

Highland Plaza - Remodel

PHASE 2 Restroom Remodel

3760 So. Highland Drive
Salt Lake City, Utah 84106

August 18, 2008



State of Utah—Department of Administrative Services

DIVISION OF FACILITIES CONSTRUCTION
AND MANAGEMENT

4110 State Office Building/Salt Lake City, Utah 84114/538-3018

State of Utah
Department of Administrative Services

Division of Facilities
Construction & Management
4110 State Office Building
Salt Lake City, Utah 84114
Phone: (801) 538-3018
Fax: (801) 538-3267

<http://dfcm.utah.gov>

CREATED BY: Design Interface LLC



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BUILDING NAME:

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MARK	DATE	DESCRIPTION

ISSUE TYPE: Phase 2 - Construction Set

ISSUE DATE: August 18, 2008

DFCM PROJECT NO: 08123310

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SHEET TITLE

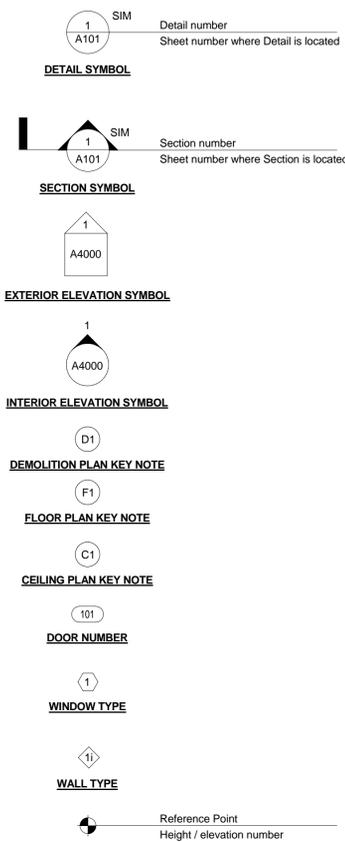
Cover
Sheet

SHEET NUMBER

G1000.2

SHEET 1 OF 23

SYMBOL KEY



ABBREVIATIONS

ADJ. ADJUSTABLE	MAT. MATERIAL
AFF. ABOVE FINISHED FLOOR	MAX. MAXIMUM
ALUM. ALUMINUM	MFR. MANUFACTURER
ASTM. AMERICAN SOCIETY FOR TESTING MATERIALS	MECH. MECHANICAL
	MIN. MINIMUM
	MISC. MISCELLANEOUS
	M.O. MASONRY OPENING
	MTL. METAL
BITUM. BITUMINOUS	N.I.C. NOT IN CONTRACT
BLDG. BUILDING	NO. NUMBER
B.O. BOTTOM OF	N.T.S. NOT TO SCALE
BRG. BEARING	
CER. CERAMIC	O.C. ON CENTER
C.J. CONSTRUCTION JOINT	O.D. OUTSIDE DIAMETER
CLG. CEILING	O.H. OVERHEAD
CLR. CLEAR	OPP. OPPOSITE
CMU. CONCRETE MASONRY UNIT	PART. PARTITION
COL. COLUMN	PL. PLATE
CONC. CONCRETE	PLUMB. PLUMBING
CONT. CONTINUOUS	PNTD. PAINTED
COORD. COORDINATE	PSI POUNDS PER SQUARE INCH
CPG. COPING	
DTL. DETAIL	R.D. ROOF DRAIN
DWG. DRAWING	REINF. REINFORCED
	REQ. REQUIRED
EA. EACH	RET. RETURN
E.J. EXPANSION JOINT	REV. REVISED
EL. ELEVATION	RM. ROOM
ELEC. ELECTRICAL	R.O. ROUGH OPENING
ELEV. ELEVATION	
EQ. EQUAL	SCHED. SCHEDULE
EXIST. EXISTING	SHWR. SHOWER
EXT. EXTERIOR	SHT. SHEET
	SIM. SIMILAR
F.D. FLOOR DRAIN	SPEC. SPECIFICATION
FDN. FOUNDATION	STD. STANDARD
F.E. FIRE EXTINGUISHER	STRUCT. STRUCTURAL
F.F. FINISH FLOOR	SUSP. SUSPENDED
FLR. FLOOR	
FTG. FOOTING	THRU. THROUGH
	T.O. TOP OF
GA. GAUGE	TYP. TYPICAL
GALV. GALVANIZED	
G.I. GALVANIZED STEEL	VERT. VERTICAL
GND. GROUND	VEST. VESTIBULE
GYP. BD. GYPSUM WALL BOARD	W/ WITH
	WO WITHOUT
H.C. HANDICAPPED	
HARD. HARDWARE	
H.M. HOLLOW METAL	
HORIZ. HORIZONTAL	
HT. HEIGHT	
I.D. INNER DIAMETER	
INSUL. INSULATION	
INT. INTERIOR	
LAV. LAVATORY	

CODE ANALYSIS

STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES
DESIGN AND CODE CRITERIA

Year	Year
International Building Code 2006	National Electrical Code 2005
International Mechanical Code 2006	Uniform Code for 2006
International Plumbing Code 2006	Building Conservation 2006
International Fire Code 2006	ADA Accessibility Guidelines 1991
International Energy Conservation Code 2006	

A. Occupancy and Group: **TYPE B (EXISTING BUILDING - NO CHANGE OF USE)**
Change in Use: Yes No Mixed Occupancy: Yes No
Special Use and Occupancy (e.g. High Rise, Covered Mall): _____

B. Seismic Design Category: _____ Design Wind Speed: _____ mph
N/A (EXISTING BUILDING)

C. Type of Construction (circle one):
I A I B I C I D I E I F I G I H I J I K I L I M I N I O I P I Q I R I S I T I U I V I W I X I Y I Z

D. Fire Resistance Rating - Requirements for the Exterior Walls based on the fire separation distance (in hours): **N/A (EXISTING BUILDING)**
North: _____ South: _____ East: _____ West: _____

E. Mixed Occupancies: **NO** Nonseparated Uses: _____

F. Sprinklers: **EXISTING BUILDING FULLY FIRE SPRINKLED**
Required: _____ Provided: _____ Type of Sprinkler System: _____

G. Number of Stories: **4** Building Height: _____

H. Actual Area:
Level 2 = 18,569 gross sq. ft.
Level 3 = 14,824 gross sq. ft.

I. Tabular Area:
J. Area Modifications: **N/A (EXISTING BUILDING)**

$$A_{net} = A_{gross} \left[\frac{A_{1,1}}{100} \right] \left[\frac{A_{1,2}}{100} \right] \dots \left[\frac{A_{1,n}}{100} \right]$$

$$I = 100 \left[\frac{F}{P} - 0.25 \right] \frac{W}{30}$$

b) Sum of the Ratio Calculations for Mixed Occupancies:
Actual Area / Allowable Area < 1

c) Total Allowable Area for:
1) One Story: _____
2) Two Story: A (2) _____
3) Three Story: A (3) _____

d) Unlimited Area Building: Yes No Code Section: _____

K. Fire Resistance Rating Requirements for Building Elements (hours) **N/A (EXISTING BUILDING)**

Element	Hours	Assembly Listing	Element	Hours	Assembly Listing
Exterior Bearing Walls			Floors - Ceiling Floors		
Interior Bearing Walls			Roofs - Ceiling Roofs		
Exterior Non-Bearing Walls			Exterior Doors and Windows		
Structural Frame			Shaft Enclosures		
Partitions - Permanent			Fire Walls		
Fire Barriers			Fire Partitions		
			Smoke Partitions		

L. Design Occupant Load:
Level 2 = 18,569 gross sq. ft. / 100 = 186 occupants
Exit Width Required = 37'
Exit Width Provided = 12' (existing)

Level 3 = 14,824 gross sq. ft. / 100 = 148 + 124 from Level 2 = 272 occupants
Exit Width Required = 55'
Exit Width Provided = 18' (existing)

M. Minimum Number of Required Plumbing Facilities: **N/A (EXISTING BUILDING)**
a) Water Closets - Required (m) _____ (f) _____ Provided (m) _____ (f) _____
b) Lavatories - Required (m) _____ (f) _____ Provided (m) _____ (f) _____
c) Bath Tubs or Showers: _____ Service Sinks: _____
d) Drinking Fountains: _____

FOOTNOTES:
1) In case of conflict with the U.S. Department of Justice Federal Registers Parts 1 through 3, ADA Guidelines and specific reference to the International Building Code Accessibility Chapters, the more restrictive requirement shall govern.
2) Additional Code Information shall be provided at the discretion of the Building Official for Complex Buildings. Including, but not limited to:
a) High Rise Requirements.
b) Aslume.
c) Performance Based Criteria.
d) Means or Egress Analysis.
e) Fire Assembly Location Sheet.
f) Exterior and Interior Accessibility Route.
g) Fire Stopping, including Tested Design Number.

INDEX OF DRAWINGS

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G1001.2	Index of Drawings, Symbols and Abbreviations
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AE102.2	Level 3 - Toilet Room Plans - Phase 2
AE201.2	Level 2 - Ceiling Plans - Phase 2
AE202.2	Level 3 - Ceiling Plans - Phase 2
AE400.2	Interior Elevations - Phase 2
AE600.2	Schedules and Details - Phase 2
M001.2	Mechanical Legend, Schedules & Details
M101.2	Level 2 - Toilet Room Mechanical Plan
M102.2	Level 3 - Toilet Room Mechanical Plan
M201.2	Mechanical Notes
P001.2	Plumbing Legend, Schedules & Details
P101.2	Level 1 - Plumbing Plan
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E001.2	Electrical Legend and Schedules and Details
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E103.2	Level 3 - Toilet Room Electrical Plan
E201.2	Electrical Notes
E202.2	Electrical Notes (Continued)

State of Utah

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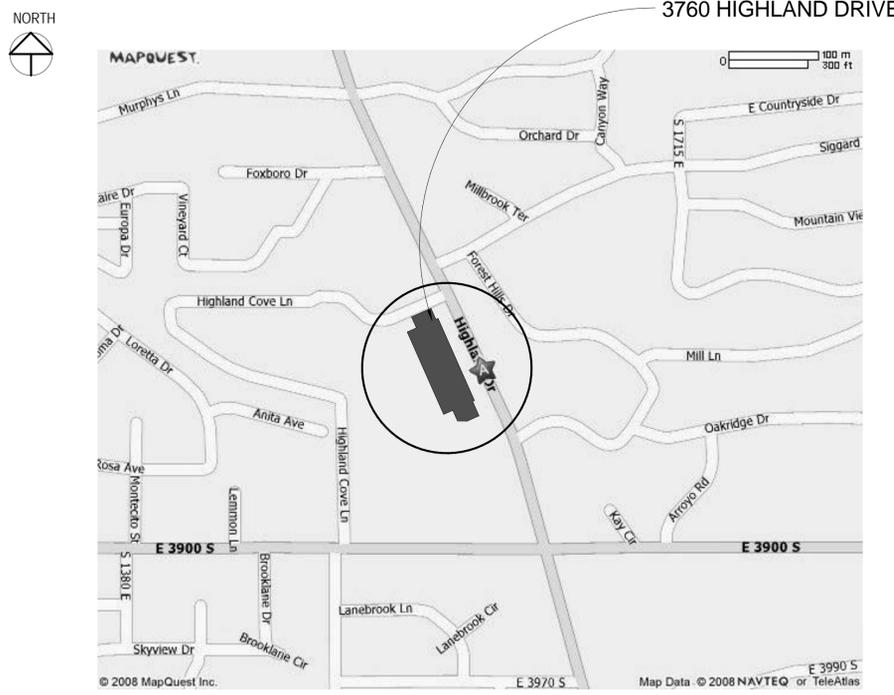
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GENERAL NOTES

- ALL DIMENSIONS, DOOR SIZES AND OPENING WIDTHS ARE TO BE FIELD VERIFIED BY GENERAL CONTRACTOR.
- OWNER RETAINS SALVAGE RIGHTS TO ANY DEMOLISHED MATERIALS. ITEMS NOT CLAIMED AS SALVAGE BY OWNERS IS TO BE LEGALLY DISPOSED OF OFF SITE.
- CONTRACTOR TO REPAIR OR REPLACE ALL SURFACES / MATERIALS THAT ARE DAMAGED OR DISTURBED DURING DEMOLITION AND REMODELING WORK, INCLUDING ALL FLOOR, CEILING AND WALL SURFACES. REPAIR AND REPLACEMENT IS TO MATCH EXISTING ADJACENT SURFACES UNLESS NOTED OTHERWISE.
- ALL UNUSED PIPING IS TO BE CAPPED FLUSH WITH ADJACENT SURFACES.
- ABANDONED ELECTRICAL WIRING IS TO BE TERMINATED AT NEAREST JUNCTION BOX OR PANEL.
- CONTRACTOR TO VERIFY LOCATION OF EXISTING ELECTRICAL, PLUMBING AND WASTE LINES.
- GENERAL CONTRACTOR IS RESPONSIBLE FOR REPLACING ALL EXISTING FIRE PROOFING / INSULATION THAT IS DAMAGED DURING DEMOLITION AND CONSTRUCTION.
- GENERAL CONTRACTOR SHALL PROVIDE FIRE RATED CAULKING OR FIRE SAFING INSULATION AT ALL PENETRATIONS THROUGH FLOOR / CEILING ASSEMBLIES OR THROUGH EXISTING CORRIDOR WALLS.

VICINITY MAP



MARK	DATE	DESCRIPTION
1	10/16/08	Review Comments

ISSUE TYPE: Phase 2 - Construction Set

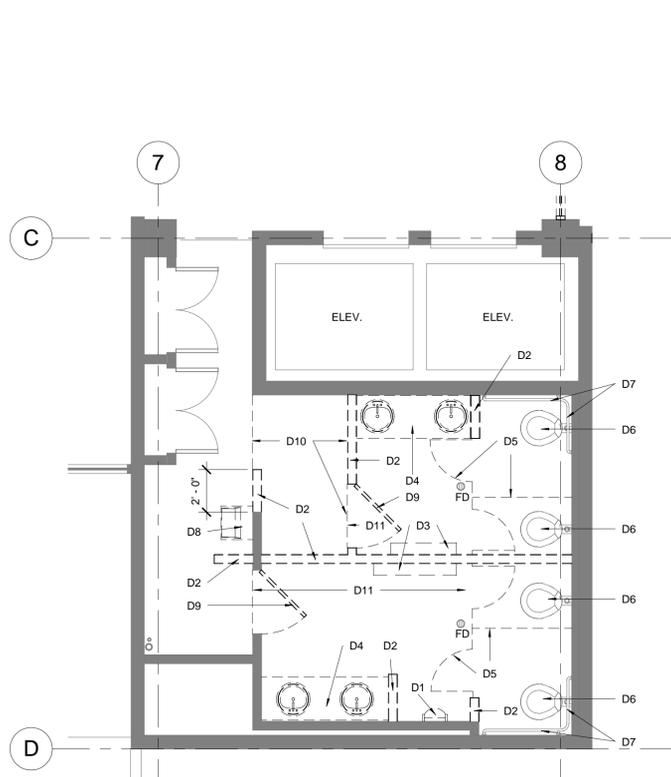
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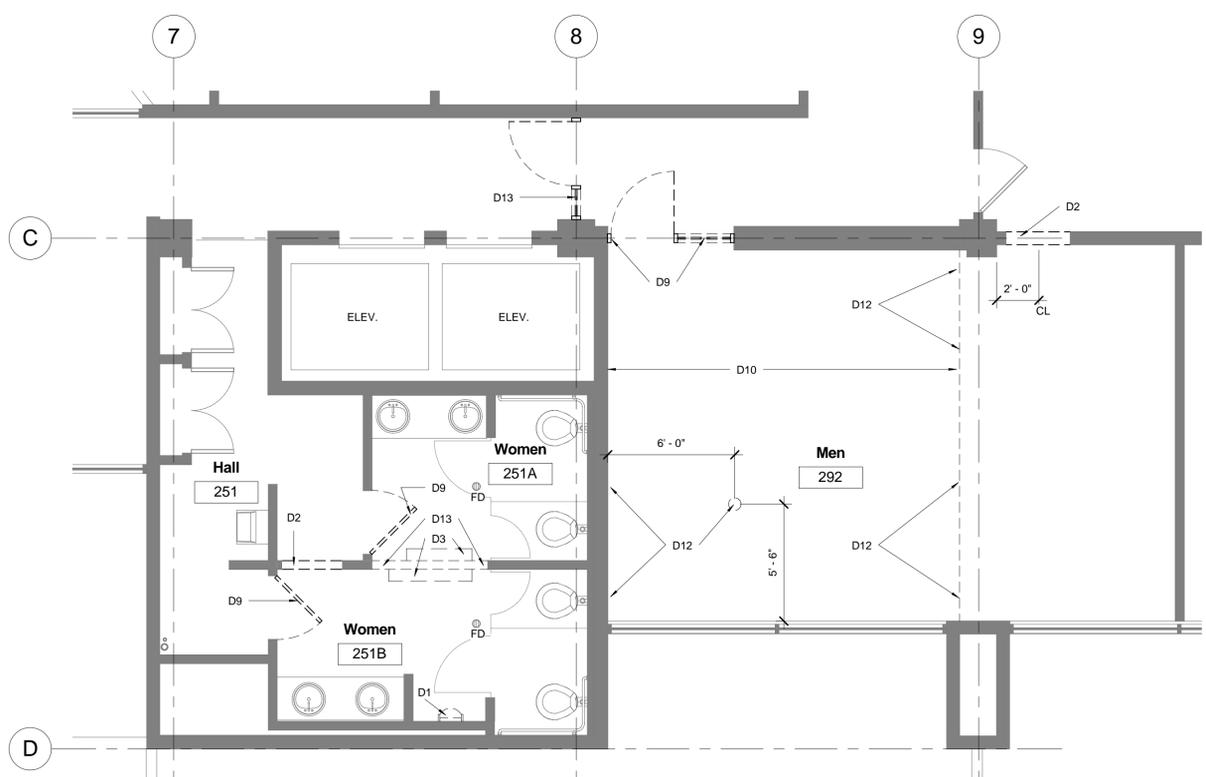
SHEET TITLE
Index of Drawings,
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G1001.2

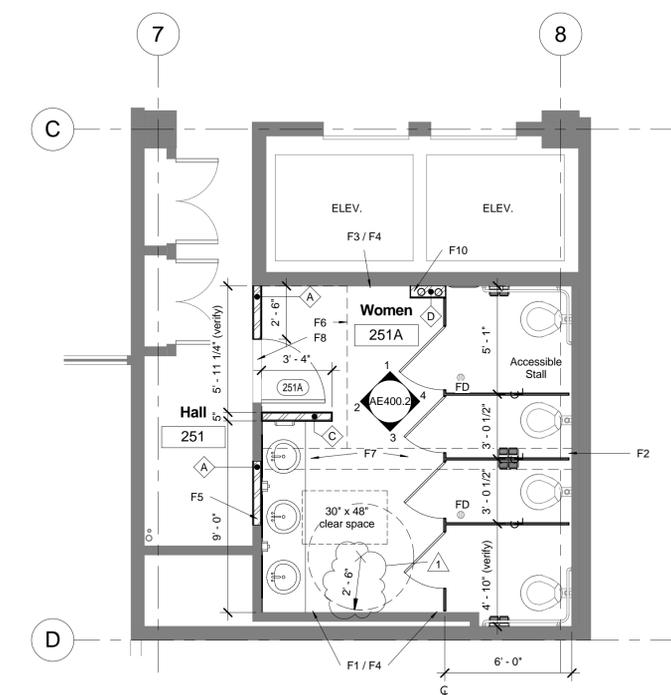
SHEET 2 OF 23



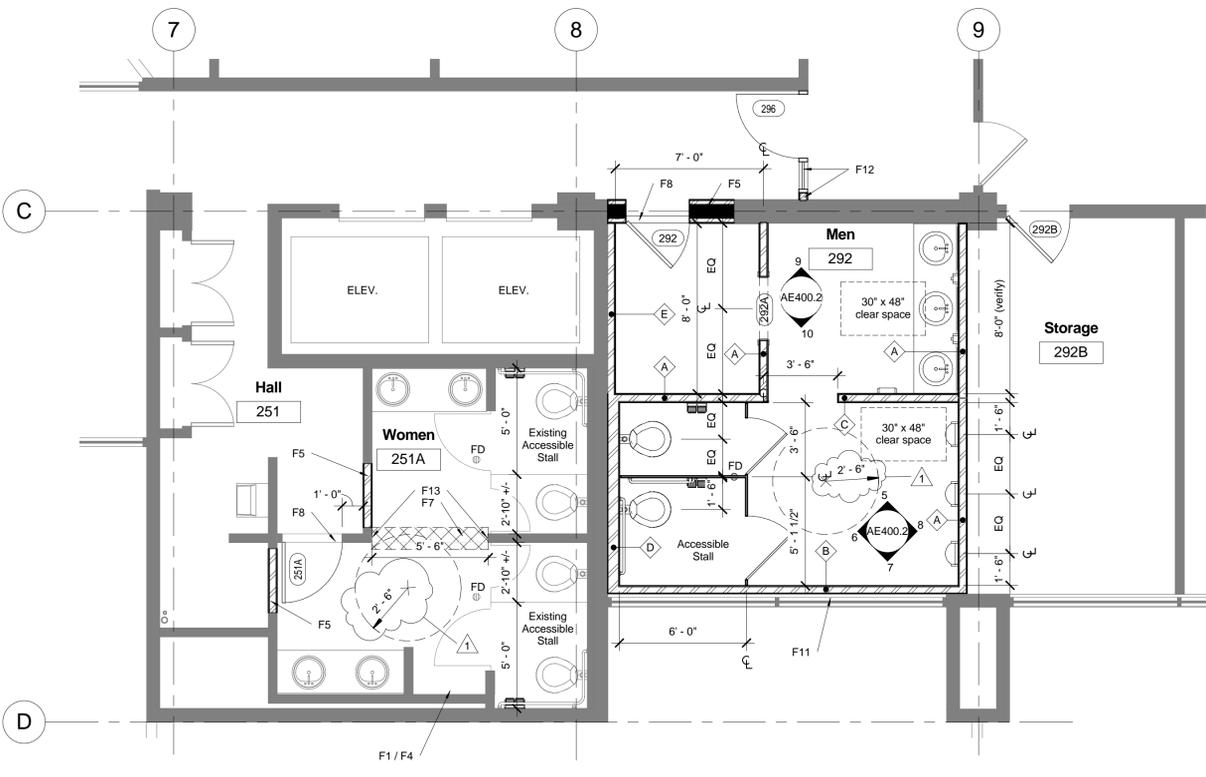
② Level 2 - Phase 2 Demolition - Alt. No. 1
1/4" = 1'-0"



① Level 2 - Phase 2 Demolition - Base Bid
1/4" = 1'-0"



④ Level 2 - Phase 2 Floor Plan - Alt. No. 1
1/4" = 1'-0"



③ Level 2 - Phase 2 Floor Plan - Base Bid
1/4" = 1'-0"

DEMOLITION NOTES

- D1 Remove existing urinal and cap abandoned plumbing lines.
- D2 Remove existing wall.
- D3 Remove existing mechanical unit.
- D4 Remove existing vanity and sinks.
- D5 Remove existing toilet partitions.
- D6 Existing toilet to remain.
- D7 Existing grab bars to remain.
- D8 Remove existing drinking fountain.
- D9 Remove existing door and frame.
- D10 Remove existing flooring to limit of dashed lines.
- D11 Existing ceramic tile floor to remain.
- D12 Cut existing masonry wall / concrete slab / metal deck for new floor drain / plumbing lines - coord. with mechanical and plumbing drawings.
- D13 Remove existing wall to 7'-0" for new opening.

SEE MECHANICAL, PLUMBING AND ELECTRICAL DEMOLITION PLANS FOR ITEMS THAT MAY NOT APPEAR ON ARCHITECTURAL DRAWINGS.

FLOOR PLAN NOTES

- F1 Repair existing wall where plumbing fixture removed. Replace damaged ceramic tile with new tile to match existing.
- F2 At area where existing wall removed, patch wall to match adjacent surfaces. Replace damaged ceramic tile and supply new tile to match existing at area where wall removed.
- F3 Clean brick and repoint if necessary at area where existing wall, cabinets, or other toilet room fixtures and accessories are removed.
- F4 Cover abandoned plumbing with metal escutcheon plate.
- F5 Infill wall where door removed. Match adjacent surfaces. At corridor walls, provide 1-hour rated assembly w/ 3-5/8" metal studs @ 16" o.c. w/ 5/8" Type "X" gyp. bd. each side.
- F6 Where old floor removed, level floor and install new ceramic tile to match existing.
- F7 At area where wall removed, patch and level floor and install new ceramic tile to match existing.
- F8 Marble threshold (typical at all ceramic tile floors).
- F9 Existing access door at wall to remain.
- F10 Furr around relocated plumbing lines. Coord. w/ Plumbing Drawings.
- F11 Apply opaque window film at inside of glass where new wall occurs.
- F12 Relocate storefront wall and door as shown. Provide 3-5/8" metal stud wing wall w/ 5/8" type "X" gyp. bd. as necessary for width of hallway. Brace wall to structure above as per Details 2 and 3/AE600.2.
- F13 Where wall removed, patch jambs and head and provide stainless steel wall guard to 4'-0" a.f.f.

SEE SHEET AE600.2 FOR INTERIOR FINISHES.

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ARCHITECTURE | SUSTAINABLE DESIGN | COMMERCIAL & RESIDENTIAL
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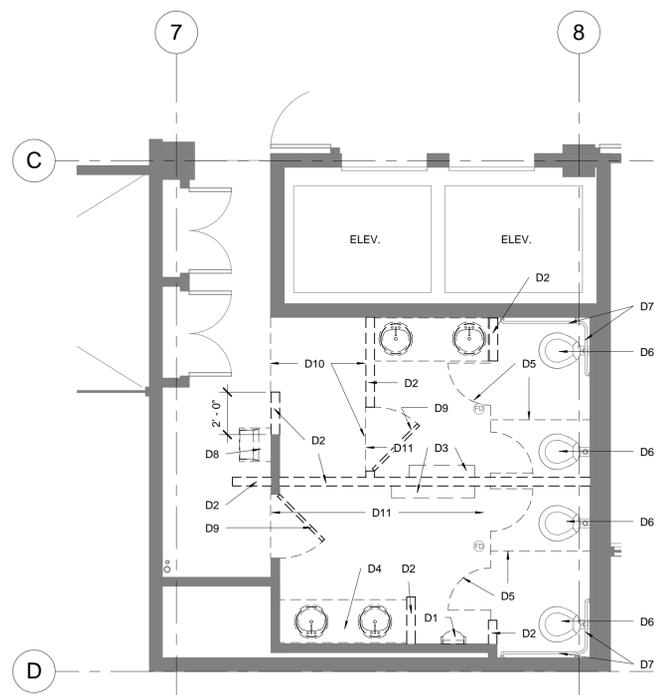
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Level 2 - Toilet Room
Plans - Phase 2

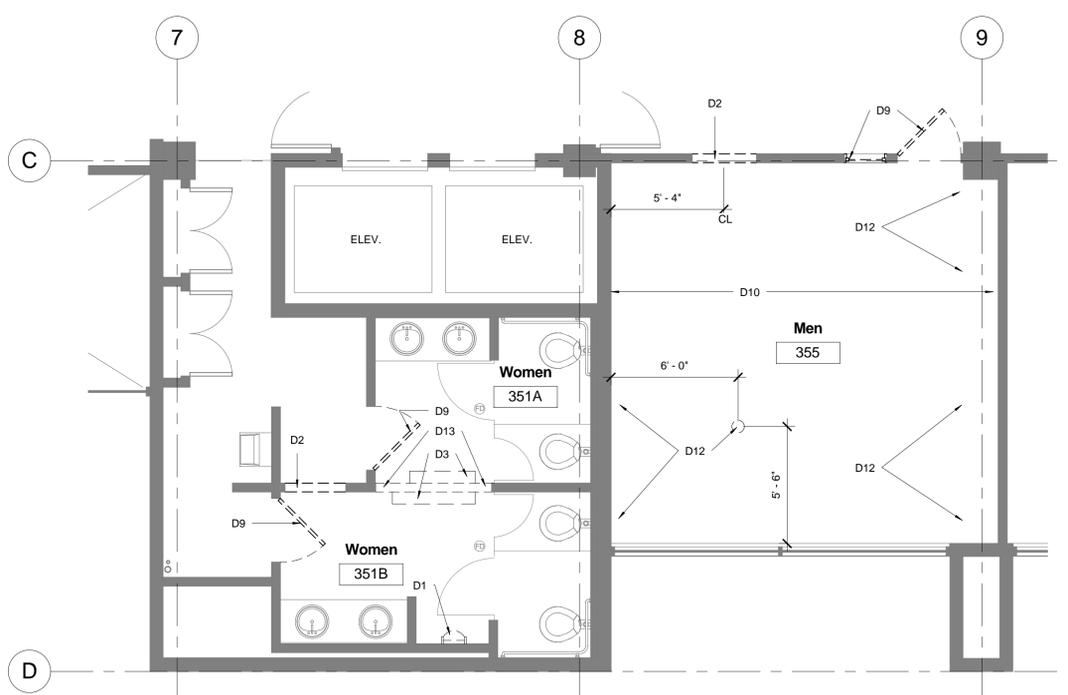
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AE101.2

SHEET 3 OF 23



2 Level 3 - Phase 2 Demolition - Alt. No. 1
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Level 3 - Toilet Room
Plans - Phase 2

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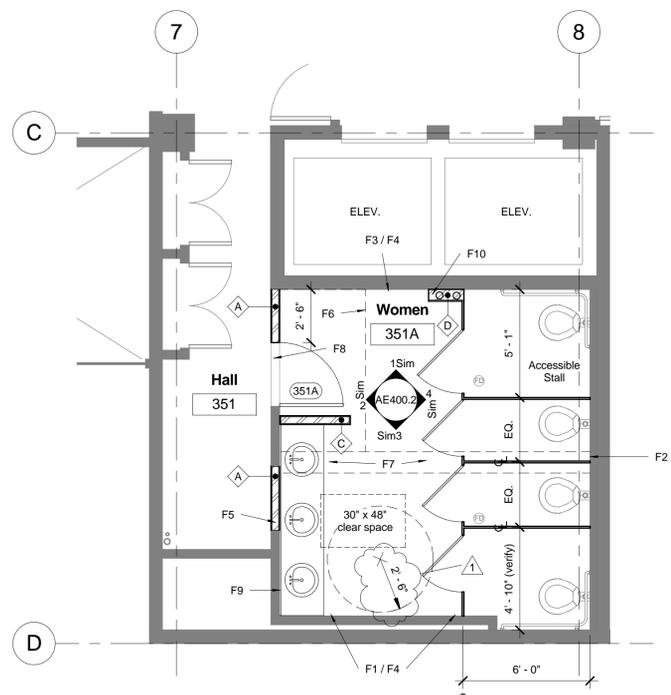
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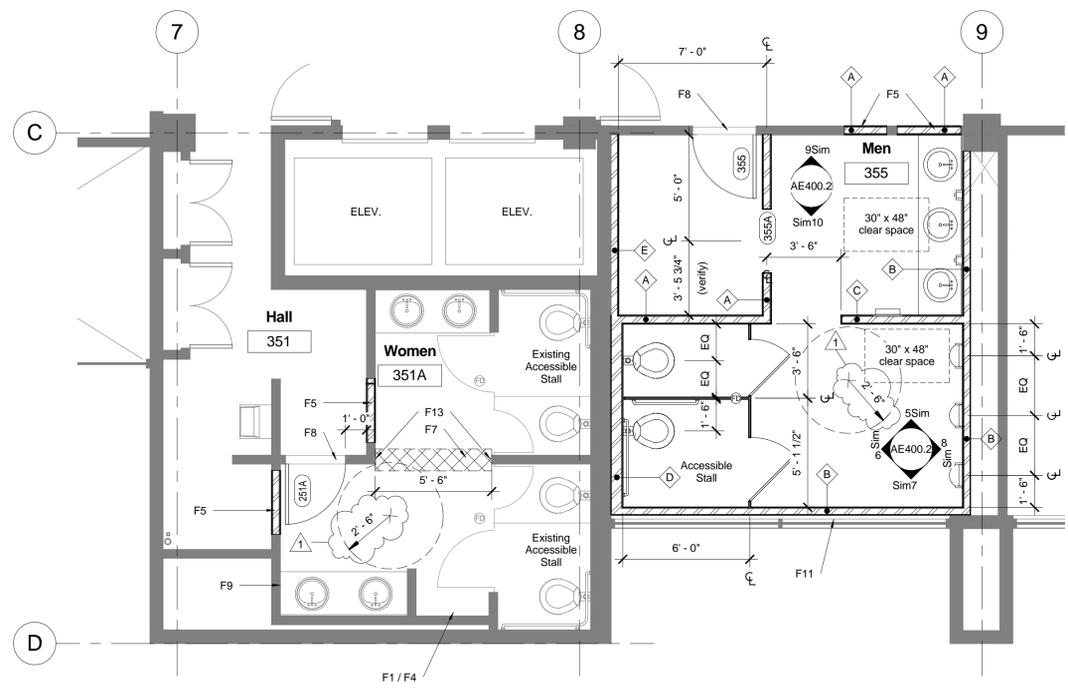
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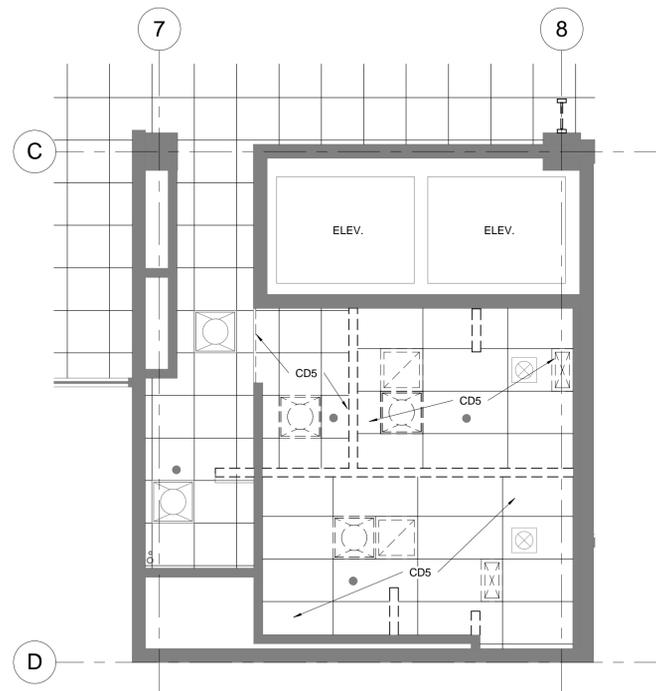
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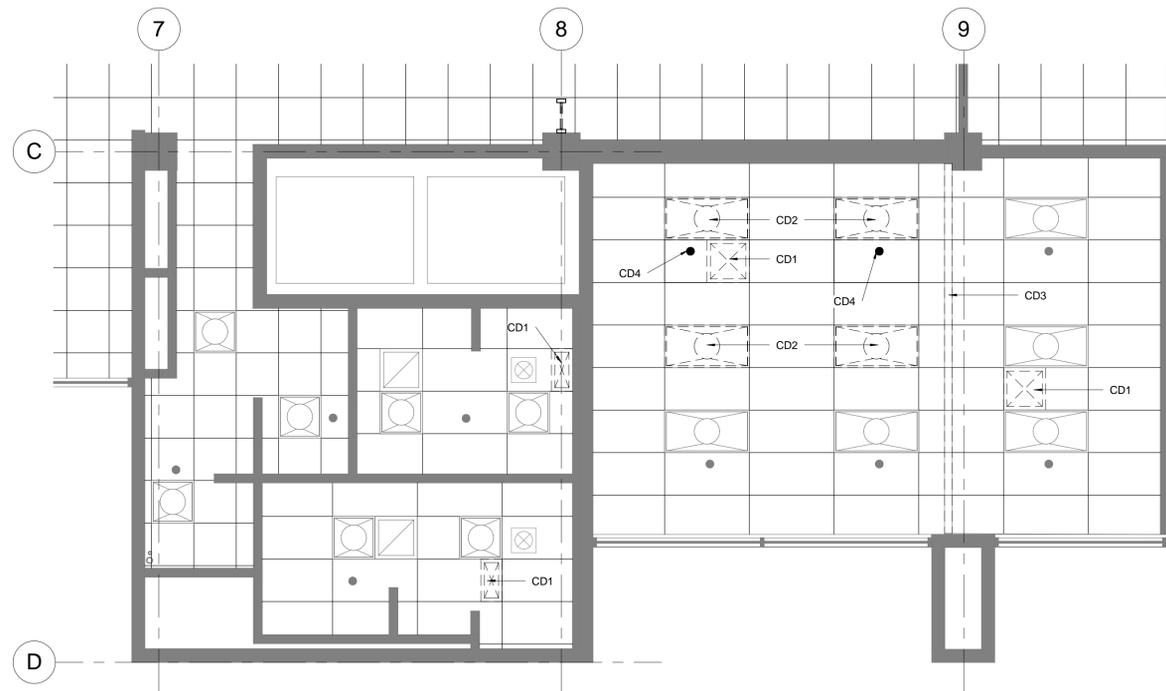
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1/4" = 1'-0"



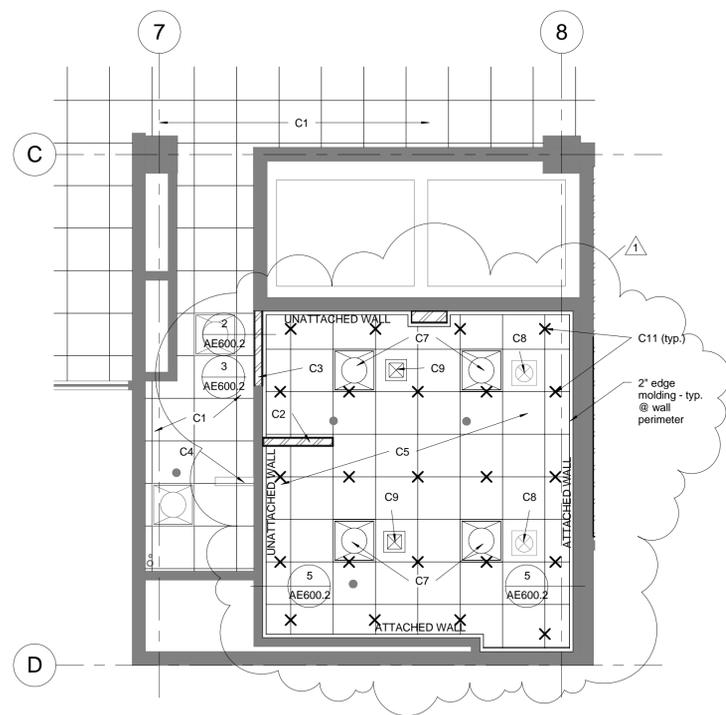
3 Level 3 - Phase 2 Floor Plan - Base Bid
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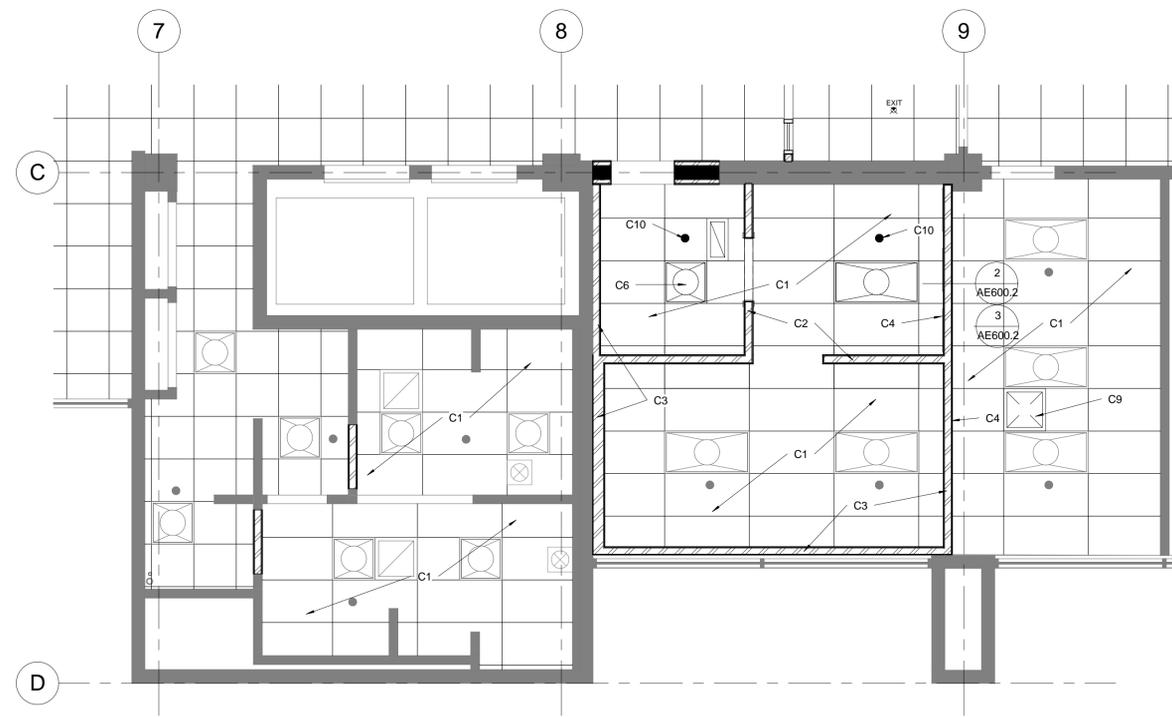
② Level 2 - Phase 2 Ceiling Demolition Plan - Alt. No. 1
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① Level 2 - Phase 2 Ceiling Demolition Plan - Base Bid
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④ Level 2 - Phase 2 Ceiling Plan - Alt. No. 1
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CEILING DEMOLITION NOTES

- CD1 Remove or relocate existing grill and/or ductwork. Coordinate with Mechanical Drawings.
- CD2 Remove or relocate existing fluorescent light. Coordinate with Electrical Drawings.
- CD3 Remove existing ceiling and grid at area of new wall.
- CD4 Relocate existing fire sprinkler.
- CD5 Remove existing ceiling, grid, lights, fans and diffusers. Coordinate with Mechanical, Plumbing and Electrical Drawings.

SEE MECHANICAL, PLUMBING AND ELECTRICAL DEMOLITION PLANS FOR ITEMS THAT MAY NOT APPEAR ON ARCHITECTURAL DRAWINGS.

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Level 2 - Ceiling Plans - Phase 2

SHEET NUMBER

AE201.2

SHEET 5 OF 23

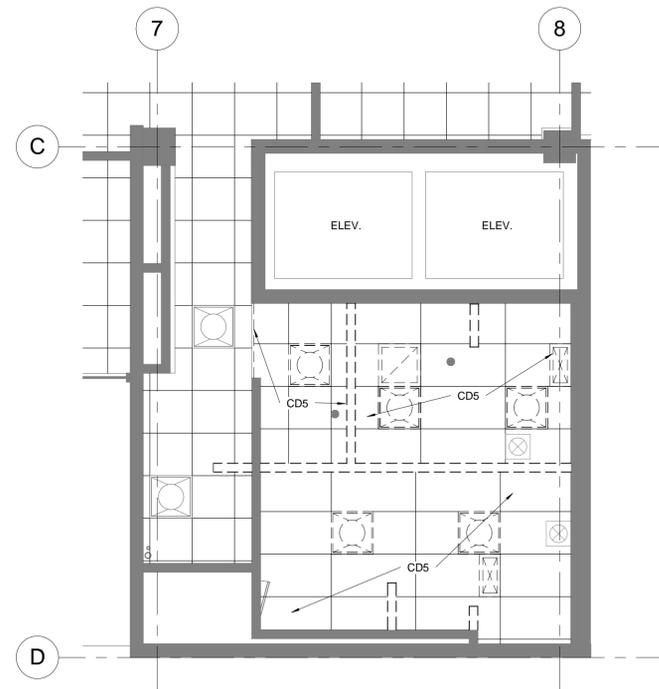
CEILING PLAN NOTES

- C1 Existing ceiling to remain.
- C2 Brace wall to bottom of ceiling grid.
- C3 Extend wall above ceiling - see Detail 2/AE600.2 and 3/AE600.2.
- C4 Repair existing ceiling at area of remodel.
- C5 New 2x4 suspended acoustic tile ceiling - see Details 4/AE600.2 for seismic bracing detail.
- C6 New 2x2 fluorescent light.
- C7 Relocated fluorescent light - coordinate with Electrical Drawings.
- C8 Ceiling exhaust fan - coordinate with Mechanical Drawings.
- C9 Diffuser - coordinate with Mechanical Drawings.
- C10 New or relocated fire sprinkler head - coordinate with Plumbing Drawings.

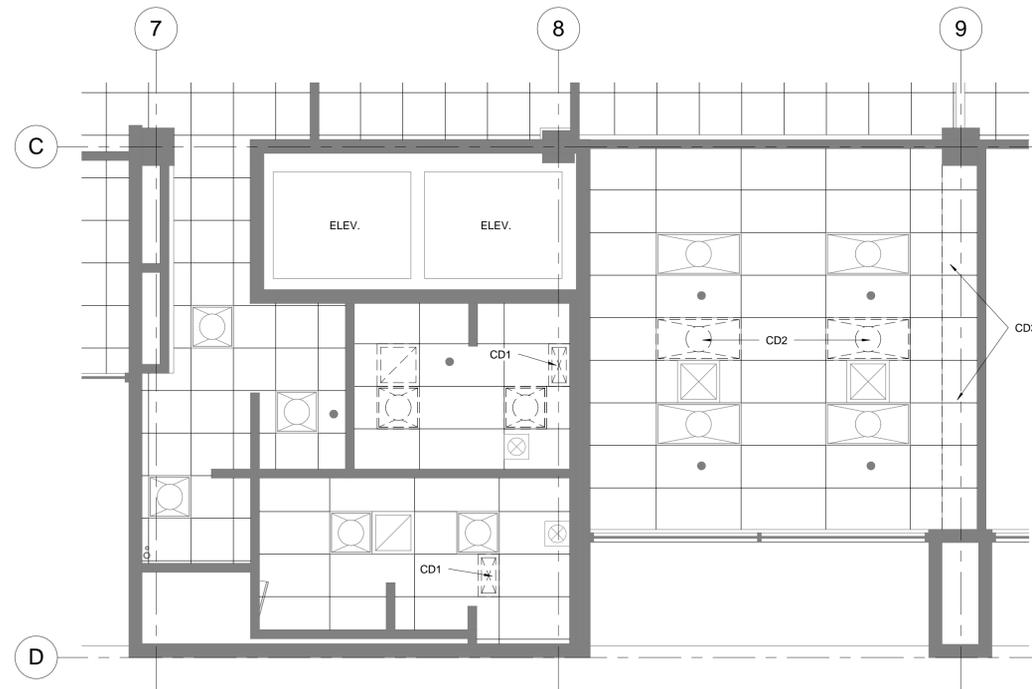
C11 12 ga. hanger wires - min. 8" from perimeter and 4'-0" o.c. each way - see Detail 5/AE600.2.

CEILING SYMBOLS

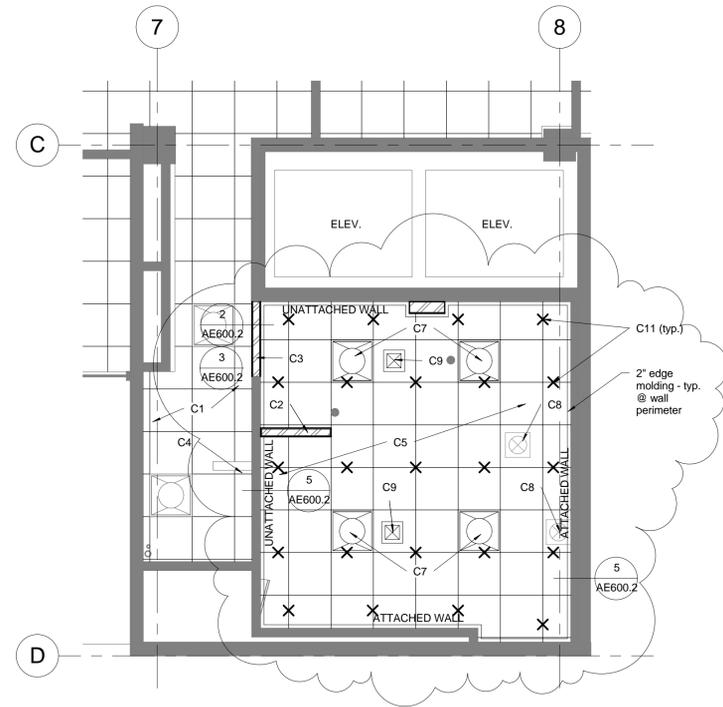
- ✕ Hanger wire
- Fire sprinkler head - see Plumbing Plans for locations of new, existing and relocated sprinklers
- ⊗ Exhaust fan
- ⊞ Return register
- ⊠ Supply diffuser



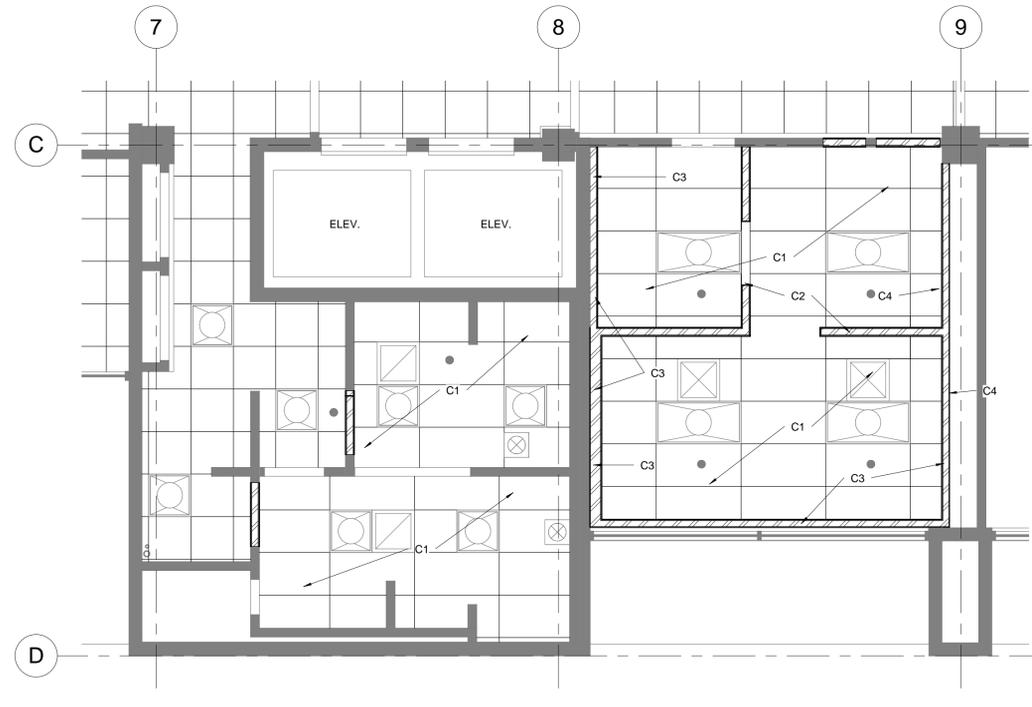
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- C10 New or relocated fire sprinkler head - coordinate with Plumbing Drawings.

C11 12 ga. hanger wires - min. 8" from perimeter and 4'-0" o.c. each way - see Detail 5/AE600.2.

CEILING SYMBOLS

- X Vertical compression strut
- Fire sprinkler head - see Plumbing Plans for locations of new, existing and relocated sprinklers
- Exhaust fan
- Return register
- Supply diffuser

State of Utah

Department of Administrative Services

Division of Facilities
Construction & Management
4110 State Office Building
Salt Lake City, Utah 84114
Phone: (801) 538-3018
Fax: (801) 538-3267

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925 SOUTH 2ND WEST, SUITE B
SALT LAKE CITY
UTAH 84101
O 801.533.0100 | F 801.533.0101

BUILDING NAME:

3760 So. Highland Drive
Salt Lake City, Utah 84106

PROJECT TITLE:

Highland Plaza - Remodel

MARK	DATE	DESCRIPTION
1	10/16/08	Review Comments

ISSUE TYPE: Phase 2 - Construction Set

ISSUE DATE: August 18, 2008

DFCM PROJECT NO: 08123310
ARCHITECT'S PROJECT NO: 2008.001
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SHEET TITLE

Level 3 - Ceiling Plans -
Phase 2

SHEET NUMBER

AE202.2

SHEET 6 OF 23



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Construction & Management
4110 State Office Building
Salt Lake City, Utah 84114
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Fax: (801) 538-3267

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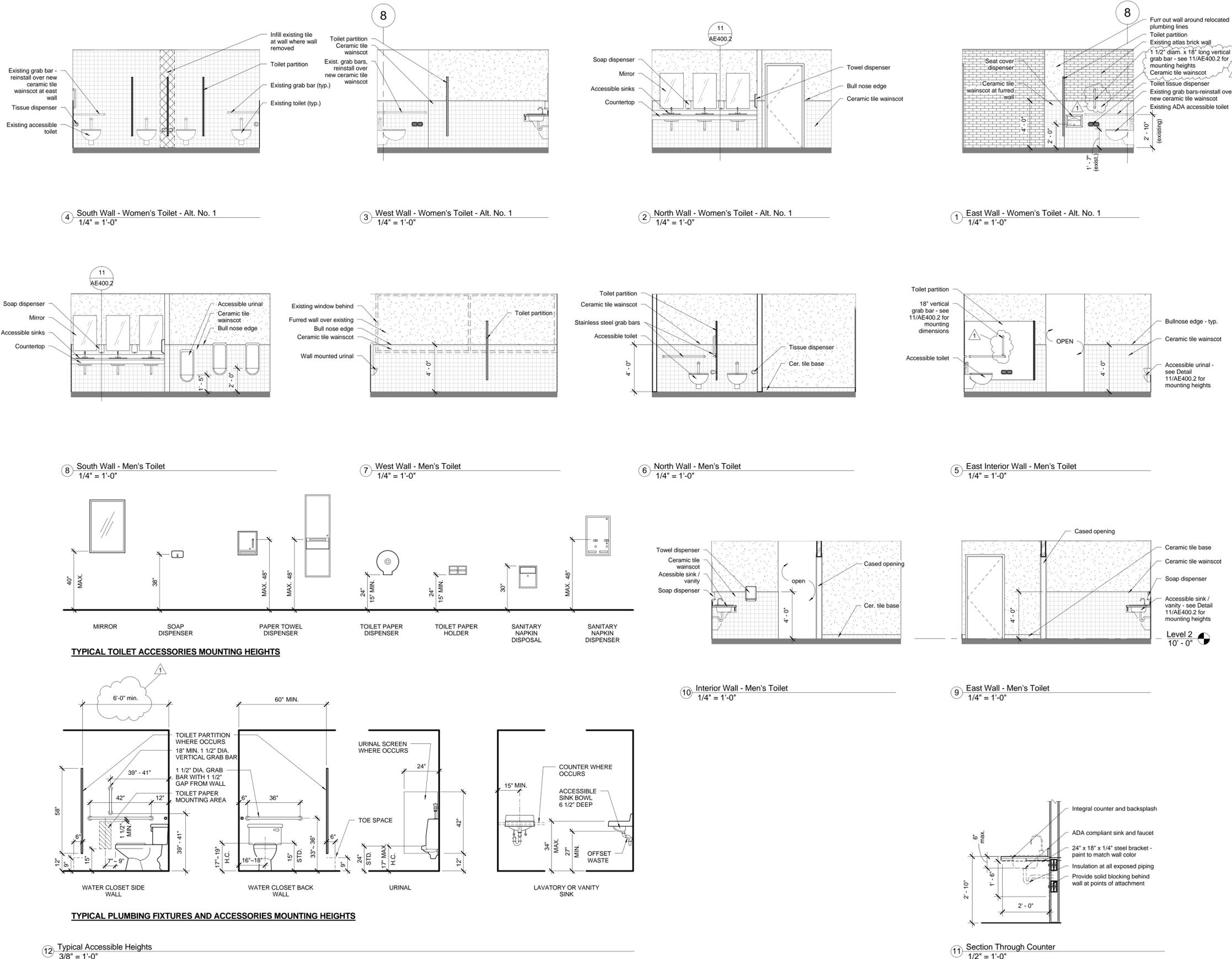
Interior Elevations -
Phase 2

SHEET NUMBER

AE400.2

SHEET 7 OF 23

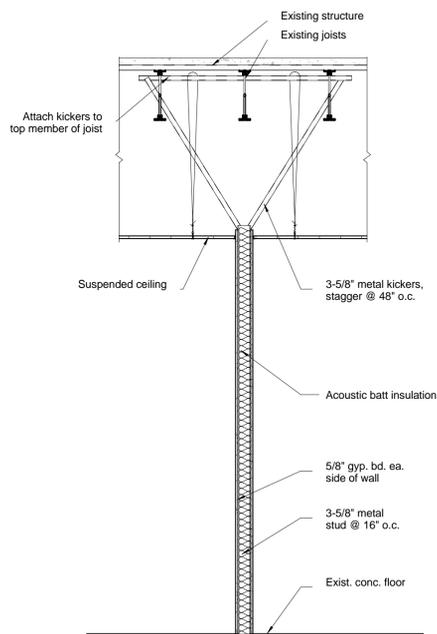
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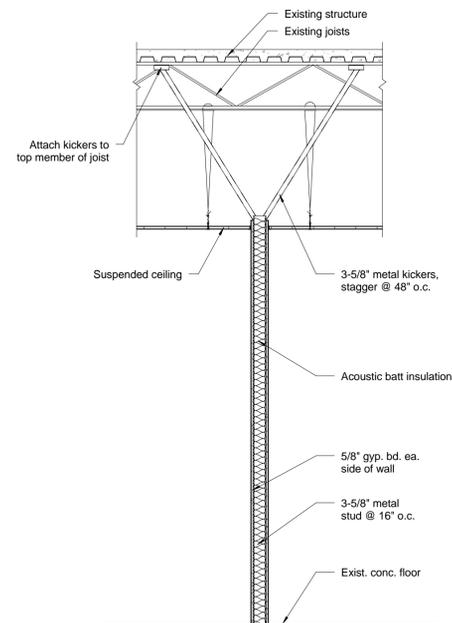
INTERIOR FINISH SCHEDULE

1. Ceramic Tile
 - a. **Porcelain Floor Tile:**
 Women's Toilets - Match existing 2"x2"
 Men's Toilets - DalTile D147
 Buffstone Range 2"x2"
 - b. **Porcelain Tile Base:**
 Men's Toilets - MB-5A in DalTile D147
 Buffstone Range 2"x2"
 - c. **Ceramic Tile Wainscot:**
 Women's Toilets - Match existing 2"x2"
 Men's Toilets - Dal Tile X735
 Matte Almond 4 1/4" x 4 1/4"
2. Laminates
 - a. **Countertop Laminate:**
 Wilsonart #1763-60 Brune Slate
3. Paints
 - a. **General Paint (all exposed gyp. bd.):**
 Sherwin Williams SW6106 Kilim Beige

WALL DETAILS



2 Wall Section Parallel to Joists - Phase 2
1/2" = 1'-0"

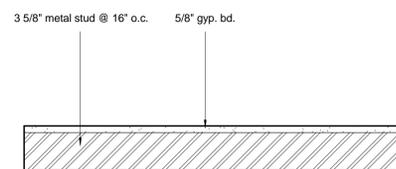


3 Wall Section Perpendicular to Joists - Phase 2
1/2" = 1'-0"

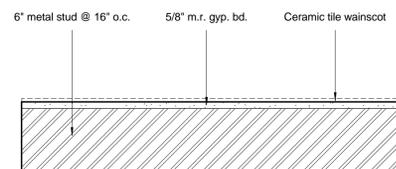
DOOR SCHEDULE

DOOR NUMBER	DOOR			MATERIAL	FINISH	FIRE RATING	HARDWARE GROUP	FRAME					COMMENTS	
	WIDTH	HEIGHT	THICKNESS					TYPE	MATERIAL	FINISH	JAMB	HEAD		THRESHOLD
251A (base bid)	2'-10"	7'-0"	1-3/4"	SC WOOD	STAIN	20 MIN.	GROUP NO. 1	TYPE 1	H. METAL	PAINT	1/AE600.2	1/AE600.2	MARBLE	
251A (Alt. No. 1)	3'-0"	7'-0"	1-3/4"	SC WOOD	STAIN	20 MIN.	GROUP NO. 1	TYPE 1	H. METAL	PAINT	1/AE600.2	1/AE600.2	MARBLE	
292	3'-0"	7'-0"	1-3/4"	SC WOOD	STAIN	20 MIN.	GROUP NO. 1	TYPE 1	H. METAL	PAINT	1/AE600.2	1/AE600.2	MARBLE	
292A	3'-0"	7'-0"						TYPE 1 (SIM)	H. METAL	PAINT	1/AE600.2	1/AE600.2		CASED OPENING
292B	3'-0"	7'-0"	1-3/4"	SC WOOD	STAIN	20 MIN.	GROUP NO. 2	TYPE 1	H. METAL	PAINT	1/AE600.2	1/AE600.2		
296	EXIST.	EXIST.	EXIST.	ALUM.	-	-	EXIST.	EXIST.						RELOCATE ALUM. DOOR AND FRAME
351A (base bid)	2'-10"	7'-0"	1-3/4"	SC WOOD	STAIN	20 MIN.	GROUP NO. 1	TYPE 1	H. METAL	PAINT	1/AE600.2	1/AE600.2	MARBLE	
351A (Alt. No. 1)	3'-0"	7'-0"	1-3/4"	SC WOOD	STAIN	20 MIN.	GROUP NO. 1	TYPE 1	H. METAL	PAINT	1/AE600.2	1/AE600.2	MARBLE	
355	3'-0"	7'-0"	1-3/4"	SC WOOD	STAIN	20 MIN.	GROUP NO. 1	TYPE 1	H. METAL	PAINT	1/AE600.2	1/AE600.2	MARBLE	
355A	3'-0"	7'-0"						TYPE 1 (SIM)	H. METAL	PAINT	1/AE600.2	1/AE600.2		CASED OPENING

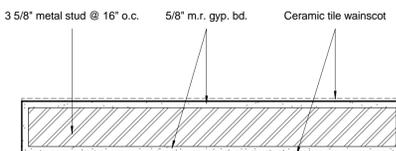
WALL TYPES



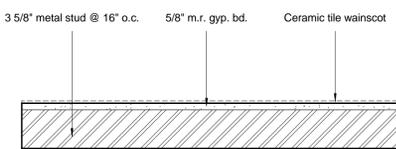
WALL TYPE E



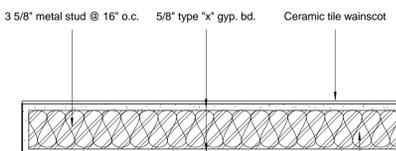
WALL TYPE D



WALL TYPE C



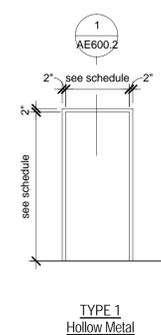
WALL TYPE B



WALL TYPE A

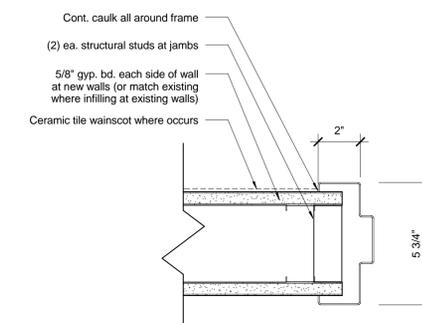
Acoustic batt at toilet room walls

FRAME TYPES



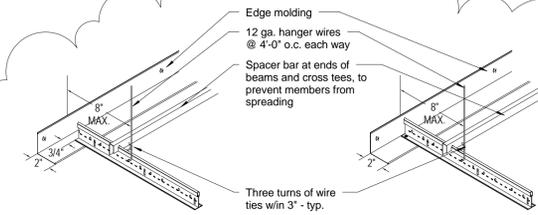
TYPE 1
Hollow Metal

FRAME DETAILS



1 H. Metal Jamb / Head Sim.
3" = 1'-0"

SEISMIC BRACING DETAILS

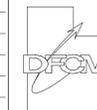


NOTE: Ceiling suspension assembly to be "heavy duty"

5 Perimeter Details @ Susp. Ceiling
1 1/2" = 1'-0"

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SHEET TITLE

Schedules and Details -
Phase 2

SHEET NUMBER

AE600.2

SHEET 8 OF 23

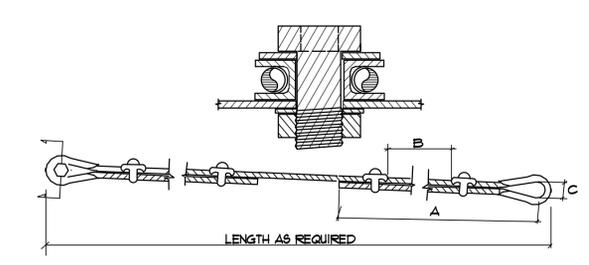
SCHEDULE FOR TYPICAL CONNECTIONS TO STRUCTURAL SUPPORTING MEMBERS

TYPE	MAX. LOAD CAPACITY POUNDS	PHILLIP'S REDHEAD ANCHORS TO CONC.		CONC. CAST-IN PLACE INSERT	BOLT OF STL. BM. CLAMP
		LT. WT.	HARD ROCK		
I	500	3/8"	3/8"	3/8"	3/8"
II	1000	3/8"	3/8"	1/2"	3/8"
III	1500	3/8"	3/8"	1/2"	3/8"
IV	2000	3/8"	3/8"	5/8"	3/8"
V	3000	2-1/2"	2-1/2"	2-1/2"	5/8"
VI	4000	2-5/8"	2-5/8"	2-5/8"	5/8"

TYPE	SPREADER SIZE	BOLT THRU WOOD	SPAN-ON-ROD	ANGLE TO SUPPORTING STRUCTURAL MEMBER	ROD SIZE FOR PIPES
I	C4x5.4	1/2"	3/8"	3x2x1/4"x0'-3" LLH	1/2"
II	C5x6.1	3/4"	3/8"	3-1/2x2-1/2x5/16x0'-3" LLH	1/2"
III	C6x8.5	***	1/2"	3-1/2x2-1/2x1/16x0'-4" LLH	5/8"
IV	C8x11.5	***	1/2"	5x3x1/2x0'-4" LLH	3/4"
V	C9x13.4	***	***	2-3-1/2x2-1/2x1/16x0'-4"	7/8"
VI	C10x15.3	***	***	2-5x3x1/2x0'-4"	1"

NOTES:

- FOR SLABS LESS THAN 5" THICK ONLY, THIN SLAB INSERTS MAY BE USED.
- FOR USE W/CONC. CAST-IN PLACE INSERTS OR PHILLIP'S REDHEAD IN HARD ROCK ONLY.
- FOR USE WITH CONC. CAST-IN PLACE INSERTS ONLY.
- WHERE TYPE III CONNECTIONS ARE REQUIRED FOR WOOD SYSTEMS, TYPE II CONNECTIONS SHALL BE USED WITH REDUCED RESTRAINT SPACING TO 20 FT. O.C. WHERE TYPE IV CONNECTIONS ARE REQUIRED FOR WOOD SYSTEMS, TYPE II CONNECTIONS SHALL BE USED WITH REDUCED RESTRAINT SPACING TO 15 FT. O.C. WHERE TYPE V CONNECTIONS ARE REQUIRED FOR WOOD SYSTEMS, TYPE II CONNECTIONS SHALL BE USED WITH REDUCED RESTRAINT SPACING TO 10 FT. O.C.
- THE MECHANICAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE STRUCTURAL ENGINEER AND THEN TO THE MECHANICAL ENGINEER, SHOWING CONNECTION TYPE AND LOCATION OF ALL RESTRAINT CONNECTIONS TO THE STRUCTURE.
- FOR ESSENTIAL FACILITIES WHERE CONCRETE ANCHOR BOLTS OF THE "REDHEAD" EXPANSION TYPE ARE LOADED IN PULL OUT, 50 PERCENT OF THE BOLTS (ALTERNATE BOLTS IN ANY GROUP ARRANGEMENT) SHALL BE PROOF TESTED TO TWICE THE ALLOWABLE LOAD. IF THERE ARE FAILURES, THE IMMEDIATELY ADJACENT BOLTS MUST THEN ALSO BE TESTED.
- "HILTI" AND "RAMSET" ANCHORS ARE EQUAL SUBSTITUTES FOR "REDHEAD".



- NOTES:**
- CABLES, THIMBLES, CLIPS, GROMMETS & FLAT WASHERS ARE TO BE FURNISHED BY RESTRAINT MANUFACTURER. ALL OTHER HARDWARE TO BE PROVIDED BY CONTRACTOR.
 - ENTIRE SYSTEM TO BE EQUAL TO AMBER BOOTH.
 - CABLE CLIPS MUST BE ORIENTED AS SHOWN WITH SHORT END OF CABLE ON THE CURVED PART OF THE CLIP.

CABLE SCHEDULE

CABLE DIA.	CABLE DESIGN	A	B	C	BOLT SIZE	ALLOWABLE LOAD (lbF)	BREAKING STRENGTH (lbF)
1/8"	1x19 GALV.	5-1/4"	1-5/8"	5/8"	3/8"	660	2000
3/16"	1x19 GALV.	5-3/4"	1-7/8"	5/8"	3/8"	1400	4200
1/4"	1x19 GALV.	6-3/4"	2-3/8"	11/16"	3/8"	2330	7000
5/16"	1x19 GALV.	7-3/8"	2-5/8"	13/16"	5/8"	3260	9800
3/8"	1x19 GALV.	8-7/8"	3-1/4"	1"	5/8"	4800	14400
7/16"	6x19 IWRC	11"	3-5/8"	1"	5/8"	5920	17800
1/2"	6x19 IWRC	10"	3-7/8"	1-1/8"	3/4"	7660	23000

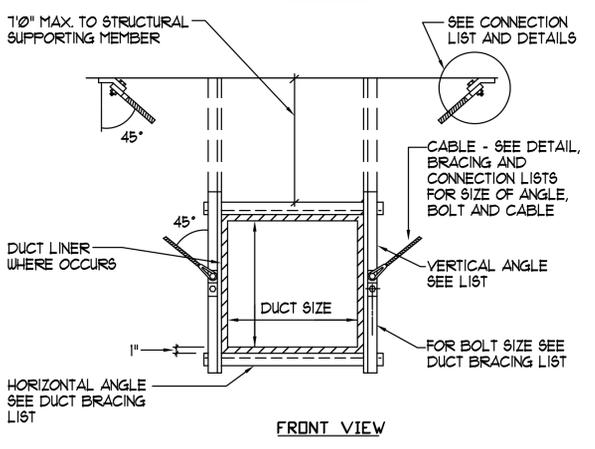
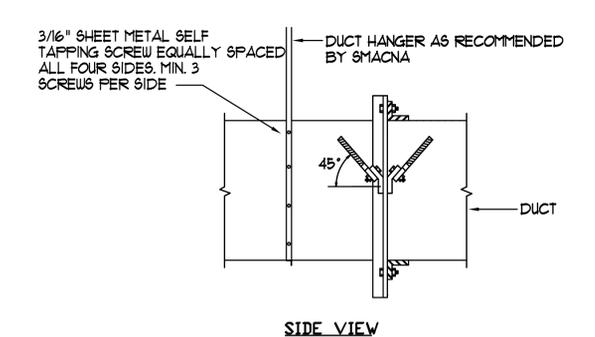
CABLE RESTRAINT
NO SCALE

DUCT BRACING GENERAL NOTES

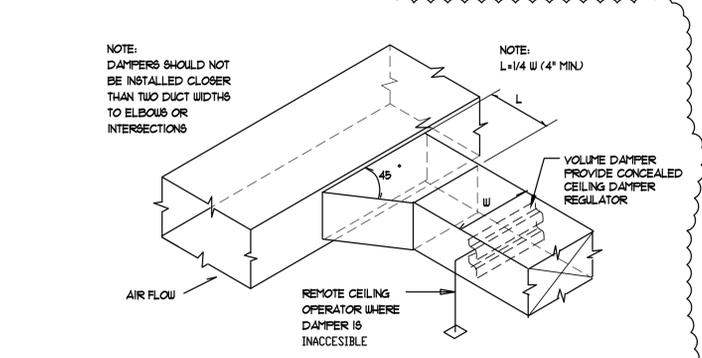
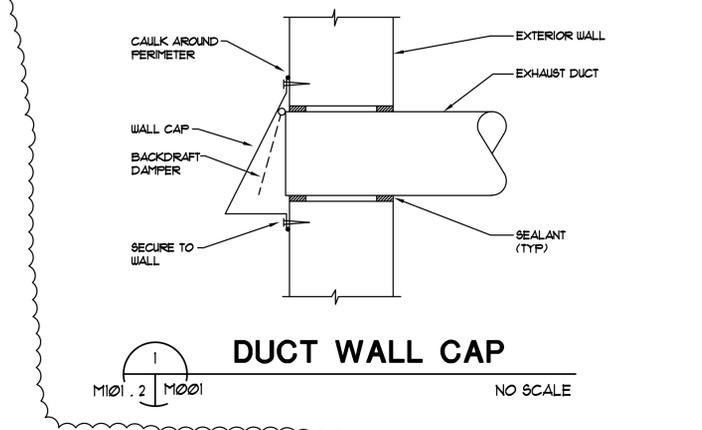
- DETAILS SHOWN PROVIDE GENERAL GUIDELINES FOR A LATERAL BRACING SYSTEM. A TYPICAL VERTICAL SUPPORT SYSTEM MUST ALSO BE USED.
- BRACE ALL RECTANGULAR DUCTS OF AREA 6 SQ. FT. AND LARGER. BRACE ALL ROUND DUCTS 28" IN DIAMETER AND LARGER.
- CABLE RESTRAINTS AND BRACING NOT TO EXCEED 30'-0" CENTERS AND SHALL BE PROVIDED AT EACH TURN, AT THE END OF EACH DUCT RUN, AND ON EACH SIDE OF FLEXIBLE CONNECTIONS. BRACE POINTS SHALL NOT EXCEED 15'-0" FROM FLEXIBLE CONNECTION.
- WHEN COMBINING DUCT GROUPS ON COMMON BRACING SYSTEMS, USE WEIGHTS AND DIMENSIONS FROM BRACING LIST.
- ALL HOLES IN ANGLES ARE TO BE 1/16" INCH OVERSIZED. PLACE STANDARD CUT WASHERS BETWEEN SHEET METAL ANGLES AND NUT.
- DUCTS NOT BRACED SHALL BE INSTALLED WITH A 6" MIN. CLEARANCE TO VERTICAL CEILING HANGER WIRES.
- REHEAT BOXES AND OTHER ITEMS WHICH ATTACH TO THE DUCT SYSTEM SHALL BE BRACED INDEPENDENTLY OF THE DUCTS.
- ALL SHEET METAL FOR BRACING TO BE FY = 33 KSI MINIMUM. GAUGE FOR SHEET METAL BRACING SHALL BE AS FOLLOWS:
16 GA = (0.0593 INCH)
14 GA = (0.0741 INCH)
12 GA = (0.1046 INCH)
- MINIMUM DISTANCE FROM EDGE OF ANGLE TO BOLTS SHALL BE AS FOLLOWS:

BOLT DIAMETER	DISTANCE FROM EDGE
1/4" TO 1/2"	1"
5/8"	1 1/8"
3/4"	1 1/4"
1"	1 1/2"

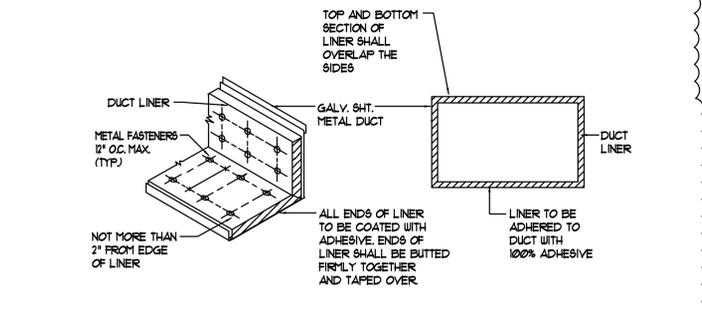
- DO NOT FASTEN RESTRAINT SYSTEM TO TWO DISSIMILAR PARTS OF A BUILDING THAT MAY RESPOND IN A DIFFERENT MODE DURING AN EARTHQUAKE. FOR EXAMPLE, A WALL AND A ROOF.
- ALTERNATE EVERY OTHER CABLE RESTRAINT IN OPPOSITE DIRECTION (SHOWN DOTTED).



BRACING FOR RECTANGULAR DUCTS
NO SCALE



BRANCH DUCT TAKE-OFF / DAMPER
NO SCALE



DUCT LINER
NO SCALE

DUCT CABLE BRACING SCHEDULE

DUCT SIZE (MAX.)	#WT/ LIN FT (MAX)	BOLT SIZE	HORIZONTAL ANGLE	VERTICAL ANGLE	CABLE DIA.**	CABLE DES.	ANCHOR CONN. TYPE
12"	5*	3/8"	2 X 2 X 16 GA	2 X 2 X 12 GA	1/8"	1x19 GALV	I
18"	8*	3/8"	2 X 2 X 16 GA	2-1/2 X 2-1/2 X 12 GA	1/8"	1x19 GALV	I
24"	10*	3/8"	2 X 2 X 16 GA	2-1/2 X 2-1/2 X 12 GA	1/8"	1x19 GALV	I

* MAXIMUM WEIGHT OF DUCTS OR COMBINATIONS OF DUCTS PER LINEAR FOOT. THE DUCTS MAXIMUM DIMENSION SHALL GOVERN WHAT BRACING IS REQUIRED. FOR ANCHOR CONNECTIONS SEE LIST. SEE DUCT BRACING DETAILS.
** TWO CABLES REQUIRED AT EACH RESTRAINT POINT, EACH CABLE TO BE INSTALLED 45° TO HORIZONTAL AND 45° TO LONGITUDINAL DIRECTION OF DUCT.

MECHANICAL LEGEND

	EXISTING RECTANGULAR DUCT (WIDTH x DEPTH)
	ROUND DUCT (DIAMETER)
	BRANCH DUCT TAKE-OFF WITH VOLUME DAMPER
	SUPPLY AIR DIFFUSER
	EXISTING RETURN AIR GRILLE
	CEILING EXHAUST FAN
	EXISTING THERMOSTAT
(E)	EXISTING
(N)	NEW
R.A.G.	RETURN AIR GRILLE
S.A.G.	SUPPLY AIR GRILLE
C.D.	CEILING DIFFUSER
	EXISTING DIFFUSER, GRILLE DESIGNATION
	EQUIPMENT DESIGNATION
	DETAIL DESIGNATION

MECHANICAL EQUIPMENT

	CEILING EXHAUST FAN CENTRIFUGAL CEILING TYPE, 300 CFM AT 0.25" S.P., 135 RPM, 146 WATTS AT 120/160/208 VOLTS, CEILING GRILLE AND HOUSING WITH BACKDRAFT DAMPER, 18-1/2" X 4-1/2" EXHAUST DUCT CONNECTION SIZE. WIRED THROUGH SWITCH BY THE ELECTRICAL CONTRACTOR. ACME, MODEL VQ4000 OR APPROVED EQUIVALENT.
--	---

DIFFUSERS & GRILLES

	CEILING DIFFUSER STEEL CONSTRUCTION WITH BAKED ENAMEL FINISH, OFFSET BLADE DAMPER, SQUARE TO ROUND TRANSITION COLLAR AND FRAME STYLE FOR LAY-IN CEILING OR GYPSUM BOARD CEILING AS REQUIRED. NAILOR INDUSTRIES MODEL 6502L-0-AW-4A-SGR (LAY-IN CEILING) OR MODEL 6502S-0-AW-4A-SGR (SURFACE MOUNT) OR APPROVED EQUIVALENT. REFER TO MECHANICAL PLAN FOR NECK AND COLLAR SIZE.
	RETURN AIR GRILLE ALUMINUM CONSTRUCTION WITH WHITE FINISH, FRAME STYLE FOR LAY-IN CEILING OR GYPSUM BOARD CEILING AS REQUIRED. NAILOR INDUSTRIES MODEL 51ECL-AW (LAY-IN CEILING) OR MODEL 51ECS-AW (SURFACE MOUNT) OR APPROVED EQUIVALENT. REFER TO MECHANICAL PLAN FOR NECK SIZE.

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4110 State Office Building
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Fax: (801) 538-3267
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DESIGN INTERFACE LLC
ARCHITECTURE | SUSTAINABLE DESIGN | COMMERCIAL & RESIDENTIAL
925 SOUTH 2ND WEST, SUITE B
SALT LAKE CITY, UTAH 84101
O 801.533.0100 | F 801.533.0101

TW Engineering Associates
2165 Sublette Plaza / Sandy, Utah 84085 / O (801) 943-2705 / F (801) 943-0744
Mechanical & Electrical Consulting Engineering
e-mail: twengineering@msn.com
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SHEET TITLE
Mechanical Legend, Schedules & Detail

SHEET NUMBER
M001.2

SHEET 9 OF 23

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925 SOUTH 2ND WEST, SUITE B
 SALT LAKE CITY
 UTAH 84101
 O 801.533.0100 | F 801.533.0101

TWA Engineering Associates
 Mechanical & Electrical Consulting Engineering
 2165 Sublette Plaza / Sandy, Utah 84085 / O (801) 943-2705 / F (801) 943-0744
 e-mail: twaengineering@msn.com
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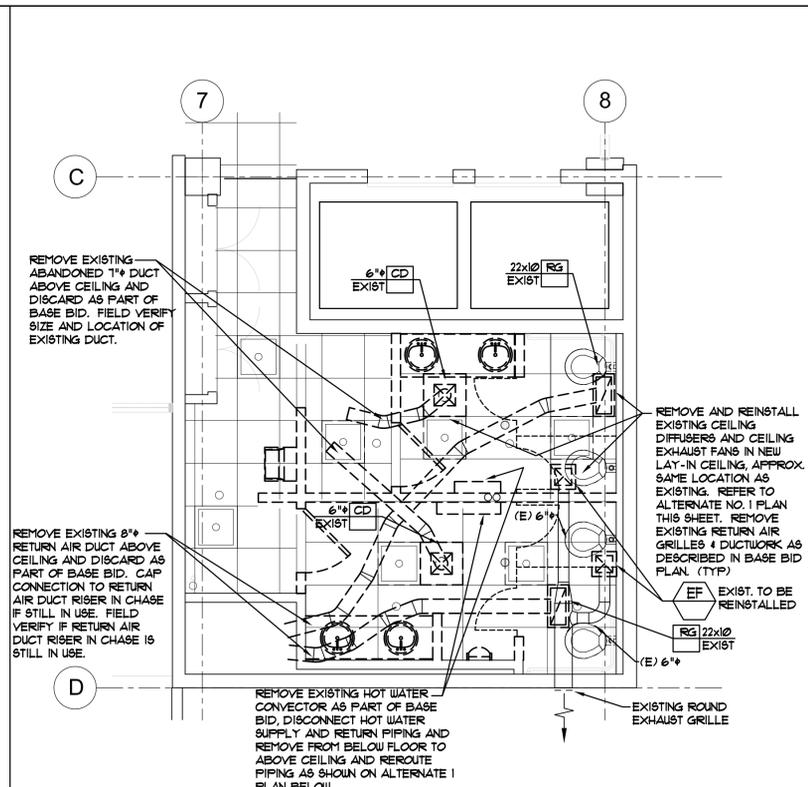
SHEET TITLE

Level 2 - Toilet Room
 Mechanical Plans

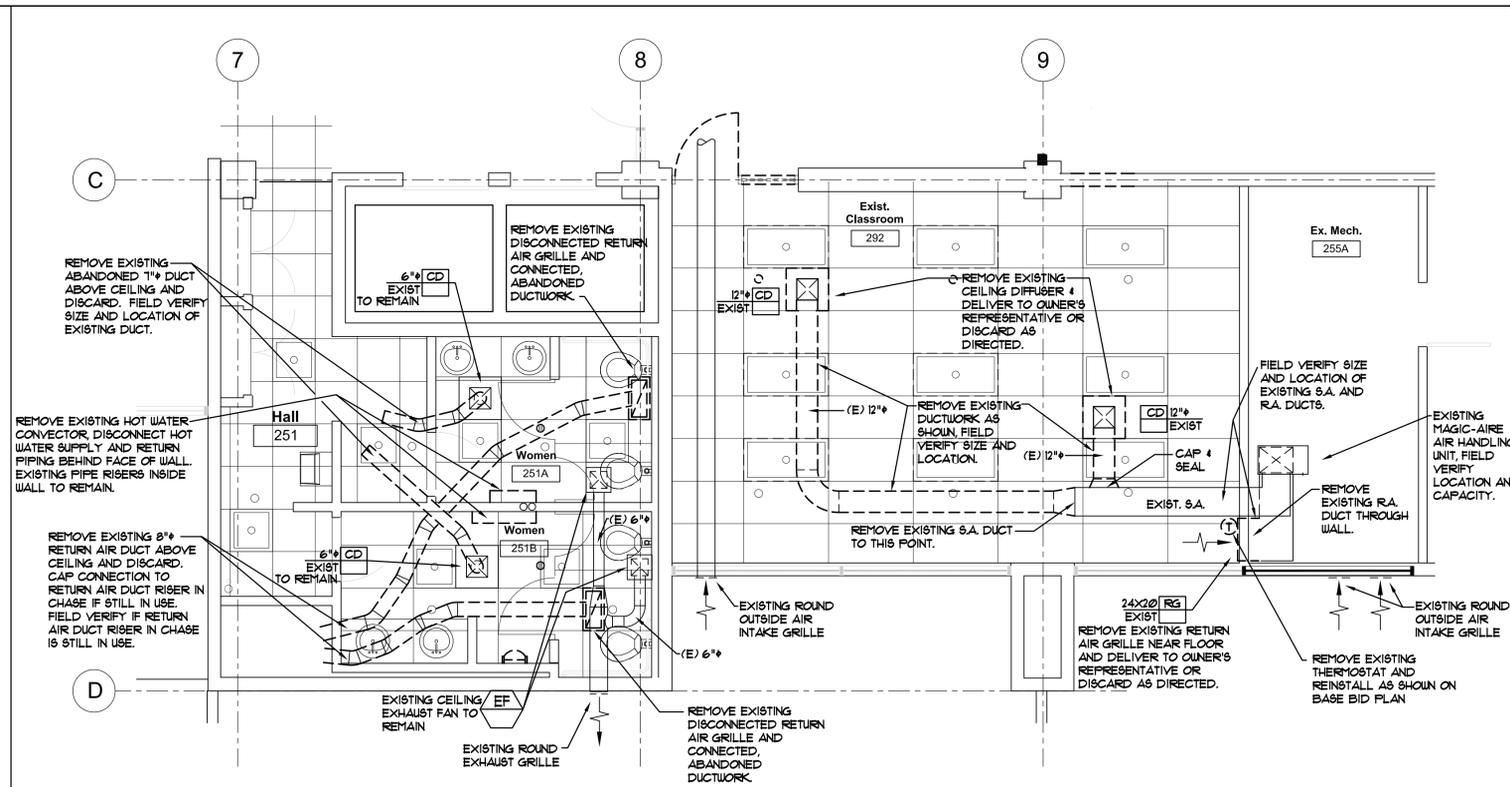
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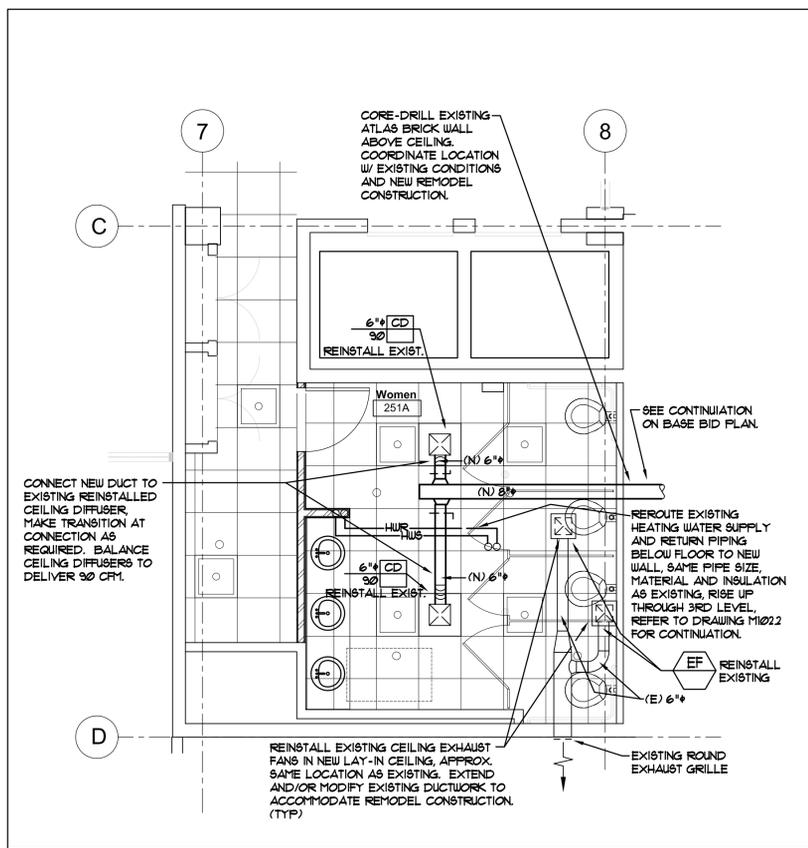
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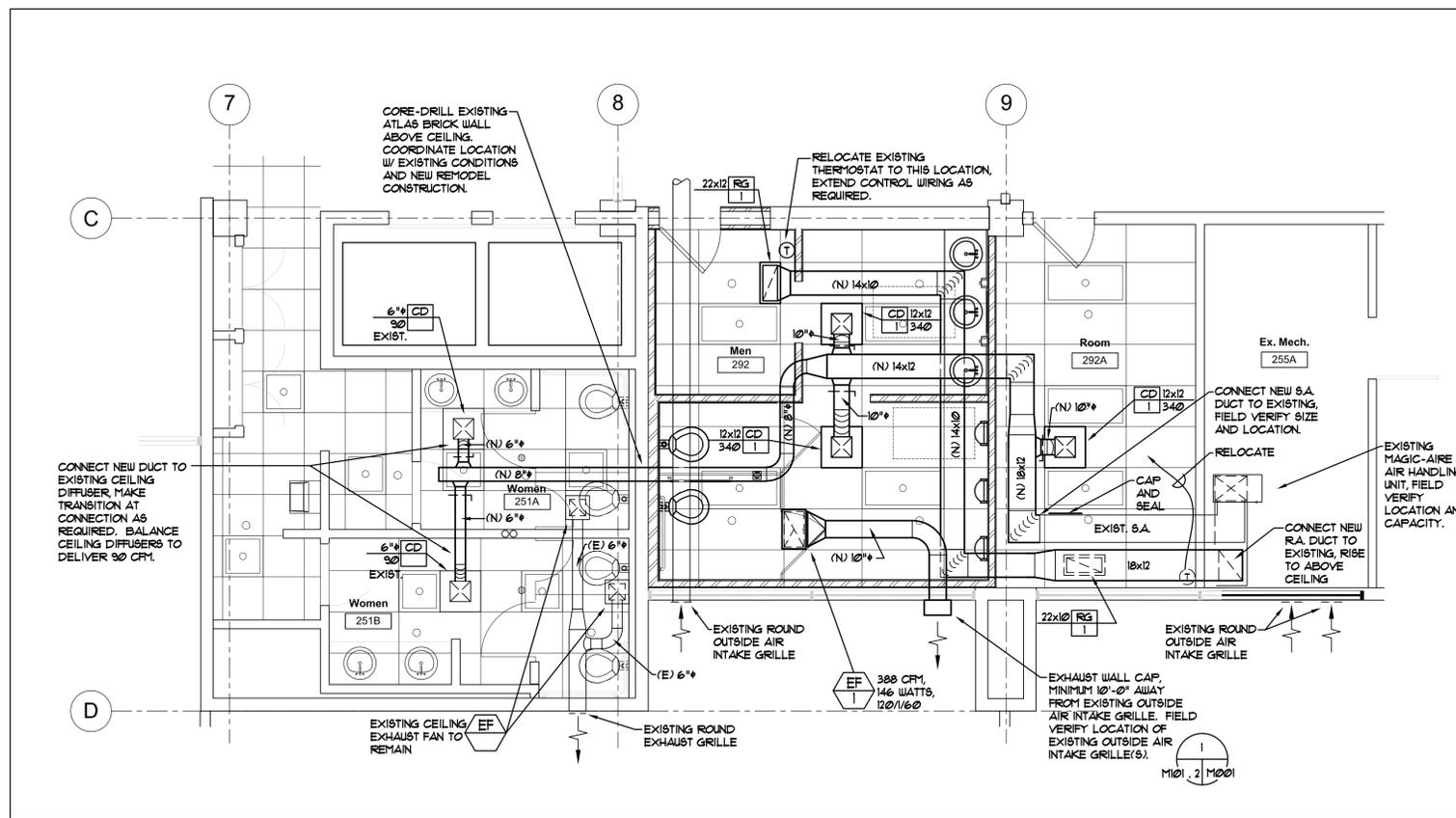
Level 2 - Phase 2 Mechanical Demolition - Alt. No. 1
 1/4" = 1'-0"



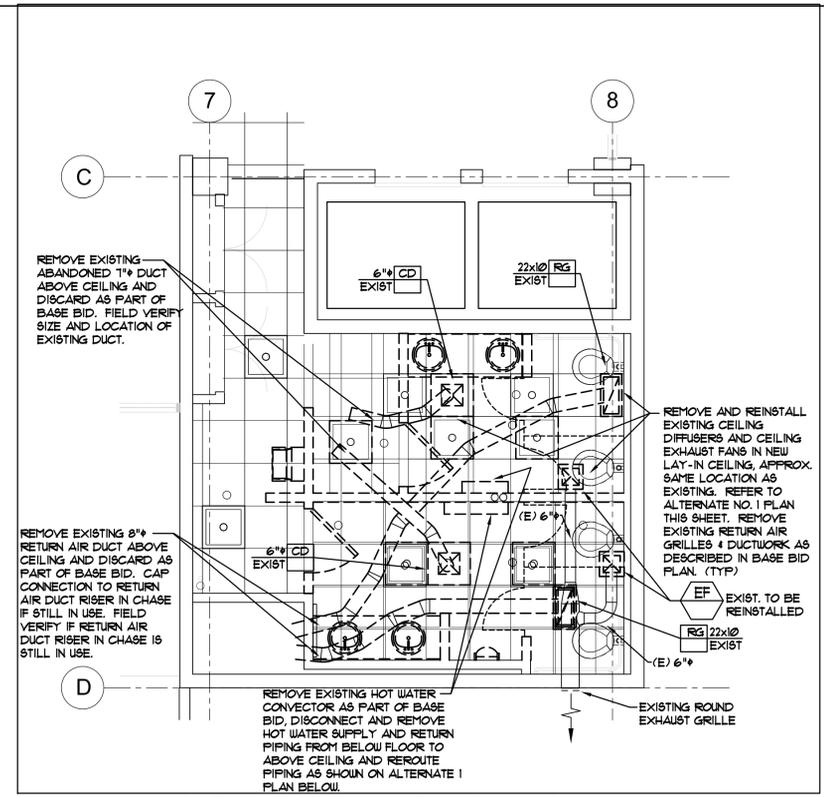
Level 2 - Phase 2 Mechanical Demolition - Base Bid
 1/4" = 1'-0"



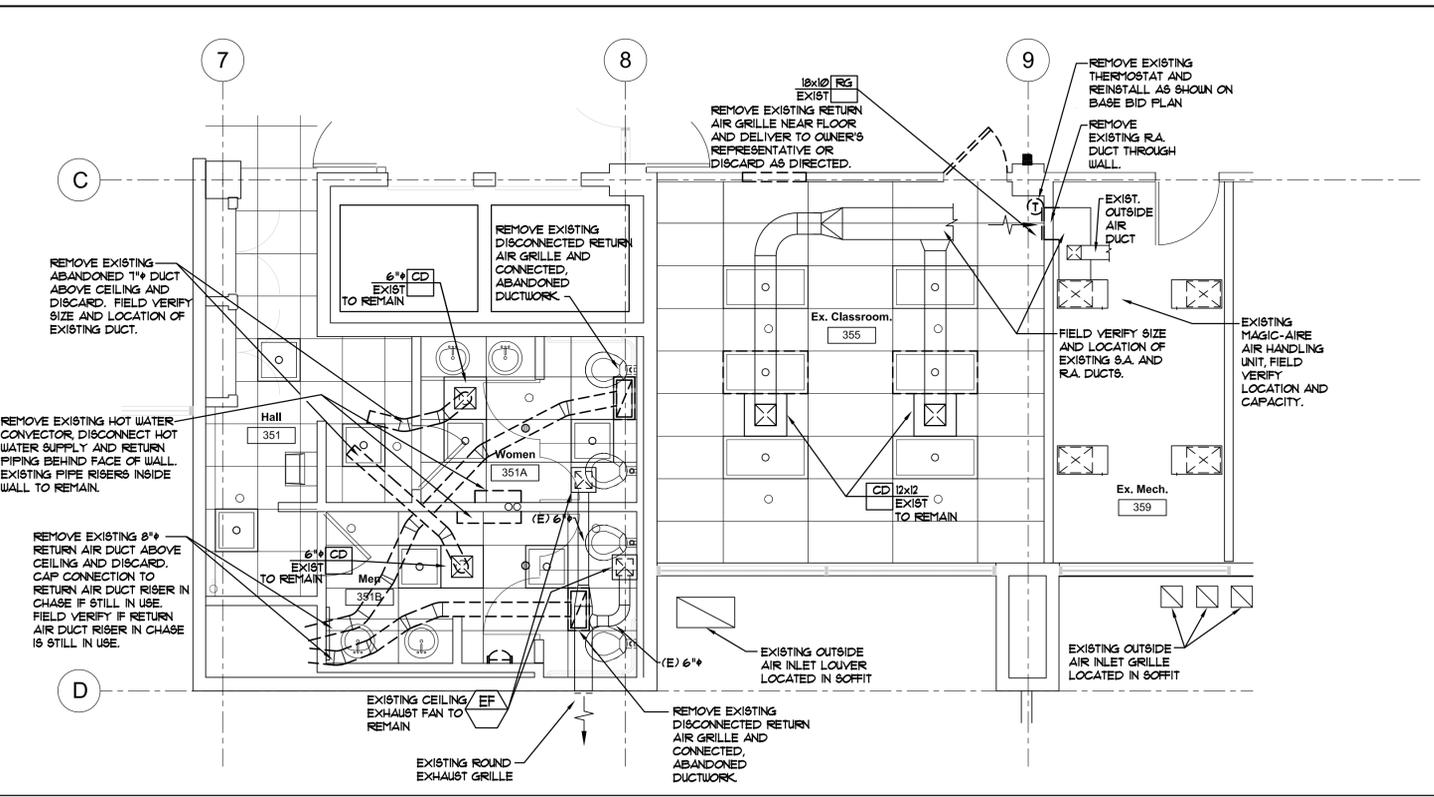
Level 2 - Phase 2 Mechanical Plan - Alt. No. 1
 1/4" = 1'-0"



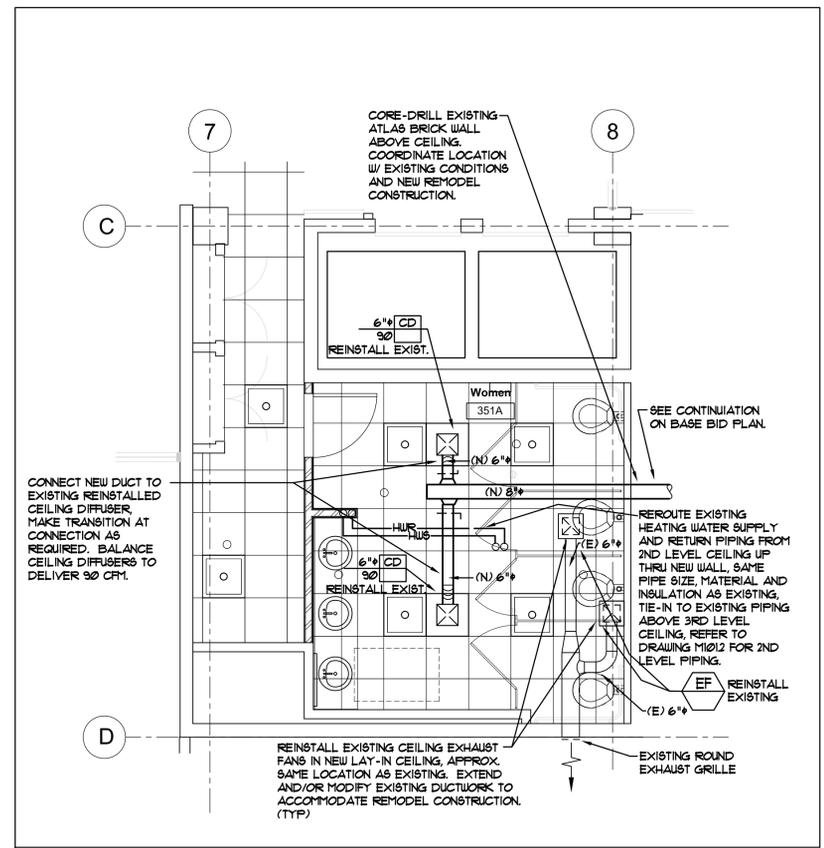
Level 2 - Phase 2 Mechanical Plan - Base Bid
 1/4" = 1'-0"



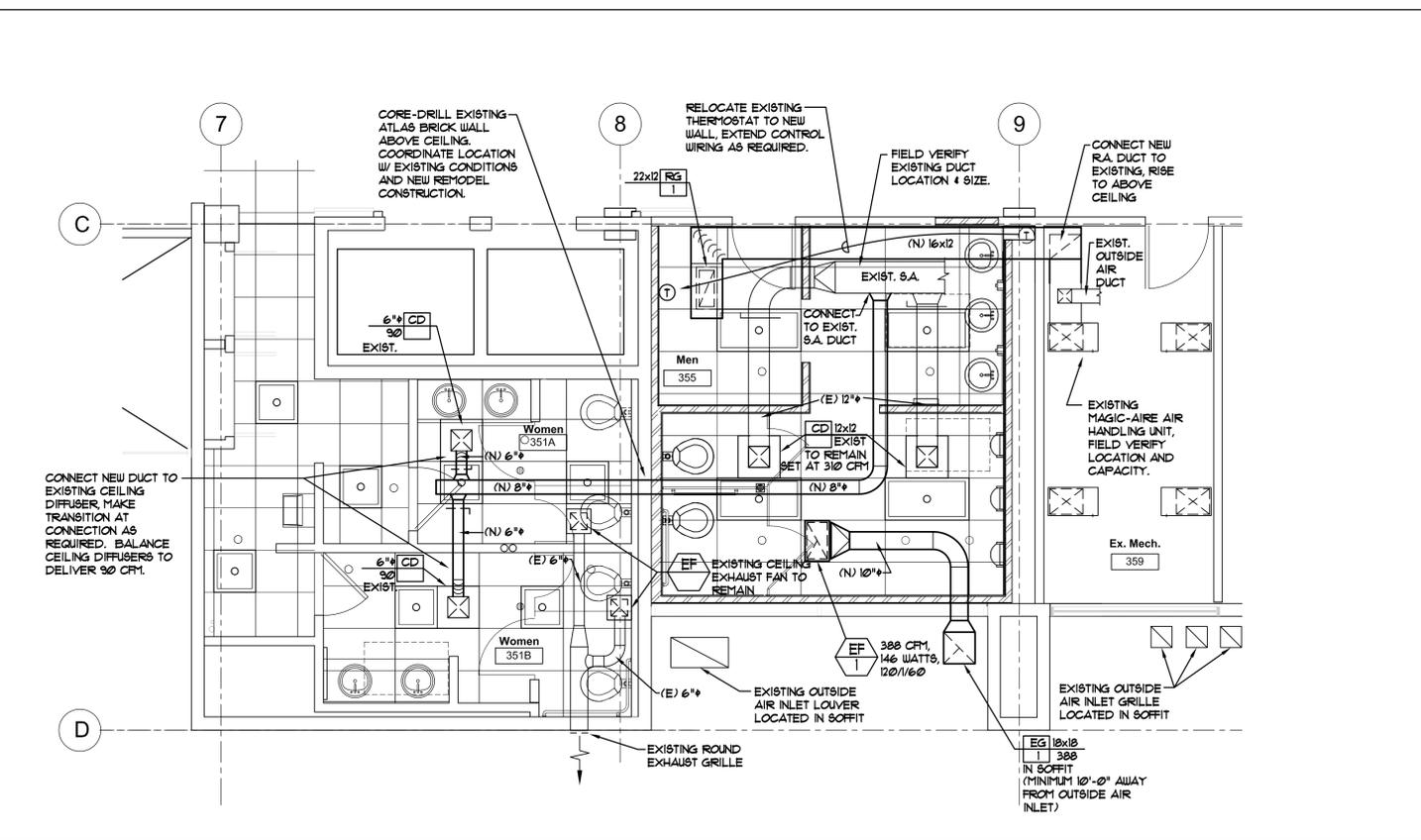
Level 3 - Phase 2 Mechanical Demolition - Alt. No. 1
 1/4" = 1'-0"



Level 3 - Phase 2 Mechanical Demolition - Base Bid
 1/4" = 1'-0"



Level 3 - Phase 2 Mechanical Plan - Alt. No. 1
 1/4" = 1'-0"



Level 3 - Phase 2 Mechanical Plan - Base Bid
 1/4" = 1'-0"

PART 14 - OPERATION AND MAINTENANCE MANUALS

1. PROVIDE THREE (3) SETS OF BOUND OPERATION AND MAINTENANCE MANUALS COVERING ALL NEW HVAC EQUIPMENT FOR THE OWNER'S USE. 0 4 M MANUALS SHALL HAVE THE FOLLOWING FORMAT:
 - A. SIZE: 8-1/2" X 11"
 - B. PAPER: MANUFACTURER'S PRINTED DATA, OR NEATLY TYPE WRITTEN.
 - C. PROVIDE REINFORCED PUNCHED BINDER TAB, BIND IN WITH TEXT.
 - D. PROVIDE FLY-LEAF FOR EACH SEPARATE PRODUCT, OR EACH PIECE OF OPERATING EQUIPMENT. PROVIDE TYPED DESCRIPTION OF PRODUCT, AND MAJOR COMPONENT PARTS OF EQUIPMENT, PROVIDE INDEXED TABS.
 - E. COVER: IDENTIFY EACH VOLUME WITH TYPED OR PRINTED TITLE: "OPERATION AND MAINTENANCE INSTRUCTION". LIST TITLE OF PROJECT, IDENTITY OF GENERAL SUBJECT MATTER COVERED IN THE MANUAL.
 - F. BINDERS: COMMERCIAL QUALITY THREE-RING BINDERS WITH DURABLE AND CLEANABLE PLASTIC COVERS.
 - G. PROVIDE NEATLY TYPEWRITTEN TABLE OF CONTENTS, LIST CONTRACTOR NAME, ADDRESS AND PHONE NUMBER. LIST EACH PRODUCT BY PRODUCT NAME AND OTHER IDENTIFYING SYMBOLS AS SET FORTH IN CONTRACT DOCUMENTS.
 - H. INCLUDE COPY OF EACH WARRANTY, BOND AND SERVICE CHART WITH MAINTENANCE SCHEDULE, TEMPERATURE CONTROL DIAGRAMS, SEQUENCE OF OPERATION AND PROVIDE LOGICAL SEQUENCE OF INSTRUCTION FOR EACH PROCEDURE.

PART 15 - WARRANTY AND GUARANTEE

1. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE NEW HVAC SYSTEM INSTALLATION AND SHALL PROVIDE A ONE (1) YEAR PARTS AND LABOR WARRANTY FOR HIS PERFORMED WORK AFTER EQUIPMENT START-UP AND THE OWNER'S ACCEPTANCE. SHOULD ANY TROUBLE DEVELOP DURING THIS PERIOD DUE TO DEFECTIVE MATERIALS OR FAULTY WORKMANSHIP, THE CONTRACTOR SHALL FURNISH ALL NECESSARY LABOR AND MATERIALS TO CORRECT THE TROUBLE WITHOUT ANY COST TO THE BUILDING OWNER. ANY MATERIALS FOUND TO BE DEFECTIVE DURING THE GUARANTEE PERIOD SHALL BE CORRECTED IMMEDIATELY TO THE ENTIRE SATISFACTION OF THE OWNER.

PART 1 - SUBMITTALS

1. BY DESCRIPTION, CATALOG NUMBER AND SPECIFIC DESIGNATION, STANDARDS ARE ESTABLISHED FOR MANUFACTURED ITEMS SUCH AS SPECIALTIES AND EQUIPMENT WHICH THE CONTRACTOR SHALL FURNISH AS REQUIRED BY THIS SECTION. PRIOR APPROVAL IS REQUIRED FOR SUBSTITUTION OF EQUIPMENT AND MATERIALS PRIOR TO BID. SUBSTITUTION OF PRODUCTS SHOWN SHALL BE SUBMITTED TO THE ARCHITECT, THE OWNER'S REPRESENTATIVE OR ENGINEER FOR WRITTEN APPROVAL.
2. SHOP DRAWINGS AND UP-TO-DATE ENGINEERING DATA SHEETS AND CATALOG INFORMATION SHALL BE FURNISHED ON THE FOLLOWING ITEMS OF EQUIPMENT. PROVIDE (6) COPIES FOR REVIEW.
 - 1) ALL DIFFUSERS, GRILLES, ETC.
 - 2) DUCTWORK FABRICATION METHODS.
 - 3) EXHAUST FANS.

PART 8 - CUTTING AND PATCHING

1. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR REQUIRED CUTTING AND PATCHING INCIDENT TO WORK FOR THIS DIVISION, THE COST OF WHICH SHALL BE PAID FOR BY THE MECHANICAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL MAKE REQUIRED REPAIRS AFTERWARDS TO SATISFACTION OF ARCHITECT AND/OR OWNER'S REPRESENTATIVE. CUT CAREFULLY TO MINIMIZE NECESSITY FOR REPAIRS TO EXISTING WORK. DO NOT CUT BEAMS, COLUMNS, OR TRUSSES. PATCH AND REPAIR WALLS, FLOORS, CEILING, AND ROOFS WITH MATERIALS OF SAME QUALITY AND APPEARANCE AS ADJACENT SURFACES UNLESS OTHERWISE SHOWN. SURFACE FINISHES SHALL EXACTLY MATCH EXISTING FINISHES OF SAME MATERIALS.
2. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CUTTING, PATCHING, REPAIRING, AND REPLACING OF WORK OF OTHER CONTRACTORS REQUIRED BECAUSE OF ITS FAULT, ERROR, TARDINESS, OR BECAUSE OF DAMAGE DONE BY THE MECHANICAL CONTRACTOR.

PART 9 - FIRE ASSEMBLY PENETRATIONS

1. PROVIDE UL LISTED FIRE DAMPERS WITH FUSIBLE LINKS CONSTRUCTED TO UL STANDARD 33 AND UL LISTED FIRE/SMOKE DAMPERS WITH SMOKE DETECTORS CONFORMING TO NFPA 90A AND MEETING UL995 REQUIREMENTS AS REQUIRED BY STATE AND LOCAL CODES, INCLUDING ANY ADDITIONAL FIRE DAMPERS AND/OR FIRE/SMOKE DAMPERS WITH SMOKE DETECTORS THAT MAY BE REQUIRED, EVEN IF NOT SHOWN ON THE MECHANICAL DRAWINGS. PROVIDE FIRESTOP SYSTEM AS REQUIRED BY LOCAL CODES AND ORDINANCES.
2. PROVIDE SMOKE DETECTORS AND WIRING CONTROL AS REQUIRED FOR OPERATION OF SMOKE DETECTORS AND FIRE/SMOKE DAMPERS.
3. COORDINATE REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR, GENERAL CONTRACTOR, ARCHITECT, THE OWNER'S REPRESENTATIVE AND THE LOCAL AUTHORITIES HAVING JURISDICTION.
4. PROVIDE UL FIRE PENETRATION SYSTEM NUMBER UL1002, FC1002, FC1006, FC3001 OR FC1001 FOR COMBUSTIBLE CONSTRUCTION OR SYSTEM NUMBER UL1002, UL2002, FA5001 OR FA5001 FOR NON-COMBUSTIBLE CONSTRUCTION OF THE UL BUILDING MATERIALS DIRECTORY AND AS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION.
5. ALL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL COMPLY WITH UL FIRE RESISTANCE DIRECTORY, LATEST EDITION.
6. ACCESS PANELS SHALL BE PROVIDED IN WALLS OR GIBB CEILINGS WHERE REQUIRED TO ACCESS DAMPERS OR CONCEALED EQUIPMENT. ACCESS DOORS SHALL BE HINGED AND CONSTRUCTED OF METAL WITH A SCREWDRIVER LATCH. ALL ACCESS PANELS SHALL BE MINIMUM 18" X 18" UNLESS OTHERWISE NOTED ON THE DRAWINGS, OR LARGER IF REQUIRED FOR THE REMOVAL OF EQUIPMENT. FIRE-RATED ACCESS PANELS SHALL BE INSTALLED IN FIRE-RATED ASSEMBLIES. INSTALLATION SHALL BE NEAT IN FINAL APPEARANCE.

PART 10 - SEISMIC BRACING

1. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL REQUIRED SEISMIC BRACING, RESTRAINTS, ETC. FOR HIS INSTALLED EQUIPMENT, DUCTWORK, PIPING, ETC., ALL OF WHICH SHALL COMPLY WITH FPIC AND SMACNA GUIDELINES FOR SEISMIC ZONE IV REQUIREMENTS AND IN ACCORDANCE WITH THE AUTHORITIES HAVING JURISDICTION.

PART 11 - AS-BUILT DRAWINGS

1. THE MECHANICAL CONTRACTOR SHALL KEEP A RECORD SET OF DRAWINGS NEATLY MARKED WITH ALL CHANGES FROM THE ORIGINAL DESIGN AND DRAWINGS. THESE DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT AND/OR OWNER'S REPRESENTATIVE AT THE COMPLETION OF THE PROJECT AND PRIOR TO RECEIVING FINAL PAYMENT.

PART 12 - CHECK, TEST AND START-UP

1. THE MECHANICAL CONTRACTOR SHALL PROVIDE MATERIAL AND LABOR REQUIRED TO PERFORM START-UP OF EACH RESPECTIVE ITEM OF EQUIPMENT. SUBMIT START-UP REPORT TO THE ARCHITECT AND/OR OWNER'S REPRESENTATIVE.

PART 13 - TESTING, ADJUSTING AND BALANCING

1. THE MECHANICAL CONTRACTOR SHALL PAY FOR THE SERVICES OF AN INDEPENDENT AIR BALANCING CONTRACTOR WHO IS AABC CERTIFIED AND APPROVED BY THE ARCHITECT AND/OR THE OWNER'S REPRESENTATIVE PRIOR TO BIDDING TO PERFORM TESTING ADJUSTING AND BALANCING OF THE NEW HVAC SYSTEMS. SUBMIT AIR BALANCE REPORT AND AABC TEST REPORT. TEST PROCEDURE SHALL CONFORM TO AABC STANDARDS FOR FIELD MEASUREMENT & INSTRUCTION, FORM P1266, VOLUME I.
2. THE MECHANICAL CONTRACTOR SHALL MAKE CHANGES TO FULLEYS, BELTS AND DAMPERS AS RECOMMENDED BY THE BALANCING CONTRACTOR.

9. INSTALL INSULATION IN A NEAT AND WORKMANLIKE MANNER WITH NO FISHTAILS. FINISH SHALL BE SMOOTH WITH ALL JOINTS PROPERLY TAPED. INSULATION SHALL BE FULL THICKNESS UNCOMPRESSED EXCEPT WHERE REQUIRED TO PASS STRUCTURAL INTERFERENCES.

PART 4 - LINE VOLTAGE WIRING

1. LINE VOLTAGE WIRING AND CONDUIT IS BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL STARTERS AND DISCONNECT SWITCHES AS REQUIRED FOR THE HVAC EQUIPMENT. COORDINATE AS REQUIRED WITH THE ELECTRICAL CONTRACTOR, THE GENERAL CONTRACTOR AND OWNER'S REPRESENTATIVE.

PART 5 - TEMPERATURE CONTROLS AND WIRING

1. RELOCATION OF THE AUTOMATIC TEMPERATURE CONTROLS AND ASSOCIATED CONDUIT AND CONTROL WIRING FOR THE EXISTING FAN COIL UNITS SHALL BE BY THE MECHANICAL CONTRACTOR. PROVIDE ALL DEVICES, COMPONENTS, CONDUIT, CONTROL WIRING AS REQUIRED TO ENSURE COMPLETE OPERABLE AUTOMATIC TEMPERATURE CONTROL SYSTEMS.
2. VERIFY THE RELOCATED THERMOSTAT LOCATIONS AS SHOWN ON THE DRAWINGS WITH THE OWNER'S REPRESENTATIVE PRIOR TO ROUGH-IN INSTALLATION.
3. ALL TEMPERATURE CONTROL WIRING SHALL RUN IN CONDUIT.
4. ALL TEMPERATURE CONTROLS ARE TO BE TESTED, ADJUSTED AND CALIBRATED FOR PROPER OPERATION.

PART 6 - INSTALLATION

1. COORDINATE THE REMODELING OF THE EXISTING HVAC SYSTEMS, EQUIPMENT, CONTROLS AND DUCTWORK INSTALLATIONS WITH THE EXISTING CONDITIONS, OTHER TRADES, PLUMBING PIPING, FIRE SPROKLER PIPING, CONDUIT, ETC. COORDINATE THE CEILING DIFFUSER, RETURN AIR GRILLES AND EXHAUST GRILLE LOCATIONS, WITH THE ELECTRICAL DRAWINGS AND THE ARCHITECTURAL REFLECTED CEILING PLAN. ROUTE THE NEW DUCTWORK SO AS NOT TO INTERFERE WITH THE STRUCTURE OR THE REMOVING AND SERVICING OF LIGHT FIXTURES. CHANGES REQUIRED AS A RESULT OF NEGLECT TO COORDINATE INTERFERENCES WILL BE MADE AT THE MECHANICAL CONTRACTOR'S EXPENSE.
2. RUN ALL DUCTWORK AS TIGHT AS POSSIBLE TO THE BOTTOM OF THE STRUCTURE IN THE DROPPED CEILING SPACE (SOME DUCTWORK MAY HAVE TO BE ROUTED BETWEEN THE JOISTS AND/OR THRU THE OPEN WEB OF THE JOISTS, IN ORDER TO MAINTAIN THE FINISHED CEILING HEIGHTS AND HEAD CLEARANCES AS SCHEDULED ON THE ARCHITECTURAL DRAWINGS. VERIFY THE DUCT HEIGHT DIMENSIONS WITH THE AVAILABLE CEILING SPACE AND MODIFY THE DUCT SIZES IF NECESSARY (KEEPING THE SAME DUCT AREA AS SHOWN ON THE MECHANICAL DRAWINGS - DUCT HEIGHT DIMENSION SHALL NOT BE LESS THAN 8") TO ACCOMMODATE ANY INTERFERENCES. COORDINATE THE NEW DUCTWORK IN THE SPACE WITH THE EXISTING CONDITIONS, CONDUIT AND PIPING. FIELD VERIFY THE ROUTING OF DUCTWORK AND EQUIPMENT AND PIPING AS SHOWN ON THE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS.
3. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO SHOW ALL DUCT OFFSETS AND ROUTINGS. IT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO PROVIDE ANY ADDITIONAL DUCTWORK AND OFFSETS AS REQUIRED TO ACCOMMODATE THE NEW STRUCTURE AND TO ENSURE COMPLETE AND OPERABLE SYSTEMS.
4. LOCATE ALL NEW OUTSIDE AIR INTAKES A MINIMUM OF 10'-0" DISTANCE FROM EXHAUST OUTLETS, FLUE AND PLUMBING VENTS.
5. IT IS UNDERSTOOD THAT WHILE DRAWINGS ARE TO BE FOLLOWED AS CLOSELY AS CIRCUMSTANCES PERMIT, THE MECHANICAL CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE INSTALLATION OF SYSTEMS ACCORDING TO THE TRUE INTENT AND MEANING OF CONTRACT DOCUMENTS. ANYTHING NOT CLEAR OR IN CONFLICT WILL BE EXPLAINED BY MAKING APPLICATION TO ARCHITECT AND/OR THE OWNER'S REPRESENTATIVE. SHOULD CONDITION ARISE WHERE CERTAIN CHANGES WOULD BE ADVISABLE, SECURE APPROVAL OF THESE CHANGES BEFORE PROCEEDING WITH WORK.
6. ARRANGE DUCTS, AND EQUIPMENT TO PERMIT READY ACCESS TO VALVES, UNIONS, TRAPS, STARTERS, MOTORS, CONTROL COMPONENTS, AND TO CLEAR OPENING OF DOORS AND ACCESS PANELS.
7. FURNISH AND INSTALL HANGERS AND SUPPORTS REQUIRED BY THE MECHANICAL CONTRACTOR UNLESS OTHERWISE NOTED. FURNISH SLEEVES, SUPPORTS, AND EQUIPMENT THAT ARE AN INTEGRAL PART OF OTHER CONTRACTOR'S WORK IN SUFFICIENT TIME TO BE BUILT INTO CONSTRUCTION AS THE WORK PROCEEDS. LOCATE THESE ITEMS AND SEE THAT THEY ARE PROPERLY INSTALLED. EXPENSE RESULTING FROM IMPROPER LOCATION OR INSTALLATION OF ITEMS ABOVE SHALL BE BORNE BY THE MECHANICAL CONTRACTOR.
8. ADJUST LOCATION OF DUCTS, EQUIPMENT, ETC. TO ELIMINATE INTERFERENCE ANTICIPATED AND ENCOUNTERED. DETERMINE EXACT ROUTE AND LOCATION OF DUCTWORK PRIOR TO FABRICATION. MAKE OFFSETS, TRANSITIONS, AND CHANGES IN DIRECTION OF DUCTS AS REQUIRED TO MAINTAIN PROPER CLEARANCES WHETHER OR NOT INDICATED ON DRAWINGS. FURNISH AND INSTALL FITTINGS AS REQUIRED TO EFFECT THESE OFFSETS, TRANSITIONS, AND CHANGES IN DIRECTION.
9. ENSURE THAT NEW HVAC EQUIPMENT TO BE FURNISHED ALONG WITH DUCTWORK FIT IN SPACE AVAILABLE. MAKE NECESSARY FIELD MEASUREMENTS TO ASCERTAIN SPACE REQUIREMENTS INCLUDING THOSE FOR CONNECTIONS AND FURNISH AND INSTALL EQUIPMENT OF SIZE AND SHAPE SO THAT FINAL INSTALLATION REFLECTS TRUE INTENT AND MEANING OF CONTRACT DOCUMENTS.
10. FOLLOW MANUFACTURER'S DIRECTION IN DELIVERY, STORAGE, PROTECTION, AND INSTALLATION OF EQUIPMENT AND MATERIALS. PROMPTLY NOTIFY ARCHITECT AND/OR OWNER'S REPRESENTATIVE IN WRITING OF CONFLICTS BETWEEN REQUIREMENTS OF CONTRACT DOCUMENTS AND MANUFACTURER'S DIRECTIONS AND OBTAIN ARCHITECT'S AND/OR OWNER'S REPRESENTATIVE WRITTEN INSTRUCTION BEFORE PROCEEDING WITH WORK. BEAR EXPENSES FOR CORRECTING DEFICIENCIES OF WORK THAT DO NOT COMPLY WITH MANUFACTURER'S DIRECTIONS OR WRITTEN INSTRUCTIONS.
11. DELIVER EQUIPMENT AND MATERIAL TO SITE AND TIGHTLY COVER AND PROTECT AGAINST DIRT, WATER, AND CHEMICAL OR MECHANICAL INJURY. EQUIPMENT AND MATERIAL SHALL BE READILY ACCESSIBLE FOR INSPECTION. STORE ITEMS SUBJECT TO MOISTURE DAMAGE (SUCH AS CONTROLS) IN A DRY HEATED SPACE.

MECHANICAL NOTES

PART 1 - GENERAL

1. THE MECHANICAL CONTRACTOR SHALL BE AN EXPERIENCED FIRM REGULARLY ENGAGED IN THE INSTALLATION OF COMMERCIAL MECHANICAL SYSTEMS IN ACCORDANCE WITH LOCAL CODES. THE OWNER'S REPRESENTATIVE MAY REJECT ANY PROPOSED CONTRACTOR WHO CANNOT SHOW EVIDENCE OF SUCH QUALIFICATIONS.
2. VISIT THE JOBSITE PRIOR TO BIDDING, PRIOR TO MATERIAL FABRICATION AND PRIOR TO EQUIPMENT PROCUREMENT TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS, INTERFERENCES AND ANY DISCREPANCIES.
3. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, EQUIPMENT SUPPORTS, DIFFUSERS AND GRILLES AS REQUIRED TO ENSURE A COMPLETE AND OPERABLE HVAC SYSTEM. FURNISH ALL PAINT, LABOR, EQUIPMENT, APPLIANCES AND MATERIALS, AND PERFORM ALL OPERATIONS IN CONNECTION WITH THE INSTALLATION OF THE REMODELING AND NEW HEATING, VENTILATION, AND AIR CONDITIONING SYSTEMS IN STRICT ACCORDANCE WITH THE DRAWINGS. SUCCESSFUL, TROUBLE-FREE OPERATION OF A VIBRATION-FREE SYSTEM IS A PREREQUISITE.
4. THE MECHANICAL CONTRACTOR SHALL SCHEDULE ALL WORK SO AS NOT TO INTERFERE AND/OR DISRUPT THE DAILY ACTIVITIES AND/OR OPERATING HOURS OF THE ADJOINING BUILDING OPERATIONS. COORDINATE AS REQUIRED WITH THE GENERAL CONTRACTOR, THE ARCHITECT AND THE OWNER'S REPRESENTATIVE.
5. ELEVATION OF THE PROJECT SITE IS 4,400 FEET.
6. THE MECHANICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL FEES AND PERMITS RELATING TO HIS WORK.
7. THE NEW HVAC SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH STATE AND LOCAL CODES, OSHA, NFPA, SMACNA AND ASHRAE GUIDELINES.

PART 2 - DUCTWORK

1. DUCT SIZES SHOWN REPRESENT INSIDE DUCT DIMENSIONS. ALL DUCT SHALL BE FABRICATED FROM GALVANIZED STEEL IN ACCORDANCE WITH SMACNA REQUIREMENTS. NON-METALLIC DUCTWORK SHALL NOT BE USED. CONCEALED SUPPLY AND RETURN DUCTWORK SHALL BE GALVANIZED STEEL.
2. MANUAL BALANCING DAMPERS SHALL BE OPPOSED BLADE TYPE, GALVANIZED STEEL, AND SHALL HAVE LOCKING QUADRANT OPERATORS OR EXTENDED CONCEALED CEILING OPERATORS WHERE ACCESS IS LIMITED AND/OR AT GYPSUM BOARD CEILINGS. ALL SUPPLY AIR TAKE-OFF DUCTS SHALL HAVE BALANCING DAMPERS.
3. ALL NEW DUCTWORK IN THE CEILING SPACE SHALL BE GALVANIZED STEEL AND SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS & RECOMMENDATIONS, LATEST EDITION. PROVIDE TURNING VANES IN ALL NEW RECTANGULAR SUPPLY AND RETURN AIR DUCTWORK ELBOWS. PROVIDE VOLUME DAMPERS WITH LOCKING QUADRANTS AT EACH NEW BRANCH TAKE-OFF SEAL. ALL DUCT JOINTS. PROVIDE FLEXIBLE CONNECTORS BETWEEN DUCTWORK AND HVAC EQUIPMENT (AIR HANDLING EQUIPMENT) WHERE THE VOLUME DAMPER IS NOT ACCESSIBLE. PROVIDE YOUNG NO. 81A OR 61B, CONSISTING OF AN END BEARING OR MITER GEAR COUPLING, 3/8" SQUARE SHAFT, AND A 3/8" REGULATOR (LENGTH AS REQUIRED) FOR OPERATING THE VOLUME DAMPER FROM SUSPENDED CEILING.
4. ALL RECTANGULAR SUPPLY AND RETURN AIR DUCTWORK SHALL HAVE 1" THICK ACoustic DUCT LINER INSULATION. ALL DUCT DIMENSIONS SHOWN ON THE MECHANICAL PLAN REPRESENT CLEAR INSIDE DUCT DIMENSIONS.
5. THE ABOVE CEILING GALVANIZED STEEL DUCTWORK HANGERS SHALL BE INSTALLED AS FOLLOWS:

DUCT SIZE:	GUAGE:	SUPPORT:	SPACING:
12" AND UNDER	36 GA.	(2) 1" X 22 GA. STRAPS	EVERY 10 FT.
13" TO 30"	24 GA.	(2) 1" X 18 GA. STRAPS	EVERY 10 FT.
31" TO 40"	22 GA.	(2) 1" X 18 GA. STRAPS	EVERY 10 FT.
40" AND OVER	20 GA.	(2) 1" X 18 GA. STRAPS	EVERY 10 FT.

PART 3 - DUCTWORK INSULATION

1. ALL NEW RECTANGULAR SUPPLY AND RETURN DUCTWORK IN THE CEILINGS AND ATTIC SPACE SHALL HAVE ACOUSTIC DUCT LINER INSULATION. ALL ROUND RIGID METAL TAKE-OFF DUCTWORK IN THE CEILING AND ATTIC SPACE SHALL HAVE 1" THICK EXTERNAL DUCT-WRAP INSULATION WITH VAPOR BARRIER.
2. THE DUCT LINING SHALL BE ONE INCH THICK FIBERGLASS, 1-1/2 POUNDS PER CUBIC FOOT DENSITY, NOISE ATTENUATION FACTOR OF NRC = 0.10 WITH THE AIR STREAM SURFACE FACED WITH A BLACK COATED MATTE.
3. THE DUCT-WRAP INSULATION SHALL BE ONE INCH THICK FIBERGLASS, 1-1/2 POUNDS PER CUBIC FOOT DENSITY, NOISE ATTENUATION FACTOR OF NRC = 0.10.
4. THE LINING AND DUCT-WRAP INSULATION SHALL HAVE A THERMAL CONDUCTANCE OF 0.24 BTU PER SQUARE FOOT PER DEGREE F. AT A MEAN TEMPERATURE OF 50-DEGREES F.
5. THE REQUIRED FIRE HAZARD CLASSIFICATION IS: FLAME SPREAD NOT OVER 25, FUEL CONTRIBUTED NOT OVER 50, SMOKE DEVELOPED NOT OVER 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84.
6. INSULATED FLEXIBLE DUCTWORK MEETING CLASS I REQUIREMENTS OF NFPA 90A AND UL LABELED MAY BE USED AT THE CEILING DIFFUSER CONNECTIONS IN THE CONCEALED CEILING SPACE AREAS AND SHALL BE INSULATED WITH 1" THICK FIBERGLASS INSULATION WITH VAPOR BARRIER WITH A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPED RATING OF 50 OR LESS WHEN TESTED IN ACCORDANCE WITH ASTM E84, AND SHALL BE LIMITED TO 5-FEET IN LENGTH.
7. APPROVED ACOUSTIC DUCT LINER MANUFACTURERS ARE:
 - JOHN-MANVILLE "LINAUSTIC"
8. APPROVED EXTERNAL INSULATION MANUFACTURERS ARE:
 - MANVILLE MICROLITE F8K
 - C8G TYPE IV STANDARD DUCT INSULATION
 - OWENS CORNING FRK
 - KNAUF (DUCT WRAP F8K)

State of Utah

Department of Administrative Services



Division of Facilities
Construction & Management
4110 State Office Building
Salt Lake City, Utah 84114
Phone: (801) 538-3018
Fax: (801) 538-3267

http://dfcm.utah.gov

CREATED BY: Design Interface LLC



DESIGN INTERFACE LLC
ARCHITECTURE | BUSINESS/INDUSTRIAL | COMMERCIAL | RESIDENTIAL

925 SOUTH 2ND WEST, SUITE B
SALT LAKE CITY
UTAH 84101
O 801.533.0100 F 801.533.0101

TW Engineering Associates
2165 Sublette Plaza / Sandy, Utah 84085 / O (801) 943-2705 / F (801) 943-0744
Mechanical & Electrical Consulting Engineering
e-mail: twengineering@msn.com
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BUILDING NAME:

3760 So. Highland Drive
Salt Lake City, Utah 84106

PROJECT TITLE:

Highland Plaza - Remodel

ISSUE TYPE: Phase 2 - Construction Set

ISSUE DATE: August 18, 2008

DFCM PROJECT NO.: 08123310

ARCHITECT'S PROJECT NO.: 2008.001

CAD DWG FILE:

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SHEET TITLE

Mechanical Notes

SHEET NUMBER

M201.2

SHEET 12 OF 23

PIPE CABLE BRACING SCHEDULE

PIPE SIZE	HANGER ROD SIZE	MAX. ROD LENGTH	HANGER TYPE	BOLTS TO CABLE	CABLE SIZE	CABLE TYPE	ANCHOR CONN. TYPE
1-1/2"	1/2"	25"	CLEVIS	3/8"	1/8"	7x19 GALV	I
2"	1/2"	25"	CLEVIS	3/8"	1/8"	7x19 GALV	I
2-1/2"	5/8"	31"	CLEVIS	3/8"	1/8"	7x19 GALV	I
3"	5/8"	31"	CLEVIS	3/8"	3/16"	7x19 GALV	II
3-1/2"	5/8"	31"	CLEVIS	3/8"	3/16"	7x19 GALV	II
4"	3/4"	37"	CLEVIS	3/8"	3/16"	7x19 GALV	II
5"	3/4"	37"	CLEVIS	1/2"	1/4"	7x19 GALV	III
6"	3/4"	37"	CLEVIS	5/8"	1/4"	7x19 GALV	IV

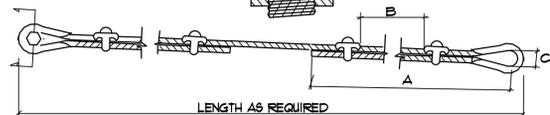
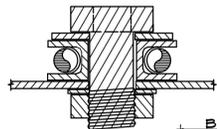
NOTES:

FOR ANCHOR CONNECTIONS SEE SCHEDULE.

SEE PIPE BRACING DETAIL.

* TWO CABLES REQUIRED AT EACH RESTRAINT POINT. EACH CABLE TO BE INSTALLED 45° TO HORIZONTAL AND 45° TO LONGITUDINAL DIRECTION OF PIPE.

** CABLE SYSTEM TO BE EQUAL TO AMBER BOOTH C/W CLAMPS, THIMBLES AND GROMMETS.



NOTES:

1. CABLES, THIMBLES, CLIPS, GROMMETS & FLAT WASHERS ARE TO BE FURNISHED BY RESTRAINT MANUFACTURER. ALL OTHER HARDWARE TO BE PROVIDED BY CONTRACTOR.

2. ENTIRE SYSTEM TO BE EQUAL TO AMBER BOOTH.

3. CABLE CLIPS MUST BE ORIENTED AS SHOWN WITH SHORT END OF CABLE ON THE CURVED PART OF THE CLIP.

CABLE SCHEDULE

CABLE DIA.	CABLE DESIGN	A	B	C	BOLT SIZE	ALLOWABLE LOAD (lbF)	BREAKING STRENGTH (lbF)
1/8"	7x19 GALV.	5-1/4"	1-5/8"	5/8"	3/8"	660	2000
3/16"	7x19 GALV.	5-3/4"	1-7/8"	5/8"	3/8"	1400	4200
1/4"	7x19 GALV.	6-3/4"	2-3/8"	11/16"	3/8"	2330	7000
5/16"	7x19 GALV.	7-3/8"	2-5/8"	13/16"	5/8"	3260	9800
3/8"	7x19 GALV.	8-1/8"	3-1/4"	1"	5/8"	4800	14400
7/16"	6x19 UURC	11"	3-5/8"	1"	5/8"	5920	17800
1/2"	6x19 UURC	18"	3-7/8"	1-1/8"	3/4"	7660	23000

CABLE RESTRAINT

NO SCALE

SCHEDULE FOR TYPICAL CONNECTIONS TO STRUCTURAL SUPPORTING MEMBERS

TYPE	MAX. LOAD CAPACITY POUNDS	PHILLIP'S REDHEAD ANCHORS TO CONC.		CONC. CAST-IN PLACE INSERT	BOLT OF STL.BM. CLAMP
		LT. WT.	HARD ROCK		
I	500	3/8"	3/8"	3/8"	3/8"
II	1000	3/8"	3/8"	1/2"	3/8"
III	1500	3/8"	3/8"	1/2"	3/8"
IV	2000	3/8"	1/2"	5/8"	1/2"
V	3000	2-1/2"	2-1/2"	2-1/2"	5/8"
VI	4000	2-5/8"	2-5/8"	2-5/8"	5/8"

TYPE	SPREADER SIZE	BOLT THRU WOOD	SPAN-CONCRETE ROD	ANGLE TO SUPPORTING STRUCTURAL MEMBER	ROD SIZE FOR PIPES
I	C4x5.4	1/2"	3/8"	3x2x1/4"x0'-3" LLH	1/2"
II	C5x6.1	3/4"	3/8"	3-1/2x2-1/2x5/16x0'-3" LLH	1/2"
III	C6x8.5	***	1/2"	3-1/2x2-1/2x1/16x0'-4" LLH	5/8"
IV	C8x11.5	***	1/2"	5x3x1/2x0'-4" LLH	3/4"
V	C9x13.4	***	***	2-3-1/2x2-1/2x1/16x0'-4"	1/8"
VI	C10x15.3	***	***	2-5x3x1/2x0'-4"	1/8"

NOTES:

1. FOR SLABS LESS THAN 5" THICK ONLY, THIN SLAB INSERTS MAY BE USED.

2. FOR USE W/CONC. CAST-IN PLACE INSERTS OR PHILLIPS REDHEAD IN HARD ROCK ONLY.

3. FOR USE WITH CONC. CAST-IN PLACE INSERTS ONLY.

4. WHERE TYPE III CONNECTIONS ARE REQUIRED FOR WOOD SYSTEMS, TYPE II CONNECTIONS SHALL BE USED WITH REDUCED RESTRAINT SPACING TO 20 FT. O.C. WHERE TYPE IV CONNECTIONS ARE REQUIRED FOR WOOD SYSTEMS, TYPE II CONNECTIONS SHALL BE USED WITH REDUCED RESTRAINT SPACING TO 15 FT. O.C. WHERE TYPE V CONNECTIONS ARE REQUIRED FOR WOOD SYSTEMS, TYPE II CONNECTIONS SHALL BE USED WITH REDUCED RESTRAINT SPACING TO 10 FT. O.C.

5. THE MECHANICAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE STRUCTURAL ENGINEER AND THEN TO THE MECHANICAL ENGINEER, SHOWING CONNECTION TYPE AND LOCATION OF ALL RESTRAINT CONNECTIONS TO THE STRUCTURE.

6. FOR ESSENTIAL FACILITIES WHERE CONCRETE ANCHOR BOLTS OF THE "REDHEAD" EXPANSION TYPE ARE LOADED IN PULL OUT, 50 PERCENT OF THE BOLTS (ALTERNATE BOLTS IN ANY GROUP ARRANGEMENT) SHALL BE PROOF TESTED TO TWICE THE ALLOWABLE LOAD. IF THERE ARE FAILURES, THE IMMEDIATELY ADJACENT BOLTS MUST THEN ALSO BE TESTED.

7. "HILTI" AND "RAMSET" ANCHORS ARE EQUAL SUBSTITUTES FOR "REDHEAD".

PIPE BRACING GENERAL NOTES

1. DETAILS SHOWN PROVIDE GENERAL GUIDELINES FOR A LATERAL BRACING SYSTEM. A TYPICAL VERTICAL SUPPORT SYSTEM MUST ALSO BE USED.

2. BRACE ALL PIPES 1-1/2" ID. AND LARGER.

3. CABLE RESTRAINTS AND BRACING NOT TO EXCEED 30'-0" CENTERS AND SHALL BE PROVIDED AT ALL CHANGES IN DIRECTION OF PIPE. ALL DROPS TO EQUIPMENT, AND ON EACH SIDE OF FLEXIBLE CONNECTIONS. BRACE POINTS SHALL NOT EXCEED 15'-0" FROM FLEXIBLE CONNECTION.

4. ALL HOLES IN ANGLES ARE TO BE 1/16" OVERSIZED. PLACE STANDARD CUT WASHERS BETWEEN SHEET METAL ANGLES AND NUT.

5. EQUIPMENT WHICH ATTACHES TO THE PIPING SYSTEM SHALL BE BRACED INDEPENDENTLY OF THE PIPES.

6. ALL SHEET METAL FOR BRACING TO BE Fy=33 KSI MINIMUM. GAUGE FOR SHEET METAL BRACING SHALL BE AS FOLLOWS:

- 16 GA = (0.0598 INCH)
- 14 GA = (0.0747 INCH)
- 12 GA = (0.1046 INCH)

7. MINIMUM DISTANCE FROM EDGE OF ANGLE TO BOLTS SHALL BE AS FOLLOWS:

BOLT DIAMETER	DISTANCE FROM EDGE
1/4" TO 1/2"	1"
5/8"	1 1/8"
3/4"	1 1/4"
1"	1 1/2"

8. DO NOT FASTEN RESTRAINT SYSTEM TO TWO DISSIMILAR PARTS OF A BUILDING THAT MAY RESPOND IN A DIFFERENT MODE DURING AN EARTHQUAKE. FOR EXAMPLE, A WALL AND A ROOF.

9. PROVIDE LARGE ENOUGH PIPE SLEEVES THROUGH WALLS OR FLOORS TO ALLOW FOR ANTICIPATED DIFFERENTIAL MOVEMENTS.

10. DO NOT FASTEN ONE RIGID PIPING SYSTEM TO TWO DISSIMILAR PARTS OF A BUILDING THAT MAY RESPOND IN A DIFFERENT MODE DURING AN EARTHQUAKE. FOR EXAMPLE, A WALL AND A ROOF.

11. BRACING DETAILS, SCHEDULE AND NOTES ARE TO BE USED WITH THE FOLLOWING TYPES OF PIPE: STEEL PIPE SCHEDULE 40 AND 80, COPPER PIPE TYPE KLM

12. FOR GAS PIPING THE BRACING DETAILS, SCHEDULES AND NOTES MAY BE USED EXCEPT THAT RESTRAINTS SHALL BE INSTALLED AT EVERY 20'-0" O.C. ALSO ALL PIPE 1 INCH AND LARGER SHALL BE BRACED.

13. WASTE, VENT AND ROOF DRAINAGE PIPING SYSTEMS ARE EXCLUDED FROM THE RESTRAINT GUIDELINES.

14. ALTERNATE EVERY OTHER CABLE RESTRAINT IN OPPOSITE DIRECTION.

PLUMBING EQUIPMENT

HT 1
HEAT TRACE CABLE RAYCHEM "XL-TRACE" HEAT CABLE, 5 WATTS PER FOOT, 120/160 SELF-REGULATING HEATING CABLE CONSISTING OF TWO (2) 16 AWG NICKEL-COPPER BUS WIRES EMBEDDED IN PARALLEL IN A POLYMER CORE THAT VARIES ITS POWER OUTPUT TO RESPOND TO TEMPERATURE ALL ALONG ITS LENGTH, ALLOWING THE HEATING CABLE TO BE CUT TO LENGTH IN THE FIELD. SERIES RESISTANCE CABLES WILL NOT BE ALLOWED. POWER CONNECTION, END SEAL, SPlice, AND THE KIT COMPONENTS SHALL BE APPLIED IN THE FIELD. POWER TO THE CIRCUIT WILL BE CONTROLLED BY AN AMBIENT SENSING THERMOSTAT SET AT 40-DEGREES F. 20-AMP CIRCUIT BREAKER SHALL BE EQUIPPED WITH 30 mA MINIMUM GROUND-FAULT PROTECTION. "ELECTRIC TRACED" LABELS SHALL BE APPLIED TO THE OUTSIDE OF THE THERMAL INSULATION SPACED AT NO MORE THAN 20-FOOT. SYSTEM MUST BE INSTALLED AND TESTED PER MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.

DRAINS

FD
FLOOR DRAIN LACQUERED CAST IRON BODY WITH DOUBLE DRAINAGE FLANGE, WEEP HOLES, COMBINED TWO PIECE BODY WITH REVERSIBLE CLAMPING DEVICE AND ADJUSTABLE NICKEL-BRONZE STRAINER. J.R. SMITH 2010-A OR APPROVED EQUIVALENT (USE 2010-B FOR TILE FLOORS). PROVIDE WITH 36" X 36" SHEET OF WATERPROOFING MEMBRANE ON FLOORS ABOVE GROUND LEVEL. THE PLUMBING CONTRACTOR SHALL VERIFY TYPE OF DRAIN TO ACCOMMODATE BUILDING CONSTRUCTION. 2" WASTE.

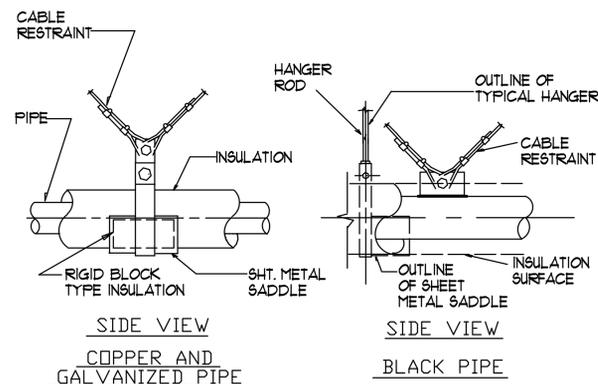
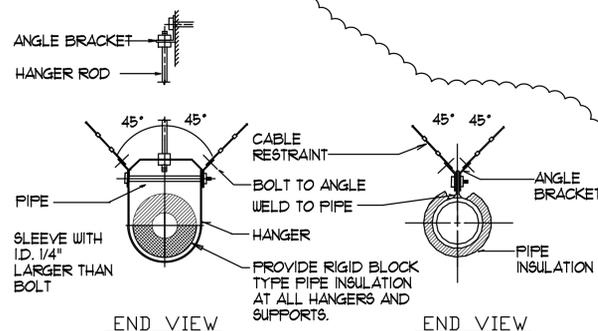
TP
TRAP PRIMER CAST BRONZE WITH 1/2" CONNECTIONS, INSTALL BELOW LAVATORY AND PROVIDE ACCESS PANEL, COORDINATE LOCATION WITH ARCHITECT. J.R. SMITH 2699 OR APPROVED EQUIVALENT. 1/2" INLET AND OUTLET CONNECTIONS.

PLUMBING LEGEND

- COLD WATER
- HOT WATER
- RECIRCULATING HOT WATER
- VENT
- WASTE BELOW FLOOR
- WASTE ABOVE FLOOR
- TP TRAP PRIMER VALVE (WITH ACCESS PANEL)
- BALL VALVE
- UNION
- STRAINER WITH BLOW-DOWN
- VENT THROUGH ROOF
- FD FLOOR DRAIN
- CO CLEANOUT
- WCO WALL CLEANOUT
- ACCESS PANEL
- HT NO. EQUIPMENT DESIGNATION
- POINT OF CONNECTION TO EXISTING
- KEYED NOTE
- EXISTING
- DETAIL DESIGNATION

PLUMBING FIXTURES

- WC-1** WATER CLOSET KOHLER "WELLCOMME" K-4350, FLOOR MOUNTED, SYPHON JET, 16 GPF, ELONGATED, WHITE VITREOUS CHINA, TWO BOLT CAPS, CHURCH 9500C SOLID PLASTIC OPEN FRONT SEAT LESS COVER, SLOAN MODEL III FLUSH VALVE WITH "DIRT GRABBER" MODEL 9FDGI FLUSH VALVE FILTER, OR APPROVED EQUIVALENT. 4" WASTE, 2" VENT, 1" COLD WATER SUPPLY.
- WC-2** WATER CLOSET, ADA COMPLIANT KOHLER "HIGHCREST" K-4302, FLOOR MOUNTED, 16-1/2" HIGH, SYPHON JET, 16 GPF, ELONGATED, WHITE VITREOUS CHINA, TWO BOLT CAPS, CHURCH 9500C SOLID PLASTIC OPEN FRONT SEAT LESS COVER, SLOAN MODEL III FLUSH VALVE WITH "DIRT GRABBER" MODEL 9FDGI FLUSH VALVE FILTER, OR APPROVED EQUIVALENT. 4" WASTE, 2" VENT, 1" COLD WATER SUPPLY.
- UR-1** URINAL KOHLER "BARDON" K-4960-ET, 10 GPF, SYPHON JET, WHITE VITREOUS CHINA, 14" ELONGATED, MAXIMUM RIM HEIGHT 24", WALL CARRIER, SLOAN ROYAL 186 FLUSH VALVE WITH "DIRT GRABBER" MODEL 9FDGI FLUSH VALVE FILTER, OR APPROVED EQUIVALENT. 2" WASTE, 1-1/2" VENT, 3/4" COLD WATER SUPPLY, WALL CLEANOUT.
- UR-2** URINAL, ADA COMPLIANT KOHLER "BARDON" K-4960-ET, 10 GPF, SYPHON JET, WHITE VITREOUS CHINA, 14" ELONGATED, MAXIMUM RIM HEIGHT 17", WALL CARRIER, SLOAN ROYAL 186 FLUSH VALVE WITH "DIRT GRABBER" MODEL 9FDGI FLUSH VALVE FILTER, OR APPROVED EQUIVALENT. 2" WASTE, 1-1/2" VENT, 3/4" COLD WATER SUPPLY, WALL CLEANOUT.
- L-1** LAVATORY, ADA COMPLIANT KOHLER "CANTON" K-225, COUNTER MOUNTED WITH METAL FRAME, 19" X 16", WHITE VITREOUS CHINA, FRONT OVERFLOW, SYMMONS "SYMMETRIX" S-20-1FS-FR TEMPERATURE LIMITING FAUCET WITH LEVER HANDLE, GRID DRAIN ASSEMBLY AND 0.5 GPM FLOW RESTRICTOR, OR APPROVED EQUIVALENT. 1-1/2" WASTE, 1-1/2" VENT, 1/2" HOT AND COLD WATER SUPPLIES. CHROME PLATED SUPPLIES WITH STOPS AND 1/4" P-TRAP. INSULATE EXPOSED SUPPLIES AND P-TRAP WITH FLUMBEREX "PRO-2000" HANDY-SHIELD WHITE SAFETY COVER INSULATION KIT OR APPROVED EQUIVALENT.



PIPE RESTRAINT

NO SCALE

State of Utah

Department of Administrative Services

Division of Facilities
Construction & Management
4110 State Office Building
Salt Lake City, Utah 84114
Phone: (801) 538-3018
Fax: (801) 538-3267

http://dfcm.utah.gov

CREATED BY: Design Interface LLC

DESIGN INTERFACE LLC
ARCHITECTURE | SUSTAINABLE DESIGN | COMMERCIAL | RESIDENTIAL
925 SOUTH 2ND WEST, SUITE B
SALT LAKE CITY
UTAH 84101
O 801.533.0100 | F 801.533.0101

TWA
TW Engineering Associates
2165 Sublette Plaza / Sandy, Utah 84085 / O (801) 943-2705 / F (801) 943-0744
Mechanical & Electrical Consulting Engineering
e-mail: twengineering@msn.com
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BUILDING NAME:

3760 So. Highland Drive
Salt Lake City, Utah 84106

PROJECT TITLE:

Highland Plaza - Remodel

12/10/10 REVIEW COMMENTS

ISSUE TYPE: Phase 2 - Construction Set

ISSUE DATE: August 18, 2008

DFCM PROJECT NO.: 08123310

ARCHITECT'S PROJECT NO.: 2008.001

CAD DWG FILE:

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SHEET TITLE

Plumbing Legend & Schedules

SHEET NUMBER

P001.2

SHEET 13 OF 23

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925 SOUTH 2ND WEST, SUITE B
 SALT LAKE CITY
 UTAH 84101

O 801.533.0100 | F 801.533.0101

TWA
TW Engineering Associates

2165 Sublette Plaza / Sandy, Utah 84093 / O (801) 943-2705 / F (801) 943-0744
 Mechanical & Electrical Consulting Engineering
 e-mail: twengineering@msn.com
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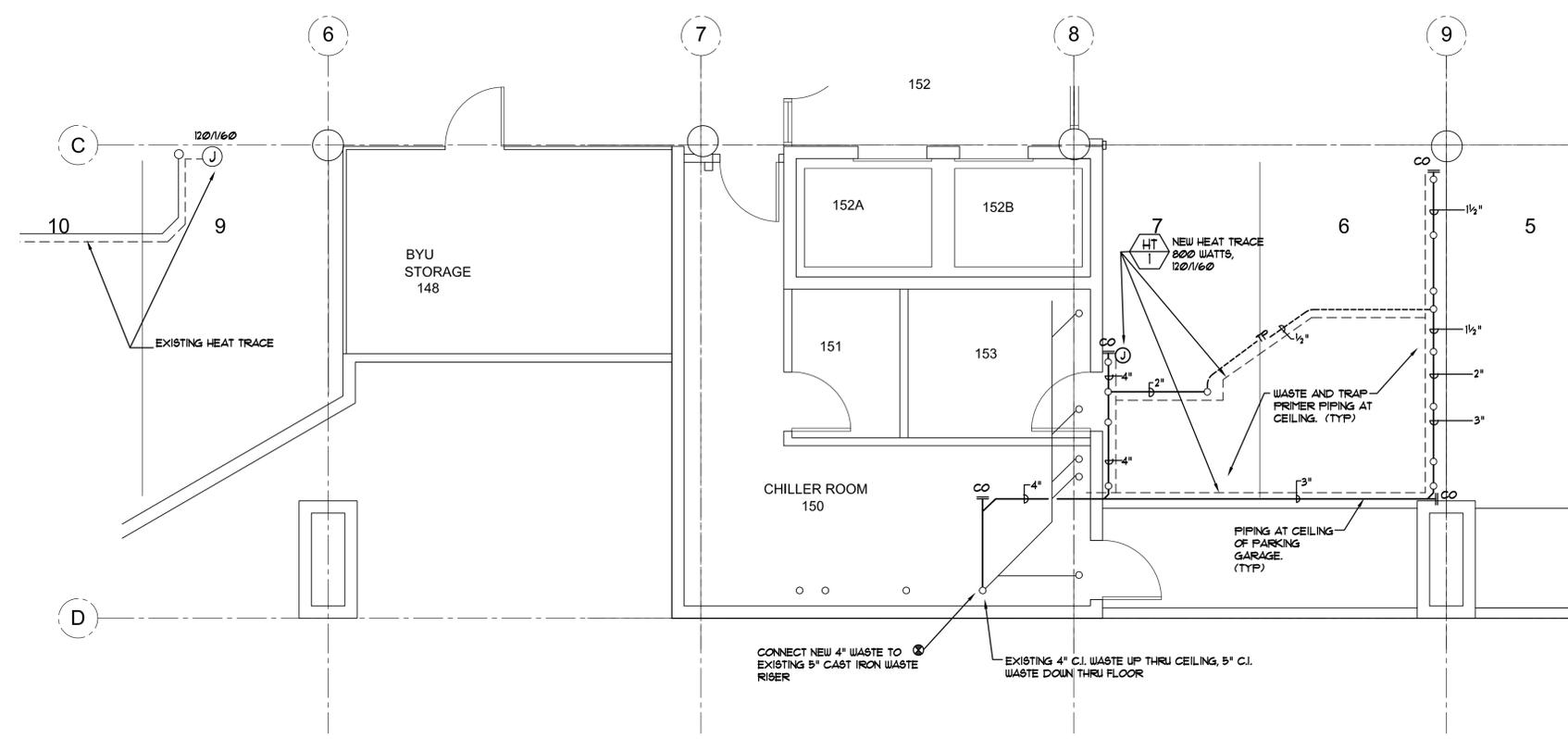
SHEET TITLE

Level 1
 Plumbing Plan

SHEET NUMBER

P101.2

SHEET 14 OF 23



Level 1 - Phase 2 Plumbing Plan - Base Bid
 1/4" = 1'-0"



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 SALT LAKE CITY
 UTAH 84101

O 801.533.0100 | F 801.533.0101

TWA
TW Engineering Associates
 2165 Sublette Plaza / Sandy, Utah 84085 / O (801) 943-2705 / F (801) 943-0744
 Mechanical & Electrical Consulting Engineering
 e-mail: twengineering@msn.com
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PROJECT TITLE:
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DATE	REVISION	REVIEW COMMENTS
10/16/08		

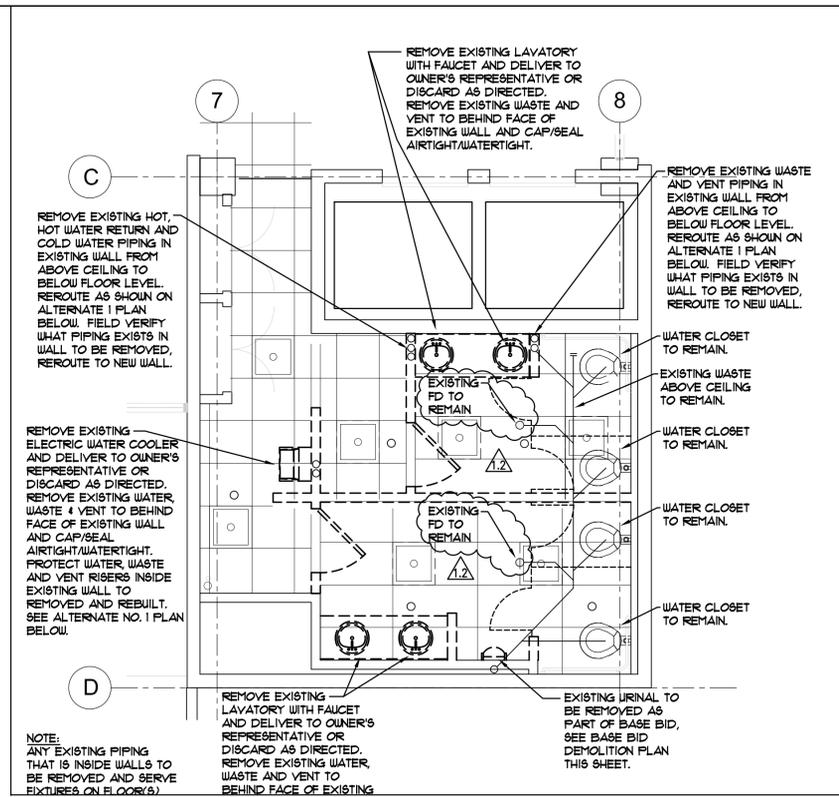
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 ISSUE DATE: August 18, 2008
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SHEET TITLE
Level 2 - Toilet Room Plumbing Plans

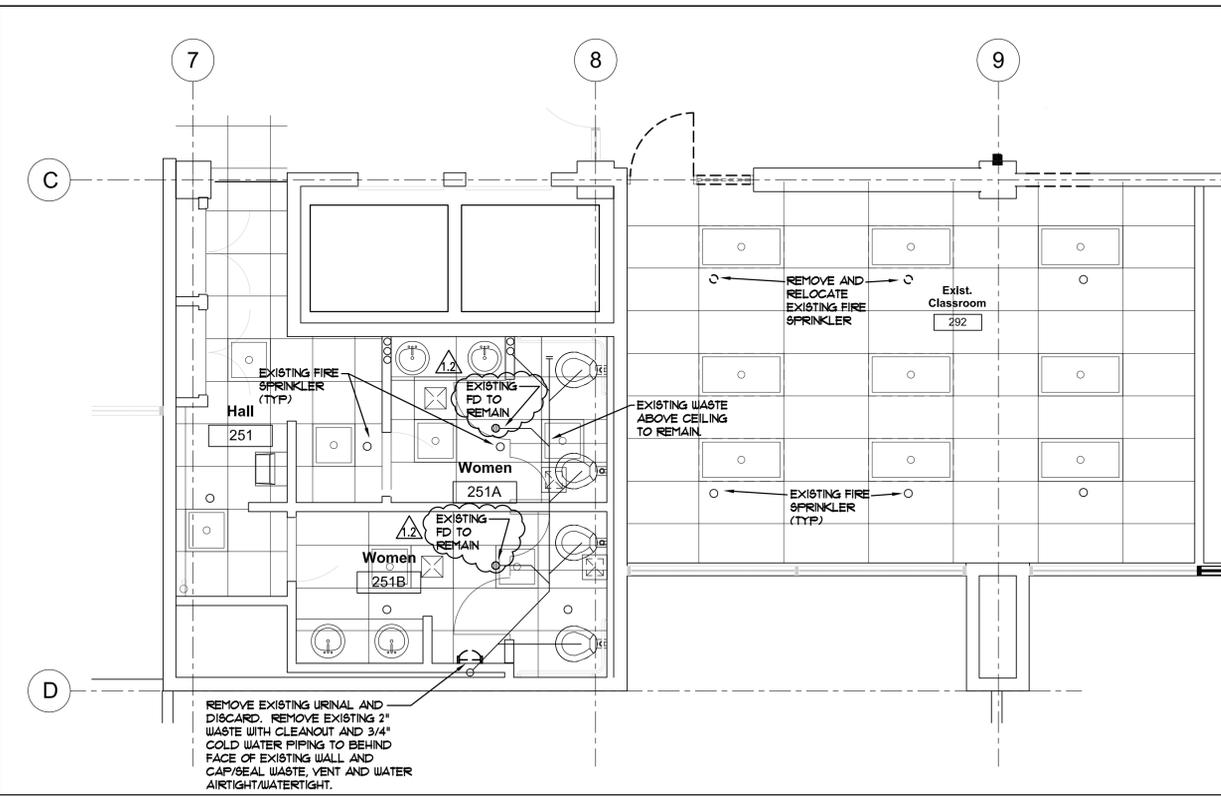
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P102.2

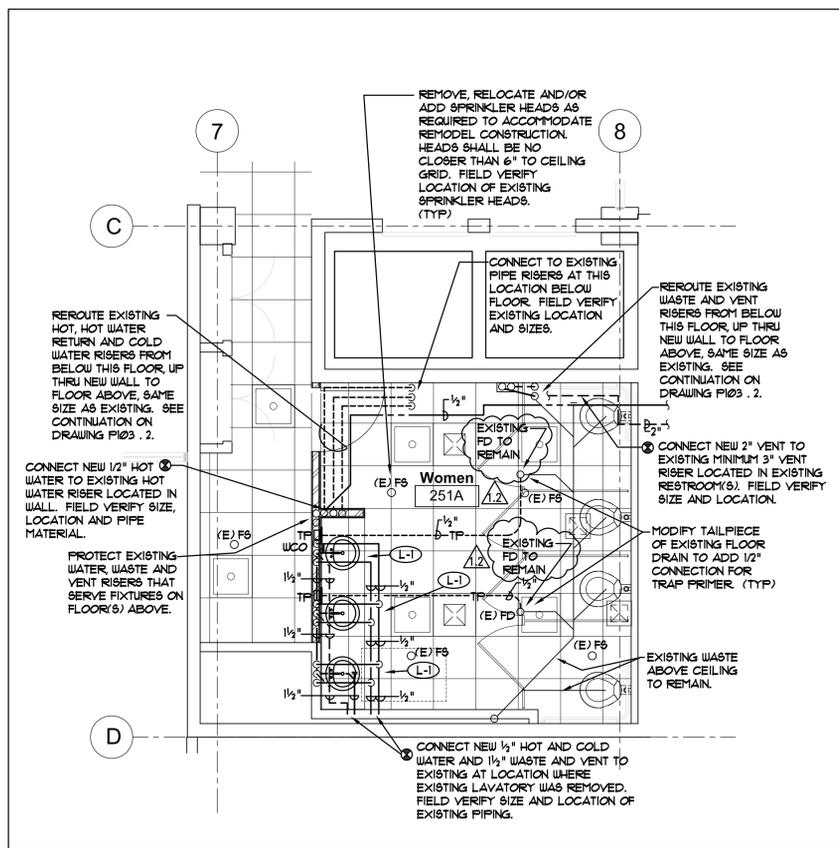
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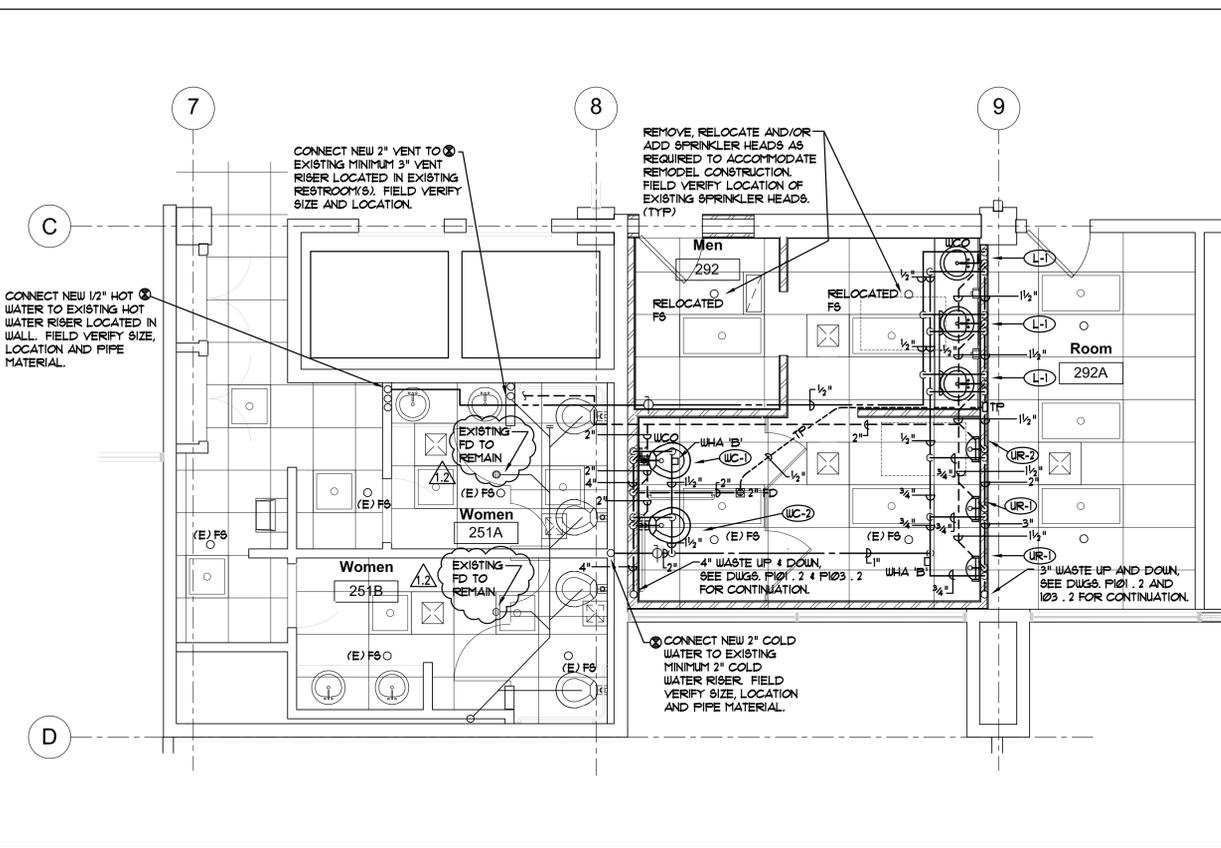
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 1/4" = 1'-0"



Level 2 - Phase 2 Plumbing Demolition - Base Bid
 1/4" = 1'-0"



Level 2 - Phase 2 Plumbing Plan - Alt. No. 1
 1/4" = 1'-0"



Level 2 - Phase 2 Plumbing Plan - Base Bid
 1/4" = 1'-0"

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 SALT LAKE CITY
 UTAH 84101
 O 801.533.0100 | F 801.533.0101

TWA
TW Engineering Associates
 2165 Sublette Plaza / Sandy, Utah 84085 / O (801) 943-2705 / F (801) 943-0744
 Mechanical & Electrical Consulting Engineering
 e-mail: twengineering@msn.com
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 Salt Lake City, Utah 84106

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10/16/08 REVIEW COMMENTS

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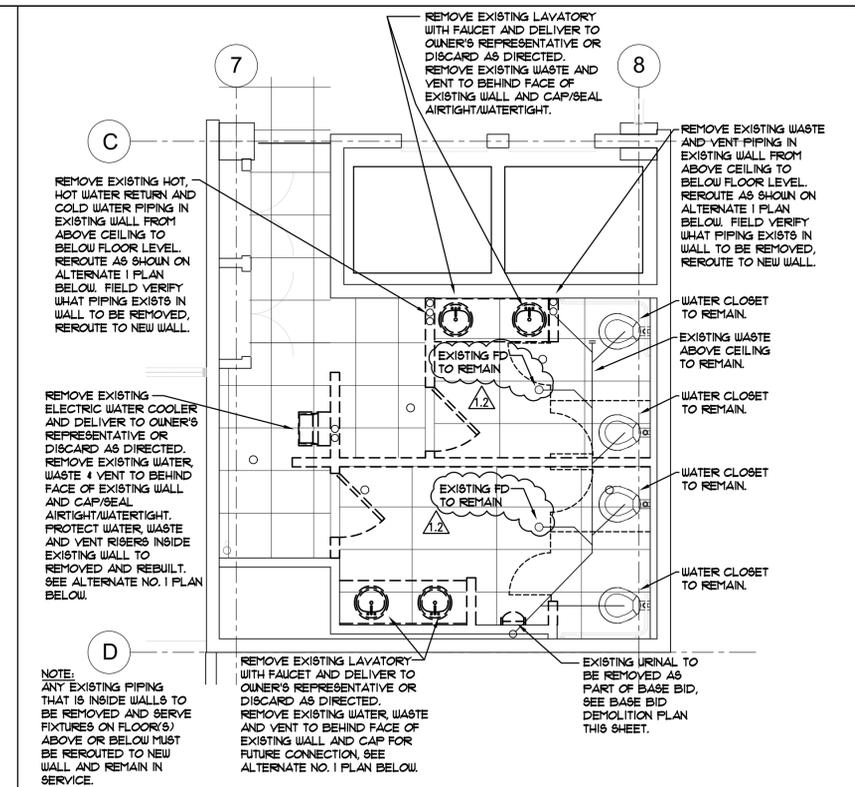
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SHEET TITLE
Level 3 - Toilet Room Plumbing Plans

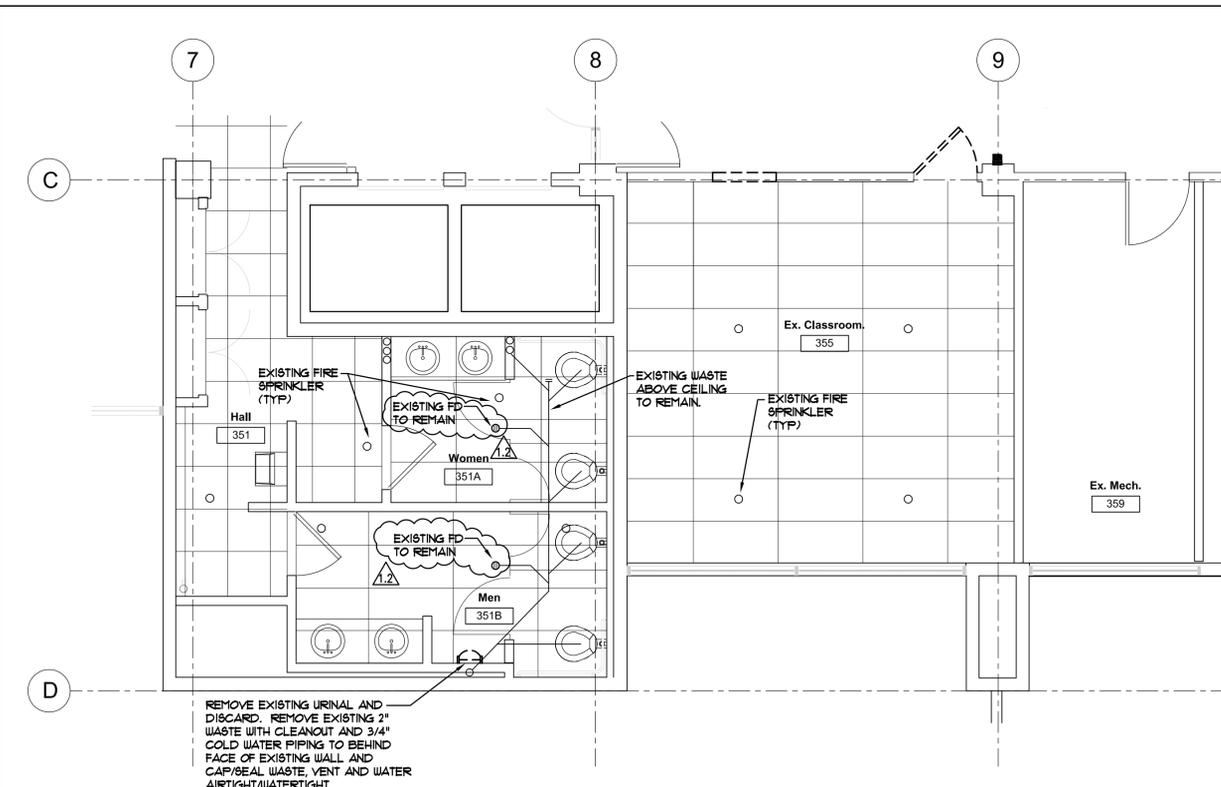
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P103.2

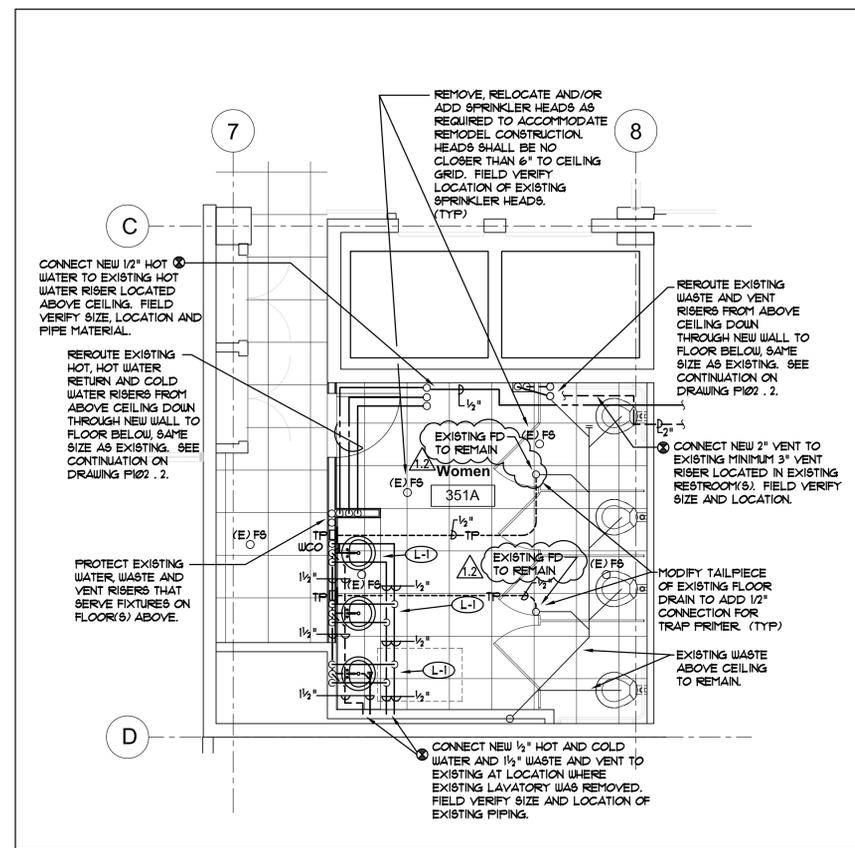
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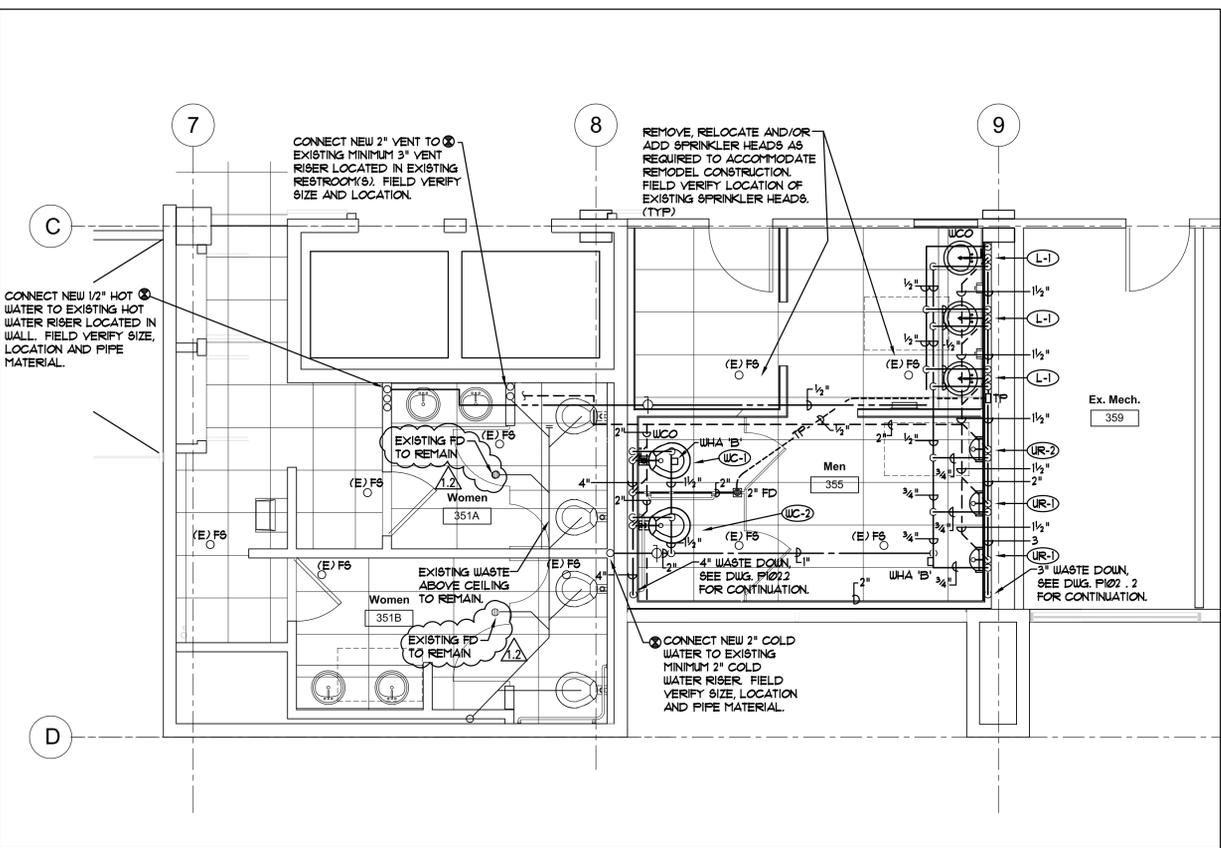
Level 3 - Phase 2 Plumbing Demolition - Alt. No. 1
 1/4" = 1'-0"



Level 3 - Phase 2 Plumbing Demolition - Base Bid
 1/4" = 1'-0"



Level 3 - Phase 2 Plumbing Plan - Alt. No. 1
 1/4" = 1'-0"



Level 3 - Phase 2 Plumbing Plan - Base Bid
 1/4" = 1'-0"

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 SALT LAKE CITY
 UTAH 84101

O 801.533.0100 | F 801.533.0101

TWA
TW Engineering Associates

2165 Sublette Plaza / Sandy, Utah 84093 / O (801) 943-2705 / F (801) 943-0744
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DFCM PROJECT NO.: 08123310

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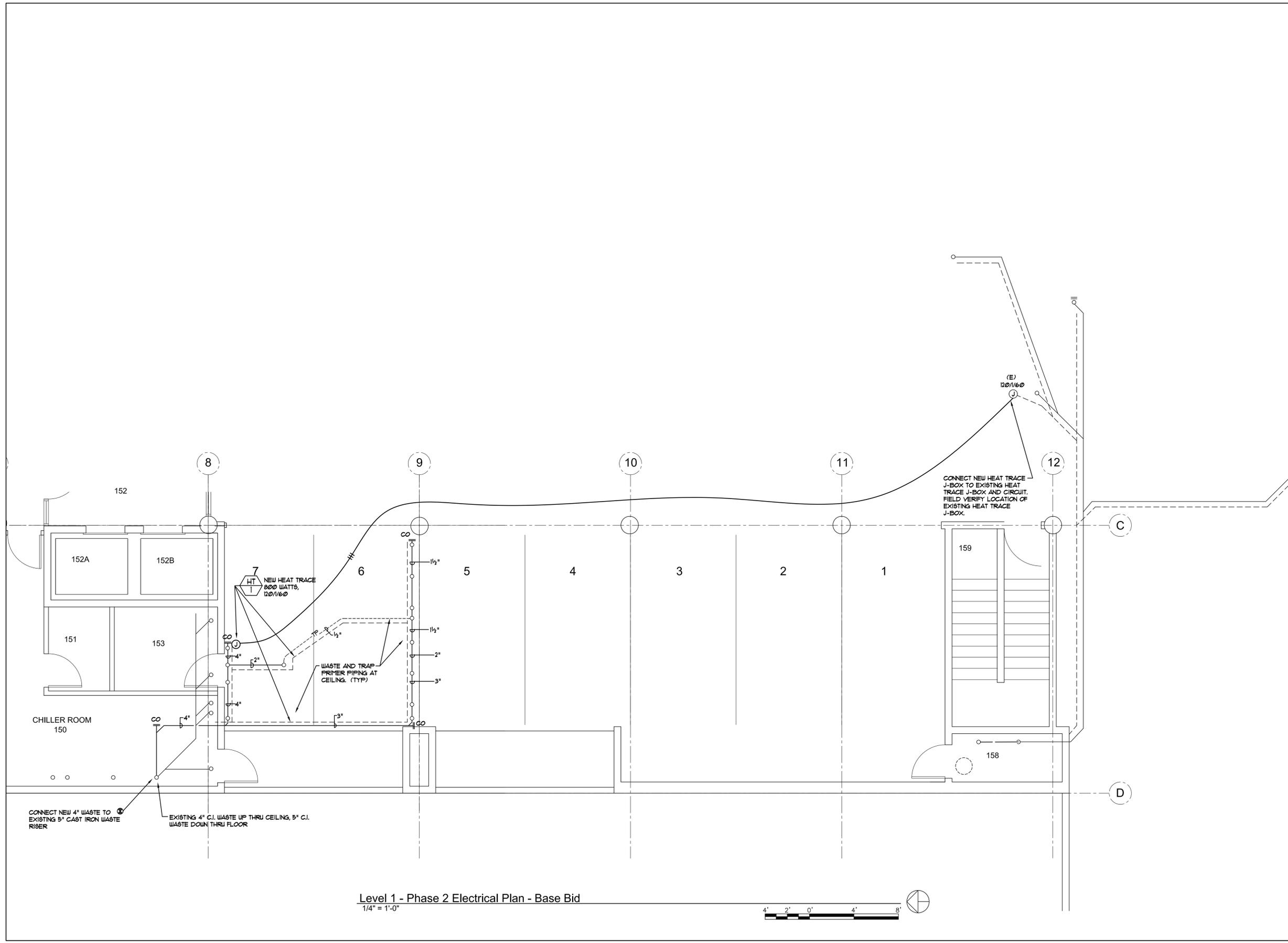
SHEET TITLE

Level 1
 Electrical Plan

SHEET NUMBER

E101.2

SHEET 19 OF 23



Level 1 - Phase 2 Electrical Plan - Base Bid
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 SALT LAKE CITY
 UTAH 84101
 O 801.533.0100 | F 801.533.0101

TWA
TW Engineering Associates
 2165 Sublette Plaza / Sandy, Utah 84085 / O (801) 943-2705 / F (801) 943-0744
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 e-mail: twengineering@msn.com
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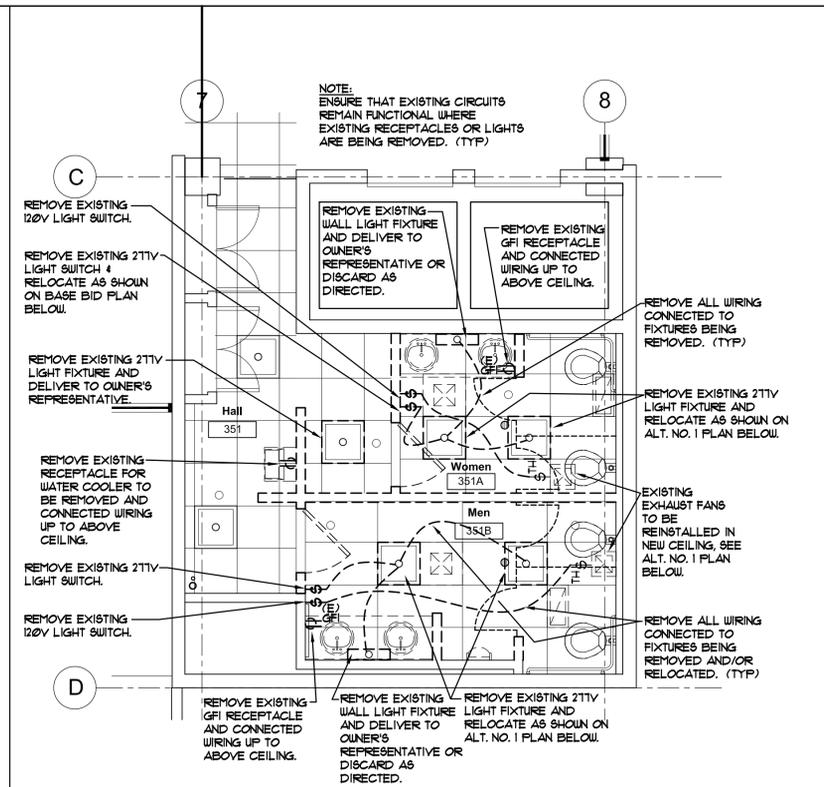
PROJECT TITLE:
Highland Plaza - Remodel

ISSUE TYPE: Phase 2 - Construction Set
 ISSUE DATE: August 18, 2008
 DFCM PROJECT NO.: 08123310
 ARCHITECT'S PROJECT NO.: 2008.001
 CAD DWG FILE:
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 SHEET TITLE

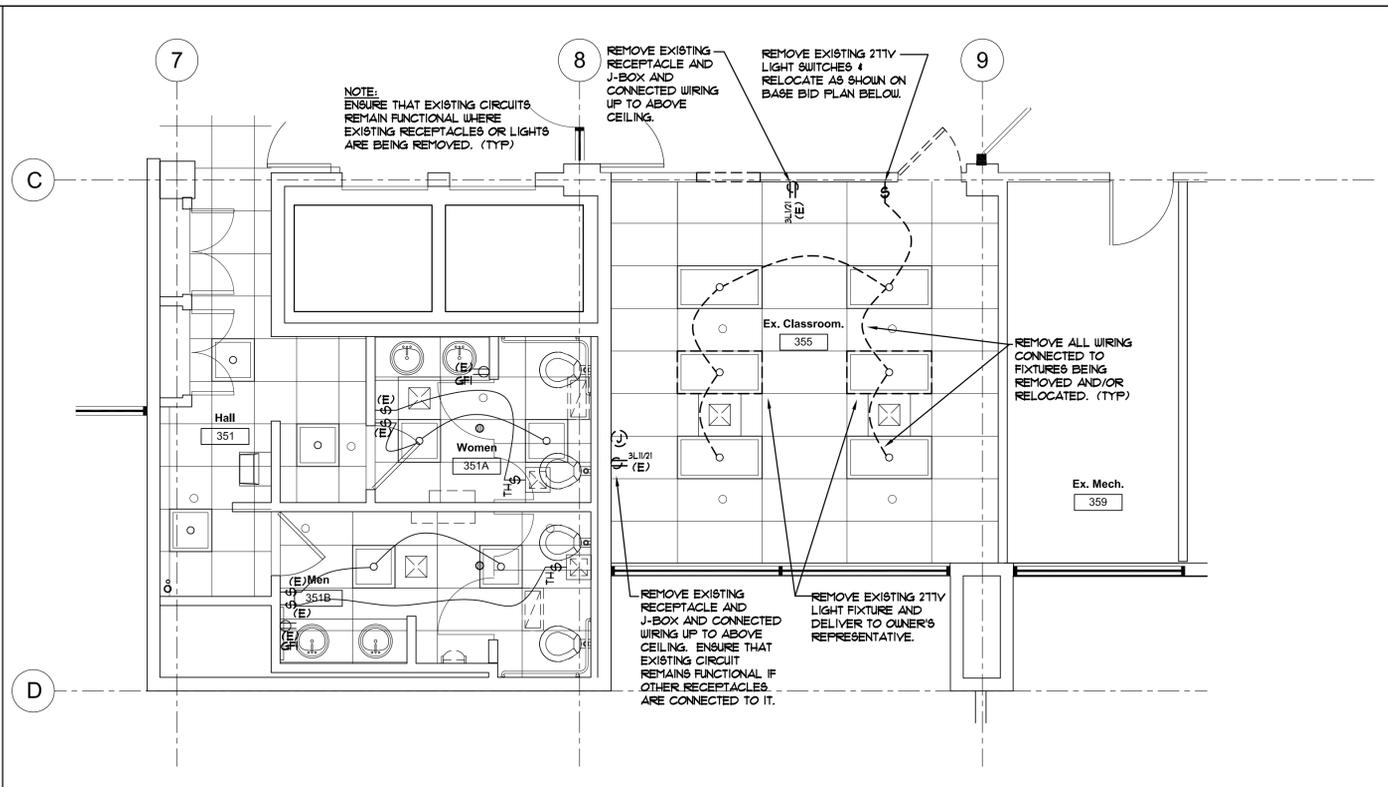
**Level 3 - Toilet Room
 Electrical Plans**

SHEET NUMBER
E103.2

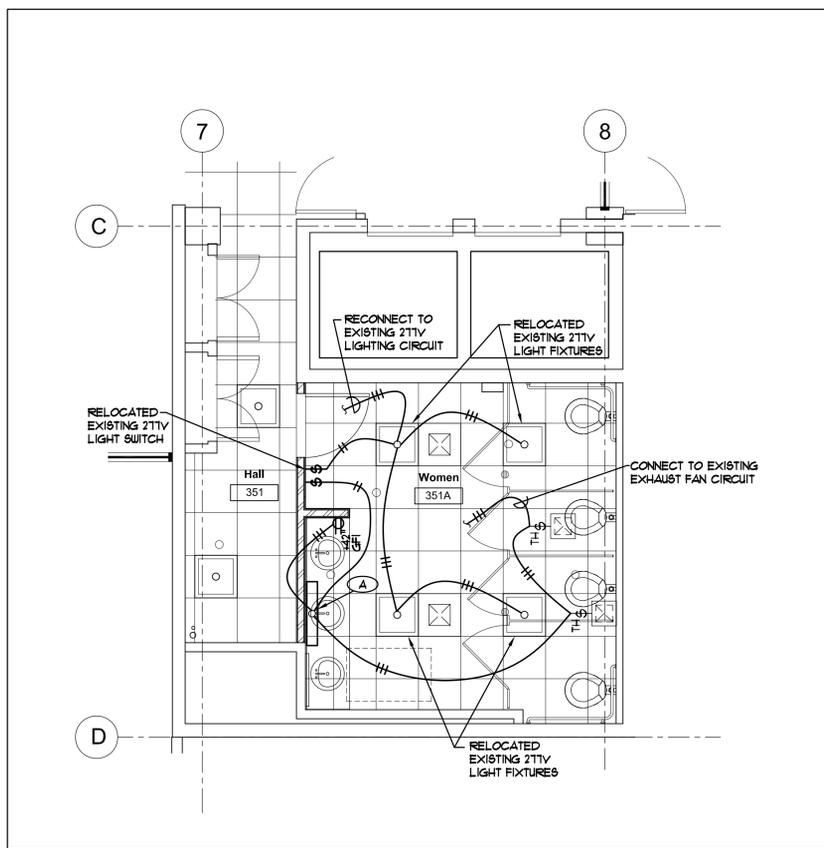
SHEET 21 OF 23



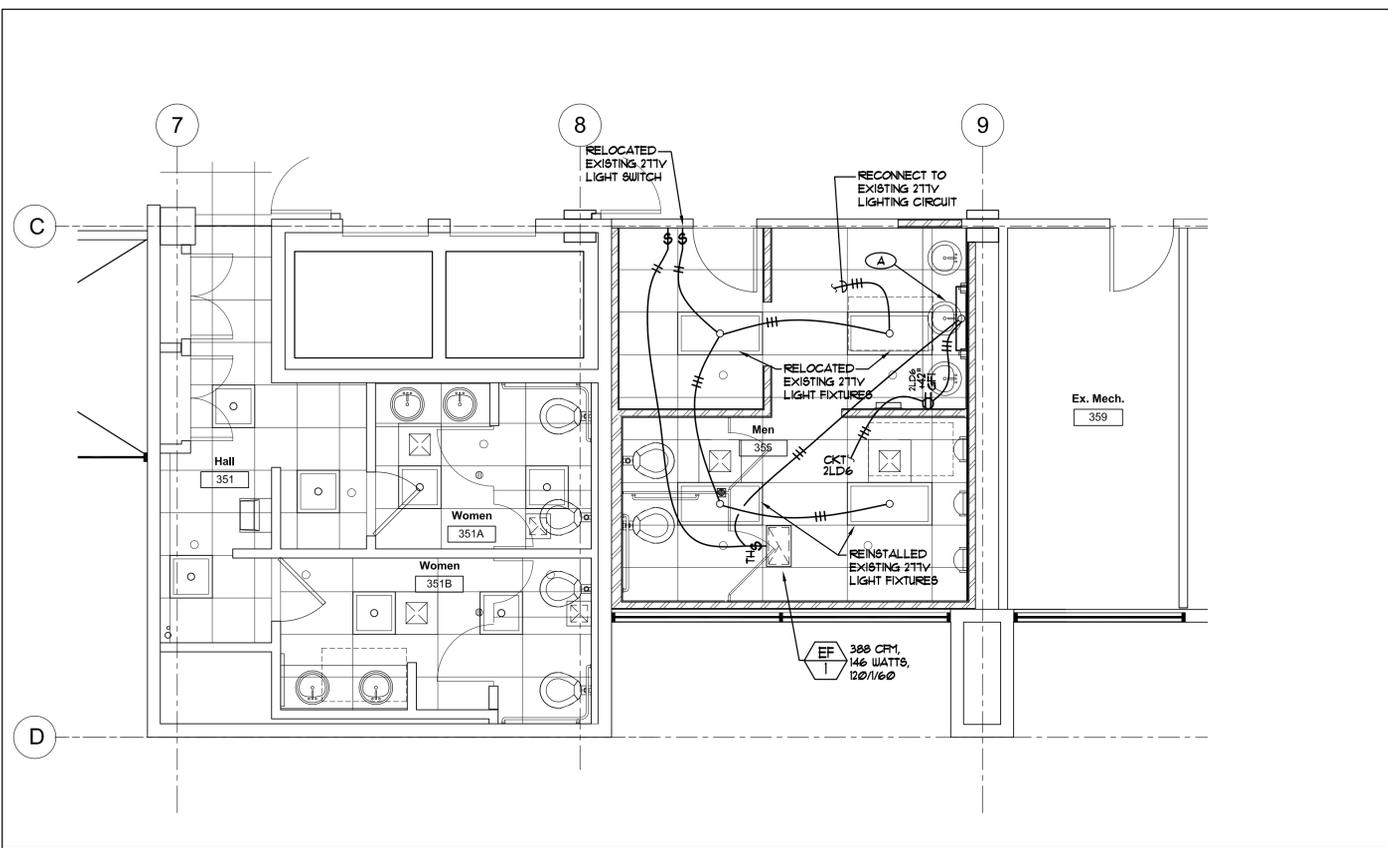
Level 3 - Phase 2 Electrical Demolition - Alt. No. 1
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Level 3 - Phase 2 Electrical Demolition - Base Bid
 1/4" = 1'-0"



Level 3 - Phase 2 Electrical Plan - Alt. No. 1
 1/4" = 1'-0"



Level 3 - Phase 2 Electrical Plan - Base Bid
 1/4" = 1'-0"

15. PROVIDE VERTICAL AND LATERAL SUPPORT SYSTEMS FOR ALL RACEWAYS WHICH ARE SUPPORTED FROM OVERHEAD STRUCTURE.

16. INSTALL WIRING DEVICES AS INDICATED, IN COMPLIANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC AND NECA'S "STANDARD OF INSTALLATION" AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO FULFILL PROJECT REQUIREMENTS. COORDINATE WITH OTHER WORK, INCLUDING PAINTING, ELECTRICAL BOX AND WIRING WORK, AS NECESSARY TO INTERFACE INSTALLATION OF WIRING DEVICES WITH OTHER WORK. INSTALL DEVICES IN BOXES SUCH THAT FRONT OF DEVICE IS FLUSH AND SQUARE WITH COVERPLATE. DRAWINGS ARE SMALL SCALE AND, UNLESS DIMENSIONED, INDICATE APPROXIMATE LOCATIONS ONLY OF OUTLETS, DEVICES, EQUIPMENT, ETC. LOCATE OUTLETS AND APPARATUS SYMMETRICALLY ON FLOORS, WALLS AND CEILING WHERE NOT DIMENSIONED AND COORDINATE WITH OTHER WORK. VERIFY ALL DIMENSIONED ITEMS ON JOB SITE. CONSULT ARCHITECTURAL CABINET, MILLWORK, AND EQUIPMENT SHOP DRAWINGS BEFORE BEGINNING ROUGH-IN OF ELECTRICAL WORK. ADJUST LOCATIONS OF ALL ELECTRICAL OUTLETS AS REQUIRED TO ACCOMMODATE WORK IN AREA. INSTALL WIRING DEVICES ONLY IN ELECTRICAL BOXES WHICH ARE CLEAN, FREE FROM EXCESS BUILDING MATERIALS, DIRT, AND DEBRIS. MARK EACH DEVICE BOX (FOR EACH TYPE OF WIRING DEVICE) WITH A PERMANENT INK FELT TIP MARKER, INDICATING THE CIRCUIT TO WHICH THE DEVICE IS CONNECTED. EXAMPLE: "CKT A-1" WHICH IS BLACK PLATES ON ALL BOXES WITHOUT DEVICES. DELAY INSTALLATION OF WIRING DEVICES UNTIL WIRING WORK IS COMPLETED. DELAY INSTALLATION OF WALL PLATES UNTIL AFTER PAINTING WORK IS COMPLETED.

17. AT TIME OF SUBSTANTIAL COMPLETION, REPLACE THOSE ITEMS WHICH HAVE BEEN DAMAGED, INCLUDING THOSE STAINED, BURNED AND SCORED.

18. PROVIDE ELECTRICALLY CONTINUOUS, TIGHT GROUNDING CONNECTIONS FOR WIRING DEVICES, UNLESS OTHERWISE INDICATED.

19. WHERE PLASTIC DIFFUSERS ARE SPECIFIED, PROVIDE 100 PERCENT VIRGIN ACRYLIC COMPOUND, MINIMUM THICKNESS, 0.125 INCHES. PROVIDE A 2 SPARE DIFFUSERS (ACRYLIC ONLY) FOR EACH FIXTURE TYPE.

20. INSTALL LIGHTING FIXTURES AT LOCATIONS AND HEIGHTS AS INDICATED, IN ACCORDANCE WITH FIXTURE HANGERS TO BE PROVIDED IN WRITTEN INSTRUCTIONS, APPROPRIATE REQUIREMENTS OF NEC, NECA'S "STANDARDS OF INSTALLATION", NEMA STANDARDS, AND WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT LIGHTING FIXTURES FULLY REQUIREMENTS. COORDINATE WITH OTHER WORK AS APPROPRIATE TO PROPERLY INTERFACE INSTALLATION OF LIGHTING FIXTURES WITH OTHER WORK. CONSULT ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL LIGHTING FIXTURES.

21. PROVIDE ALL NECESSARY SUPPORTS, BRACKETS, AND MISCELLANEOUS EQUIPMENT FOR MOUNTING OF LIGHTING FIXTURES. SUPPORT ALL CEILING MOUNTED FIXTURES FROM THE BUILDING STRUCTURE, INDEPENDENT OF THE CEILING SYSTEM, UNLESS NOTED. SUPPORT EACH RECESSED FIXTURE FLOUORESCENT OR INCANDESCENT FROM THE BUILDING STRUCTURE WITH #2 GA. STEEL WIRE ATTACHED TO EACH CORNER. PROVIDE BACKING SUPPORTS ABOVE SHEETROCK, PLASTER AND SIMILAR CEILING AND WALL MATERIALS. SUPPORT SURFACE MOUNTED CEILING FIXTURES FROM CHANNEL. SUPPORT CEILING MOUNTED OUTLET BOXES IN DEPENDENT OF THE RACEWAY SYSTEM, AND CAPABLE OF SUPPORTING 200 POUNDS. FEED EACH RECESSED FIXTURE DIRECTLY FROM AN OUTLET BOX WITH FLEX CONDUIT AS REQUIRED, DO NOT LOOP FROM FIXTURE TO FIXTURE.

22. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL REQUIRED SEISMIC BRACING, RESTRAINTS, ETC. FOR HIS INSTALLED EQUIPMENT, CONDUITS, LIGHT FIXTURES, ETC., ALL OF WHICH SHALL COMPLY WITH ZONE 4 REQUIREMENTS AND AUTHORITIES HAVING JURISDICTION.

23. PROVIDE GYPSUM BOARD PROTECTION AS REQUIRED AT FIRE RATED CEILING ACCEPTABLE TO FIRE OFFICIAL HAVING JURISDICTION TO INSURE FIRE RATING OF EACH CEILING IN WHICH FIXTURES ARE INSTALLED.

24. MEET AT LEAST TWICE WITH THE CEILING INSTALLER. HOLD FIRST MEETING BEFORE SUBMITTAL OF SHOP DRAWINGS TO COORDINATE EACH LIGHT FIXTURE MOUNTING CONDITION WITH CEILING TYPE. DURING SECOND MEETING, COORDINATE FIXTURE LAYOUT IN EACH AREA. MEET AT LEAST ONCE WITH THE MECHANICAL INSTALLER PRIOR TO FABRICATION AND INSTALLATION OF DUCT WORK. COORDINATE DEPTH AND LOCATION OF ALL FIXTURES AND DUCT WORK IN ALL AREAS.

25. CLEAN LIGHTING FIXTURES OF DIRT AND DEBRIS UPON COMPLETION OF INSTALLATION. PROTECT INSTALLED FIXTURES FROM DAMAGE DURING REMAINDER OF CONSTRUCTION PERIOD. REPAIR ALL NICKS AND SCRATCHES TO APPEARANCE OF ORIGINAL FINISH.

26. PROVIDE EQUIPMENT GROUNDING CONNECTIONS FOR EACH LIGHTING FIXTURE AND RECEPTACLE.

27. INSTALL RACEWAY SYSTEM AS INDICATED TO COMPLY WITH NEC AND RECOGNIZED INDUSTRY PRACTICES.

28. ALL NEW CIRCUITS SHALL INCLUDE SEPARATE NEUTRAL. ENSURE THAT ALL NEUTRAL WIRE AND PHASE CONDUCTORS AND NEW CIRCUIT BREAKERS ARE BALANCED.

29. THE ELECTRICAL CONTRACTOR SHALL REMOVE ALL DEBRIS ASSOCIATED WITH THE ELECTRICAL SYSTEM INSTALLATION.

30. IDENTIFICATION: ALL NEW JUNCTION BOXES AND OUTLET BOXES ABOVE ACCESSIBLE CEILINGS AND IN UNFINISHED AREAS SHALL BE PERMANENTLY AND LEGIBLY MARKED AS TO VOLTAGE, PHASE CHARACTERISTICS AND PANEL FROM WHICH SERVED. PROVIDE NEATLY TYPED OR LETTERED INDEX FOR ALL CIRCUITS SERVED BY EACH REUSED AND NEW PANELBOARD USING PERMANENT ROOM NUMBERS OR NAMES. EACH INDEX SHALL BE ENCLOSED IN AN APPROVED HOLDER INSIDE THE PANELBOARD DOOR. ALL EMPTY CONDUIT SYSTEMS SHALL BE IDENTIFIED AS TO USE AND JUNCTION AND OUTLET BOXES SHALL HAVE FULL WIRE IDENTIFIED WITH POINT OF TERMINUS CLEARLY DESCRIBED.

31. REFER TO THE GENERAL AND KEYED ELECTRICAL NOTES AS SHOWN ON THE DRAWINGS FOR ADDITIONAL REQUIREMENTS.

A. BRANCH CIRCUITS, SIGNAL AND CONTROL CIRCUITS, AND INDIVIDUAL EQUIPMENT CIRCUITS RATED LESS THAN 100 AMPS, INSTALL IN ELECTRIC METALLIC TUBING (EMT).

B. COORDINATE WITH OTHER WORK INCLUDING METAL AND CONCRETE DECK WORK, AS NECESSARY TO INTERFACE INSTALLATION OF ELECTRICAL RACEWAYS AND COMPONENTS.

C. INSTALL RACEWAY IN ACCORDANCE WITH THE FOLLOWING:

1. PROVIDE A MINIMUM OF 12" CLEARANCE FROM FLUES AND HOT WATER PIPING, ETC. AVOID INSTALLING RACEWAYS IN IMMEDIATE VICINITY OF HEAT EMITTING EQUIPMENT. CONCEAL RACEWAYS IN FINISHED WALLS, CEILINGS AND FLOORS (OTHER THAN SLAB-ON-GRADE). WHERE CONDUIT IS EXPOSED IN MECHANICAL SPACES, ETC., INSTALL PARALLEL WITH OR AT RIGHT ANGLES TO BUILDING OR ROOF STRUCTURAL LINES.

2. WHERE CUTTING RACEWAY IS NECESSARY, REMOVE ALL INSIDE AND OUTSIDE BURRS, MAKE CUTS SMOOTH AND SQUARE WITH RACEWAY. PAINT ALL FIELD THREADS (OR PORTIONS OF RACEWAY WHERE CORROSION PROTECTION HAS BEEN DAMAGED) WITH PRIMER AND ENAMEL FINISH COAT TO MATCH ADJACENT RACEWAY SURFACE.

3. COMPLY WITH NEC FOR REQUIREMENTS FOR INSTALLATION OF FULL BOXES IN LONG RUNS.

4. CAP OPEN ENDS OF CONDUITS AND PROTECT OTHER RACEWAYS AS REQUIRED AGAINST ACCUMULATION OF DIRT AND DEBRIS. FULL A HANGERS AND STRAPS THROUGH ALL CONDUIT BEFORE INSTALLING CONDUCTORS. INSTALL A 200 LB. NYLON FULL CORD IN EACH EMPTY CONDUIT RUN.

5. REPLACE ALL CRUSHED, WRINKLED OR DEFORMED RACEWAY BEFORE INSTALLING CONDUCTORS.

6. PROVIDE RIGID METAL CONDUIT (RMC) FOR ALL BENDS GREATER THAN 30 DEGREES IN BURIED CONDUIT. PROVIDE PROTECTIVE COATING FOR RMC BEND AS SPECIFIED HEREIN.

7. WHERE RACEWAYS PENETRATE BUILDING, AREA WALLS, AND FLOORS BELOW GRADE, INSTALL RIGID METAL CONDUIT (RMC) FOR A MINIMUM DISTANCE OF 36" ON THE EXTERIOR SIDE OF THE FLOOR OR WALL. PROVIDE OZ. TYPE FSK, USK OR CS#1 SEALING BUSHINGS (WITH EXTERNAL MEMBRANE CLAMPS AS APPLICABLE) FOR ALL CONDUIT PENETRATIONS ENTERING WALLS OR SLABS BELOW GRADE. PROVIDE SEGMENTED TYPE CS#1 INTERNAL SEALING BUSHINGS IN ALL RACEWAYS PENETRATING BUILDING WALLS AND SLABS BELOW GRADE, AND IN ALL ABOVE GRADE RACEWAY PENETRATIONS SUSCEPTIBLE TO MOISTURE MIGRATION INTO BUILDING THRU RACEWAY.

8. PROVIDE OZ EXPANSION FITTINGS ON ALL CONDUITS CROSSING BUILDING EXPANSION JOINTS, BOTH IN SLAB AND SUSPENDED.

9. PROVIDE OZ CABLE SUPPORTS IN ALL VERTICAL RISERS IN ACCORDANCE WITH NEC 300-19, TYPE AS REQUIRED BY APPLICATION.

10. COMPLETE INSTALLATION OF ELECTRICAL RACEWAYS BEFORE STARTING INSTALLATION OF CABLES/CONDUCTORS WITHIN RACEWAYS.

11. INSTALL ELECTRICAL BOXES AND FITTINGS WHERE INDICATED, COMPLYING WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC AND NECA'S "STANDARD OF INSTALLATION", AND IN COMPLIANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PRODUCTS FULLY REQUIREMENTS.

A. PROVIDE COVERPLATES FOR ALL BOXES.

B. PROVIDE WEATHERPROOF OUTLETS FOR INTERIOR AND EXTERIOR LOCATIONS EXPOSED TO WEATHER OR MOISTURE.

C. PROVIDE KNOCKOUT CLOSURES TO CAP UNUSED KNOCKOUT HOLES WHERE BLANKS HAVE BEEN REMOVED.

D. INSTALL BOXES AND CONDUIT BODIES TO ENSURE READY ACCESSIBILITY OF ELECTRICAL WIRING. INSTALL RECESSED BOXES WITH FACE OF BOX OR RING FLUSH WITH ADJACENT SURFACE. SEAL BETWEEN SWITCH, RECEPTACLE AND OTHER OUTLET BOX OPENINGS AND ADJACENT SURFACES WITH PLASTER, GROUT, OR SIMILAR SUITABLE MATERIAL.

E. FASTEN BOXES RIGIDLY TO SUBSTRATES OR STRUCTURAL SURFACES TO WHICH ATTACHED, OR SOLIDLY EMBED ELECTRICAL BOXES IN CONCRETE OR MASONRY. USE BAR HANGERS FOR STUD CONSTRUCTION. USE OF NAILS FOR SECURING BOXES IS PROHIBITED. SET BOXES ON OPPOSITE SIDES OF COMMON WALL WITH MINIMUM 10" OF CONDUIT BETWEEN THEM.

F. PROVIDE ELECTRICAL CONNECTIONS FOR INSTALLED BOXES.

12. INSTALL HANGERS, ANCHORS, SLEEVES, AND SEALS AS REQUIRED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND WITH RECOGNIZED INDUSTRY PRACTICES TO INSURE SUPPORTING DEVICES COMPLY WITH REQUIREMENTS. COMPLY WITH REQUIREMENTS OF NECA, NEC AND ANSI/NEMA FOR INSTALLATION OF SUPPORTING DEVICES. COORDINATE WITH OTHER ELECTRICAL WORK, INCLUDING RACEWAY AND WIRING WORK, AS NECESSARY TO INTERFACE INSTALLATION OF SUPPORTING DEVICES WITH OTHER WORK. INSTALL HANGERS, SUPPORTS, CLAMPS AND ATTACHMENTS TO SUPPORT PIPING PROPERLY FROM BUILDING STRUCTURES. ARRANGE FOR GROUPING OF PARALLEL RUNS OF HORIZONTAL CONDUITS TO BE SUPPORTED TOGETHER ON TRAPEZIE TYPE HANGERS POSSIBLE.

14. SUPPORT RACEWAYS WHICH ARE RIGIDLY ATTACHED TO STRUCTURE AT INTERVALS NOT TO EXCEED 8 FEET ON CENTER AND WITHIN 12" OF EACH JUNCTION BOX, OUTLET OR FITTING. SUPPORT RACEWAY (AS IT IS INSTALLED) IN ACCORDANCE WITH THE FOLLOWING:

NUMBER OF RUNS	3/4" TO 1-1/4"	1-1/2" + LARGER
1	FULL STRAPS, CLAMPS OR HANGERS.	HANGER
2	FULL STRAPS, CLAMPS	MOUNTING CHANNEL OR HANGERS.
3 OR MORE	MOUNTING CHANNEL	MOUNTING CHANNEL

SUPPORT SUSPENDED RACEWAYS ON TRAPEZIE HANGER SYSTEMS, OR INDIVIDUALLY BY MEANS OF TRAPEZIE HANGERS, OR HANGERS SUITABLE FOR THE APPLICATION. DO NOT USE "TIE WIRE" AS A PORTION OF ANY RACEWAY SUPPORT SYSTEM. DO NOT SUPPORT RACEWAY FROM CEILING SUPPORT WIRES.

20. ALL NEW FLUORESCENT FIXTURES SHALL BE FURNISHED WITH LOW FREQUENCY BALLASTS AND ENERGY SAVING LAMPS.

21. FUSES:

A. FUSES SHALL BE BUSBMAN LFM DUAL ELEMENT FUSES, EXCEPT FOR SERVICE ENTRANCE FUSING WHERE THEY SHALL BE BUSBMAN HI-CAP CURRENT LIMITING TYPE FUSES.

B. FUSES, RATED 600 AMPERES OR LESS FOR ALL GENERAL POWER CIRCUITS SHALL BE DUAL-ELEMENT, UL CLASS R TIME-DELAY TYPE. THE INTERRUPTING RATING SHALL BE 200,000 AMPERES RMS SYMMETRICAL. PEAK LET-THRU CURRENT, LP AND ENERGY LET-THRU VALUES, IT, SHALL NOT EXCEED THE VALUES ESTABLISHED BY UNDERWRITERS LABORATORIES STANDARD FOR CLASS K-5 FUSES.

C. FUSES PROTECTING CIRCUIT BREAKERS OR CIRCUIT BREAKER PANELBOARDS SHALL BE SILVER-SAND, FAST-ACTING, CURRENT-LIMITING UL CLASS K-1 AND R FOR AMPERAGES 60-600 AND UL CLASS L FOR AMPERAGES 601-6000. LIMTRON FAST-ACTING FUSE KTN, S, -R.

D. UPON COMPLETION OF THE BUILDING, THE CONTRACTOR SHALL PROVIDE THE OWNER'S REPRESENTATIVE WITH THE FOLLOWING: 10% OF EACH TYPE AND RATING INSTALLED 0 TO 600 AMPERES, MINIMUM OF SIX.

22. MOTOR CONTROL:

A. BRANCH DISCONNECTS TO MOTORS SHALL BE FUSED. FUSES, 0 TO 600 AMPERES, SHALL BE BUSBMAN LOW PEAK DUAL ELEMENT FUSES SIZED NOT TO EXCEED 125% OF MOTOR FULL LOAD AMPERES (MFLA) FOR MOTORS WITH 15 SERVICE FACTOR AND SIZED NOT TO EXCEED 100% FOR MFLA FOR MOTORS WITH 100 SERVICE FACTOR. FUSES, 601 TO 6000 AMPERES, SHALL BE BUSBMAN HI-CAP CLASS L TIME-DELAY FUSES SIZED NOT TO EXCEED 150% OF MFLA.

B. 1/2 HP OR LESS, 15 VOLT, SINGLE-PHASE MOTORS SHALL BE INSTALLED WITH BUSBMAN 897 BOX COVER UNITS. 3/4 HP OR LESS, 230 VOLT, SINGLE-PHASE MOTORS SHALL BE INSTALLED WITH BUSBMAN 897 BOX COVER UNITS. FUSES SHALL BE BUSBMAN RUSTAT TYPE, FUSE AMPERE RATING AND FUSE LOCATION.

C. BRANCH MOTOR FUSES SHALL BE SIZED FROM MOTOR NAMEPLATE RATINGS AFTER MOTORS ARE PERMANENTLY INSTALLED. TWO COPIES OF AN AS-BUILT FUSE LIST SHALL BE FURNISHED TO THE OWNER'S REPRESENTATIVE. THE FUSE LIST SHALL CONTAIN MOTOR NO., HP, MFLA, FUSE TYPE, FUSE AMPERE RATING AND FUSE LOCATION.

PART 3 - INSTALLATION OF ELECTRICAL SYSTEMS

1. THE ELECTRICAL CONTRACTOR SHALL PERFORM ALL EXCAVATING REQUIRED FOR BURIED LINES AND AFTER THE WORK IS IN PLACE SHALL BACKFILL AND THOROUGHLY TAMP THE EARTH AROUND LINES AND SHALL BRING THE EARTH TO REQUIRED LEVEL. ALL BACKFILLING OF THE TRENCHES WHERE UNDER CONCRETE FLOORS, DRIVES OR WALLS SHALL BE DONE WITH SAND OR FEA GRAVEL AND SHALL BE DONE IN A MANNER THAT WILL PREVENT ANY FUTURE SETTLEMENT. ANY STREET, CURB, SIDEWALK, OR PLANTED AREAS THAT ARE DAMAGED MUST BE REPAIRED TO THE SATISFACTION OF THE LOCAL AUTHORITIES, THE OWNER'S REPRESENTATIVE AND THE ARCHITECT.

2. ALL WIRING SHALL BE COPPER WIRE AND SHALL BE RUN IN CONDUIT. NO WIRE SMALLER THAN #12 IS TO BE USED. SPLICES, TAPS, AND TERMINALS SHALL BE MADE IN ACCORDANCE WITH NEC AND SHALL BE MADE IN JUNCTION BOXES, AND OUTLETS APPROVED FOR THE PURPOSE. IDEAL WIRE CONNECTORS OR EQUIV. SHALL BE USED FOR ALL SPLICES.

3. GROUND THE ELECTRICAL SYSTEM PER LATEST EDITION NEC, ARTICLE 250, AND IN ACCORDANCE WITH I.B.C. AND LOCAL AUTHORITIES HAVING JURISDICTION. ALL RECEPTACLES AND LIGHTING FIXTURES SHALL BE GROUNDED.

4. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE THAT VOLTAGE DROP DOES NOT EXCEED CODE REQUIREMENTS.

5. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC, BUT SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION AND WORK OF OTHER CONTRACTORS WILL PERMIT. RUNS TO PANELS FROM OUTLETS ARE INDICATED BY POINTING IN THE GENERAL DIRECTION OF PANELS. CONSTRUCTION SHALL CONTINUE SUCH CIRCUITS TO THE PANELS AS THOUGH THE ROUTES WERE COMPLETELY INDICATED. PROVIDE BLOCK-OUTS, SLEEVES, DEMOLITION WORK, ETC. REQUIRED FOR INSTALLATION OF ALL ELECTRICAL WORK.

6. DEVIATIONS FROM DRAWINGS REQUIRED TO MAKE WORK OF THIS CONTRACT CONFORM TO BUILDING AS CONSTRUCTED, OR AS TO WORK OF OTHER CONTRACTORS, SHALL BE MADE BY THE ELECTRICAL CONTRACTOR AT HIS EXPENSE. THE ARCHITECT AND/OR OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO MAKE MINOR CHANGES IN THE LOCATION OF EQUIPMENT AND OUTLETS WITHOUT ADDITIONAL CHARGES.

7. THE ELECTRICAL CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS, ARCHITECTURAL, PLUMBING AND MECHANICAL DRAWINGS. HE SHALL PERFORM ALL ELECTRICAL WORK AND PROVIDE ALL MATERIAL REQUIRED. THE ELECTRICAL CONTRACTOR SHALL PERFORM ALL LINE VOLTAGE WIRING AND MAKE ALL LINE VOLTAGE CONNECTIONS TO MISCELLANEOUS EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL STARTERS AND DISCONNECT SWITCHES, ONLY IF STARTERS AND DISCONNECT SWITCHES ARE NOT PROVIDED WITH THE MECHANICAL, PLUMBING AND FIRE PROTECTION EQUIPMENT, AS REQUIRED. COORDINATE AND FURNISH PROTECTION FOR THE MECHANICAL, PLUMBING AND FIRE PROTECTION CONTRACTORS AND THE GENERAL CONTRACTOR.

8. UNLESS OTHERWISE INDICATED OR DIRECTED, THE HEIGHTS FROM FLOOR TO THE CENTER OF EQUIPMENT SHALL BE AS FOLLOWS:

RECEPTACLES	18" (OR AS SHOWN ON DRAWINGS)
WALL SWITCHES	48"
TELEPHONE OUTLETS	18"
DATA OUTLETS	18"
PANELBOARDS	72" TO TOP
DISCONNECTS	60"

9. PROVIDE NEATLY TYPED OR LETTERED INDEX FOR ALL CIRCUITS SERVED BY EACH NEW AND/OR REUSED PANEL USING PERMANENT ROOM NUMBERS OR NAMES. EACH INDEX SHALL BE ENCLOSED IN AN APPROVED HOLDER INSIDE THE EXISTING PANELBOARD DOOR.

10. VERIFY ALL RECEPTACLE, TELEPHONE AND DATA OUTLET LOCATIONS AS SHOWN ON THE ELECTRICAL DRAWINGS WITH THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

11. INSTALL ELECTRICAL RACEWAYS WHERE INDICATED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC AND NECA "STANDARD OF INSTALLATION", AND IN ACCORDANCE WITH THE FOLLOWING.

1. ALL FLEXIBLE CONDUIT IN DAMP LOCATIONS, THIS INCLUDES ALL GARAGE AREAS AND MECHANICAL ROOMS, SHALL BE NEOPRENE JACKETED, UL APPROVED WATER-TIGHT COMPLETE WITH UP CONNECTIONS.

3. NON-METALLIC CONDUIT AND DUCTS SHALL COMPLY WITH THE FOLLOWING:

A. GENERAL: PROVIDE NON-METALLIC CONDUIT, DUCTS AND FITTINGS OF TYPES, SIZES AND WEIGHTS (WALL THICKNESSES) AS INDICATED, WITH MINIMUM TRADE SIZE OF 3/4".

4. ALL UNDERGROUND CONDUIT SHALL BE RIGID SCHEDULE 40 PVC WHICH SHALL CONFORM IN ALL RESPECTS TO THE APPLICABLE REQUIREMENTS OF ASTM D-1184, D-883 AND 1600 AND NEMA STANDARD 3-9-1967.

5. INSTALL NYLON FULL CORD IN EVERY EMPTY CONDUIT TO FACILITATE THE INSTALLATION OF FUTURE CONDUCTORS AND/OR CABLES. FULL CORDS SHALL BE IDENTIFIED BY LINEN TAGS AND SUCH SHALL BE AFFIXED TO EACH END OF SUCH CORD; TAGS SHALL CARRY COMPLETE IDENTIFYING INFORMATION.

6. SEALING BUSHINGS SHALL COMPLY WITH THE FOLLOWING:

A. PROVIDE OZ TYPE FSK, USK, OR CS#1 AS REQUIRED BY APPLICATION. PROVIDE OZ TYPE CS#1 INTERNAL SEALING BUSHINGS.

1. COPPER CONDUCTORS (600V):

A. PROVIDE FACTORY-FABRICATED CONDUCTORS OF EACH SIZE, RATINGS, MATERIALS, AND TYPES INDICATED FOR EACH SERVICE. WHERE NOT INDICATED PROVIDE PROPER SELECTION TO COMPLY WITH PROJECT'S INSTALLATION REQUIREMENTS AND NEC STANDARDS. PROVIDE CONDUCTORS IN ACCORDANCE WITH THE FOLLOWING:

1. BRANCH CIRCUIT CONDUCTORS AND ALL CONDUCTORS #3 AUG AND SMALLER - COPPER CONDUCTOR WITH TW, THIN, OR THIN INSULATION #0AUG AND SMALLER, AND THU LARGER THAN #0AUG, AND WHERE AMBIENT TEMPERATURE CONDITIONS EXCEED 60 DEGREES C, SIZE ALL CONDUCTORS IN ACCORDANCE WITH NEC. MINIMUM SIZE TO BE #2 AUG. PROVIDE STRANDED CONDUCTORS FOR #0 AUG AND LARGER. PROVIDE THIN INSULATED CONDUCTOR (IN DRY AREAS) FROM OUTLETS TO FIXTURES, AND IN FIXTURE CHANNELS. USE THIN IN DRY AREAS, IN DAMP LOCATIONS, UNDER SLABS, ON EXTERIOR, ETC, USE THIN.

2. PROVIDE COLOR AND CODING OF CONDUCTORS AS FOLLOWS:

120/208V: BLACK, RED, BLUE, WHITE (NEUTRAL)

277/480V: BROWN, ORANGE, YELLOW, GRAY (NEUTRAL)

B. PROVIDE #0 AUG NEUTRAL CONDUCTOR FOR ALL THREE AND FOUR WIRE FLUORESCENT CIRCUIT HOME RUNS.

8. INTERIOR OUTLET BOXES: PROVIDE ONE PIECE, GALVANIZED FLAT RIBBED STEEL INTERIOR OUTLET BOXES OF TYPES, SHAPES AND SIZES, INCLUDING BOX DEPTHS, TO SUIT EACH RESPECTIVE LOCATION AND INSTALLATION. CONSTRUCT WITH STAMPED KNOCKOUTS IN BACK AND SIDES, AND WITH THREADED SCREW HOLES WITH CORROSION-RESISTANT SCREWS FOR SECURING BOX AND COVERS AND WIRING DEVICES, MINIMUM DEPTH 1-1/2". PROVIDE MINIMUM 2-1/8" DEPTH FOR BOXES WITH THREE OR MORE CONDUIT ENTRIES.

9. INTERIOR OUTLET BOX ACCESSORIES: PROVIDE OUTLET BOX ACCESSORIES AS REQUIRED FOR EACH INSTALLATION, INCLUDING MOUNTING BRACKETS, HANGERS, EXTENSION RINGS, FIXTURE STUDS, CABLE CLAMPS, AND METAL STRAPS FOR SUPPORTING OUTLET BOXES, WHICH ARE COMPATIBLE WITH OUTLET BOXES BEING USED AND FULFILLING REQUIREMENTS OF INDIVIDUAL WIRING APPLICATIONS.

10. JUNCTION BOXES: PROVIDE CODE-GAGE SHEET STEEL JUNCTION AND FULL BOXES, WITH SCREW-ON COVERS, OF TYPES, SHAPES AND SIZES TO SUIT EACH RESPECTIVE LOCATION AND INSTALLATION WITH WELDED SEAMS AND EQUIPPED WITH STAINLESS STEEL NUTS, BOLTS, SCREWS AND WASHERS.

11. CONDUIT BODIES: PROVIDE GALVANIZED CAST-METAL CONDUIT BODIES, OF TYPES, SHAPES AND SIZES TO SUIT RESPECTIVE LOCATIONS AND INSTALLATION. PROVIDE CONDUIT CONTRACTOR SHALL PROVIDE CONDUIT-ENTRANCE ENDS, REMOVABLE COVERS, AND CORROSION-RESISTANT SCREWS.

12. BUSHINGS, KNOCKOUT CLOSURES AND LOCKNUTS: PROVIDE CORROSION-RESISTANT FINCHED-STEEL BOX KNOCKOUT CLOSURES, CONDUIT LOCKNUTS AND MALLEABLE STEEL CONDUIT BUSHINGS AND OFFSET CONNECTORS, OF TYPES AND SIZES TO SUIT RESPECTIVE USES AND INSTALLATION.

13. SWITCHES SHALL BE: FLUSH TOGGLE TYPE AC QUIET, 20 AMP, COLOR WHITE OR AS SELECTED BY THE ARCHITECT, EQUAL TO HUBBELL 1220 SERIES.

14. RECEPTACLES: 3-WIRE FLUSH GROUNDING TYPE, 125 VOLT, 20 AMP, COLOR WHITE (OR IVORY) AS SELECTED BY THE ARCHITECT. EQUAL TO HUBBELL 9362.

15. PLATES: NYLON OR FIBERGLASS, COLOR WHITE (OR IVORY) AS SELECTED BY THE ARCHITECT, EQUAL TO SIERRA. GANG PLATES TO BE ONE PIECE.

16. DISCONNECT SWITCHES: SHALL BE EQUAL TO SQUARE D WITH RATING AS REQUIRED BY NEC AND SHALL BE WEATHERPROOF WHERE LOCATED OUTSIDE OR WHERE NOTED "UP". OTHER ACCEPTABLE MANUFACTURERS ARE GENERAL ELECTRIC, GULF, ITC, AND CUTLER-HAMMER OF EQUAL TYPE AND GRADE. ALL DISCONNECT SWITCHES SHALL BE OF ONE MANUFACTURER (MATCH EXISTING DISCONNECT SWITCH MFG. TYPE).

17. TIME SWITCH (WHEN USED) SHALL BE EQUAL TO TORK 1200L FOR 120V AND 1202 FOR 277V, 24-HOUR CLOCK. THE SWITCH SHALL BE COMPLETE WITH RESERVE POWER MOTOR. PROVIDE NEMA TYPE 1B ENCLOSURE WITH KEY LOCK AND SIZE AS REQUIRED WHEN FLUSH MOUNTING IS SPECIFIED. FOR TIME SWITCHES CONTROLLING OUTDOOR LIGHTING, CONTROL SHALL ALSO INCLUDE A TORK 2101 FOR 120V AND 2104 FOR 277V PHOTO ELECTRIC CONTROL UNIT AND PROPERLY SIZED LIGHTING CONTACTOR. MOUNT PHOTO CONTROL ON NORTH SIDE OF ROOF OUT OF SIGHT FROM ARTIFICIAL LIGHTS.

18. FURNISH AND INSTALL ALL LIGHTING FIXTURES. REFER TO THE LIGHT FIXTURE SCHEDULE AS SHOWN ON THE DRAWINGS.

19. EMERGENCY BATTERY PACK FOR THE EMERGENCY FIXTURES WHEN REQUIRED SHALL BE NICKEL CADMIUM WITH CHARGER, TEST SWITCH AND INDICATOR LIGHT AND SHALL CARRY A FULL 5-YEAR MANUFACTURER'S WARRANTY. EQUAL TO ENERGLITE, CATALOG NO. FFS1-24.

ELECTRICAL NOTES

PART 1 - GENERAL

1. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE ELECTRICAL SYSTEM INSTALLATION, INCLUDING ALL ITEMS, OPERATIONS OR METHODS LISTED, MENTIONED OR SCHEDULED ON THE DRAWINGS, INCLUDING ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS NECESSARY AND REQUIRED FOR THEIR COMPLETION. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE INSTALLATION, INTERCONNECTIONS AND TESTING OF COMPLETE AND OPERABLE SYSTEMS. THE INTENT OF THE ELECTRICAL SYSTEM INSTALLATION SHALL BE AS SHOWN ON THE DRAWINGS. INCLUDE ALL RENOVELING TO THE EXISTING ELECTRICAL PANELBOARDS, LIGHTING FIXTURES, RECEPTACLES, SURFACE MOUNTED WIRE MOLD WITH RECEPTACLES, POWER WIRING FOR PLUMBING, MECHANICAL, ETC. PROVIDE NEW WIRE AND CONDUIT, PROVIDE CIRCUITING FOR REUSED AND NEW CIRCUIT BREAKERS, ETC., AS REQUIRED TO ACCOMMODATE THE RENOVELING CONSTRUCTION TO ENSURE A COMPLETE AND OPERABLE ELECTRICAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL COORDINATE AS REQUIRED WITH THE ARCHITECT, THE OWNER'S REPRESENTATIVE AND THE GENERAL CONTRACTOR.

2. THE ELECTRICAL CONTRACTOR SHALL EMPLOY QUALIFIED ELECTRICAL CRAFTSMEN WITH AT LEAST THREE YEARS OF EXPERIENCE. WORKMANSHIP SHALL BE NEAT, HAVE A GOOD MECHANICAL APPEARANCE AND CONFORM TO BEST ELECTRICAL CONSTRUCTION PRACTICES. PROVIDE A COMPETENT SUPERINTENDENT TO DIRECT THE WORK AT ALL TIMES. ANY PERSON FOUND INCOMPETENT SHALL BE DISCHARGED FROM THE PROJECT AND REPLACED BY SATISFACTORY PERSONNEL. CONTRACTOR MUST HAVE A CURRENT STATE CONTRACTING LICENSE APPLICABLE TO TYPE OF WORK TO BE PERFORMED UNDER THIS CONTRACT.

3. THE CONTRACTOR SHALL PAY FOR ALL PERMITS RELATED TO HIS INSTALLED WORK AND SHALL COMPLY WITH LOCAL AUTHORITIES HAVING JURISDICTION. VERIFY THAT ALL AVAILABLE WITH THE EXISTING ELECTRICAL DISTRIBUTION SYSTEMS BEFORE COMMENCING WITH ELECTRICAL INSTALLATION. IF ANY CHANGES ARE REQUIRED FROM THE SYSTEM SHOWN ON THE DRAWINGS, IT SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO MAKE REQUIRED MODIFICATIONS AND CHANGES TO ENSURE A COMPLETE OPERABLE ELECTRICAL SYSTEM.

4. FURNISH CERTIFICATE OF APPROVAL TO THE OWNER'S REPRESENTATIVE FROM THE INSPECTION AUTHORITY AT COMPLETION OF WORK.

5. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION NEC AND PREVAILING LOCAL ELECTRICAL CODES, COMPLY WITH REQUIREMENTS OF STATE AND LOCAL ORDINANCES. IF A CONFLICT OCCURS BETWEEN THESE REQUIREMENTS AND THE CONTRACT DOCUMENTS, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN. THE CONTRACTOR ACCEPTS THIS RESPONSIBILITY UPON SUBMITTING HIS BID, AND NO EXTRA CHARGE WILL BE ALLOWED AFTER THE CONTRACT IS AWARDED. THIS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLYING WITH ANY REQUIREMENTS OF THE CONTRACT DOCUMENTS WHICH MAY BE IN EXCESS OF THE AFOREMENTIONED REQUIREMENTS, AND NOT CONTRARY TO SAME.

6. IN ADDITION TO THE AFOREMENTIONED ORDINANCES, THE FOLLOWING INDUSTRY STANDARDS SHALL APPLY AS APPLICABLE EXCEPT THAT WHERE THE REQUIREMENTS OF THIS SPECIFICATION ARE MORE STRINGENT THAN THE FOLLOWING STANDARDS, THEY SHALL TAKE PRECEDENCE:

- AIEE - AMERICAN INSTITUTE OF ELECTRICAL ENGINEERING.
- ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE.
- ASTM - AMERICAN SOCIETY OF TESTING MATERIALS.
- IES - ILLUMINATING ENGINEERING SOCIETY.
- NFPA - NATIONAL BOARD OF FIRE UNDERWRITERS.
- NEC - NATIONAL ELECTRICAL CODE.
- NEMA - NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION.
- UL - UNDERWRITERS LABORATORY.
- NECA - NATIONAL ELECTRIC CONTRACTORS ASSOCIATION.
- OSHA - OCCUPATIONAL SAFETY AND HEALTH ACT.

7. THE ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH THE OTHER TRADES AND EXISTING CONDITIONS. VISIT THE SITE DURING THE BIDDING PERIOD TO DETERMINE EXISTING CONDITIONS AFFECTING ELECTRICAL AND OTHER WORK. ALL COSTS ARISING FROM SITE CONDITIONS AND/OR PREPARATION SHALL BE INCLUDED IN THE BASE BID. NO ADDITIONAL CHARGES WILL BE ALLOWED DUE TO UNEXPECTED SITE CONDITIONS. BEFORE BIDDING, CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE DRAWINGS, SPECIFICATIONS AND PROJECT SITE. SUBMIT REQUESTS FOR CLARIFICATION TO ARCHITECT AND/OR OWNER'S REPRESENTATIVE IN WRITING PRIOR TO ISSUANCE OF FINAL ADDENDUM. AFTER SIGNING THE CONTRACT, THE CONTRACTOR SHALL MEET THE INTENT, PURPOSE, AND FUNCTION OF THE CONTRACT DOCUMENTS. ANY COSTS OF MATERIALS, LABOR AND EQUIPMENT ARISING THEREFROM, TO MAKE EACH SYSTEM COMPLETE AND OPERABLE, IS THE RESPONSIBILITY OF THE CONTRACTOR.

PART 2 - MATERIAL, DEVICES AND FIXTURES

1. ALL RACEWAYS SHALL BE EITHER RIGID STEEL OR INTERMEDIATE METAL CONDUIT (IMC). ELECTRICAL METALLIC TUBING (EMT) MAY BE USED ONLY WHERE CONCEALED IN WOOD OR METAL STUD WALLS OR ABOVE DROPPED CEILINGS.

2. METAL CONDUIT AND TUBING SHALL COMPLY WITH THE FOLLOWING:

A. GENERAL: PROVIDE METAL CONDUIT, TUBING AND FITTINGS OF TYPES, GRADES, SIZES AND WEIGHTS (WALL THICKNESSES) AS INDICATED WITH MINIMUM TRADE SIZE OF 3/4".

B. RIGID METAL CONDUIT (RMC): F8 WU-C-0581 AND ANSI C801.

C. RIGID METAL CONDUIT FITTINGS: PROVIDE FULLY THREADED MALLEABLE STEEL COUPLINGS, RAINIGHT AND CONCRETE TIGHT WHERE REQUIRED BY APPLICATION. PROVIDE DOUBLE LOCKNUTS AND METAL BUSHINGS AT CONDUIT TERMINATION, USE OZ TYPE B BUSHINGS ON CONDUITS 1-1/4" AND LARGER.

D. ELECTRICAL METALLIC TUBING (EMT): F8 WU-C-563 AND ANSI C803.

E. EMT FITTINGS: PROVIDE INSULATED THROAT NON-INDENTER TYPE MALLEABLE STEEL FITTINGS, CONCRETE TIGHT WHERE REQUIRED BY APPLICATION. PROVIDE OZ TYPE B BUSHINGS ON CONDUITS 1-1/4" LARGER.

F. FLEXIBLE METAL CONDUIT: F8 WU-C-566, OF THE FOLLOWING TYPE, ZINC-COATED STEEL.

G. FLEXIBLE METAL CONDUIT FITTINGS: F8 WF-406, TYPE I, CLASS 1, AND STYLE A.

H. EXPANSION FITTINGS: OZ TYPE AX, OR EQUIVALENT TO SUIT APPLICATION.

State of Utah

Department of Administrative Services



Division of Facilities Construction & Management
4110 State Office Building
Salt Lake City, Utah 84114
Phone: (801) 538-3018
Fax: (801) 538-3267

http://dfcm.utah.gov

CREATED BY: Design Interface LLC



DESIGN INTERFACE LLC
ARCHITECTURE | BUSINESS | DESIGN | COMMERCIAL | RESIDENTIAL
925 SOUTH 2ND WEST, SUITE B
SALT LAKE CITY, UTAH 84101
O 801.533.0100 | F 801.533.0101



2165 Sublette Plaza / Sandy, Utah 84085 / O (801) 943-2705 / F (801) 943-0104
Mechanical & Electrical Consulting Engineering
e-mail: twengineering@msn.com
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BUILDING NAME:

3760 So. Highland Drive
Salt Lake City, Utah 84106

PROJECT TITLE:

Highland Plaza - Remodel

PART 8 - DATA SYSTEM

1. THE OWNER'S DATA INSTALLATION CONTRACTOR SHALL INSTALL J-BOX AND CONDUIT WITH CAT6 CABLE FOR THE DATA SYSTEM.
2. VERIFY THE DATA OUTLET LOCATIONS AS SHOWN ON THE ELECTRICAL DRAWINGS WITH THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

PART 9 - AS-BUILT DRAWINGS

1. THE CONTRACTOR SHALL KEEP A RECORD SET OF DRAWINGS NEATLY MARKED "AS-BUILT" WITH ALL CHANGES FROM THE ORIGINAL DESIGN AND DRAWINGS. THESE DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT AND/OR OWNER'S REPRESENTATIVE AT THE COMPLETION OF THE PROJECT PRIOR TO RECEIVING FINAL PAYMENT.

PART 10 - TESTING OF ELECTRICAL SYSTEMS

1. PRIOR TO ENERGIZING CIRCUITRY, TEST WIRING DEVICES FOR ELECTRICAL CONTINUITY AND PROPER POLARITY CONNECTIONS. AFTER ENERGIZING CIRCUITRY, TEST WIRING DEVICES TO DEMONSTRATE COMPLIANCE WITH REQUIREMENTS.
2. UPON COMPLETION OF INSTALLATION OF LIGHTING FIXTURES, AND AFTER BUILDING CIRCUITRY HAS BEEN ENERGIZED, APPLY ELECTRICAL ENERGY TO DEMONSTRATE CAPABILITY AND COMPLIANCE WITH REQUIREMENTS. WHERE POSSIBLE, CORRECT MALFUNCTIONING UNITS AT SITE, THEN RETEST TO DEMONSTRATE COMPLIANCE, OTHERWISE REMOVE AND REPLACE WITH NEW UNITS, AND PROCEED WITH RETESTING. AT THE TIME OF SUBSTANTIAL COMPLETION, REPLACE LAMPS IN INTERIOR LIGHTING FIXTURES WHICH ARE OBSERVED TO BE NOTICEABLY DIMMED AFTER THE CONTRACTOR'S USE AND TESTING, AS JUDGED BY ARCHITECT/ENGINEER.
3. ON THE COMPLETION OF THE WORK, THE INSTALLATION SHALL BE TESTED FREE FROM ALL GROUNDS AND SHORT CIRCUITS. NORMAL FEEDERS, CIRCUITS AND CONDUCTORS WITH WIRE SIZE 12 AND LARGER SHALL BE TESTED FOR LEAKAGE PHASE-TO-PHASE PRIOR TO ENERGIZATION OF THE ELECTRICAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL SUBMIT A WRITTEN REPORT TO THE ARCHITECT AND/OR OWNER'S REPRESENTATIVE SHOWING METHODS AND READINGS TAKEN. TESTING VOLTAGE SHALL NOT EXCEED TWO TIMES NORMAL OPERATING VOLTAGE.

PART 11 - OPERATION AND MAINTENANCE MANUALS

1. PROVIDE THREE (3) SETS OF 0 4 M MANUALS COVERING ALL NEW LIGHT FIXTURES EQUIPMENT AND APPURTENANCES FOR THE OWNER'S USE. THE FORMAT SHALL BE AS FOLLOWS:
 - A. SIZE: 8-1/2 X 11 INCHES.
 - B. PAPER: MANUFACTURER'S PRINTED DATA, OR NEATLY TYPE-WRITTEN.
 - C. PROVIDE REINFORCED PUNCHED BINDER TABS, BOUND IN WITH TEXT.
 - D. PROVIDE FLY-LEAF FOR EACH SEPARATE PRODUCT, OR EACH PIECE OF OPERATING EQUIPMENT. PROVIDE TYPED DESCRIPTION OF PRODUCT, AND MAJOR COMPONENT PARTS OF EQUIPMENT. PROVIDE INDEXED TABS.
 - E. COVER: IDENTIFY EACH VOLUME WITH TYPED OR PRINTED TITLE: "OPERATION AND MAINTENANCE INSTRUCTION". LIST TITLE OF PROJECT, IDENTITY OF GENERAL SUBJECT MATTER COVERED IN THE MANUAL.
 - F. BINDERS: COMMERCIAL QUALITY THREE-RING BINDERS WITH DURABLE AND CLEANABLE PLASTIC COVERS.
 - G. PROVIDE NEATLY TYPE WRITTEN TABLE OF CONTENTS. LIST PRODUCT BY PRODUCT NAME AND OTHER IDENTIFYING SYMBOLS AS SET FORTH IN CONTRACT DOCUMENTS.
 - H. INCLUDE COPY OF EACH WARRANTY, BOND AND SERVICE CONTRACT ISSUED. INCLUDE PARTS LISTS INCLUDE PARTS LISTS AND OTHER PERTINENT INFORMATION.

PART 12 - WARRANTY AND GUARANTEE

1. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE REMODELED ELECTRICAL SYSTEM INSTALLATION AND PROVIDE A ONE (1) YEAR PARTS AND LABOR WARRANTY FOR THE REMODELED ELECTRICAL SYSTEM INSTALLATION. ENSURE THAT ELECTRICAL SYSTEM INSTALLED UNDER THIS CONTRACT IS IN PROPER WORKING ORDER AND IN COMPLIANCE WITH DRAWINGS, SPECIFICATIONS, AND/OR AUTHORIZED CHANGES. WITHOUT ADDITIONAL CHARGE, REPLACE ANY WORK OR MATERIALS WHICH DEVELOP DEFECT, EXCEPT FROM ORDINARY WEAR AND TEAR, WITHIN ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION AND THE OWNER'S REPRESENTATIVE'S ACCEPTANCE.

ELECTRICAL NOTES (CONT.)

PART 4 - SUBMITTALS AND SUBSTITUTIONS

1. SUBMIT SHOP DRAWINGS AND PRODUCT DATA AFTER THE CONTRACT IS AWARDED BUT PRIOR TO MANUFACTURE OR INSTALLATION OF ANY EQUIPMENT. SUBMIT 6 COMPLETE SETS FOR REVIEW. VERIFY ALL DIMENSIONAL INFORMATION TO INSURE PROPER CLEARANCE FOR INSTALLATION OF EQUIPMENT. CHECK ALL MATERIALS AND EQUIPMENT AFTER ARRIVAL ON THE JOB SITE AND VERIFY COMPLIANCE WITH THE CONTRACT DOCUMENTS. A MINIMUM PERIOD OF TWO WEEKS, EXCLUSIVE OF TRANSMITTAL TIME, WILL BE REQUIRED EACH TIME A SHOP DRAWING AND/OR PRODUCT DATA IS SUBMITTED OR RESUBMITTED FOR REVIEW. THIS TIME PERIOD SHALL BE CONSIDERED BY THE CONTRACTOR WHEN SCHEDULING SUBMITTAL DATA.
2. REVIEW OF SHOP DRAWINGS AND PRODUCT DATA SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR DIMENSIONS AND/OR ERRORS THAT MAY BE CONTAINED THEREIN, OR DEVIATIONS FROM THE CONTRACT DOCUMENTS REQUIREMENTS. IT SHALL BE CLEARLY UNDERSTOOD THAT THE NOTING OF SOME ERRORS BUT OVERLOOKING OTHERS DOES NOT GRANT THE CONTRACTOR PERMISSION TO PROCEED IN ERROR. REGARDLESS OF ANY INFORMATION CONTAINED IN THE SHOP DRAWINGS AND PRODUCT DATA, THE REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL GOVERN AND ARE NOT WAIVED, OR SUPERSEDED IN ANY WAY BY THE REVIEW OF THE SHOP DRAWINGS AND PRODUCT DATA. OBSERVE THE FOLLOWING RULES WHEN SUBMITTING THE SHOP DRAWINGS AND BROCHURES.
 - A. EACH SHOP DRAWING SHALL INDICATE IN THE LOWER RIGHT HAND CORNER, AND EACH BROCHURE SHALL INDICATE ON THE FRONT COVER THE FOLLOWING: TITLE OF THE SHEET OR BROCHURE, NAME AND LOCATION OF THE BUILDING, NAMES OF THE ARCHITECT, CONTRACTOR, SUBCONTRACTORS, MANUFACTURER, SUPPLIER/VENDOR, ETC., DATE OF SUBMITTAL, AND THE DATE OF CORRECTION AND REVISION. UNLESS THE ABOVE INFORMATION IS INCLUDED THE SUBMITTAL WILL BE RETURNED FOR RESUBMITTAL.
 - B. SHOP DRAWINGS SHALL BE DONE IN AN EASILY LEGIBLE SCALE AND SHALL CONTAIN SUFFICIENT PLANS, ELEVATIONS, SECTIONS, AND ISOMETRICS TO CLEARLY DESCRIBE THE EQUIPMENT OR APPARATUS, AND ITS LOCATION. DRAWINGS SHALL BE PREPARED BY AN ENGINEER/ DRAFTER SKILLED IN THIS TYPE OF WORK. SHOP DRAWINGS SHALL BE DRAWN TO AT LEAST 1/4" = 1'-0" SCALE.
 - C. PRODUCT DATA SUBMITTED SHALL BE PUBLISHED BY THE MANUFACTURERS AND SHALL CONTAIN COMPLETE AND DETAILED ENGINEERING AND DIMENSIONAL INFORMATION. ALL IRRELEVANT INFORMATION SHALL BE MARKED OUT, OR UNLESS RELEVANT INFORMATION IS CLEARLY MARKED.
3. PRODUCTS ARE SPECIFIED BY MANUFACTURER NAME, DESCRIPTION, AND/OR CATALOG NUMBER. DISCREPANCIES BETWEEN EQUIPMENT SPECIFIED AND THE INTENDED FUNCTION OF EQUIPMENT SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IN WRITING PRIOR TO BIDDING. FAILURE TO REPORT ANY CONFLICT, INCLUDING CATALOG NUMBERS, DISCONTINUED PRODUCTS, ETC., DOES NOT RELIEVE THE CONTRACTOR FROM VIOLATING THE INTENT OF THE CONTRACT DOCUMENTS NOR SHALL IT CHANGE THE CONTRACT COST. IF THE CONTRACTOR IS UNABLE TO INTERPRET ANY PART OF THE PLANS AND/OR SPECIFICATIONS, OR SHOULD HE FIND DISCREPANCIES THEREIN, HE SHALL BRING THIS TO THE ATTENTION OF THE ARCHITECT AND/OR THE OWNER'S REPRESENTATIVE WHO WILL ISSUE INTERPRETATION AND/OR ADDITIONAL INSTRUCTIONS TO BIDDERS BEFORE THE PROJECT IS BID. PROVIDE PRODUCTS OF MANUFACTURERS SPECIFIED OR EQUIVALENT PRODUCTS OF OTHER MANUFACTURERS WHICH HAVE BEEN APPROVED IN WRITING BY THE ARCHITECT PRIOR TO BID. MANUFACTURERS CATALOG NUMBERS AND DESCRIPTIONS ESTABLISH THE QUALITY OF PRODUCT REQUIRED. ANY CONFLICT ARISING FROM THE USE OF SUBSTITUTED EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR WHO SHALL BEAR ALL COSTS REQUIRED TO MAKE THE EQUIPMENT COMPLY WITH THE INTENT OF THE CONTRACT DOCUMENTS. PROVIDE ALL SAMPLES AS REQUIRED. NO MATERIALS OR APPARATUS MAY BE SUBSTITUTED AFTER THE BID OPENING. PROVIDE ONLY EQUIPMENT SPECIFIED IN THE CONTRACT DOCUMENTS OR APPROVED BY ADDENDUM.

PART 5 - CUTTING AND PATCHING

1. THE GENERAL CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING OF CEILINGS, FLOORS AND WALLS AS REQUIRED TO FACILITATE THE ELECTRICAL SYSTEM INSTALLATION. THE COST OF WHICH SHALL BE PAID FOR BY THE ELECTRICAL CONTRACTOR. THIS WORK SHALL BE COORDINATED BY THE ELECTRICAL CONTRACTOR WITH THE GENERAL CONTRACTOR, ARCHITECT AND THE OWNER'S REPRESENTATIVE. SCHEDULE ALL WORK SO AS NOT TO INTERFERE AND/OR DISRUPT THE DAILY ACTIVITIES AND/OR OPERATING HOURS OF THE ADJOINING BUILDING OPERATIONS.

PART 6 - FIRE ASSEMBLY PENETRATIONS

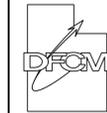
1. PROVIDE FIRESTOP SYSTEM AT FIRE RATED ASSEMBLIES PER LOCAL CODES. WHERE APPLICABLE, PROVIDE 02 TYPE CFRP/1 AND CAF9/1 FIRE SEAL FITTINGS FOR CONDUIT AND CABLE PENETRATIONS THROUGH CONCRETE AND MASONRY WALLS, FLOORS, SLABS, AND SIMILAR STRUCTURES. WHERE APPLICABLE, PROVIDE 3M FIRE BARRIER SEALING PENETRATION SYSTEM, AND/OR THOMAS 4 BETTS FLAME SAFE FIRE STOP SYSTEM, AND/OR CHASE. FOAM FIRE STOP SYSTEM, INCLUDING WALL WRAP, PARTITIONS, CAPS, AND OTHER ACCESSORIES AS REQUIRED. ALL MATERIALS TO COMPLY WITH UL 1479 (ASTM E-814). COMPLY WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR INSTALLATION OF SEALING FITTINGS AND BARRIER SEALING SYSTEMS.

PART 7 - TELEPHONE SYSTEM

1. THE OWNER'S TELEPHONE INSTALLATION CONTRACTOR SHALL INSTALL J-BOX AND CONDUIT WITH CAT6 CABLE FOR THE TELEPHONE SYSTEM.
2. VERIFY THE TELEPHONE OUTLET LOCATIONS AS SHOWN ON THE ELECTRICAL DRAWINGS WITH THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

State of Utah

Department of Administrative Services



Division of Facilities
Construction & Management
4110 State Office Building
Salt Lake City, Utah 84114
Phone: (801) 538-3018
Fax: (801) 538-3267

http://dfcm.utah.gov

CREATED BY: Design Interface LLC



DESIGN INTERFACE LLC
ARCHITECTURE | SUSTAINABLE DESIGN | COMMERCIAL & RESIDENTIAL

925 SOUTH 2ND WEST, SUITE B
SALT LAKE CITY
UTAH 84101

O 801.533.0100 | F 801.533.0101



TW Engineering Associates

2165 Sublette Plaza / Sandy, Utah 84085 / O (801) 943-2705 / F (801) 943-0744
Mechanical & Electrical Consulting Engineering
e-mail: twengineering@msn.com
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BUILDING NAME:

3760 So. Highland Drive
Salt Lake City, Utah 84106

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SHEET TITLE

Electrical Notes
(Continued)

SHEET NUMBER

E202.2

SHEET 23 OF 23