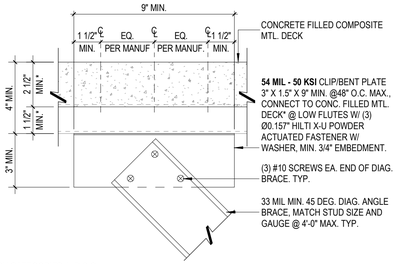
ELEVATIONS

A-7.1

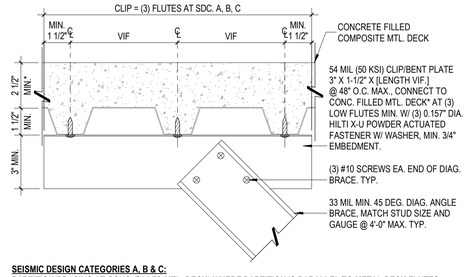
2/19/2025 4:19:24 PM 23.1



SEISMIC DESIGN CATEGORIES A, B & C: BRACING ATTACHMENT AT CIP. CONC. SLAB**

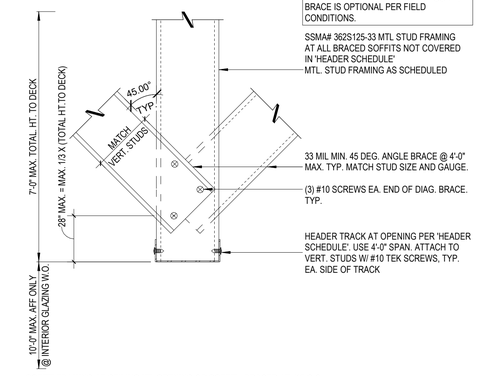


SEISMIC DESIGN CATEGORIES A, B & C:
DIAG. BRACING ATTACHMENT AT CONC. FILLED MTL. DECK* - PARTITION PERPENDICULAR TO MTL. DECK FLUTES



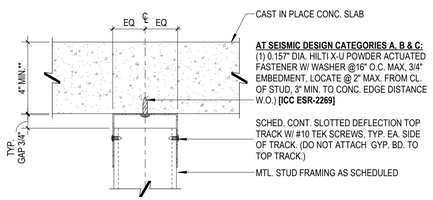
SEISMIC DESIGN CATEGORIES A, B & C:
PARTITION BRACING AT CONC. FILLED MTL. DECK* WHERE PARTITION IS PARALLEL TO MTL. DECK FLUTES

12 MTL. STUD BRACING ATTACHMENT AT CONC. FILLED MTL. DECK/CIP. SLAB
3" = 1'-0"

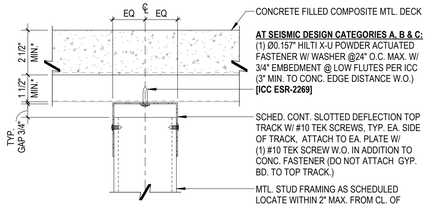


SOFFIT FRAMING AT CEILING HT. OPENING OR SOFFIT - BRACED AT 48" O.C.

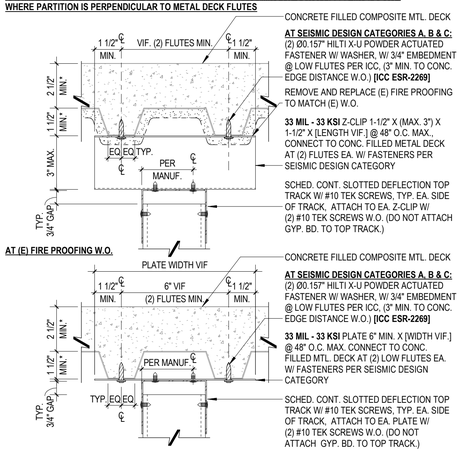
8 DECK SUPPORTED CEILING & SOFFIT/OPENING FRAMING
3" = 1'-0"



SEISMIC DESIGN CATEGORIES A, B & C: HEAD OF PARTITION FRAMING AT CIP. CONC. SLAB**



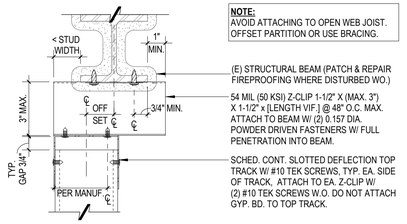
SEISMIC DESIGN CATEGORIES A, B & C: HEAD OF PARTITION FRAMING AT CONC. FILLED MTL. DECK* WHERE PARTITION IS PERPENDICULAR TO METAL DECK FLUTES



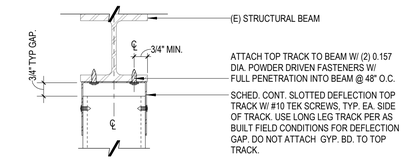
AT (E) FIRE PROOFING W.O.

SEISMIC DESIGN CATEGORIES A, B & C: HEAD OF PARTITION FRAMING AT CONC. FILLED MTL. DECK* WHERE PARTITION IS PARALLEL TO MTL. DECK FLUTES (OPTIONS)

10 FULL HT. PARTITION HEAD ATTACHMENT AT CONC. FILLED MTL. DECK/CIP. SLAB
3" = 1'-0"

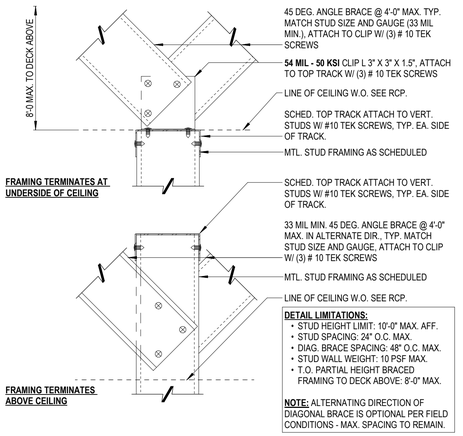


PARTITION FRAMING HEAD PARALLEL AND OFFSET BELOW (E) STRUCT. BEAM - WITH OR WITHOUT FIRE PROOFING

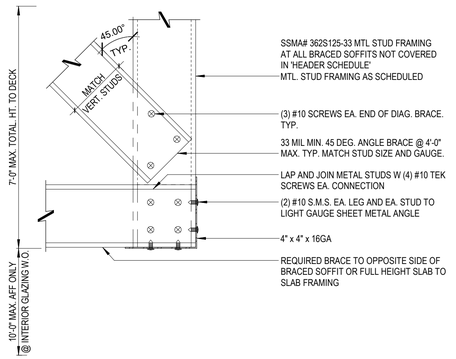


PARTITION FRAMING HEAD CENTERED BELOW (E) STRUCT. BEAM - WITHOUT FIRE PROOFING

5 FULL HT. PARTITION HEAD ATTACHMENT - BELOW STRUCTURAL SUPPORTS
3" = 1'-0"



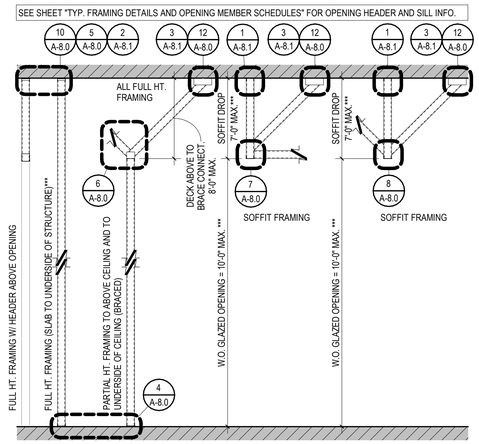
6 PARTIAL HEIGHT PARTITION HEAD BRACING ATTACHMENT
3" = 1'-0"



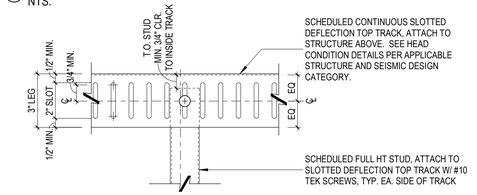
SOFFIT FRAMING AT OUTSIDE EDGE CEILING HT. OPENING OR SOFFIT - BRACED AT 48" O.C. ONE DIRECTION

7 DECK SUPPORTED CEILING & SOFFIT/OPENING FRAMING AT OUTSIDE EDGE
3" = 1'-0"

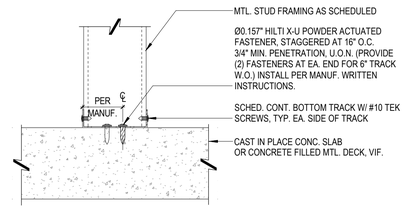
SEE SHEET "TYP. FRAMING DETAILS AND OPENING MEMBER SCHEDULES" FOR OPENING HEADER AND SILL INFO.



2 TYPICAL INTERIOR PARTITION FRAMING ATTACHMENT DIAGRAMS
NTS.



3 INTERIOR FRAMING - SLOTTED DEFLECTION TOP TRACK ELEVATION
3" = 1'-0"



4 INTERIOR FRAMING - SILL AT CONC. FILLED MTL. DECK/CIP SLAB
3" = 1'-0"

QUALIFICATIONS & ASSUMPTIONS

***REQUIREMENTS FOR (E) METAL FILLED CONCRETE DECK:**
- MIN. 1 1/2" DECK W/ MIN. 2 1/2" CONCRETE TOPPING UON.
- MIN. TOTAL 4 3/4" DECK + CONCRETE TOPPING FOR SCREW ANCHOR ALTERNATE W.O.

****REQUIREMENTS FOR (E) CAST IN PLACE (CIP.) CONCRETE SLAB:**
- THICKNESS: 4" MIN.
- THICKNESS: 4 3/4" MIN. FOR SCREW ANCHOR ALTERNATE W.O.

REQUIREMENTS FOR (N) PARTITION AND SOFFIT FRAMING:
- SEE PARTITION SCHEDULE FOR MTL. FRAMING TYPE.
- STUD SPACING: 24" O.C. MAX.
- STUD HEIGHT LIMITATION: 15'-0" MAX. AFF.
- STUD WALL WEIGHT: 10 PSF MAX.
- LATERAL LOAD: 5 PSF MAX.
- T.O. PARTIAL HEIGHT AND BRACED FRAMING TO DECK ABOVE: 8'-0" MAX.

REQUIREMENTS FOR (N) SOFFIT FRAMING:
- SSMA# 362S125-33 MTL STUD FRAMING AT ALL BRACED SOFFITS NOT COVERED IN 'HEADER SCHEDULE'
- ***SOFFIT DROP: 7'-0" MAX. FROM STRUCTURE ABOVE @ W.O. GLAZING BELOW
- HEIGHT OF GLAZING BELOW SOFFITS: 10'-0" MAX. AFF.
- STUD & CONNECTION SPACING: 24" O.C. MAX.
- BRACE SPACING: 48" O.C. MAX.
- STUD WALL WEIGHT: 10 PSF MAX.

- **DETAILS APPLICABLE FOR INTERIOR METAL STUD FRAMING AT CAST IN PLACE CONC. SLAB, CONCRETE FILLED METAL DECK OR UNFILLED METAL DECK AT ROOF ONLY.**
- **PROVIDE IN WRITING ANY AS BUILT FIELD DISCREPANCIES WITH THESE CONDITIONS, AND COORDINATE WITH ARCHITECT BEFORE START OF WORK.**
- **REFER TO OPENING FRAMING JAMB - HEADER - SILL SCHEDULES FOR MEMBER SIZING.**

***** MAX. LIMITS APPLY TO REFERENCED DETAILS ONLY. COORDINATE WITH PARTITION SCHEDULE. PROVIDE ENGINEERED STRUCTURAL DRAWINGS FOR ALL OTHER CONDITIONS WHERE APPLICABLE.**

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
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1 ISSUE FOR CONSTRUCTION 2/20/2025

DELTA	ISSUE	DESCRIPTION	DATE

IA INTERIOR ARCHITECTS

DENVER
1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

Owner Approval

27MSHF.0030.000 — Job No.
As indicated — Scale

TYP. MTL. STUD FRAMING DETAILS - SDC A, B, C

A-8.0

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QUALIFICATIONS & ASSUMPTIONS

***REQUIREMENTS FOR (E) METAL FILLED CONCRETE DECK:**
- MIN. 1 1/2" DECK W/ MIN. 2 1/2" CONCRETE TOPPING UON.
- MIN. TOTAL 4 3/4" DECK + CONCRETE TOPPING FOR SCREW ANCHOR ALTERNATE W.O.

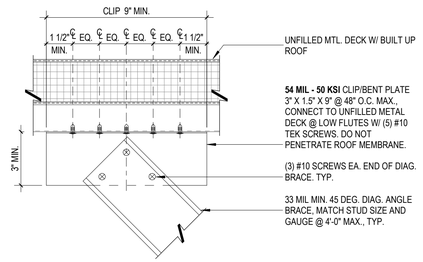
****REQUIREMENTS FOR (E) CAST IN PLACE (CIP.) CONCRETE SLAB:**
- THICKNESS: 4" MIN.
- THICKNESS: 4 3/4" MIN. FOR SCREW ANCHOR ALTERNATE W.O.

REQUIREMENTS FOR (N) PARTITION AND SOFFIT FRAMING:
- SEE PARTITION SCHEDULE FOR MTL. FRAMING TYPE.
- STUD SPACING: 24" O.C. MAX.
- STUD HEIGHT LIMITATION: 15'-0" MAX. AFF.
- STUD WALL WEIGHT: 10 PSF MAX.
- LATERAL LOAD: 5 PSF MAX.
- T.O. PARTIAL HEIGHT AND BRACED FRAMING TO DECK ABOVE: 8'-0" MAX.

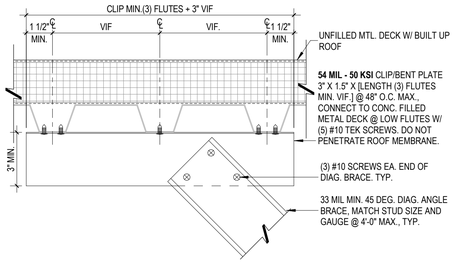
REQUIREMENTS FOR (N) SOFFIT FRAMING:
- SSMA# 362S125-33 MTL STUD FRAMING AT ALL BRACED SOFFITS NOT COVERED IN 'HEADER SCHEDULE'
- ***SOFFIT DROP: 7'-0" MAX. FROM STRUCTURE ABOVE @ W.O. GLAZING BELOW
- HEIGHT OF GLAZING BELOW SOFFITS: 10'-0" MAX. AFF.
- STUD & CONNECTION SPACING: 24" O.C. MAX.
- BRACE SPACING: 48" O.C. MAX.
- STUD WALL WEIGHT: 10 PSF MAX.

- **DETAILS APPLICABLE FOR INTERIOR METAL STUD FRAMING AT CAST IN PLACE CONC. SLAB, CONCRETE FILLED METAL DECK OR UNFILLED METAL DECK AT ROOF ONLY.**
- **PROVIDE IN WRITING ANY AS BUILT FIELD DISCREPANCIES WITH THESE CONDITIONS, AND COORDINATE WITH ARCHITECT BEFORE START OF WORK.**
- **REFER TO OPENING FRAMING JAMB - HEADER - SILL SCHEDULES FOR MEMBER SIZING.**

***** MAX. LIMITS APPLY TO REFERENCED DETAILS ONLY. COORDINATE WITH PARTITION SCHEDULE. PROVIDE ENGINEERED STRUCTURAL DRAWINGS FOR ALL OTHER CONDITIONS WHERE APPLICABLE.**



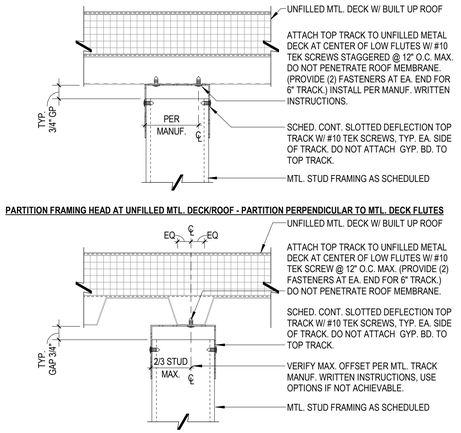
ALL SEISMIC DESIGN CATEGORIES:
DIAG. BRACING ATTACHMENT AT UNFILLED MTL. DECK* - PARTITION PERPENDICULAR TO MTL. DECK FLUTES



ALL SEISMIC DESIGN CATEGORIES:
DIAG. BRACING ATTACHMENT AT UNFILLED MTL. DECK - PARTITION PARALLEL TO METAL DECK FLUTES

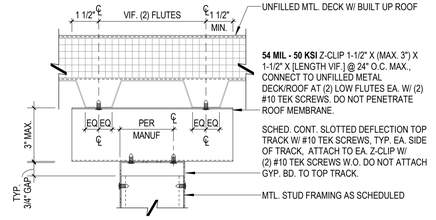
3 MTL. STUD BRACING ATTACHMENT AT UNFILLED MTL. DECK/ROOF
3" = 1'-0"

NOTE: DO NOT SUPPORT FOR SOFFIT HEAD FRAMING FROM UNFILLED MTL DECK/ROOF. USE STRUT DETAIL.

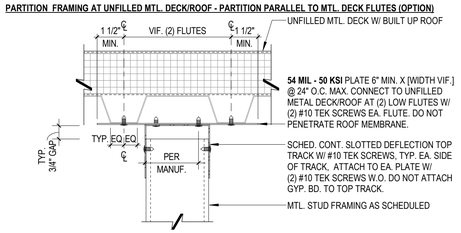


PARTITION FRAMING HEAD AT UNFILLED MTL. DECK/ROOF - PARTITION PERPENDICULAR TO MTL. DECK FLUTES

PARTITION FRAMING HEAD AT UNFILLED MTL. DECK/ROOF - PARTITION PARALLEL AND BELOW MTL. DECK FLUTES



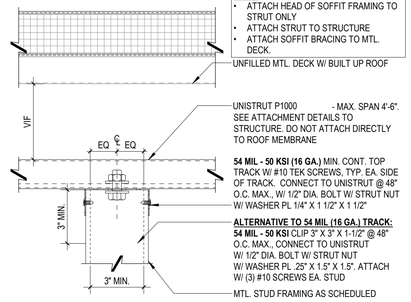
PARTITION FRAMING AT UNFILLED MTL. DECK/ROOF - PARTITION PARALLEL TO MTL. DECK FLUTES (OPTION)



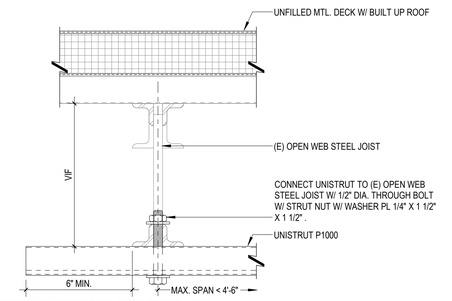
PARTITION FRAMING AT UNFILLED MTL. DECK/ROOF - PARTITION PARALLEL TO METAL DECK FLUTES (OPTION)

2 FULL HEIGHT PARTITION HEAD ATTACHMENT AT UNFILLED METAL DECK/ROOF
3" = 1'-0"

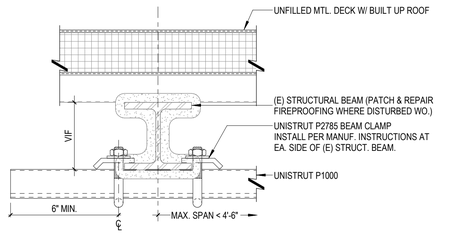
NOTE:
- ATTACH HEAD OF SOFFIT FRAMING TO STRUT ONLY
- ATTACH STRUT TO STRUCTURE
- ATTACH SOFFIT BRACING TO MTL. DECK.



SOFFIT FRAMING ATTACHMENT TO UNISTRUT AT UNFILLED MTL. DECK/ROOF



UNISTRUT CONNECTION TO (E) OPEN WEB STEEL JOIST



UNISTRUT CONNECTION TO (E) STRUCT. BEAM

1 SOFFIT HEAD ATTACHMENT AT UNFILLED MTL. DECK/ROOF
3" = 1'-0"

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1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

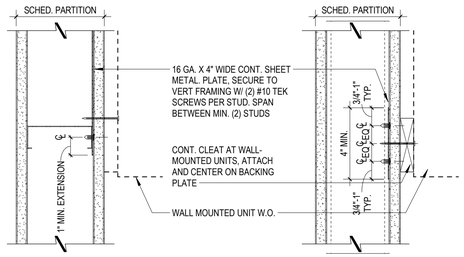
Owner Approval

27MSHF.0030.000 — As indicated
Job No. — Scale

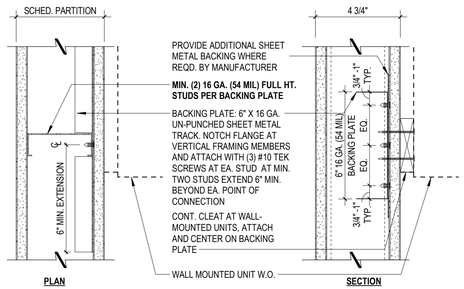
TYP. MTL. STUD FRAMING DETAILS - SDC A, B, C

A-8.1

2/19/2025 3:57:43 PM 23.0.1

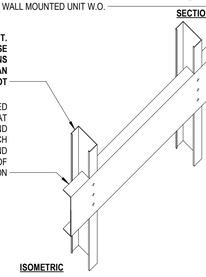


TYPICAL PARTITION BACKING FOR OBJECTS WITH MAXIMUM VERTICAL LOAD OF 25 LBS. PER LINEAR FOOT



MIN. (2) 16 GA. (54 MIL - 50KSI) FULL HT. STUDS PER BACKING PLATE. DO NOT USE TYP. SCHEDULED STUDS AT LOCATIONS OF BACKING FOR OBJECTS LARGER THAN 25 LBS PER LINEAR FOOT

6" X 16 GA. (54 MIL - 50 KSI) UN-PUNCHED SHEET METAL TRACK. NOTCH LEGS AT VERTICAL FRAMING MEMBERS AND ATTACH WITH (3) #10 SCREWS AT EACH STUD (TWO STUDS MINIMUM) EXTEND MINIMUM 6" BEYOND POINTS OF CONNECTION

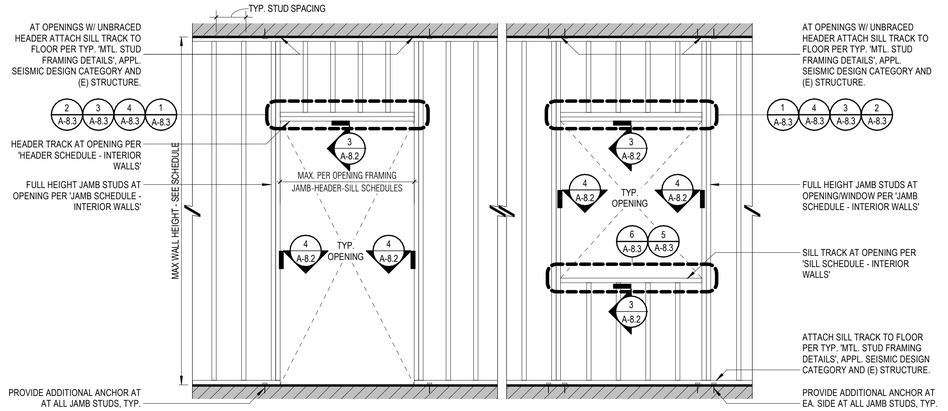


ISOMETRIC

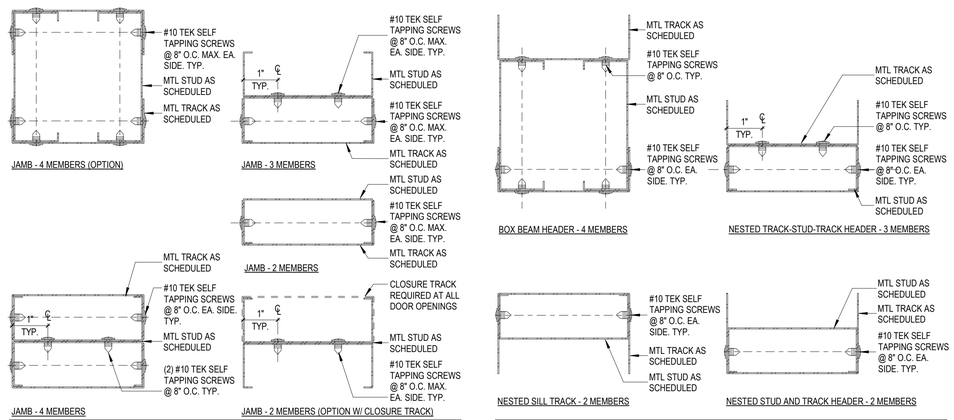
TYPICAL PARTITION BACKING FOR WALL-MOUNTED OBJECTS 100 LBS. PER LINEAR FOOT OR 250 LBS POINT LOAD

NOTE:
1. COORDINATE BACKING PLATE LOCATION WITH ACCESSORY MANUFACTURER'S MOUNTING INSTRUCTIONS.
2. COORDINATE FULL HT. STUD GAUGE FOR ALL LOCATIONS BETWEEN 25 LBS AND 100 LBS PER LINEAR FOOT.
3. SEE STRUCTURAL DRAWINGS FOR PARTITION BLOCKING AND FRAMING FOR HEAVIER LOADS.
4. PROVIDE PARTITION BACKING AT ITEMS SUCH AS SHELVING, MILLWORK, WALL-MOUNTED RESTROOM FIXTURES, HANDRAILS, GRAB BARS, SIGNAGE, TOILET ACCESSORIES, ETC. AS REQUIRED FOR PROPER ATTACHMENT AND AS REQUIRED BY THE CONTRACTOR.

5 TYPICAL IN-WALL BACKING FOR WALL MOUNTED UNITS
3" = 1'-0"



2 TYP. INTERIOR MTL. FRAMING OPENING DIAGRAMS
NTS.



NOTE: REFER TO "OPENING FRAMING JAMB - HEADER - SILL SCHEDULES" FOR MEMBER SIZING REQUIREMENTS.

4 FASTENING OPTIONS FOR JAMBS WITH 4, 3, OR 2 MEMBERS
NTS.

NOTE: REFER TO "OPENING FRAMING JAMB - HEADER - SILL SCHEDULES" FOR MEMBER SIZING REQUIREMENTS.

3 FASTENING OPTIONS FOR SILLS, AND HEADERS WITH 4, 3, OR 2 MEMBERS
NTS.

JAMB SCHEDULE - INTERIOR WALLS - 3 5/8" AND 6" STUDS

MAX. OPENING WIDTH	STUD SIZE	12' MAX.WALL HEIGHT		17' MAX.WALL HEIGHT		20' MAX.WALL HEIGHT	
		STUD/TRACK	NO. OF MEMBERS	STUD/TRACK	NO. OF MEMBERS	STUD/TRACK	NO. OF MEMBERS
4'-0"	3 5/8"	(1)362S162-43 (33KSI)	1	(1)362S162-43 (33KSI) (1)362T200-43 (33KSI)	2	(1)362S250-54 (50KSI) (1)362T250-54 (50KSI)	2
8'-0"	3 5/8"	(1)362S162-33 (33KSI) (1)362T150-33 (33KSI)	2	(2)362S200-43 (33KSI) (2)362T250-54 (50KSI)	3	(2)362S250-54 (50KSI) (2)362T250-54 (50KSI)	4
12'-0"	3 5/8"	(1)362S162-33 (33KSI) (1)362T125-33 (33KSI)	2	(2)362S250-54 (33KSI) (2)362T150-43 (33KSI)	4	(2)362S300-68 (50KSI) (2)362T250-68 (50KSI)	4
15'-0"	3 5/8"	(2)362S162-33 (33KSI) (1)362T200-33 (33KSI)	3	(2)362S300-54 (33KSI) (2)362T250-54 (50KSI)	4	(2)362S300-68 (50KSI) (2)362T250-97 (50KSI)	4
4'-0"	6"	(1)600S162-33 (33KSI)	1	(1)600S162-43 (33KSI)	1	(1)600S162-43 (33KSI)	1
8'-0"	6"	(1)600S162-33(33KSI)	1	(1)600S162-33 (33KSI) (1)600T125-30 (33KSI)	2	(1)600S200-43 (33KSI) (1)600T150-33 (33KSI)	2
12'-0"	6"	(1)600S162-33 (33KSI)	1	(1)600S200-33 (33KSI) (1)600T200-33 (33KSI)	2	(2)600S250-43 (33KSI) (1)600T125-33 (33KSI)	3
18'-6"	6"	(1)600S162-43 (33KSI)	1	(1)600S250-43 (33KSI) (1)600T250-43 (33KSI)	2	(2)600S250-43 (33KSI) (2)600T150-33 (33KSI)	4
21'-6"	6"	(1)600S200-43 (33KSI)	1	(2)600S200-33 (33KSI) (1)600T200-43 (33KSI)	3	(1)600S300-68 (50KSI) (1)600T250-97 (50KSI)	2

HEADER SCHEDULE - INTERIOR WALLS - 3 5/8" AND 6" STUDS

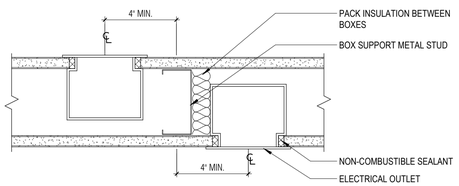
MAX. OPENING WIDTH	STUD SIZE	12' MAX.WALL HEIGHT		17' MAX.WALL HEIGHT		20' MAX.WALL HEIGHT	
		STUD/TRACK	NO. OF MEMBERS	STUD/TRACK	NO. OF MEMBERS	STUD/TRACK	NO. OF MEMBERS
4'-0"	3 5/8"	(1)362T150-43 (50KSI)	1	(1)362S162-43 (33KSI) (1)362T200-33 (33KSI)	2	(1)362S200-33 (33KSI) (1)362T250-43 (33KSI)	2
8'-0"	3 5/8"	(1)362S200-33 (33KSI) (1)362T250-33 (33KSI)	2	(2)362S162-43 (33KSI) (2)362T125-43 (33KSI)	4	(2)362S162-43 (33KSI) (2)362T150-43 (33KSI)	4
12'-0"	3 5/8"	(2)362S200-43 (33KSI) (2)362T250-43 (33KSI)	4	(2)800S162-43 (33KSI) (2)362T250-54 (50KSI)	4	(2)800S162-43 (33KSI) (2)362T250-68 (50KSI)	4
15'-0"	3 5/8"	(2)362S250-97 (33KSI) (2)362T250-97 (50KSI)	4	(2)600S162-97 (33KSI) (2)362T250-97 (50KSI)	4	(2)1000S162-68 (50KSI) (2)362T250-97 (50KSI)	4
4'-0"	6"	600T200-43 (33KSI)	1	(1)600S162-33 (33KSI) (1)600T200-43 (33KSI)	2	(1)600S162-43 (33KSI) (1)600T200-43 (33KSI)	2
8'-0"	6"	(1)600S162-33 (33KSI) (1)600T250-43 (33KSI)	2	(2)600S162-33 (33KSI) (2)600T125-30 (33KSI)	4	(2)600S162-33 (33KSI) (2)600T125-33 (33KSI)	4
12'-0"	6"	(2)600S162-33 (33KSI) (2)600T125-30 (33KSI)	4	(2)600S162-33 (33KSI) (2)600T150-33 (33KSI)	4	(2)600S200-43 (33KSI) (2)600T200-33 (33KSI)	4
18'-6"	6"	(2)600S200-54 (33KSI) (2)600T200-54 (50KSI)	4	(2)1100S200-43 (33KSI) (2)600T250-68 (50KSI)	4	(2)1200S300-54 (33KSI) (2)600T250-68 (50KSI)	4
21'-6"	6"	(2)600S350-54 (33KSI) (2)600T250-68 (50KSI)	4	(2)1100S300-54 (33KSI) (2)600T250-97 (50KSI)	4	(1)1400S200-68 (50KSI) (2)600T250-97 (50KSI)	2

SILL SCHEDULE - INTERIOR WALLS - 3 5/8" AND 6" STUDS

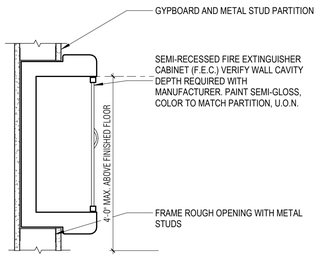
MAX. OPENING WIDTH	STUD SIZE	STUD/TRACK	NO. OF MEMBERS	MAX. OPENING WIDTH	STUD SIZE	STUD/TRACK	NO. OF MEMBERS
4'-0"	3 5/8"	(1)362T150-33 (33KSI)	1	4'-0"	6"	(1)600T125-30 (33KSI)	1
8'-0"	3 5/8"	(1)362T150-33 (33KSI)	1	8'-0"	6"	(1)600T125-30 (33KSI)	1
12'-0"	3 5/8"	(1)362S162-43 (33KSI) (1)362T150-43 (33KSI)	2	12'-0"	6"	(1)600T125-33 (33KSI)	1
15'-0"	3 5/8"	(1)362S200-54 (33KSI) (1)362T250-54 (33KSI)	2	18'-6"	6"	(1)600S200-43 (33KSI) (1)600T250-43 (33KSI)	2
				21'-6"	6"	(1)600S300-54 (33KSI) (1)600T250-43 (33KSI)	2

NOTE: SEE AXON AND FASTENING OPTION DETAILS FOR ADDITIONAL INFO BASED ON OPENING DIMENSIONS.

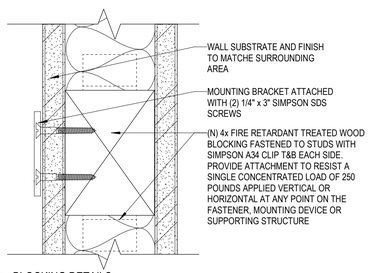
1 OPENING FRAMING JAMB - HEADER - SILL SCHEDULES



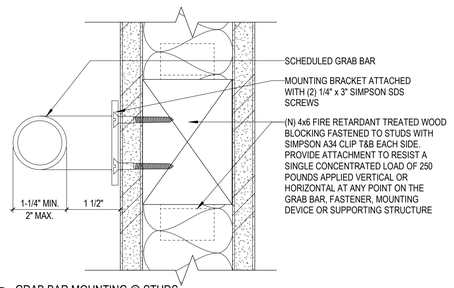
9 BACK-TO-BACK OUTLETS
3" = 1'-0"



10 SEMI-RECESSED FIRE EXTINGUISHER CABINET
1 1/2" = 1'-0"



8 BLOCKING DETAILS
6" = 1'-0"



7 GRAB BAR MOUNTING @ STUDS
6" = 1'-0"

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MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUE FOR CONSTRUCTION	2/20/2025

INTERIOR ARCHITECTS

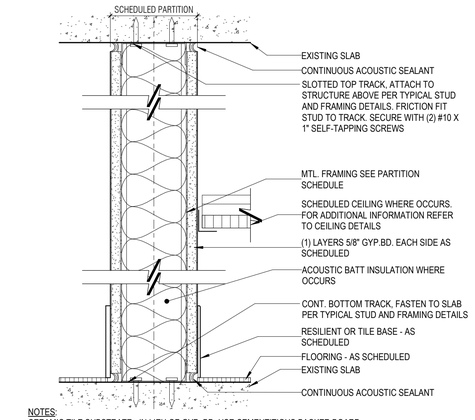
DENVER
1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

Owner Approval

27MSHF.0030.000 — As indicated
Job No. — Scale

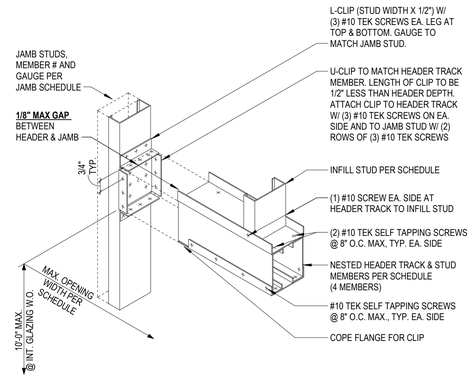
TYP. FRAMING DETAILS AND OPENING MEMBER SCHEDULES

A-8.2

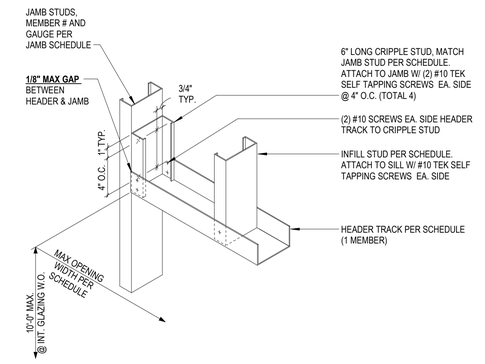


NOTES:
CERAMIC TILE SUBSTRATE - IN LIEU OF GYP. BD. USE CEMENTITIOUS BACKER BOARD

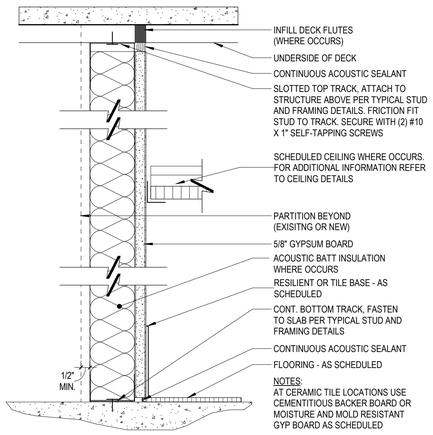
7 PARTITION TYPE B - FULL HEIGHT, NON-RATED
3" = 1'-0"



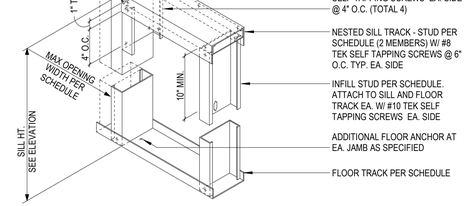
4 (4) MEMBER - BOX BEAM HEADER TO JAMB CONNECTION AT OPENING
NTS.



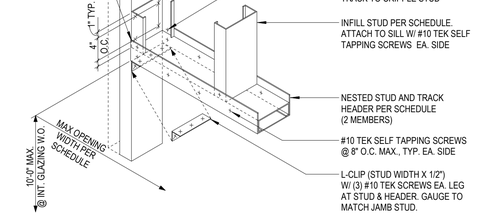
1 (1) MEMBER - HEADER TRACK TO JAMB CONNECTION AT OPENING
NTS.



8 PARTITION TYPE F - FULL HEIGHT, NON-RATED
3" = 1'-0"

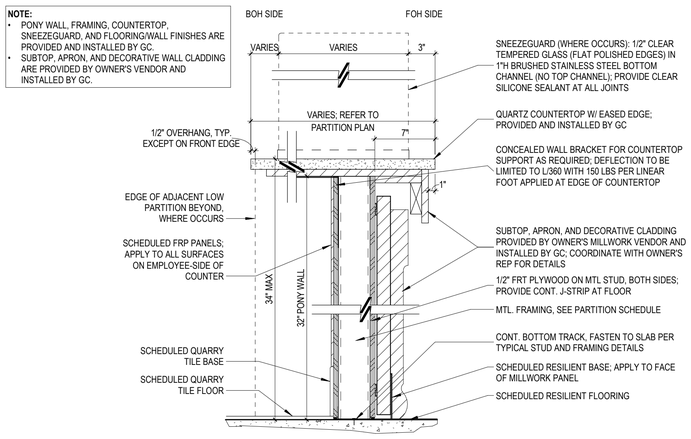


5 (2) MEMBER - SILL TRACK TO JAMB CONNECTION AT OPENING
1" = 1'-0"

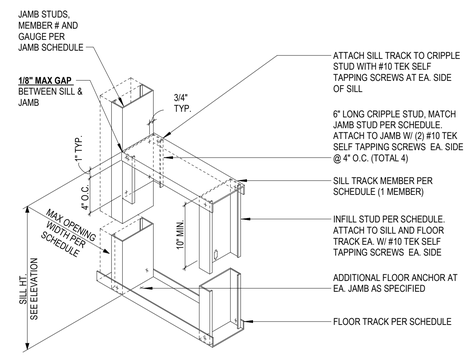


2 (2) MEMBER STUD & TRACK HEADER TO JAMB CONNECTION AT OPENING
1" = 1'-0"

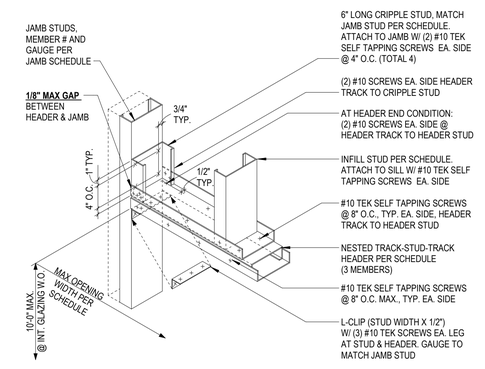
NOTE:
- PONY WALL, FRAMING, COUNTERTOP, SNEEZEGUARD, AND FLOORING/WALL FINISHES ARE PROVIDED AND INSTALLED BY GC.
- SUBTOP, APRON, AND DECORATIVE WALL CLADDING ARE PROVIDED BY OWNER'S VENDOR AND INSTALLED BY GC.



9 PARTITION TYPE G - PONY WALL AT FRONT COUNTER
1 1/2" = 1'-0"



6 (1) MEMBER - SILL TRACK TO JAMB CONNECTION AT OPENING
NTS.



3 (3) MEMBER TRACK-STUD-TRACK HEADER TO JAMB CONNECTION AT OPENING
1" = 1'-0"

MilkShake EST FACTORY 1914

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INTERIOR ARCHITECTS

DENVER
1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

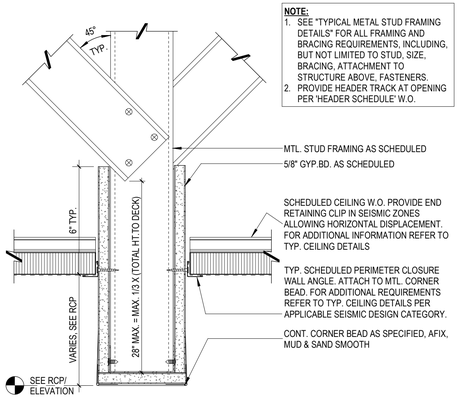
Owner Approval

27MSHF.0030.000 — Job No.
As indicated — Scale

TYP. FRAMING DETAILS AND OPENING MEMBER SCHEDULES

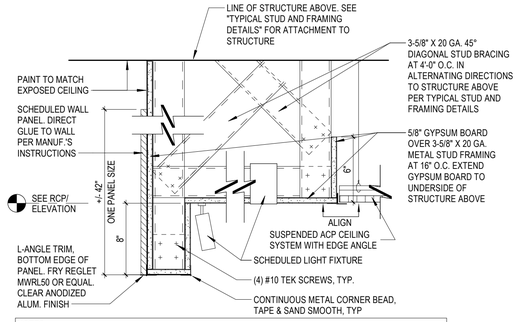
A-8.3

2/19/2025 3:57:42 PM 23.1.1



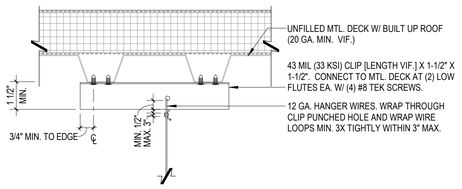
NOTE:
1. SEE "TYPICAL METAL STUD FRAMING DETAILS" FOR ALL FRAMING AND BRACING REQUIREMENTS, INCLUDING, BUT NOT LIMITED TO STUD, SIZE, BRACING, ATTACHMENT TO STRUCTURE ABOVE, FASTENERS.
2. PROVIDE HEADER TRACK AT OPENING PER 'HEADER SCHEDULE' W.O.

8 SUSPENDED CEILING TRANSITION W/ GYP. BD. HEADER
3" = 1'-0"

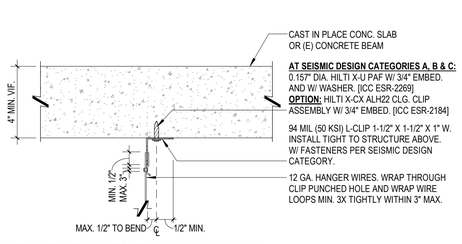


NOTES:
1. ANY HVAC DIFFUSERS ARE TO BE INSTALLED ABOVE THE ACOUSTICAL PANEL IF POSSIBLE.
2. ANY DIFFUSERS/ GRILLES WHICH MUST BE INSTALLED ON SOFFIT, SHALL BE INSTALLED ABOVE THE ACOUSTIC PANEL AND PAINTED BLACK. COORD. W/ MECHANICAL DRAWINGS.
3. SEE "TYPICAL METAL STUD FRAMING DETAILS" FOR ALL FRAMING AND BRACING REQUIREMENTS, INCLUDING, BUT NOT LIMITED TO STUD, SIZE, BRACING, ATTACHMENT TO STRUCTURE ABOVE, FASTENERS.
4. PROVIDE HEADER TRACK AT OPENING PER 'HEADER SCHEDULE' W.O.

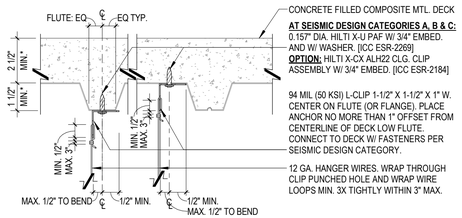
9 CEILING DETAIL AT FRONT COUNTER
1 1/2" = 1'-0"



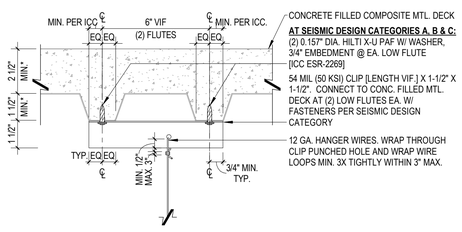
6 HANGER WIRE CONNECTION TO UNFILLED MTL. DECK OR ROOF AT SUSP. CEILING
3" = 1'-0"



WIRE HANGER ATTACHMENT TO (E) CIP CONC. SLAB/CONC. BEAM



WIRE HANGER ATTACHMENT TO (E) CONC. FILLED MTL. DECK

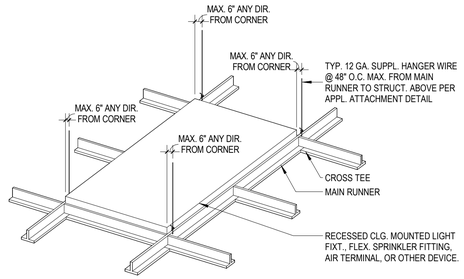


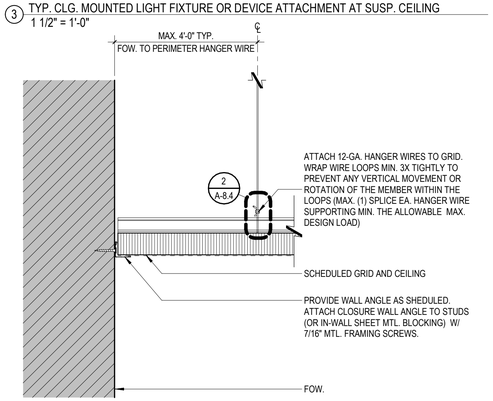
WIRE HANGER ATTACHMENT TO (E) CONC. FILLED MTL. DECK (OPTION)

7 HANGER WIRE CONNECTION TO CONC. FILLED MTL. DECK AND CIP CONC. SLAB OR BEAM AT SUSPENDED CEILING
3" = 1'-0"

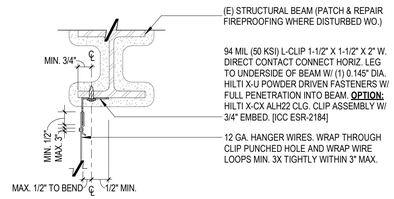
SDC-A-B NOTES:
1. IF THE WEIGHT OF THE LIGHT FIXTURE, FLEX. SPRINKLER FITTING, AIR TERMINAL OR OTHER DEVICE CAUSES THE TOTAL DEAD LOAD TO EXCEED THE DEFLECTION CAPABILITY OF THE CEILING SUSPENSION SYSTEM, SUPPORT THE FIXTURE BY 12 GA. SUPPLEMENTAL HANGERS WITHIN 6 IN. OF EACH CORNER OR. SUPPORT THE FIXTURE INDEPENDENTLY FROM THE STRUCTURE ABOVE BY APPROVED HANGERS OR ALT. SUPPORT. DO NOT SUPPORT FROM CEILING GRID SUSPENSION SYSTEM.
2. ATTACH EA. SURFACE-MOUNTED LIGHT FIXTURE TO SUSPENDED CEILING SYSTEM W/ A POSITIVE CLAMPING DEVICE COMPLETELY SURROUNDING THE SUPPORTING MEMBERS.
3. ANY FIXTURE WEIGHT MAY NOT EXCEED CARRYING DESIGN LOAD OF SUPPORTING CEILING GRID MEMBERS.
4. SUPPORT EA. PENDANT LIGHT FIXTURE DIRECTLY FROM THE STRUCTURE ABOVE BY APPROVED HANGERS OR ALT. SUPPORT. DO NOT SUPPORT FROM CEILING GRID SUSPENSION SYSTEM.
5. RIGID CONDUIT IS NOT PERMITTED FOR ATTACHMENT OF LIGHT FIXTURES.

3 TYP. CLG. MOUNTED LIGHT FIXTURE OR DEVICE ATTACHMENT AT SUSP. CEILING
1 1/2" = 1'-0"





4 GRID CONNECTION TO WALL AT SUSPENDED CEILING GRID
3" = 1'-0"

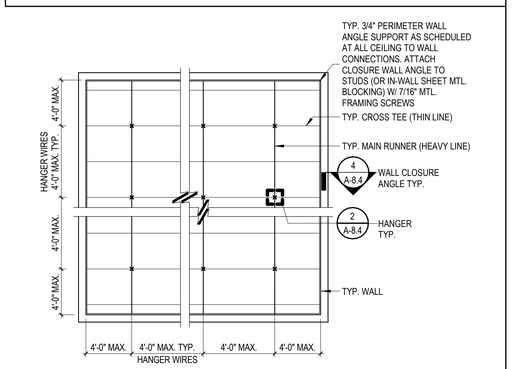


NOTE:
- CONTRACTOR TO VERIFY MIN. 3/16" BEAM FLANGE THICKNESS
- ANY FASTENER NOT TO BE INSTALLED IN THE PROTECTED ZONE OF STEEL MEMBER.

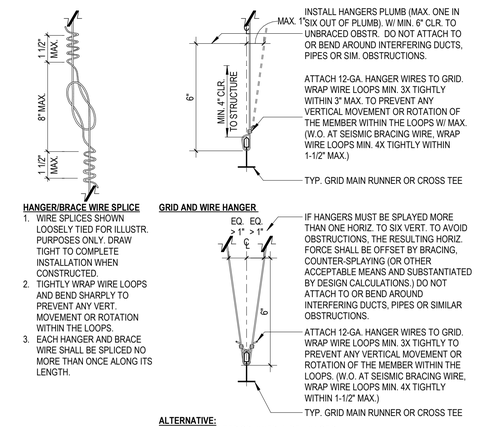
5 HANGER WIRE CONNECTION TO (E) STRUCTURAL BEAM
3" = 1'-0"

REQUIREMENTS: SUSP. CEILING SYSTEMS SEISMIC DESIGN CATEGORIES A & B

1. **SDC 'A' & 'B': CONFORM TO MINIMUMS ESTABLISHED IN ASTM C636**
2. **THE ASSEMBLIES SUPPORTED ARE LIMITED TO DISTRIBUTED CEILING SYSTEMS WHERE THE LOAD ON ANY INDIVIDUAL SUPPORT ASSEMBLY DOES NOT EXCEED 90 LBF (400N).**
3. SYSTEM COMPONENTS SHALL BE COMPLIANT WITH CODE DEFINED SEISMIC DESIGN CATEGORIES (SDC) ENFORCED BY LOCAL JURISDICTION.
4. PROVIDE 12-GA. VERT. HANGER WIRES @ 4'-0" MAX. OC. ALONG MAIN BEAMS AND NOT MORE THAN ONE-IN-SIXTH OUT-OF-PLUMB, UNLESS A COUNTER-SLOPING WIRE OR HORIZONTAL BRACE IS PROVIDED.
5. EXPOSED POP RIVETS NOT PERMITTED.
6. BRACE PARTITIONS ATTACHED TO CEILING SUSPENSION SYSTEM LATERALLY BRACED TO BUILDING STRUCTURE INDEPENDENT FROM CEILING.
7. USE MAX. 4'-0" X 4'-0" GRID SYSTEM.
8. HANGER WIRES SUPPORTING MAIN BEAMS MUST BE WRAPPED AROUND THEMSELVES A MINIMUM OF THREE FULL TURNS WITHIN 3" LENGTH.
9. FIXTURES SHALL NOT BE SUPPORTED FROM MAIN RUNNERS OR CROSS RUNNERS IF THE WEIGHT OF THE FIXTURE CAUSES THE TOTAL DEAD LOAD TO EXCEED THE DEFLECTION CAPABILITY OF THE CEILING SUSPENSION SYSTEM. IN SUCH CASES, THE FIXTURE LOAD SHALL BE SUPPORTED BY SUPPLEMENTAL HANGERS WITHIN 6 IN. OF EACH CORNER, OR THE FIXTURE SHALL BE SEPARATELY SUPPORTED
10. FIELD VERIFY ALL CONDITIONS AND DIMENSIONS.



1 TYPICAL SUSPENDED CEILING WIRING DIAGRAM - SDC A & B
NTS.



2 TYPICAL WIRE HANGER AT SUSPENDED CEILING GRID
3" = 1'-0"

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

1 ISSUE FOR CONSTRUCTION 2/20/2025

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INTERIOR ARCHITECTS
DENVER
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DENVER, CO 80202
TEL 303-672-8500

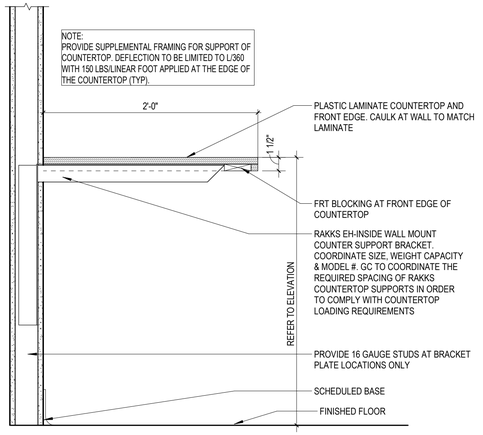
Owner Approval

27MSHF.0030.000 — As indicated
Job No. — Scale

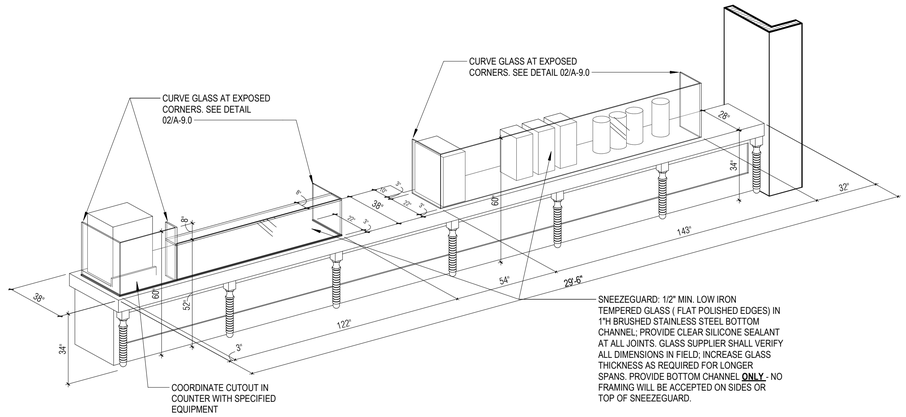
TYPICAL CEILING DETAILS SDC A-B

A-8.4

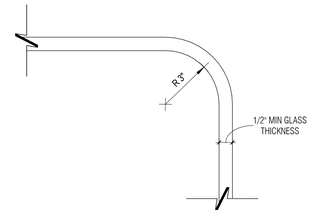
2/6/2025 3:57:47 PM 23.0.1



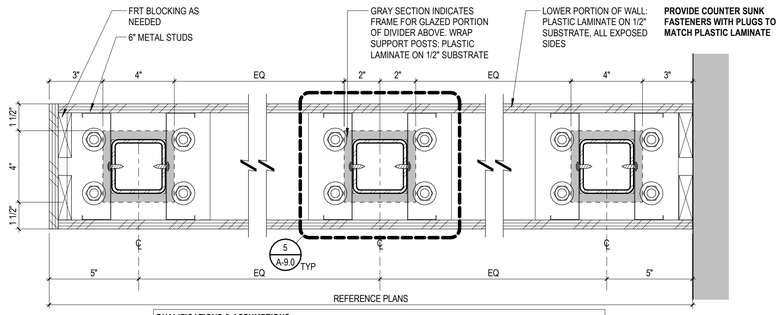
1 OFFICE DESK
1 1/2" = 1'-0"



2 FRONT COUNTER ISOMETRIC

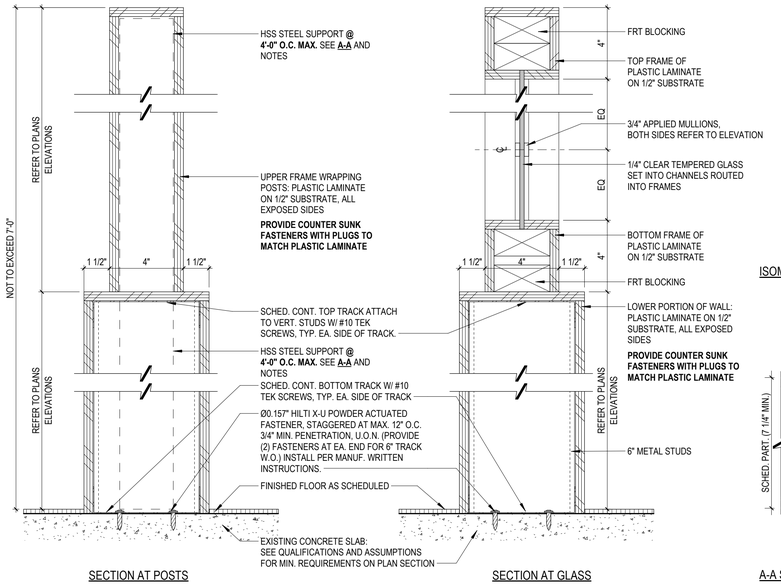


3 CURVED GLASS CORNER
3" = 1'-0"

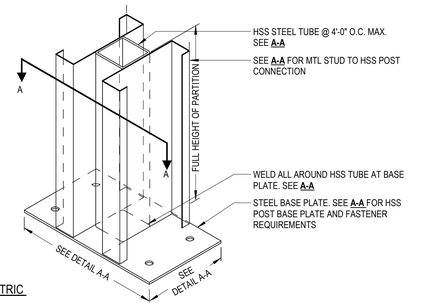


QUALIFICATIONS & ASSUMPTIONS:
1. **MAX. WALL HEIGHT:** 7'-0" AFF. - **MAX. HSS POST SPACING:** 4'-0" O.C. **MIN. HSS SIZE:** 3X3X3/16
2. **MIN. STUD SIZE:** 600S125-33; **MAX. STUD SPACING:** 24" O.C. **MAX. STUD WALL WEIGHT:** 10 PSF
3. COORDINATE PARTITION WIDTH W/ BASE PLATE DETAIL DIMENSIONS.
4. ***REQUIREMENTS FOR (E) METAL FILLED CONCRETE DECK:**
   MIN. 1 1/2" DECK W/ MIN. 2 1/2" CONCRETE TOPPING UON. F'C= 4,000 PSI MIN.
5. ***REQUIREMENTS FOR (E) CAST IN PLACE (CIP.) CONCRETE SLAB:** THICKNESS: 4" MIN. F'C= 4,000 PSI MIN.
6. **CONTRACTOR TO VIF. ALL AS BUILT CONDITIONS BEFORE START OF WORK. COORDINATE ANY DISCREPANCIES IN WRITING W/ ARCHITECT AND SEOR W.O. DETAIL NOT APPLICABLE TO OTHER AS BUILT FIELD CONDITIONS.**

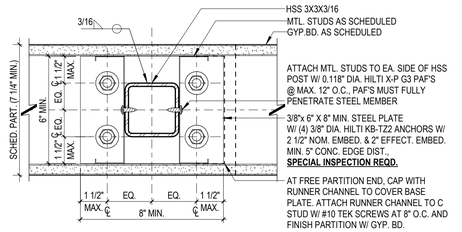
4 PLAN SECTION AT DIVIDER WALL
3" = 1'-0"



5 SECTION AT DIVIDER WALL SUPPORT
3" = 1'-0"



ISOMETRIC



A-A SUPPORT AND BASE PLATE

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

DELTA	ISSUE	DESCRIPTION	DATE
1		ISSUE FOR CONSTRUCTION	2/20/2025

INTERIOR ARCHITECTS

DENVER
1750 15TH STREET, FLOOR 3
DENVER, CO 80202
TEL 303-672-8500

Owner Approval

27MSHF.0030.000	As indicated
Job No.	Scale

MILLWORK DETAILS

A-9.0

20250205 3:57:48 PM 23.1

GENERAL NOTES
(APPLY TO ALL SHEETS)

1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT A COMPLETE TENANT MECHANICAL SYSTEM BE PROVIDED WITH ALL NECESSARY EQUIPMENT, ACCESSORIES, OPTIONS AND CONTROLS, COMPLETELY COORDINATED WITH ALL DISCIPLINES. ALL ITEMS AND LABOR REQUIRED FOR A COMPLETE TENANT MECHANICAL SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS AND THE BASE BUILDING CONTRACT DOCUMENTS SHALL BE FURNISHED WITHOUT INCURRING ADDITIONS TO THE CONTRACT.

2. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT PARTITION LAYOUTS, REFLECTED CEILING PLANS, DIMENSIONS, ETC.

3. EXISTING MECHANICAL EQUIPMENT AND DUCTWORK ARE SHOWN BY DASHED LINES. NEW WORK AND RELOCATED WORK ARE SHOWN BY SOLID LINES. EXISTING WORK TO BE REMOVED IS SHOWN CROSSHATCHED. WHEN ANY DUCTWORK OR AIR DISTRIBUTION DEVICE IS REMOVED, THE ASSOCIATED TRUNK DUCT SHALL BE SEALED AIRTIGHT WITH A SHEET METAL PATCH OR CAP.

4. VISIT SITE AND CAREFULLY EXAMINE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. THE EXISTING CONDITIONS SHOWN ARE BASED ON DOCUMENTS PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY THE ENGINEER. IF EXISTING CONDITIONS DIFFER FROM DRAWINGS IN SUCH A MANNER THAT WILL AFFECT PRICING, (I.E., DUCTWORK, VAV OR PIU ARE NOT IN THE SHOWN LOCATION) CONTRACTOR WILL NOTIFY OWNER SO THAT A RESOLUTION CAN BE MADE PRIOR TO SUBMITTING BIDS. NO ALLOWANCE WILL BE MADE FOR LACK OF KNOWLEDGE OF EXISTING CONDITIONS.

5. COORDINATE THE LOCATION OF ALL MECHANICAL EQUIPMENT (NEW & EXISTING) CLOSELY WITH ALL WALLS THAT GO TO STRUCTURE, COLUMNS, DUCTWORK, ETC. THE UNIT SHALL EITHER BE RELOCATED OR THE WALL OFFSET TO PROVIDE MANUFACTURER'S REQUIRED CLEARANCE OR AS REQUIRED BY CODE.

6. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED AIR DISTRIBUTION DEVICES. IF ANY ITEMS ARE NOT SHOWN ON THE REFLECTED CEILING PLANS, PREPARE A DRAWING OF THE PROPOSED LOCATION AND PRESENT IT TO THE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.

7. ALL ROUND AND FLEXIBLE DUCTWORK EXTENDING TO DIFFUSERS SHALL BE SIZED FULL SIZE OF DISTRIBUTION DEVICE INLET, AND TAPS TO THE EXISTING LOW-PRESSURE DUCTWORK SHALL BE MADE WITH SPIN-IN FITTINGS HAVING INTEGRAL SCOOPS AND VOLUME DAMPERS. ALL NEW RECTANGULAR DUCTWORK TAPS SHALL BE MADE WITH SPLITTERS OR EXTRACTORS. ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SMACNA DUCT STANDARDS. NEW LOW PRESSURE SPIN-IN FITTINGS AND TAPS SHALL NOT BE MADE WITHIN 5 FT OF OUTLET OF EQUIPMENT. NEW LOW PRESSURE SPIN-IN FITTINGS SHALL BE MADE NO CLOSER THAN 2'-6" ON CENTER.

8. FLEXIBLE DUCTS SHALL BE INSTALLED FREE OF SAGS AND KINKS; SUPPORTED AT NOT MORE THAN 48" O.C.

9. TEST AND BALANCE ALL DIFFUSERS, BOXES, FANS, ETC. TO THE AIRFLOWS AND CONDITIONS INDICATED. ALL EXISTING DIFFUSERS, BOXES, FANS, ETC. WHICH ARE NOT NOTED OTHERWISE SHALL BE BALANCED TO THEIR PRIOR DESIGN AIRFLOWS; REFERENCE THE EXISTING RECORD DRAWING AVAILABLE FROM THE OWNER. TESTING AND BALANCING OF HVAC SYSTEM SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS OF AABC OR NEBB AND SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF AN AABC OR NEBB CERTIFIED TEST AND BALANCE ENGINEER. SUBMIT 4 COPIES OF THE REPORT TO THE OWNER.

10. PORTIONS OF DUCTWORK VISIBLE THROUGH GRILLES AND REGISTERS IN FINISHED AREA SHALL BE PAINTED FLAT BLACK.

11. ALL CONTROL WIRING AND TUBING INSTALLED ABOVE THE CEILING SHALL BE LOCATED AS HIGH ABOVE THE CEILING AS POSSIBLE AND SHALL FOLLOW THE DESIGNATED GENERAL ROUTING OF THE DUCTWORK. DO NOT HANG WIRING OR TUBING FROM DUCTWORK; RATHER, SUSPEND FROM THE STRUCTURE. ALL NEW TERMINAL UNITS SHALL BE TIED INTO THE BASE BUILDING CONTROL SYSTEM. SEE BASE BUILDING SPECIFICATIONS FOR REQUIREMENTS.

12. SPRINKLER HEADS AND ASSOCIATED BRANCH PIPING SHALL BE PROVIDED AND RELOCATED IN ACCORDANCE WITH NFPA 13 AND ALL PREVAILING LOCAL CODES AS REQUIRED TO PROTECT ALL SPACES IN THIS TENANT AREA. SPRINKLER HEADS SHALL BE SEMI-RECESSED SPRINKLER HEADS IN TENANT AREAS AND CONCEALED FULLY RECESSED TYPE IN PUBLIC CORRIDORS.

13. COORDINATE ALL WORK IN OCCUPIED AREAS WITH THE TENANT IN THAT AREA. COORDINATE ALL WORK IN UNOCCUPIED AREAS AND COMMON AREAS WITH LANDLORD.

14. THERMOSTATS SHALL BE LOCATED IN EACH ZONE AS SHOWN. THE EXACT LOCATION ON THE WALL INDICATED SHALL BE AS DIRECTED BY THE ARCHITECT. NEW THERMOSTATS SHALL BE COMPATIBLE WITH EQUIPMENT SERVED. THERMOSTATS ON EXTERIOR WALLS SHALL BE PROVIDED WITH INSULATED BACKING.

15. ALL WORK AND MATERIALS SHALL BE CONSISTENT WITH BASE BUILDING SPECS.

ABBREVIATIONS

A/C	ABOVE CEILING	LB	POUNDS
AC	AIR CONDITIONING	LG	LINEAR GRILLE
ADJ	ADJUSTABLE	LRG	LINEAR RETURN GRILLE
AFF	ABOVE FINISHED FLOOR		
AHU	AIR HANDLING UNIT	MAX	MAXIMUM
		MD	MANUAL DAMPER
B/F	BELOW FLOOR	MIN	MINIMUM
B/G	BELOW GRADE	MOD	MOTOR OPERATED DAMPER
BDD	BACKDRAFT DAMPER	MFR	MANUFACTURER
BOD	BASIS OF DESIGN/BOTTOM OF DUCT		
		NC	NORMALLY CLOSED
CD	CEILING DIFFUSER	NG	NATURAL GAS
CFM	CUBIC FEET PER MINUTE	NO	NORMALLY OPEN
COND	CONDENSATE	NOM	NOMINAL
CSR	CURVED SUPPLY REGISTER		
CU	CONDENSING UNIT	OA	OUTSIDE AIR
CW	COLD WATER (DOMESTIC)	OBD	OPPOSED BLADE DAMPER
		OD	OUTSIDE DIMENSION
dB	DECIBELS		
DB	DRY BULB	PIU	POWERED INDUCTION UNIT
DN	DOWN	PSI	POUNDS PER SQUARE INCH
DR	DRAIN		
		RA	RETURN AIR
EA	EACH	RAG	RETURN AIR GRILLE
EAT	ENTERING AIR TEMPERATURE	RAR	RETURN AIR REGISTER
EF	EXHAUST FAN	RED	REDUCER
EFF	EFFICIENCY	RL	REFRIGERANT LIQUID
ER	EXHAUST REGISTER	RS	REFRIGERANT SUCTION
ESP	EXTERNAL STATIC PRESSURE	RTU	ROOFTOP UNIT
EX	EXISTING		
EXH	EXHAUST	SA	SUPPLY AIR
		SD	SMOKE DAMPER
F	FAHRENHEIT	SEN	SENSIBLE
FCU	FAN COIL UNIT	SP	STATIC PRESSURE
FD	FIRE DAMPER	SPS	STATIC PRESSURE SENSOR
FLR	FLOOR	SR	SUPPLY REGISTER
FPM	FEET PER MINUTE	SS	SPLIT SYSTEM
FPS	FEET PER SECOND		
FSD	FIRE/SMOKE DAMPER	TEMP	TEMPERATURE
FT	FEET	TG	TRANSFER GRILLE
		TYP	TYPICAL
GA	GAUGE		
GPM	GALLONS PER MINUTE	UON	UNLESS OTHERWISE NOTED
		V	VENT
HD	HUB DRAIN	VA	VALVE
HP	HORSEPOWER	VAV	VARIABLE AIR VOLUME
HTG	HEATING	VTR	VENT THRU ROOF
ID	INSIDE DIMENSION		
IN	INCHES	WB	WET BULB
		WC	WATER COLUMN
KW	KILOWATTS	WHA	WATER HAMMER ARRESTOR
		W	WASTE
LAT	LEAVING AIR TEMPERATURE		

FAN SCHEDULE

I.D. TAG	SPACES	CAPACITY (CFM)	E.S.P. (IN. WG)	MOTOR H.P.	DRIVE	VOLTS/ PHASE	MAXIMUM FAN RPM	MAXIMUM NOISE	TYPE OF FAN	BASIS OF DESIGN	REMARKS
EF-1	RESTROOM	75	0.5	F	DIRECT	120/1	839	2.5 SONES	CEILING EXHAUST	GREENHECK SP-B110	①②
EF-2	JANITOR'S CLOSET	75	0.5	F	DIRECT	120/1	839	2.5 SONES	CEILING EXHAUST	GREENHECK SP-B110	①③

① PROVIDE FAN WITH BACKDRAFT DAMPER, DISCONNECT, VIBRATION ISOLATION, AND FAN SPEED CONTROLLER MOUNTED AT FAN.
② FAN SHALL BE INTERLOCKED TO LIGHTS. COORDINATE WITH DIVISION 16. PROVIDE TRANSFORMER IF NECESSARY.
③ FAN SHALL BE CONTROLLED BY A TIMER. TIMER SHALL ENABLE FAN OPERATION DURING OCCUPIED HOURS.

DEHUMIDIFIER SCHEDULE

I.D. TAG	AIRFLOW (CFM)	ESP (IN. W.C.)	VOLTS/ PHASE	CAPACITY (PINTS/DAY) (80°F @ 60% RH)	WEIGHT (LBS)	BASIS OF DESIGN	REMARKS
DH-1	458	0.4	120/1	205	170	QUEST DRY 205	①②

① UNIT SHALL BE PROVIDED WITH MERV 11 FILTER, SUPPLY AND RETURN DUCT COLLARS WITH BACKDRAFT DAMPER AND CONDENSATE PUMP.
② PROVIDE WITH MANUFACTURER'S CONTROLLER, REMOTE HUMIDISTAT AND ALL REQUIRED TEMPERATURE/HUMIDITY SENSORS TO MAINTAIN MAX. SPACE RH OF 50% AT MAXIMUM 70°F.

AIR IONIZATION SCHEDULE

I.D. TAG	FLOW	MAX AIRFLOW (CFM)	OA AIRFLOW (CFM)	PRESSURE DROP (IN. W.C.)	VOLTAGE (AC)	CLEAN/OP WATTS	MOUNTING LOCATION	MIN. ION DENSITY (IONS/CC)	BASIS OF DESIGN	QUANTITY	REMARKS
BPI-1	CV	2,000	160	0.05	24-240	8	DUCT	160 MILLION	GPS-DM-24-AC	1	①②③④⑤⑥⑦
BPI-1	CV	2,000	25	0.05	24-240	8	DUCT	160 MILLION	GPS-DM-24-AC	1	①②③④⑤⑥⑦

① BASIS OF DESIGN: GPS AIR: SUBSTITUTIONS MUST BE APPROVED BY THE ENGINEER, SUBJECT TO SPECIFICATION COMPLIANCE.
② IF CONTRACTOR SUBSTITUTES BASIS OF DESIGN WITH ANOTHER MANUFACTURER, CONTRACTOR SHALL COORDINATE ALL ELECTRICAL AND MECHANICAL CHANGES.
③ ION OUTPUT FROM THE NPBI DEVICE SHALL BE MEASURED IN IONS PER CUBIC CENTIMETER (IONS/CC) AND VERIFIABLE WITH FIELD INSTRUMENTATION PER THE MANUFACTURER'S INSTRUCTIONS. SUBSTITUTION OF PRODUCTS WITH MATHEMATICALLY CALCULATED, NOT MEASURED NOR MEASURABLE, ION FLOW IN IONS/SECOND ARE NOT ACCEPTABLE.
④ BI-POLAR IONIZATION SYSTEMS REQUIRING REPLACEMENT PARTS, INCLUDING GLASS TUBES ARE NOT ACCEPTABLE.
⑤ MOUNT NEEDLEPOINT BI-POLAR ION GENERATOR WHERE INDICATED ON PLANS AND SCHEDULES.
⑥ PROVIDE WITH SELF-CLEANING FEATURE. SYSTEMS WITHOUT SELF-CLEANING SHALL NOT BE ACCEPTABLE.
⑦ MUST BE UL-2998 ZERO OZONE CERTIFIED BY EITHER UL OR ETL. MUST BE CARB COMPLIANT FOR CALIFORNIA APPLICATIONS.

MECHANICAL LEGEND

	CEILING DIFFUSER
	CEILING RETURN AIR GRILLE
	CEILING EXHAUST GRILLE
	SUPPLY REGISTER
	SLOT DIFFUSER UON
	FIRE DAMPER UON
	MANUAL VOLUME DAMPER UON
M	MOTOR OPERATED DAMPER
T	THERMOSTAT
H	HUMIDISTAT
	CARBON DIOXIDE SENSOR
	SMOKE DETECTOR
	CONNECT TO EXISTING
	EXISTING WORK
	NEW WORK
	WORK TO BE REMOVED
R	GAS PRESSURE REGULATOR

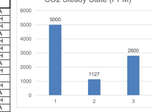
GPS Air
3101 Yorkmont Rd
Suite 400
Charlotte, NC 28208
www.gpsair.com
VERSION 2.2 running ASHRAE 62.1-2016

Zone Tag	Facility Type	Zone Use	Zone Floor Area (square ft) Az	Zone Max Occupancy Pz	Table 6.1 OA per Occupant Rp	Table 6.1 cfm/ft2 Ra	Pz * Rp Pz * Rp	Az * Ra Az * Ra	Table 6.2 Ventilation Effectiveness Ez	Outdoor Air to Zone (CFM) with Ez correction (Vbz/Ez)
EX. RTU-1	Food & Beverage Service	Cafeteria and Fast Food Dining	1,015.0	32.0	7.5	0.18	240	183	0.8	528
										OA required per VRP

Zone Height (feet)	9.0			Air Changes Per Hour	13.1	VRP OA CFM per person	16.5
Desired Outside Air (Vo) IAQP (CFM)	720			Outside Air Per VRP	528 CFM	IAQ OA CFM per person	5.0
Supply Air (Vs) (CFM)	2,000			Outside Air Per IAQ	160 CFM		
Return Air (Vr)	1840			Outside Air Savings	368 CFM	Winter Heating Savings	
Recirc. Flow Factor (R)	0.92			OA Summer Drybulb	93.0	OA Winter Design DB (F)	-3
Ventilation Effectiveness (Ez)	0.8			OA Summer Wetbulb	60.0	Supply Air DB Setpoint (F)	93
Level of Physical Activity	Standing (desk work)			Coil Leaving Air Drybulb (F)	52.8	MBH Saved Winter	38.4
Filter Location	9			Coil Leaving Air Wetbulb (F)	51.6	KW Saved Winter	11.2
HVAC Flow Type	Constant			OA MBH Saved Summer*	#NAME?		
Outdoor Air Flow Type	Constant			OA Tons Saved Summer*	#NAME?	*OA = Outside Air	

Indoor Contaminants Generated By People & From Outdoors	Maximum Threshold Value Based on OSHA or NIOSH (PPM)	Steady State (lb/ft3) Using the VRP* (Prescribed OA) Ionization Off	Steady State (lb/ft3) Using the IAQ Method (Reduced OA) Ionization On	Is Steady State Level Acceptable at Reduced OA Levels?	Contaminant Generation Rate lb/person/min	Filtration Effectiveness	Cognizant Authority**
Acetaldehyde	100.0	2.7243E-09	8.7379E-10	Yes	1.9486E-08	50%	OSHA
Acetone	250.0	1.5042E-08	7.8135E-09	Yes	1.9622E-07	50%	NIOSH
Ammonia	25.00	3.4903E-07	1.8321E-07	Yes	4.6095E-06	50%	NIOSH
Benzene	1.0	1.7194E-08	8.8044E-09	Yes	2.2052E-07	50%	OSHA
2- Butanone (MEK)	200.0	1.0106E-06	5.3059E-07	Yes	1.3350E-05	50%	NIOSH
Carbon dioxide**	5000	4.7779E-05	5.4278E-05	Yes	3.7290E-05	0%	NIOSH
Chloroform	2.0	3.1322E-08	1.6417E-08	Yes	4.1292E-07	50%	NIOSH
Dioxane	100.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%	OSHA
Hydrogen Sulfide	10.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%	NIOSH
Methane	NA	6.8698E-08	6.8698E-08	Yes	0.0000E+00	0%	NA
Methanol	200.0	1.2762E-08	4.2145E-08	Yes	1.6658E-07	0%	NIOSH
Methylene Chloride	25.0	9.1777E-07	4.8178E-07	Yes	1.2121E-05	50%	OSHA
Propane	1000.0	1.1242E-09	1.1242E-09	Yes	0.0000E+00	0%	NIOSH
Tetrachloroethane	5.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%	OSHA
Tetrachloroethylene	100.0	1.0421E-06	5.4707E-07	Yes	1.3764E-05	50%	OSHA
Toluene	100.0	3.8564E-09	1.4682E-09	Yes	3.4441E-08	50%	NIOSH
1,1,1 - Trichloroethane	350.0	4.3809E-05	2.3006E-05	Yes	5.7868E-04	50%	NIOSH
Xylene	100.0	6.2453E-10	4.9645E-11	Yes	0.0000E+00	50%	OSHA

*http://www.cdc.gov/niosh/npg/npgsyn-a.html
**OSHA, NIOSH & WHO most conservative values used



1 = NIOSH CO2 Limit
2 = CO2 Level at Ventilation Rate OA Flow Rate
3 = CO2 Level at IAQ Procedure OA Flow Rate

***Carbon dioxide has been provided for reference only for gathering demand control ventilation (DCV) setpoints. The National Research Council was commissioned by the US Navy to prove CO2 is not a contaminant of concern when using air cleaning devices to control the other contaminants of concern, as found on submarines.

The University of Denmark conducted a study to confirm CO2 levels at 5,000 PPM had no impact on cognitive function. Zhang X, Wargocki P, Lian Z, Human Responses to Carbon Dioxide, a Follow-up Study at Recommended Exposure Limits in

Building materials and furnishings assumed to have no VOCs and off-gassing is complete
All yellow shaded boxes require user input or review

Is IAQ acceptable at reduced outside air levels? Yes

Date	2/18/2025
Job Name	Milkshake Factory - Denver, CO
Representative	-
Engineer	-
Contractor	-

IMC 2006 & later allows for ASHRAE 62 IAQP through the engineered exception found in Section 403.2
Exhaust flow rates may differ from Table 6.5 based on ASHRAE 62 IAQP via Section 6.5.2

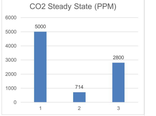
GPS Air
3101 Yorkmont Rd
Suite 400
Charlotte, NC 28208
www.gpsair.com
VERSION 2.2 running ASHRAE 62.1-2016

Zone Tag	Facility Type	Zone Use	Zone Floor Area (square ft) Az	Zone Max Occupancy Pz	Table 6.1 OA per Occupant Rp	Table 6.1 cfm/ft2 Ra	Pz * Rp Pz * Rp	Az * Ra Az * Ra	Table 6.2 Ventilation Effectiveness Ez	Outdoor Air to Zone (CFM) with Ez correction (Vbz/Ez)
EX. RTU-2	Food & Beverage Service	Cafeteria and Fast Food Dining	640.0	5.0	7.5	0.18	38	115	0.8	191
										OA required per VRP

Zone Height (feet)	9.0			Air Changes Per Hour	20.8	VRP OA CFM per person	38.2
Desired Outside Air (Vo) IAQP (CFM)	25			Outside Air Per VRP	191 CFM	IAQ OA CFM per person	5.0
Supply Air (Vs) (CFM)	2,000			Outside Air Per IAQ	25 CFM		
Return Air (Vr)	1975			Outside Air Savings	166 CFM	Winter Heating Savings	
Recirc. Flow Factor (R)	0.99			OA Summer Drybulb	93.0	OA Winter Design DB (F)	-3
Ventilation Effectiveness (Ez)	0.8			OA Summer Wetbulb	60.0	Supply Air DB Setpoint (F)	93
Level of Physical Activity	Standing (desk work)			Coil Leaving Air Drybulb (F)	52.8	MBH Saved Winter	17.3
Filter Location	9			Coil Leaving Air Wetbulb (F)	51.6	KW Saved Winter	5.1
HVAC Flow Type	Constant			OA MBH Saved Summer*	#NAME?		
Outdoor Air Flow Type	Constant			OA Tons Saved Summer*	#NAME?	*OA = Outside Air	

Indoor Contaminants Generated By People & From Outdoors	Maximum Threshold Value Based on OSHA or NIOSH (PPM)	Steady State (lb/ft3) Using the VRP* (Prescribed OA) Ionization Off	Steady State (lb/ft3) Using the IAQ Method (Reduced OA) Ionization On	Is Steady State Level Acceptable at Reduced OA Levels?	Contaminant Generation Rate lb/person/min	Filtration Effectiveness	Cognizant Authority**
Acetaldehyde	100.0	1.8871E-09	1.3738E-10	Yes	1.9486E-08	50%	OSHA
Acetone	250.0	6.6125E-09	1.2285E-09	Yes	1.9622E-07	50%	NIOSH
Ammonia	25.00	1.5101E-07	2.8806E-08	Yes	4.6095E-06	50%	NIOSH
Benzene	1.0	7.7203E-09	1.3843E-09	Yes	2.2052E-07	50%	OSHA
2- Butanone (MEK)	200.0	4.3714E-07	8.3422E-08	Yes	1.3350E-05	50%	NIOSH
Carbon dioxide**	5000	4.6177E-05	5.4278E-05	Yes	3.7290E-05	0%	NIOSH
Chloroform	2.0	1.3583E-08	2.5811E-09	Yes	4.1292E-07	50%	NIOSH
Dioxane	100.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%	OSHA
Hydrogen Sulfide	10.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%	NIOSH
Methane	NA	6.8698E-08	6.8698E-08	Yes	0.0000E+00	0%	NA
Methanol	200.0	5.5200E-09	4.2145E-08	Yes	1.6658E-07	0%	NIOSH
Methylene Chloride	25.0	3.9705E-07	7.5748E-08	Yes	1.2121E-05	50%	OSHA
Propane	1000.0	1.1242E-09	1.1242E-09	Yes	0.0000E+00	0%	NIOSH
Tetrachloroethane	5.0	0.0000E+00	0.0000E+00	Yes	0.0000E+00	50%	OSHA
Tetrachloroethylene	100.0	4.5084E-07	8.6014E-08	Yes	1.3764E-05	50%	OSHA
Toluene	100.0	2.3768E-09	2.3083E-10	Yes	3.4441E-08	50%	NIOSH
1,1,1 - Trichloroethane	350.0	1.8948E-05	3.6162E-06	Yes	5.7868E-04	50%	NIOSH
Xylene	100.0	6.2453E-10	7.8054E-12	Yes	0.0000E+00	50%	OSHA

*http://www.cdc.gov/niosh/npg/npgsyn-a.html
**OSHA, NIOSH & WHO most conservative values used



1 = NIOSH CO2 Limit
2 = CO2 Level at Ventilation Rate OA Flow Rate
3 = CO2 Level at IAQ Procedure OA Flow Rate

***Carbon dioxide has been provided for reference only for gathering demand control ventilation (DCV) setpoints. The National Research Council was commissioned by the US Navy to prove CO2 is not a contaminant of concern when using air cleaning devices to control the other contaminants of concern, as found on submarines.

The University of Denmark conducted a study to confirm CO2 levels at 5,000 PPM had no impact on cognitive function. Zhang X, Wargocki P, Lian Z, Human Responses to Carbon Dioxide, a Follow-up Study at Recommended Exposure Limits in

Building materials and furnishings assumed to have no VOCs and off-gassing is complete
All yellow shaded boxes require user input or review

Is IAQ acceptable at reduced outside air levels? Yes

Date	2/18/2025
Job Name	Milkshake Factory - Denver, CO
Representative	-
Engineer	-
Contractor	-

IMC 2006 & later allows for ASHRAE 62 IAQP through the engineered exception found in Section 403.2
Exhaust flow rates may differ from Table 6.5 based on ASHRAE 62 IAQP via Section 6.5.2

MilkShake
EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

ISSUED FOR CONSTRUCTION

DELTA	ISSUE	DESCRIPTION	DATE
1		ISSUED FOR CONSTRUCTION	02/19/2025

Christopher Lyles, P.E.
License # PE.0059116

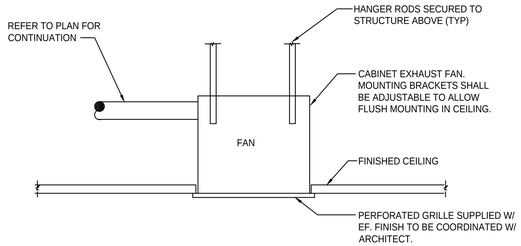
BWA JOB # 2025-0073

Owner Approval

27MSHF.0030.000 — Job No.
AS INDICATED — Scale

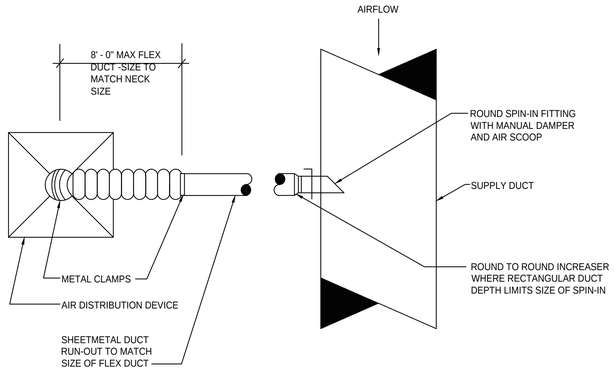
NOTES, ABBREVIATONS, LEGEND & SCHEDULES - MECHANICAL

M-0.1



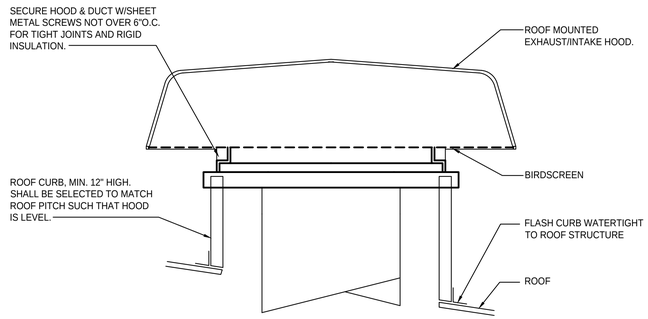
3 M-0.2 CEILING FAN

NOT TO SCALE



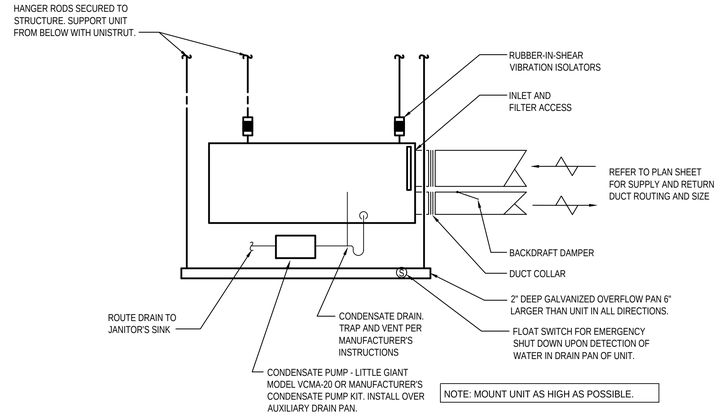
1 M-0.2 DIFFUSER CONNECTION DETAIL

NOT TO SCALE



4 M-0.2 ROOF MOUNTED EXHAUST/INTAKE HOOD

NOT TO SCALE

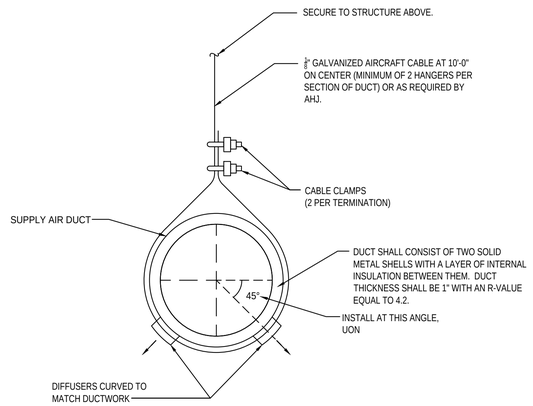


2 M-0.2 DEHUMIDIFER INSTALLATION DETAIL

NOT TO SCALE

NOTES:

1. DEHUMIDIFER DETAIL IS SCHEMATIC. REFER TO PLAN SHEET FOR ALL DUCT SIZES AND ROUTING.
2. COORDINATE LOCATION WITH ALL OTHER EQUIPMENT EQUIPMENT, WALLS AND STRUCTURE TO MAINTAIN MANUFACTURER'S REQUIRED CLEARANCES.
3. CONTRACTOR SHALL SWAP OUT EXISTING RTU CONTROLS AND PROVIDE NEW TEMPERATURE AND HUMIDITY SENSORS AS REQUIRED FOR RTU ECONOMIZER TO OPERATE BASED ON COMPARATIVE ENTHALPY. COORDINATE ALL WORK ON EXISTING RTU WITH LANDLORD AND THEIR PREFERRED CONTRACTOR.



5 M-0.2 DOUBLE WALL SPIRAL DUCT DETAIL

NOT TO SCALE

NOTES:
1) DUCTWORK SHALL BE INSTALLED LEVEL
2) SUPPLY DUCT WORK SHALL BE SPIRAL DUCTWORK WITH A PAINT GRIP FINISH
3) DUCTWORK SIZE CHANGES IN EXPOSED CEILING AREAS SHALL BE ECCENTRIC WITH THE BOTTOM AT A CONSTANT HEIGHT.
4) REGISTERS SHALL BE FLUSH MOUNTED

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AS INDICATED — Scale

DETAILS - MECHANICAL

M-0.2

SECTION 23 05 00

COMMON WORK RESULTS FOR HVAC

1.0 GENERAL

1.01 DESCRIPTION

A. This Division 23 and the accompanying drawings cover the provision of all labor, equipment, appliances, and materials and performing all operations in connection with the construction of the air conditioning, ventilating, heating, fire suppression and plumbing systems as specified herein and as shown.

B. The General Provisions and Division 01, including the general, supplementary and other conditions and other Divisions, as appropriate, apply to work specified in this Division.

1.02 EXISTING CONDITIONS

A. Attention is called to the fact that the work is to be performed within an existing, operational facility. Prior to the submission of bids, each bidder shall visit the project site, thoroughly investigate and be familiar with all existing conditions which will affect their work; especially the work to be performed above the existing ceilings.

B. Connect new work to existing work in a neat and workmanlike manner. Where an existing structure must be cut or existing utilities interfere, such obstructions shall be bypassed, removed, replaced or relocated, patched and repaired. Work disturbed or damaged shall be replaced or repaired to its prior condition.

1.03 INTENT OF DRAWINGS AND SPECIFICATIONS

A. The implied and stated intent of the drawings and specifications is to establish minimum acceptable standards for materials, equipment and workmanship, and to provide operable mechanical systems complete in every respect.

B. The engineering drawings are diagrammatic, intended to show general arrangement and sizes of system components, and shall not be scaled. Rather, the architectural and structural drawings shall govern space constraints, dimensions and finishes. All offsets and fittings which will be necessary to accomplish the finished installation shall be provided at no additional cost or increase in the Contract.

1.04 SPACE PRIORITY

A. Ensure optimum use of available space for materials and equipment installed above ceilings. Allocate space in the order of priority as listed below except as otherwise detailed. Items are listed in the order of priority, with items of equal importance listed under a single priority number.

1. Gravity flow piping systems
2. Vent piping systems
3. Recessed lighting fixtures
4. Concealed HVAC terminals and equipment
5. Air duct systems
6. Sprinkler piping systems
7. Pressurized piping systems
8. Electrical conduit, wiring, control air tubing

B. Order of space priority does not dictate installation sequence. Installation sequence shall be as required to install all affected trades.

C. The work of this Division 23 shall not obstruct access for installation, operation and maintenance of the work of any other Division.

D. All major items of equipment shall be arranged so as to provide a minimum of 28" clear aisle space. Additional space shall be provided between and around equipment for maintenance and proper operation as shown in the Equipment Manufacturer's literature.

1.05 COORDINATION

A. Coordinate all work under this Division 23 with work under all other Divisions, providing adjustment as necessary.

B. Coordination of space requirements with respect to Division 26 shall be performed such that:

1. No equipment, piping or ductwork, other than electrical, shall be installed within 42" of switchboards or panelboards.
2. No piping or ductwork which ever operates at a temperature in excess of 120°F shall be installed within 3" of any electrical conductor.

C. All items mounted in or below the ceiling, and all items penetrating the ceiling, shall be coordinated with the architectural reflected ceiling plans. If any items are not shown on these plans, or any items need to be relocated for coordination purposes, prepare a reflected ceiling plan and submit it to the Architect for approval.

D. Variable-Frequency Drives shall be provided under Division 23 and installed by Division 26. See specification 26 29 23 Variable – Frequency Motor Controllers.

E. Fused disconnects shall be provided under this Division 23 for all equipment connected directly to bus duct, and rating shall match bus duct rating. Coordinate with Division 26.

1.06 CODE COMPLIANCE

A. All workmanship and materials provided under this Division 23 shall comply with all laws, ordinances, codes and regulations of all Federal, State and Local Authorities Having Jurisdiction.

B. All fire suppression, plumbing, heating, ventilating, and air conditioning materials and workmanship shall comply with the following codes and standards as minimum requirements, including all state and local amendments:

1. NFPA 70, National Electrical Code, 2023 Edition
2. Life Safety Code (NFPA 101) – 2021 Edition
3. All other NFPA Codes and Standards – Applicable Editions
4. International Building Code – 2021 Edition
5. International Conservation Code – 2021 Edition
6. International Fire Code – 2021 Edition
7. International Mechanical Code – 2021 Edition
8. International Plumbing Code – 2021 Edition
9. International Accessibility Code – 2021 Edition
10. American with Disabilities Act, January 26, 1992
11. American National Standard Handicapped Code, A117.1 – 2009 Edition
12. ASME A17.1 Safety Code Elevators and Escalators, 2016 Edition

C. Secure and pay all fees associated with all permits and licenses required for execution of the Contract. Arrange for all inspections required by City, County, State and other Authorities Having Jurisdiction, and deliver certificates of approval to the Architect.

D. The code requirements are strictly a minimum and shall be met without incurring additions to the Contract. Where requirements of the drawings or specifications exceed the code requirements, the work shall be provided in accordance with these drawings or specifications. In the event of conflict or ambiguity between the various codes, the most stringent requirement shall govern.

1.07 ELECTRICAL REQUIREMENTS AND INTERFACE

A. All electrical equipment and wiring provided under this Division 23 shall comply with the electrical system characteristics indicated on the electrical drawings and specified in Division 26.

B. Electric controls, contactors, starters, pilot lights, push buttons, etc., shall be provided complete as part of the motor, heater or other equipment which it operates. All electrical components shall be in conformance with the requirements of the National Electrical Code and Division 26. Starters shall be wye-delta, closed transition type. Reference Division 26 and the electrical engineering drawings for those motor starters provided under that Division 26. All starters not shown shall be provided under this Division 23. Unless specified otherwise under other individual equipment Sections, motor starters shall conform to the following minimum requirements:

1. Starters for motors 1/3 horsepower or smaller shall be manual unless remote or automatic starting is required, in which case the starters shall be magnetic, full voltage, non-reversing, single-speed, unless otherwise indicated. All other starters shall be magnetic.
2. Each starter for a three-phase motor shall be furnished with three (3) overload relays sized for the full load running current of the motor actually provided. Provide an external "HAND-OFF-AUTO" selector switch with red "RUNNING" light. Provide a green pilot light to indicate motor "STOPPED". Each pilot light shall have a legend plate indicating reason for signal.
3. Each overload relay shall have a normally open alarm contact which will close only when actuated by an overload (not to be confused with N.O. or N.C. auxiliary contacts). These contacts shall be properly wired to their respective blue pilot light provided on the starter front cover and having a "TRIPPED" legend plate.
4. Individually mounted motor starters shall be in a NEMA Type 1 general purpose enclosure in unfinished areas and shall be flush mounted in all finished areas. All starters mounted in exterior areas shall have a NEMA 3R enclosure. Each starter shall have a laminated nameplate to indicate equipment unit number, function and circuit number.
5. All motor starters, push buttons and pilot lights shall be of the same Manufacturer as the switchboard and shall be General Electric, Square D, Siemens I.T.E., or Westinghouse.

C. Motor starters for the following equipment shall be provided under this Division 23 by the Manufacturer of the equipment:

1. Packaged air conditioning equipment
2. Water chillers
3. Other equipment hereinafter specified in other Sections to be provided with integral starters

D. Unless otherwise noted or specified in individual Sections, all 3-phase motors shall be standard NEMA continuous duty "B" type, with Class B insulation, open drip-proof frame for indoor service, TEFC for outdoor service and a service factor of 1.15. All motors 5 HP and larger shall be U.S. Motors Hi-Efficiency Model or Reliance XE Hi-Efficiency Model.

E. All power wiring and final connections to equipment shall be provided under Division 26.

F. Control components, all interlocks, (VAVs, actuators, smoke dampers, fire/smoke dampers, motor-operated dampers, fire alarm motors, etc.) and control wiring (277 volt, single phase and less) shall be provided under this Division 23 as required to achieve the specified control sequences. All electrical connections shall be specifically coordinated with Division 26 and any necessary scope included as part of Division 23.

G. All control wiring over 30 volts shall be installed by a licensed Electrician working under this Division 23.

1.08 SLEEVES, SEALS AND ESCUTCHEONS

A. Sleeves shall be provided through all pipe and ductwork penetrations of concrete or masonry walls, elevated floors and roofs, except those piping penetrations for equipment, etc.

B. Sleeves shall be fabricated from Schedule 40 steel pipe through 10" and Standard Wall steel pipe for sleeve sizes 12" and larger. All sleeves penetrating exterior walls, underground walls, pit or vault walls shall be provided with a 3" x 3/8" thick waterstop ring welded completely to the midpoint of the sleeve.

C. All sleeves penetrating exterior walls, underground walls, pit or vault walls and elevated floors shall be packed and sealed watertight.

D. Sleeves through roofs shall extend above the roof surface and be flashed watertight.

E. Sleeves through walls shall be cut and finished flush with each surface of the wall in which they are installed.

F. Sleeves through floors in mechanical rooms or other back of house spaces shall be installed with the top no less than 1/2 " above the finished floor to allow for leak protection. Space between the top of the fire-stopping and top of the sleeve shall be packed with mineral wool and caulked to not allow water ponding within the sleeve.

G. Sleeves shall be sized to provide a minimum of 1/2" clearance between the inside surface of the sleeve and the outside finished surface of the pipe plus any insulation specified.

H. Fire-stops shall be provided as specified herein. All annular spaces between piping and sleeves, which do not require fire-stops, shall be packed with mineral wool and caulked.

I. Provide round, chrome-plated escutcheons on all exposed piping and ductwork penetrations passing through walls, floors, partitions and ceilings. Escutcheons shall be painted and caulked in coordination with Architect. Note that escutcheons should be only attached to the wall as piping and ductwork may move slightly during operation.

1.09 FIRESTOPS

A. Where piping, conduit, etc. pass through fire partitions, fire walls and floors, a firestop shall be provided that will ensure an effective barrier against the spread of fire, smoke and gases. Firestop material shall be packed tight and completely fill gaps between the ductwork, piping, conduit, etc. and the perimeter of their rough openings.

B. All penetrations shall be in accordance with UL 1479 or ASTM E 814 listed systems, and products used shall be specifically applicable for the appropriate installation conditions. Assemblies shall provide a minimum rating equal to the construction penetrated. Products shall be by HILTI, 3M, or ProSet.

C. Installation shall be by a Qualified Installer. Installer shall be certified, licensed, or otherwise qualified by the Firestopping Manufacturer as having the necessary training to install the Manufacturer's specific product. A Manufacturer or Vendor's willingness to sell the firestopping product to the Contractor or Installer does not in itself confer qualification.

D. Installer shall have at least one of the following qualifications:

1. FM 4991 Approved Contractor
2. UL Approved Contractor
3. HILTI, 3M, or ProSet Accredited Fire Stop Specialty Contractor

E. Installing Firm shall have no less than 3 years of experience with firestop installation.

F. A Manufacturer's direct Representative (not Distributor or Agent) shall be on site during initial installation of firestop systems to train appropriate Contractor personnel in proper selection and installation procedures.

G. The firestop Contractor or Installer shall supply As-Built documentation of each individual penetration location on the project. Documentation shall include a sequential location number, detailed description of the penetration location, size, and type, tested system number, type of assembly penetrated, and rating to be achieved. As-Built documentation shall be included with the close-out materials.

H. Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach label permanently on both sides of penetrated construction in a visible location. The label shall include the following:

1. The words Warning – Through Penetration Firestop System–Do Not Disturb "
2. Through Penetration firestop system designation and Manufacturer
3. Date of Installation

1.10 CORE DRILLING

A. Cutting of holes through concrete and masonry shall be by diamond core or concrete saw. Pneumatic hammer, impact electric and hand or manual hammer type drills will not be allowed, except as permitted by the Architect where required by limited working space. Locate holes such that they will not affect structural sections such as ribs or beams. Holes shall be laid out well in advance of the installation. These layout locations shall be approved by the Architect prior to drilling.

1.11 IDENTIFICATION OF PIPING

A. All aboveground HVAC piping sized 3/4" and larger which is installed in accessible locations (including piping above removable ceilings and behind access panels) shall be identified in strict conformance with the "Scheme for the Identification of Piping Systems" (ANSI A13.1–2015).

B. Piping labels in exposed areas shall be oriented and located in coordination with the Architect.

C. Specific system names shall be subject to Owner approval. System names shall, at minimum, uniquely identify the system and performance category – i.e. Base Building Condenser Water Supply, Cooling Tower Make-up, etc.

D. Each identification marker shall include to the following:

1. Proper color-coded background
2. Proper color of legend in relation to background color
3. Proper legend letter size
4. Proper marker length
5. Direction of flow arrows shall be included on each marker

E. Locations for pipe markers shall be as follows:

1. Adjacent to each valve and fitting
2. At each branch and riser take off
3. At each pipe passage through walls, floors or ceilings
4. On all straight pipe runs every 25 feet

F. Identification markers may be stenciled or shall be Setmark Pipe Markers, as manufactured by Seton Name Plate Corporation.

G. All valves shall be identified with the appropriate service designation and valve number with brass valve tags. Each valve tag shall be 19 gauge brass with 1/4" black-filled letters over 1/2" black-filled numbers. Tags shall be fastened to valves with brass "S" hooks or brass jack chain. Brass tags and fasteners shall be as manufactured by Seton Name Plate Corporation.

H. Provide charts of all valves. Valve charts shall include the following items:

1. Valve identification Number
2. Location
3. Purpose/Material

2.0 PRODUCTS

2.01 BID BASIS AND SUBSTITUTION PROCEDURES

A. Manufacturer names, series and model numbers, as noted or specified, are for the purpose of describing type, capacity, and quality of equipment, materials and products to be used. Unless "or equal" is specifically stated, bids shall be based only on the specified "basis of design" Manufacturer. The listing of a particular manufacturer as an "equal" or "acceptable substitute" manufacturer shall not be misconstrued as approving nor allowing the substitution of that Manufacturer's standard product in place of the basis of design. No consideration will be given to a product, which would require dimensional, spatial or aesthetic changes to the project. "Acceptable substitute" and "equal" manufacturers shall only bid those products, which exactly match the size and other characteristics of the specified basis of design. Any changes to other disciplines and trades of work required by an "or equal" or "substitute" product shall be duly considered and priced accordingly prior to bidding or pricing. The decision as to whether or not a proposed substitute or "equal" product is actually equal to that specified shall rest solely with the Architect.

B. Requests to provide "equal" products in lieu of those specified shall be submitted to the Architect in writing at least ten (10) days prior to final pricing and execution of the Contract. No consideration will be given to substitute products after final pricing and execution of the Contract.

C. Any "or equal" product or proposed product substitution which will cause a change in the appearance, dimensions or design of any part of the building, it structure, electrical system or any other engineered systems shall be accompanied by a scaled drawing and written description of the required change(s) for approval by the Architect. If deemed necessary by the Architect, Owner, or AHJ, design changes shall be signed and sealed by a registered Professional Engineer, currently licensed in this State. This shall be performed under the Contractor's scope who selects the substitution.

D. Any and all changes due to a substitution of basis of design equipment including but not limited to electrical connection, physical size, access, duct or piping connections, controls, etc. shall be solely the responsibility of substituting Contractor.

2.02 MINIMUM STANDARDS

A. Every piece of energy consuming equipment, all fire suppression products and life safety equipment shall comply with the following standards as applicable; especially in regard to prevailing codes:

1. Factory Mutual Laboratories (FM)
2. Industrial Risk Insurers (IRI)
3. Underwriters Laboratories, Inc. (UL)
4. ADC: Air Diffusion Council
5. AGA: American Gas Association
6. AMCA: Air Moving and Conditioning Association, Inc.
7. ANSI: American National Standards Institute
8. API: American Petroleum Institute
9. AHRI: Air Conditioning, Heating, and Refrigeration Institute
10. ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers
11. ASME: American Society of Mechanical Engineers
12. ASTM: American Society of Testing and Materials
13. AWWA: American Water Works Association
14. IBR: Institute of Boiler and Radiator Manufacturers
15. MSS: Manufacturers Standardization Society
16. NBBPVI: National Board of Boiler and Pressure Vessel Inspectors
17. NEMA: National Electrical Manufacturer's Association
18. OSHA: Occupational Safety & Health Administration
19. PDI: Plumbing Drainage Institute
20. PPI: Plastic Pipe Institute
21. SMACNA: Sheet Metal and Air Conditioning Contractors National Association, Inc.

2.03 PIPE HANGERS AND SUPPORTS

A. Pipe hangers, trapeze hangers, upper attachments, rods and other supports shall be selected based on pipe size and material contained therein. Provide all hangers, rods, turnbuckles, angles, channels and other supports to securely support the piping systems from the building structure.

B. All materials utilized for the hanging and support of the piping systems shall be manufactured products, which are specifically intended for the purpose of hanging piping systems. The use of wire, steel straps, plastic ties, etc. is strictly prohibited.

C. Supports and hangers shall be selected to fit around the pipe (and insulation unless otherwise specified herein) and provide adequate movement for expansion of the piping systems. Anchors shall be provided to restrict and control such movement within offsets and expansion loops.

D. All hangers and supports shall be selected at a minimum factor of safety of five based on the ultimate tensile strength of the material.

E. Intermediate pipe supports shall be provided between building structural members so as not to exceed maximum support spacing specified and shall be structural steel angles (minimum 2 1/2" x 2 1/2" x 1/4"). In steel construction, intermediate supports shall be securely clamped to steel beams and to steel joists, and in no case shall supports be attached to roof decks.

F. For suspending pipes from concrete beams, upper attachments shall be side beam bracket utilizing bolts in sleeves set in top portions of the beams. Where sleeves are not used, provide expansion shields or power-actuated fasteners.

G. Hanger rods for pipe hangers shall be as follows:

1. 3/8 "hanger rod – 2 "nominal pipe and smaller
2. 1/2 "hanger rod – 2 ½ "and 3 "nominal pipe
3. 5/8 "hanger rod – 4 "and 5 "nominal pipe

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AS INDICATED — Scale

SPECIFICATIONS - MECHANICAL

M-0.3

4. 3/4"hanger rod – 6"nominal pipe

5. 7/8"hanger rod – 8"through 16"nominal pipe

H. Pipe hangers selected for supporting horizontal insulated piping shall be sized to fit around the outside of the pipe insulation except for the following services, which shall be sized to fit around the pipe and under the insulation:

1. Hot water supply and return piping, steam, condensate return and related piping sized 2" and smaller.

I. Provide pipe saddles, inserts and shields on all insulated piping as outlined below:

1. Hot water supply and return piping and associated steam and condensate return piping over 2" shall be supported by steel saddles welded to pipe. Insulation shall be continuous through the saddle.

2. All other insulated piping shall be supported on Foamglas insulation inserts and galvanized shields, except that no inserts are required on piping sized less than 2". Foamglas inserts shall extend at least 2" past each end of the pipe shields.

a. Shields shall be as follows:

1) Pipes 2" and smaller: 18 gauge x 12" long

2) Pipes 2 1/2" and larger: 16 gauge x 18" long

b. Shields and inserts shall be 180 degrees around the lower half of the pipe at all pipe hangers, except that on trapeze hangers, pipe racks and floor supported horizontal pipes, shields shall be 360 degrees around the entire pipe.

3.0 EXECUTION

3.01 SUBMITTALS

A. Before preparing submittals, study all Contract Drawings and specifications in detail, obtain manufacturer's recommended instructions, and have submittals prepared based on specific equipment and material proposed for installation. An officer of the Contracting Firm shall sign all shop drawings (certifying conformance with plans and specifications) before submitting to the Architect or releasing to the field.

B. The submittal process shall not be utilized as an avenue to substitute products after the execution of the contract. Should an unspecified or unequal product be submitted, it will be rejected. If a second attempt at substitution is made during the resubmittal of the same product, then no more reviews of that product will be performed without direct compensation to the Engineer being paid for the additional services required for the third review and any further reviews.

C. All submittals shall be submitted and returned electronically.

D. Submittals will not be accepted for review unless they:

1. Comply with the requirements of Division 1

2. Include complete information pertaining to all appurtenances and accessories

3. Are submitted as complete packages which pertain to all related items in Division 23. Separate packages shall be submitted as follows:

a. All HVAC equipment and components

b. The automatic controls and EMS

4. Are properly marked with equipment, service, or function identification as related to the project and are marked with pertinent specification paragraph number

E. Submit catalog information, factory assembly drawings, field installation drawings and certifications as required for complete explanation and description of all items of equipment. The submittal data shall provide ample, unquestionable compliance with the Contract Documents.

F. Review of submittals shall not be construed as authorizing any deviations from the plans and specifications unless such deviations are clearly identified and separately submitted in the form of a letter that is enclosed with the submittals.

G. Submittals are required on all manufactured equipment, especially energy consuming equipment. Submittals shall include, but are not limited to, the following items of equipment:

1. Ductwork and Piping Insulation

2. Air Distribution Devices

3. Ductwork Accessories (Including All Dampers)

4. Fans

5. Louvers and Hoods

6. T&B Company Certifications and Final Report

3.03 INSTALLATION REQUIREMENTS

A. All equipment shall be installed in strict conformance with the recommendations of the Equipment Manufacturer, as indicated on the Drawings and as specified.

B. Provide installation manuals for each piece of equipment. Submit in separately bound volumes after review of submittals.

C. Provide supplementary steel framing and welded steel equipment support stands as required for proper hanging and support of the mechanical systems. Steel angles, channels and tubing utilized for such framing shall be selected for a maximum deflection of 1/360th of the span.

D. All roof curbs shall be a minimum of 12" high and selected for the various roof pitches. Curbs installed on roofs having pitches of not more than 1/4" per foot may be standard curbs shimmed level with steel channels or Zs to provide suitable support and flashing surfaces.

3.04 CLEANING, LUBRICATION AND ADJUSTMENT

A. The exterior surfaces of all mechanical equipment, piping, ductwork, conduit, etc., shall be cleaned and free of all dirt, grease, oil, paint splatter, and other construction debris.

B. Ducts, plenums, and air unit casings shall be cleaned of all debris and either vacuumed or blown free of all rubbish, dirt, and dust before installing grilles, registers or diffusers.

C. Bearings that require lubrication shall be lubricated in strict accordance with the manufacturer's recommendations.

D. All control equipment shall be adjusted to the settings required for the performance specified.

E. Fans shall be adjusted to the speed indicated by the Manufacturer to meet the installed final system pressure at the airflows indicated. Any additional sheaves and belts required for final adjustments shall be provided with no increase in the Contract amount.

F. Any fans operated during construction shall have temporary filters. Temporary filters shall be changed regularly to minimize contamination of the equipment and duct systems. Permanent filters shall be installed prior to final inspection.

G. All coils shall be thoroughly cleaned and combed prior to final inspection.

H. All materials, equipment, etc. subject to weather, corrosion, dust, debris, water etc. to be installed or utilized for the project shall be fully protected. This is inclusive of piping and duct openings and internal fan ventilation intakes and discharges. This Division's scope includes protection and remediation of any and all Division materials, etc. including cleaning, vacuuming, dusting, etc. required for a clean system and operation. Insulation and equipment with electrical connections subject to water shall be replaced in their entirety. Coordinate with all other trades and schedules.

3.05 PAINTING

A. All uncoated and uninsulated steel surfaces exposed to sight inside the building, such as piping, equipment hangers and supports which are not provided with factory prime coat or galvanizing, shall be cleaned and painted with one coat of rust inhibiting primer. In addition, all surfaces in finished spaces shall also be painted with two coats of finish paint in a colour selected by the Architect.

B. All ductwork surfaces, piping, supports, etc. visible through grilles, registers and diffusers in finished areas shall be painted flat black. All ductwork, equipment, piping, supports, air distribution, etc. visible in exposed finished areas shall be painted a colour selected by the Architect, except that nameplates shall not be painted.

C. Steel items exposed outside the building, such as equipment supports, uninsulated piping and hangers, which are not factory painted or galvanized, shall be cleaned and painted with one coat of rust inhibiting primer and two coats of asphaltic base aluminum paint. Insulated steel pipes outside the building shall be cleaned and painted with one coat of rust inhibiting primer before installing insulation.

D. Factory painted equipment that has been scratched or marred shall be repainted to match the original factory color.

3.06 DUCTWORK AND PIPING LEAK TESTING

A. Insulated, underground, and concealed ductwork and piping shall be tested for leaks in place before backfilling, concealing or covering. Tests shall be conducted in the presence of the Architect or their designated Representative.

B. All low pressure ductwork (design operating pressure of 1.0" WC ESP or less) shall be tested by the operation of the system to which it is connected.

C. All medium and high pressure ductwork (operating pressure of more than 1.0" WC ESP) shall be tested at 1.5 times the design operating pressure of the system to which it is connected, or at the total fan pressure at shut-off, whichever is greater, up to the maximum pressure classification of the associated ductwork system.

D. All visible and audible air leaks from the ductwork systems shall be repaired.

E. See specification section 23 11 23 for testing requirements of natural gas piping. System shall be part of Division 22 scope unless otherwise arranged within the Contract. Coordinate with Division 22.

F. All refrigerant piping shall be 100% tested with the applicable ASHRAE standard – latest version.

G. All leaks shall be repaired by tightening, remaking joints, or replacing pipe and fittings. Caulking of joints shall not be permitted.

3.07 RECORD (AS-BUILT) DRAWINGS

A. At the completion of the project, provide a set of reproducible prints to the Architect which reflects all changes, deviations and revisions made to the original design documents. Locations of all underground piping and utilities shall be clearly shown and dimensioned from permanent reference points such as building column lines. Record drawings shall be produced in electronic format compatible with AUTOCAD. Furnish electronic copies of all drawings in dwg. format, and two (2) bond copies of all drawing sheets. **As-Builts for electronic incorporation by the Design Team, as applicable, shall be redline mark-ups of the Construction Documents.

3.08 OPERATING AND MAINTENANCE MANUALS AND INSTRUCTIONS

A. Complete operating and maintenance manuals shall be provided to the Owner. Four copies shall be provided. Each copy shall be bound in a separate 3-ring, loose-leaf notebook. Operating instructions shall be provided for each mechanical system, and shall each include a brief system description, a simple schematic and a sequence of operation. Operating and maintenance instructions shall be provided for each piece of equipment. A control system wiring diagram shall be included in each operating and maintenance manual.

B. Prior to final acceptance or beneficial occupancy, provide the services of a Competent Technician for not less than one (1)**two (2) days** to instruct the Owner in the operation of the mechanical systems.

3.09 TESTING AND BALANCING

A. Testing and balancing of the HVAC system shall be performed **in accordance with the standards of AABC and shall be performed under the direct supervision of a Certified Test and Balance Engineer** as specified in Section 23 05 93. Note that this work is to be performed under a separate Contract directly under the General Contractor. Submit four (4) copies of the test and balance report directly to the Architect.

3.10 PIPING SUPPORTS

A. Pipe hangers or supports shall be provided within 18" of each horizontal fitting, equipment connection, valve, etc. and within 18"of the centerline of horizontal or vertical changes in direction summing to 90° or more. Specific attention is called to vertical turns into risers.

B. Piping supports shall be provided, at a minimum, in accordance with the greater of the below or at code minimum. Where the below or code does not address support for specific piping, supports shall be in accordance with manufacturer's requirements.

Piping Material	Max. Horz. Spacing	Max. Vert. Spacing
Cast-iron pipe	5'	15'
Copper pipe	12'	10'
Copper tubing ≤ 1-1/4"dia.	6'	10'
Copper tubing ≥ 1-1/2"dia.	10'	10'
PVC pipe	4'	10'*

*Midstory guide required for piping 2"diameter and smaller

C. Riser clamps shall be provided at each floor penetration. For pressurized piping systems except refrigerant suction and liquid service, provide vibration isolation at all riser clamps with two (2) pad-type mountings consisting of a minimum 3/8" thick ribbed or waffled elastomeric pads bonded between minimum 16-gauge galvanized steel separator plates. Pads shall be sized for a deflection of 0.12" to 0.16". Pads shall be minimum 3" x 3" square.

3.11 WARRANTY

A. All work provided under this Division 23 shall be subject to a minimum one year warranty. The warranty shall include prompt repair or replacement of equipment or system failures and shall include all parts, refrigerant, and labor. In addition, all compressors shall carry an additional four year parts-only warranty. Extended warranties shall be provided on all other equipment so specified in other Sections.

3.14 SHOP DRAWINGS

A. Shop drawings per the submittal requirements shall be submit to the Design Team with adequate time for multiple rounds of review. Shop drawings shall show As-Built"conditions including elevations, offsets, transitions, and accessories. Shop drawings shall indicate all code and manufacturer's recommended clearances, access, and coordinate the clearance and access requirements with all other trades.

B. Shop drawings that use keynotes direct from the Design Documents shall not be acceptable as they do not demonstrate coordination with all other trades, necessary transitions, etc.

C. Shop drawings shall be provided as complete packages in parallel with all trades to document coordination. Floor-by-floor or otherwise piecemeal shop drawings are generally not acceptable.

3.17 BID REQUIREMENTS

A. The Contractor shall include all systems, equipment and accessories shown on the plans and specifications.

B. The Contractor is responsible for providing all design documents to all SubContractors. All systems, equipment and accessories shall be included in the bid, whether shown on the SubContractor applicable plans or other design documents.

C. Should any discrepancy occur in the Design Documents, the Contractor shall provide a request for clarification prior to bid or note the discrepancy in the bid and provide an appropriate cost allowance in the bid.

D. The Contractor shall acknowledge that the Design Documents are diagrammatic and shall provide all systems, equipment and accessories required for a complete facility. Any areas that appear to be void of systems or inappropriate systems shall be noted in the bid. No post bid change order shall be considered for areas or discrepancies not noted in the bid.

E. All installation coordination and means and methods and labor and materials required for proper system installation shall be included.

F. These requirements are in addition to bid procedures and requirements of the RFP or general specifications.

END OF SECTION

SECTION 23 05 93

TESTING, ADJUSTING, AND BALANCING FOR HVAC

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section is governed by the Common Work Results for HVAC Section 23 05 00.

B. This Section 23 05 93 and the accompanying drawings cover the provision of all labor, equipment, appliances, and materials and performing all operations in connection with the testing and balancing (T&B) of the heating, ventilating and air conditioning (HVAC) systems as specified herein and as shown. These systems include, but are not limited to, the following:

1. Supply distribution systems

2. Return and exhaust air systems

3. Heating, ventilating and air conditioning equipment (all scheduled equipment as a minimum)

4. Hydronic systems

1.02 INTENT

A. It is the intent of this Section of the specifications to provide a complete operable and balanced HVAC system as shown and specified which is reasonably airtight, comfortable and free of objectionable noise and vibration.

1.03 SCOPE OF WORK

A. HVAC test and balance shall be performed by an Independent Agency certified by the Associated Air Balance Council (AABC) or National Environmental Balancing Bureau (NEBB) under direct contract to the General Contractor. All work performed by this Agency shall be performed by qualified Technicians under the direct supervision of an AABC or NEBB Certified Test and Balance Engineer. The Agency shall be independent and shall not be associated in any way with the installing HVAC SubContractor.

C. HVAC Test and Balance shall be performed in accordance with the 7th edition of the AABC National Standards, 2016 for Total System Balance or the NEBB Procedural Standards for TAB of Environmental Systems, 8th Edition, 2015 together with the NEBB TAB Manual for Technicians, 2nd Edition.

D. The final Test and Balance report shall serve to substantiate compliance with the intent of the Contract Documents, specifically the HVAC systems.

E. HVAC Test and Balance shall not begin until the systems are substantially complete.

F. Upon the completion of the Test and Balance work, the Agency shall submit four (4) copies of the complete HVAC Test and Balance Report directly to the Architect.

G. The Agency, as a part of its contract with the General Contractor, shall act as an Authorized Inspection Agency, responsible to the General Contractor and the Architect and shall, during the test and balance, list those items which require correction or have not been installed in accordance with the Contract Documents.

H. The Agency shall plainly mark the settings of all valves, dampers and other adjustable devices. If a balancing device is provided with a memory stop, it shall be set, locked and marked.

I. The Agency shall record all of the final set points on all variable speed drives.

1.04 SUBMITTALS

A. The name and certification of the Agency, along with the name and certification of the Certified Test and Balance Engineer, shall be submitted to the Architect for review within 30 days after the award of the General Contract.

B. The selected Agency shall submit to the Owner:

5. Procedural Manual

6. Report Forms

7. AABC or NEBB Performance Guaranty

8. Instrument List and Calibration Dates

9. Schedule

10. Floorplans as Needed to Uniquely Identify Device Locations

C. A reviewed copy of each of the above shall be returned to the Agency before the HVAC Test and Balance begins.

D. If a complete submittal in accordance with these requirements is not received within 60 days from award of the General Contract, then the Architect reserves the right to select the Agency.

2.0 PRODUCTS

2.01 (Not applicable).

3.0 EXECUTION

3.01 GENERAL CONTRACTOR'S DUTIES

A. The General Contractor shall provide the following, within 10 days after his receipt, to the Agency:

1. Contract Drawings

2. Contract applicable specification Division 23 (others as applicable)

3. Addenda

4. Change orders

5. Reviewed submittals

B. The General Contractor shall start-up and maintain the HVAC systems and shall continue the operation of the HVAC systems during each day of testing and balancing. Start-up and operation shall include, as a minimum, the following:

1. All equipment operable and in safe condition.

2. Temperature control system complete.

3. Proper thermal overload protection in place for electrical equipment.

4. Ductwork leakage rates not exceeding those specified and all duct systems clean of debris.

5. Air transfer systems shall have:

a. Correct fan rotation and RPM.

b. Coil fins cleaned and combed.

c. Filters clean and in place.

d. Access doors closed.

e. All dampers in place and open.

f. All grilles, registers and diffusers installed.

C. Provide sufficient time before final completion date so that testing and balancing can be accomplished. Coordinate the submitted T&B schedule.

D. Provide immediate labor and tools to make required corrections and repairs without undue delay.

E. The General Contractor and his SubContractors shall cooperate fully with the Agency to provide the following:

1. Access to HVAC system components.

2. The right to adjust the systems.

F. Any conditions which prevent a proper HVAC Test and Balance shall be reported by the Agency to the General Contractor and Architect within 7 days of their discovery.

G. If it is determined by the Agency and confirmed by the Architect that drive changes or additional balancing dampers are required, the Contractor shall obtain and install all necessary components.

H. The Agency shall cooperate with the Architect and the Contractor and all his SubContractors to perform the work in such a manner as to meet the job schedule.

I. The Agency shall verify that all system components are in place and in proper working order prior to leaving the project.

J. All reported and recorded data shall represent true measured conditions.

K. Where equipment uses variable speed drives, and where feasible, VFDs shall be used as the primary balancing method prior to adjustment or balancing of valves, dampers, etc.

END OF SECTION

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

ISSUED FOR CONSTRUCTION

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUED FOR CONSTRUCTION	02/19/2025

Christopher Lyles, P.E.
License # PE.0059116

BWA JOB # 2025-0073

Owner Approval

27MSHF.0030.000 — Job No.

AS INDICATED — Scale

SPECIFICATIONS - MECHANICAL

M-0.4

SECTION 23 07 13

DUCT INSULATION

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section is governed by the Common Work Results for HVAC Section 23 05 00.

B. This Section 23 07 13 and the accompanying drawings cover the provisions of all labor, equipment, appliances, and materials and performing all operations in connection with the construction of the ductwork systems as specified herein and as shown. These systems include, but are not limited to, the following:

1. Insulation for typical ductwork
2. Duct liner
3. Insulation for ductwork outside
4. Insulation for grease exhaust ductwork
5. Insulation for generator exhaust pipe

1.02 INTENT

A. It is the intent of this Section of the specifications to provide a complete operable duct system as shown and specified which is reasonably airtight, free of noise, vibration and sweating, and fabricated so as to fit into the space allotted and to exhibit a minimum resistance to airflow.

2.0 PRODUCTS

2.01 DUCT LINER

A. Duct liner shall be one inch thick, 1 ½ lb. density (3 lb. density on medium- and high-pressure supply air systems except that 1 ½ lb. density is acceptable if the liner is at least R ≥ 4.2 and NRC ≥ 0.65) fibrous glass with one face coated with a black fire retardant compound. The permanent composite fire and smoke hazard rating of the liner shall be stenciled on the liner face and shall be:

1. Maximum Flame Spread 25
2. Maximum Smoke Developed 50

2.02 TYPICAL DUCT INSULATION

A. Duct insulation shall be 2" thick, minimum 3/4 lb. density fiberglass with an FSKL 0.00035" thick aluminum foil jacket, reinforced with fiberglass scrim. Thermal conductivity shall be a maximum of K = 0.29 at 75°F mean temperature, or a maximum of K=0.27 at 25% compression.

B. Insulation adhesive shall be Benjamin Foster 85-20. Tape shall be aluminum foil and shall be SMACNA listed and labeled.

C. The composite NFPA 90A and 90B, ASTM E84, UL rating of the installed insulation shall not exceed 25/50.

D. The grease exhaust ductwork shall have zero-clearance to combustibles wrap from the hood connection to discharge termination. Coordinate the insulation with all required access panels, drains, etc. as required by NFPA 96.

3.0 EXECUTION

3.01 INSTALLATION

A. Ductwork shall be installed in strict accordance with SMACNA, UL, and NFPA standards.

B. Duct liner shall be provided throughout all return air, transfer and plenums. Duct liner shall also be provided for the following minimum distances, through the first elbow(s), or as otherwise indicated on the drawings, whichever is greater, downstream of each unit indicated below:

1. Packaged rooftop unit – 25 ft

C. Straight runs only shall be factored into the above distance requirements. Elbows, etc. within the length shall be lined but shall not count towards the length requirement.

D. Duct liner shall not be installed within six inches of a damper, including fire and/or smoke dampers. Metal nosings are required on the downstream side of the exposed insulation. Where lining has been interrupted, external insulation is required.

E. Duct liner shall be cut to provide overlapped and compressed longitudinal corner joints. Liner shall be installed with the coated surface facing the air stream. Duct liner shall be adhered to the ductwork with a 100% coverage of the sheet metal surfaces using a fire retardant adhesive applied by spraying. Coat all exposed leading edges and all transverse joints with fire retardant adhesive. The liner shall be additionally secured using metal pins welded to the duct and speed washers. All leading edges shall be secured with sheet metal airfoils.

F. Inside the vapor barrier of the building all supply air ductwork which is not lined shall be insulated. All outside air ductwork shall be insulated. Insulation shall be cut slightly longer than circumference of duct to insure full thickness at corners. All insulation shall be applied with edges tightly banded. Insulation shall be adhered to duct with fire resistant adhesive. Adhesive shall be applied so that insulation conforms to duct surfaces uniformly and firmly. In addition to the adhesive, the insulation shall be additionally secured to the bottom of all ducts 18" or wider by means of welded pins and speed clips. The protruding end of the pins shall be cut off flush after the speed clips have been applied. The vapor barrier facing shall be thoroughly sealed with tape where the pins have pierced through. All joints shall be sealed with 2" wide SMACNA tape. Any cuts or tears shall be sealed with SMACNA tape.

G. Combustion air ductwork located in conditioned spaces, to gas-fired appliances, shall be externally insulated similar to supply ductwork.

H. All outside air ductwork located in conditioned or semi-conditioned spaces shall be externally insulated similar to supply ductwork.

I. All conditioned air ductwork, including partially conditioned energy recovery ventilator outside air supply to the building and exhaust ductwork, installed in spaces that are ventilated only, i.e. penthouses, shall be insulated.

END OF SECTION

SECTION 23 11 23

NATURAL GAS PIPING

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section is governed by the Common Work Results for Plumbing Section 22 05 00.

B. This Section 23 11 23 and the accompanying drawings cover the provision of all labor, equipment, appliances, and materials and performing all operations in connection with the construction of the systems as specified herein and as shown. These systems include, but are not limited to, the following:

1. Natural gas systems

1.02 INTENT

A. It is the intent of this Section of the specifications to provide complete and operable system as shown and specified which is free of leaks, properly vented, free of unreasonable noise, vibration, and fabricated so as to fit the space allotted.

B. The word "piping" is defined to mean all piping, fittings, joints, hangers, coatings, valves, cocks, and accessories necessary for the system described, shown, and specified.

1.03 GENERAL REQUIREMENTS

A. Provide all reducing fittings, flanges, couplings and unions of the size and type of material to match the piping connections at each fixture, piece of equipment, valve, and accessory.

B. All pipe and fittings shall be products of a domestic Manufacturer.

C. Union joints, couplings or flanges shall be provided in each pipe line connected to each piece of equipment, fixture and elsewhere as indicated and specified. Unions shall match the piping system in which they are installed.

1. Unions or flanges shall be provided between all copper to steel connections. These unions shall be dielectric, insulating type.

D. All changes in direction and branches shall be made with manufactured fittings.

E. All pipe joints shall be cut square and all burrs shall be removed.

F. Open ends of pipe lines not currently being handled shall be plugged during installation to keep dirt, water, and foreign material out of the system.

G. This scope shall be part of Division 22 scope unless otherwise arranged within the Contract. Coordinate with Division 22.

1.04 IDENTIFICATION OF PIPING

A. See specification Section 22 05 00 for all requirements.

B. In addition, the natural gas piping shall be painted yellow, in accordance with ANSI standards, with paint suitable for the piping location. Paint shall be corrosion-resistant and continuous through all supports, penetrations, sleeves, etc.

2.0 PRODUCTS

2.01 NATURAL GAS

A. Piping shall be Schedule 40 black steel complying with ANSI B36.10 or ASTM A 53. Fittings shall be steel or malleable iron. Joints shall be threaded or welded.

B. Gas cocks shall meet ANSI B16.33.

C. Piping installed underground outside may be medium density polypropylene. Coordinate selection with all installation location and connection requirements. Connections to equipment shall be made with piping per the materials listed in this specification. Provide and install transitions as required.

D. For Seismic Design Category C or D, all natural gas **and liquid propane piping shall be seismically restrained in accordance with code requirements. Restraints shall be by Mason or approved equal. Submit shop drawings on seismic restraint systems.

2.02 PIPE HANGERS AND SUPPORTS

A. See specification Section 22 05 00 for all requirements.

2.03 REGULATORS

A. Regulators shall be appropriate for the installation in which they are installed, including weather-rated as appropriate. Provide and install all accessories as necessary.

B. Regulators installed inside or within 15' of any outside air intake, including doors and operable windows, shall be ventless. Where ventless regulators are not available, regulator shall have vent piped to outside in accordance with manufacturer's recommendations. Route and size shall be in accordance with manufacturer's recommendations.

3.0 EXECUTION

3.01 ARRANGEMENT

A. Follow the general piping layout, arrangement, schematics and details. Provide all offsets, vents, drains and connections necessary to accomplish the installation. Fabricate piping accurately to measurements established at the project site to avoid interference with ductwork, other piping, equipment, openings, electrical conduits and light fixtures. Make suitable provision for expansion and contraction with expansion loops and offsets.

3.02 MINIMUM HANGER SPACING

A. See specification 22 05 00 for all requirements.

3.03 INSTALLATION

A. Piping installed outside the building and underground shall be installed in a PVC sleeve to prevent corrosive ground contact with piping. Piping shall enter the building above grade.

B. Piping not subject to corrosion (i.e. polypropylene) does not require a PVC sleeve.

C. Piping installed outside the building and underground shall be buried a minimum of 36 "below grade or below the frost line, whichever is deeper.

D. Piping installed outside shall be elevated above grade a minimum of 3.5 "and shall be securely supported.

E. Piping penetrating floor slabs, walls, etc. shall be protected from damage and corrosion as required by Code.

F. For non-metallic underground gas lines, a yellow insulated copper traces wire or other approved conductor shall be installed with underground nonmetallic piping. Access shall be provided to the tracer wire or the tracer wire shall terminate aboveground at the end of the nonmetallic piping or not less than 3 "above ground, whichever is greater. The tracer wire size shall not be less than 18 AWG and the insulation type shall be suitable for direct burial.

G. Regulators shall be provided under this scope for each gas-fired equipment without appropriate regulators provided by the Equipment Manufacturer. Coordinate with all equipment. Regulators shall be appropriate for the pressures and capacity of the equipment and installation location.

3.04 TESTING AND PURGING

A. All new gas piping shall be pressure tested at 3 psi or 1.5 times the design pressure, whichever is greater, for a time period of 0.5 hours per 500 cubic feet of pipe volume, not to exceed 24 hours.

B. All gas piping 2.5 "and larger shall be purged with an inert gas prior to operation, with the piping purge lengths as required by Code.

END OF SECTION

SECTION 23 31 00

HVAC DUCTS, ACCESSORIES, AND CASINGS

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section is governed by the Common Work Results for HVAC Section 23 05 00.

B. This Section 23 31 00 and the accompanying drawings cover the provisions of all labor, equipment, appliances, and materials and performing all operations in connection with the construction of the ductwork systems as specified herein and as shown. These systems include, but are not limited to, the following:

1. Supply air ductwork
2. Return, transfer and relief air ductwork
3. Exhaust ductwork
4. Combustion air ducts and flues
5. Ductwork accessories

1.02 INTENT

A. It is the intent of this Section of the specifications to provide a complete operable duct system as shown and specified which is reasonably airtight, free of noise, vibration and sweating, and fabricated so as to fit into the space allotted and to exhibit a minimum resistance to airflow.

1.03 DESIGN AND CONSTRUCTION – DUCTWORK

A. Ductwork shall be provided in strict accordance with the third edition – 2005 – of the SMACNA HVAC Duct Construction Standards – Metal and Flexible, NFPA No. 90A, 90B, 91 and 96, and UL 181. Where SMACNA tables have an option between different gauges and supports, the heavier gauge shall be used.

B. Ductwork dimensions shown are net, clear, inside dimensions with no allowance shown for duct liner. All ductwork specified to be lined shall be 2" larger than shown in each dimension to compensate for the liner. Ductwork shall be square, rectangular, round, spiral or flat oval as noted. Conversion of duct shapes and sizes shown shall be accomplished without increasing air velocities or friction losses and is subject to prior approval by the Architect and Engineer.

C. Elbows shall be either full radius type (inside radius equal to duct width), five-gore radiused flat-oval type or, in low pressure systems only, mitered with double-thickness turning vanes.

D. Abrupt changes in duct sizes and shapes shall not be permitted. The total angle of diverging transitions shall be not more than 15 degrees; converging transitions shall be not more than 30 degrees unless otherwise noted or required due to structural constraints.

E. Offsets, transitions, rises and drops are not individually called out on the Design Drawings. They shall be provided as required to fit the ductwork into the allocated spaces.

F. Transition rectangular ductwork on bottom and sides. Maintain top of ductwork level and as high as possible.

H. All ductwork shall be constructed for standard 1" WC static pressure class at 2500 FPM with Class C seals and is herein defined as "low pressure ductwork".

I. Provide the following types of ductwork material for the services indicated:

1. Galvanized sheetmetal: supply, return, exhaust, and relief of conditioned and outside air

2.0 PRODUCTS

2.01 GALVANIZED SHEETMETAL

A. Galvanized sheetmetal shall be lock-forming grade G90-ASTM A 525 hot dip galvanized steel sheets. Sheetmetal shall be galvanized on each side with not less than 1.25 ounces of zinc per square foot.

B. Galvanized sheetmetal installed outside the building and subject to weather shall be soldered or welded. See Section 23 07 13 for additional information about covering and insulation.

C. Galvanized sheetmetal installed outside the building and not exposed to weather, such as in covered loading docks and parking decks, may match the construction of ductwork inside the building.

D. Galvanized sheetmetal ductwork outside the building within 20 miles of the seacoast shall have corrosion coating appropriate to the installation location.

2.02 SPIRAL DUCT

A. Spiral duct shall be utilized for all flat-oval and round ductwork in medium and high-pressure systems.

B. Spiral duct shall be the product of United McGill Corporation, R.V. Money, Eastern Sheet Metal, or an approved equal.

C. Spiral duct with internal ribs is not acceptable.

D. Spiral duct shall conform to SMACNA 2005 Standards. Lighter gauges, etc. due to standing ribs are not acceptable.

2.03 DOUBLE-WALL DUCTWORK

A. See Section 23 07 13 for insulation. Insulation shall be sandwiched between two (2) layers of sheetmetal in accordance with SMACNA standards. All joints shall be permanently sealed airtight.

2.06 COMBUSTION AIR DUCTS

A. All combustion air shall galvanized sheetmetal, constructed for the negative pressure per the Gas-Fired Equipment Manufacturer's recommendation, as applicable. Alternatively, combustion air ductwork may be constructed per the plumbing vent requirements except PVC and CPVC are disallowed in return air plenums. Ductwork shall be sealed airtight to prevent mechanical room or conditioned space air infiltration. Combustion air ducts shall be complete with storm collars, weatherproof caps, and all accessories.

2.07 FLUES

A. All Category I and III flues shall be Type "B", double-wall, as manufactured by Metalbestos or an approved equal. Flues shall be complete with storm collars, weatherproof caps and all accessories.

B. All Category II and IV flues shall be double-walled AL29-4C stainless steel leak-proof vent material, as manufactured by Metalbestos or an approved equal. Flue must be sealed gas-tight "at all joints. Flues shall be complete with storm collars, drip T with hose end connection, weatherproof caps, and all accessories.

C. Flues must be listed by the Combustion Equipment Manufacturer for the specific equipment applicable.

2.08 DAMPERS

A. Manual Volume Dampers

1. Single blade butterfly dampers are acceptable up to 12" round or 12" x 12" square. Dampers larger than these dimensions shall be multi-blade type. Single blade dampers shall be constructed of 16 gauge or heavier galvanized sheetmetal.
2. No multi-blade damper blade shall exceed 8" in width. All multiple blade dampers shall be constructed of 16 gauge galvanized steel or heavier. The damper frame shall be 16 gauge or heavier. The damper action shall be opposed-blade type.
3. Each blade shall pivot on a 1/2" cadmium plated, cold-rolled steel axle which pivots within self-lubricating, Oilite bronze bearings.
4. The top and bottom edges of each rectangular damper blade shall be crimped for stiffness.
5. The operating rod for all dampers shall be extended outside the damper frame for attachment of an operator. Each operator shall have a position indicator and locking quadrant.
6. All dampers utilized for introduction of outside air shall have flexible, gasketed edge and end seals. The leakage rate shall be less than 4 CFM per SF of face area against a 1" WC differential pressure, based on a nominal 48" x 48" damper size.
7. All dampers utilized for exhaust or relief air shall have flexible, gasketed edge and end seals. The leakage rate shall be less than 4 CFM per SF of face area against a 1" WC differential pressure, based on a nominal 48" x 48" damper size.
8. Dampers to be installed in insulated ductwork shall have standoffs sufficient to allow for insulation and vapor barrier integrity.
9. Manual volume dampers shall be as manufactured by Louvers & Dampers, Inc., Pottorff, Greenheck, Nailor, Ruskin, or an approved equal.

B. Control Dampers

1. Control dampers shall be of the same construction as manual volume dampers, except that no manual operator and quadrant is required. The operating rod shall be suitable for operation by an automatic pneumatic or electric operator.

C. Fire Dampers

1. Fire dampers shall be UL-listed and labeled for 1 1/2 or 3 hours, in accordance with the installation location, and shall be provided with 160°F links or linkages appropriate for the service. Dampers installed within ducts shall be Type B or Type C with the blades out of the air stream. Areas indicated shall be net, clear, open areas.
2. Fire dampers shall be appropriate for the installation location and application. All fire dampers in supply, return, exhaust, etc. shall be dynamic-type.
3. Fire dampers shall be as manufactured by Louvers & Dampers, Inc., Pottorff, Greenheck, Nailor, Ruskin, or an approved equal.

D. Smoke Dampers

1. Smoke dampers shall be UL-listed as Class 1 low-leakage smoke dampers. Smoke dampers shall be 24V and wired under this Division.
2. Smoke dampers shall be appropriate for the installation location and application. All fire dampers in supply, return, exhaust, etc. shall be dynamic-type.
3. Smoke dampers shall be as manufactured by Prefco, Louvers & Dampers, Inc., Pottorff, Greenheck, Nailor, Ruskin, or an approved equal.

E. Fire/Smoke Dampers

1. Fire/smoke dampers may be combined into a combination fire/smoke dampers. All provisions of the above shall apply. Fire/smoke dampers shall be UL-listed.

F. Backdraft Dampers

1. Backdraft dampers shall be sized according to their installation location and noted pressure setting. Damper pressure setting shall be adjustable and shall be accessible from outside ductwork or via access hatch, as applicable.

2.09 LOW-PRESSURE DUCT BRANCHES

A. Splitter dampers shall be provided at all low-pressure ductwork branches. All low-pressure ductwork branches shall be radiused or 45 degree take-offs; straight taps are unacceptable. The length of the damper blade shall be the same as the width of the widest duct section at the split, but in no case shall blade length be less than 12". Each operator rod shall have a locking swivel joint.

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

ISSUED FOR CONSTRUCTION

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUED FOR CONSTRUCTION	02/19/2025

Christopher Lyles, P.E.
License # PE.0059116

BWA JOB # 2025-0073

Owner Approval

27MSHF.0030.000 — Job No.

AS INDICATED — Scale

SPECIFICATIONS - MECHANICAL

M-0.5

2.10 FLEXIBLE DUCT

A. Flexible ductwork shall be Class 1, UL 181 air duct and meet NFPA 90A and 90B Standards.

B. The internal duct surface shall be acoustically rated, black CPE bonded to a coated steel wire helix. The external jacket shall be a fiberglass, bi-directionally reinforced, metallized vapor barrier with a standing, triple ply seam. Fiberglass insulation shall be provided between the duct surface and the jacket to achieve a maximum thermal conductance of 0.24 BTU/Hr./sq. ft./°F at 75°F mean.

C. Flexible ductwork shall be suitable for 10" W.G. positive pressure and 1" W.G. negative pressure in sizes 4 " through 12 "ID, and 6 "W.G. positive pressure and 0.5 "W.G. negative pressure in sizes 14–16 "ID.

D. Flexible ductwork, insulation and insulation cover shall be suitable for ceiling return air plenum installation and shall comply with all applicable codes and standards regarding such ceiling plenum installations.

E. Flexible duct shall be Thermaflex M–KE or an approved equal.

F. The maximum allowable installed length of flexible ductwork shall be as follows:

1. 8'–0" on low–pressure supply air systems limited to short runouts and end of runs connected to round neck supply diffusers and registers.

2. 4'–0" on medium and high–pressure supply air systems limited to the runouts from the sheetmetal ductwork to each terminal unit.

3. 2'–0" on connections from round neck grilles to sheetmetal ductwork on return, exhaust and transfer ductwork.

G. Provide a spin–in fitting with integral scoop and volume damper at all flexible run–out connections in low–pressure supply air ductwork only, except locations where spin–in fittings would project more than 50% into the projecting ductwork dimension. **Adhesive fittings are acceptable provided they are also screwed to the ductwork and sealed with mastic.

H. Flexible ductwork shall not pass through wall, floors, or ceilings.

2.11 TERMINAL UNIT RUNOUTS

A. Medium and high–pressure runouts to terminal units shall be connected to the trunk duct with factory–welded laterals, conical tees or bellmouth fittings; abrupt round to rectangular taps are strictly prohibited and shall be rejected.

B. Terminal unit runouts shall be the larger of the associated terminal unit inlet size or the size noted on the drawings.

2.12 FLEXIBLE CONNECTIONS

A. Provide flexible duct connections at the inlet and outlet of each belt–driven fan, indoor unit, fan coil unit, air handling unit, etc., and at all other locations indicated. Flexible connections shall be fabricated from a glass fabric coated on both sides with neoprene. Minimum weight shall be 30 oz. per sq. yard. Flexible connections shall be used for vibration isolation only and shall not be used to correct connection misalignment.

2.13 DUCT HARDWARE

A. Duct hardware shall be as manufactured by Young Regulator or an approved equal.

2.14 ACCESS DOORS

A. A duct access door shall be provided at each fire and smoke damper. Access doors shall be designed for 1.5 times the pressure of the duct in which they are mounted. Access doors shall be of sufficient size to provide access to the dampers for resetting the blades and replacing the links. Access doors in medium and high–pressure ductwork shall be installed downstream of fire dampers and shall be implosion type. Where access is provided through gypsum board walls or ceilings, furnish access door for installation under Division 09. Coordinate with Division 09 and Architect. Each door shall match the fire–rating of the wall or ceiling indicated.

B. Access shall be provided to duct–mounted smoke detector locations. Access shall allow inspection and maintenance of all aspects of the detector. Access doors shall meet the requirements of A, above, as needed.

3.0 EXECUTION

3.01 INSTALLATION

A. Ductwork shall be installed in strict accordance with SMACNA, UL, and NFPA standards.

B. All ductwork installed outside the building shall be secured to the structure. Coordinate with the Structural Engineer as needed. It is the Contractor's responsibility to design and coordinate all supports. All supports shall be designed to withstand all code–required wind and seismic loads.

C. Flexible ducts utilized in the low–pressure ductwork systems shall be installed without kinks or bends which are less than a centerline radius equal to or greater than twice the diameter of the flexible duct being installed.

D. All intersections (crossing) of low–pressure and medium–pressure ductwork shall be made with offsets in the low–pressure ductwork only. The medium pressure ductwork shall be ran straight and level.

E. Electric duct heaters shall be installed as indicated and in conformance with the manufacturer's recommendations. Coordinate the actual units to be provided with all trades. The heater shall be tested and adjusted after installation to provide the capacities indicated.

F. Ductwork labels, including factory labels, tags, etc. except equipment nameplates shall be removed to the satisfaction of the Architect in all exposed areas.

G. Ductwork exposed to sight from tenant spaces or common areas shall be flat oval or spiral, and shall be double–walled with insulation between walls.

END OF SECTION

SECTION 23 34 00

HVAC FANS

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section is governed by the Common Work Results for HVAC Section 23 05 00.

B. This Section 23 34 00 and the accompanying drawings cover the provision of all labor, equipment, appliances and materials, and performing all operations in connection with the construction and installation of the fans as specified herein and as shown. These fans include, but are not limited to the following:

1. Ceiling/cabinet fans

1.02 INTENT

A. It is the intent of this Section of the specifications to provide complete, operable, adjusted fans as shown and specified which are free of excessive noise, vibration and airflow fluctuations.

1.03 BASIS OF DESIGN

A. The basis of design is as scheduled. Any proposed substitutions shall be proven equal in all aspects to the equipment specified as the basis of design. Particular attention is called to the requirements of Section 23 05 00.

1.04 ACCEPTABLE SUBSTITUTE MANUFACTURERS

A. Acceptable substitute manufacturers are Carnes, Cook, Acme, PennBarry, Twin City, Price, and Greenheck. Acceptable manufacturers for kitchen grease exhaust fans are Captive–Aire, Viking, and Greenheck.

2.0 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. All non–filtered fans shall be factory tested, rated and certified in accordance with the requirements of AMCA Standard No. 210 and shall be labeled accordingly. Filtered fans may be non–labeled but must be rated in an AMCA approved laboratory in accordance with 210.

B. All roof–mounted fans shall be constructed such that water cannot enter the building through the fan regardless of whether or not the fan is operating. Fans shall be provided with drain connection and piped to the nearest roof drain as applicable.

C. Fans installed outside or otherwise subject to weather shall have a weatherproof enclosure over the motor compartment. All components, including VFDs, shall have enclosures and be appropriate for the installation locations.

D. All roof–mounted fans shall be provided complete with roof curbs. Roof curbs shall be of **aluminum **galvanized (hurricane rated) construction, insulated, canted and complete with wood nailer strips. Insulation shall meet NFPA 25/50 flame spread/smoke developed ratings.

E. All exhaust fans (except those utilized for grease exhaust service) shall be provided complete with gravity–type backdraft dampers.

F. All belt–drive assemblies shall be mounted on vibration isolators.

G. All motors on belt–drive assemblies shall be mounted on slide bases to provide adjustment of belt tension.

H. All belts in belt drives shall be rated for not less than 150% of the connected motor horsepower.

I. All belt–drives driven by a 5 HP or larger motor shall be multiple belt arrangements.

J. All belt–drives shall be adjustable to a minimum speed variation of plus or minus 20% of the design RPM.

K. All centrifugal fan wheels shall be statically and dynamically balanced.

L. All electric motors and equipment shall be UL labeled.

M. Refer to Division 26 of these specifications and to the electrical Contract Drawings for electrical characteristics and connections to all equipment. Coordinate all electric motors and other equipment with these electrical documents.

N. Fans with variable–frequency drives (VFDs) shall have shaft grounding ring and appropriate insulation class.

O. All exposed motors and belts shall be protected with enclosures or guards in accordance with OSHA requirements.

P. Life safety fans (i.e. stair pressurization, elevator hoistway pressurization, smoke control, etc. shall have 1.5 times the number of belts necessary for the scheduled performance with no less than two (2) belts.

2.02 CEILING/CABINET EXHAUST FANS

A. Ceiling/cabinet exhaust fans shall be Greenheck Model CSP (inline/cabinet) or Greenheck Model SP (ceiling) with integral grille, or an approved equal.

3.0 EXECUTION

3.01 INSTALLATION

A. Fans shall be installed as indicated and in conformance with the manufacturer's recommendations. Coordinate the actual units to be provided with all trades.

3.02 ADJUSTMENT

A. The fans shall be tested and adjusted after installation to provide the capacities indicated.

END OF SECTION

SECTION 23 37 13

DIFFUSERS, REGISTERS, AND GRILLES

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section is governed by the Common Work Results for HVAC Section 23 05 00.

B. This Section 23 37 13 and the accompanying drawings cover the provisions of all labor, equipment, appliances and materials, and performing all operations in connection with the construction and installation of air distribution devices as specified herein and as shown. These units include, but are not limited to the following:

1. Ceiling Diffusers (CD)

2. Return Air Grilles (RAG)

3. Curved Supply Registers (CSR)

1.02 INTENT

A. It is the intent of this Section of the specifications to provide complete, operable, adjusted air distribution devices as shown and specified which are free of excessive noise, vibration and airflow fluctuations.

1.03 SELECTION CRITERIA

A. All air distribution devices shall be selected in accordance with the following minimum criteria unless otherwise noted below or on the drawings:

1. Method of mounting shall be compatible with the ceiling, wall or duct surface which it mounts on or in; i.e. lay–in, surface mounting, plaster frame, duct collar, etc. The architectural drawings shall be referenced to determine the mounting method for each device. All flanges on surface mounted devices shall be provided with a gasket.

2. Finish of all ceiling mounted devices shall be selected to match the color of the adjacent ceiling. Finish of all wall mounted devices shall be primer which is compatible with the finish coating specified for the adjacent wall; finish coat will be applied under Division 9.

1.04 BASIS OF DESIGN

A. The basis of design is Titus. Any proposed substitutions shall be proven equal in all respects to the equipment specified as the basis of design. Any modifications to ductwork, controls, ceilings, building structure, etc., that result from any substitution shall be coordinated with all trades. This coordination shall occur before delivery of equipment and any modifications shall be performed without incurring additions to the Contract.

1.05 ACCEPTABLE MANUFACTURERS

A. Acceptable manufacturers are Price, Carnes, Metal Aire, Krueger and Nailor UON, provided that their units, performance, appearance and physical characteristics are equal in all respects for this specific project.

2.0 PRODUCTS

2.01 DESCRIPTION

A. Ceiling Diffusers (CD)

1. CD Ceiling diffusers (CD) shall be square, plaque face diffusers capable of providing one–way, two–way, two–way corner, three–way, and four–way air patterns; Titus OMNII with directional blow clips. The diffuser shall have a 22 gauge steel face panel that captures a secondary 22–gauge panel. The face panel shall be removable by means of four hanger brackets. The exposed surface of the face panel shall be smooth, flat, and free of visible fasteners. The back pan shall be one piece precision die–stamped and shall be constructed of 22–guage steel. Diffuser performance data shall be in accordance with ANSI/ASHRAE Standard 70–1991. The maximum NC level at design airflow shall not exceed 35 when measured in a direct field 5'–0" from the face of the device. Diffusers to be 24"x24" unless noted on drawings. The finish shall be baked enamel white, unless directed otherwise by the Architect. Provide plaster frames and round neck damper (operable from face of diffuser) for diffusers installed in hard ceilings.

B. Return Air Grilles (RAG)

1. Return air grilles shall be selected to match the CDs; with the neck size as indicated, Titus OMNI. Opposed blade dampers shall be provided with each RAG. Performance data shall be in accordance with ADC 162R4. All other characteristics shall be equal to the ceiling diffusers.

G. Curved Supply Registers (CSR)

1. Curved registers shall be duct mounted, aluminum, radius end cap, radius to match the installation duct system, adjustable double–deflection type complete with air scoop dampers for balancing purposes. The outermost set of deflection blades shall be parallel to the long dimension of the CSR and the innermost shall be parallel to the short dimension of the CSR. The register shall have foam gasketing. The register shall be tested in accordance with ADC standards and shall be selected to provide design airflow at a maximum NC of 35. CSRs shall be Nailor 51DHC and be mounted directly to the duct where not externally insulated, or flush with the exterior insulation, as applicable.

3.0 EXECUTION

3.01 INSTALLATION

D. Air distribution devices shall be installed as indicated and in conformance with the manufacturer's recommendations. The color, frame, and border types shall be coordinated with Architectural requirements and shall be selected to install in the finished surface indicated.

E. All air distributions devices to be reused shall be installed the same way as indicated for new devices. All existing color, frame, and border types shall modified as required to match new device requirements.

F. All air distribution devices with blade orientations shall be coordinated with Architect. Specific attention is called to devices in exposed ceiling areas, including wall–mounted.

3.02 ADJUSTMENT

A. Grilles, registers, diffusers, etc. shall be tested and adjusted to provide the scheduled air flow capacities.

B. All devices shall have adjustable and accessible volume dampers. Where dampers are not or will not be accessible without access panels, provide and install remote balancing cable control system, Young Regulator or equal. Adjustment shall be from the face of the air distribution device, coordinated with the Air Distribution Manufacturer. Coordinate the location and size of the damper with the installation.

C. All adjustable air distribution devices located within three feet of any wall or kitchen hood shall be set to blow directly away from, or parallel to, the wall or hood. All air distribution patterns near kitchen hoods shall be coordinated with the Kitchen Hood Manufacturer.

D. In all slot diffuser applications, the inactive sections of the slot shall be finished with perforated steel, painted flat black, selected to match the SDs. These sections shall be open to the plenum as a return air path. Inactive sections shall have an insulated light shield.

END OF SECTION

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BWA JOB # 2025–0073

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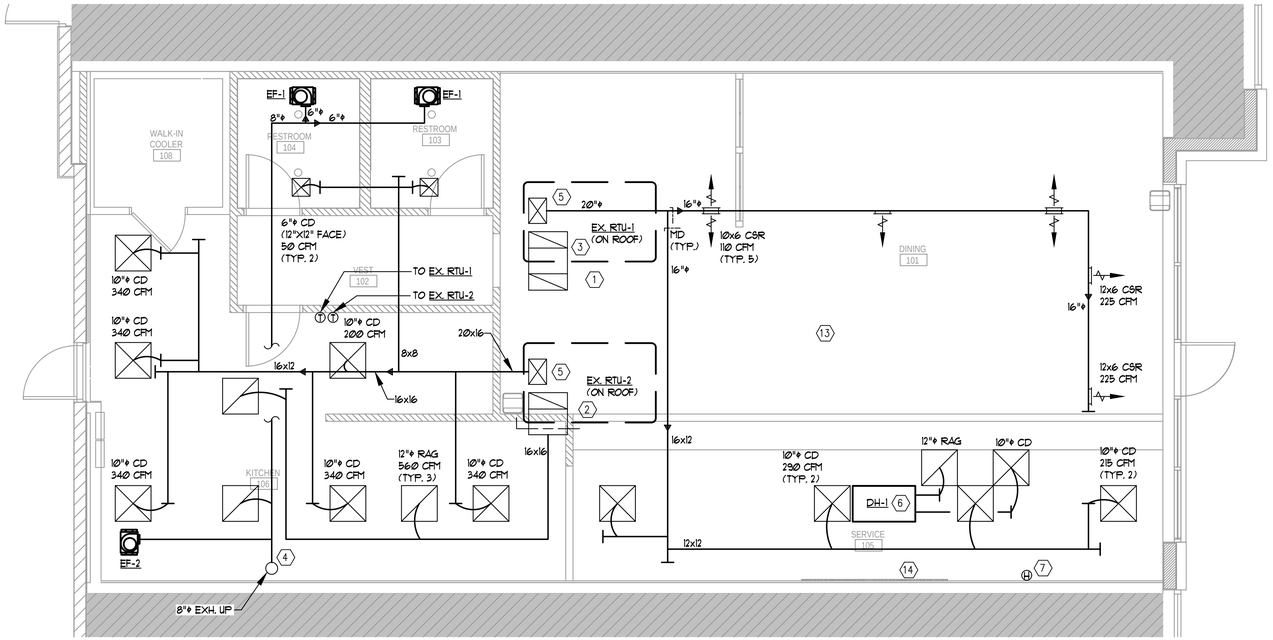
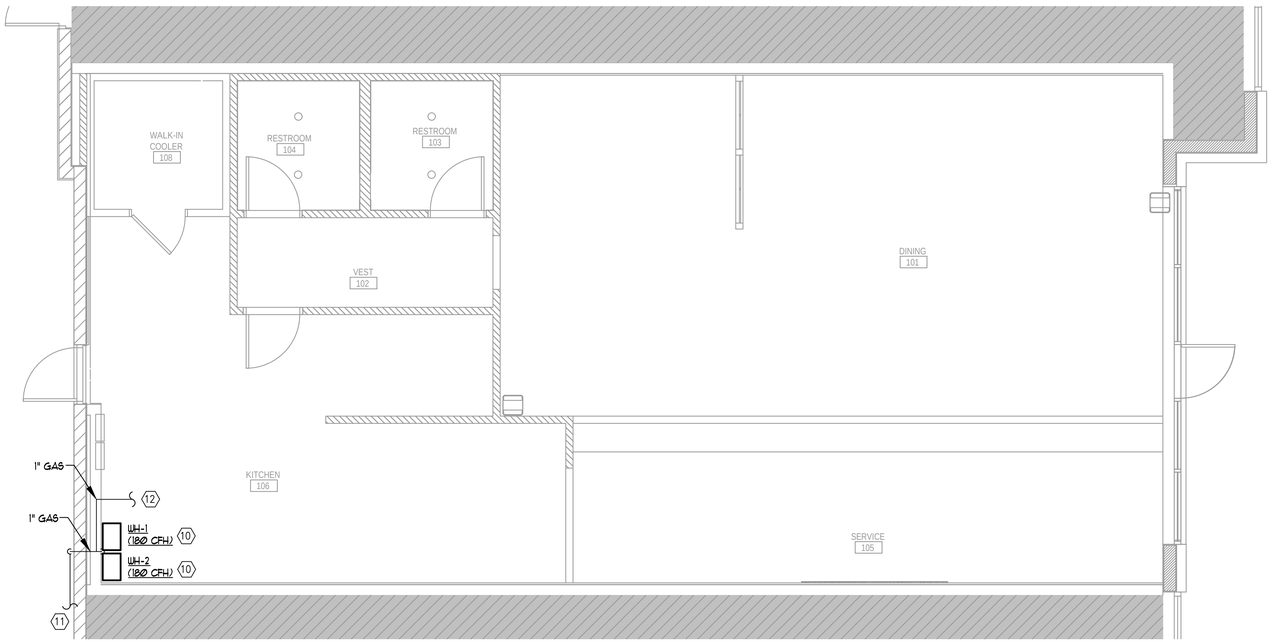
SPECIFICATIONS - MECHANICAL

M-0.6



1 / M-1.1 FLOOR PLAN – MECHANICAL
1/4"=1'-0"



2 / M-1.1 FLOOR PLAN – NATURAL GAS
1/4"=1'-0"

GENERAL NOTES
(APPLIES TO ALL SHEETS)

1. EXACT LOCATION OF ALL AIR DISTRIBUTION DEVICES SHALL BE COORDINATED WITH THE ARCHITECTURAL RCP.
2. REPAIR AND REPLACE ANY DUCTWORK THAT DOES NOT MEET SPECIFICATION SECTION 233100. SEAL ANY HOLES IN DUCTWORK AIRTIGHT WITH SHEET METAL AND "HARDCAST."
3. COORDINATE THE EXACT LOCATION OF ALL THERMOSTATS WITH FINAL FURNITURE LAYOUT, EQUIPMENT LAYOUT, ARCH AND OWNERS REPRESENTATIVE.
4. PROVIDE ALL MANUFACTURER AND NEC REQUIRED CLEARANCE FOR ALL EQUIPMENT.
5. RELOCATE ALL SPRINKLER AND PLUMBING PIPING AS REQUIRED TO ACCOMMODATE NEW EQUIPMENT.
6. AIR QUANTITIES AS SHOWN SHALL BE USED TO BALANCE SYSTEM PER NEW LAYOUT. CONTRACTOR SHALL VERIFY ACTUAL CAPACITY (CFMs) OF THE EXISTING UNIT AND DISTRIBUTE THEM PROPORTIONALLY TO CFMs SHOWN TO ALL DIFFUSERS.
7. ALL THERMOSTATS LOCATED ON EXTERIOR WALLS SHALL BE PROVIDED WITH INSULATED BACKING.

KEY NOTES
(APPLY THIS SHEET ONLY)

(1) PROVIDE LINED RETURN DUCT FULL SIZE OF UNIT CONNECTION, TURN UPWARD. FIELD VERIFY EXACT LOCATION AND COORDINATE WITH ARCHITECTURAL RCP AND PARTITION PLAN.

(2) PROVIDE LINED ELBOW RETURN DUCT FULL SIZE OF UNIT CONNECTION, AND PROVIDE MANUAL DAMPER FOR BALANCING. FIELD VERIFY EXACT LOCATION AND COORDINATE WITH ARCHITECTURAL RCP AND PARTITION PLAN.

(3) CONTRACTOR TO FIELD VERIFY LOCATION AND CONDITION OF EXISTING RTU PRIOR TO STARTING WORK. CONTRACTOR TO PERFORM ALL RECOMMENDED MAINTENANCE FOR UNIT AND NOTIFY OWNER OF ANY DEFICIENCIES.

(4) ROUTE DUCT UP THROUGH ROOF. PROVIDE ROOF CURB, BACKDRAFT DAMPER AND EXHAUST HOOD, GREENHECK GRSR, TO MATCH DUCT SIZE, OR APPROVED EQUAL. SEE DETAIL 2/M-0.2. EXHAUST TERMINATION SHALL BE AT LEAST 10FT FROM ANY FRESH AIR INTAKE. EXTEND EXHAUST DUCTWORK BELOW ROOF DECK AS REQUIRED TO PROVIDE MINIMUM REQUIRED CLEARANCE. COORDINATE ALL ROOF WORK WITH LANDLORD.

(5) PROVIDE DUCT-MOUNTED AUTO-CLEANING IONIZATION IN MAIN SUPPLY DUCT FROM RTU UPSTREAM OF ANY BRANCHES. REFER TO AIR IONIZATION SCHEDULE.

(6) REFER TO DETAIL 3/M-0.2 FOR DEHUMIDIFER INSTALLATION.

(7) PROVIDE REMOTE HUMIDISTAT FOR DEHUMIDIFIER. COORDINATE EXACT LOCATION NEAR OPEN CHOCOLATE DISPLAY CASE WITH TENANT.

(8) ALL SUPPLY DUCTWORK WITHIN AREAS OPEN FROM FLOOR TO DECK SHALL BE ROUND PAINTGRIP DOUBLE WALL INSULATED SPIRAL DUCT. NO FLEX DUCT SHALL BE INSTALLED.

(9) REBALANCE EXISTING RTU OUTSIDE AIR TO X CFM.

(10) PROVIDE A GAS COCK, DIRT LEG AND PRESSURE REGULATOR AT EQUIPMENT CONNECTIONS. COORDINATE THE PRESSURE REGULATOR REQUIREMENTS WITH THE EQUIPMENT MANUFACTURER. COORDINATE CONNECTION WITH FINAL EQUIPMENT LOCATION. VENT ALL PRESSURE REGULATORS LOCATED INSIDE TO THE OUTDOORS.

(11) ROUTE 1" GAS PIPING TO EXISTING METER. COORDINATE PIPE ROUTING WITH LANDLORD. CONFIRM EXISTING METER CAPACITY IS AT LEAST 590 MBH AT 2 PSI. GAS PIPING IS SIZED FOR A TOTAL LOAD OF 590 MBH, EQUIVALENT LENGTH OF 300 FT, A SERVICE PRESSURE OF 2 PSI AND PRESSURE DROP OF 1 PSI. NOTIFY ENGINEER IF DIFFERENT.

(12) CONNECT NEW INSTANTANEOUS WATER HEATERS TO EXISTING GAS LINE.

(13) CONTRACTOR TO DEMO/RELOCATE/MODIFY EXISTING DUCTWORK AND OTHER HVAC EQUIPMENT AS NEEDED FOR NEW WORK.

(14) DEMO EXISTING KEY STATIONS IN THIS AREA. EXISTING THERMOSTATS RELOCATED TO NEW LOCATION SHOWN.

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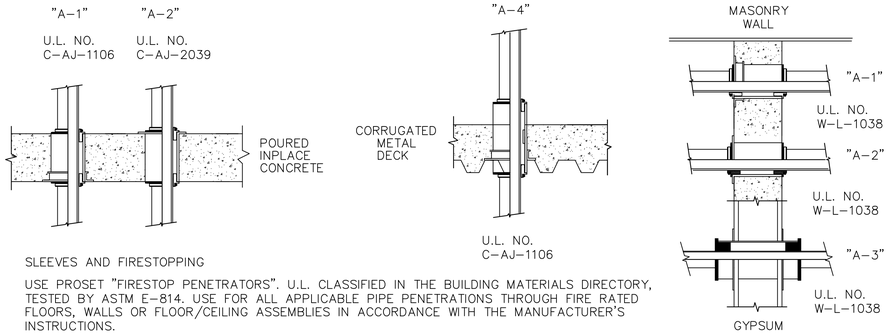
MECHANICAL PLAN

M-1.1



SLEEVES AND FIRESTOPPING

USE PROSET "FIRESTOP PENETRATORS". U.L. CLASSIFIED IN THE BUILDING MATERIALS DIRECTORY, TESTED BY ASTM E-814. USE FOR ALL APPLICABLE PIPE PENETRATIONS THROUGH FIRE RATED FLOORS, WALLS OR FLOOR/CEILING ASSEMBLIES IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

A. SYSTEM "A" PENETRATORS FOR WATER LINES, HEATING AND COOLING LINES, FIRE STANDPIPE AND SPRINKLER LINES, TEMPERATURE CONTROL, ACID WASTE GLASS PIPE AND ELECTRIC AND COMMUNICATION CONDUIT PENETRATING FLOORS OR WALLS.

1. CAST-IN-COUPLING PENETRATORS FOR POURED-IN-PLACE CONCRETE ON STEEL OR WOOD FORMS IN FLOORS OR WALLS.
2. CORED HOLE COUPLING PENETRATORS FOR CORED HOLES THROUGH PRECAST OR EXISTING CONCRETE IN FLOORS OR WALLS.
3. SPLIT WALL SLEEVE PENETRATORS FOR PIPES PASSING THROUGH GYPSUM WALLS OR FLOOR / CEILING ASSEMBLIES.
4. SLIP FLANGE CM COUPLING FOR POURED-IN-PLACE CONCRETE ON CORRUGATED METAL DECK.

FIRESTOP PENETRATOR DETAILS

ELECTRICAL GENERAL NOTES

1. ALL WORK THIS DIVISION SHALL COMPLY WITH ALL LOCAL BUILDING CODES, LAWS, REGULATIONS, ORDINANCES, AND THE REQUIREMENTS OF THE 2023 NATIONAL ELECTRICAL CODE. ALL WORK SHALL COMPLY WITH BASE BUILDING SPECIFICATIONS. OBTAIN A COPY OF SPECIFICATIONS FROM BUILDING MANAGER IF NECESSARY.
2. THE CONTRACTOR SHALL KEEP A RECORD OF THE CHANGES WHICH ARE IN CONFLICT WITH THESE DRAWINGS AND SPECIFICATIONS. AT THE COMPLETION OF HIS WORK HE SHALL SUBMIT "AS BUILT" PRINTS TO THE OWNER.
3. DRAWINGS ARE GENERALLY DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY FITTING AND DETAIL. ALL WORK SHALL BE INSTALLED SO THAT JUNCTION BOXES AND COMPONENTS WILL BE ACCESSIBLE FOR SERVICE.
4. ALL SYSTEMS, EQUIPMENT, COMPONENTS, WORK, ETC. PROVIDED UNDER THIS DIVISION SHALL BE COVERED BY A ONE YEAR GUARANTEE STARTING AT THE TIME OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. ANY DEFECTS IN THE WORK, SYSTEMS, EQUIPMENT, OR COMPONENTS FOUND DURING THIS YEAR SHALL BE CORRECTED AT NO CHARGE. THE GUARANTEE SHALL INCLUDE PROVIDING ALL NECESSARY CUTTING, PATCHWORK, REPAINTING, ETC. TO MAKE THE WORK COMPLETE AND NEW.
5. ALL CONDUIT MUST BE CONCEALED IN THE WALLS OR ABOVE THE CEILING UNLESS OTHERWISE NOTED. MINIMUM CONDUIT SIZE IS 1/2".
6. ALL CONDUCTORS SHALL BE COPPER WITH TYPE "THW" OR "THHN" INSULATION AND THE MINIMUM WIRE SIZE SHALL BE #12 A.W.G. WITH A 167 DEGREE TEMPERATURE RATING.
7. ALL WORK MUST BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER ACCORDING TO GENERALLY ACCEPTED PRINCIPALS OF FIRST CLASS WORKMANSHIP.
8. FASTEN ALL RECESSED LIGHTING FIXTURES TO STRUCTURE OR GRID PER N.E.C. 410.36.
9. RECESSED INCANDESCENT FIXTURES SHALL BE SUPPORTED IN COMPLIANCE WITH N.E.C. 410.36.
10. ALL PENETRATIONS THRU RATED WALLS, FLOORS AND CEILINGS SHALL BE FIRE STOPPED PER N.E.C. 300.21.
11. PROVIDE ALL GROUNDING AS REQUIRED BY N.E.C.
12. DEVICE MOUNTING HEIGHTS ARE TO BE MEASURED TO THE DEVICE CENTERLINE.
13. ALL SWITCHES FOR FANS, LIGHTS, ETC. WHICH ARE SHOWN TO BE MOUNTED IN THE SAME GENERAL AREA SHALL SHARE A MULTI-GANG COVER PLATE AS REQUIRED.
14. ALL CONDUIT SHALL BE 1/2" EMT WITH 2#12,1#12G AWG CONDUCTORS UNLESS OTHERWISE NOTED.
15. PROVIDE #12AWG GND. FOR ALL MECHANICAL EQUIPMENT UNLESS SHOWN OTHERWISE. ALL EQUIPMENT SHALL BE GROUNDED AT THE PANEL WHICH FEEDS THE EQUIPMENT.
16. COORDINATE RECEPTACLE NEMA TYPE AND VOLTAGE WITH COPIERS AND EQUIPMENT.
17. PROVIDE A NEW DIRECTORY FOR ALL PANELS. CORRECTLY LABEL ALL CIRCUITS, SPARES AND SPACES IN ACCORDANCE WITH N.E.C. 408.4(A).
18. PROVIDE A SEPARATE GREEN, INSULATED, #12AWG EQUIPMENT GROUNDING CONDUCTOR ROUTED WITH THE BRANCH CIRCUIT HOMERUN CONDUCTORS.
19. WHERE WORK BY THE GENERAL CONTRACTOR (WALL REMOVAL, NEW OR RELOCATED WALL OPENING, ETC.) RESULTS IN THE REMOVAL, RELOCATION OF REFEEDING OF ELECTRICAL DEVICES OR LIGHTING FIXTURES, THE ELEC. CONTRACTOR SHALL DISCONNECT OR RECONNECT AS REQUIRED ALL ACTIVE DEVICES REMAINING ON THAT CIRCUIT SYSTEM.
20. DEVICE BOXES IN RATED WALLS SHALL MEET STANDARD BUILDING CODE SECTION 706.4.
21. ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE LABEL LISTED BY AN APPROVED THIRD PARTY TESTING AGENCY.
22. DEDICATED RECEPTACLES TO RECEIVE VISUAL DESIGNATION.
23. OUTLET BOX SHALL NOT BE MOUNTED BACK TO BACK.
24. BLANK FACEPLATES ARE NOT ALLOWED, U.N.O.. ANY EXISTING OUTLET OR TELE/DATA LOCATION NOT USED OR SHOWN WITHIN THE SCOPE OF WORK IN THESE PLANS SHOULD BE REMOVED, PATCHED, AND REPAIRED.
25. MULTIWIRE BRANCH CIRCUITS SHALL BE PROVIDED WITH A MEANS THAT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS PER N.E.C. 210.4(B).
26. MULTIWIRE BRANCH CIRCUITS SUPPLYING POWER TO PERMANENTLY CONNECTED FREESTANDING PARTITIONS SHALL BE PROVIDED WITH A MEANS TO DISCONNECT SIMULTANEOUSLY ALL UNGROUNDED CONDUCTORS AT THE PANEL BOARD WHERE THE BRANCH CIRCUIT ORIGINATES PER N.E.C. 605.8.
27. ARC-FLASH HAZARD WARNING SHALL BE PROVIDED ON ALL EQUIPMENT IN AFFECTED ELECTRICAL ROOMS PER N.E.C. 110.16.
28. PROVIDE PLASTIC NAMEPLATE ON ALL PANELS (NEW AND EXISTING) INDICATING PANEL NAME AND SOURCE PER N.E.C 408.4(B).
29. ALL WIRING TERMINATIONS ARE ASSUMED TO BE 75DEG C RATED, UNLESS NOTED OTHERWISE. ALL WIRING UNDER 100A IS BASED ON A 60DEG C TERMINATION.

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION	ON CENTER MTG. HT.
	CONCEALED CONDUIT IN CEILING OR WALL	
	CONCEALED CONDUIT IN FLOOR OR UNDERGROUND	
	CIRCUIT HOMERUN TO PANEL; EACH ARROWHEAD = 1 CIRCUIT	
	NO. OF CONDUCTORS IN CONDUIT; EACH CROSSHATCH = 1 WIRE	
	PLYWOOD BACKBOARD	
	WALL MOUNTED SINGLE RECEPTACLE OUTLET	18"
	WALL MOUNTED DUPLEX RECEPTACLE OUTLET	18"
	WALL MOUNTED DUPLEX RECEPTACLE OUTLET – ABOVE COUNTER	AS REQUIRED
	WALL MOUNTED G.F.C.I. DUPLEX RECEPTACLE OUTLET	18"
	WALL MOUNTED G.F.C.I. DUPLEX RECEPTACLE OUTLET – ABOVE COUNTER	AS REQUIRED
WP	WALL MOUNTED G.F.C.I. DUPLEX RECEPTACLE OUTLET – WEATHER RESISTANT 'WR' TYPE	18"
IG	WALL MOUNTED ISOLATED GROUND DUPLEX RECEPTACLE OUTLET	18"
	WALL MOUNTED DOUBLE DUPLEX RECEPTACLE OUTLET	18"
	WALL MOUNTED SPECIAL RECEPTACLE OUTLET	18"
	WALL MOUNTED RECEPTACLE & USB OUTLET	18"
J	JUNCTION BOX	
	WALL MOUNTED COMBINATION DATA/VOICE OUTLET. PROVIDE JUNCTION BOX WITH 3/4" CONDUIT TO ABOVE CEILING.	18"
	277/480 VOLT PANELBOARD	
	120/208 VOLT PANELBOARD	
	RECESSED MOUNTED 120/208 VOLT PANELBOARD	
T	TRANSFORMER	
	LIGHT FIXTURE	
	EXIT SIGN – CEILING,WALL MT.	
	LIGHT FIXTURE ON BATTERY BACKUP (90MIN, 1100 LUMEN)	
	SEE SHEET E-0.6 FOR LIGHTING CONTROL LEGEND	
M	MOTOR RATED TOGGLE SWITCH	AS REQ'D.
	COMBINATION MOTOR STARTER/DISCONNECT SWITCH	
S (30/3)	DISCONNECT SWITCH (FRAME/POLES/FUSE-IF REQUIRED)	
(2)	MOTOR – NUMBER INDICATES HORSEPOWER (F=FRACTIONAL)	
F.B.O.	FURNISHED BY OTHERS	
AFF/AFG	ABOVE FINISHED FLOOR/ABOVE FINISHED GRADE	
BC	BELOW CEILING	
AC	ABOVE COUNTER	
WP	WEATHER PROOF	
E,EX/RE/N	EXISTING/RELOCATED/NEW	
GFI	GROUND FAULT INTERRUPTING CIRCUIT	
E.C.	EMPTY CONDUIT (PROVIDE PULLSTRING IN ALL EMPTY CONDUIT)	
FPMR	FUSE PER MANUFACTURER'S RECOMMENDATION	
IG	ISOLATED GROUND	

NOTES:
1. COORDINATE LOCATION AND SPECIFIC MOUNTING HEIGHT WITH ARCHITECT.
2. MOUNTING HEIGHTS SHALL BE AS INDICATED IN THE LEGEND UNLESS OTHERWISE NOTED ON THE PLANS.

MilkShake® EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

ISSUED FOR CONSTRUCTION

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUED FOR CONSTRUCTION	02/19/2025

Jarod Hall, P.E.
License # PE.0062693

BWA JOB # 2025-0073

Owner Approval

27MSHF.0030.000 — Job No.
AS INDICATED — Scale

LEGENDS, DETAILS, AND NOTES

E-0.1

SECTION 260010

ELECTRICAL GENERAL

1.0 GENERAL

1.01 SCOPE

A. Division 26 includes all Specifications in the 260000 series and the accompanying Electrical Drawings. Provide all labor, materials and equipment, and all necessary operations to provide the complete scope of the electrical systems intended under this Division. Division 26 is not a stand-alone document, but a part of the complete Project Documents.

B. Attention is called to the fact that there are many interfaces between the work required in this Division and the work required in other Divisions. Provide the necessary interface and coordination with other Divisions to provide a complete project.

1.02 EXISTING CONDITIONS

A. Attention is called to the fact that the work is to be performed within an existing, operational facility. Prior to the submission of bids, each bidder shall visit the project site, thoroughly investigate and be familiar with all existing conditions, which will affect their work; especially the work to be performed above the existing ceilings.

B. When this project is finished, the work under this Division shall be complete in every respect, completely integrated with all the existing systems, and left in perfect operating condition. The electrical service to the building shall not be interrupted at any time without written coordination of the building's Owner. All existing electrical equipment removed during the project shall be removed from the site after inspection of the building's Owner. All existing electrical systems required to be operating at the project's completion or required to remain in use during the project shall be reconnected, replaced, rerouted or otherwise made to fit with proper workmanship techniques and left in safe working order.

C. Connect new work to existing work in a neat and workmanlike manner. Where an existing structure must be cut or existing utilities interfere, such obstructions shall be bypassed, removed, replaced or relocated, patched and repaired. Work disturbed or damaged shall be replaced or repaired to its prior condition.

D. Prior to the start of any demolition or construction, secure the services of a qualified, EPA Certified asbestos abatement agency to check the existing insulation, etc. for asbestos. Should asbestos be found, do not proceed with demolition or construction; notify the Architect in any case in writing of the agency's findings.

1.03 CODES AND REGULATIONS

A. All work under this Division shall comply with all local building codes, laws, regulations, ordinances and the requirements of the 2023 National Electrical Code.

B. Where conflicts of installation requirements occur between the aforementioned codes, regulations or the Contract Documents, the most restrictive shall govern.

C. Obtain all permits and licenses and pay all fees required by local authorities. Arrange for all necessary inspections required by the authorities having jurisdiction and provide written certificates of approval to the project Owner or his designated representative.

1.04 DEFINITIONS

A. Contract Documents: The complete set of project Drawings and Specifications.

B. Provide: Furnish, install and connect.

C. Work: All materials installed, including all labor to provide complete system.

D. Wiring or Wired: All wire or cable installed in conduit from panelboard to equipment and connected at both ends with all required boxes, connectors, couplings, etc.

E. Conduit: Rigid steel conduit intermediate metal conduit (I.M.C.), electrical metallic tubing (EMT) plastic conduit (PVC), electrical non-metal tubing (ENT), or flexible steel conduit.

1.05 DRAWINGS AND SPECIFICATIONS

A. The Drawings and Specifications together are to be considered as the Contract Documents. Any work shown in one and not shown in the other, or implied by either, shall be provided to give a complete project.

B. Should any conflicts exist between the Drawings and Specifications or there is an item shown/called for which is not clearly defined, immediately submit a request for clarification. No additional monies will be granted later when a conflict is resolved or an item is more clearly defined.

C. The Drawings are schematic and are not intended to show the exact location outlets, etc. or the routing of conduit.

D. The exact location of equipment requiring electrical connections (mechanical equipment, elevators, lights, etc.) shall be as located by other Divisions of the Contract Documents. Refer to the Architectural, Structural and Mechanical Documents for dimensions and details of building construction and provide work described in this Division so that it conforms to the details of the project. The right is reserved to relocate any receptacle, switch or other outlet a maximum of 10'-0" before it is permanently installed without incurring additions to the Contract amount.

1.06 SITE VISIT

A. Visit the site and become familiar with all aspects of the site and existing conditions before submitting Contract price.

B. No allowance will be made for lack of knowledge of existing conditions.

1.07 DEVIATIONS

A. No deviations from the Contract Documents shall be made without the full knowledge and written consent of the Architect.

B. If the existing conditions make it desirable to modify the Contract Documents in regard to any item, provide a written request to the Architect.

2.0 PRODUCTS

2.01 STANDARDS FOR MATERIALS AND WORKMANSHIP

A. All materials used shall be new and shall be stamped with the label of Underwriters Laboratories, Inc. (UL).

B. All materials shall meet the standards of the following associations and institutes where applicable:

1. National Fire Protection Association (NFPA)
2. American Society of Testing Materials (ASTM)
3. American National Standards Institute (ANSI)
4. National Electrical Manufacturer's Association (NEMA)
5. Institute of Electrical and Electronic Engineers (IEEE)

C. Manufacturers names and catalog numbers specified herein are intended to describe the material and set the standard of quality. All bids shall be based on material specified. Requests for approval of material not specified shall be considered if the request is in written form and submitted to the Architect no later than fourteen (14) days before bid date. All requests shall conform with the provisions of the general and supplementary conditions.

D. Samples of materials requested to be substituted shall be furnished upon the request of the Architect.

2.02 SHOP DRAWINGS AND SUBMITTAL

A. The Engineer's review of shop drawings or submittals is a cursory review to check for general compliances of submittals with the design intent of the Contract Documents. The Engineer's review does not relieve the Contractor of his responsibility of complying with the Contract Documents. All coordination of the work in strict compliance with the Contract Documents is the sole responsibility of the Contractor.

B. The following items shall be submitted for review:

1. Conduit and wire
2. Devices
3. Coverplates
4. Underfloor duct
5. Metering equipment
6. Panelboards
7. Transformers
8. Fuses
9. Overcurrent devices
10. Disconnect switches
11. Lighting fixtures
12. Lighting control system
13. Dimming system
14. Life safety system
15. Emergency system
16. Motor starters
17. Transient Voltage Surge Suppression

C. All shop drawings and submittals shall be submitted in compliance with the requirements of the general and supplementary conditions. All submittals are to be received electronically in .pdf format only.

D. All submittals shall bear the name of the manufacturer to be used, along with all associated options and specific input/output requirements clearly marked.

E. All shop drawings and submittals shall include a stamped indication signifying that the submittal has been reviewed for compliance with the Contract Documents by the Contractor. This stamped indication also represents the fact that the Contractor has checked this submittal for its interaction with all other Divisions and certifies by his signature or initials that all coordination has taken place. The stamp shall include the date, name of the Contracting Firm, the signature of the Contractor, certification of compliance and approval. This stamp shall be on the submittal before the Engineer will review it.

F. The engineer will review an individual submittal not more than twice. If the submittal is rejected again on the second review, the contractor will bare all responsibility for paying for the engineer's time for additional reviews. Such payments to the engineer shall be withheld from the next monthly pay application.

2.03 RECORD (AS-BUILT) DRAWINGS AND MAINTENANCE MANUALS

A. At job completion, submit to the Architect, an electronic set of the latest plans, in .pdf format, showing all deviations from the Contract Documents. The Drawings shall also have dimensions locating all underground conduits.

B. At job completion, submit to the Architect, three (3) hardcopy sets of maintenance and instruction manuals for all equipment furnished on the project. Also provide an electronic copy in .pdf format. Coordinate file delivery method with the architect.

3.0 EXECUTION

3.01 COORDINATION

A. Coordinate all space requirements with all other Divisions before installing any work. Install work such that adequate space will be allotted for all other work from other Divisions to be installed and also will allow room for future access for repair and maintenance.

B. Any work installed without proper coordination shall be relocated at the Architect's direction without increasing the Contract price.

C. During the bidding process or the pricing for a guaranteed maximum price, coordinate with all other Divisions for the total amount of work required in Division 26. Any work shown or implied in another Division requiring work in Division 26 shall be included in the Contract price regardless of whether or not it is addressed in Division 26.

3.02 PROTECTION OF MATERIALS

A. All equipment shall have the original finish when the building is turned over to the Owner.

B. Protect equipment during construction from dirt, water, chemical, mechanical damage, etc. Protect all conduit openings so that no foreign material will enter the conduit.

3.03 TESTS, DEMONSTRATION AND INSTRUCTIONS

A. Functional Testing:

1. Test all systems described in this Division in the presence of the Owner or a designated representative upon completion of the work. Demonstrate that the installation is in accordance with Contract Documents.
2. For all new lighting and lighting control systems within the Contract Documents, the contractor shall obtain the services of a licensed professional engineer (registered to the state this project is within) to perform system commissioning in compliance with local energy conservation codes. The contractor shall demonstrate in the presence of the commissioning agent that the installation of such systems are in accordance with the Contract Documents.

B. Any work found not to be in compliance with the Contract Documents shall be repaired or replaced without incurring any additions to the Contract price.

C. Provide to the Owner and System Commissioning Agent, all instruction on maintenance and operation of all systems and equipment provided under this Division. Provide all necessary tools and personnel to thoroughly present these instructions. The documentation shall include the following, at minimum:

1. Submittal data indicating all selected options.
2. Operation and maintenance manual for all equipment and systems. Include routine maintenance actions and cleaning procedures.
3. A schedule for inspecting and recalibrating, where applicable.
4. A narrative of how each system is intended to operate, including any recommended set points where adjustment is available.

D. At project completion, prior to obtaining Certificate of Occupancy, present at final inspection to the jurisdiction's AHJ a signed and dated statement of system commissioning for all lighting and lighting control systems. The format of the statement of system commissioning shall be in the form required by the state's energy conservation codes and/or AHJ requirements. The document shall be signed by the contractor's licensed professional engineer representative.

3.04 GUARANTEE

A. All systems, equipment, components, work, etc. provided under this Division shall be covered by a one year guarantee starting at the time of final acceptance of the work by the Owner. Any defects in the work, systems, equipment or components found during this year shall be corrected at no charge. The guarantee shall include providing all necessary cutting, patchwork, repainting, etc. to make the work complete and new.

B. Present this guarantee and any additional warranties or guarantees on furnished equipment or systems to the Architect. All equipment or system guarantees are in addition to the general guarantee.

END OF SECTION

SECTION 261000

ELECTRICAL BASIC MATERIALS & METHODS

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 260010.

B. This Section describes the basic electrical materials and installation methods that are acceptable and applicable to Division 26.

2.0 PRODUCTS

2.01 CONDUIT

A. Galvanized rigid steel conduit shall be low carbon, hot-dipped galvanized both inside and out with threaded joints.

B. Intermediate metal conduit (IMC) shall be steel, galvanized both inside and out with threaded joints.

C. Electrical metallic tubing (EMT) shall be steel, galvanized both inside and out.

D. Plastic conduit (PVC) shall be schedule 40 PVC heavy wall type. A grounding conductor shall be provided.

Electrical non-metallic tubing (ENT) shall be of such material that it is resistant to moisture, chemical atmospheres and is flame retardant. A grounding electrode conductor shall be provided.

E. Flexible metal conduit shall be flexible steel conduit tubing and shall meet Underwriters Laboratories Standard for Flexible Steel Conduit.

F. Liquid-tight flexible metal conduit and liquid-tight non-metallic conduits shall be liquid-tight and sunlight resistant.

G. Steel conduit approved manufacturers are Allied, Triangle and Republic.

H. PVC and ENT conduit approved manufacturers are Carlon and Triangle.

2.02 CONDUIT FITTINGS

A. Rigid conduit and IMC conduit fittings shall be zinc-coated, ferrous metal and taper threaded type.

B. EMT fittings shall be zinc-coated steel and hexnut compression or set-screw type. EMT connectors shall have insulated throats.

C. PVC fittings, elbows and cement shall be produced by the same manufacturer. All joints shall be solvent welded in accordance with the manufacturer's recommendations.

D. Conduit connections to switchboards, motor control centers, transformers, panel cabinets, and pull boxes shall have grounding wedge lugs between the bushing and the box or locknuts designed to bite into the metal.

E. Each conduit end shall be provided with either an insulated throat connector or separate locknut and insulated bushing. Bushing shall be installed before any wire is pulled.

F. Conduit fittings approved manufacturers are Raco, Steel City, O.Z. Gedney, Thomas & Betts and Appleton.

G. Expansion fittings shall be provided in all conduit which crosses and expansion joint.

2.03 CONDUCTORS

Conductors shall be copper of 98% conductivity, 600 volt insulation. Sizes specified are AWG gauge for No. 4/0 and smaller and circular mils (MCM) for all sizes larger than no. 4/0. Conductors No. 10 and smaller shall be solid and type "THHN" or "THWN" insulation. No. 8 and larger shall be stranded and type "THW" or "XHHW" insulation.

2.04 OUTLETS

A. Outlet boxes and covers shall be of such form and dimensions as to be adapted to their specified usage, locations, size and quantity of conduit, and size and quantity of conductors entering the boxes. In special "Fire Rated" partitions, outlets shall comply with ASTM No. E119.

B. Flush ceiling outlets for surface or pendant mounted lighting fixtures shall be one-piece 4" square or octagonal pressed steel boxes. Boxes for devices in unfinished masonry walls or stud walls shall be pressed steel, square corner, sectional switch boxes, or shall be 4" square box with a square cornered tile wall cover, set flush with masonry construction. Boxes in concrete ceiling slab shall be octagonal, shallow concrete boxes. Welded boxes are not acceptable.

C. All outlet boxes in plaster or masonry walls or ceiling shall be provided with plaster rings.

D. Junction boxes and all outlets not indicated as containing wiring devices or lighting fixtures shall have covers. Covers for outlets in walls shall be as specified for wall switches and receptacles.

E. Outlet boxes exposed to the weather and outlet boxes for vaportight lighting fixtures and devices shall be of cast iron corrosion resistant type.

F. Outlet box approved manufacturers are Appleton, Raco, Steel City or Crouse-Hinds.

2.05 DISCONNECT SWITCHES

A. Disconnect switches shall be "heavy-duty" type, enclosed switches of quick-make, quick-break construction. Switches shall be horsepower rated for 600 volts AC as required. Lugs shall be UL listed for copper and aluminum.

B. Padlocking provisions shall be provided for padlocking in the OFF position.

C. Switches shall be furnished in NEMA 1 General purpose enclosure unless noted otherwise. Switches located on the exterior of the building or in "wet" locations shall have NEMA 3R enclosures.

D. Fused disconnect switches shall have rejection type fuse clips with dual element, current limiting fuses of rating shown.

E. Disconnect switches shall be mounted to structure. Disconnect switches shall not be mounted to mechanical equipment or ductwork.

2.06 NAMEPLATES

A. Nameplates shall have 3/8" high engraved letters.

B. 120 or 208 volts: white core laminated bakelite with black finish.

C. 277 or 480 or higher volts: white core laminated bakelite with red finish.

D. Nameplate shall indicate the panel name and the name of the device or equipment where the power supply/feeder originates.

2.07 WALL SWITCHES

A. Wall switches shall be plastic, totally enclosed, quiet type, self-grounding, 277 volts and 20A rating and shall match existing if possible and equal the following:

Single Pole: Hubbell No. CS1221, or equal by Leviton, P&S or Cooper.
Double Pole: Hubbell No. CS1222, or equal by Leviton, P&S or Cooper.
Three-Way: Hubbell No. CS1223, or equal by Leviton, P&S or Cooper.
Four-Way: Hubbell No. CS1224, or equal by Leviton, P&S or Cooper.

B. Color shall be as selected by architect.

C. Flush motor switches with red pilot light and with overload protection for fractional horsepower motors shall be Hubbell No. HBL1221PL.

D. Key switches shall be Hubbell No. HBL1221L 20A Series or approved equal by P&S or Leviton.

2.08 WALL MOUNTED OCCUPANCY SWITCHES

A. The passive infrared sensor shall be a completely self-contained control system that replaces a standard toggle switch. Sensor shall have ground wire for safety. Switching mechanism shall be a latching air gap relay, compatible with electronic ballasts, compact fluorescent and inductive loads. Triac and other harmonic generating devices shall not be allowed.

B. Sensor shall cover up to 1000 sq. ft. for walking motion, with a field of view of 180 degrees.

C. Sensor shall have system which provides superior 180 degree coverage.

D. Sensor shall operate at 120 VAC or 277 VAC.

E. Sensor shall have no minimum load requirement and shall be capable of switching from 0 to 500 watt incandescent; 0 to 800 watts fluorescent or 1/6 hp @ 120 VAC, 60 Hz; and 0 to 1200 watts fluorescent or 1/3 hp @ 277 VAC, 60 Hz.

F. For accuracy and consistency, sensor shall have a DIP switch controlled, digital time delay adjustable from 15 seconds to 30 minutes.

G. Sensor shall have standard 5 year warranty and shall be UL and CUL listed.

H. Sensor shall be **Wattstopper WI Series, Leviton Decora Series** or approved equal by engineer.

2.09 RECEPTACLES

A. Duplex receptacles shall be plastic, two-pole, three wire, self-grounding, side wired, 125 volts and 15A rating and shall match existing if possible and be equal to the following: Duplex receptacles shall be Hubbell No. CR5262 Series, or equal by Leviton, P&S or Cooper. Isolated ground type shall be Hubbell No. CR5252IG Series, or equal by Leviton, P&S or Cooper.

B. Single receptacles shall be two-pole, three wire, self-grounding, side wired, 125 volts and 20A rating and shall be equal to the following: Single receptacles shall be Hubbell No. HBL5361 Series, or equal by Leviton, P&S or Cooper. Isolated ground type to be Hubbell No. IG-5361 Series, or equal by Leviton, P&S or Cooper.

C. Ground fault circuit interrupt (GFI) receptacles shall be Hubbell GFR5352, or equal by P&S, Leviton or Cooper.

D. Ground fault circuit interrupt (GFI) receptacles for outdoor locations shall be weather resistant type (WR) Hubbell GFWRST20, or equal by P&S, Leviton or Cooper. Provide with "while-in-use" weatherproof extra duty cover

E. Color shall be as selected by the Architect.

2.10 COVERPLATES

A. Coverplates for flush mounted devices shall be standard size (color or finish to be selected by the architect), Hubbell "P" Series or equal by Leviton, P&S or Cooper.

B. Telephone outlet coverplates shall have same finish as above and have a bushed hole in the center.

C. Coverplates for exterior devices shall be self-closing, die cast aluminum Hubbell WP8M or equal by Leviton, P&S or Cooper.

2.11 PLYWOOD BACKBOARDS

A. Provide plywood backboards where shown. Backboards shall be minimum 3/4" thick and sized as shown or to accommodate equipment indicated to be mounted thereon.

B. Secure plywood to the building structure and paint with two coats of gray paint.

2.12 SMOKE AND FIRE STOP FITTINGS

A. Smoke and Fire Stop Fittings shall be UL listed for that purpose. The fittings used to seal conduit either on the outside of the conduit, busway or cable or internally shall have heat activated intumescent material, which expands to fill all voids. Smoke and fire stop fittings shall be O.Z./Gedney "FIRE-SEAL" or Dow Corning silicone RTV foam with an hourly fire-rating equal to or higher than the rating of the floor, ceiling or wall through which the cable or conduit passes. The seals for conduit shall be of the flanged type.

2.13 FUSES

A. Provide all fuses. All fuses shall be of the same manufacturer. All fuses shall be of the high interrupting rating (200,000 Amps), current limiting type and manufactured by Bussmann. Fuses shall be provided for each fuse cutout and the specified quantity of fuses shall be furnished for spares.

B. Circuits 0 to 600 ampere shall be protected by rejection type, current limiting BUSSMANN LOWPEAK Dual Element Fuses LPN-RK (250 volts) or LPS-RK (600 volts). All dual-element fuses shall have separate overload and short-circuit clearing chamber. The fuse must hold 500% of rated current for a minimum of 10 seconds and be listed by Underwriter's Laboratories, Inc., with an interrupting rating of 200,000 amperes RMS symmetrical. The fuses shall be UL Class RK-1.

C. Furnish and turn over to the Owner a minimum of one (1) set of spare fuses (set consisting of three fuses) for each type and rating of fuse used. When the number of fuse sets of the same type and rating actually installed exceeds five (5) sets, furnish an additional spare set of fuses for each five (5) or fraction thereof.

D. Provide a cabinet in which to store all spare fuses, Bussman Catalog No. SFC

E. Acceptable manufacturers are Bussman or equal by Littlefuse.

3.0 EXECUTION

3.01 CONDUIT

A. Rigid steel (or IMC) shall be used for service entrance and all feeders and branch circuits where exposed to damage.

B. EMT shall be used for branch circuits, fire alarm and telephone when not underground or in concrete in contact with the earth.

C. Schedule 40 PVC may be used for all underground feeders, service entrance conductors when encased in 4" of concrete on all sides, or under the lowest floor slab.

D. Conduit shall be continuous from outlet to outlet, from outlet to cabinet, junction box and pull box. Conduit shall enter and be secured to all boxes, etc., in such a manner that each system will be electrically continuous from service to all outlets such that a good ground is provided. All conduit from cabinets and junction boxes shall terminate in approved outlet boxes or conduit fittings. Conduit connections to any box which has no threaded hub shall be double locknutted.

E. Provide junction boxes or pull boxes where shown and where necessary to avoid excessive runs or too many bends between outlets. The conduit sizes shown may increase if desired to facilitate the pulling of cables.

F. All conduit shall be concealed unless indicated otherwise. Install exposed conduit parallel with or at right angles to the building walls and support from walls or ceilings at intervals required by Code with approved galvanized iron clamps or hangers. Concealed conduit above the ceiling shall be supported independent of ceiling construction. Where ceilings of lay-in type are used, conduit must be installed high enough to permit removal of ceiling panels and lighting fixtures. Use threaded rods and hangers for supporting single conduit. Use trapeze hangers consisting of double-nutted threaded rods and "Unistrut" channels or angles of 12 gauge minimum steel for supporting multiple conduit.

G. Minimum size conduit for branch circuits shall not be smaller than 1/2". Home runs shall extend from outlets shown to panel designated. Home runs shown shall not be combined. Home run conduit shall not be smaller than 3/4".

H. At couplings, conduit ends shall be threaded so that they meet in the coupling. Right and left hand couplings shall not be used; conduit couplings of the Erikson Type shall be used at locations requiring such joints.

I. All conduit for future use, for telephone wire, or for data communication cable, shall be left with No. 16 gauge wire pulled in them or a pull line as manufactured by Ideal, and the ends securely corked or capped.

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

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ISSUED FOR CONSTRUCTION

DELTA	ISSUE	DESCRIPTION	DATE
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Jarod Hall, P.E.
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BWA JOB # 2025-0073

Owner Approval

27MSHF.0030.000 — AS INDICATED
Job No. — Scale

SPECIFICATIONS - ELECTRICAL

E-0.2

J. Expansion fittings shall be installed in all conduit which pass through the cross-sectional area of expansion joints.

K. Provide non-hardening elastic type duct seal compound, Neer No. DC., 3M Co. "Scotchfil", or Gardner Bender duct seal, for each conduit entering the building from outside and for each conduit passing from one space into another which is normally at a lower temperature.

L. Provide watertight conduit hubs on conduit terminating in a box or cabinet exposed to the weather.

M. Space in sleeves or around conduit that pass through fire resistive or fire rated walls, partitions, floors or ceilings shall be closed by packing with an unlabeled fire resistive material that will maintain the rating of the barrier penetrated.

3.02 FLEXIBLE CONDUIT

A. PVC extruded cover flexible conduit shall be used in making short flexible connections to rotating or vibrating machinery or equipment. The flexible conduit at these locations shall be as short as possible, but shall have a minimum length of 12".

B. A green stranded bonding jumper shall be installed outside of all flexible conduit that extends directly from a non-flex conduit to a rotating or vibrating machine. Where a junction box is used, the green stranded bonding jumper shall be installed inside the flexible conduit and attached to the junction box and to the machine. When the bonding jumper is installed outside of the flexible conduit, plastic wire straps shall be used 6" o.c. to secure the jumper to the flexible conduit.

C. Flexible metal (MC) conduit system may be utilized **where concealed in walls and/or millwork only. MC Cable shall run from point of exit from wall or millwork to nearest structurally support junction box. MC cable will not be permitted to be installed in the above ceiling space and shall not pass through a fire rated partition.** Conductor colors of the MC cable shall comply with 261000 3.03 D.

1. MC cable shall be constructed to have an insulated, copper ground conductor. Sheathing with a bare aluminum conductor shall not be used as the ground.

3.03 WIRING

A. All conductors shall be installed in conduit. No conductors shall be pulled into the conduit until the conduit system is complete and plaster had dried. Wire pulling lubricants shall be Gardner-Bender "Wireaide" or Ideal "Yellow 77".

B. Conductors shall be continuous from outlet to outlet and from outlet to junction box or pull box. All splices and joints shall be carefully and securely made to be mechanically and electrically solid with pressure type connectors, Gardner Bender "Winggard" or Ideal "Wingnut". Tape shall be "Scotch" No. 33 for indoor and No. 88 for outdoor or Gardner Bender No. 95-661. Where connection is made to any terminals of more than 30 amperes capacity and where conductors larger than No. 10 are connected to any terminal, copper terminal lugs shall be bolted to the conductors. Where multiple connections are made to the same terminal, individual lugs for each conductor shall be used.

C. Each conduit shall have a minimum of two (2) conductors pulled in unless that particular conduit is noted as being for systems other than electrical circuitry and/or future use or unless noted otherwise.

D. Conductors for lighting and receptacle circuits shall have color coded jackets. The wiring shall be color coded with the same color used with its respective phase through the entire job as follows:

208/120 Volt System	480/277 Volt System
Phase A – Black	Phase A – Brown
Phase B – Red	Phase B – Orange
Phase C – Blue	Phase C – Yellow
Neutral – White	Neutral – Gray
Ground – Green	Ground – Green

E. The feeder and service entrance conductors shall be color coded by the use of colored plastic tape applied within 6" of each conductor end.

F. Branch circuit conductors shall not be smaller than No. 12 and where the home run from center of load exceeds 100'-0", the conductors from home run outlet to panel shall be No. 10 minimum.

G. For branch circuits terminating in outlet without device, leave minimum of 12" of slack wire coiled for connection of equipment. All conductors shall be identified with proper circuit numbers at terminals, junction boxes at panelboards within 6" of conductor ends.

3.04 OUTLETS

A. Provide galvanized steel or cast type boxes for all outlets.

B. Where outlet boxes are used to support lighting fixtures, the outlet box shall be anchored to the structural members of the building per NEC 314.27.

C. Outlet boxes shall be flush mounted unless they are specifically shown as being used with exposed conduit or are located above a ceiling.

D. Where outlets are supplied from conduit run in or below floor slabs, the conduit shall be stubbed up at the location shown and the wall built up around the conduit.

E. Cuts for outlet boxes in masonry walls shall be made so that the coverplate will completely cover the cut. The mounting height of switch, receptacle and other outlets may be varied slightly, with the Architects approvals, so that the outlet box, top or bottom, will occur at a masonry joint.

F. The edge of all outlet boxes shall be flush with the surface in which they are recessed. The devices that fit into the outlet boxes shall be screwed tight before the coverplate is installed and the coverplate shall not be used as a means of tightening the devices in place.

G. Where outlets are shown as being adjacent and different mounting heights are specified for each, they shall be mounted one directly over the other, on the centerline of the group.

3.05 NAMEPLATES

A. Provide specified nameplates on the main switchboard, distribution panels, feeder switches, feeder breakers, panelboards motor control centers, disconnect switches, contactors, starters, transformers, start-stop push buttons and motor switches.

B. Provide nameplates on every device in the main switchboard, distribution panels and motor control centers.

C. Nameplates for surface mounted equipment shall be installed on the exterior of equipment with sheetmetal screws. Nameplates for flush or recessed mounted equipment shall be installed on the inside of the panel door or cover with epoxy cement.

3.06 WALL SWITCHES AND RECEPTACLES

A. Where more than one device is indicated at a location, the devices shall be gang-mounted in combined multi-gang boxes and covered jointly by a common coverplate. Provide barriers as required by the devices and voltages being used.

3.07 COVERPLATES

A. All junction boxes, outlet boxes, multi-gang switch boxes, utility boxes, etc., shall be covered with a coverplate. The coverplate shall be a finished plate as specified unless designated otherwise.

B. Coverplates shall be mounted vertically unless designated otherwise.

3.08 GROUNDING

A. Ground connections shall be in accordance with the National Electrical Code.

B. Provide an insulated green bonding jumper from the grounding lug of all receptacles to a Steel City "GEE" clip or a machine screw per NEC 250.8 in the outlet box. The ground wire installed behind the device mounting screws will not be acceptable.

C. Provide 1 #6-3/4" conduit from the system ground to the telephone company main distribution frame or service cabinet and to each telephone backboard.

3.09 TELEPHONE CONDUIT SYSTEM

A. Telephone service shall include wood backboards and equipment cabinets with service entrance conduit as shown.

B. Telephone service entrance cable, all branch cabling and telephone instruments shall be provided by the telephone equipment vendor.

C. Provide an outlet and conduit system for the telephones as shown and leave the same in readiness for wiring by others. Provide pull line in all telephone conduit. Terminate all conduit at a uniform height with smooth insulated bushings at the telephone wood backboards.

D. Telephone wall outlets shall be pressed steel sectional switch boxes, wall mounted at the locations indicated. Coverplate shall have a bushed hole.

E. Telephone floor outlets shall be floor boxes as specified at the locations indicated.

3.10 CONNECTION TO EQUIPMENT

A. Equipment furnished by the Owner or under other Sections, such as mechanical equipment, elevators, escalators, signs, kitchen equipment, etc., will be installed by others. Provide electrical service and make the electrical circuit connection to this equipment.

B. Provide PVC insulated flexible cord sets for all cord and plug connected building appliances and equipment. Cords shall be sized in accordance with electrical circuits indicated. Multiple conductor cords shall be "SO" cable with PVC jacket and green insulated ground conductor.

3.11 CORING, CUTTING AND PATCHING

A. Set sleeves for conduit accurately before the concrete floors are poured, or set boxes on the forms so as to leave openings in the floors in which the required sleeves can be subsequently located. Fill in the voids around the sleeves with concrete.

B. Should the performance of this preliminary work be neglected and should cutting be required in order to install conduit, then the expense of the cutting and restoring of surfaces to their original conditions shall be accomplished without incurring additions to the Contract.

3.12 EQUIPMENT ANCHORING

A. All items of electrical equipment, such as switchboards, motor control centers, transformers, standby generator, etc., shall be securely anchored to the building structure. The anchoring shall be accomplished by utilizing a minimum size of 3/8" steel anchor bolts in the structure and to the item of equipment. A minimum of two (2) anchor bolts shall be provided on each side of each item of equipment with the following exceptions:

Exception No. 1: If the equipment manufacturer includes more than two (2) anchor Holes per side in the base or base frame of the equipment item, then there shall be one anchor for each anchor hole.

Exception No. 2: If the equipment manufacturer recommends a particular quantity greater than two (2) per side, then that quantity of anchors shall be provided.

END OF SECTION

SECTION 262000

SERVICE AND DISTRIBUTION

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 260010.

B. Provide a complete electrical distribution system. The system shall include the service entrance, main switchboard, feeders, transformers, distribution panels, panelboards, busway, remote control switches, contactors, etc., to provide a complete system.

C. All distribution switchgear (branch circuit panelboards, switchboard, distribution panelboards, transformers, busway, etc.) shall be the unit responsibility of one manufacturer. All component parts of the above listed items shall be of the same manufacturer except where a written request for deviation from this requirement has been approved prior to bid date.

D. Shop drawings for equipment specified in this Section shall show that all specified requirements have been incorporated.

E. All floor mounted distribution equipment shall be mounted on a 4" high concrete pad.

1.02 ELECTRICAL SERVICE (EXISTING)

1.03 METERING (EXISTING)

2.0 PRODUCTS

2.01 BRANCH CIRCUIT PANELBOARDS

A. Panelboards (panels) shall be general purpose enclosures and shall be surface or flush mounted as indicated. Panels shall be of the automatic circuit breaker type, factory assembled by the manufacturer of the circuit breakers. Panels shall be for the voltage indicated with the quantity of poles and ampacity of circuit breakers shown.

B. Boxes and trim shall be made from code gauge steel. Boxes shall be sufficient size to provide a minimum gutter space of 4" on all sides. Boxes shall be minimum 20" width and 5 3/4" depth.

C. Hinged door covering all device handles shall be included in all panel trim. Doors shall have flush-type cylinder lock and catch, except that doors over 48" in height shall have auxiliary fasteners at top and bottom of door in addition to flush-type cylinder lock and catch. Door hinges shall be concealed. All locks shall be keyed alike. Directory frame and card having a transparent cover shall be furnished each panel door.

D. Trims for flush panels shall overlap the box by at least 3/4" all around. Surface trims shall have the same width and height as the box. Trims shall be mountable by a screwdriver without the need for special tools. After installation, trim mounting mechanism or hardware shall not be accessible when panel door is closed and locked.

E. All exterior and interior steel surfaces of the trim shall be cleaned and finished with gray paint over a rust-inhibiting phosphatized coating.

F. All interiors shall be completely factory assembled with protective devices, wire connectors, etc. All wire connectors, except screw terminals, shall be of the anti-turn solderless type and all shall be suitable for copper or aluminum wire.

G. Interiors shall be so designed that devices can be replaced without disturbing adjacent units and without removing the main bus connectors, and shall be so designed that devices may be changed without machining, drilling or tapping.

H. Bus bars for the mains shall be of copper sized in accordance with U.L. standards. Full size bars shall be included. Bus bar taps for panels with single pole branches shall be arranged for sequence phasing of the branch circuit devices.

I. Phase bussing shall be full height without reduction. Cross and center connectors shall be of the same material as the bus.

J. The neutral bus shall utilize setscrews to bond the neutral wire to the neutral bus through holes drilled in the neutral bar. A sheet copper neutral bus utilizing flathead screws to hold the neutral wires will not be acceptable.

K. Spaces for future devices shall be included as indicated and shall be bussed for the maximum rated device that can be fitted into them.

L. All circuit breakers shall be manually operated, thermal-magnetic, automatic, of the ampacity and poles as indicated. They shall be quick-make, quick-break, both on manual and automatic operation. Breakers shall be over-the-center toggle operating type, with the handle going to a position between ON and OFF to indicate automatic tripping. All multi-pole breakers shall have internal common trip. Breakers shall have a minimum of 10,000 RMS symmetrical amperes interrupting capacity unless designated otherwise. The breakers furnished shall be determined by the specifications and by the minimum U.L. labeled RMS symmetrical amperes interrupting capacity at circuit voltage. All circuit breakers shall be bolted on and rigidly braced.

M. Panels having sub-feed lugs for feeding through shall have 8" minimum extra gutter space at the lug end and on one side.

N. Each panel as a complete unit shall have a short-circuit current rating equal to or greater than the equipment rating indicated.

O. Panels shall be as manufactured by same manufacturer installed in the base building.

2.02 DISTRIBUTION PANELBOARDS

A. Distribution panelboards (panels) shall be of the circuit breaker type, factory assembled by the manufacturer of the circuit breakers, complete with front door cover. The main breaker and the branch circuit breakers shall be as indicated. The main bus shall be 98% conductivity silver plated copper, rated as and of capacity equal to or greater than the rating or setting of the over-current protective device next back in the line. Panel shall be suitable for the voltage and phase indicated. Provide 25% ground bus.

B. Panels shall be flush or surface mounted as indicated, with baked-on enamel trim, adjustable trim clamps and door with chromium plated combination cylinder lock and catch, all locks keyed alike. Provide a specified nameplate for each device and a blank (not engraved) nameplate for each spare breaker or space.

C. The neutral bus shall utilize setscrews to bond the neutral bus through holes drilled in the neutral bar. A sheet copper neutral bus utilizing flathead screws to hold the neutral wires will not be acceptable.

D. All circuit breakers shall be manually operated, thermal-magnetic, automatic, of the ampacity and poles as indicated. They shall be quick-make, quick-break both on manual and on automatic operation. Breakers shall be over-the-center toggle operating type, with the handle going to a position between "ON" and "OFF" to indicate automatic tripping. All multi-pole breakers shall have internal common trip.

E. The interrupting capacity of the breakers furnished shall be 10,000 RMS symmetrical unless indicated otherwise.

F. All main circuit breakers shall be molded case and vertically mounted. All vertically mounted molded case circuit breakers shall be mounted so that the handle is up for "ON" and down for "OFF", when viewed from the normal standing position. All vertically mounted molded case main circuit breakers shall be UL approved for feeding in the bottom and out the top.

G. All circuit breakers, including any connectors to the main bus, shall be bolted and rigidly braced.

H. Spaces for future installation of molded case circuit breakers are specifically by range of trip rather than a single trip size or frame size. The spaces so scheduled shall be complete with all bus and required bus connectors such that future breakers can be installed without adding or changing bus connectors on the main bus and without using a larger (frame size) or more expensive breaker than the trip size and interrupting capacity would require. If the bus connectors furnished on the main bus will not cover the trip range specified, then duplicate sets of connectors shall be furnished on the main bus for each frame size required.

I. Distribution panels shall be as manufactured by same manufacturer installed in the base building.

2.03 TRANSFORMERS

A. Branch circuit and distribution transformers shall be the dry type and shall have the ratings indicated.

B. Single phase transformers shall be 480 volt primary and 120/208 volt secondary. Three phase transformers shall be 480 volt delta primary and 120/208 volt grounded type secondary. Transformers 25 KVA and larger shall have a minimum of 4 1/2% full capacity primary taps.

C. Transformers shall have a U.L. recognized 220 degree insulation system and shall be designed so that under full load, the average conductor temperature rise does not exceed 115 degree C. rise above a 40 degree C. ambient and the enclosure does not exceed a 50 degree C. rise at any point.

D. Transformer coils shall be of the continuous wound construction and shall be impregnated with non-hygroscopic, thermosetting varnish. All cores to be constructed of high grade, non-aging silicon steel with high magnetic permeability, and low hysteresis and eddy current losses. Magnetic flux densities shall be kept well below the saturation point. The core laminations shall be clamped together with structural steel angles. The completed core and coil shall then be bolted to the base of the enclosure but isolated therefrom by means of rubber, vibration-absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure. On transformers 500 KVA and smaller, the vibration isolating system shall be designed to provide a permanent fastening of the core and coil to the enclosure. Sound isolating systems requiring the complete removal of all fastening devices will not be acceptable. Sound levels shall be guaranteed by the manufacturer not to exceed the following: 25 to 50 KVA – 45 DB; 51 to 150 KVA – 50 DB; 151 to 300 KVA – 55 DB; 301 to 500 KVA – 60 DB.

E. Transformers 24 KVA and larger shall be in a heavy gauge, sheet steel, ventilated enclosure. The ventilating openings shall be designed to prevent accidental access to live parts in accordance with UL, NEMA, and National Electrical Code standard for ventilated enclosures. Transformers 25 KVA through 112.5 KVA shall be designed so that they can be either floor or wall mounted. Above 112.5 KVA, they shall be floor-mounted design. The entire transformer enclosure shall be degreased, cleaned, phosphatized, primed and finished with a gray, baked enamel.

F. Transformers shall be compliant with the 2016 DOE efficiency standards:

Table I.6 -- Electrical Efficiencies for All Low-Voltage Dry-Type Distribution Transformer Equipment Classes

Equipment Class 3 (Single-Phase)		Equipment Class 4 (Three-Phase)	
kVA	%	kVA	%
15	97.70	15	97.89
25	98.00	30	98.23
37.5	98.20	45	98.40
50	98.30	75	98.60
75	98.50	112.5	98.74
100	98.60	150	98.83
167	98.70	225	98.94
250	98.80	300	99.02
333	98.90	500	99.14
		750	99.23
		1,000	99.28

G. Transformers that are of the floor-mounted type shall be mounted on Korfund Vibration Eliminators of the pad type.

H. Transformers shall be as manufactured by same manufacturer installed in the base building.

3.0 EXECUTION

3.01 INSTALLATION

A. Provide a typewritten directory under plastic for all panelboards with spares marked in pencil. Circuit identification shall include sufficient detail to allow each circuit to be distinguished from all others. Include specific tenant suite numbers in multi-tenant buildings in the circuit description. Provide a label on each breaker in a switchboard or distribution panelboard with the same level of circuit identification details.

B. Provide all necessary hardware to level and secure the switchgear as required by the manufacturer's instructions. Make all electrical connections for supply and load circuits and leave in operating condition.

C. Clean enclosure of all switchgear of all foreign matter, including dust.

D. Remove all rust marks and repaint to leave switchgear in new condition.

END OF SECTION

SECTION 263000

LIGHTING

1.0 GENERAL

1.01 DESCRIPTION

A. All work in this Section shall comply with the provisions of Section 260010.

B. Provide all lighting fixtures and lamps as specified herein and as shown.

C. All lamps shall be operating at the time of the final inspection and for a period of six (6) months after the final acceptance of the project by the Owner.

D. Confirm exact locations of all lighting fixtures by coordination with the Architects Reflected Ceiling Plans and mechanical equipment above or on the ceiling.

E. Confirm all ceiling types before ordering lighting fixtures.

F. Each lighting fixture shall have been tested and certified for proper operation by the fixture manufacturer for the type mounting and ceiling on/in, which it is installed.

2.0 PRODUCTS

2.01 LIGHTING FIXTURES

A. Each lighting fixture shall be as specified in the Lighting Fixture Schedule corresponding with its fixture type indication (letter).

B. Most lighting outlets are lettered or groups of outlets are indicated by a letter.

C. Each lighting fixture shall have a manufacturer's label affixed and shall comply with the requirements of all authorities having jurisdiction.

D. The lighting fixtures that are indicated by the letters shall be as indicated on the Lighting Fixture Schedule.

2.02 LAMPS

A. The type lamps shall be as specified for each lighting fixture in the lighting fixture schedule.

B. The lamp catalog number is the catalog number is generally for Sylvania Lighting and is given as a standard of the quality and performance required. Equal lamps by General Electric or Philips will be acceptable. When a lamp manufacturer's name is used along with the catalog number in the lighting fixture schedule, it is considered unequaled by any other lamp and shall not be substituted for. The lamp performance with energy conserving ballasts furnished under this Section shall be certified by a nationally recognized independent testing laboratory.

C. Fluorescent lamps shall be as specified in the Lighting Fixture Schedule.

D. Incandescent lamps shall be as specified in Lighting Fixture Schedule.

E. All incandescent lamps, except quartz tubes, shall be rated for 130 volt operation.

F. High Intensity Discharge (HID) lamps shall be as specified in the Lighting Fixture Schedule.

2.03 BALLASTS

A. Fluorescent ballast shall be electronic type manufactured by Motorola, Magnetek or Advance.

B. Ballast shall operate lamps at a frequency or 25 KHz or higher with less than 2% lamp flicker.

C. Ballast shall operate at an input voltage of 108 – 132 Vac (120V line) or 249 – 305 Vac (277V line) at an input frequency of 60 Hz. Light output shall remain constant for line voltage fluctuation of + 5%.

D. Ballast shall comply with EMI and RFI limits set by the FCC (CFR 47 part 18) for non-residential applications and not interfere with normal electrical equipment.

E. Ballast shall withstand transients as specified by ANSI C.62.41 for location category A3 in the normal mode and location category A1 in the common mode.

F. Ballast shall meet applicable ANSI standards.

G. Ballast shall have a minimum power factor of 0.99.

H. Ballast shall not be potted or weigh more than 1.3 pounds.

I. Ballast shall have less than 10% Total Harmonic Distortion.

J. Ballast shall have less than 6% Third Harmonic Distortion.

K. Ballast height shall be less than or equal to 1.5 inches.

L. Ballast shall have a poke-in wiretrap connector.

M. Ballast shall meet sound rating "A".

N. Ballast must be Underwriters Laboratories (UL) listed Class P, Type 1 Outdoor.

O. Ballast shall provide normal rated lamp life as stated by lamp manufacturers.

P. Rapid start ballasts are series wired and shall maintain full cathode heat during operation.

Q. Rapid start ballast shall have less than a 1.5 Lamp Current Crest Factor (LCCF) and instant start ballasts have less than a 1.7 LCCF.

R. Instant start ballast shall have parallel lamp operation.

S. Ballast factor standard is .875+0.025 on all normal light output products.

T. Ballasts for "PL" fluorescent lamps shall be coordinated with lamps and 2-pin or 4-pin configuration ballasts shall be provided to match lamps. Manufacturer for "PL" fluorescent fixtures shall be Advance, Roberson, Lightolier or Lutron.

U. Ballasts for High Intensity Discharge (HID) lamps shall be Constant Wattage Autotransformer (CWA) type or equal type with minimum power factor of 0.9.

2.04 DIFFUSERS

A. Unless specified otherwise, all prismatic diffusers for fluorescent lighting fixtures shall be prismatic acrylic KSH K12 with a thickness of 0.125", measured from the back side to the peak of the prism.

B. All wraparound lenses shall be virgin acrylic, one-piece and injection molded.

2.05 EMERGENCY BATTERY LIGHTING

A. Lighting fixtures indicated on the drawings to be provided with an emergency battery ballast shall provide emergency lighting by using a standard fluorescent lamp or lamps and an emergency battery ballast. The ballast shall consist of a field replaceable high temperature, maintenance free nickel cadmium battery, charger and electronic circuitry contained in one metal case. Provide a solid state charging indicator light to monitor the charger and battery, double pole test switch and installation hardware. The battery ballast shall provide power to the fluorescent lamp upon failure of the normal supply to the fixture.

B. The test button and indicator light shall be integral in the fixture reflector and shall be

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MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

ISSUED FOR CONSTRUCTION

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUED FOR CONSTRUCTION	02/19/2025

Jarod Hall, P.E.
License # PE.0062693

BWA JOB # 2025-0073

Owner Approval

27MSHF.0030.000 — Job No.

AS INDICATED — Scale

SPECIFICATIONS - ELECTRICAL

E-0.3

positioned within or on the surface of the fixture so as to be accessible and identifiable.

C. Under normal mode the battery ballast shall keep the batteries at full charge. Upon loss of normal power the battery ballast shall operate the fluorescent lamp or lamps for 90 minutes.

D. Battery recharge time shall not exceed 16 hours to fully recharge and shall not exceed 225 milliamperes charging current.

E. The lumen output of the lamp or lamps powered by battery unit shall be not less than 1,100 lumens initially for a four-foot fluorescent lamp.

F. The battery ballast shall meet or exceed all the requirements set forth in UL924 "Emergency Lighting and Power Equipment" and shall be UL listed for installation on top of or remote from the fixture. Emergency illumination shall meet or exceed the requirements set forth in the National Electric Code, Life Safety Code and UL 90-Minute Requirements.

2.06 LIGHT FIXTURE TRIM

A. Each recessed lighting fixture shall have a trim to match the type of ceiling (plaster, exposed grid, concealed spline, exposed panel, etc.) in which it is being installed, regardless of catalog number given. Coordinate with the Architect's reflected ceiling plan to provide the right trim for the type of ceiling the fixture is to be installed in.

B. Each lighting fixture recessed in a plastered ceiling of any type shall have a plaster frame.

2.07 RECESSED INCANDESCENT FIXTURES

A. All recessed incandescent fixtures shall comply with Article 410-110, C of the N.E.C.

2.08 FLUORESCENT FIXTURES

A. All indoor fluorescent fixtures utilizing double ended lamps or that are supplied from multi-wire branch circuits, shall have a disconnecting means that complies with Article 410.130, G of the N.E.C.

2.09 LED LIGHTING FIXTURES

A. LED lamps for interior use shall be 3500K, CRI 80 (min.), unless noted otherwise. Color temperature chromaticity over the lifetime of the product shall be within 0.007 on the CIE 1976 (u',v') diagram.

B. System shall be rated at a minimum for 50,000 hours (min.) at 70% lumen maintenance (L80).

C. System shall comply with the following:

1. ENERGY STAR® SSL Requirements for Luminaires
2. IESNA LM-16
3. IESNA LM-58-94
4. IESNA LM-79
5. IESNA LM-80
6. ANSI C82.2-2002
7. ANSI C82.77-2002
8. ANSI C78.377-2008
9. CIE 13.3-1995
10. CIE 15-2002
11. ANSI/UL 153
12. UL 1598
13. NEMA 410-2011

D. LED drivers shall be electronic, thermally protected and have an input voltage at 120/277VAC, 60Hz with a power factor of >0.90.

E. LED boards and drivers shall be provided with plug-in connections for tool-less replacement of components.

F. Compatibility of dimming switches for control of dimmable LED drivers shall be confirmed with LED fixture manufacturer.

3.0 EXECUTION

3.01 SUPPORT OF LIGHTING FIXTURES

A. All lighting shall be supported from the building structure. The fixtures shall be supported in a manner that will insure the fixture weight being equally distributed from each support and the fixture remaining in a level position.

B. Fluorescent fixtures installed recessed in a suspended ceiling system shall be supported from the building structure with four (4) 12 gauge wires on each corner of the fixture. In addition, the fixture shall be clipped to members of the ceiling suspension system.

C. Fluorescent fixtures installed in or on any ceiling other than a suspended ceiling system specifically mentioned above shall be supported with concealed steel rods. Rods shall be 1/4" diameter minimum and shall be located where recommended by the fixture manufacturer. Provide a minimum of four (4) supports for each 4' or 8' fixture chassis. Supports shall be maximum of 48" centers. For incandescent fixtures, steel hanging wire may be used by attaching the wire to the fixture mounting frame.

D. Pendant mounted incandescent fixtures shall be stem supported by a fixture stud mounted in the outlet box. Suspended fluorescent fixtures shall have mounting stems located as per the manufacturer's recommendations, but in no case shall have less than two (2) stems per chassis.

3.02 AIMING OF ADJUSTABLE LIGHT FIXTURES

A. All fixtures with lamp position, tilt, shutters, rotation, or other types of adjustments during the final inspection. Fixtures serving areas where day lighting is predominant will be adjusted after sunset.

3.03 LIGHTING FIXTURES IN MILLWORK

A. Special attention shall be given to lighting fixtures indicated to be mounted within, under, on or otherwise incorporated into millwork or cabinetry.

B. Refer to the Architectural drawings and details for specific dimensions. This coordination shall occur prior to ordering fixtures to assure fixtures will fit the space limitations of the millwork.

C. This requirement is intended to preclude incurring additions to the Contract due to fixtures being too small or too large for the space.

3.04 FINAL PREPARATION

A. All plastic covers shall be removed from fluorescent fixtures.

B. Clean all lens and reflectors from debris, fingerprints, dust, etc.

END OF SECTION

SECTION 269200

MOTOR CONTROLS AND WIRING

1.0 GENERAL

1.01 SCOPE

A. All work specified in this Section shall comply with the provisions of Section 260010.

B. All motors shall be provided under Division 22 and 23.

C. A motor starter shall be provided under this Section for each motor except for those specified in Division 22 or 23 to be furnished with integral starters. Motor starters shall be installed either in a Motor Control Center or separately mounted adjacent to the motor served.

D. Motor power wiring is defined as those conductors between the energy source and the motor. This power wiring shall be terminated at the motor terminals.

E. All control wiring required for automatic starting and stopping of motors shall be provided under Division 22 or 23 unless specifically shown on the electrical drawings.

F. Power wiring shall be connected through all line voltage control devices such as firestats and thermostats.

2.0 PRODUCTS

2.01 MOTOR STARTERS

A. Starters for motors 1/3 horsepower or smaller shall be manual unless remote or automatic starting is required, in which case the starters shall be magnetic, full voltage, non-reversing, single-speed, unless otherwise indicated. All other starters shall be magnetic.

B. Each starter for a three-phase motor shall be furnished with three (3) overload relays sized for the full load running current of the motor actually provided. Provide an external "HAND-OFF-AUTO" selector switch with green "RUNNING" light. Provide a red pilot light to indicate motor "STOPPED". Each pilot light shall have a legend plate indicating reason for signal.

C. Each overload relay shall have a normally open alarm contact which will close only when actuated by an overload (not to be confused with N.O. or N.C. auxiliary contacts). These contacts shall be properly wired to their respective blue pilot light provided on the starter front cover and having a "TRIPPED" legend plate.

D. Individually mounted motor starters shall be in a NEMA Type 1 general purpose enclosure in unfinished areas and shall be flush mounted in all finished areas. All starters mounted in exterior areas shall have a NEMA 3R enclosure. Each starter shall have a laminated nameplate to indicate Division 22 or 23 unit number, function and circuit number.

E. A control power transformer shall be provided at each motor starter for connection to the controls provided under Division 22 or 23. The control power transformer shall be mounted inside the motor starter enclosure. All control transformers at 50 VA or greater shall have primary fusing. Coordinate all control equipments with Division 22 or 23 and equipment manufacturers.

F. All motor starters, push buttons and pilot lights shall be of the same manufacturer as the switchboard and shall be General Electric, Square D, Siemens I.T.E, Joslyn Clark Controls or Westinghouse.

2.02 COMBINATION STARTERS

A. Combination starters shall consist of a circuit breaker and a motor starter mounted in a common NEMA Type 1 general purpose enclosure.

B. The motor starter components shall be as specified in paragraph 2.01 for motor starters.

C. The circuit breaker component shall be a minimum 22,000 RMS interrupting capacity and shall be as required in Section 262000.

3.0 EXECUTION

3.01 INSTALLATION

A. Provide power wiring to and install all motor starters, unless integrally factory mounted on a piece of equipment.

B. Provide power wiring to all motors except packaged units that are prewired between the starter and motor.

C. Where line voltage control devices are mounted at, on or inside a unit, such as aquastats, firestat for single phase devices, etc., the power wiring to the unit shall be connected through such a control device.

D. On final inspection, it shall be demonstrated to the Architect or his representative, that each overload relay control circuit is properly wired and functioning correctly by manually tripping each overload relay individually, one at a time. This inspection procedure shall not involve removing any wiring or disconnecting any current carrying parts.

END OF SECTION

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ARVADA, COLORADO
80002

ISSUED FOR CONSTRUCTION

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUED FOR CONSTRUCTION	02/19/2025

Jarod Hall, P.E.
License # PE.0062693

BWA JOB # 2025-0073

Owner Approval

27MSHF.0030.000 — Job No.
AS INDICATED — Scale

SPECIFICATIONS - ELECTRICAL

E-0.4

EXISTING PANEL 5
SECTION 1

VOLTAGE: 120/208
PHASE: 3

AMP. MAIN: 200
MLO

DESCRIPTION	KW	BKR	CK	PH	CK	BKR	KW	DESCRIPTION
EX. AC-1	2.46	30/3	1	A	2	20/1	0.2	SIGNAGE
---	2.46	---	3	B	4	20/1	1.2	SIGNAGE
---	2.46	---	5	C	6	20/1	1.5	SHOW WINDOW**
EX. AC-2	2.46	30/3	7	A	8	20/1	1.5	SHOW WINDOW**
---	2.46	---	9	B	10	20/1	1.57	LIGHTING
---	2.46	---	11	C	12	15/2	0.83	WALK-IN COND*
SPARE	0	40/3	13	A	14	---	0.83	---
---	0	---	15	B	16	20/1	0.2	EF-2**
---	0	---	17	C	18	20/1	0.56	HURF-A**
SOFT-SERVE*,**	2.4	30/3	19	A	20	20/1	0.1	WH-1A2*
-----	2.4	---	21	B	22	20/1	1.38	DH-1
-----	2.4	---	23	C	24	20/1	0	SPARE
SOFT-SERVE*,**	2.4	30/3	25	A	26	20/1	0	SPARE
-----	2.4	---	27	B	28	20/1	0	SPACE ONLY
-----	2.4	---	29	C	30	20/1	0	SPACE ONLY
SOFT-SERVE*,**	2.4	30/3	31	A	32	20/1	0	SPACE ONLY
-----	2.4	---	33	B	34	20/1	0	SPACE ONLY
-----	2.4	---	35	C	36	20/1	0	SPACE ONLY
SOFT-SERVE*,**	2.4	30/3	37	A	38	100/3	4.5	EX. PANEL '5I'
-----	2.4	---	39	B	40	---	5.53	---
-----	2.4	---	41	C	42	---	6.54	---

*CIRCUIT BREAKER SHALL BE GFCI TYPE
**PROVIDE NEW CIRCUIT BREAKER

A TOTAL	21.65
B TOTAL	24.60
C TOTAL	23.95
CONN. KW	70.20
CONN. Amps	194.86

V.L.L	PH
208	3

4.86	RECEPTACLES
0.00	HEATING
18.20	AC/MOTORS
4.17	LIGHTING
6.01	MISC.
0.00	WATER HEATERS
0.00	ELEVATORS
36.96	KITCHEN EQUIP

TOTAL DEMAND LOAD

RECEPTS: 100% 1ST 10 KW + 50% REMAINING:	=	4.86 KVA
HEAT: 100% :	=	0 KVA
AC/MOTORS: 125% LARGEST + 100% REMAINING:	=	18.2 KVA
LIGHTING: 125%:	=	5.2125 KVA
MISC: 100%:	=	6.01 KVA
WATER HEATER: 125%:	=	0 KVA
ELEVATORS: PER NEC:	=	0 KVA
KITCHEN EQUIP: PER NEC :		24.024 KVA
TOTAL DEMAND LOAD KW:	=	58.30625 KVA
TOTAL DEMAND LOAD AMPS:	=	161.85 AMP

NEW PANEL 5I
SECTION 1

VOLTAGE: 120/208
PHASE: 3

AMP. MAIN: 100
MLO

DESCRIPTION	KW	BKR	CK	PH	CK	BKR	KW	DESCRIPTION
SPARE	0	20/1	1	A	2	20/1	0.18	CONV REC*,**
SPARE	0	20/1	3	B	4	20/1	0.9	BLENDER*,**
REACH IN FREEZER*	0.66	20/1	5	C	6	20/1	0.9	BLENDER*,**
SPARE	0	20/1	7	A	8	20/1	0.9	BLENDER*,**
SPARE	0	20/1	9	B	10	20/1	0.9	BLENDER*
SPARE	0	20/1	11	C	12	20/1	0.3	REFRIGERATED WORKTOP*
SPARE	0	20/1	13	A	14	20/1	0.36	CONV REC*
SPARE	0	20/1	15	B	16	20/1	0.36	INCLUSION STATION*
GLASS FRONT FRIDGE*,**	0.6	20/1	17	C	18	20/1	0.18	CONV REC*
MICROWAVE*,***	1	20/1	19	A	20	20/1	0.38	GLASS FRONT FRIDGE*
CONV REC*,**	0.18	20/1	21	B	22	20/1	0.72	DESK REC
CHOCOLATE COUNTER*	0.18	20/1	23	C	24	20/1	0.66	REACH IN FREEZER*,**
EX. ROOFTOP REC	0.18	20/1	25	A	26	20/1	0.36	IT QUAD**
CONV REC*	0.18	20/1	27	B	28	20/1	0.36	IT QUAD**
POS*,**	0.5	20/1	29	C	30	20/1	0.36	IT QUAD**
REFRIGERATED WORKTOP*,**	0.6	20/1	31	A	32	20/1	0.36	IT QUAD**
CONV REC*,**	0.36	20/1	33	B	34	20/1	0.25	WALK-IN**
SIGNAGE**	1.2	20/1	35	C	36	20/1	0.5	FUTURE DISH EQP.*,**
SPARE	0	20/1	37	A	38	20/1	0.18	MAINTENANCE REC**
SPARE	0	20/1	39	B	40	20/1	0.72	BATHROOM REC**
SPARE	0	20/1	41	C	42	20/1	0.5	DEHUMIDIFIER*,**

*CIRCUIT BREAKER SHALL BE GFCI TYPE
**PROVIDE NEW CIRCUIT BREAKER

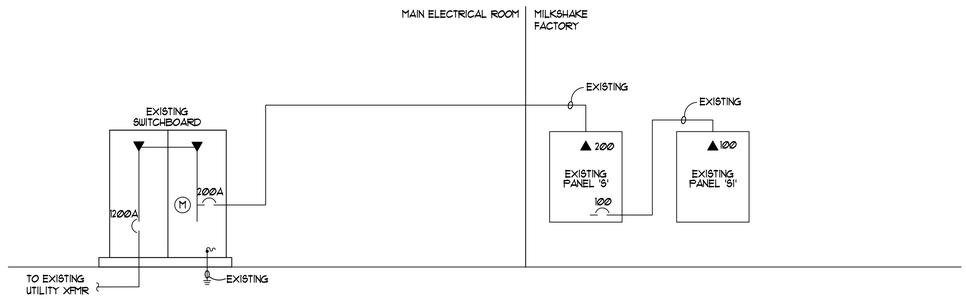
A TOTAL	4.50
B TOTAL	5.53
C TOTAL	6.54
CONN. KW	16.57
CONN. Amps	46.00

V.L.L	PH
208	3

4.86	RECEPTACLES
0.00	HEATING
0.00	AC/MOTORS
1.20	LIGHTING
2.35	MISC.
0.00	WATER HEATERS
0.00	ELEVATORS
8.16	KITCHEN EQUIP

TOTAL DEMAND LOAD

RECEPTS: 100% 1ST 10 KW + 50% REMAINING:	=	4.86 KVA
HEAT: 100% :	=	0 KVA
AC/MOTORS: 125% LARGEST + 100% REMAINING:	=	0 KVA
LIGHTING: 125%:	=	1.5 KVA
MISC: 100%:	=	2.35 KVA
WATER HEATER: 125%:	=	0 KVA
ELEVATORS: PER NEC:	=	0 KVA
KITCHEN EQUIP: PER NEC :		8.16 KVA
TOTAL DEMAND LOAD KW:	=	16.87 KVA
TOTAL DEMAND LOAD AMPS:	=	46.83 AMP



1 PARTIAL RISER DIAGRAM
E-0.5 NOT TO SCALE

MilkShake EST FACTORY 1914

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License # PE.0062693

BWA JOB # 2025-0073

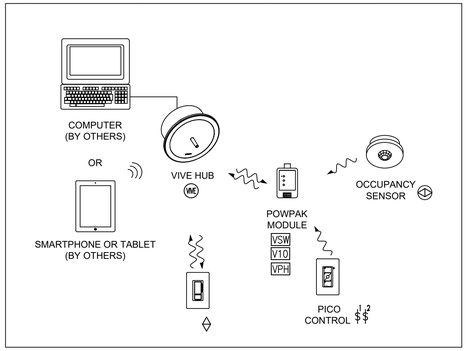
Owner Approval

27MSHF.0030.000 — Job No.
AS INDICATED — Scale

RISER DIAGRAM AND PANEL SCHEDULES

E-0.5

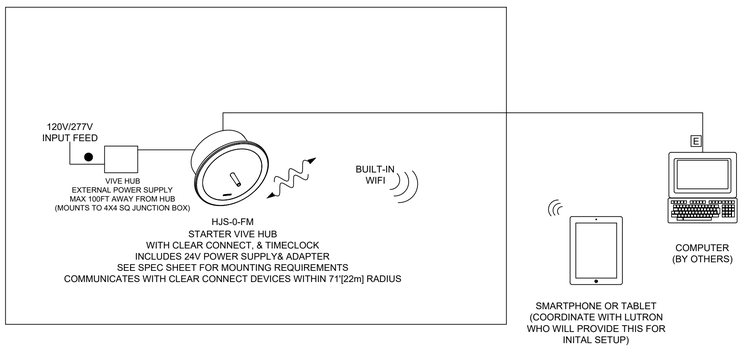
TYPICAL VIVE SYSTEM COMPONENT CONNECTIVITY DIAGRAM



GENERAL NOTES:
(APPLY THIS SHEET ONLY)

1. THE MAIN LIGHTING CONTROL SYSTEM IDENTIFIED IN RISER 1/E-0.5 SHALL BE PROVIDED WITH FACTORY SETUP AND OWNER TRAINING. COORDINATE EXACT SCHEDULE AND SETUP WITH THE GENERAL CONTRACTOR SO THAT A FULLY FUNCTIONAL SYSTEM IS LEFT AT PROJECT TURNOVER TO THE OWNER.
2. CONTRACTOR TO PROVIDE ALL INTERFACES, CONTROLS, ETC... SO THAT A COMPLETE AND OPERATIONAL SYSTEM IS INSTALLED TO MEET THE DESIGN INTENT SHOWN ON THESE PLANS.
3. CONNECT ROOM CONTROLLER INPUT CIRCUIT TO ROOM'S LIGHTING CIRCUIT, U.N.O.
4. REFER TO LOAD & DIMMING TYPE FOR EACH ZONE. PROVIDE EXPANSION MODULES AS NECESSARY TO ACCOUNT FOR THAT TYPE FIXTURE AND CONTROL REQUIREMENTS. REFERENCE THE LIGHTING FIXTURE SCHEDULE AND LIGHTING DESIGNER PACKAGE.

AS REQUIRED FOR SYSTEM DEVICE INTEGRATION (SEE PLANS FOR QUANTITY & LOCATIONS)



2 E-0.6 LTG CONTROL DETAILS – LUTRON VIVE
NO SCALE

LOCAL LIGHTING CONTROL – SYMBOL LEGEND:

SYMBOL	DESCRIPTION
VWC	VIVE WIRELESS HUB W/TIMECLOCK MODEL#: HJS-0-FM PROVIDE WITH HUB POWER SUPPLY: #PS-J-20W-UNV RF RANGE: 71 FT RADIUS (TO ALL CONNECTED DEVICES)
	WIRELESS OCCUPANCY/VACANCY SENSOR MODEL#: LRF2-OCR2B-P-WH SENSOR RANGE: 500 SQFT, 360 DEG
2	WIRELESS DIMMER (ON/OFF, RAISE/LOWER, PRESET) MODEL#: PJ2-3BRL-GXX-L01 PROVIDE WITH CLARO STYLE SCREWLESS WALLPLATE
	WIRELESS SWITCH (ON/OFF) MODEL#: PJ2-3B-GXX PROVIDE WITH CLARO STYLE SCREWLESS WALLPLATE
	OCCUPANCY SENSOR SWITCH (ON/OFF) MODEL#: MRF2S-8SS PROVIDE WITH CLARO STYLE SCREWLESS WALLPLATE
VSW	VIVE SWITCHING MODULE (SOFTSWITCH) MODEL#: RMJS-5R-DV-B CAPACITY: 5 AMP; RF RANGE: 30 FT RADIUS TO SENSORS
V10	VIVE DIMMING MODULE (0-10V DIMMING) MODEL#: RMJS-8T-DV-B CAPACITY: 8 AMP; RF RANGE: 30 FT RADIUS TO SENSORS
VPH	VIVE DIMMING MODULE (PHASE/MLV/ELV) MODEL#: RMJS-PNE-DV CAPACITY: 450W; RF RANGE: 30 FT RADIUS TO SENSORS

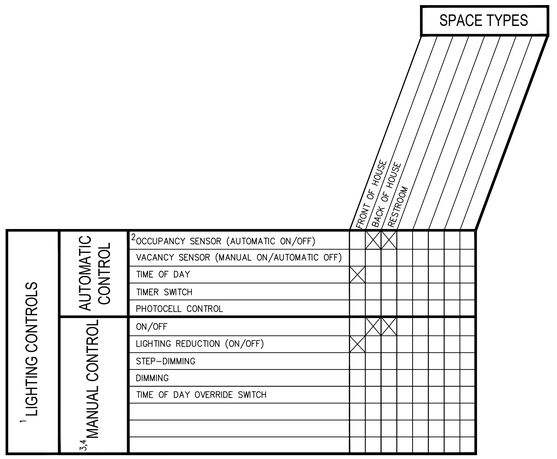
CLARO STYLE SCREWLESS WALLPLATES:
1-GANG – CW-1-WH
2-GANG – CW-2-WH
3-GANG – CW-3-WH

LIGHTING FIXTURE SCHEDULE

FIXTURE TYPE	MANUFACTURER AND CATALOG INFORMATION	LAMPS QTY.	LAMPS TYPE	LAMPS WATTS	BALLAST/DRIVER QTY.	BALLAST/DRIVER TYPE	BALLAST/DRIVER WATTS	TOTAL WATTS	INPUT VOLTAGE	DESCRIPTION	MOUNTING
L-01	PACLIGHTS FTFS/2-22D SERIES	–	LED 3810LUM 4000K 80CRI	30W	–	LED DRIVER 0-10V	30W	30W	120V	2X2 LED RECESSED TROFFER.	RECESSED
L-03	PACLIGHTS FDLA04D12 SERIES	–	LED 928LUM 4000K 90CRI	12W	–	LED DRIVER 0-10V	12W	12W	120V	4" ROUND LED DOWNLIGHT. 40 DEGREE DIFFUSED LENS	RECESSED
L-04	CSL LIGHTING ED1NC-409010-12S SERIES	–	LED 928LUM 4000K 90CRI	9.6W	–	LED DRIVER 0-10V	9.6W	9.6W	120V	1" ROUND LED DOWNLIGHT. 40 DEGREE DIFFUSED LENS	RECESSED
L-05	BROWNLEE LIGHTING METRO PENDANT SERIES	–	LED 2879LUM 3000K 82CRI	34W	–	LED DRIVER 0-10V	34W	34W	120V	DECORATIVE LED PENDANT. 19" DIAMETER.	PENDANT
F-08A	JUNO LIGHTING R606L SERIES	–	LED 1120LUM 4000K 90CRI	13.5W	–	LED DRIVER	13.5W	13.5W	120V	LED TRACK HEAD.	TRACK
F-08B	JUNO LIGHTING R606L SERIES	–	LED 1120LUM 4000K 90CRI	13.5W	–	LED DRIVER	13.5W	13.5W	120V	LED TRACK HEAD.	TRACK
D-01	KOHLER LIGHTING EMBRA SERIES	1	INC	10W	–	–	–	10W	120V	DECORATIVE INCANDESCENT PENDANT. PROVIDE WITH COMPATIBLE A19 10W LED LAMP. PROVIDE NEW MAX WATTAGE STICKER ON FIXTURE LIMITING WATTAGE AS SHOWN.	PENDANT
D-02	SHADES OF LIGHT LIGHTING ALGONAC SPHERES CHANDELIER SERIES	6	INC	10W	–	–	–	60W	120V	DECORATIVE INCANDESCENT PENDANT. PROVIDE WITH COMPATIBLE B10 10W LED LAMP. PROVIDE NEW MAX WATTAGE STICKER ON FIXTURE LIMITING WATTAGE AS SHOWN.	PENDANT
EM-1	FULHAM FHEM10W SERIES	–	LED	0.6W	–	LED DRIVER	0.6W	0.6W	120V	LED EMERGENCY LIGHT. PROVIDE WITH 90-MINUTE RATED BATTERY BACKUP.	SURFACE
X-1	FULHAM FHEX20WREM SERIES	–	LED	1.49W	–	LED DRIVER	1.49W	1.49W	120V	LED EXIT SIGN. PROVIDE WITH 90-MINUTE RATED BATTERY BACKUP. RED LETTERS.	SURFACE
X-2	FULHAM FHEC3OWR SERIES	–	LED	5W	–	LED DRIVER	5W	5W	120V	LED EXIT SIGN WITH EMERGENCY LIGHT. PROVIDE WITH 90-MINUTE RATED BATTERY BACKUP. RED LETTERS.	SURFACE

LIGHT FIXTURE SCHEDULE NOTES:

1. ALL FINISH TYPES SHOULD BE COORDINATED WITH THE ARCHITECT/INTERIOR DESIGNER(S).
2. ALL TRIMS AND INSTALLATION REQUIREMENTS SHALL BE COORDINATED WITH THE CEILING TYPE IN WHICH IT IS TO BE INSTALLED. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT CEILING TYPE FOR WHICH THE FIXTURE IS TO BE INSTALLED.
3. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS AND MILLWORK DETAILS, WHERE APPLICABLE, FOR THE INTENDED MOUNTING LOCATION OF ALL LIGHT FIXTURES WITHIN.
4. FIXTURE TYPES NOTED ON PLAN WITH SUFFIX 'E' INDICATES FIXTURE TO BE PROVIDED WITH 90 MINUTE MINIMUM BATTERY BACK-UP. (E.G. L1E, L2E, ETC...). ALL EXIT AND EMERGENCY FIXTURES SHALL BE FED FROM LOCAL LIGHTING BRANCH CIRCUIT PER NEC 700.12(I)(2).
5. ANY LOW-VOLTAGE CLASS 2 WIRING OUTSIDE THE LIGHT FIXTURE HOUSING SHALL BE PLENUM RATED, I.E. TYPE CL-2P, IN COMPLIANCE WITH NEC ARTICLE 725.179. THIS APPLIES TO POWER WIRING AND CONTROL WIRING.



NOTE:

1. LIGHTING CONTROLS ARE NOT REQUIRED AREAS DESIGNATED FOR SECURITY OR EMERGENCY, INTERIOR EXIT RAMPS, STAIRWAYS, AND PASSAGEWAYS, AND EMERGENCY EGRESS LIGHTING THAT IS NORMALLY OFF.
2. OCCUPANT SENSORS AT THE MINIMUM SHALL AUTOMATICALLY TURN OFF LIGHTS WITHIN 30 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE.
3. TIME-SWITCH CONTROL:
   - 3.1. EACH SPACE WITH TIME-SWITCH CONTROL SHALL ALSO BE PROVIDED WITH MANUAL CONTROL FOR LIGHTING REDUCTION.
   - 3.2. TIME-SWITCH CONTROLS SHALL INCLUDE OVERRIDE SWITCHING DEVICE THAT COMPLIES WITH THE FOLLOWING:
   - A.A. HAVE A MINIMUM OF 7-DAY CLOCK.
   - A.B. BE CAPABLE OF BEING SET FOR SEVEN DIFFERENT DAY TYPES PER WEEK.
   - A.C. INCORPORATE AN AUTOMATIC HOLIDAY "SHUTOFF" FEATURE, WHICH TURNS OFF ALL CONTROLLED LIGHTING LOADS FOR AT LEAST 24 HORS AND THEN RESUMES NORMALLY SCHEDULED OPERATION.
   - A.D. HAVE PROGRAM BACKUP CAPABILITIES, WHICH PREVENT THE LOSS OF PROGRAM AND TIME SETTINGS FOR AT LEAST 10 HOURS, IF POWER IS INTERRUPTED.
   - A.E. INCLUDE AN OVERRIDE SWITCH THAT COMPLIES WITH THE FOLLWOING:
     - A.E.A. THE OVERRIDE SWITCH SHALL BE MANUAL CONTROL
     - A.E.B. THE OVERRIDE SWITCH, WHEN INITIATED, SHALL PERMIT THE CONTROLLED LIGHTING TO REMAIN ON FOR MORE THAN 2 HORS.
     - A.E.C. ANY INDIVIDUAL OVERRIDE SWITCH SHALL CONTROL THE LIGHTING FOR AN AREA NOT LARGER THAN 5,000 SQ.FT.
4. MANUAL CONTROL SHALL BE READY ACCESSIBLE TO OCCUPANTS, AND SHALL BE LOCATED WHERE THE CONTROLLED LIGHTS ARE VISIBLE, OR SHALL IDENTIFY THE AREA SERVED BY THE LIGHTS AND INDICATE THEIR STATUS.

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License # PE.0062693

BWA JOB # 2025-0073

Owner Approval

27MSHF.0030.000 — Job No.
AS INDICATED — Scale

LIGHTING SCHEDULE AND CONTROLS

E-0.6

COMcheck Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: Milkshake Factory - Denver, CO
Project Type: Alteration

Construction Site: Owner/Agent: Designer/Contractor:

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Dining: Cafeteria/Fast Food	1711	0.76	1300
		Total Allowed Watts =	1300

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Dining: Cafeteria/Fast Food (1711 sq.ft.)				
LED: L-01: 2X2: Other:	1	11	18	198
LED: L-03: DOWNLIGHT: Other:	1	4	12	48
LED: L-04: DOWNLIGHT: Other:	1	5	10	48
LED: L-05: PENDANT: Other:	1	17	34	578
Track Lighting: F-08A: TRACK HEAD: Wattage based on 33 feet of track	0	0	264	264
Incandescent: D-01: PENDANT: Incandescent Other:	1	5	10	50
Incandescent: D-02: PENDANT: Incandescent Other:	6	2	10	20
		Total Proposed Watts =		1206

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Michael Griffin — Name - Title
Signature
02/19/2025 — Date

COMcheck Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2021 IECC

Requirements: 0.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3.1 [EL22][1]	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1, C405.2.1.1 [EL18][1]	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, corridors, warehouse storage areas, and other spaces <= 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.2 [EL19][1]	Occupancy sensors control function in warehouses: In warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more within 20 minutes of when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor. Lights not turned off by occupant sensors is done so by time-switch.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.1.3 [EL20][1]	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq.ft. within the space, 2) general lighting in each zone permitted to turn on upon occupancy in control zone, 3) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 4) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.2, C405.2.2.1 [EL21][2]	Each area not served by occupancy sensors (per C405.2.1.1) have time-switch controls and functions detailed in sections C405.2.2.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.4, C405.2.4.1, C405.2.4.2 [EL23][2]	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.5 [EL27][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.7 [EL26][2]	Low-voltage dry-type distribution electric trans'ormers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.8 [EL27][2]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.9.1, C405.9.2 [EL28][2]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.10 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.1.1 [EL30][2]	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.11, C405.11.1 [EL31][2]	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.1.1 [FI57][3]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.2.5 [FI16][3]	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C408.3 [FI33][3]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

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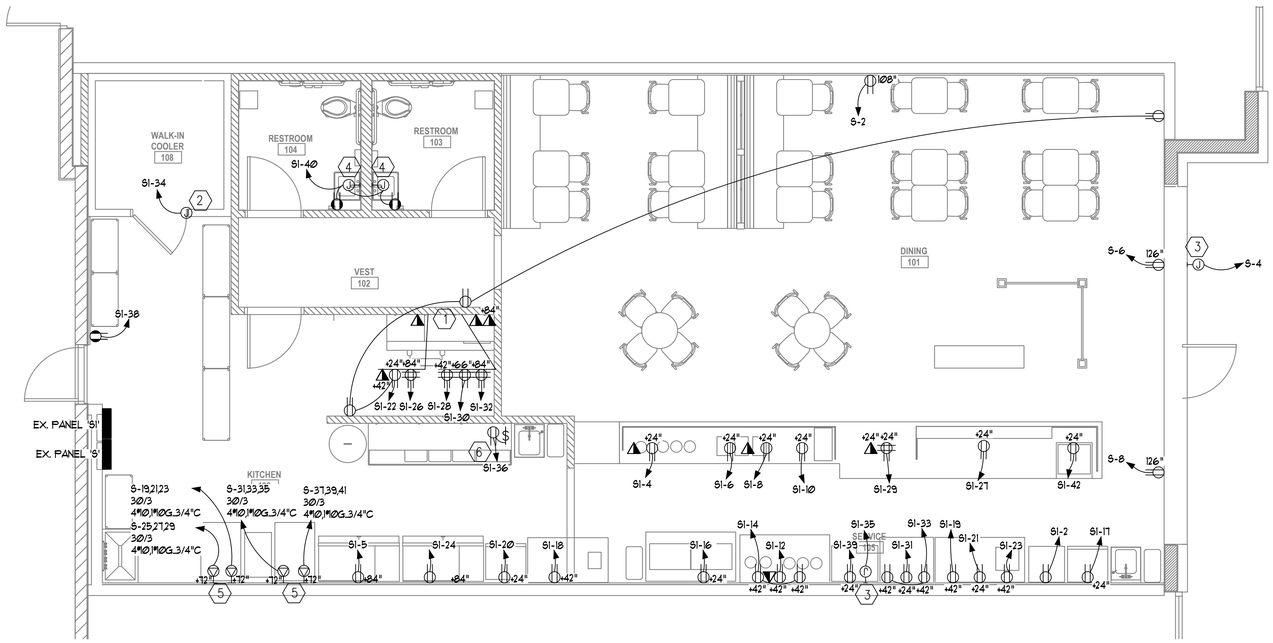
AS INDICATED — Scale

COM-CHECK

E-0.7



1 FLOOR PLAN – ELECTRICAL
E-1.1 1/4"=1'-0"

LEGEND NOTES:
(APPLY THIS SHEET ONLY)

1. PROVIDE 3/4" THICK 2'X2' FIRE TREATED PLYWOOD TELEPHONE BACKBOARD. EXTEND EXISTING TELECOM CONDUIT TO TELEPHONE BACKBOARD. PROVIDE TELEPHONE GROUND BAR WITH #6 GROUND BACK TO BUILDING GROUNDING SYSTEM. COORDINATE EXACT LOCATION WITH TENANT LOW VOLTAGE CONTRACTOR.
2. COORDINATE WIRING OF WALK-IN LIGHTS AND DOOR WITH EQUIPMENT PROVIDER. PROVIDE ALL NECESSARY ACCESSORIES FOR A COMPLETE SYSTEM.
3. PROVIDE CONNECTION TO ILLUMINATED SIGNAGE. PROVIDE LUTRON RMJS-16R-DV-B ON/OFF POWER PACK FOR TIME OF DAY CONTROL. COORDINATE EXACT SCHEDULE WITH OWNER. SEE SHEET E-0.6 FOR MORE INFORMATION.
4. PROVIDE HARDWIRED CONNECTION TO AUTOMATIC FAUCET. COORDINATE EXACT LOCATION WITH PLUMBING CONTRACTOR.
5. PROVIDE SO CORD FROM SOFTSERVE MACHINE TO NEW L21-30 RECEPTACLE AND PLUG. COORDINATE EXACT CONNECTION WITH EQUIPMENT PROVIDER PRIOR TO ROUGH-IN. PROVIDE TWO CONNECTIONS PER PIECE OF EQUIPMENT AS SHOWN.
6. PROVIDE SWITCHED RECEPTACLE FOR FUTURE DISH EQUIPMENT. COORDINATE EXACT LOCATION WITH OWNER.

GENERAL NOTES:
(APPLY THIS SHEET ONLY)

1. COORDINATE ALL DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH THE ARCHITECT & FURNITURE VENDOR PRIOR TO INSTALLATION.
2. HATCHED AREA NOT IN THIS SCOPE OF WORK.
3. DEDICATED OUTLETS SHALL BE 20A RATED, U.N.O.
4. RECEPTACLES SHALL BE INSTALLED PER ANSI A117.1.
5. LABEL ALL OUTLETS AND JUNCTION BOXES WITH THE CORRESPONDING CIRCUIT DESIGNATION. LABEL TO BE TYPEWRITTEN; BLACK LETTERS ON WHITE BACKGROUND.
6. PROVIDE PULL STRINGS FOR ALL EMPTY CONDUIT. EACH NON-TERMINATED CONDUIT END SHALL BE PROVIDED WITH A BUSHING.
7. DIVISION 26 CONTRACTOR SHALL COORDINATE WITH DIVISION 23 TO MAKE SURE RETURN AIR OPENINGS ARE KEPT CLEAR OF ANY CONDUITS.
8. ALL RECEPTACLES WITHIN 6'-0" OF ANY WATER SOURCE SHALL BE 'GFCI' TYPE.
9. CONNECT ALL FOOD SERVICE EQUIPMENT COMPLETELY.
10. FOOD SERVICE EQUIPMENT ELECTRICAL CHARACTERISTICS WERE TAKEN FROM EQUIPMENT CUT SHEETS. ALLOWANCES WERE MADE WHERE NO ELECTRICAL CHARACTERISTICS WERE AVAILABLE. COORDINATE EQUIPMENT DRAWINGS AND NAMEPLATE RATINGS WITH CIRCUIT SIZES. NOTIFY ARCHITECT OF CONFLICTS.
11. PROVIDE ALL CORDS, CAPS, RECEPTACLES, DISCONNECT SWITCHES, CONDUIT AND FITTINGS REQUIRED TO MAKE POWER AND CONTROLS CONNECTIONS TO EQUIPMENT.
12. COORDINATE ROUGH-IN LOCATIONS WITH THE FOOD SERVICE EQUIPMENT SHOP DRAWINGS. DO NOT SCALE DRAWINGS.
13. PER NEC 210.8(B), ALL FOOD SERVICE/FOOD PREP SINGLE-PHASE RECEPTACLES RATED 150 VOLTS TO GROUND OR LESS, 50 AMPERES OR LESS AND THREE-PHASE RECEPTACLES RATED 150 VOLTS TO GROUND OR LESS, 100 AMPERES OR LESS SHALL HAVE GROUND-FAULT CIRCUIT-INTERRUPTER PROTECTION.
14. PROVIDE EQUIPMENT GROUNDING CONDUCTOR WITH ALL FOOD SERVICE EQUIPMENT CIRCUITS. ALL EQUIPMENT SHALL BE SOLIDLY GROUNDED.
15. ALL FLEX CONDUIT CONNECTIONS SHALL BE WITH SEAL-TITE FLEX WITH GROUNDING JUMPER.
16. ALL CONDUITS STUBBED UP IN FLOORS SHALL HAVE A RIGID STEEL COUPLING FLUSH WITH FINISHED FLOOR.
17. MAKE ALL REQUIRED CONNECTIONS THROUGH EQUIPMENT CONTROLLERS WHERE CONTROLS ARE REMOTE FROM EQUIPMENT.
18. WHERE SAFETY SWITCHES AND RECEPTACLES ARE SHOWN FOR A DISCONNECT MEANS, LOCATE SWITCHES NEAR THE CONNECTION POINT IN AN ACCESSIBLE LOCATION. COORDINATE CONNECTION POINTS WITH EQUIPMENT DRAWINGS.
19. ALL CONDUITS MUST BE STUBBED OUT AT THE POINT OF USE OR OTHERWISE MOUNTED OR CONCEALED SO AS NOT TO BE A DETERRANT TO CLEANING. SURFACE MOUNTED CONDUIT SHOULD BE AVOIDED, BUT WHERE NECESSARY MUST BE HELD 1-$\frac{1}{2}$" OFF OF THE WALL AND 6" ABOVE THE FLOOR.
20. WHERE JUNCTION BOXES ARE INDICATED, PROVIDE AS CORRESPONDING DISCONNECTING MEANS AT THAT LOCATION. PROVIDE AT THE RATING AND PHASE OF THE EQUIPMENT SERVED.
21. ALL ABANDONED AND UNUSED JUNCTION BOXES, BOXES WITH BLANK COVERPLATES, AND DATA OUTLET LOCATIONS NOT SHOWN ON THIS PLAN ARE TO BE DEMO'D. PATCH ANY EXISTING TO REMAIN WALLS TO A LIKE NEW CONDITION. ANY RECEPTACLE, WITHIN THE SCOPE OF WORK AREA, NOT SHOWN TO REMAIN SHALL BE REMOVED. ALL ASSOCIATED CONDUIT AND WIRING SHALL BE REMOVED BACK TO ITS SOURCE.

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MILKSHAKE FACTORY
DENVER, CO

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SUITE C
ARVADA, COLORADO
80002

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DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUED FOR CONSTRUCTION	02/19/2025

Jarod Hall, P.E.
License # PE.0062693

BWA JOB # 2025-0073

Owner Approval

27MSHF.0030.000 — Job No.

AS INDICATED — Scale

ELECTRICAL PLAN

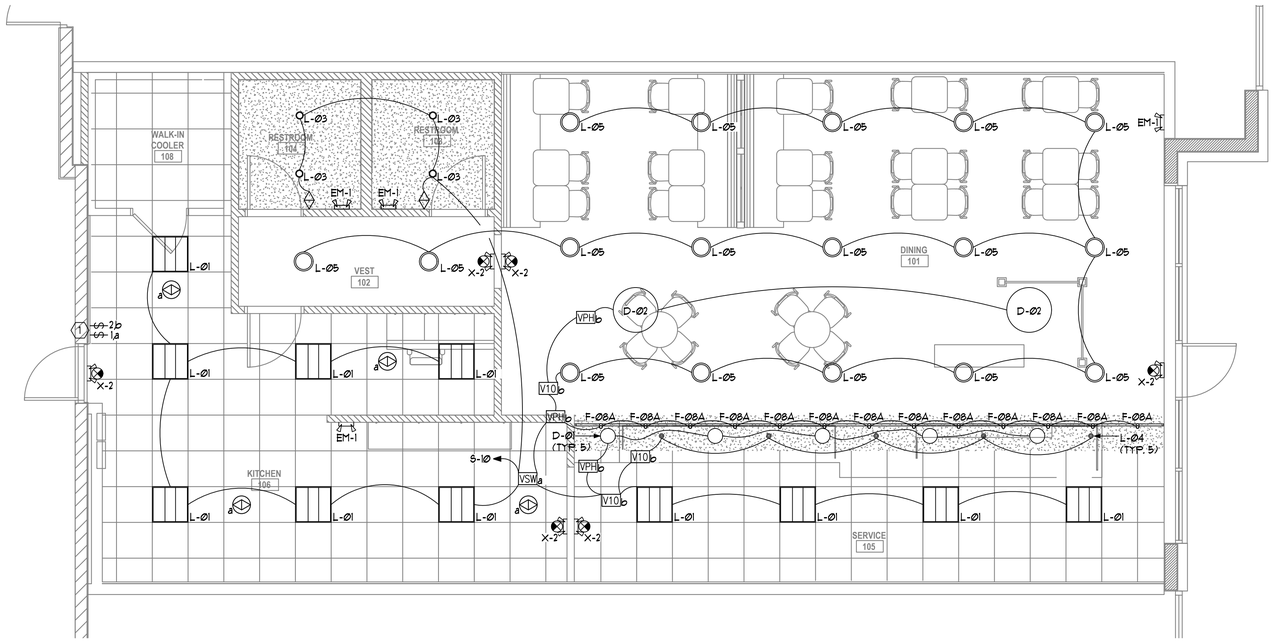
E-1.1

LEGEND NOTES:
(APPLY THIS SHEET ONLY)

(1) FOH LIGHTS ARE PROVIDED WITH 3-BUTTON OVERRIDE SWITCH WITH ON/OFF/PRESET TO MEET 2021 IECC SECTION C405.2.3.1. PRESET BUTTON SHALL DIM ALL FIXTURES TO LESS THAN 20% OF FULL POWER WHEN DESIRED. COORDINATE ON/OFF TIME SCHEDULE WITH OWNER.

GENERAL NOTES:
(APPLY THIS SHEET ONLY)

1. COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS WITH ARCHITECTURAL PLANS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS, DETAILS, AND LIGHTING NOTES FOR FURTHER INFORMATION OF DEVICE PLACEMENT AND OTHER RELEVANT INFORMATION.
2. HATCHED AREA IS NOT IN SCOPE OF WORK.
3. SEE ELECTRICAL SYSTEM AND EQUIPMENT SCHEDULE FOR LIGHTING POWER DENSITY INFORMATION.
4. ALL LIGHT FIXTURES CONTAINING BATTERY PACK FOR EMERGENCY LIGHTING SHALL BE CONTROLLED WITH THE GENERAL LIGHTING IN THE ROOM/AREA. PROVIDE AN ADDITIONAL UNSWITCHED "HOT" CONDUCTOR TO THESE LIGHTING FIXTURES.
5. ALL SWITCHES FOR LIGHTS, SHADES, ETC. WHICH ARE SHOWN TO BE MOUNTED IN THE SAME GENERAL AREA SHALL BE GANGED TOGETHER AND SHARE A MULTI-GANG COVER PLATE WHERE POSSIBLE.
6. REFER TO SHEET E-1.1 FOR LOCATION OF ELECTRICAL DISTRIBUTION PANELS.
7. LOWER CASE LETTERS IN LIGHTING FIXTURES AND ADJACENT TO SWITCHES IN EACH INDIVIDUAL ROOM/AREA INDICATE WHICH LIGHT FIXTURE IS TO BE CONTROLLED FROM EACH CORRESPONDING SWITCH IN THAT ROOM/AREA.
8. ALL CONTROL CABLING PROVIDED AS A PART OF ANY LIGHTING CONTROL SYSTEM SHALL BE PLENUM RATED.
9. DIMMING SWITCHES SHALL BE LUTRON DIVA #DVWCL-153PH-WH WALL MOUNTED DIMMING SWITCHES.
10. 50 FT-CANDLES OF LIGHT MUST BE PROVIDED AT ALL WORKSURFACES.
11. ALL LIGHT FIXTURES IN THE FOOD-PREP AREA SHALL LENSED AND BE CAPABLE OF EASY CLEANING.
12. ALL PREVIOUS EXISTING INTERIOR LIGHTING FIXTURES AND CONTROLS ARE TO BE DEMO'D. PATCH ANY EXISTING TO REMAIN WALLS TO A LIKE NEW CONDITION. ALL ASSOCIATED CONDUIT AND WIRING SHALL BE REMOVED BACK TO ITS SOURCE.



1 / E-2.1 FLOOR PLAN – LIGHTING
1/4"=1'-0"

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LIGHTING PLAN

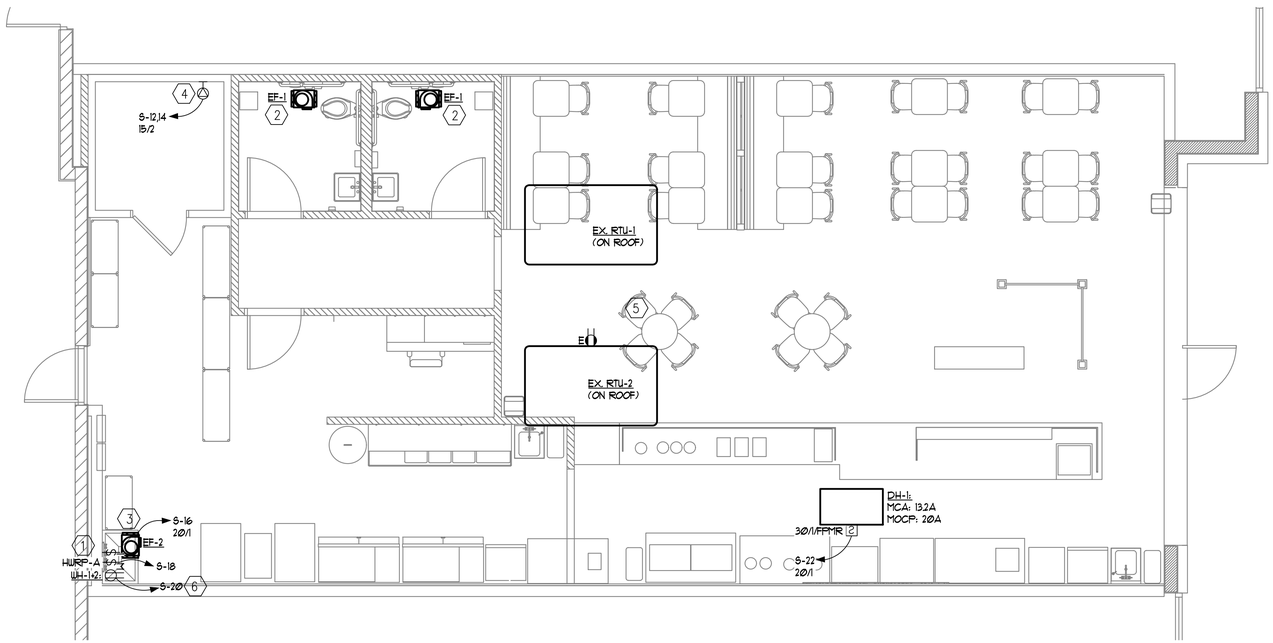
E-2.1

LEGEND NOTES:
(APPLY THIS SHEET ONLY)

1. PROVIDE MOTOR RATED SWITCH FOR CONNECTION TO EQUIPMENT. COORDINATE LOCATION WITH MECHANICAL/PLUMBING CONTRACTOR.
2. EXHAUST FAN TO BE TIED INTO RESTROOM LIGHTING CONTROLS. SEE SHEET E-2.1 FOR MORE INFORMATION. EXTEND CONDUIT AND WIRES TO NEW LOCATION.
3. EXHAUST FAN TO BE ON WHILE OCCUPIED. PROVIDE LUTRON RMJS-16R-DV-B ON/OFF POWER PACK FOR TIME OF DAY CONTROL. COORDINATE EXACT SCHEDULE WITH OWNER. SEE SHEET E-0.6 FOR MORE INFORMATION. PROVIDE PJ2-3B-GXX ON/OFF OVERRIDE SWITCH AS SHOWN.
4. PROVIDE L6-15 RECEPTACLE FOR WALK-IN COOLER SELF CONTAINED UNIT. COORDINATE EXACT LOCATION WITH INSTALLER.
5. PROVIDE CONNECTION TO BPI-1. COORDINATE WITH MECHANICAL CONTRACTOR.
6. PROVIDE DUPLEX FOR WATER HEATER CONNECTION. COORDINATE EXACT LOCATION WITH PLUMBING CONTRACTOR.

GENERAL NOTES:
(APPLY THIS SHEET ONLY)

1. COORDINATE ALL EQUIPMENT LOCATIONS AND CONNECTION REQUIREMENTS WITH THE HVAC CONTRACTOR (DIV23) AND/OR PLUMBING CONTRACTOR (DIV22) PRIOR TO INSTALLATION.
2. HATCHED AREA NOT IN THIS SCOPE OF WORK.
3. REFER TO SHEET E-1.1 FOR LOCATION OF ELECTRICAL DISTRIBUTION PANELS.



1 FLOOR PLAN – MECHANICAL CONNECTIONS
E-3.1 1/4"=1'-0"

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MECHANICAL CONNECTIONS PLAN

E-3.1

ABBREVIATIONS

A/C	ABOVE CEILING
AAV	AIR ADMITTANCE VALVE
AC	AIR CONDITIONING
AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ARP	ACID RESISTANCE PIPING
AUTO	AUTOMATIC
B/F	BELOW FLOOR
B/G	BELOW GRADE
B/S	BELOW SLAB
BAL	BALANCING
BHP	BRAKE HORSEPOWER
BCO	BASE CLEANOUT
CO	CLEANOUT
CW	COLD WATER (DOMESTIC)
DN	DOWN
DO	DITTO
DR	DRAIN
DWG	DRAWING
EA	EACH
ECC	ECCENTRIC
EFF	EFFICIENCY
EOD	EMERGENCY OVERFLOW DRAIN
EWT	ENTERING WATER TEMP.
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FLR	FLOOR
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FEET
G	GATE
GA	GAUGE
GCO	GRADE CLEANOUT
GPM	GALLONS PER MINUTE
GW	GREASE WASTE
HD	HUB DRAIN
HP	HORSEPOWER
HP	HIGH PRESSURE
HTG	HEATING
HW	HOT WATER (DOMESTIC)
HWR	HOT WATER RETURN
HWRR	HW REVERSE RETURN
HWS	HOT WATER SUPPLY
ID	INSIDE DIMENSION
IE	INVERTED ELEVATION
IN	INCHES
KW	KILOWATTS
LB	POUNDS
LP	LIQUID PROPANE GAS
LWR	LOOP WATER RETURN
LWS	LOOP WATER SUPPLY
MAX	MAXIMUM
MIN	MINIMUM
MFR	MANUFACTURER
NC	NORMALLY CLOSED
NG	NATURAL GAS
NFGH	NON-FREEZE GROUND HYDRANT
NFWH	NON-FREEZE WALL HYDRANT
NO	NORMALLY OPEN
NOM	NOMINAL
OD	OVERFLOW DRAIN
PSI	POUNDS PER SQUARE INCH
RAD	RADIUS
RD	ROOF DRAIN
RED	REDUCER
RTU	ROOFTOP UNIT
SAN	SANITARY
SQ	SQUARE
ST	STORM
TEMP	TEMPERATURE
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VENT
VA	VALVE
VTR	VENT THRU ROOF
W	WASTE
WC	WATER COLUMN
WCO	WALL CLEANOUT
WHA	WATER HAMMER ARRESTOR
WT	WEIGHT

GENERAL NOTES
(APPLY TO ALL SHEETS)

1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT A COMPLETE TENANT MECHANICAL SYSTEM BE PROVIDED WITH ALL NECESSARY EQUIPMENT, ACCESSORIES, OPTIONS AND CONTROLS, COMPLETELY COORDINATED WITH ALL DISCIPLINES. ALL ITEMS AND LABOR REQUIRED FOR A COMPLETE TENANT MECHANICAL SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS AND THE BASE BUILDING CONTRACT DOCUMENTS SHALL BE FURNISHED WITHOUT INCURRING ADDITIONS TO THE CONTRACT.
2. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT PARTITION LAYOUTS, REFLECTED CEILING PLANS, DIMENSIONS, ETC.
3. EXISTING PLUMBING EQUIPMENT AND PIPES ARE SHOWN BY DASHED LINES. NEW WORK AND RELOCATED WORK ARE SHOWN BY SOLID LINES. EXISTING WORK TO BE REMOVED IS SHOWN HATCHED. WHEN ANY PIPING IS REMOVED, PIPING SHALL BE CAPPED AND SEALED.
4. VISIT SITE AND CAREFULLY EXAMINE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. THE EXISTING CONDITIONS SHOWN ARE BASED ON DOCUMENTS PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY THE ENGINEER. IF EXISTING CONDITIONS DIFFER FROM DRAWINGS IN SUCH A MANNER THAT WILL AFFECT PRICING, (I.E., PIPING, WATER HEATERS, FIXTURES, ETC.)CONTRACTOR WILL NOTIFY OWNER SO THAT A RESOLUTION CAN BE MADE PRIOR TO SUBMITTING BIDS. NO ALLOWANCE WILL BE MADE FOR LACK OF KNOWLEDGE OF EXISTING CONDITIONS.
5. ALL PLUMBING FIXTURES SHALL BE PROVIDED AS COMPLETE PACKAGES PROVIDING ALL RELATED ACCESSORIES SUCH AS TAIL PIECES, SUPPLY STOPS, P-TRAPS ETC., SO AS TO FURNISH A COMPLETE JOB.
6. ALL SANITARY WASTE, VENT, AND WATER PIPING AND INSULATION SHALL BE AS SPECIFIED IN THE BASE BUILDING DOCUMENTS. ALL NEW WORK SHALL CONFORM TO BASE BUILDING STANDARD AS A MINIMUM.
7. ALL PLUMBING FIXTURES SHALL BE PROVIDED AS COMPLETE PACKAGES PROVIDING ALL RELATED ACCESSORIES SUCH AS TAIL PIECES, SUPPLY STOPS, P-TRAPS ETC., SO AS TO FURNISH A COMPLETE JOB.

PLUMBING LEGEND

	COLD WATER
	HOT WATER
	HOT WATER RECIRCULATION
	SANITARY
	GREASE
	VENT
	GAS
	EXIST. CW (OTHERS SIM.)
	EXIST. (TYPE NOT SPECIFIED)
	WORK TO BE REMOVED
	CONNECT TO EXISTING
	FLOOR DRAIN
	FLOOR SINK
	FLOOR CLEAN-OUT
	WALL CLEAN-OUT
	HOSE BIBB UON
	SHUT-OFF VALVE

COMMISSIONING NOTE:

A FINAL COMMISSIONING REPORT SHALL BE DELIVERED TO THE BUILDING OWNER PER SECTION C408.2.5 OF THE 2021 IECC

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE		CW	HW	SAN / WASTE	VENT	REMARKS
P-1	WATER CLOSET FLOOR MOUNT		3/4"	---	4"	2"	
BASIS OF DESIGN:	FIXTURE SHALL BE AMERICAN STANDARD CADET, MODEL 2467.016. FIXTURE SHALL BE FLOOR-MOUNTED, PRESSURE-ASSISTED SIPHON JET, ELONGATED STYLE, TANK-TYPE WATER CLOSET. FIXTURE SHALL BE 16-1/2" HIGH TOILET COMPLETE WITH TANK, BOWL, FLUSH UNIT, ANTISYPHON FLOAT VALVE, AND CHROME PLATED SUPPLY STOPS AND LEVEL. INCLUDE CENTOCO CLOSED FRONT TOILET SEAT WITH CHECK HINGE AND ANTI-MICROBIAL AGENT. ENSURE HANDLE IS ON ADA ACCESSIBLE SIDE OF THE TANK.						
P-2	WALL MOUNT LAVATORY		1/2"	1/2"	3"	2"	
BASIS OF DESIGN:	FIXTURE SHALL BE AMERICAN STANDARD DECORUM, MODEL 9024.001EC, WHITE VITREOUS CHINA, WALL HUNG LAVATORY, CONCEALED MOUNTING, REAR OVERFLOW, FAUCET LEDGE, SINGLE HOLE PUNCHING AND MOUNTING HARDWARE. FAUCET SHALL BE AMERICAN STANDARD SELECTRONIC, MODEL605B.105, ELECTRONIC TOUCHLESS FAUCET WITH VANDAL-RESISTANT CAST SPOUT, 0.5 GPM PRESSURE COMPENSATING VANDAL-RESISTANT MULTI-LAMINAR SPRAY AND GRID DRAIN. PROVIDE WITH POINT OF USE MIXING VALVE TO MEET ASSE 1070, P-TRAP, LOOSE KEY SUPPLY STOPS AND ALL OTHER TRIM FOR A COMPLETE INSTALLATION.						
P-3	MOP SINK		1/2"	1/2"	3"	2"	
BASIS OF DESIGN:	FIXTURES SHALL BE A MUSTEE FLOOR SERVICE SINK, 24" X 36" X 10" HIGH, COMPLETE WITH ONE-PIECE HIGH IMPACT RESISTANT DURASTONE STRUCTURAL FIBERGLASS, INTEGRAL MOLDED IN DRAIN WITH STAINLESS STEEL STRAINER; MUSTEE MODEL 65M OR APPROVED EQUAL. FAUCET SET SHALL BE T-10-VB SINK FITTING COMPLETE WITH WALL BRACE, HOSE END, VACUUM BREAKER AND CHROME FINISH. PROVIDE TWO (2) 24" X 36" 20 GAUGE STAINLESS STEEL SPLASH PANELS MOUNTED BEHIND SINK.						
P-4	HANDWASH SINK		1/2"	1/2"	3"	2"	
BASIS OF DESIGN:	FIXTURE SHALL BE PROVIDED BY KITCHEN EQUIPMENT VENDOR.						
P-5	4-COMPARTMENT SINK		1/2" (2)	1/2" (2)	1-1/2" (3)	--	ROUTE INDIRECT WASTE TO DISCHARGE TO FLOOR DRAIN WITH AIR GAP
BASIS OF DESIGN:	FIXTURE SHALL BE FOUR-BOWL STAINLESS STEEL SINK WITH THREE (3) 14" X 24" X 12" DEEP BOWLS, ONE (1) 24" X 24" X 8" DEEP BOWL, 3-HOLE PUNCHING ON 8" CENTERS BY KEYSTONE CUSTOM FABRICATORS. FAUCET TO BE FURNISHED BY KITCHEN EQUIPMENT VENDOR AND INSTALLED BY PLUMBING CONTRACTOR. PROVIDE WITH LEVER DRAIN, THREE (3) ELKAY LK-35 BASKET DRAINS, P-TRAP, LOOSE KEY SUPPLY STOPS AND ALL OTHER TRIM FOR A COMPLETE INSTALLATION. PROVIDE WITH POINT OF USE MIXING VALVE TO MEET ASSE 1070. FIXTURE TO BE PROVIDED BY KITCHEN EQUIPMENT VENDOR AND INSTALLED BY PLUMBING CONTRACTOR						
FD	FLOOR DRAIN		1/2" TP	--	3"	2"	
BASIS OF DESIGN:	FLOOR DRAINS IN TOILETS AND FINISHED AREAS SHALL BE JR SMITH 2000 SERIES WITH 6" TYPE B SQUARE ADJUSTABLE STRAINERS FINISHED IN SATIN NICKEL BRONZE; OR EQUAL PRODUCTS BY JOSAM OR ZURN. PROVIDE VANDALPROOF SECURED TOPS.						
FD-K	FLOOR DRAIN TYPE K		1/2" TP	--	3"	2"	
BASIS OF DESIGN:	TYPE "K" FLOOR DRAINS IN KITCHENS AND FOOD SERVICE AREAS SHALL BE JR SMITH 2000 SERIES WITH SEDIMENT BUCKET AND 8" TYPE "B" SQUARE ADJUSTABLE STRAINER FINISHED IN NICKEL BRONZE; OR EQUAL PRODUCTS BY JOSAM OR ZURN. PROVIDE VANDALPROOF SECURED TOPS.						
FD-R	FLOOR DRAIN TYPE R		1/2" TP	--	3"	2"	
BASIS OF DESIGN:	TYPE "R" FLOOR DRAINS IN KITCHENS AND FOOD SERVICE AREAS SHALL BE JR SMITH 2000 SERIES WITH SEDIMENT BUCKET AND 7" TYPE F37 ROUND EXTENDED RIM STRAINER FINISHED IN NICKEL BRONZE; OR EQUAL PRODUCTS BY JOSAM OR ZURN. PROVIDE VANDALPROOF SECURED TOPS.						
FS	FLOOR SINK		1/2" TP	--	3"	2"	
BASIS OF DESIGN:	FLOOR SINKS (FS) IN KITCHENS AND FOOD SERVICE AREAS SHALL BE JR SMITH 3007-NB SERIES WITH 6" DEEP TYPE 304 STAINLESS STEEL BODY, REMOVABLE STAINLESS STEEL SEDIMENT BUCKET, 12 1/2" SQUARE NICKEL BRONZE TOP AND NON-PUNCTURING FLASHING CLAMPS OR EQUAL PRODUCTS BY ACO, JOSAM, OR ZURN. GRATE CONFIGURATION SHALL BE COORDINATED WITH KITCHEN EQUIPMENT CONSULTANT TO ENSURE PROPER OPENING FOR EQUIPMENT SERVED; OTHERWISE PROVIDE A FULL GRATE WITH OPENINGS CUT OUT FOR EQUIPMENT SERVED.						

NOTES:
TP: PROVIDE WITH ½" CW TRAP PRIMER.
-REFER TO SPECIFICATIONS SECTION 22 45 00 FOR MORE INFORMATION.

- REFER TO ARCHITECTURAL DRAWINGS FOR ALL MOUNTING HEIGHTS AND ADA (ICC A117.1-2017) ACCESSIBILITY REQUIREMENTS.

GREASE INTERCEPTOR SCHEDULE

ID TAG	WASTE INLET/ OUTLET SIZE	VENT CONN. SIZE	FLOW RATE (GPM)	CAPACITY IN GAL (LIQUID/GREASE)	BASIS OF DESIGN	REMARKS
GT-1	4"	3"	50	40/37.2	SCHIER GB3	①②③

① REFER TO DETAIL 5/P-0.5 FOR INSTALLATION.
② PROVIDE WITH BUILT-IN FLOW CONTROL AND INTEGRAL AIR RELIEF/ANTI-SIPHON.
③ GREASE INTERCEPTOR TO BE INSTALLED INDOORS BELOW-GRADE. PROVIDE WITH RISERS TO BRING COVER FLUSH WITH FLOOR.

PUMP SCHEDULE

I.D. TAG	FLUID	TYPE OF PUMP	FLOW (GPM)	HEAD (FT)	MAX. NPSHR (FT.)	MAXIMUM RPM	MOTOR HP	VOLTS/ PHASE	MINIMUM EFFICIENCY	BASIS OF DESIGN	REMARKS
HWRP-A	WATER	HW RECIRC PUMP	5	18	---	3,300	F	120/1	--	BELL & GOSSETT NRF-36	①

① PROVIDE PUMP WITH AN AQUASTAT AND TIMER.

TANKLESS GAS WATER HEATER SCHEDULE

I.D. TAG	INPUT (MBH)	FLOWRATE (GPM)	TEMP RISE °F	EFF.	FUEL	VOLTS/ PHASE	BASIS OF DESIGN	REMARKS
WH-1,2	180	4.25	80	95%	NAT. GAS	120/1	RINNAI RU180i	① ②

① REFER TO DETAIL 1/P-0.5 FOR INSTALLATION.
② PROVIDE WITH CONDENSATE NEUTRALIZER, CONTROLS FOR RECIRCULATING PUMP AND WALL BRACKET.

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Christopher Lyles, P.E.
License # PE.0059116

BWA JOB # 2025–0073

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NOTES, ABBREVIATONS, LEGEND & SCHEDULES - PLUMBING

P-0.1

SECTION 22 05 00

COMMON WORK RESULTS FOR PLUMBING

1.0 GENERAL

1.01 DESCRIPTION

A. This Division 22 and the accompanying drawings cover the provision of all labor, equipment, appliances, and materials and performing all operations in connection with the construction of the plumbing systems as specified herein and as shown.

B. All work specified in this Section is governed by the Common Work Results for Plumbing 22 05 00.

C. The General Provisions and Division 1, including the general, supplementary and other conditions and other Divisions, as appropriate, apply to work specified in this Division.

1.02 EXISTING CONDITIONS

A. Attention is called to the fact that the work is to be performed within an existing, operational facility. Prior to the submission of bids, each bidder shall visit the project site, thoroughly investigate and be familiar with all existing conditions which will affect their work; especially the work to be performed above the existing ceilings.

B. Connect new work to existing work in a neat and workmanlike manner. Where an existing structure must be cut or existing utilities interfere, such obstructions shall be bypassed, removed, replaced or relocated, patched and repaired. Work disturbed or damaged shall be replaced or repaired to its prior condition.

1.03 INTENT OF DRAWINGS AND SPECIFICATIONS

A. The implied and stated intent of the drawings and specifications is to establish minimum acceptable standards for materials, equipment and workmanship, and to provide operable plumbing systems complete in every respect.

B. The engineering drawings are diagrammatic, intended to show general arrangement and sizes of system components, and shall not be scaled. Rather, the architectural and structural drawings shall govern space constraints, dimensions and finishes. All offsets and fittings which will be necessary to accomplish the finished installation shall be provided at no additional cost or increase in the Contract.

1.04 SPACE PRIORITY

A. Ensure optimum use of available space for materials and equipment installed above ceilings. Allocate space in the order of priority as listed below except as otherwise detailed. Items are listed in the order of priority, with items of equal importance listed under a single priority number.

1. Gravity flow piping systems
2. Vent piping systems
3. Recessed lighting fixtures
4. Concealed HVAC terminals and equipment
5. Air duct systems
6. Sprinkler piping systems
7. Pressurized piping systems
8. Electrical conduit, wiring, control air tubing

B. Order of space priority does not dictate installation sequence. Installation sequence shall be as required to install all affected trades.

C. The work of this Division 22 shall not obstruct access for installation, operation and maintenance of the work of any other Division.

D. All major items of equipment shall be arranged so as to provide a minimum of 28" clear aisle space. Additional space shall be provided between and around equipment for maintenance and proper operation as shown in the Equipment Manufacturer's literature.

1.05 COORDINATION

A. Coordinate all work under this Division 22 with work under all other Divisions, providing adjustment as necessary.

B. Coordination of space requirements with respect to Division 26 shall be performed such that:

1. No equipment, piping or ductwork, other than electrical, shall be installed within 42" of switchboards or panelboards.
2. No piping or ductwork which ever operates at a temperature in excess of 120°F shall be installed within 3" of any electrical conductor.

C. All items mounted in or below the ceiling, and all items penetrating the ceiling, shall be coordinated with the architectural reflected ceiling plans. If any items are not shown on these plans, or any items need to be relocated for coordination purposes, prepare a reflected ceiling plan and submit it to the Architect for approval.

1.06 CODE COMPLIANCE

A. All workmanship and materials provided under this Division 22 shall comply with all laws, ordinances, codes and regulations of all Federal, State and Local Authorities Having Jurisdiction.

B. All fire suppression, plumbing, heating, ventilating, and air conditioning materials and workmanship shall comply with all local, state, and federal codes and the following standards as minimum requirements:

1. NFPA 70, National Electrical Code, 2023 Edition
2. Life Safety Code (NFPA 101) – 2021 Edition
3. All other NFPA Codes and Standards – Applicable Editions
4. International Building Code – 2021 Edition
5. International Energy Conservation Code – 2021 Edition
6. International Fire Code – 2021 Edition
7. International Mechanical Code – 2021 Edition
8. International Plumbing Code – 2021 Edition
9. American with Disabilities Act, January 26, 1992
10. ICC A117.1–2017 Accessible and Usable Buildings and Facilities
11. ASME A17.1 Safety Code Elevators and Escalators, 2016 Edition

C. Secure and pay all fees associated with all permits and licenses required for execution of the Contract. Arrange for all inspections required by City, County, State and other Authorities Having Jurisdiction, and deliver certificates of approval to the Architect.

D. The code requirements are strictly a minimum and shall be met without incurring additions to the Contract. Where requirements of the drawings or specifications exceed the code requirements, the work shall be provided in accordance with these drawings or specifications. In the event of conflict or ambiguity between the various codes, the most stringent requirement shall govern.

1.07 ELECTRICAL REQUIREMENTS AND INTERFACE

A. All electrical equipment and wiring provided under this Division 22 shall comply with the electrical system characteristics indicated on the electrical drawings and specified in Division 26.

B. Electric controls, contactors, starters, pilot lights, push buttons, etc., shall be provided complete as part of the motor, heater or other equipment which it operates. All electrical components shall be in conformance with the requirements of the National Electrical Code and Division 26. Starters shall be wye–delta, closed transition type. Reference Division 26 and the electrical engineering drawings for those motor starters provided under that Division 26. All starters not shown shall be provided under this Division 22. Unless

specified otherwise under other individual equipment Sections, motor starters shall conform to the following minimum requirements:

1. Starters for motors 1/3 horsepower or smaller shall be manual unless remote or automatic starting is required, in which case the starters shall be magnetic, full voltage, non–reversing, single–speed, unless otherwise indicated. All other starters shall be magnetic.
2. Each starter for a three–phase motor shall be furnished with three (3) overload relays sized for the full load running current of the motor actually provided. Provide an external "HAND–OFF–AUTO" selector switch with red "RUNNING" light. Provide a green pilot light to indicate motor "STOPPED". Each pilot light shall have a legend plate indicating reason for signal.
3. Each overload relay shall have a normally open alarm contact which will close only when actuated by an overload (not to be confused with N.O. or N.C. auxiliary contacts). These contacts shall be properly wired to their respective blue pilot light provided on the starter front cover and having a "TRIPPED" legend plate.
4. Individually mounted motor starters shall be in a NEMA Type 1 general purpose enclosure in unfinished areas and shall be flush mounted in all finished areas. All starters mounted in exterior areas shall have a NEMA 3R enclosure. Each starter shall have a laminated nameplate to indicate equipment unit number, function and circuit number.
5. All motor starters, push buttons and pilot lights shall be of the same manufacturer as the switchboard and shall be General Electric, Square D, Siemens I.T.E., or Westinghouse.

C. Motor starters for the following equipment shall be provided under this Division 22 by the Manufacturer of the equipment:

1. Other equipment hereinafter specified in other Sections to be provided with integral starters

D. Unless otherwise noted or specified in individual Sections, all 3–phase motors shall be standard NEMA continuous duty "B" type, with Class B insulation, open drip–proof frame for indoor service, TEFC for outdoor service and a service factor of 1.15. All motors 5 HP and larger shall be U.S. Motors Hi–Efficiency Model or Reliance XE Hi–Efficiency Model.

E. All power wiring and final connections to equipment shall be provided under Division 26.

F. Control components, all interlocks (control valves, leak sensors, etc.) and control wiring (120 volt, single phase and less) shall be provided under this Division 22 as required to achieve the specified control sequences.

G. All control wiring over 30 volts shall be installed by a Licensed Electrician working under this Division 22.

1.08 SLEEVES, SEALS AND ESCUTCHEONS

A. Sleeves shall be provided through all pipe penetrations of concrete or masonry walls, elevated floors and roofs, except those plumbing piping penetrations for fixtures, vents, etc.

B. Sleeves shall be fabricated from Schedule 40 steel pipe through 10" and Standard Wall steel pipe for sleeve sizes 12" and larger. All sleeves penetrating exterior walls, underground walls, pit or vault walls shall be provided with a 3" x 3/8" thick waterstop ring welded completely to the midpoint of the sleeve.

C. All sleeves penetrating exterior walls, underground walls, pit or vault walls and elevated floors shall be packed and sealed watertight.

D. Sleeves through roofs shall extend above the roof surface and be flashed watertight.

E. Sleeves through walls shall be cut and finished flush with each surface of the wall in which they are installed.

F. Sleeves through elevated floors shall extend at least ½" above the finished floor and be sealed waterproof between the sleeve and slab.

G. Sleeves shall be sized to provide a minimum of 1/2" clearance between the inside surface of the sleeve and the outside finished surface of the pipe plus any insulation specified.

H. Fire–stops shall be provided as specified herein. All annular spaces between piping and sleeves which do not require fire–stops shall be packed with mineral wool and caulked.

I. Fire–stopping or packing at elevated floor penetrations shall be level with or above the elevation of the top of sleeve to prevent any water ponding on top of the sleeve.

J. Provide round, chrome–plated escutcheons on all exposed piping penetrations passing through walls, floors, partitions and ceilings.

K. All penetrations through rated slabs, walls, etc. shall be in accordance with UL listed systems. Provide rated box–out, fire caulking, etc. as needed to ensure fire rating is maintained in compliance with UL listed systems.

1.09 FIRESTOPS

A. Where piping, conduit, etc. pass through fire partitions, fire walls and floors, a firestop shall be provided that will ensure an effective barrier against the spread of fire, smoke and gases. Firestop material shall be packed tight and completely fill gaps between the ductwork, piping, conduit, etc. and the perimeter of their rough openings.

B. All penetrations shall be in accordance with UL 1479 or ASTM E 814 listed systems, and products used shall be specifically applicable for the appropriate installation conditions. Assemblies shall provide a minimum rating equal to the construction penetrated. Products shall be by HILTI, 3M, or ProSet.

C. Installation shall be by a Qualified Installer. Installer shall be certified, licensed, or otherwise qualified by the Firestopping Manufacturer as having the necessary training to install the Manufacturer's specific product. A Manufacturer or Vendor's willingness to sell the firestopping product to the Contractor or Installer does not in itself confer qualification.

D. Installer shall have at least one of the following qualifications:

1. FM 4991 Approved Contractor
2. UL Approved Contractor
3. HILTI, 3M, or ProSet Accredited Fire Stop Specialty Contractor

E. Installing Firm shall have no less than 3 years of experience with firestop installation.

F. A Manufacturer's direct Representative (not Distributor or Agent) shall be on site during initial installation of firestop systems to train appropriate Contractor personnel in proper selection and installation procedures.

G. The firestop Contractor or Installer shall supply As–Built documentation of each individual penetration location on the project. Documentation shall include a sequential location number, detailed description of the penetration location, size, and type, tested system number, type of assembly penetrated, and rating to be achieved. As–Built documentation shall be included with the close–out materials.

H. Identify through–penetration firestop systems with pressure–sensitive, self–adhesive, preprinted vinyl labels. Attach label permanently on both sides of penetrated construction in a visible location. The label shall include the following:

1. The words Warning – Through Penetration Firestop System–Do Not Disturb "
2. Through Penetration firestop system designation and Manufacturer
3. Date of Installation

1.10 CORE DRILLING

A. Cutting of holes through concrete and masonry shall be by diamond core or concrete saw. Pneumatic hammer, impact electric and hand or manual hammer type drills will not be allowed, except as permitted by the Architect where required by limited working space. Locate holes such that they will not affect structural sections such as ribs or beams. Holes shall be laid out well in advance of the installation. These layout locations shall be approved by the Architect prior to drilling.

1.11 IDENTIFICATION OF PIPING

A. All aboveground plumbing systems piping and valves sized 3/4" and larger which are installed in accessible locations (including piping above removable ceilings and behind access panels) shall be identified in strict conformance with the "Scheme for the Identification of Piping Systems" (ANSI A13.1–2015)

B. Piping labels in exposed areas shall be oriented and located in coordination with the Architect.

C. System names shall, at minimum, uniquely identify the system and performance category – i.e. 140°F Hot Water Supply, High Pressure Cold Water, etc.

D. Specialized piping (grease waste, acid waste, fuel piping, etc.) installed underground shall be labeled. The label shall be corrosion resistant or shall be permanently marked.

E. Each identification marker shall include the following:

1. Proper color–coded background
2. Proper color of legend in relation to background color
3. Proper legend letter size
4. Proper marker length
5. Direction of flow arrow shall be included on each marker

F. Locations for pipe markers shall be as follows:

1. Adjacent to each valve and fitting
2. At each branch and riser take off
3. At each pipe passage through walls, floors and ceilings
4. On all straight pipe runs every 25 feet except that piping underground required to be labeled shall be labeled every 10 feet or more often as required by the AHJ

G. Identification markers may be stenciled or shall be Setmark Pipe Markers, as manufactured by Seton Name Plate Corporation.

H. All valves shall be identified with the appropriate service designation and valve number brass valve tags. Each valve tag shall be 19 gauge brass with 1/4" black–filled letters over 1/2" black–filled numbers. Tags shall be fastened to valves with brass "S" hooks or brass jack chain. Brass tags and fasteners shall be as manufactured by Seton Name Plate Corporation.

I. Provide charts of all valves. Valve charts shall include the following items:

1. Valve identification Number
2. Location
3. Purpose/Material

2.0 PRODUCTS

2.01 BID BASIS AND SUBSTITUTION PROCEDURES

A. Manufacturer names, series and model numbers, as noted or specified, are for the purpose of describing type, capacity, and quality of equipment, materials and products to be used. Unless "or equal" is specifically stated, bids shall be based only on the specified "basis of design" Manufacturer. The listing of a particular manufacturer as an "equal" or "acceptable substitute" manufacturer shall not be misconstrued as approving, nor allowing the substitution of, that Manufacturer's standard product in place of the basis of design. No consideration will be given to a product which would require dimensional, spatial or aesthetic changes to the project. "Acceptable substitute" and "equal" manufacturers shall only bid those products which exactly match the size and other characteristics of the specified basis of design. Any changes to other disciplines and trades of work required by an "or equal" or "substitute" product shall be duly considered and priced accordingly prior to bidding or pricing. The decision as to whether or not a proposed substitute or "equal" product is actually equal to that specified shall rest solely with the Architect.

B. Requests to provide "equal" products in lieu of those specified shall be submitted to the Architect in writing at least ten (10) days prior to final pricing and execution of the Contract. No consideration will be given to substitute products after final pricing and execution of the Contract.

C. Any "or equal" product or proposed product substitution which will cause a change in the appearance, dimensions or design of any part of the building, structure, electrical system, or any other engineered systems shall be accompanied by a scaled drawing and written description of the required change(s) for approval by the Architect. If deemed necessary by the Architect, design changes shall be signed and sealed by a registered Professional Engineer, currently licensed in this State. This shall be performed under the Contractor selecting the substitution's scope.

D. Any and all changes due to a substitution of basis of design equipment including but not limited to electrical connection, physical size, access, piping connections, controls, etc. shall be solely the responsibility of Contractor selecting the substitution.

2.02 MINIMUM STANDARDS

A. Every piece of energy consuming equipment, all fire suppression products and life safety equipment shall comply with the following standards as applicable; especially in regard to prevailing codes:

1. Factory Mutual Laboratories (FM)
2. Industrial Risk Insurers (IRI)
3. Underwriters Laboratories, Inc. (UL)
4. ADC: Air Diffusion Council
5. AGA: American Gas Association
6. AMCA: Air Moving and Conditioning Association, Inc.
7. ANSI: American National Standards Institute
8. API: American Petroleum Institute
9. AHRI: Air Conditioning, Heating, and Refrigeration Institute
10. ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers
11. ASME: American Society of Mechanical Engineers
12. ASTM: American Society of Testing and Materials
13. AWWA: American Water Works Association
14. IBR: Institute of Boiler and Radiator Manufacturers
15. MSS: Manufacturers Standardization Society
16. NBBPVI: National Board of Boiler and Pressure Vessel Inspectors
17. NEMA: National Electrical Manufacturer's Association
18. OSHA: Occupational Safety & Health Administration
19. PDI: Plumbing Drainage Institute
20. PPI: Plastic Pipe Institute
21. CISPI: Cast Iron Soil Piping Institute

2.03 PIPE HANGERS AND SUPPORTS

A. Pipe hangers, hanger rods, trapeze type hangers, upper attachments and other supports shall be selected based on pipe size (plus insulation of pipes specified to be insulated) and the weight of the medium being transported or the medium used for testing, whichever is greater. Provide all hangers and rods, turnbuckles, angles, channels, and other structural supports to support the piping systems. Rods for pipe hangers shall be full size of the Hanger Manufacturer's catalog listed rod size for each type hanger specified. Hangers and supports shall be Michigan, ITT Grinnell or B–Line.

B. All material utilized for the hanging and support of the piping systems shall be manufactured products which are specifically intended for the purpose of hanging piping systems. The use of wire, steel straps, plastic ties, etc. is strictly prohibited.

C. Pipe hangers selected for supporting horizontal insulated piping shall be sized to fit around the outside of the pipe insulation. Insulated piping shall be supported on galvanized shields.

1. Shields shall be as follows:
   a. Pipes 2" and smaller: 18 gauge x 12" long
   b. Pipes 2 1/2" and larger: 16 gauge x 18" long
2. Shields shall be 180 degrees around the lower half of the pipe at all pipe hangers, except that on trapeze hangers, pipe racks and floor supported horizontal pipes, shields shall be 360 degrees around the entire pipe.

D. Pipe hangers touching copper piping shall be copper plated or the piping shall be dielectrically isolated from any steel hangers or clamps that are used. Note the requirement for domestic water piping requires the hangers to be installed over the insulation.

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

ISSUED FOR CONSTRUCTION

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUED FOR CONSTRUCTION	02/19/2025

Christopher Lyles, P.E.
License # PE.0059116

BWA JOB # 2025–0073

Owner Approval

27MSHF.0030.000 — Job No.
AS INDICATED — Scale

SPECIFICATIONS - PLUMBING

P-0.2

E. Steel rods, framing and clamps shall be plated or primed to prevent rust formation.

3.0 EXECUTION

3.01 GENERAL

A. All piping, valves, and fittings shall be products of a domestic Manufacturer and made in the USA.

B. Flexible piping connections shall be provided and installed at all suction and discharge connections of packaged booster pumps and at any pump 2.0 HP and above. Flexible piping connections shall be suitable for 150 psi working pressure or the system pressure at the installation location, whichever is greater, and be suitable for the temperature of the system. Flexible connections shall be stainless steel braided hose type, with a length not less than their pipe diameter. Provide and install restraining rods if recommended by the Manufacturer for the installation location and application.

C. Provide and install shut–off valves at any and all equipment including water heaters, domestic booster pumps, recirculation pumps, storage and pressure tanks, etc. and at any locations required by code, such as branch lines from risers serving more than one fixture. Shut–offs shall be in addition to those specifically shown or noted in the Contract Documents.

3.02 SUBMITTALS

A. Before preparing submittals, study all Contract Drawings and specifications in detail, obtain manufacturer's recommended instructions, and have submittals prepared based on specific equipment and material proposed for installation. An officer of the contracting firm shall sign all shop drawings (certifying conformance with plans and specifications) before submitting to the Architect or releasing to the field.

B. The submittal process shall not be utilized as an avenue to substitute products after the execution of the contract. Should an unspecified or unequal product be submitted, it will be rejected. If a second attempt at substitution is made during the resubmittal of the same product, then no more reviews of that product will be performed without direct compensation to the Engineer being paid for the additional services required for the third review and any further reviews.

C. All submittals shall be submitted and returned electronically.

D. Submittals will not be accepted for review unless they:

1. Comply with the requirements of Division 1.
2. Include complete information pertaining to all appurtenances and accessories.
3. Are submitted as complete packages which pertain to all related items in Division 22. Separate packages shall be submitted as follows:
    a. All plumbing equipment, piping, specialties, and components
    b. All plumbing fixtures
4. Are properly marked with equipment, service or function identification as related to the project and are marked with pertinent specification paragraph number.

E. Submit catalog information, factory assembly drawings, field installation drawings and certifications as required for complete explanation and description of all items of equipment. The submittal data shall provide ample, unquestionable compliance with the Contract Documents.

F. Review of submittals shall not be construed as authorizing any deviations from the plans and specifications unless such deviations are clearly identified and separately submitted in the form of a letter that is enclosed with the submittals.

G. Submittals are required on all manufactured equipment, especially energy consuming equipment. Submittals shall include, but are not limited to, the following items of equipment:

1. Piping and Piping Specialties
2. Insulation
3. Water Heaters
4. Plumbing Fixtures
5. Firestopping Products and Applicable UL Firestop Details

3.03 EXCAVATION, TRENCHING AND BACKFILLING

A. Perform all excavation, trenching and backfilling for underground work under this Division 22. During excavation, the excavated material shall be piled back from the banks of the trench to avoid overloading, slides or cave–ins. Do not exceed the angle of repose unless written approval is obtained in advance from the Architect for shoring, bracing or other alternate excavation methods. All excavated material not used for backfilling shall be removed from the building and disposed of as indicated or directed by the Architect. Take measures to prevent surface water from flowing into trenches and other excavations and any water accumulating therein shall be removed by pumping. All excavation shall be made by open cut. Tunneling shall not be allowed.

B. The bottom of all trenches shall be evenly graded to provide firm support and an even bearing surface. Pipe shall be laid on firm soil, laid in straight lines and on uniform grades. Provide bell holes so that the barrel of the pipe rests evenly on the bottom of the trench along the entire length of the pipe.

C. Pipe shall be inspected and tested prior to backfilling. Trench shall be handfilled to a minimum of 12" above the top of pipe with suitable earth (free of rocks, trash, large clods and organic material) and compacted to a minimum 95% proctor. After the first layer is completed, subsequent layers shall be filled and compacted the same as the first layer. Settling the backfill with water shall not be permitted.

3.04 INSTALLATION REQUIREMENTS

A. All equipment shall be installed in strict conformance with the recommendations of the Equipment Manufacturer, as indicated on the Drawings, and as specified.

B. Provide installation manuals for each piece of equipment. Submit in separately bound volumes after review of submittals.

C. Provide supplementary steel framing and welded steel equipment support stands as required for proper hanging and support of the plumbing systems. Steel angles, channels and tubing utilized for such framing shall be selected for a maximum deflection of 1/360th of the span.

D. All roof curbs shall be a minimum of 12" high and selected for the various roof pitches. Curbs installed on roofs having pitches of not more than 1/4" per foot may be standard curbs shimmed level with steel channels or Zs to provide suitable support and flashing surfaces.

3.05 CLEANING, LUBRICATION AND ADJUSTMENT

A. The exterior surfaces of all plumbing equipment, piping, conduit, etc., shall be cleaned and free of all dirt, grease, oil, paint splatter, and other construction debris.

B. Bearings that require lubrication shall be lubricated in strict accordance with the manufacturer's recommendations.

C. All control equipment, valves, equipment settings, pressure tanks, etc. shall be adjusted to the settings required for the performance specified.

D. All materials, equipment, etc. subject to weather, corrosion, dust, debris, water etc. to be installed or utilized for the project shall be fully protected. This is inclusive of piping and duct openings and internal fan ventilation intakes and discharges. This Division's scope includes protection and remediation of any and all Division materials, etc. including cleaning, vacuuming, dusting, etc. required for a clean system and operation. Insulation and equipment with electrical connections subject to water shall be replaced in their entirety. Coordinate with all other trades and schedules.

3.06 PAINTING

A. All uncoated and uninsulated steel surfaces exposed to sight inside the building, such as piping, equipment hangers and supports, which are not provided with factory prime coat or galvanizing, shall be cleaned and painted with one coat of rust inhibiting primer. In addition, all surfaces in finished spaces shall also be painted with two coats of finish paint in a color selected by the Architect.

B. Steel items exposed outside the building, such as equipment supports, uninsulated piping and hangers which are not factory painted or galvanized shall be cleaned and painted with one coat of rust inhibiting primer and two coats of asphaltic base aluminum paint. Insulated steel pipes outside the building shall be cleaned and painted with one coat of rust inhibiting primer before installing insulation.

C. Factory painted equipment that has been scratched or marred shall be repainted to match the original factory color.

3.07 PIPING LEAK TESTING

A. Sanitary, waste, storm, and vent piping shall be tested with water before installing fixtures. Water test shall be applied to the system either in its entirety or to the individual sections. Each opening except the highest opening of the section under test shall be plugged, and the section shall be filled with water and tested with a head of water of at least ten (10) feet above the highest point in the system. The water shall be kept in the portion under test, for at least thirty (30) minutes; no drop in the water level will be acceptable.

B. The water piping systems shall be tested at a minimum pressure of 125 psi, or 1.5 times the system operating conditions, whichever is greater, and proved tight at this pressure for not less than thirty (30) minutes or longer if required to permit inspection of all joints. No loss in pressure will be permitted.

C. All compressed air piping shall be tested pneumatically and proved tight at a pressure of not less than 100 psi for a period of not less than two (2) hours. No loss in pressure will be permitted.

D. All leaks shall be repaired by tightening, remaking joints, or replacing pipe and fittings. Caulking of joints shall not be permitted.

E. See specification section 23 11 23 for testing requirements of natural gas and liquid propane gas piping. System shall be part of Division 22 scope unless otherwise arranged within the Contract. Coordinate with Division 23.

3.08 RECORD (AS–BUILT) DRAWINGS

A. At the completion of the project, provide a set of reproducible prints to the Architect which reflects all changes, deviations and revisions made to the original design documents. Locations of all underground piping and utilities shall be clearly shown and dimensioned from permanent reference points such as building column lines. Record drawings shall be produced in electronic format compatible with AUTOCAD. Furnish electronic copies of all drawings in dwg. format, and two (2) bond copies of all drawing sheets. As–Builts for electronic incorporation by the Design Team, as applicable, shall be redline mark–ups of the Construction Documents.

3.09 OPERATING AND MAINTENANCE MANUALS AND INSTRUCTIONS

A. Complete operating and maintenance manuals shall be provided to the Owner. Four copies shall be provided. Each copy shall be bound in a separate 3–ring, loose leaf notebook. Operating instructions shall be provided for each plumbing system, and shall each include a brief system description, a simple schematic and a sequence of operation. Operating and maintenance instructions shall be provided for each piece of equipment. A control system wiring diagram shall be included in each operating and maintenance manual.

B. Prior to final acceptance or beneficial occupancy, provide the services of a Competent Technician for not less than one (1) day to instruct the Owner in the operation of the plumbing systems.

3.10 MINIMUM HANGER SPACING

A. Pipe hangers or supports shall be provided within 18" of each horizontal fitting, equipment connection, valve, etc. and within 18 "of the centerline of horizontal or vertical changes in direction summing to 90° or more. Specific attention is called to turns into vertical risers.

B. Piping supports shall be provided, at a minimum, in accordance with the greater of the below or code minimum. Where the below or code does not address support for specific piping, supports shall be in accordance with manufacturer's requirements.

Piping Material	Max. Horz. Spacing	Max. Vert. Spacing
Cast–iron pipe	5'	15'
Copper pipe	12'	10'
Copper tubing ≤ 1–1/4 " dia.	6'	10'
Copper tubing ≥ 1–1/2 " dia.	10'	10'
CPVC pipe ≤ 1 " diameter	3'	10'*
CPVC pipe ≥ 1–1/4 " dia.	4'	10'*
PVC pipe	4'	10'*
PEX	32"	10'*

Midstory guide required for piping 2" diameter and smaller

C. Riser clamps shall be provided at each floor penetration. For pressurized piping systems, provide vibration isolation at all riser clamps with two (2) pad–type mountings consisting of a minimum 3/8" thick ribbed or waffled elastomeric pads bonded between minimum 16–gauge galvanized steel separator plates. Pads shall be sized for a deflection of 0.12" to 0.16". Pads shall be minimum 3"x3" square.

3.11 WARRANTY

A. All work provided under this Division 22 shall be subject to a minimum one year warranty. The warranty shall include prompt repair or replacement of equipment or system failures and shall include all parts and labor. In addition, all compressors shall carry an additional four year parts–only warranty. Extended warranties shall be provided on all other equipment so specified in other Sections.

3.12 OWNER TRAINING

A. Owner training shall be provided for all systems and equipment and shall include the following:

1. 8–hours of training for each type of equipment
2. 16–hours for overall system operational training

B. A training summary and schedule shall be submitted to the Architect for approval within ninety (90) days of the date of substantial completion.

C. Training timing will vary and shall be assumed to include multiple sessions as required by the Owner.

3.13 BID REQUIREMENTS

A. The Contractor shall include all systems, equipment and accessories shown on the plans and specifications.

B. The Contractor is responsible for providing all Contract Documents to all SubContractors. All systems, equipment and accessories shall be included in the bid, whether shown on the SubContractor applicable plans or other design documents.

C. Should any discrepancy occur in the Contract Documents, the Contractor shall provide a request for clarification prior to bid or note the discrepancy in the bid and provide an appropriate cost allowance in the bid.

D. The Contractor shall acknowledge that the Contract Documents are diagrammatic and shall provide all systems, equipment and accessories required for a complete facility. Any areas that appear to be void of systems or inappropriate systems shall be noted in the bid. No post bid change order shall be considered for areas or discrepancies not noted in the bid.

E. All installation coordination and means and methods and labor and materials required for proper system installation shall be included.

F. These requirements are in addition to bid procedures and requirements of the RFP or general specifications.

END OF SECTION

SECTION 22 07 00

PLUMBING INSULATION

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section is governed by the Common Work Results for Plumbing Section 22 05 00.

B. This Section 22 07 00 and the accompanying drawings cover the provision of all labor, equipment, appliances, and materials and performing all operations in connection with the insulation of the plumbing systems as specified herein and as shown. These systems include, but are not limited to, the following:

1. Sanitary waste and vent systems
2. Domestic water systems

1.02 INTENT

A. It is the intent of this Section of the specifications to provide complete and operable plumbing systems complete with insulation, which are free of unreasonable noise, vibration and sweating, and fabricated so as to fit the space allotted.

B. The word "piping" is defined to mean all piping, fittings, joints, hangers, coatings, valves, cocks, insulation and accessories necessary for the plumbing systems described, shown and specified.

1.03 ACCEPTABLE MANUFACTURERS

A. Insulation products shall be as manufactured by Owens Corning, Knauf, Manville, Certainteed, Dow, Armacell, or Armstrong.

2.0 PRODUCTS

2.01 PLUMBING INSULATION

A. All pipe insulation products shall have a permanent composite insulation, jacket and adhesive fire and smoke hazard rating as tested by procedure ASTM–84, NFPA 255 and UL 723 not exceeding Flame Spread 25 or Smoke Developed 50.

B. Preformed insulation for all domestic hot water piping shall be minimum 1–1/2" thick for piping less than or equal to 1–1/2" diameter, 2" thick for piping above 1–1/2" in diameter, preformed fiberglass pipe insulation with white all–service jacket. All longitudinal joints shall be lapped, self–sticking type with all butt joints, tears, etc. sealed with a matching white vapor barrier tape. Elbows shall be mitered or may be Zeston covers filled with equivalent fiberglass insulation. The maximum conductivity (k–value) of the insulation shall be 0.23 BTU per inch/h·ft^2·°F at 75°F.

C. Preformed insulation for all domestic cold water piping, except trap primer piping underground, shall be minimum 1" thick, preformed fiberglass pipe insulation with white all–service jacket. All longitudinal joints shall be lapped, self–sticking type with all butt joints, tears, etc. sealed with a matching white vapor barrier tape. Elbows shall be mitered or may be Zeston covers filled with equivalent fiberglass insulation. The maximum conductivity (k–value) of the insulation shall be 0.23 BTU per inch/h·ft^2·°F at 75°F.

D. Insulation shall be continuous over all valve bodies, fittings, and wall and floor penetrations. Do not insulate unions on hot water piping; nor instruments, gauges, valve handwheels, etc. on any piping.

E. Closed–cell insulation shall be provided over all piping called to have insulation that is installed below ground. Closed–cell piping insulation shall match the thicknesses for above ground piping, 25/50 Armaflex or Rubatex. All glues and coatings shall be products of the same manufacturer as the insulation. The insulation shall be installed by the slip–on method; slitting of the insulation is prohibited and shall be cause for rejection.

3.0 EXECUTION

3.01 ARRANGEMENT

A. Follow the general piping layout, arrangement, schematics and details. Provide all offsets, vents, drains and connections necessary to accomplish the installation. Fabricate piping accurately to measurements established at the project site to avoid interference with ductwork, other piping, equipment, openings, electrical conduits and light fixtures. Make suitable provision for expansion and contraction with expansion loops and offsets.

3.02 INSULATION INSTALLATION

A. Provide blanket insulation over all horizontal roof drain piping which is within the building and including the vertical risers to the roof drains and the underbody of the roof drains.

1. Blanket insulation shall be wrapped around the piping and underbodies of roof drains. Ends of insulation shall overlap at least 2" and bottom of insulation shall overlap pipe insulation at pipe connection to roof drain at least 3". Adhere insulation to roof drain underbodies with 100% coverage of fire retardant adhesive and tape all joints with 3" wide foil reinforced kraft tape.

B. Provide insulation over all above ground hot and cold water piping, except that no insulation is required on cold water lines installed inside interior plumbing chases (those chases with no exterior wall). In addition, no insulation is required for cold water piping outside the building vapor barrier and designed to be drained down for freeze–protection, such as parking deck hose bibbs for washdown.

1. All joints and tears shall be sealed with matching white vapor barrier tape

C. See specification 23 07 19 for HVAC piping insulation requirements.

END OF SECTION

SECTION 22 10 00

PLUMBING PIPING

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section is governed by the Common Work Results for Plumbing Section 22 05 00.

B. This Section 22 10 00 and the accompanying drawings cover the provision of all labor, equipment, appliances, and materials and performing all operations in connection with the construction of the plumbing systems as specified herein and as shown. These systems include, but are not limited to, the following:

1. Sanitary, waste, and vent systems
2. Domestic water systems

C. Provide all final plumbing connections to all equipment furnished by Owner.

D. Provide isolation valve and reduced pressure backflow preventer or vacuum breaker at the service entrance and at those connections (especially to kitchen equipment) required by local plumbing code.

E. Note: See specification Section 23 11 23 for natural gas piping. Natural gas piping shall be part of this Division's scope unless otherwise coordinated. Coordinate with all trades.

1.02 INTENT

A. It is the intent of this Section of the specifications to provide complete and operable plumbing systems as shown and specified which are free of leaks, properly vented, free of unreasonable noise, vibration and sweating, and fabricated so as to fit the space allotted and to exhibit a minimum resistance to fluid flow.

B. The word "piping" is defined to mean all piping, fittings, joints, hangers, coatings, valves, cocks, insulation and accessories necessary for the plumbing systems described, shown and specified.

1.03 GENERAL REQUIREMENTS

A. Provide all reducing fittings, flanges, couplings and unions of the size and type of material to match the piping connections at each fixture, piece of equipment, valve and accessory.

B. Union joints, couplings or flanges shall be provided in each pipe line connected to each piece of equipment, fixture and elsewhere as indicated and specified. Unions shall match the piping system in which they are installed.

C. Unions or flanges shall be provided between all copper to steel connections. These unions shall be dielectric, insulating type.

D. All changes in direction and branches shall be made with manufactured fittings.

E. The use of offset–type reducers is strictly prohibited in any piping system.

F. In all water piping systems, changes in horizontal pipe line sizes shall be made with eccentric reducers installed flat on top for proper air venting. Reducing tees, reducing elbows and concentric reducers shall only be allowed in water piping systems for changing pipe sizes in vertical risers and for making connections to equipment and accessories from vertical risers.

G. All pipe joints shall be cut square and all burrs shall be removed.

H. Open ends of pipe lines not currently being handled shall be plugged during installation to keep dirt, water and foreign material out of the system.

I. Sanitary waste and storm drainage piping shall slope down in the direction of flow as shown on the drawings or as prescribed by Code, but not less than 1 percent.

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ISSUED FOR CONSTRUCTION

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUED FOR CONSTRUCTION	02/19/2025

Christopher Lyles, P.E.
License # PE.0059116

BWA JOB # 2025–0073

Owner Approval

27MSHF.0030.000 — Job No.

AS INDICATED — Scale

SPECIFICATIONS - PLUMBING

P-0.3

J. All vents through roof (VTRs) shall be offset just below the roof such that their termination points are at least 15 ft from any outside air intake of any HVAC unit; special attention is called to packaged rooftop and dedicated make-up air units.

K. Trap primers shall be provided at all floor drains, floor sinks, trench drains, and hub drains except trap primers may be omitted where drain routes to the storm system. Route water piping from nearest cold water line and as allowed by code.

L. All piping, valves, and fittings shall be provided by a domestic Manufacturer and manufactured in the USA.

2.0 PRODUCTS

2.01 SANITARY WASTE AND VENT SYSTEMS

A. All underground sanitary waste and vent piping shall be PVC, DWV Solid Wall Schedule 40 with socket-type, solvent welded joints in sizes up to 12"; All PVC piping shall be installed in accordance to ASTM D2321.

B. All aboveground sanitary, waste, and vent piping shall be PVC except that sanitary, waste and vent piping located within return air plenums, including throughout future tenant space, shall be hubless cast iron soil pipe. Piping shall be DWV Solid Wall Schedule 40 with socket-type, solvent welded joints in sizes up to 12".

1. Above ground installation of PVC piping shall be specifically indicated on the shop drawings or submitted in a confirming RFI, as applicable.
2. Piping aboveground shall match the requirements for the underground piping as above.
3. Sanitary, waste, and vent piping less than or equal to 2.5" may be copper DWV. Piping shall meet ASTM B 75, B 88, B 251, and B 306.
4. Drain piping from equipment, such as kitchen warewashers, pot sinks, etc. with high temperature discharge shall be Type L hard drawn copper tubing with wrought copper fittings and soldered joints.
5. Sanitary and waste piping in pressurized piping systems, such as for elevator sump pumps or sanitary sump pumps, shall be copper DWV with wrought copper fittings. All joints shall be brazed

C. Joints on hubless cast iron soil pipe shall be made with neoprene couplings and stainless-steel clamps. Gaskets shall conform to ASTM C 564. Couplings and gaskets shall be produced by the same manufacturer and shall be installed in accordance with the manufacturer's recommendations, including band tightening sequence and torque. All couplings shall be manufactured to the CISPI 310 standard, ASTM C 1277, ASTM C 150, FM Standard 1680 Class I and certified by NSF International. Coupling shall be as follows:
1. 1 ½" to 3" – Two (2) stainless steel bands
2. 4" to 8" – Four (4) stainless steel bands
3. 3. 10" to 15" – Heavy duty coupling with six (6) stainless steel bands. Heavy duty couplings shall conform to ASTM C 1540.

D. Cleanouts shall be provided at the locations indicated and, as a minimum, where required by Code. Floor cleanouts shall be a minimum of 4" and shall be complete with a flush plug and removable, scoriated bronze floor plate. Provide carpet buttons in carpeted areas. Wall cleanouts shall be threaded cleanout tees and plugs with polished stainless steel coverplate with centerset screw.

E. Floor drains in toilets and finished areas shall be JR Smith 2000 Series with 6" Type B square adjustable strainers finished in satin nickel bronze; or equal products by Josam or Zurn. Provide vandalproof secured tops.

F. Floor drains in mechanical rooms and unfinished concrete floors shall be JR Smith 2131 Series with round 11 3/4" cast iron grate, sediment bucket and deep-seal P-trap; or equal products by Josam or Zurn. Provide vandalproof secured tops.

G. Hub drains (HD) shall be made with a reducer fitting with opening at least one nominal size larger than the connected piping as scheduled. HDs shall be sized to receive all discharges without splashing.

H. Type "K" floor drains in kitchens and food service areas shall be JR Smith 2000 Series with sediment bucket and 8" type "B" square adjustable strainer finished in nickel bronze; or equal products by Josam or Zurn. Provide vandalproof secured tops.

I. Type "R" floor drains in kitchens and food service areas shall be JR Smith 2000 Series with sediment bucket and 7" type F37 round extended rim strainer finished in nickel bronze; or equal products by Josam or Zurn. Provide vandalproof secured tops.

J. Floor sinks (FS) in kitchens and food service areas shall be JR Smith 3007-NB Series with 6" deep type 304 stainless steel body, removable stainless steel sediment bucket, 12 1/2" square nickel bronze top and non-puncturing flashing clamps or equal products by Aco, Josam, or Zurn. Grate configuration shall be coordinated with Kitchen Equipment Consultant to ensure proper opening for equipment served; otherwise provide a full grate with openings cut out for equipment served.

2.03 DOMESTIC WATER SYSTEM

A. All underground copper branch lines (1/2" and 3/4" only) shall be continuous lengths of soft Type K copper tubing with no joints allowed underground.

B. Aboveground domestic water piping shall be high-density cross-linked polyethylene (PEX-a). Piping shall conform to ASTM F876, ASTM F877, CSA B137.5, NSF/ANSI 14, and NSF/ANSI 61 and be rated for continuous pressure of 100 psi at 180°F. Piping shall have minimum installed bend radius in accordance with manufacturer's recommendations. Piping shall be co-extruded with UV resistance, rated for a minimum of 3 months. Piping shall be by Rehau, Uponor, or Viega.
1. Fittings shall be cold-expansion compression-sleeve type
2. Fittings shall be from the same manufacturer as the piping
3. All compression sleeves shall be made from PEX-a
4. Fitting and tube shall have ASTM F876 standard listing and certification
5. Fitting certifications shall match piping certifications
6. Supports shall be in accordance with manufacturer's recommendations
7. Systems shall not be installed where subject to UV exposure, including from interior lighting
8. Installers shall attend the Manufacturer's installation training class and shall include training certificate(s) with the piping material submittal

C. All valves in potable water systems shall be "lead-free" type.

D. All valves 3/4" and smaller shall be "full-port" type, and greater than 3/4" may be "reduced-port" type.

E. Ball valves:

1. Valves 2 inch and smaller shall be two piece bronze body, full port with solid, smooth bore chrome plated brass ball, meeting MSS-SP110 and rated for no less than 300 psi. Seats shall be reinforced TFE with Teflon packing ring and threaded adjustable packing nut. Valves on insulated lines will be provided with stem extensions to provide clearance for two inches of pipe insulation. Valves to be Apollo Valves 77C, Hammond/Milwaukee UP8301, or Watts B-6080.

2. Valves larger than 2 inch and up to 4 inch shall be two piece bronze body, standard port with solid, smooth bore chrome plated brass ball, meeting MSS-SP110, and rated for no less than 300 psi. Seats shall be reinforced TFE (or TFM for 4") with Teflon packing ring and threaded adjustable packing nut. Valves on insulated lines will be provided with stem extensions to provide clearance for two inches of pipe insulation. Valves to be Apollo Valves 70-100, Hammond/Milwaukee UP8501, or Watts B-6000.

F. Balancing valves:

1. Valves shall be NSF/ANSI 61/372 certified and suitable for potable water applications. Valve shall be suitable for the greater of 125 psig pressure and 40°F to 250°F temperature or the system's operating conditions. Valve shall provide positive shut-off and be rated for 300 psig. Each balancing valve shall be equipped with two gauge taps with check valves and drip caps. Provide preformed insulation to encase valve assembly in insulated piping.

2. Valves up to 3" shall have lead-free brass body, full-port ball constructed of 304 stainless steel, and shall have calibrated nameplate with memory stop. Balancing valves shall be Bell and Gossett Circuit-Setter Plus or equal by Nexus, FlowDesign, or Watts. After the test and balance is complete, provide to the Owner a differential pressure gauge to match the balancing valves. Autoflow valves are acceptable as a substitution provided the flow cartridge is replaceable and the flowrate is clearly and permanently labeled.

G. Backflow preventers at carbonated beverage machines shall meet ASSE 1022 UON and all other appliances shall meet ASSE 1024. Backflow preventers shall be approved by the AHJ. ASSE 1022 ports shall be piped with copper tubing to an indirect drain location. Backflow preventers at dishwashers shall meet ASSE 1020 unless otherwise noted. Other equipment and appliances shall be protected from backflow as required by Code and/or manufacturer's requirements.

H. Water connections to appliances shall be made with flexible copper tubing or commercial grade double-reinforced stainless steel braided hose, no less than 3/8" in size, or the connections size of the appliance, whichever is greater.

I. Water heater mixing valve shall be Leonard 210-LF or an approved equal with lead-free construction, vandal resistant adjustment cap, and integral inlet check valves. Mixing valve shall be sized by the Manufacturer for the fixture(s) serve.

J. Point of use mixing valves shall be Leonard 170-LF or an approved equal with lead-free construction, vandal resistant adjustment cap, and integral inlet check valves. Mixing valve shall be ASSE 1070 rated. Mixing valve shall be sized by the Manufacturer for the fixture(s) served. Mixing valve shall have no more than 0.25 gpm minimum flowrate required.

K. All water hammer arresters (WHA) shall be PDI Certified, Size A, B, C, D, E or F, as indicated for the fixture units served; Josam, JR Smith, Watts, or Zurn. WHAs that are not PDI Certified are disallowed. WHAs in potable water applications shall be lead-free.

L. Soldered joints shall be made with tin-antimony/silver solder. Solder containing lead shall not be permitted.

CC. Saddle valves and "T" fittings that rely on puncturing the piping main are disallowed.

DD. Thermometers and pressure gauges shall be products of Trerice, Weksler, or Weiss. Select all devices to operate within 20% of the midpoint of their scales under normal operating conditions. Gauges provided on pumps shall be compound type.

EE. Pressure and temperature (P&T) test plugs shall be constructed of brass with two (2) self-closing Nordel cores and be complete with cap and gasket. Plugs shall be as manufactured by Peterson or Lancaster. Provide a complete test kit to the Owner at the time of final inspection. Test kit shall be complete with pressure gauge, thermometer, probes and carrying case.

3.0 EXECUTION

3.01 ARRANGEMENT

A. Follow the general piping layout, arrangement, schematics and details. Provide all offsets, vents, drains and connections necessary to accomplish the installation. Fabricate piping accurately to measurements established at the project site to avoid interference with ductwork, other piping, equipment, openings, electrical conduits and light fixtures. Make suitable provision for expansion and contraction with expansion loops and offsets.

B. Water hammer arresters shall be installed at the top of each riser and on each fixture branch in accordance with Plumbing and Drainage Institute Standard WH201. WHAs shall also be installed at all water service to appliances with quick-closing valves, such as clothes washers, kitchen warewashers, icemakers, etc.

C. Cleanouts shall be provided at the base of all sanitary and storm risers and as required by code.

D. Fittings, unions, joints, couplings (including no-hub couplings), etc. shall not be within slabs.

E. All potable domestic water connections to equipment shall be provided with backflow prevention as required by the specification section and code.

F. Pressure gauges and thermometers called to be permanently installed shall be easily visible from a standing position on the ground.

3.02 UNDERGROUND WATER PIPING

A. All domestic water piping shall have a minimum cover of 3'-0", or below the frost line, whichever is deeper, except piping at least 20' from any exterior wall may be installed 3" or more below the bottom of the slab.

B. For water piping 2" and above, provide concrete thrust blocks at all changes of direction and secure all mechanical joints with restraining rods.

C. All copper water lines, or other material subject to corrosion, shall be protected from corrosion with a continuous plastic sheathing or coating and wrapping. This sheathing or coating and wrapping shall be extended 6" to 12" above finished floor. The protection shall be installed on the outside of any insulation required.

3.04 PIPING INSTALLATION ABOVE CEILINGS

A. All domestic hot and cold water piping installed above the insulated ceilings shall be installed just above (within 2") of the top of the finished ceiling with the building insulation over the piping to avoid freeze-up.

3.05 DISINFECTION

A. All domestic water piping installed under this Division shall be disinfected with chlorine before it is placed into operation. The chlorinating material shall be liquid chlorine conforming to Federal Specification BB-C-120 and shall be introduced to the system by experienced operators only. The chlorine solution applied to the piping sections or system shall contain at least fifty parts per million of available chlorine and shall remain in the sections or system for a period of not less than sixteen (16) hours. During the disinfection period, all valves shall be opened and closed at least four times. After the disinfection period, the chlorinated water shall be flushed from the system with clear water until the residual chlorine content is not greater than two-tenths parts per million (0.2 PPM). Submit certification to the Architect that the system was disinfected.

END OF SECTION

SECTION 22 30 00

PLUMBING EQUIPMENT

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this Section is governed by the Common Work Results for Plumbing Section 22 05 00.

B. This Section 22 30 00 and the accompanying drawings cover the provisions of all labor, equipment, appliances, and materials and performing all operations in connection with the construction of the water heating systems as specified herein and as shown. These systems include, but are not limited to, the following:

1. Water Heaters

2. Hot Water Circulator

1.02 GENERAL REQUIREMENTS

A. All plumbing equipment installed in locations with a water hardness of 25 grains per gallon or more, shall be resistant to corrosion. Where copper materials are in the water stream, it shall be Cupro-Nickel of not more than 90% copper.

B. All water heaters shall be NSF/ANSI 61 certified "lead free" for potable water service.

C. All water heaters shall have ASME rated temperature and pressure relief valve(s). Valve(s) shall be provided by the Manufacturer and sized for the discharge location noted in the plans.

D. All water heaters and tanks shall be glass-lined, 1600°F fired, with a working pressure of 150 psi, a test pressure of 300 psi, or the system pressure at the installation location, whichever is greater, and shall have magnesium anodes for electrolytic protection. Separate storage tanks may also be cement-lined. Tanks shall be ASTM stamped.

E. All water heaters shall meet or exceed the energy efficiency requirements of the latest version of ASHRAE 90.1.

F. All water heaters and pumps shall be UL approved and labeled, and be AGA certified where applicable.

G. All water heaters and pumps shall be NEMA rated appropriate for the installation location in which they are installed.

H. Water heater controls shall include an operating thermostat and manual reset high limit control for each heating element or burner. The safety high limit control shall prevent over heating in the event of a thermostat failure.

I. All controls shall be factory-wired and require no external power source.

J. Water heaters and tanks shall have drain with external access and hose end connection.

K. All water heater condensate lines shall be protected from freezing or shall be heat traced in accordance with specification 23 05 93.

L. See specification section 23 31 00 for combustion air and flue ductwork as applicable. Specific attention is called to coordination of scope with Division 23. Combustion air and flue system shop drawings, including any fans required, shall be submit for review and must be coordinated with Division 26.

M. The water heater shall be certified by an independent laboratory for Oxides of Nitrogen (NOx) of less than 10 ppm corrected to 3% 02 or better as required by the AHJ.

N. Where classified as a boiler by the Department of Labour, AHJ, or applicable codes, the system shall additionally meet all requirements. An emergency power off (EPO) switch shall be provided at locations required by the AHJ. The EPO(s) shall be accessible, clearly labeled, and shall shut-off all power to the boilers and cause the equipment to be disengaged. EPO(s) shall be coordinated with controls and Division 26, and shall be installed and wired under this scope.

2.0 PRODUCTS

2.01 TANKLESS GAS WATER HEATER

A. The instantaneous water heaters shall be as scheduled. Acceptable substitute manufacturers are (electric) Stiebel Eltron and Chronomite and (gas), AO Smith, Rinnai, Lochinvar, and Noritz, subject to substitution requirements.

B. The heater shall be fitted with an electronic, solid state temperature control system adjustable from 100°F to 140°F; set at 105°F.

C. The heating and control system shall be enclosed in an impact resistant and shockproof case of Cycolac KJW flame-retardant thermoplastic.

D. The water heaters shall be UL approved and labeled without the need for a T&P relief valve, or a T&P valve shall be provided and installed.

2.02 HOT WATER CIRCULATOR

A. Hot water circulator shall be as scheduled. Acceptable substitute manufacturers are B&G, Goulds, and Grundfos, subject to substitution requirements.

B. Hot water circulators used in potable water system shall be lead-free.

3.0 EXECUTION

3.01 INSTALLATION

A. The water heaters and accessories shall be installed in strict accordance with the manufacturer's recommendations and the Contract Documents.

B. All temperature and pressure relief valves shall be piped full size to an indirect waste such as the nearest floor drain, service sink, sink tailpiece, etc. Piping shall be in accordance with specification 22 10 00 for DWV services. Size shall be in accordance with manufacturer's requirements.

C. All water heaters shall have internal heat traps or shall have heat traps installed in the cold water and hot water piping. Instantaneous water heaters shall be provided with heat traps unless manufacturer documentation specifically allows exclusion.

D. Water heaters shall be completely encased in high density insulation of sufficient value to meet the energy efficiency standards of latest version of ASHRAE 90.1, or shall be factory insulated with non-CFC polyurethane closed-cell foam insulation. Provide removable insulation panels to maintain access to all required components.

E. All water heaters or boilers subject to condensing under normal steady-state operating conditions shall be provided and installed with accessory condensate neutralization kits.

3.02 WARRANTY

A. Provide 5-year limited warranty on all tanks and heat exchangers, and 1-year limited warranty on parts unless otherwise noted.

END OF SECTION

SECTION 22 40 00

PLUMBING FIXTURES

1.0 GENERAL

1.01 DESCRIPTION

A. All work specified in this section is governed by the Common Work Results for Plumbing Section 22 05 00.

B. This Section 22 40 00 and the accompanying drawings cover the provisions of all labor, fixtures, equipment, appliances and materials, and performing all operations in connection with the construction and installation of the plumbing fixtures and trim as specified herein and as shown.

C. All finishes shall be as selected by the Architect. Where the Architect does not have a preference, finishes shall be in accordance with this specification.

D. All exposed piping, valves, stops, P-traps, etc. shall be chrome-plated. Also, all exposed piping penetrations through walls, floors or ceilings shall be provided with chrome-plated cast brass escutcheons.

E. All P-traps shall be minimum 17-gauge brass.

F. All exposed P-traps subject to contact, such as those below wall-mounted lavatories, shall be provided with insulated covers as required.

G. Flush valves shall have non-hold open feature, vacuum breakers and cover cap on angle-type stop.

H. Provide all final connections to all equipment and fixtures furnished by Owner.

I. Unless otherwise specified in an individual fixture description, all enameled cast-iron and porcelain fixtures shall be white.

J. All lavatories and other hand-washing fixtures shall be provided and installed with ASSE 1070 point-of-use mixing valve on the hot water connection. Mixing valve shall be set to provide no more than 110°F hot water.

1.02 INTENT

A. It is the intent of this Section of the specifications to provide complete, operable, adjusted, clean plumbing fixtures as shown and specified, which are free of leaks, noise, air, vibration and waterflow fluctuations.

1.03 BASIS OF DESIGN

A. The basis of design is as outlined for each fixture in the 2.0 PRODUCTS subsection. Any proposed substitutions shall be proven equal in all respects to the equipment specified as the basis of design.

1.04 ACCEPTABLE MANUFACTURERS

A. Acceptable fixture manufacturers for each type of fixture is as follows:

1. Water Closets – American Standard, Kohler, Sloan, and Zurn

2. Urinals – American Standard, Kohler, Sloan, and Zurn

3. Manual Flushvalves – American Standard, Kohler, Sloan, and Zurn

4. Automatic Flushvalves – American Standard, Kohler, Sloan, TOTO, and Zurn

5. Lavatories – American Standard, Bradley, Crane, Kohler, Sloan, and Zurn.

6. Lavatory Faucets – American Standard, Bradley, Chicago, Delany, Grohe, Kohler, Sloan, TOTO, and Zurn

7. Breakroom/Kitchen/Pantry/Etc. Sinks – American Standard, Elkay, Grohe, Just, and Kohler

8. Breakroom/Kitchen/Pantry/Etc. Faucets – American Standard, Chicago, Delta, Elkay, Just, Kohler, and Zurn

9. Service and Laundry Sinks – Fiat, Kohler, Mustee, ProFlo, and Stern-Williams

10. Service and Laundry Faucets – American Standard, Delta, Elkay, Fiat, Kohler, T&S Brass, Speakman, and Stern-Williams

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MILKSHAKE FACTORY
DENVER, CO

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SUITE C
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ISSUED FOR CONSTRUCTION

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUED FOR CONSTRUCTION	02/19/2025

Christopher Lyles, P.E.
License # PE.0059116

BWA JOB # 2025-0073

Owner Approval

27MSHF.0030.000 — Job No.

AS INDICATED — Scale

SPECIFICATIONS - PLUMBING

P-0.4

2.0 PRODUCTS

REFER TO THE PLUMBING FIXTURE SCHEDULE FOR PLUMBING FIXTURE SPECIFICATIONS.

3.0 EXECUTION

3.01 INSTALLATION

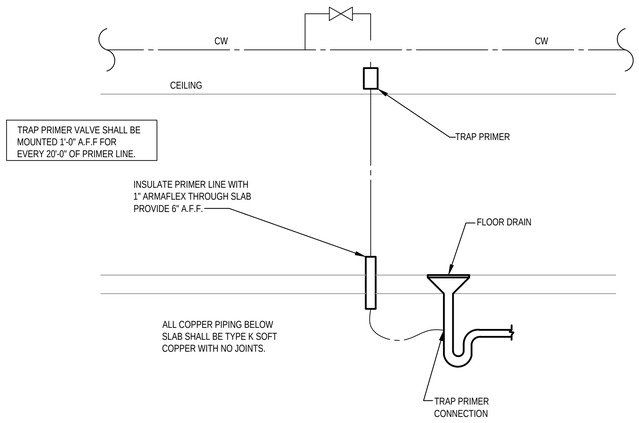
A. Units shall be installed as indicated and in conformance with the manufacturer's recommendations. Coordinate the actual units to be provided with all trades.

B. All plumbing fixtures shall be free of leaks, provided completely finished, trimmed, adjusted, cleaned and ready for use. They shall be properly secured to the structure by the use of thru–bolting, backplates, carriers, expansion shields (for floor mounting only) or toggle bolts.

C. Wall hung fixtures supported on chair carriers shall be bolted to the floor slab. Carefully coordinate space requirements and fixture mounting height requirements with supports being furnished.

D. Fixtures supported with wall hangers on masonry chase walls shall be fastened to the wall with not less than 3/8" bolts which shall pass through the wall and through a 1/4" x 4" wide steel backplate on the unfinished chase wall side.

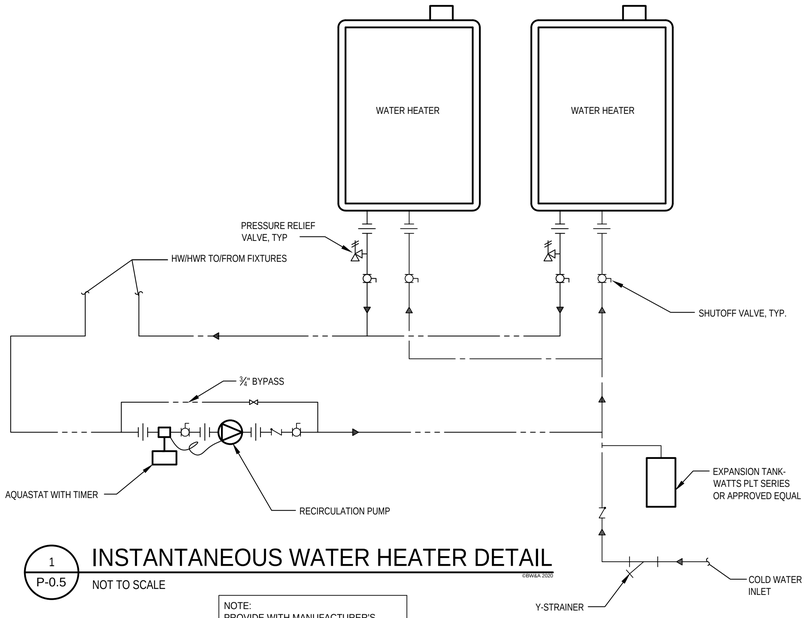
E. Where fixtures are hung on single masonry walls without a pipe chase behind, they shall be mounted with 3/8" toggle bolts.



2 P-0.5 FLOOR DRAIN TRAP PRIMER PIPING SCHEMATIC

NO SCALE

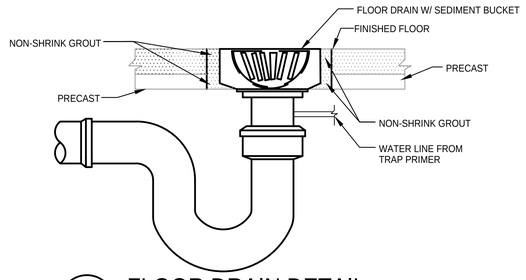
REFER TO SPECIFICATION SECTION 15400 FOR ADDITIONAL INFORMATION.



1 P-0.5 INSTANTANEOUS WATER HEATER DETAIL

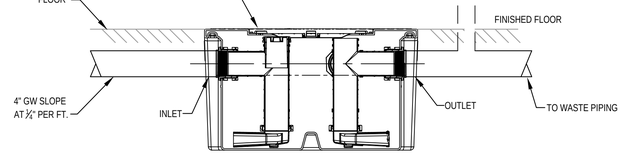
NOT TO SCALE

NOTE:
PROVIDE WITH MANUFACTURER'S WALL BRACKET AND MOUNT WATER HEATERS AS HIGH AS POSSIBLE ON WALL ABOVE MOP SINK AND SHELVING



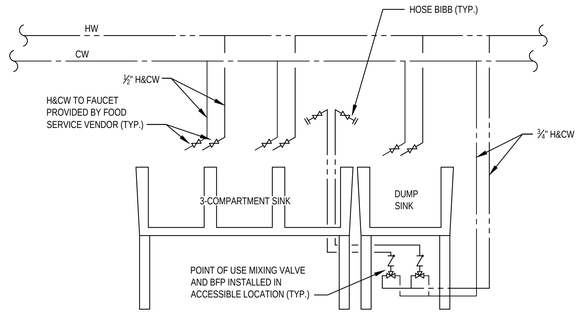
3 P-0.5 FLOOR DRAIN DETAIL

NO SCALE



5 P-0.5 GREASE TRAP DETAIL

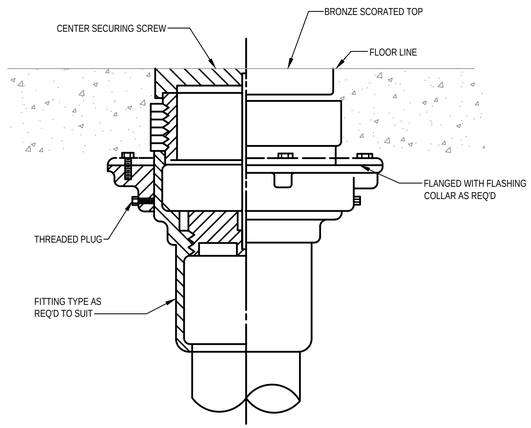
NO SCALE



6 P-0.5 DUMP SINK AND 3-COMPARTMENT FAUCET DETAIL

NO SCALE

COORDINATE FAUCET AND EQUIPMENT LOCATIONS WITH FOOD SERVICE AND OWNER PROVIDED EQUIPMENT



4 P-0.5 FLOOR CLEANOUT DETAIL

NOT TO SCALE

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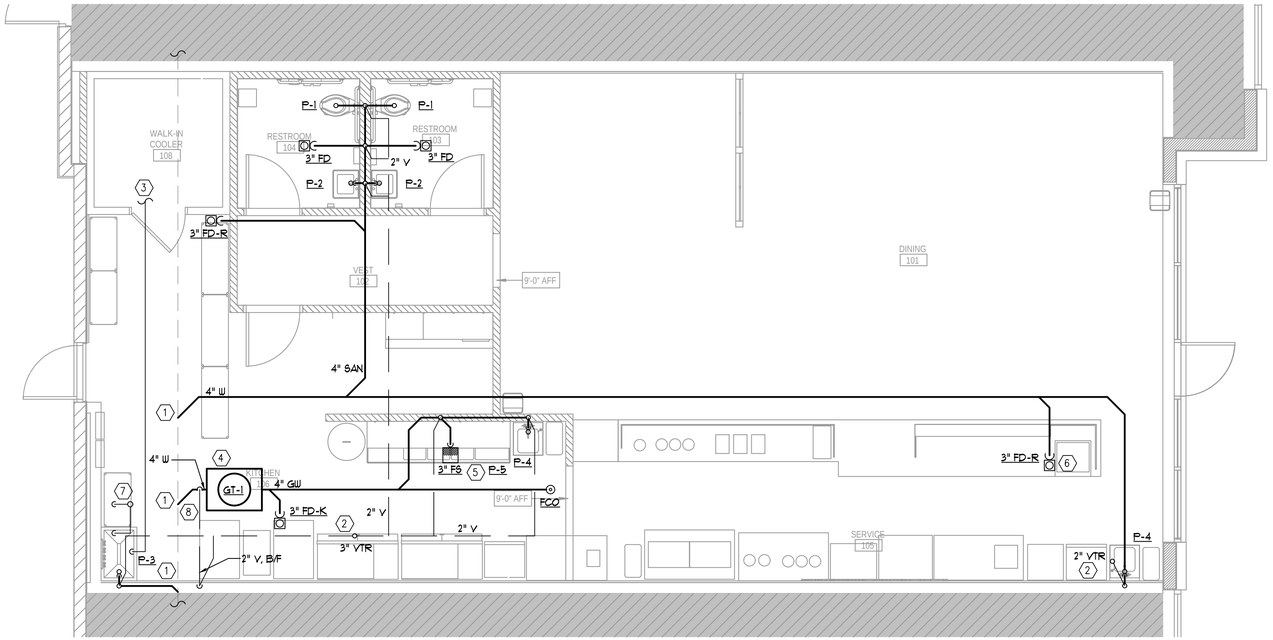
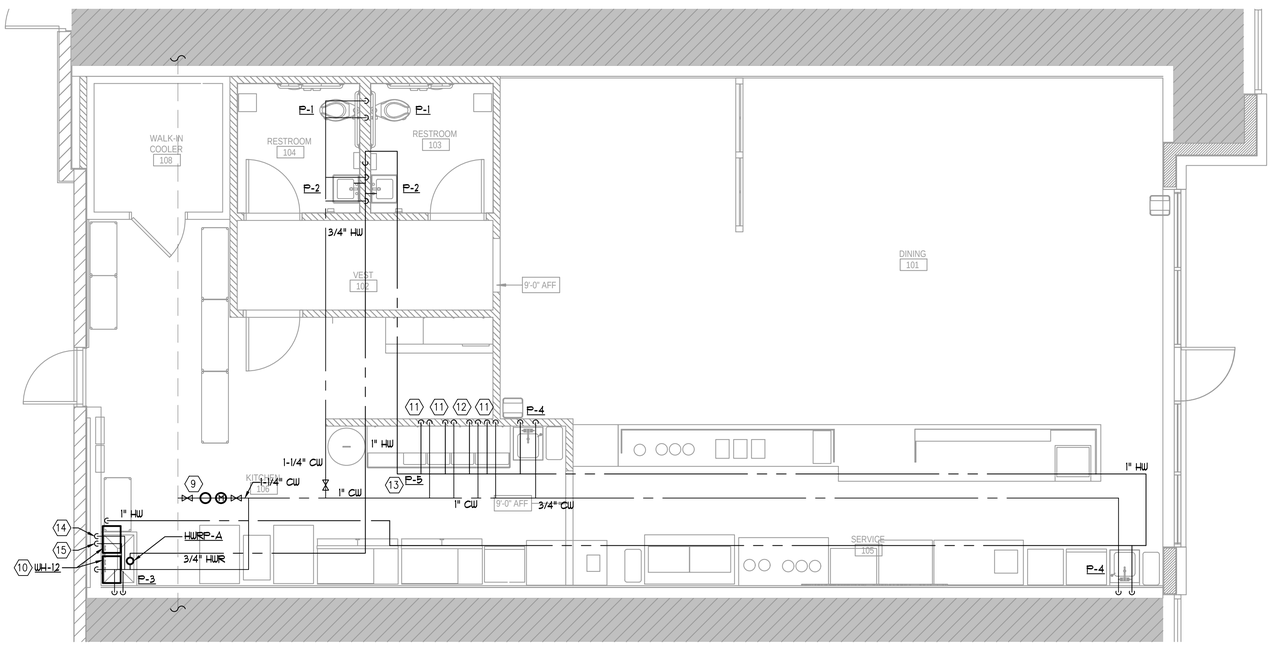
SPECIFICATIONS & DETAILS - PLUMBING

P-0.5



1 P-1.1 PLUMBING PLAN – SAN, WASTE & VENT
1/4"=1'-0"



2 P-1.1 PLUMBING PLAN – DOMESTIC WATER
1/4"=1'-0"

GENERAL NOTES
(APPLIES TO ALL SHEETS)

1. EXISTING UNDERGROUND PIPING WAS NOT LOCATED AND SHOULD BE FIELD VERIFIED PRIOR TO DEMO OR NEW INSTALLATON.
2. ALL HUB DRAINS SHALL BE READILY ACCESSIBLE.
3. ALL PLUMBING SHUTOFF VALVES SHALL BE COORDINATED WITH MECHANICAL EQUIPMENT AND SHALL BE EASILY ACCESSED FOR FUTURE OPERATION.
4. PIPE SUPPORT ATTACHMENT TO BRIDGING OR METAL ROOF DECK IS STRICTLY PROHIBITED. REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION.
5. ALL HORIZONTAL SANITARY, WASTE, & STORM PIPING SHALL BE SLOPED AT A MINIMUM ⅛" PER FOOT IN DIRECTION OF FLOW.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND COORDINATING WITH THE LOCAL UTILITY COMPANIES (GAS, WATER, SEWER, ELECTRICAL, TELEPHONE) TO INSURE TIMELY INSTALLATION OF UTILITY SERVICES TO THE POINTS SHOWN ON THE PLANS.
7. ALL SANITARY PIPING CONNECTING TO AND DOWSTREAM OF TOILETS SHALL BE 4" OR LARGER.
8. NO 90° HORIZONTAL TURNS SHALL BE USED IN THE SANITARY PIPING SYSTEM. ALL HORIZONTAL TURNS SHALL BE MADE WITH 45° ELBOWS WITH PIPE IN BETWEEN THE TWO ELBOWS.
9. CLOSELY COORDINATE OVERALL PIPING DIAMETER (INCLUDING INSULATION) WITH WALL DEPTH. NOTIFY ARCHITECT IF OVERALL PIPE DIAMETER EXCEEDS WALL DEPTH.
10. ALL GREASE WASTE PIPING SHALL BE SLOPED AT ¼" PER FOOT, UNLESS OTHERWISE NOTED, IN DIRECTION OF FLOW.

KEY NOTES
(APPLY THIS SHEET ONLY)

1. CONNECT NEW SANITARY/WASTE TO EXISTING 4" SANITARY. FIELD VERIFY EXACT LOCATION AND ELEVATION OF EXISTING LINE PRIOR TO INSTALLATION OF NEW SANITARY LINES.
2. COORDINATE LOCATION OF VENT TERMINATION WITH RTU OUTSIDE AIR INTAKE AND MAINTAIN MINIMUM 10' CLEARANCE.
3. PROVIDE INSULATED 3/4" COPPER PIPE FOR WALK-IN COOLER CONDENSATE ROUTED TO DISCHARGE INDIRECTLY AT FLOOR DRAIN.
4. CONTRACTOR SHALL CONFIRM GREASE INTERCEPTOR SIZING WITH AHJ AND INSPECTOR PRIOR TO INSTALLATION. VENT GREASE INTERCEPTOR PER MANUFACTURER'S RECOMMENDATIONS.
5. ROUTE INDIRECT WASTE LINES FROM 4-COMPARTMENT SINK TO DISCHARGE TO FLOOR SINK WITH AIR GAP.
6. FLOOR DRAIN TO BE PROVIDED WITH EXTENDED RIM AND RECEIVE CLEAR WASTE ONLY.
7. ROUTE SCH 40 PVC WATER HEATER COMBUSTION AIR INTAKE AND EXHAUST VENT TO ROOF AND PROVIDE CONCENTRIC TERMINATION. SIZE AND TERMINATE PER MANUFACTURER'S INSTALLATION MANUAL.
8. CONNECT 2" VENT TO WASTE LINE DOWNSTREAM OF GREASE INTERCEPTOR. VENT SHALL RISE MINIMUM 6" BEFORE TURNING HORIZONTAL AND ROUTING TO WALL. PROVIDE CLEANOUT.
9. CONNECT NEW 1-1/4" CW TO EXISTING CW OF EQUAL OR GREATER SIZE. PROVIDE NEW PRESSURE REDUCING VALVE AND SUB-METER. COORDINATE METER REQUIREMENTS WITH LANDLORD.
10. WATER HEATERS TO BE MOUNTED ON WALL AS HIGH AS POSSIBLE. COORDINATE LOCATION WITH ALL OTHER KITCHEN STORAGE AND EQUIPMENT. REFER TO DETAIL 1/P-0.5 FOR INSTALLATION.
11. PROVIDE ½" HW & CW TO FAUCET PROVIDED BY FOOD SERVICE VENDOR.
12. PROVIDE ½" HW & CW TO POINT-OF-USE MIXING VALVE AND THREADED HOSE CONNECTION OUTLET WITH VACUUM BREAKER.
13. REFER TO DETAIL 5/P-0.5 FOR DUMP SINK AND 3-COMPARTMENT FAUCET DETAIL.
14. PROVIDE ½" CW LINE TO CHEMICAL DISPENSER AT MOP SINK. PROVIDE RPZ BACKFLOW PREVENTER, WATTS LF009 OR EQUAL, UPSTREAM OF EQUIPMENT CONNECTION.
15. PROVIDE HOSE BIBB WITH VACUUM BREAKER ON WALL AT MOP SINK.

MilkShake EST FACTORY 1914

MILKSHAKE FACTORY
DENVER, CO

5324 WADSWORTH BLVD
SUITE C
ARVADA, COLORADO
80002

ISSUED FOR CONSTRUCTION

DELTA	ISSUE	DESCRIPTION	DATE
	1	ISSUED FOR CONSTRUCTION	02/19/2025

Christopher Lyles, P.E.
License # PE.0059116

BWA JOB # 2025-0073

Owner Approval

27MSHF.0030.000 — Job No.
AS INDICATED — Scale

PLUMBING PLAN

P-1.1