UNITED STATES COLD STORAGE

SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

71005332

FILE COPY

GENERAL

G001	COVER SHEET/DRAWING INDEX
G002	ENLARGED OFFICE LIFE SAFETY FLOOR PLAN

CIVIL

C101	SITE GEOMETRY PLAN

STRUCTURAL

S110	WELFARE AREA PARTIAL ROOF FRAMING PLAN

ARCHITECTURAL

A101	OVERALL FACILITY FLOOR PLAN
A102	ENLARGED OFFICE FLOOR PLANS, NOTES, AND DETAILS
A301	WALL SECTIONS
A401	ENLARGED FLOOR PLANS, ELEVATIONS, AND DETAILS
A402	ADA STANDARD DETAILS
A601	SCHEDULES AND DETAILS

PLUMBING

P001	SCHEDULES, NOTES, AND SPECIFICATIONS
P002	SCHEDULES, NOTES, AND SPECIFICATIONS
P003	PIPE SCOPE AND SPECIFICATIONS
P101	OVERALL PLUMBING FLOOR PLAN
P401	ENLARGED SANITARY AND UTILITY FLOOR PLANS
P501	PLUMBING DETAILS
P601	PLUMBING RISER DIAGRAMS

MECHANICAL

M001	MECHANICAL LEGEND NOTES & SPECS
M002	MECHANICAL SCHEDULES
M003	MECHANICAL SEQUENCE OF OPERATIONS
M004	MECHANICAL SEQUENCE OF OPERATIONS
M101	MECHANICAL OVERALL PLAN
M102	MECHANICAL ENLARGED PLAN
M103	MECHANICAL ENLARGED ROOF PLAN
M501	MECHANICAL DETAILS

ELECTRICAL

E001	ELECTRICAL LEGEND, LUMINAIRE SCHEDULE, & GENERAL NOTES
E002	ELECTRICAL DEMOLITION PLAN
E401	LIGHTING & POWER PLAN
E501	ELECTRICAL DETAILS
E601	ELECTRICAL ONE LINE & PANEL SCHEDULES

Sheet Identification

A101X01

- Unit or Floor number (large projects only)
- Sheet Sequence Number
- Sheet Type Designator
- Discipline Designator

DISCIPLINE DESIGNATORS		SHEET TYPE DESIGNATORS	
G	GENERAL	0	GENERAL
H	HAZARDOUS MATERIALS	1	PLANS
C	CIVIL	2	ELEVATIONS
L	LANDSCAPE	3	SECTIONS
S	STRUCTURAL	4	LARGE SCALE VIEWS
A	ARCHITECTURAL	5	DETAILS
I	INTERIORS	6	SCHEDULES AND DIAGRAMS
F	FIRE PROTECTION	7	USER DEFINED
P	PLUMBING	8	USER DEFINED
Q	PROCESS EQUIPMENT AND PIPING	9	3D REPRESENTATIONS
U	UTILITY – PROCESS PIPING		
M	MECHANICAL		
E	ELECTRICAL		
T	TELECOMMUNICATIONS		
R	REFRIGERATION		
X	RESOURCE		

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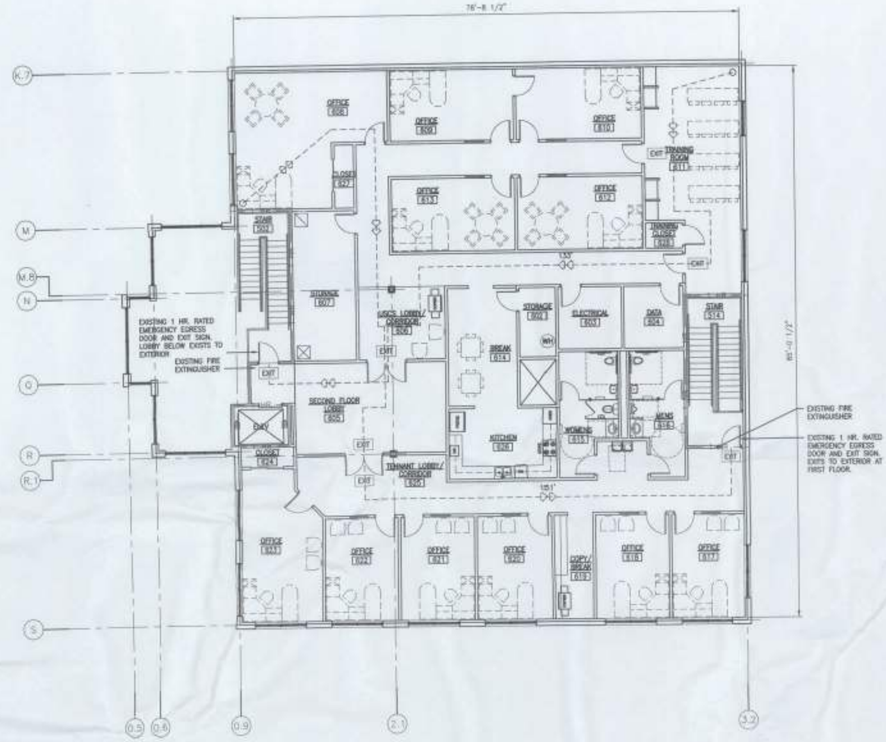
FLORIDA ENGINEERING LICENSE NO.

DRAWING ISSUE "A" - "08/08/2014" - "PERMIT ISSUE"



LIFE SAFETY
FLOOR PLAN

N

BUILDING CODE ANALYSIS

BUILDING CODE: Florida Building Code, 2010 (2009 IBC)
ACCESSIBILITY CODE: Florida Accessibility Code, 2012
FIRE CODE: Florida Fire Prevention Code, 2010
ENERGY CODE: Florida Building Code, 2010 (2009 IBC)
MECHANICAL CODE: Florida Building Code, 2010 (2009 IBC)
PLUMBING CODE: Florida Building Code, 2010 (2009 IBC)
FUEL/GAS CODE: Florida Building Code, 2010 (2009 IBC)
ELECTRICAL CODE: NFPA 70

EXISTING AREA SUMMARY

EXISTING FACILITY-----------------293,967 S.F.

NEW REMODEL SUMMARY

SECOND FLOOR OFFICE BUILDOUT--------7,574 S.F.

Occupancy Classification:

304.1 Business Group B

Chapter 6 – Types of Construction:

Type IIB

TABLE 601 FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (hours)									
	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
BUILDING ELEMENT	A	B	A^{d}	B	A^{d}	B	HT	A^{d}	B
Primary structural frame ^{g} (see Section 202)	3^{a}	2^{a}	1	0	1	0	HT	1	0
Bearing walls Exterior ^{f,g} / Interior	3 / 3^{a}	2 / 2^{a}	1 / 1	0 / 0	2 / 1	2 / 0	2 / 1/HT	1 / 1	0 / 0
Nonbearing walls and partitions Exterior	See Table 602								
Nonbearing walls and partitions Interior ^{e}	0	0	0	0	0	0	See Section 602.4.6	0	0
Floor construction and secondary members (see Section 202)	2	2	1	0	1	0	HT	1	0
Roof construction and secondary members (see Section 202)	$1\frac{1}{2}^{b}$	$1^{b,c}$	$1^{b,c}$	0^{c}	$1^{b,c}$	0	HT	$1^{b,c}$	0

Chapter 5 – General Building Heights and Areas

TABLE 503 ALLOWABLE BUILDING HEIGHTS AND AREASa

a. See the following sections for general exceptions to Table 503:

SECTION 507 UNLIMITED AREA BUILDINGS

507.1 General. The area of buildings of the occupancies and configurations specified herein shall not be limited.

507.3 Sprinklered, one story. The area of a Group S building no more than one story above grade plane shall not be limited when the building is provided with an automatic sprinkler system throughout in accordance with Section 903.3.1.1 and is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

507.4 Two story. The area of a Group S building no more than two stories above grade plane shall not be limited when the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, and is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

SECTION 1004 OCCUPANT LOAD

TABLE 1004.1.1 MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT	
FUNCTION OF SPACE	FLOOR AREA IN SQ. FT. PER OCCUPANT
Business areas	100 gross

1004.1.1 Occupant Load:

B (BUSINESS) 7,574 / 100 = 75.74 OR 76 OCCUPANTS

1014.3 Common path of egress travel. In occupancies other than Groups H-1, H-2 and H-3, the common path of egress travel shall not exceed 75 feet (22 860 mm). In Group H-1, H-2 and H-3 occupancies, the common path of egress travel shall not exceed 25 feet (7620 mm). For common path of egress travel in Group A occupancies and assembly occupancies accessory to Group E occupancies having fixed seating, see Section 1028.8.

Exceptions:

1. The length of a common path of egress travel in Group B, F and S occupancies shall not be more than 100 feet (30 480 mm), provided that the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

TABLE 1016.1 EXIT ACCESS TRAVEL DISTANCE		
OCCUPANCY	WITHOUT SPRINKLER SYSTEM (feet)	WITH SPRINKLER SYSTEM (feet)
B	200	300^{c}

c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

1018.4 Dead ends. Where more than one exit or exit access doorway is required, the exit access shall be arranged such that there are no dead ends in corridors more than 20 feet (6096 mm) in length.

Exceptions:

2. In occupancies in Groups B, E, F, M, R-1, R-2, R-2.1, R-4, S and U, where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the length of the dead-end corridors shall not exceed 50 feet (15 240 mm).

SECTION 1021 NUMBER OF EXITS AND CONTINUITY

1021.1 Exits from stories. All spaces within each story shall have access to the minimum number of approved independent exits as specified in Table 1021.1 based on the occupant load of the story. For the purposes of this chapter, occupied roofs shall be provided with exits as required for stories.

TABLE 1021.1 MINIMUM NUMBER OF EXITS FOR OCCUPANT LOAD	
OCCUPANT LOAD (persons per story)	MINIMUM NUMBER OF EXITS (per story)
1-500	2

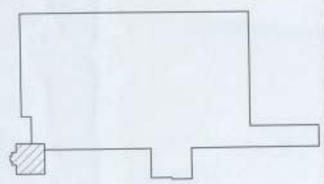
SECTION 1101 GENERAL

1101.1 Scope. The provisions of this chapter shall control the design and construction of facilities for accessibility to physically disabled persons.

1101.1.1 Criteria. Buildings shall be designed and constructed in accordance with the Florida Building Code, Accessibility.

LEGEND

249' DENOTES ACTUAL TRAVEL DISTANCE IN FEET
DENOTES STARTING POINT FOR TRAVEL DISTANCE
DENOTES PATHS OF EXIT TRAVEL.
FE DENOTES FIRE EXTINGUISHER LOCATIONS.
EXIT DENOTES EMERGENCY EXIT DOOR



KEY PLAN
NOT TO SCALE

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UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

ENLARGED OFFICE LIFE SAFETY FLOOR PLAN

REV.	DATE	BY	DESCRIPTION
A	05/08/2014	FRR	PERMIT ISSUE

JOB NO. 71005332
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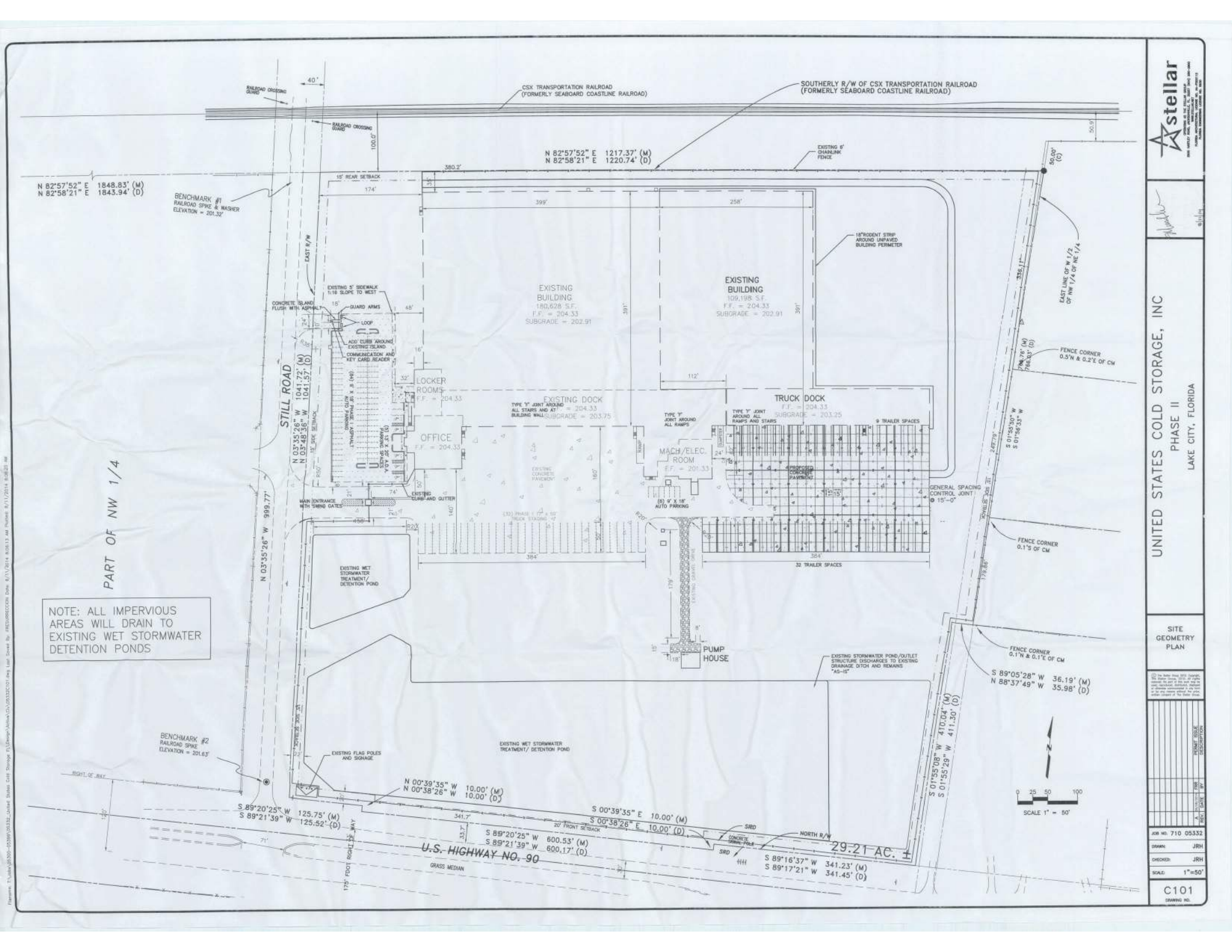

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UNITED STATES COLD STORAGE, INC
PHASE II
LAKE CITY, FLORIDA

SITE GEOMETRY PLAN

JOB NO.	710 05332
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SCALE:	1"=50'

C101
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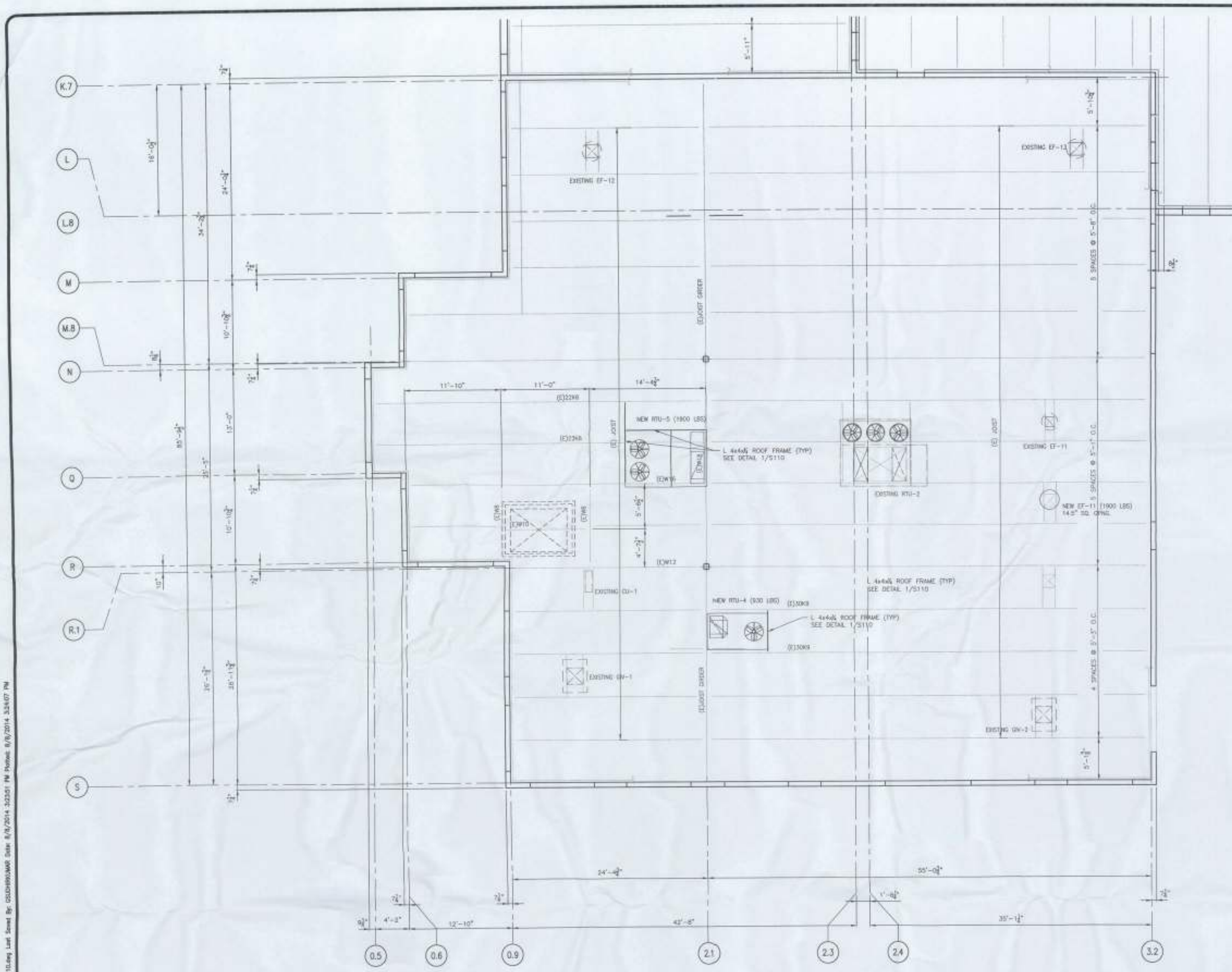
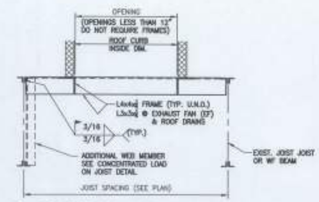


WELFARE AREA PARTIAL ROOF FRAMING PLAN
SCALE: 3/16" = 1'-0"

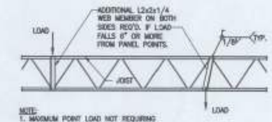


① TYP. ROOF OPENING FRAMING DETAIL

EXISTING CONSTRUCTION

TYP. ROOF OPENING FRAMING NOTES:

1. PROVIDE SUPPORT ANGLE FOR OPENINGS AND CURBS.
2. VERIFY SIZE AND LOCATION OF OPENING WITH ARCHITECTURAL AND MECHANICAL DRAWINGS PRIOR TO FABRICATION AND ERECTION.
3. FRAME DIMENSIONS SHALL BE COORDINATED WITH UNIT CUT SHEETS.



NOTE:
1. MAXIMUM POINT LOAD NOT REQUIRING JOIST REINFORCEMENT AS SPECIFIED BY JOIST SUPPLIER.

② TYP. CONCENTRATED LOAD ON JOIST

GENERAL NOTES:

MATERIALS:

1. ANGLES A36 (36 KSI).
2. WELDING ELECTRODES E70XX

ALL WELDS SHALL CONFORM TO AWS D1.1 2004 "STRUCTURAL WELDING CODE"

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UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
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WELFARE AREA PARTIAL ROOF FRAMING PLAN

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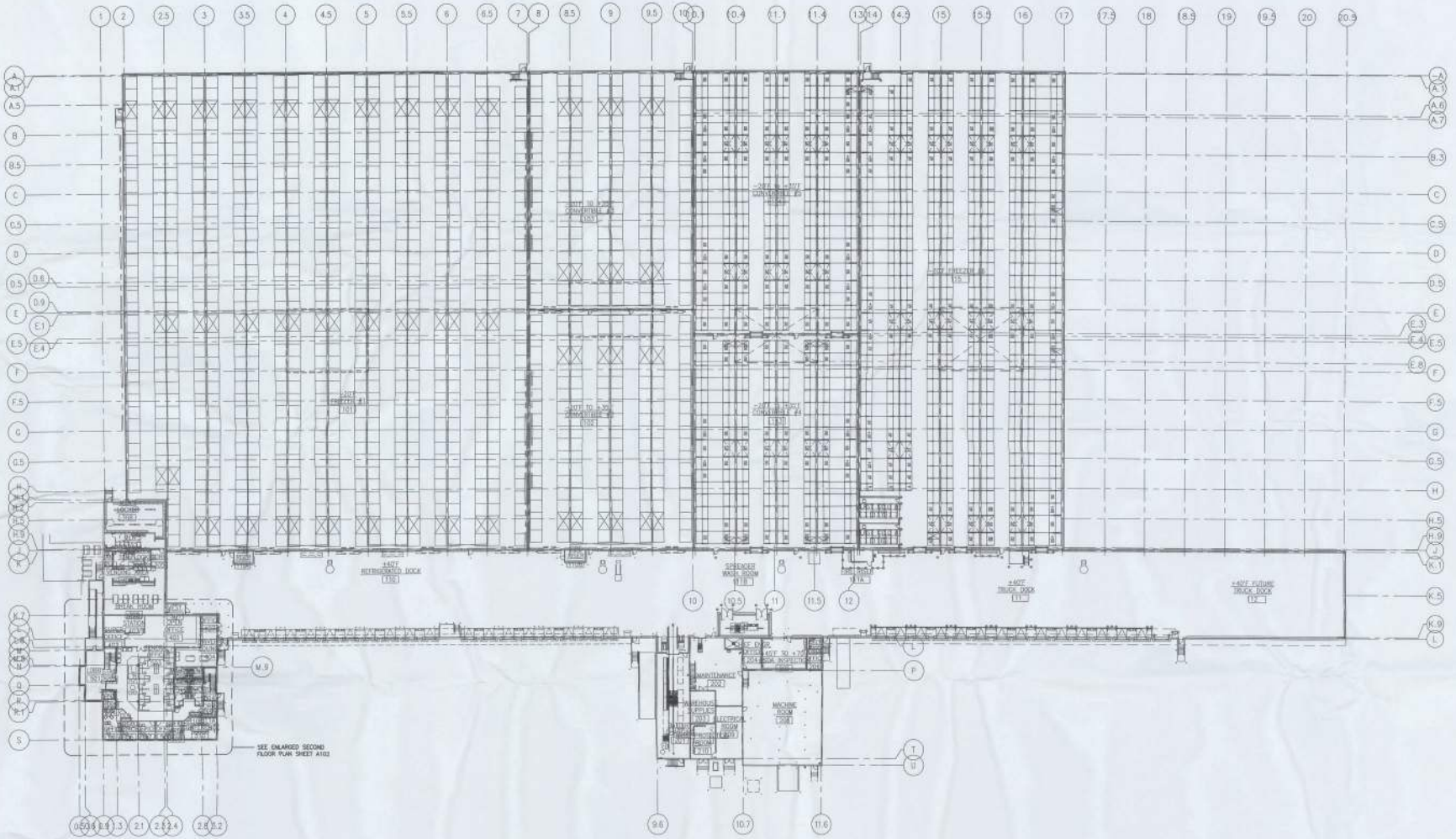

OVERALL FACILITY FLOOR PLAN

SCALE: 1" = 30'-0"

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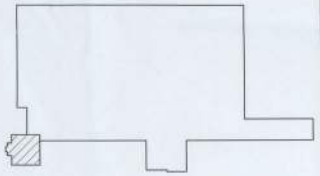

KEY PLAN

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UNITED STATES COLD STORAGE

SECOND FLOOR OFFICE BUILD-OUT

LAKE CITY, FLORIDA

OVERALL FACILITY FLOOR PLAN

REV.	DATE	BY	PERMIT ISSUE DESCRIPTION
A	09/30/2015	FRR	

JOB NO. 71005332

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SCALE: AS NOTED

A101

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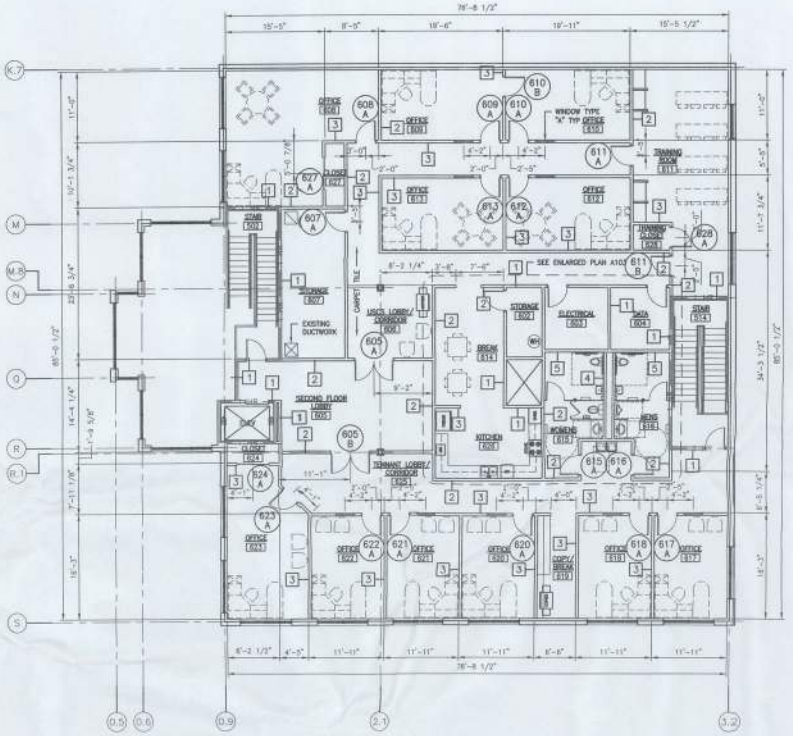
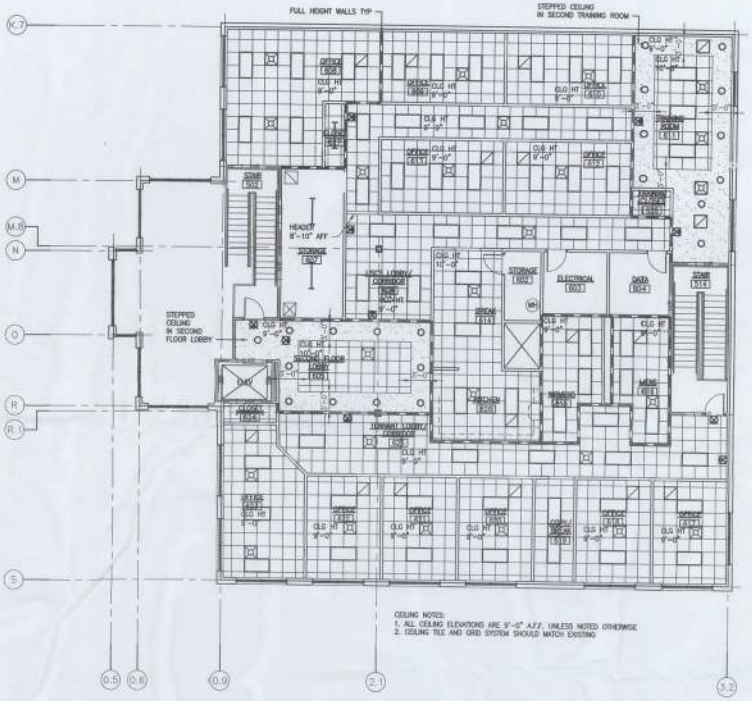


ENLARGED OFFICE FLOOR PLAN

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



REFLECTED CEILING FLOOR PLAN

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

WALL TYPES

1	EXISTING WALL – FINISH AS SCHEDULED
2	5/8" GYPSUM WALLBOARD EA. SIDE ON 3 5/8" METAL STUDS @ 16" O.C. WITH INSULATION (SOUND ATTENUATION) EXTEND UP TO THE UNDERSIDE OF METAL DECK
3	5/8" GYPSUM WALLBOARD EA. SIDE ON 3 5/8" METAL STUDS @ 16" O.C. STOP 8" ABOVE CEILING GRID
	PIPE CHASE:
4	1'-0" CLEAR BETWEEN (2) 3 5/8", 25 GA. METAL STUDS @ 16" O.C. W/ 5/8" GYPSUM WALL BOARD ON EACH FINISH SIDE. PROVIDE ONE SIDE OF WALL W/ INSULATION (SOUND ATTENUATION) & EXTEND INSULATION & WALL UP TO THE UNDERSIDE OF METAL DECK.
5	ABOVE EXISTING WALL, 5/8" GYPSUM WALLBOARD ON 3 5/8", METAL STUDS @ 16" O.C. WITH INSULATION (SOUND ATTENUATION) EXTEND UP TO THE UNDERSIDE OF METAL DECK

WALL NOTE: REPAIR, PATCH, AND PREP EXISTING WALL AS REQUIRED FOR NEW FINISHES.

SUSPENDED CEILING NOTES

1. SUSPENSION

A) VERTICAL HANGER WIRES SHALL BE #12 GA. WIRE AT 4'-0" O.C. ALONG EACH MAIN RUNNER. HANGER WIRES SHALL NOT HANG MORE THAN 1 IN 6 IOUT-OF-PLUMB UNLESS COUNTER SLOPING WIRES ARE PROVIDED. WIRES SHALL NOT ATTACH TO, BEND AROUND OR REST AGAINST DUCTS, PIPES AND ETC., EACH HANGER WIRE SHALL BE ATTACHED TO CEILING SUSPENSION MEMBER AND TO SUPPORT ABOVE WITH A MINIMUM OF THREE (3) TIGHT TURNS. ANY CONNECTION DEVICE AT TMC SUPPORTING CONSTRUCTION SHALL BE CAPABLE OF SUPPORTING NOT LESS THAN ONE HUNDRED (100) POUNDS. VERTICAL WIRES TO START AT A MAXIMUM OF 8" OFF FACE OF WALLS FOR CROSS AND MAIN RUNNERS.

B) PERIMETER HANGERS, TERMINAL ENDS OF EACH CROSS RUNNER AND MAIN RUNNER SHALL BE SUPPORTED INDEPENDENTLY A MAXIMUM OF EIGHT (8) INCHES FROM EACH FACE OF WALL OR CEILING DISCONTINUITY WITH A #12 GA. WIRE.

C) LATERAL FORCE BRACING: PROVIDE FOUR (4) #12 GA WIRES SECURED TO MAIN RUNNER WITHIN TWO (2) INCHES OF THE CROSS RUNNER INTERSECTION AND SPLAYED NINETY (90) DEGREES FROM EACH OTHER AND AT AN ANGLE NOT EXCEEDING FORTY-FIVE (45) DEGREES FROM THE PLANE OF THE CEILING. A STRUT FASTENED TO THE MAIN RUNNER SHALL BE EXTENDED AND FASTENED TO THE STRUCTURAL MEMBERS SUPPORTING THE ROOF OR FLOOR ABOVE. THE STRUT SHALL BE ADEQUATE TO THE VERTICAL COMPONENT INDUCED BY THE BRACING WIRES. THESE HORIZONTAL RESTRAINT POINTS SHALL BE PLACED TWELVE (12) FEET O.C. IN BOTH DIRECTIONS WITH THE FIRST POINT WITHIN SIX (6) FEET FROM EACH WALL. LATERAL FORCE BRACING MEMBERS SHALL HAVE A MINIMUM OF SIX (6) INCHES FROM ALL HORIZONTAL PIPING OR DUCTWORK THAT IS NOT PROVIDED WITH BRACING RESTRAINTS FOR HORIZONTAL FORCES.

D) ENDS OF MAIN RUNNERS AND CROSS RUNNERS SHALL BE TIED TOGETHER TO PREVENT THEIR SPREADING.

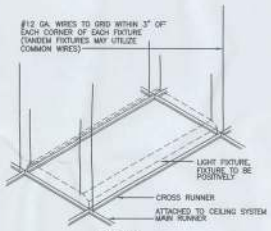
E) MAIN RUNNERS AND CROSS RUNNERS MAY BE ATTACHED TO WALL ANGLE AT TWO (2) ADJACENT WALLS ONLY. CLEARANCE BETWEEN WALL AND RUNNERS SHALL BE MAINTAINED AT THE OTHER TWO (2) WALLS.

2. LIGHTING FIXTURES

A) ATTACH #12 GA. HANGER WIRE TO THE GRID MEMBERS WITHIN THREE (3) INCHES OF EACH CORNER OF EACH FIXTURE. TANDEM FIXTURES MAY UTILIZE COMMON WIRES. ALL RECESSED OR DROP-IN LIGHT FIXTURES SHALL BE POSITIVELY ATTACHED TO THE SUSPENDED CEILING SYSTEM. THE ATTACHMENT DEVICE SHALL HAVE A CAPACITY OF ONE HUNDRED (100) PERCENT OF THE FIXTURE WEIGHT ACTING IN ANY DIRECTION. IN ADDITION, THE THE FIXTURE SHALL SUPPORTED DIRECTLY FROM FIXTURE HOUSING TO THE STRUCTURE ABOVE WITH A MINIMUM OF FOUR (4) #12 GA. WIRES, ONE LOCATED AT EACH CORNER. (SEE DETAIL)

3. MECHANICAL FIXTURES

A) CEILING MOUNTED MECHANICAL GRILLES SHALL BE POSITIVELY ATTACHED TO THE CEILING SUSPENSION MAIN RUNNERS OR TO CROSS RUNNERS. IN ADDITION, THE FIXTURE SHALL HAVE TWO (2) #12 GA. HANGER WIRES CONNECTED FROM THE FIXTURE HOUSING TO THE CEILING SYSTEM HANGERS OR TO THE STRUCTURE ABOVE. THESE WIRES MAY BE SLACK. (SEE DETAIL)



1 LIGHT FIXTURE SUPPORT

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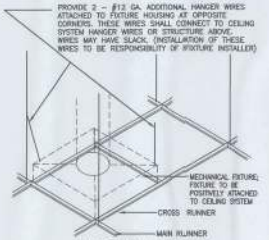
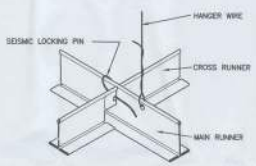


2 MECHANICAL FIXTURE SUPPORT

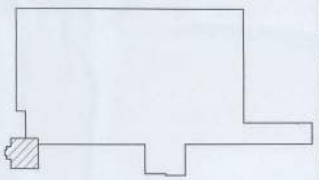
N.T.S.



SPLICES & INTERSECTIONS OF RUNNERS SHALL BE ATTACHED WITH MECHANICAL INTERLOCKING CONNECTORS SUCH AS POP RIVETS, SCREWS, PINS, PLATES, WITH BENT TABS, OR OTHER APPROVED CONNECTORS. DESIGN CONNECTORS FOR 2 X DESIGN LOAD OR ULTIMATE AXIAL TENSION OR COMPRESSION (MIN. 50#)

3 SPLICE DETAIL

N.T.S.



KEY PLAN

NOT TO SCALE

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8/1/14

UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

ENLARGED OFFICE FLOOR PLANS, NOTES, AND DEAILS

REV.	DATE	BY	PERMIT ISSUE DESCRIPTION
A	8/1/14	FRR	

JOB NO.	71005332
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SCALE:	AS NOTED

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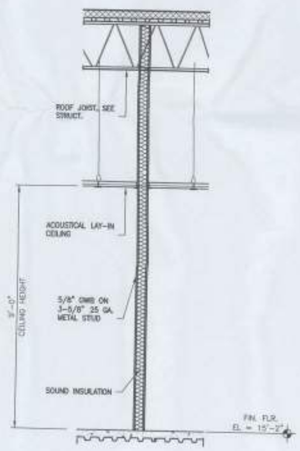
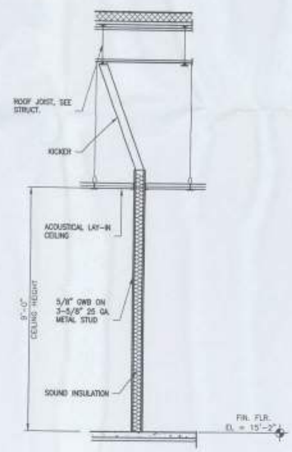
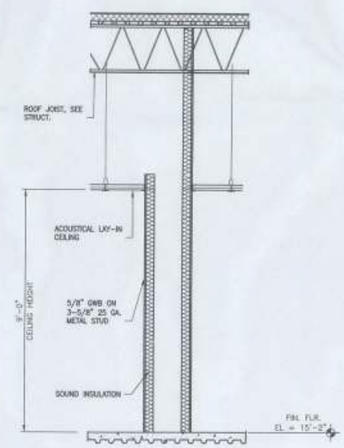


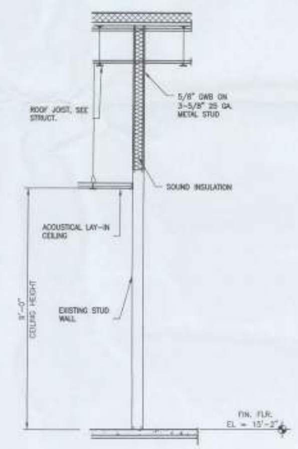
(1) WALL TYPE 2
1/2" = 1'-0"



(2) WALL TYPE 3
1/2" = 1'-0"



(3) WALL TYPE 4
1/2" = 1'-0"



(4) WALL TYPE 5
1/2" = 1'-0"

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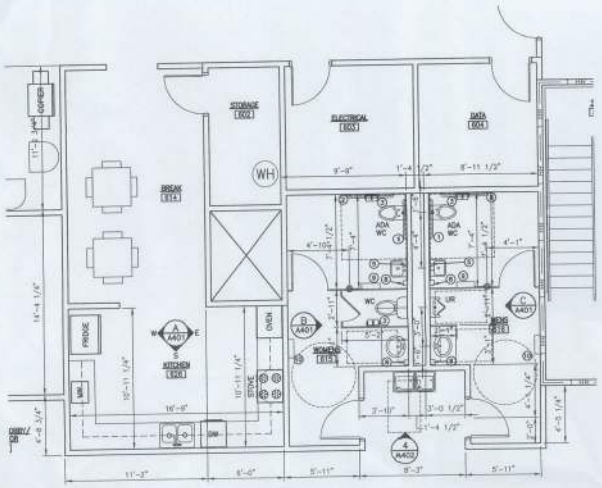
UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

WALL SECTIONS

JOB NO. 710053
DRAWN: FR
CHECKED: R
SCALE: AS NOTE

A301
DRAWING NO.



ENLARGED FLOOR PLAN

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

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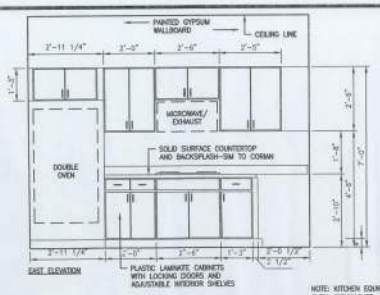
TOILET ACCESSORIES LEGEND

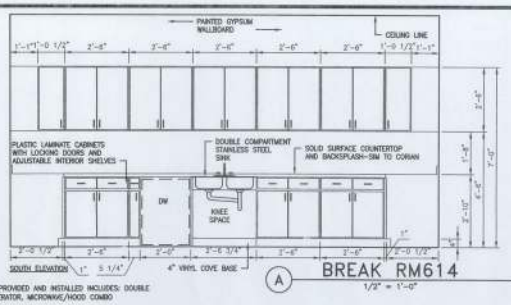
1. 36" LONG GRAB BAR HORIZONTAL, 1 1/2" DIA.
2. 42" LONG GRAB BAR HORIZONTAL, 1 1/2" DIA.
3. SURFACE MOUNTED TOILET TISSUE DISPENSER –(B-2740)
4. 18"x36" TEMPERED GLASS, STAINLESS STEEL FRAME
5. 24"x36" TEMPERED GLASS, STAINLESS STEEL FRAME
6. 36"x36" TEMPERED GLASS, STAINLESS STEEL FRAME
7. 108"x36" TEMPERED GLASS, STAINLESS STEEL FRAME
8. SURFACE MOUNTED SOAP DISPENSER – (B-2111)
9. SURFACE MOUNTED PAPER TOWEL DISPENSER & WASTE RECEPTACLE – (B-3949)
10. SURFACE MOUNTED ELECTRIC HAND DRYER – ( )

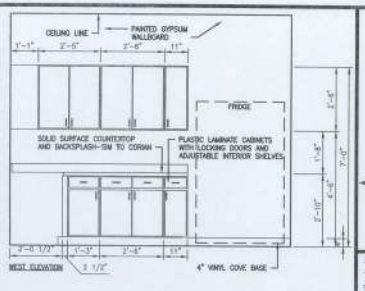
ABBREVIATION	DESCRIPTION
ADA LAV	ADA ACCESSIBLE LAVATORY
ADA UR	ADA ACCESSIBLE URINAL
ADA WC	ADA ACCESSIBLE WATER CLOSET
FD	FLOOR DRAIN
LAV	LAVATORY
UR	URINAL
US	URINAL SCREEN
WC	WATER CLOSET

NOTES:

A. FIELD VERIFICATION OF DIMENSIONS ARE REQUIRED BEFORE FABRICATION OF TOILET PARTITIONS.
B. BOBRICK ACCESSORIES LISTED OR APPROVED EQUIVALENT.
C. SEE PLUMBING DOCUMENTS FOR FIXTURES.
D. OTHER TOILET ACCESSORIES TO BE PROVIDED BY THE OWNER.



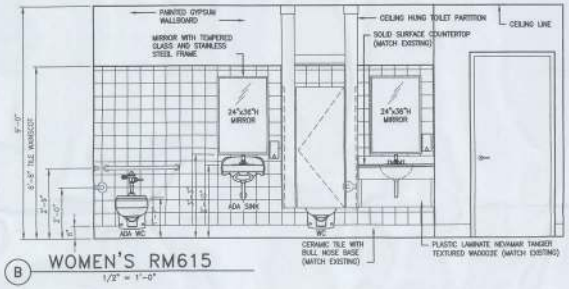




NOTE: KITCHEN EQUIPMENT PROVIDED AND INSTALLED INCLUDES: DOUBLE OVEN, DISHWASHER, REFRIGERATOR, MICROWAVE/HOOD COMBO

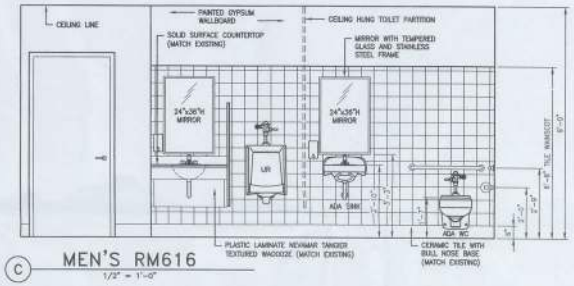
A BREAK RM614

1/2" = 1'-0"



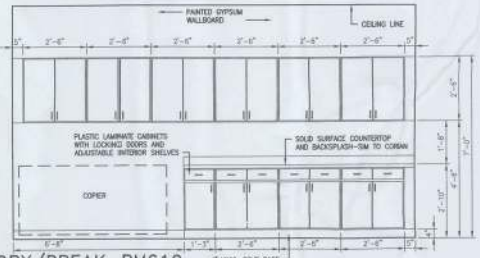
B WOMEN'S RM615

1/2" = 1'-0"



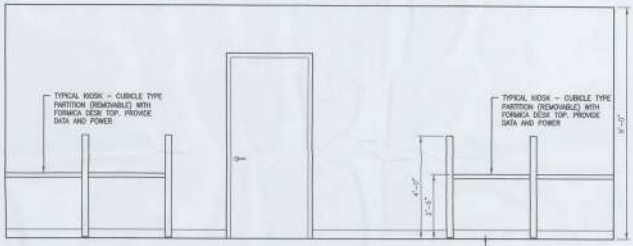
C MEN'S RM616

1/2" = 1'-0"



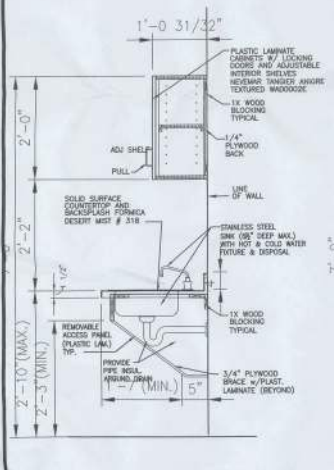
D COPY/BREAK RM619

1/2" = 1'-0"



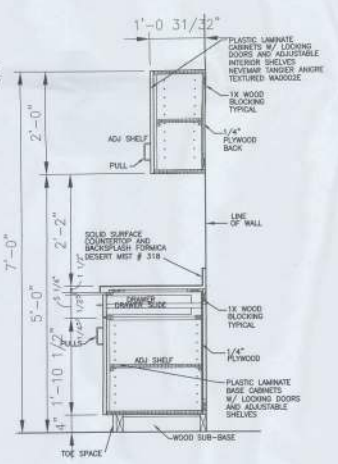
E TRAINING RM611

1/2" = 1'-0"



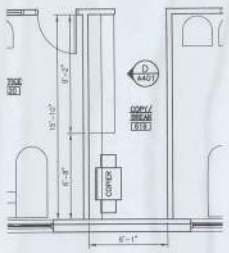
2 CABINET SECTION

SCALE: 1"=1'-0"



3 CABINET SECTION

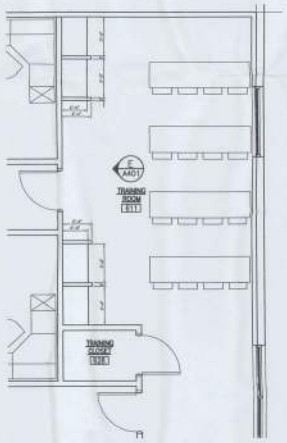
SCALE: 1"=1'-0"



ENLARGED COPY/BREAK FLOOR PLAN

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

N



ENLARGED TRAINING FLOOR PLAN

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

N

stellar

UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

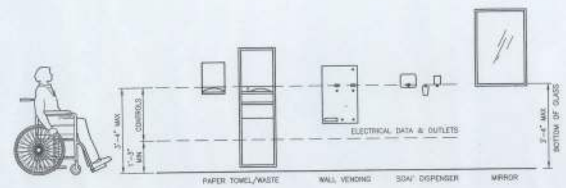
8/14/14

ENLARGED FLOOR PLANS, ELEVATIONS, AND DETAILS

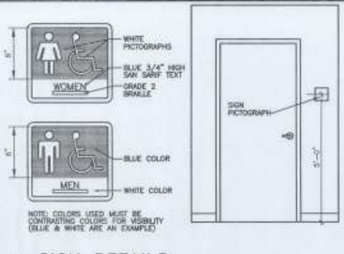
REV	DATE	BY	DESCRIPTION
A	8/14/14	FRR	PERMIT ISSUE

JOB NO. 71005332
DRAWN: FRR
CHECKED: RS
SCALE: AS NOTED

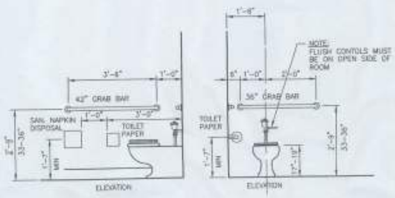
A401
DRAWING NO.



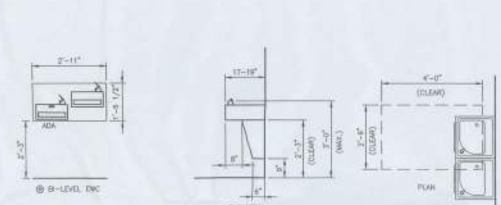
1 ADA FORWARD REACH MOUNTING HEIGHT
1/2" = 1'-0"



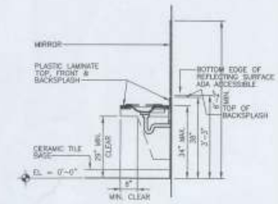
2 SIGN DETAILS
NOT TO SCALE
TYPICAL PICTOGRAPHS



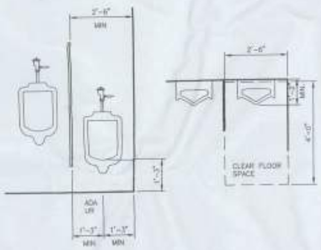
3 GRAB BAR LAYOUT
1/2" = 1'-0"



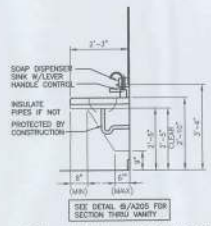
ADA EWC
4 MOUNTING HEIGHTS
1/2" = 1'-0"



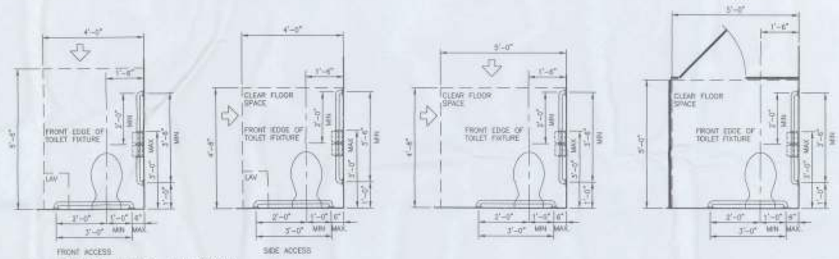
ADA VANITY
5 MOUNTING HEIGHTS
1/2" = 1'-0"



6 ADA URINAL
1/2" = 1'-0"



7 ADA WALL–MOUNTED SINK MOUNTING HTS
1/2" = 1'-0"



8 GRAB BAR LAYOUT
1/2" = 1'-0"

stellar

UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

ADA STANDARD DETAILS

JOB NO.	71005332
DRAWN:	FRR
CHECKED:	RS
SCALE:	AS NOTED

A402
DRAWING NO.

ROOM FINISH SCHEDULE

KEY: WALL (CMU) M | FINISH (PAINT) T | COLOR (PAINT) P-3

MATERIALS
A VINYL COMPOSITION TILE (VCT)
B DAIRY BRICK
C CARPET
D CONCRETE
E CERAMIC TILE
F VINYL FABRIC
G GYPSUM WALLBOARD
H SUSPENDED ACOUSTICAL CEILING (SAC)
I INSULATED METAL PANEL (IMP)
J GLASS
K METAL DECKING
L LINEAR METAL PANELS
M CONCRETE MASONRY UNIT (CMU)
N BUILT-UP ROOF
O —
P POLYURETHANE
Q QUARRY TILE
R RUBBER
S STEEL
T STRUCTURAL GLAZED
U STAINLESS STEEL
V VINYL
W VAPOR BARRIER
X EXPOSED CONSTRUCTION

FINISH
1 PAINT
1A EPOXY PAINT
2 PRE-FINISHED
3 UNFINISHED
4 2'X2' GRID/MINERAL FIBER
5 2'X2' GRID/GLASS FIBER
6 SHAKE-ON HARDENER
7 W/ SEALER

COLOR
SEE COLOR SCHEDULE FOR COLOR & MATERIALS SELECTIONS

ROOM NUMBER	ROOM NAME	FLOOR			BASE			WALL N			WALL E			WALL S			WALL W			CEILING			CEILING HEIGHT	REMARKS
502	STAIR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	EXISTING – FINISH AS REQUIRED
514	STAIR	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	EXISTING – FINISH AS REQUIRED
602	STORAGE ROOM	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	EXISTING – FINISH AS REQUIRED
603	ELECTRICAL ROOM	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	EXISTING – FINISH AS REQUIRED
604	DATA ROOM	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	EXISTING – FINISH AS REQUIRED
605	SECOND FLOOR LOBBY	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H/D*	4/1	–	9'-0"	* SEE REFLECTED CEILING PLAN
606	USCS LOBBY/CORRIDOR	E/D*	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	* SEE FLOOR PLAN
607	STORAGE	D	3	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	–	X	–	VARIES	–
608	OFFICE	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
609	OFFICE	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
610	OFFICE	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
611	TRAINING ROOM	E	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H/D*	2/1	–	9'-0"	* SEE REFLECTED CEILING PLAN
612	OFFICE	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
613	OFFICE	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
614	BREAK	E	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
615	WOMEN'S RESTROOM	E	2	–	V	2	–	G	1	–	E	2	–	G	1	–	G	1	–	H	2	–	9'-0"	–
616	MEN'S RESTOOM	E	2	–	V	2	–	G	1	–	G	1	–	G	1	–	E	2	–	H	2	–	9'-0"	–
617	OFFICE	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
618	OFFICE	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
619	COPY/BREAK	E	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
620	OFFICE	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
621	OFFICE	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
622	OFFICE	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'0"	–
623	OFFICE	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
624	CLOSET	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
625	TENNANT LOBBY/CORRIDOR	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
626	KITCHEN	E	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
627	CLOSET	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
628	TRAINING CLOSET	C	2	–	V	2	–	G	1	–	G	1	–	G	1	–	G	1	–	H	2	–	9'-0"	–
99999999999																								

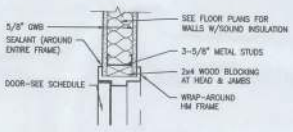
DOOR

DOOR

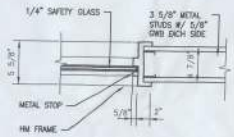
DOOR NUMBER	INSIDE ROOM NUMBER	OUTSIDE ROOM NUMBER	TYPE	SIZE WIDTH	SIZE HEIGHT	SIZE THICK	MATERIAL	GLASS		TYPE	MATERIAL
605A	605	606	A	PAIR 3'-0"	7'-0"	1-3/4"	GLASS/ALUM	SAFETY	1	ALUM	
605B	605	606	A	PAIR 3'-0"	7'-0"	1-3/4"	GLASS/ALUM	SAFETY	1	ALUM	
607	607	606	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
608A	608	606	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
609A	609	606	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
610A	610	606	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
610B	610	606	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
611A	611	606	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
611B	628	611	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
611B	611	606	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
612A	612	606	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
613A	613	606	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
615A	615	625	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
616A	616	625	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
617A	617	625	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
618A	618	625	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
620A	620	625	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
621A	621	625	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
622A	622	625	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
623A	623	625	B	3'-0"	7'-0"	1-3/4"	SC WOOD	–	2	HM	
624A	624	623	C	PAIR 2'-6"	7'-0"	1-3/8"	SC WOOD	–	–	WOOD	
627A	627	608	C	PAIR 2'-6"	7'-0"	1-3/8"	SC WOOD	–	–	WOOD	

INTERIOR FINISH

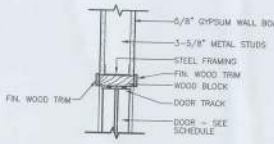
TYPE	SYM.	MANU
CARPET	C1	
RESILIENT BASE	RB1	
GLAZED WALL TILE	CT1	
GROUT	FOR CT1	
GLAZED WALL TILE	CT2	
GROUT	FOR CT2	
PORCELAIN TILE	PT1	
GROUT	FOR PT1	
PAINT	P1	
PAINT	P2	
PAINT	P3	
PLASTIC LAMINATE	L1	
SOLID SURFACE COUNTER TOP	K1	FOR
SOLID SURFACE COUNTER TOP	K2	FOR
CEILING	ACT1	



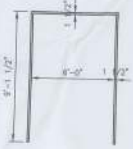
1 HEAD
1 1/2" = 1'-0"



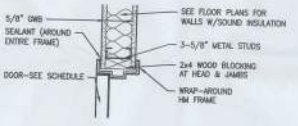
4 JAMB
1 1/2" = 1'-0"



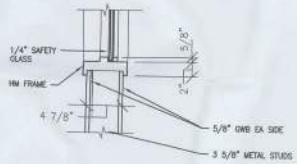
6 HEAD
1 1/2" = 1'-0"



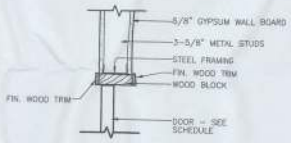
ALUM. FRAME TYPES
1/4"=1'-0"



2 JAMB
1 1/2" = 1'-0"

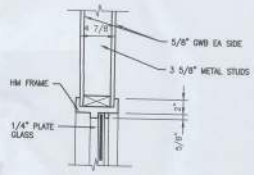


5 SILL
1 1/2" = 1'-0"

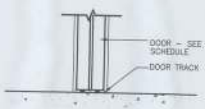


7 JAMB
1 1/2" = 1'-0"

HM FRAME TYPES
1/4"=1'-0"

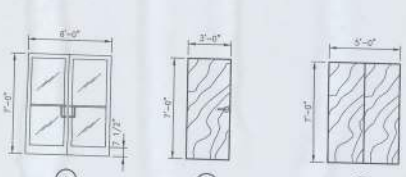


3 HEAD
1 1/2" = 1'-0"



8 SILL
1 1/2" = 1'-0"

ALL EXTERIOR DOORS AND DOORS WITH GLASS OR GLAZING MUST BE IMPACT RESISTANT AND HAVE A FLORIDA BUILDING CODE APPROVAL NUMBER OR A MIAMI-DADE APPROVAL NUMBER.



DOOR TYPES
1/4"=1'-0"

HARDWARE SCH

HARDWARE SET

DOORS – MA

PER DOOR

ITEM

3 EA. HINGE H
1 EA. CLOSER
1 EA. SILENCER
1 EA. FLUSH B
1 EA. PUSH/PU
1 EA. KICKPLAT

HARDWARE SET

DOORS – STOR

PER DOOR

ITEM

3 EA. HINGE HA
1 EA. STORAGE
1 EA. CLOSER
1 EA. WALL STO
1 EA. SILENCER

SAFETY GL

SECTION 2406 REQUIRES THE FOLLOWING LOCATIO

GLAZING IN SWINGING DO

GLAZING IN FIXED AND S DOORS (OR WINDOWS)

GLAZING IN AN INDIVIDUA TO A DOOR WHERE THE THE GLAZING IS WITHIN VERTICAL EDGE OF THE AND WHERE THE BOTTOM GLAZING IS LESS THAN SURFACE.

PLUMBING SPECIFICATIONS

PART I – GENERAL

1.01 DESCRIPTION

THE GENERAL REQUIREMENTS, ARE HEREBY MADE A PART OF THIS SECTION AS IF FULLY REPEATED HEREIN.

THIS WORK SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

TRENCH EXCAVATION, PUMPING, BACKFILLING AND COMPACTION FOR UNDERGROUND PIPING AND PLUMBING.

DOMESTIC SOIL, WASTE AND VENT PIPING.

DOMESTIC HOT AND COLD WATER PIPING CONNECTIONS TO FIXTURES.

FIXTURES INCLUDING ELECTRIC WATER COOLERS.

JOINTS, FITTINGS, HANGERS, SLEEVES, ESCUTCHEONS, ETC.

LEAD FLASHING.

GREASE TRAPS AND INTERCEPTORS.

ACID NEUTRALIZING TANK.

RELATED WORK: PIPING SYSTEMS REQUIRING FIXED LOCATIONS AND SLOPES SHALL TAKE PRIORITY OVER THOSE, WHICH DO NOT HAVE BOTH REQUIREMENTS. THE FOLLOWING WORK IS SPECIFIED IN OTHER SECTIONS OF THESE SPECIFICATIONS.

FIRE PROTECTION SPRINKLERS: FIRE PROTECTION SPRINKLERS

AIR CONDITIONING AND HEATING: HEATING, VENTILATING & AIR CONDITIONING

TOILET ROOM ACCESSORIES: TOILET ROOM ACCESSORIES

FORCE MAIN: SEWAGE TREATMENT PLANT, INFLUENT STRUCTURE, PUMPING STATIONS, AND ON-SITE PROCESS WASTE LINES

PROCESS WASTE LINES BEYOND THE BUILDING AND SEWAGE TREATMENT FACILITIES: SEWAGE TREATMENT PLANT, INFLUENT STRUCTURE, PUMPING STATIONS, AND ON-SITE PROCESS WASTE LINES

WELL: DEEP WELL, PUMP AND PUMP FOR EXISTING DEEP WELL

WATER STORAGE TANK: GROUND STORAGE TANK & AERATOR

EXCAVATION & BACKFILL: EXCAVATION AND BACKFILL

POWER WIRING: ELECTRICAL

1.02 QUALITY

MATERIALS AND EQUIPMENT: ALL MATERIALS SHALL BE NEW AND FIRST CLASS IN EVERY RESPECT. AS FAR AS IS PRACTICAL, SIMILAR PRODUCTS SHALL BE BY ONE MANUFACTURER.

INDUSTRY STANDARDS: WHERE COMPLIANCE WITH AN INDUSTRY, SOCIETY, OR ASSOCIATION STANDARD IS SPECIFIED OR INDICATED, CERTIFICATION OF SUCH COMPLIANCE SHALL BE SUBMITTED WITH SHOP DRAWINGS.

1.03 SUBMITTALS

MANUFACTURER'S SUBMITTALS: REFER TO SECTION ENTITLED "BASIC MECHANICAL MATERIALS AND METHODS" SUBMIT SHOP DRAWINGS OR CATALOG DATA FOR THE ENGINEER'S REVIEW AND RECEIVE APPROVAL BEFORE PURCHASING OR INSTALLING EQUIPMENT. THIS INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

PIPING WHERE REVISED FROM DRAWINGS.

FLOOR DRAINS AND ROOF DRAINS.

PLUMBING FIXTURES INCLUDING ELECTRIC WATER COOLERS.

FIXTURE SUPPLIES, TRAPS AND STOP VALVES AND APPURTENANCES.

GREASE TRAPS.

PIPE HANGERS.

INSULATION.

ACID NEUTRALIZING TANK.

ACID RESISTANT PIPE AND FITTINGS.

WHERE COMPLIANCE WITH AN INDUSTRY, SOCIETY OR ASSOCIATION STANDARD IS SPECIFIED OR INDICATED, CERTIFICATION OF SUCH COMPLIANCE SHALL BE MADE WITH SHOP DRAWINGS.

1.04 STORAGE OF MATERIALS:

PIPE AND FITTINGS MAY BE STORED AT THE SITE PROVIDED THEY ARE STORED IN SUCH A MANNER AS TO PROTECT THEM FROM DAMAGE AND PROHIBIT ENTRANCE OF DIRT AND CONSTRUCTION DEBRIS. USE OF THE SITE SHALL COMPLY WITH GENERAL CONDITIONS AND SUCH OTHER PROVISIONS OF CONTRACT DOCUMENTS AS MAY LIMIT OR RESTRICT SAID USE.

PART II – PRODUCTS

2.01 FIXTURES AND TRIM

GENERAL: PROVIDE ALL FIXTURES AND TRIM AS SCHEDULED ON THE DRAWINGS. ALL EXPOSED METAL PARTS SHALL BE POLISHED CHROMIUM PLATED BRASS. COLOR SHALL BE WHITE. COMPARABLE ITEMS OF THE FOLLOWING MANUFACTURERS ARE CONSIDERED EQUAL.

FIXTURES: KOHLER, AMERICAN STANDARD, CRANE, ELJER.

STAINLESS STEEL FIXTURES: AMTEKCO, ELKAY AND JUST.

PLUMBING BRASS: SPEAKMAN, SLOAN, CHICAGO, JUST, BRADLEY, T&S BRASS AND BRONZE WORKS, ELKAY.

SEATS: OLSON, CHURCH, BENEKE, BEMIS AND FIXTURE MANUFACTURERS.

ELECTRIC WATER COOLERS AND DRINKING FOUNTAINS: SUNROCK, OASIS, ELKAY, HAWS, HALSEY TAYLOR.

STAINLESS STEEL FLOOR DRAINS: KUSEL, SCHERPING.

FLUSH VALVES: SLOAN.

SHALL BE AS SCHEDULED ON THE DRAWINGS.

2.02 PIPE

PIPING SHALL BE AS SPECIFIED IN PIPE SPECS BELOW.

LEAD:

PIPE: CLASS D FOR SOIL AND WASTE CONNECTIONS, CONFORMING TO FED. SPEC. WW-P-325.

SHEET: WEIGHT NOT LESS THAN FOUR (4) LBS. PER SQUARE FOOT, CONFORMING TO FED. SPEC. QQ-L-201, GRADE A.

CAULKING: FED. SPEC. QQ-L-156, TYPE 1.

SOLDERING NIPPLES: RED BRASS PIPE CONFORMING TO ASTM STD. SPEC. B-43, AND OF FOLLOWING WEIGHTS:

DIAMETER IN INCHES	WEIGHT IN OUNCES
1-1/4	6
1-1/2	8
2	14

CAULKING FERRULES: STANDARD QUALITY RED CAST BRASS, WITH WEIGHTS AND DIMENSIONS AS FOLLOWS:

PIPE SIZE	INSIDE DIAMETER	LENGTH	WEIGHT
2"	2-1/2"	4-1/2"	1 LB.
3"	3-1/2"	4-1/2"	1 LB.-12 OZ.
4"	4-1/4"	4-1/2"	2 LB.-8 OZ.

WIPING SOLDER: COMPOSITION SN35, FED. SPEC. QQ-S-5710.

2.07 DRAINAGE SPECIALTIES

GENERAL: AS SPECIFIED IN FIXTURE SPECIFICATIONS.

FLOOR DRAINS: AS SPECIFIED IN FIXTURE SPECIFICATIONS.

FLOOR CLEANOUTS: AS SPECIFIED IN FIXTURE SPECIFICATIONS.

WALL CLEANOUTS: AS SPECIFIED IN FIXTURE SPECIFICATIONS.

2.08 PIPE HANGERS: AS SPECIFIED IN FIXTURE SPECIFICATIONS.

2.09 PIPE SLEEVES: AS SPECIFIED IN FIXTURE SPECIFICATIONS.

2.10 ESCUTCHEONS: AS SPECIFIED IN FIXTURE SPECIFICATIONS.

2.11 INSULATION

AS SPECIFIED IN INSULATION SPECIFICATION SCHEDULE.

2.12 GREASE TRAPS

SHALL BE AS SCHEDULED ON THE DRAWINGS.

PART III – EXECUTION

3.01 INSPECTION

EXAMINE AREAS TO RECEIVE PIPING FOR:

DEFECTS THAT ADVERSELY AFFECT EXECUTION AND QUALITY OF WORK.

DEVIATIONS BEYOND ALLOWABLE TOLERANCES FOR PIPING CLEARANCES.

CHECK LOCATION OF ROUGH-IN WORK TO ASSURE MATCH WITH FIXTURES.

VERIFY THAT ELECTRICAL FACILITIES ARE COMPATIBLE WITH EQUIPMENT.

START WORK ONLY WHEN CONDITIONS ARE SATISFACTORY.

3.02 INSTALLATION

PIPING LAYOUT:

COMPLETE INSTALLATION TO PRESENT A NEAT, ORDERLY APPEARANCE.

RUN PIPING PARALLEL TO WALLS OF BUILDING UNLESS OTHERWISE INDICATED.

KEEP PIPING FREE FROM CONTACT WITH STRUCTURE OF INSTALLED ITEMS.

ABOVE CEILING: HANG AND SUPPORT AS REQUIRED.

PIPING WITHIN WALLS: ANCHOR AS REQUIRED TO PREVENT RATTLE OR MOVEMENT OF ANY KIND.

PENETRATIONS:

COORDINATE PENETRATIONS FOR VENTS WITH ROOF SYSTEM AND HVAC SYSTEMS AIR INTAKES.

DO NOT PENETRATE STRUCTURAL MEMBERS UNLESS APPROVED IN WRITING BY ENGINEER.

A. JOINTS AND CONNECTIONS:

1. GENERAL: JOINTS AND CONNECTIONS SHALL BE MADE PERMANENTLY AIR, GAS, AND WATER TIGHT.

2. CAST IRON:

   A. HUB AND SPIGOT JOINTS: INSERT THE SPIGOT INTO HUB AFTER CAREFULLY CLEANING BOTH. INSERT AN OAKUM STRAND INTO JOINT SUFFICIENTLY LONG TO MAKE THREE TURNS AROUND PIPE AND OF A DIAMETER THAT CAN BE PRESSED INTO THE JOINT BY HAND. DRIVE THE OAKUM TO THE BOTTOM OF JOINT USING A YARNING IRON, THEN PACK SOLIDLY AND EVENLY USING A PACKING IRON AND HAMMER. INSERT ADDITIONAL STRANDS OF OAKUM SUFFICIENT TO FILL THE JOINT TO WITHIN ONE-HALF INCH (1/2") OF THE TOP AND THEN PACK WITH HAMMER AND PACKING IRON TO FORM A UNIFORM SURFACE ONE INCH (1") BELOW TOP OF THE HUB. POUR MOLTEN LEAD INTO THE JOINT UNTIL IT ARCHES SLIGHTLY ABOVE TOP OF THE HUB. ALLOW LEAD TO COOL AND DRIVE IT DOWN AT QUARTER POINTS USING A CAULKING IRON. CAULK THE JOINT ON THE INSIDE AND OUTSIDE EDGES USING A ONE POUND BALL PEEN HAMMER AND APPROPRIATE CAULKING IRONS.

3. COPPER: CUT PIPE SQUARE USING CUTTING TOOL WHICH DOES NOT CRIMP THE PIPE. REMOVE ALL BURRS USING PIPE REAMER AND TAKING CARE NOT TO FLARE THE PIPE END. THOROUGHLY CLEAN THE OUTSIDE OF THE PIPE AND THE INTERIOR OF THE VALVES AND FITTINGS USING A FINE SAND CLOTH. APPLY NONCORROSIVE PASTE FLUX TO THE CLEANED SURFACES IMMEDIATELY AND APPLY SOLDER AND HEAT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS TO COMPLETE JOINT. USE CARE NOT TO DAMAGE VALVES AND FOLLOW THE VALVE MANUFACTURER'S INSTALLATION INSTRUCTIONS EXPLICITLY.

4. CONNECTIONS: PROVIDE FIXTURE AND EQUIPMENT CONNECTIONS IN COMPLIANCE WITH REQUIREMENTS OF LOCAL CODES.

B. FLASHINGS: PROVIDE PROPER FLASHINGS FOR PIPES PASSING THROUGH ROOFING. FLASHINGS SHALL BE OF SHEET LEAD WITH FLANGES NOT LESS THAN EIGHTEEN INCHES (18") SQUARE AND WITH TUBULAR SECTIONS EXTENDING OVER TOP OF THE VENT AND TURNED INTO TOP APPROXIMATELY ONE INCH (1"). VENT EXTENSION SHALL STAND APPROXIMATELY ONE FOOT (1') ABOVE ROOF. PROVIDE FOR EXPANSION WHERE LEAD TURNS INTO PIPE.

C. FIXTURES, FLOOR DRAINS AND CLEANOUTS: PROVIDE ALL FIXTURES AND FLOOR DRAINS WITH TRAPS TO COMPLY WITH LOCAL REGULATIONS, AND AS HEREINAFTER SPECIFIED. PROVIDE EXPOSED TRAPS WITH BRASS CLEANOUT PLUGS. PROVIDE CLEANOUTS IN SOIL AND WASTE LINES AS SHOWN ON THE PLANS AND AS REQUIRED BY THE GOVERNING CODES. EXTEND CLEANOUTS FOR PIPING CONCEALED IN FLOOR OR CEILING CONSTRUCTION THROUGH THE FLOOR ABOVE AND PROVIDE WITH ADJUSTABLE FLOOR LEVEL CLEANOUT SET FLUSH WITH THE FINISHED FLOOR. USE SCREW TYPE CLEANOUTS FOR PIPING CONCEALED IN WALL CONSTRUCTION AND PROVIDE CHROMIUM PLATED BRONZE ACCESS COVER PLATES.

D. WATER SUPPLY PIPING: PROVIDE A COMPLETE SYSTEM OF HOT AND COLD WATER PIPING EXTENDING FROM WATER SUPPLY TO EACH FIXTURE AND ITEM OF EQUIPMENT REQUIRING WATER AS INDICATED ON THE DRAWINGS. INSTALL GATE VALVES AT TAKEOFF FROM THE MAIN AND UPSTREAM OF ALL EQUIPMENT CONNECTIONS AND ELSEWHERE AS INDICATED ON THE DRAWINGS OR AS REQUIRED. PROVIDE WATER HAMMERS ARRESTORS IN ACCORDANCE WITH PDI SELECTION STANDARDS. MAKE FINAL CONNECTION TO THE PLUMBING FIXTURES AS SPECIFIED WITH THE PLUMBING FIXTURE. PROVIDE A UNION IN THE CONNECTION TO EACH THREADED VALVE, FIXTURE OR PIECE OF APPARATUS SO THAT IT MAY BE READILY REMOVED. INSTALL UNIONS DOWNSTREAM OF SHUT OFF VALVES.

E. ESCUTCHEONS: PROVIDE ESCUTCHEONS ON ALL FINISHED SURFACES WHERE EXPOSED PIPING, BARE OR INSULATED, PASS THROUGH FLOORS, WALLS, OR CEILINGS, EXCEPT IN BOILER, UTILITY OR EQUIPMENT ROOMS. FASTEN ESCUTCHEONS SECURELY TO PIPE OR PIPE COVERING.

F. PIPE HANGERS: PVC PIPES SHALL BE SUPPORTED BY SPLIT RING TYPE, ADJUSTABLE SWIVEL RING HANGERS. HANGERS FOR COPPER PIPES SHALL BE COPPER PLATED OR PLASTIC COATED. PIPE HANGERS SHALL BE COMPLETE WITH RODS AND SUPPORTS, PROPORTIONED TO THE SIZE OF PIPE TO BE SUPPORTED.

3.03 TESTS

A. GENERAL REQUIREMENTS: TESTING REQUIREMENTS ARE MINIMUM AND ARE NOT INTENDED TO BE LIMITING WHERE ADDITIONAL TESTING METHODS ARE REQUIRED BY THE AUTHORITY HAVING JURISDICTION. TEST PRIOR TO COVERING OR CONCEALING PIPING.

B. DRAINAGE AND VENT PIPING: ALL DRAINAGE, VENT AND INSIDE CONDUCTOR PIPING SHALL BE TESTED BEFORE FIXTURES ARE INSTALLED, BY CAPPING OR PLUGGING THE OPENINGS AND FILLING THE ENTIRE SYSTEM WITH WATER TO A MINIMUM OF 15' HEAD AND ALLOWING IT TO STAND THUS FILLED FOR 24 HOURS. PROVIDE NECESSARY TEST TEES AND PLUGS TO TEST THE SYSTEM IN SECTIONS. REMAKE ALL LEAKING JOINTS.

C. FIXTURES: TEST EACH FIXTURE FOR SOUNDNESS, STABILITY OF SUPPORT, AND SATISFACTORY OPERATION OF ALL ITS PARTS.

3.04 STERILIZATION

A. GENERAL REQUIREMENTS: AFTER TESTS ARE COMPLETED AND APPROVED BY THE CONTRACTOR, FILL ALL WATER SUPPLY SYSTEMS WITH A SOLUTION CONTAINING 50 PPM OF AVAILABLE CHLORINE AND ALLOW TO STAND FOR A PERIOD OF 4 HOURS BEFORE BEING FLUSHED WITH CLEAN WATER, STERILIZE IN ACCORDANCE WITH LOCAL CODES. THEN DELIVER TO THE ENGINEER A DATED LETTER CERTIFYING STERILIZATION.

PLUMBING LEGEND AND ABBREVIATIONS

———	SANITARY PIPING (S)	—▷◁—	GATE VALVE (GV)
———	WASTE PIPING (W)	—▷◁—	BALL VALVE (BV)
– – – –	VENT PIPING (V)	——⊙	FLOOR DRAIN
— - —	COLD WATER PIPING (CW)	——○	HUB DRAIN
— - - —	HOT WATER PIPING (HW)	——⊙	FLOOR CLEAN-OUT
	TEE (PLAN, UP, DOWN)	——⊸	WALL CLEAN-OUT
	ELBOW (90°, 45°)		VENT THRU ROOF (VTR)
	ELBOW (UP, DOWN)		

AFF	ABOVE FINISHED FLOOR	W/	WITH
B.F.F.	BELOW FINISHED FLOOR	FL	FLOOR
B.F.G.	BELOW FINISHED GRADE	V	VENT
CO	CLEANOUT (ON PIPE STACK)	WC	WATER CLOSET
DN	DOWN	U	URINAL
I.E.	INVERT ELEVATION	L	LAVATORY
RD	ROOF DRAIN	S	SINK
FD	FLOOR DRAIN	JAN	JANITOR SINK
HD	HUB DRAIN	EWC	ELECTRIC WATER COOLER
FS	FLOOR SINK	SH	SHOWER
SAN	SANITARY	EWC	ELECTRIC WATER COOLER
S.S.	STAINLESS STEEL		
TYP	TYPICAL		
VTR	VENT THRU ROOF		

PLUMBING NOTES

1. PRIOR TO ORDERING OR FABRICATING ANY NEW EQUIPMENT THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND REPORT ANY DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL FIELD CONDITIONS TO THE ENGINEER.
2. ALL PIPE SIZES ARE NOT SHOWN ON PLANS. REFER TO RISER DIAGRAMS FOR COMPLETE PIPE SIZING AND CONFIGURATION.
3. VERIFY ALL FLOOR DRAIN FINISH ELEVATIONS AND LOCATIONS WITH ARCHITECTURAL AND STRUCTURAL PLANS.
4. ALL PIPING AND EQUIPMENT SHALL BE COORDINATED WITH MECHANICAL, ELECTRICAL, STRUCTURAL AND GENERAL CONTRACTORS BEFORE INSTALLATION.
5. OFFSET VENTS THROUGH ROOF AS REQUIRED TO MAINTAIN A MINIMUM OF 10 FEET HORIZONTAL DISTANCE FROM OUTSIDE AIR INTAKES. REFER TO MECHANICAL DRAWINGS FOR COORDINATION.
7. PROVIDE ALL VENTS WITH EFFECTIVE RODENT SCREENS.
8. ALL FLOOR DRAIN TRAPS AND CLEANOUTS BELOW GRADE SHALL BE ENCASED IN CONCRETE.
9. FLOOR DRAINS AND CLEANOUTS SHALL NOT BE LOCATED NEAR DOORS OR IN LINE WITH PATHWAYS OF DOORS AND HEAVY TRAFFIC AREAS.
10. SHOP DRAWINGS: SUBMIT TO THE ENGINEER FOR APPROVAL, BEFORE COMMENCING WORK, SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT TO BE PROVIDED UNDER THIS CONTRACT. THE FOLLOWING APPLIES TO THE SHOP DRAWINGS:
    A. DESIGN IS BASED ON MANUFACTURER NAMED DRAWINGS OR IN SPECIFICATIONS. SHOP DRAWINGS SHALL INDICATE EXCEPTIONS TO OR DEVIATIONS FROM THE DESIGN BASIS.
    B. EQUIPMENT IS GENERALLY SELECTED AT MIDRANGE CAPACITY TO PROVIDE FLEXIBILITY FOR CHANGES. SELECTIONS AT FULL MAXIMUM OR MINIMUM CAPACITY WILL NOT BE ACCEPTED.
11. SECURE EQUIPMENT TO SUPPORTS PER LOCAL CODE AUTHORITY. PROVIDE SEISMIC BRACING PER LOCAL CODE AUTHORITY. PLUMBING SUBCONTRACTOR SHALL PROVIDE SHOP DRAWINGS INDICATING METHODS INTENDED.
12. ANY LOAD SUSPENDED FROM THE ROOF OR FLOOR STRUCTURE ABOVE SHALL HANG DIRECTLY FROM THE BAR JOIST OR STRUCTURAL MEMBER; OTHERWISE, PROVIDE ADDITIONAL SUPPORT MATERIAL DESIGNED TO CARRY THE LOAD BETWEEN THE STRUCTURAL MEMBERS. DO NOT SUPPORT LOADS FROM BRIDGING.
13. ALL PLUMBING EQUIPMENT, PIPING, INSULATION, ETC. INSTALLED IN HVAC PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.
14. THE CONTRACTOR SHALL MAINTAIN A FULL SET OF "INSTALLATION AND OPERATING MANUALS" ON SITE DURING CONSTRUCTION FOR THE USE OF THE BUILDING OFFICIAL. (CMC 304)

PLUMBING FIXTURE SPECIFICATIONS

WC-1 WATER CLOSET – AMERICAN STANDARD MODEL 2257.103 AFWALL ELONGATED, WALL MOUNTED VITREOUS CHINA TOILET. TOILET RATED FOR 1.6-GALLONS PER FLUSH. PROVIDE SLOAN OPTIMA 111 ES-S EXPOSED SENSOR OPERATED FLUSH VALVE WITH SLOAN MODEL EL-154 120V TO 24V TRANSFORMER. PROVIDE OLSONITE 95-SS EXTRA HEAVY DUTY PLASTIC SEAT FOR ELONGATED BOWL LESS COVER WITH CONCEALED CHECK AND STAINLESS STEEL HINGE POST. TOILET AND SEAT COLOR WILL BE WHITE. PROVIDE ZURN CARRIER WITH NEOPRENE FIXTURE GASKET.

WC-2 WATER CLOSET – AMERICAN STANDARD MODEL 2257.103 AFWALL ELONGATED, WALL MOUNTED VITREOUS CHINA TOILET. TOILET RATED FOR 1.6-GALLONS PER FLUSH. PROVIDE SLOAN OPTIMA 111 ES-S EXPOSED SENSOR OPERATED FLUSH VALVE WITH SLOAN MODEL EL-154 120V TO 24V TRANSFORMER. PROVIDE OLSONITE 95-SS EXTRA HEAVY DUTY PLASTIC SEAT FOR ELONGATED BOWL LESS COVER WITH CONCEALED CHECK AND STAINLESS STEEL HINGE POST. WATER CLOSET TO BE MOUNTED FOR HANDICAPPED HEIGHT. TOILET AND SEAT COLOR WILL BE WHITE. PROVIDE ZURN CARRIER WITH NEOPRENE FIXTURE GASKET.

U-2 URINAL – AMERICAN STANDARD MODEL 6501.010 WASHBROOK VITREOUS CHINA URINAL. URINAL RATED FOR 1.0-GALLON PER FLUSH. PROVIDE SLOAN OPTIMA 186 ES-S EXPOSED SENSOR OPERATED FLUSH VALVE WITH SLOAN MODEL EL-154 120V TO 24V TRANSFORMER. MOUNT URINAL 17" FROM FINISH FLOOR TO LIP OF URINAL. URINAL COLOR TO BE WHITE. PROVIDE ZURN CARRIER. (PROVIDE CLEANOUT)

L-1 LAVATORY – AMERICAN STANDARD 0355.012 LUCERNE WALL MOUNTED 20" x 17" OVAL SELF-RIMMING VITREOUS CHINA LAVATORY WITH 4" CENTERSET. UNIT TO BE PROVIDED WITH T&S MODEL B-2711 SINGLE LEVER POLISHED CHROME FAUCET WITH McGUIRE CHROME PLATED 17 GA. CAST BRASS BODY ADJUSTABLE "P" TRAP WITH CLEANOUT, AND McGUIRE 3/8" ANGLED LOOSE KEY STOPS WITH ANNEALED VERTICAL TUBES AND CHROME PLATED BRASS ESCUTCHEON PLATES. LAVATORY COLOR TO BE WHITE. (PROVIDE CLEANOUT)

L-2 LAVATORY – AMERICAN STANDARD 0355.012 LUCERNE WALL MOUNTED 20" x 18" VITREOUS CHINA LAVATORY WITH 4" CENTERSET. UNIT TO BE PROVIDED WITH SLOAN OPTIMA MODEL ETF-600-C POLISHED CHROME SENSOR FAUCET, SLOAN HARDWIRED TRANSFORMER, SLOAN ETF-490-A CHROME PLATED STRAINER AND OUTLET TUBE, McGUIRE CHROME PLATED 17 GA. CAST BRASS BODY ADJUSTABLE "P" TRAP WITH CLEANOUT AND OFFSET DRAIN, McGUIRE 3/8" ANGLED LOOSE KEY STOPS WITH ANNEALED VERTICAL TUBES AND CHROME PLATED BRASS ESCUTCHEON PLATES, ZURN CONCEALED ARM TYPE CARRIER AND McGUIRE MODEL PW2000WC OFFSET DRAIN AND SUPPLIES INSULATION KIT. LAVATORY COLOR TO BE WHITE. (PROVIDE CLEANOUT)

S-1 COUNTERTOP SINK – ELKAY MODEL LR-3321 DOUBLE COMPARTMENT 33" x 21" STAINLESS STEEL SINGLE LEDGE SELF-RIMMING SINK. SINK TO BE CONSTRUCTED OF 18 GAUGE, TYPE 304 STAINLESS STEEL. SINK TO BE FURNISHED WITH ELKAY MODEL LK2310HS FAUCET WITH SPRAY, ELKAY LK-35 STRAINER, McGUIRE 17 GAUGE CAST BRASS P-TRAP WITH CLEANOUT, McGUIRE MODEL H2166 1/2" x 3/8" ANGLED LOOSE KEY STOPS WITH ANNEALED VERTICAL TUBES AND CHROMED PLATED BRASS ESCUTCHEON PLATES.

EWC-1 WATER COOLER – OASIS MODEL P8ACSL BI-LEVEL WHEELCHAIR ACCESS LEAD FREE ELECTRIC WATER COOLER WITH A COOLER CAPACITY OF 8.0 GPH. UNIT TO USE HFC-134a REFRIGERANT. PROVIDE UNIT WITH SAFETY BUBBLER, FRONT PUSH BAR ON/OFF AND ONE PIECE STAINLESS STEEL BASIN WITH INTEGRAL DRAIN GRID. UNIT TO BE MECHANICALLY OPERATED. PROVIDE WALL SUPPORT BRACKET. PROVIDE POWDER COATED FINISH WITH 3 YEAR WARRANTY.

FD-1 FLOOR DRAIN – ZURN MODEL Z-415-ZN. DRAIN TO BE DURA-COAT CAST IRON WITH FLANGE, INTEGRAL REVERSIBLE CLAMPING RING COLLAR, SEEPAGE OPENINGS AND HAVE A SATIN NICKEL BRONZE FINISHED STRAINER AND VANDAL PROOF SCREWS. DRAIN TO BE PROVIDED WITH TRAP PRIMER CONNECTION. PROVIDE CAST IRON P- TRAP.

FCO-1 FLOOR CLEANOUT – ZURN MODEL 1444 DURA-COATED CAST IRON BODY WITH AIR TIGHT ABS THREADED PLUG. PROVIDE TOP TO ALLOW FOR FLOOR FINISH.

TP-1 TRAP PRIMER – PRECISION PLUMBING PRODUCTS, MODEL PR01-500, UNDER-LAV WITH CHROME PLATED BODY AND CAP, STAINLESS STEEL SCREEN, 1/2" COLD WATER SUPPLY, 1/2"NPTx5/8"COMP, 3/8" COMP. TO FAUCET.

IM-1 ICE MAKER (COFFEE MAKER) OUTLET BOX – IPS CORP WATER-TITE MODEL 87978, BRASS LEAD FREE QUARTER TURN VALVE WITH INTEGRAL LEAD FREE HAMMER ARRESTER, PLASTIC OUTLET BOX

HD-1 HUB DRAIN – CAST IRON FUNNEL AS MANUFACTURED BY ZURN.

stellar

UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

SCHEDULES, NOTES & SPECIFICATIONS

REV.	DATE	BY	DESCRIPTION
A		JPB	PERMIT ISSUE

JOB NO. 71005332
DRAWN: JPB
CHECKED: WMW
SCALE: AS NOTED

P001
DRAWING NO.

SPECIFICATION PIPEWORK INSULATION –1A

PIPE INSULATION (INSULATION TYPES) TABLE 1

ITEM	DESCRIPTION
INS-TYPE1	PREFORMED FLEXIBLE ELASTOMERIC PIPE INSULATION: COMPLY WITH ASTM C-534, TYPE I, AND ASTM E-84 FOR FLAME SPREAD RATE OF 25 OR LESS AND SMOKE DEVELOPED RATING OF 50 OR LESS, FOR 1" THICKNESS. K VALUE OF 0.30 AT 75'F MEAN TEMPERATURE; EQUAL TO AP ARMAFLEX, CLOSED CELL TUBE AND PIPE INSULATION. UTILIZE ADHESIVE RECOMMENDED BY INSULATION MANUFACTURER FOR JOINTS AND SEAMS.
INS-TYPE2	PREFORMED POLYISOCYANURATE PIPE INSULATION: COMPLY WITH ASTM E-84 FOR FLAME SPREAD RATE OF 25 OR LESS AND SMOKE DEVELOPED RATING OF 50 OR LESS FOR 1 ½" THICKNESS AND LESS. K VALUE OF 0.19 AT 75'F. COMPRESSIVE STRENGTH OF 25 PSI. EQUAL TO DOW TRYMER 2000. UTILIZE ADHESIVES RECOMMENDED BY THE INSULATION MANUFACTURER FOR JOINTS AND SEAMS.
INS-TYPE3	PREFORMED CALCIUM SILICATE PIPE INSULATION: INORGANIC HYDROUS CALCIUM SILICATE WITH NON-ASBESTOS FIBROUS REINFORCEMENT COMPLYING WITH ASTM C533 TYPE I, AND ASTM E84 FOR FLAME SPREAD RATE OF 25 OR LESS AND SMOKE DEVELOPED RATING OF 50 OR LESS. K VALUE OF 0.41 AT 200'F. EQUAL TO JOHNS MANVILLE THERMO 12 GOLD FORM PIPE INSULATION. WIRE INSULATION TO PIPE UTILIZING STAINLESS STEEL WIRE OR METAL BANDS.
INS-TYPE4	PREFORMED FOAMGLAS PIPE INSULATION: COMPLYING WITH ASTM C552-00,INSULATION SHALL BE NON COMBUSTIBLE EQUAL TO PITTSBURG CORNING FOAMGLAS PREFORMED SECTIONAL INSULATION WIRE INSULATION TO PIPE UTILIZING STAINLESS STEEL WIRE OR METAL BANDS.
JACKET J-1	PVC JACKET 30 MIL THICK, UV RESISTANT WHITE IN COLOR. PREFABRICATED SHAPES FOR FITTINGS, JOINTS, VALVES, ETC. USE ADHESIVE RECOMMENDED BY THE JACKET MANUFACTURER. SOLVENT WELD ALL JOINTS AND SEAMS. LAP SEAMS 1-1/2", LAP JOINTS 3". INSTALL IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
JACKET J-2	EMBOSSED ALUMINUM JACKET 0.016" THICK COMPLYING WITH ASTM-B209, 3003 ALLOY, H-14 TEMPER. USE 0.007" THICK ALUMINUM BANDS TO FASTEN JACKET TO INSULATION. USE 2" OVERLAP ON SEAMS AND JOINTS. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
JACKET J-3	PLAIN STAINLESS STEEL JACKET 0.0149 THICK COMPLYING WITH ASTM-A666, 304 STAINLESS STEEL C/W 3/4" WIDE BANDS .02" THICK TO FASTEN JACKET TO INSULATION. USE 2" OVERLAP ON SEAMS AND JOINTS. INSTALL IN ACCORDANCE WITH THE MANUFACTURER?S RECOMMENDATIONS.
VB-1	VAPOR BARRIER FILM: DOW SARAN 560 INDUSTRIAL FILM, 6 MIL THICK. SEAL SEAMS AND JOINTS WITH PRESSURE SENSITIVE TAPE RECOMMENDED BY THE PRODUCT MANUFACTURER.

SPECIFICATION PIPEWORK INSULATION –1B

PIPE INSULATION (INSULATION THICKNESS) TABLE 2

SERVICE	INSULATION TYPE	INSULATION JACKET	INSULATION THICKNESS (INCHES) PIPE SIZE (INCHES) 1/2"	3/4"	1"	1-1/4" to 2"	2-1/2" to 6"	8" to 12"
CW, HW, HW RECIRC.	INS-TYPE1	J1 & J3	1?	1?	1?	1?	1?	NA
CW, HW, HW RECIRC.IN COOLERS	INS-TYPE1	J1 & J3	1" SEE NOTE 7	1" SEE NOTE 7	1" SEE NOTE 7	1" SEE NOTE 7	1" SEE NOTE 7	NA
COMPRESSED AIR, AL,AD AND CA IN COOLERS ONLY	INS-TYPE2	J1 & J3	1" SEE NOTE 7	1" SEE NOTE 7	1" SEE NOTE 7	1" SEE NOTE 7	1" SEE NOTE 7	NA
STEAM	INS-TYPE3	J1, J2 & J3	NA	1-1/2"	2?	2-1/2"	3? see notes 3 and 4	3? see notes 3 and 4
CR	INS-TYPE3	J1, J2 & J3	NA	1?	1-1/2"	1-1/2"	1-1/2"	NA
HPHW,	INS-TYPE1	J1 & J3	1?	1?	1?	1?	1?	NA
HWHS, HWHR	INS-TYPE2	J1 & J2	NA	1?	1-1/2"	1-1/2"	1-1/2"	NA
RWL	INS-TYPE1	J1 & J3	NA	NA	NA	NA	1?	1?
CHWS, CHWR, CHGS, CHGR	INS-TYPE2	J1 & J2	1?	1?	1?	1?	1?	1?
THERMAL FLUID	INS-TYPE4	J1 & J2	NA	SEE NOTES 5 AND 6	SEE NOTES 5 AND 6	SEE NOTES 5 AND 6	SEE NOTES 5 AND 6	SEE NOTES 5 AND 6

GENERAL INSTALLATION NOTES

1. REVIEW TABLE 1 FOR INSULATION TYPES
2. REVIEW TABLE 3 FOR JACKET TYPES AND LOCATIONS WHERE J1, J2 AND J3 JACKETS MAY BE USED.
3. PROVIDE DOUBLE LAYER OF INSULATION TO THICKNESS SHOWN
4. OFFSET ALL LATERAL AND LONGITUDINAL JOINTS
5. THICKNESS OF INSULATION SHALL LIMIT SURFACE TEMPERATURE OF INSULATION TO 120'F MAXIMUM
6. THE TEMPERATURE OF THE THERMAL FLUID SHALL BE ASSUMED AT 600'F
7. PROVIDE 5 WATTS PER FOOT TRACING ON ALL PIPEWORK COMPLETE WITH TEMPERATURE CONTROLLER

SPECIFICATION PIPEWORK INSULATION –1C

PIPE INSULATION (INSULATION INSTALLATION NOTES) TABLE 3

DESCRIPTION	SYMBOL	
STEAM AND CONDENSATE	HPS, LPS, HPC & LPC	1. USE J1 JACKET IN ALL LOCATIONS OTHER THAN BOILER ROOMS, MECHANICAL ROOMS AND FINAL CONNECTIONS TO HOSE STATIONS AND EQUIPMENT IN PROCESS AREAS 2. USE J2 JACKET IN BOILER ROOMS, MECHANICAL EQUIPMENT ROOMS AND OUTDOOR APPLICATIONS 3. USE J3 JACKET FOR FINAL CONNECTIONS TO HOSE STATIONS & PROCESS EQUIPMENT IN PROCESS AREAS. JACKET SHALL EXTEND FROM EQUIPMENT TO 10'-00" ABOVE FINISHED FLOOR
HOT WATER SUPPLY AND RECIRCULATION HIGH PRESSURE HOT WATER COLD WATER	HW AND HWR HPHW CW	1. USE J1 JACKET IN ALL LOCATIONS OTHER THAN FINAL CONNECTIONS TO HOSE STATIONS AND EQUIPMENT IN PROCESS AREAS 2. USE J3 JACKET FOR FINAL CONNECTIONS TO HOSE STATIONS & PROCESS EQUIPMENT IN PROCESS AREAS. JACKET SHALL EXTEND FROM EQUIPMENT TO 10'-00" ABOVE FINISHED FLOOR 3. COVER INSULATION ON CW WITH VAPOR BARRIER VB-1.
HOT WATER HYDRONICS SUPPLY AND RETURN CHILLED WATER SUPPLY AND RETURN CHILLED GLYCOL SUPPLY AND RETURN	HWHS & HWHR CHWS & CHWR CHGS & CHGR	1. USE J1 JACKET IN INDOOR APPLICATIONS 2. USE J2 JACKET IN OUTDOOR APPLICATIONS 3. COVER INSULATION ON CHWS, CHWR, CHGS AND CHGR WITH VAPOR BARRIER VB-1.
RAINWATER LEADERS	RWL	1. USE J1 JACKET IN ALL LOCATIONS OTHER 10'-00 VERTICAL DROP IN PROCESS AREAS 2. USE J3 JACKET TO 10'-00" ABOVE FINISHED FLOOR 3. COVER INSULATION WITH VAPOR BARRIER VB-1.
THERMAL FLUID	TH 600	1. USE J2 JACKET IN BOILER ROOMS, MECHANICAL EQUIPMENT ROOMS AND OUTDOOR APPLICATIONS 2. USE J3 JACKET IN PROCESS AREAS.

GENERAL INSTALLATION NOTES

A. USE PREFORMED INSULATION WITH PREFABRICATED SECTIONS FOR FITTINGS AND VALVES. IF FABRICATED SECTIONS ARE NOT AVAILABLE, MITER AND/OR FABRICATE FROM LARGER SIZED INSULATION TO INSULATION THICKNESS SPECIFIED.

B. BUTT ALL JOINTS TOGETHER FIRMLY AND SEAL WITH TAPE OR ADHESIVE ACCORDING TO MANUFACTURERS? RECOMMENDATIONS.

C. ALL FITTINGS AND VALVES TO BE COVERED WITH THE SAME JACKETING AS PIPING. (NO HAND APPLIED SEALER).

D. CONTROL VALVES AND REGULATORS SHALL NOT BE INSULATED. SEAL PIPE INSULATION INDEPENDENTLY OF VALVES TO ENABLE REMOVAL OF VALVE WITHOUT DAMAGE TO VAPOR BARRIER OF PIPE INSULATION.

E. INSULATION COVERS ON ALL SHUTOFF VALVES MUST BE TRIMMED AND VAPOR SEALED TO ALLOW ACCESS TO PACKING NUTS AND SCREWED BONNETS.

F. PROVIDE STAINLESS STEEL SHEET METAL SADDLES, GAUGE AS REQUIRED TO PROTECT INSULATION FROM BEING CRUSHED, AT EACH HANGER OR STAND. INSULATION CONTRACTOR SHALL SEAL AND GLUE THE SADDLES TO THE INSULATION JACKET TO AVOID MOISTURE ACCUMULATION.

G. PIPE HANGERS AND SUPPORTS MUST NOT PENETRATE INSULATION. WHERE PIPE WEIGHT WILL CRUSH OR DEFORM THE INSULATION, INSTALL INSULATING BLOCKS TO CARRY WEIGHT. SADDLE SHALL BE SIZED TO DISTRIBUTE WEIGHT TO BELOW MANUFACTURERS MAXIMUM LOAD RECOMMENDATIONS.

H. NO INSULATION SHALL BE APPLIED UNTIL ALL PIPES AND EQUIPMENT HAVE BEEN PRESSURE TESTED, DRIED AND PROVEN TIGHT, BALANCED, AND ACCEPTED BY THE ENGINEER AND ALL WELD AREAS AND EXPOSED BARE METAL INCLUDING PIPE THREADS HAS BEEN CLEANED AND PRIMED.

J. INSULATION ON ALL COLD SURFACES WHERE VAPOR BARRIER JACKETS ARE USED WILL BE APPLIED WITH A CONTINUOUS UNBROKEN VAPOR SEAL. HANGERS, SUPPORTS, ANCHORS, ETC. THAT ARE SECURED DIRECTLY TO COLD SURFACES MUST BE ADEQUATELY INSULATED AND VAPOR SEALED TO PREVENT CONDENSATION.

K. CONTRACTOR SHALL SUBMIT MATERIAL DATA SHEETS AND RECEIVE APPROVAL BEFORE STARTING WORK DO NOT USE GLASS FIBER INSULATION.

L. USE SELF ADHESIVE PIPE MARKERS TO IDENTIFY ALL PIPE SERVICES AND FLOW DIRECTION PER ASME A 13.1

M. INSTALL INSULATION TO PREVENT LATERAL AND LONGITUDINAL JOINT SEPARATION WHEN PIPEWORK EXPANDS TO OPERATING TEMPERATURE

N. INSULATION SHALL BE CONTINUOUS THROUGH ALL WALLS. COORDINATE WITH MECHANICAL UTILITIES AND PLUMBING CONTRACTOR TO ENSURE SLEEVES ARE CORRECTLY SIZED

O. WHERE INSULATION PASSES THROUGH RATED FIRE WALL PROVIDE INSULATION TO MATCH THE FIRE RATING OF THE WALL IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS

PLUMBING FIXTURE SCHEDULE

MARK	DESIGNATION	CONNECTIONS CW	HW	WASTE	REMARKS
WC-1	WATER CLOSET	1"	–	3"	
WC-2	WATER CLOSET	1"	–	3"	HANDICAPPED ROUGH-IN
U-2	URINAL	3/4"	–	2"	HANDICAPPED ROUGH-IN
L-1	LAVATORY	1/2"	1/2"	1 1/4"	
L-2	LAVATORY	1/2"	1/2"	1 1/4"	HANDICAPPED ROUGH-IN
S-1	KITCHEN SINK	1/2"	1/2"	1 1/2"	DOUBLE COMPARTMENT
EWC-1	ELECTRIC WATER COOLER	1/2"	1/2"	1 1/4"	BI-LEVEL WITH SINGLE DRAIN
TP-1	TRAP PRIMER	1/2"	–	–	

PIPING SPECIFICATION PS-4a

SYSTEM	DOMESTIC WATER– (CW, HW, HW AND HWR)	
PRESSURE	UP TO 100 PSIG	
TEMPERATURE	UP TO 120 DEGREES FAHRENHEIT	
SIZE	3" AND SMALLER	4" AND LARGER
PIPE	HARD COPPER TUBE, TYPE L TO ASTM B 88	SCHEDULE 40, CARBON STEEL TO ASTM A53 OR B SEAMLESS, GALVANIZED
JOINTING	95-5 TIN-ANTIMONY SOLDER TO ASTM B62 GR 95 TA	VICTAULIC FLEXIBLE GALVANIZED STEEL COUPLING STYLE 75 OR EQUAL. WITH EDPM WITH EDPM GASKET AND PLATED NUTS AND BOLTS TO ASTM A-183.
FITTINGS	COPPER PRESSURE FITTINGS WROUGHT COPPER SOLDER JOINT FITTINGS TO ASTM B16.22 CAST COPPER ALLOY FITTINGS TO ASTM B16.18	GALVANIZED STEEL ROLL GROOVE IPS PIPING SYSTEM EQUAL TO VICTAULIC FLEXIBLE SYSTEM
FLANGES	CLASS 150 BRONZE, SOLDER JOINT TO ASME B16.24	VICTAULIC ON EQUAL STYLE 741 CLASS 125
UNIONS	CAST COPPER ALLOY, HEXAGONAL STOCK BODY, METAL-TO-METAL SEATING, SOLDER JOINT OR THREADED ENDS TO MSS-SP-123	NOT APPLICABLE
BALL VALVES	VALVES SHALL BE 600 WOG ASTM B584 BRONZE BODY WITH FULL PORTING, STAINLESS STEEL BALL AND STEM, REINFORCED TEFLON SEATS, PTFE PACKING AND PACKING ADJUSTMENT NUT. VALVES SHALL COMPLY WITH MSS-SP-110. EQUAL TO CRANE 9303 (THREADED) OR 9323-S (SOLDER ENDS).	NOT APPLICABLE
CHECK VALVE	VALVES SHALL BE CL125 ASTM B62 BRONZE T-PATTERN BODY WITH BRONZE INTEGRAL SEAT, FREE ROTATING BRONZE DISC, AND SCREWED CAP. VALVES SHALL COMPLY WITH MSS-SP-80. EQUAL TO CRANE 1707 (THREADED) OR 1707S (SOLDER ENDS).	SWING CHECK, 125 LB, BRONZE DISC 3" TO 6" BRONZE FACED IRON DISC 8" AND UP" CAST IRON BODY, EQUAL TO CRANE SERIES 373
STRAINER	STRAINERS SHALL BE Y-TYPE CL125 ASTM B62 BRONZE BODY WITH STRAIGHT THREAD CAP, MACHINED SCREEN SEAT, AND 20 MESH T304 STAINLESS STEEL SCREENS. EQUAL TO TITAN YS55-BZ (THREADED) OR YS56-BZ (SOLDER ENDS).	NOT APPLICABLE
DRAIN VALVES	BRASS BODY, THREADED OR SOLDER CONNECTION, AND HOSE THREAD CONNECTION WATTS SERIES B0.	NOT APPLICABLE
BUTTERFLY VALVES	NOT APPLICABLE	200 PSI, DI BODY, ALUMINUM / BRONZE DISC 316 SS STEM, EDPM SEAT LEVER LOCKING HANDLE, GEAR OPERATOR 12" AND LARGER, EQUAL TO CRANE QUARTERMASTER SERIES
PRESSURE GAUGE	4" DIA LIQUID FILLED, 304SS CASE, WHITE DIAL WITH BLACK FIGURES AND GRADUATIONS, IN PSI, POLYCARBONATE WINDOW, BRONZE BOURDON TUBE, SNUBBER 1/4" NPT CONNECTION, ACCURACY, 1% OF FULL SCALE PER ASME B40.1 EQUAL TO TRERICE SERIES 700. RANGE TO EQUAL TWO TIMES SYSTEM WORKING PRESSURE. USE 1/4" BALL VALVE FOR ISOLATION.	
THERMOMETER	7", ALUMINUM CASE, ACRYLIC WINDOW, ALCOHOL FILLED TUBE, SCALE WITH WHITE BACKGROUND, BLACK NUMBERS AND GRADUATIONS, ACCURACY OF + 1 SCALE DIVISION, ADJUSTABLE BASE, RANGE 0-200 DEGREES F. 3/4" NPT CONNECTION, EQUAL TO TRERICE NO 700 SERIES. SELECT INSERTION LENGTH AND 304SS THERMOWELL TO SUIT PIPE SIZE AND INSULATION THICKNESS.	
NOTES:	1 SLOPE PIPE IN DIRECTION OF FLOW 1" / 40' DOWN. PROVIDE MANUAL DRAIN VALVES AT SYSTEM DRIP LEGS. 2 PERFORM A HYDROSTATIC PRESSURE TEST ON THE SYSTEM AT 1 1/2 TIMES WORKING PRESSURE BUT NOT LESS THAN 150 PSIG FOR 2 HOURS, WITH MAX PRESSURE LOSS OF 2 PSIG. 3 CONNECTIONS TO ALL DISSIMILAR METALS SHALL BE MADE WITH DIELECTRIC ISOLATED COUPLINGS	

PIPE & FITTINGS SPECIFICATION (PS-7c)

SERVICE	PROCESS DRAIN, WASTE AND VENT PIPING	
PRESSURE	GRAVITY	
LOCATION	ABOVE AND BELOW GROUND	
SIZE	2" AND SMALLER	3" AND LARGER
SLOPE (MIN.)	1/4" PER FOOT	1/8" PER FOOT
PIPE & FITTINGS	CAST IRON NO-HUB PIPE AND FITTINGS CONFORMING TO LATEST VERSION OF OF FEDERAL SPECIFICATION WW-P-401 F, ASTM A-888, CISPI 301.	CAST IRON NO-HUB PIPE AND FITTINGS CONFORMING TO LATEST VERSION OF OF FEDERAL SPECIFICATION WW-P-401 F, ASTM A-888, CISPI 301.
JOINTS	JOINT GASKETS SHALL CONFORM TO ASTM C-564 AND CISPI HSN.	JOINT GASKETS SHALL CONFORM TO ASTM C-564 AND CISPI HSN.
TESTING	TEST PIPING USING REQUIREMENTS OF LOCAL OR STATE CODE OR BY MEANS OF THE WATER TEST TEST WITH A WATER HEIGHT OF 10'-0" OR 4.3 PSI.	
NOTES:	1 BEDDING, COMPACTION AND BACKFILL SHALL CONFORM TO LOCAL AND STATE CODES, CISPI AND MANUFACTURES RECOMMENSATIONS. 2 FOR VENT AND ABOVE GROUND PIPING, REFER TO ABOVE GROUND PIPING SPECIFICATION THIS DRAWING. 3 USE OF NO-HUB PIPING MEETING THE ABOVE MENTIONED APPLICABLE CODES IS ACCEPTABLE.	

PIPE & FITTINGS SPECIFICATION (PS-7i)

SERVICE	SANITARY DRAIN, WASTE AND VENT PIPING	
PRESSURE	GRAVITY	
LOCATION	ABOVE AND BELOW GROUND	
SIZE	2" AND SMALLER	3" AND LARGER
SLOPE (MIN.)	1/4" PER FOOT	1/8" PER FOOT
PIPE & FITTINGS	PVC SCHEDULE 40 TYPE DWV PIPE AND FITTINGS CONFORMING TO ASTM D-1784, ASTM D-1785, ASTM D-2665 AND NSF STANDARD 14.	PVC SCHEDULE 40 TYPE DWV PIPE AND FITTINGS CONFORMING TO ASTM D-1784, ASTM D-1785, ASTM D-2665 AND NSF STANDARD 14.
JOINTS	SLOVENT WELD WITH PRIMER CONFORMING TO ASTM SOLVENT CEMENT SHALL CONFORM TO ASTM D-2564.	SLOVENT WELD WITH PRIMER CONFORMING TO ASTM SOLVENT CEMENT SHALL CONFORM TO ASTM D-2564.
TESTING	TEST PIPING USING REQUIREMENTS OF LOCAL OR STATE CODE OR BY MEANS OF THE WATER TEST TEST WITH A WATER HEIGHT OF 10'-0" OR 4.3 PSI.	
NOTES:	1 BEDDING, COMPACTION AND BACKFILL SHALL CONFORM TO LOCAL AND STATE CODES AND MANUFACTURERS RECOMMENDATIONS. 2 THE USE OF FOAM CORE TYPE PIPE AND FITTINGS IS NOT PERMITTED. 3 THE USE OF PVC DWV PIPING IN PLENUM AREAS IS PROHIBITED UNLESS PIPING MEETS OR EXCEEDS SMOKE AND FLAME SPREAD REQUIREMENTS 4	

ELECTRIC WATER HEATER SCHEDULE

MARK	LOCATION	STORAGE CAPACITY	RECOVERY GPH	ELEMENT KW	ELEMENT QUANTITY	E.W.T. 0' F	E.W.T. 0' F	ELECTRICAL V / # / Hz	RELIEF SIZE	MANUF.	MODEL	NOTES
EWH-2	STORAGE RM# 602	80	30	4.5	2	80	140	480 / 3 / 60	3/4"	A.O. SMITH	DEN-60	1, 2, 3

NOTES:
1. NON-SIMULTANEOUS OPERATION OF ELEMENTS.
2. VERIFY ELECTRICAL REQUIREMENTS PRIOR TO EQUIPMENT PURCHASE.
3. INSTALL AS PER MANUFACTURERS RECOMMENDATIONS.

PUMP SCHEDULE

MARK	LOCATION	MANUF.	MODEL NUMBER	GPM FLOW	HEAD PRESSURE	VOLTAGE	H.P.	RPM	REMARKS
HWRP	STORAGE RM# 602	TACO	0-110	5	8 FT.	120/1	1/12	1725	DOMESTIC HOT WATER (120'F) RECIRCULATING PUMP

NOTE: PROVIDE PUMP WITH TIMER CONTROL

stellar

WILLIAM M. WEAVER LICENSE No. 63148 STATE OF FLORIDA PROFESSIONAL ENGINEER

UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

SCHEDULES NOTES & SPECS

REV.	DATE	BY	DESCRIPTION
A	06/06/14	JPB	PERMIT ISSUE

JOB NO. 71005332
DRAWN: JPB
CHECKED: WMW
SCALE: AS NOTED
P002
DRAWING NO.

1.1 SCOPE

1.1.1 THE NOTES, TOGETHER WITH OTHER PROJECT SPECIFICATIONS REFERENCED HEREIN, PIPING DRAWING, AND DIAGRAMS (P&ID), ESTABLISH THE REQUIREMENTS FOR FIELD FABRICATION, ERECTION, EXAMINATION, INSPECTION & TESTING, CLEANING & FLUSHING OF PIPING SYSTEMS AND THEIR COMPONENTS FOR SPECIFIC SERVICES.

1.1.2 INTENT IS NOT TO SUBSTITUTE THE CODES AND STANDARDS REFERENCED, BUT TO SUPPLEMENT, AMEND OR LIMIT THEM AS REQUIRED.

1.1.3 THE PIPING MATERIAL SPECIFICATION, PIPING AND INSTRUMENT DIAGRAMS, AND SERVICE INDEX ARE TO BE USED FOR SPECIFIC SERVICES

1.2 CODES AND STANDARDS

1.2.1 ALL PIPING MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS AND ADDENDA OF THE APPLICABLE CODES AND STANDARDS LISTED BELOW:

ANSI - AMERICAN NATIONAL STANDARD INSTITUTION
ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS
ASME - AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AWWA - AMERICAN WATER WORKS ASSOCIATION
MSS - MANUFACTURER STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY
3-A - SANITARY STANDARDS, INTERNATIONAL ASSOCIATION OF MILK, FOOD AND - ENVIRONMENTAL SANITARIANS, INC.
AWS - AMERICAN WELDING SOCIETY

1.2.2 PIPING SYSTEMS SHALL BE DESIGNED IN ACCORDANCE WITH THE FOLLOWING STANDARDS:
ASTM-B31.7- UNFIRED PRESSURE VESSEL CODE
ASTM-B31.1- POWER PIPING (GENERAL PIPING)
ASTM-B31.3- PROCESS PIPING
ASTM-B31.5- REFRIGERATION PIPING (REFRIGERATION SYSTEM)
ASTM-B31.4- FUEL PIPING
ASTM-B31.9- SERVICE PIPING
3-A - SANITARY STANDARDS, MILK AND FOOD PRODUCTS

1.2.3 UNLESS OTHERWISE NOTED, ALL UNDERGROUND FERROUS (CAST IRON & BLACK STEEL) PIPES SHALL BE COATED AND/OR WRAPPED IN ACCORDANCE WITH THE STANDARD OF AWWA C-203.

1.2.4 ALL STEEL BUTT-WELDING FITTINGS SHALL CONFORM DIMENSIONALLY TO ANSI B16.9, WITH WALL THICKNESS AT LEAST EQUAL TO THAT OF THE PIPE. WHERE THE FITTING IS HEAVIER THAN THE PIPE, INDICATING WELDING ALIGNMENT TO ANSI CODE IS NOT POSSIBLE, ENDS OF FITTINGS SHALL BE BEVELED TO MEET CODE REQUIREMENTS.

1.2.5 PIPE IN SIZES 48" AND SMALLER SHALL CONFORM DIMENSIONALLY TO ANSI B36.10 FOR CARBON STEEL. PIPE WALL THICKNESS SHALL BE AS INDICATED IN THE PIPING MATERIAL SPECIFICATIONS.

1.2.6 ALL STEEL SCREWED AND SOCKET WELDING FITTINGS SHALL CONFORM TO ANSI B16.11.

2.0 PRODUCTS NOTES

2.1 MATERIALS NOTES

2.1.1 PIPING MATERIAL SPECIFICATIONS WILL BE USED AS ASSIGNED ON THE DRAWINGS AND SPECIFICATIONS. ANY DEVIATIONS FROM THE PIPING MATERIAL SPECIFICATIONS WILL BE NOTED ON THE PIPING DRAWINGS.

2.1.2 MATERIALS COVERED BY THE ABOVE SPECIFICATIONS SHALL BE NEW, FREE FROM DEFECTS AND IMPERFECTIONS.

2.1.3 MATERIALS WHICH ARE NOT COVERED BY DETAILED SPECIFICATION SHALL BE STANDARD PRODUCT OF APPROVED MANUFACTURERS AND SUITABLE FOR INTENDED SERVICE.

2.1.4 FULL LENGTHS OF PIPES SHALL BE USED WHEREVER POSSIBLE. SHORT LENGTHS OF PIPES WITH COUPLINGS WILL NOT BE PERMITTED.

2.1.5 LONG RADIUS WELD ELLS SHALL BE USED WHEREVER POSSIBLE. SHORT RADIUS ELLS WILL NOT BE USED UNLESS A WRITTEN APPROVAL IS SECURED FROM ENGINEER.

2.1.6 THE VALVE TYPE: GATE, GLOBE, CHECK, BUTTERFLY, BALL, ETC., SHALL BE AS INDICATED ON PIPING AND INSTRUMENT DIAGRAMS OR PER THE VALVE SPECIFICATIONS FOR SERVICE & FUNCTION. VALVE MATERIALS AND END CONNECTIONS SHALL BE PROVIDED AS SPECIFIED IN PIPING MATERIAL SPECIFICATION.

2.1.7 SHUTOFF VALVES ON BOTH SIDES OF A CONTROL VALVE AND THE BY-PASS VALVE SHALL TAKE THE SAME SPECIFICATION AS THE LINE WITH THE HIGHEST RATING.

2.1.8 VALVE TRIM MATERIAL SHALL BE MANUFACTURER'S STANDARD FOR SERVICE SPECIFIED.

2.1.9 VALVES REQUIRING SPECIAL TRIM OR OTHER FEATURES NOT IN AGREEMENT WITH THE PIPING MATERIAL SPECIFICATION WILL BE NOTED ON THE PIPING AND INSTRUMENT DIAGRAMS.

2.1.10 WHERE A VENT LINE, DRAIN LINE, ETC. CONNECTS TO A PROCESS LINE THAT HAS SPECIAL TRIM VALVES, ALL VALVES IN THE CONNECTING LINE SHALL HAVE THE SPECIAL TRIM.

2.1.11 CHAIN WHEELS OR EXTENSION STEMS SHALL BE PROVIDED FOR VALVE USED IN NORMAL PLANT OPERATION WHEN BOTTOM HAND WHEEL IS IN EXCESS OF 7'-0" ABOVE NORMAL WORKING LEVEL. CHAIN WHEELS OR EXTENSION STEMS MAY BE BUT ARE NOT NECESSARILY SHOWN ON PIPING DRAWING, BUT ARE REQUIRED.

2.1.12 GEAR OPERATORS SHALL BE CONSIDERED FOR VALVES, ONLY WHEN FREQUENT OR RAPID OPERATION IS REQUIRED UNDER UNIT OPERATIONS. GEAR OPERATORS WILL BE REQUIRED FOR BLOCK VALVES LARGER THAN 10"ø.

2.1.13 A MANUFACTURER'S NAME AND FIGURE NUMBER SHOWN IN PIPING MATERIAL SPECIFICATION DOES NOT REPRESENT A PREFERENCE. THE INTENT IS TO INDICATE QUALITY, DESIGN, MATERIALS, AND CONSTRUCTION REQUIRED. EQUIVALENT ITEMS NOT SPECIFIED BY NAME / MODEL SHALL BE SUBMITTED FOR APPROVAL.

2.1.14 PRESSURE AND TEMPERATURE LIMITS FOR VALVES WITH NONMETALLIC SEATING OR LINING MATERIALS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION FOR INTENDED SERVICE.

2.1.15 STEEL ON STAINLESS STEEL FLANGES AGAINST 125 LBS. CAST IRON FLANGES SHALL BE FLAT FACE.

2.1.16 GASKET FOR FLAT FACE FLANGES SHALL BE OF THE FLAT FACE TYPE.

2.1.17 WHERE VALVE LININGS EXTEND OVER FLANGE FACING, NO GASKET IS REQUIRED.

2.2 WELDING.

2.2.1 WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS SHALL BE QUALIFIED IN ACCORDANCE WITH THE ASME BOILER AND PRESSURE VESSEL CODE, SECTION IX AND APPLICABLE ASTM B31 CODE FOR PRESSURE PIPING.

2.2.2 ALL WELDING PROCEDURES AND WELDERS SHALL BE QUALIFIED IN COMPLIANCE WITH STANDARD WELDING PROCEDURE QUALIFICATION TEST AND WELDER QUALIFICATION TEST FOR PIPE WELDING.

2.2.3 BUTT-WELDING ENDS SHALL BE PREPARED FOR WELDING ACCORDING TO THE APPLICABLE ASTM B31 CODE. BUTT WELDS MADE IN THE EFFECTIVE STRAIGHT RUN OF PIPE, BOTH UP AND DOWNSTREAM OF ANY MEASURING DEVICE SHALL BE GROUND FLUSH WITH THE INSIDE PIPE DIAMETER. THE GROUND JOINTS SHALL BE INSPECTED AND APPROVED BY A FIELD REPRESENTIVE PRIOR TO FURTHER FABRICATION OR INSTALLATION.

2.2.4 ALL PIPE ENDS SHALL BE SQUARE AND SMOOTH PRIOR TO WELDING. ALL CHAMFERING SHALL BE DONE BY MACHINING, GRINDING OR FLAME CUTTING.

2.2.5 WELDING SHALL NOT BE USED TO JOIN DISSIMILAR METALS. ALL SUCH JOINTS SHALL BE FLANGED OR THREADED ACCORDING TO THE PIPING MATERIAL SPECIFICATION. DIELECTRIC FITTINGS OR FLANGES SHALL BE UTILIZED.

2.2.6 TACK WELDS SHALL BE MADE BY QUALIFIED WELDERS. TACK WELDS WHICH ARE NOT REMOVED, WILL BE MADE WITH AN ELECTRODE WHICH IS THE SAME AS THE ELECTRODE TO BE USED FOR THE FIRST PASS. TACK WELDS WHICH HAVE CRACKED WILL BE REMOVED.

2.2.7 ALL COMPONENTS (PIPES, FITTINGS, FLANGES AND VALVES) SHALL BE FITTED UP AND RESTRAINED TO ENSURE THAT THE ROOT GAP IS MAINTAINED AT A CLEARANCE OF MINIMUM OF 1/16" AND MAXIMUM OF 1/8" FOR STEEL BUTT WELDING ENDS.

2.2.8 WELDED CONNECTIONS SHALL BE MADE WITH FULL PENETRATION WELDS. BRANCH PIPE REINFORCEMENT WELDING JOINTS SHALL HAVE A MINIMUM THROAT FILLET WELD EQUAL TO THE THICKNESS OF THE THINNER MATERIALS BEING JOINED.

2.2.9 ALIGNMENT: THE INSIDE DIAMETER OF PIPING COMPONENTS TO BE JOINED SHALL BE ALIGNED AS ACCURATELY AS IS PRACTICABLE WITHIN EXISTING TOLERANCES OF DIAMETERS, WALL THICKNESS, AND OUT OF ROUNDNESS. ALIGNMENT SHALL BE PRESERVED DURING WELDING. WHERE ENDS ARE JOINED AND THE INTERNAL MISALIGNMENT EXCEEDS 1/16", IT IS PREFERRED THAT THE COMPONENT WITH THE WALL EXTENDING INTERNAL BE INTERNALLY TRIMMED SO THAT ADJOINING INTERNAL SURFACES ARE APPROXIMATELY FLUSHED. HOWEVER TRIMMING SHALL NOT RESULT IN PIPING COMPONENT WALL THICKNESS LESS THAN MINIMUM DESIGN THICKNESS AND THE CHANGE IN CONTOUR SHALL NOT EXCEED 30°.

2.2.10 NO WELDING SHALL BE DONE IF THERE IS IMPINGEMENT OF ANY RAIN, OR HIGH WINDS ON THE WELD AREAS EXCEPT WHEN SUITABLE PROTECTION OR EFFECTIVE SHIELD AGAINST THE RAIN OR WIND IS PROVIDED.

2.2.11 SPECIAL PRECAUTIONS SHALL BE TAKEN AT ALL TIMES DURING FABRICATION AND ERECTION TO PREVENT ENTRANCE OF ANY FOREIGN MATTER INTO PIPING OR EQUIPMENT. LOOSE RUST, SLAG, WELD SPATTER, DIRT, OIL, GREASE AND OTHER FOREIGN SUBSTANCES SHALL BE REMOVED FROM INTERIOR SURFACES OF PIPING PRIOR TO CONNECTING PIPING TO EQUIPMENT. PRIOR TO FABRICATION IN SHOP OR FIELD, ALL SURFACES FOR WELDING SHALL BE CLEANED TO BRIGHT METAL AND FREE OF PAINT, OIL, RUST OR OTHER FOREIGN MATTER FOR A DISTANCE OF AT LEAST 2 TIMES THE NOMINAL DIAMETER FROM THE JOINT. AFTER FABRICATION OPEN ENDS OF PIPE LINES SHALL BE CAPPED OR PLUGGED TO KEEP OUT DIRT AND OTHER MATERIALS UNTIL PIPE LINES ARE CONNECTED TO EQUIPMENT.

2.2.12 COMPLETED PIPING SHALL BE CLEANED WITH AIR, STEAM AND WATER FLUSHED TO SATISFACTION OF OWNER, ENGINEER, AND THIRD PARTY REPRESENTATIVE BEFORE FINAL CONNECTION TO EQUIPMENT. AFTER COMPLETION OF ANY TESTING WHERE NON-POTABLE SOLUTIONS ARE USED, ALL PARTS OF INSTALLATIONS SHALL BE THOROUGHLY CLEANED.

2.2.13 PROTECT ROOF MEMBRANE WHEN WELDING ON THE ROOF. DAMAGE TO THE ROOF MEMEBRANE WILL BE REPAIRED BY THE ROOFING CONTRACTOR AT THIS CONTRACTORS EXPENSE.

2.3.1 FLANGED JOINTS SHALL BE ARRANGED SO THAT IT IS NOT NECESSARY TO UNDULY STRAIN THE ASSOCIATED PIPE OR EQUIPMENT TO DISMANTLE THE JOINT.

2.3.2 ALL FLANGE JOINTS SHALL BE MADE PERFECTLY SQUARE AND TIGHT WITH THE BOLT HOLES ALIGNED SO THAT THERE IS NO BOLT BINDING. FLANGES SHALL NOT BE ALIGNED BY FORCING OR SPRINGING.

2.3.3 FLANGE BOLTING ARRANGEMENTS SHALL BE MADE SO THAT THE BOLTS HOLES STRADDLE THE CENTERLINE OF THE PIPE.

2.3.4 ALL BOLT HOLES SHALL BE FITTED WITH LOCKING WASHERS AND SHALL SHOW A MINIMUM OF TWO COMPLETE THREADS BEYOND THE NUT AFTER TIGHTENING.

2.3.5 DURING ASSEMBLY, ALL BOLTS SHALL BE COATED WITH AN APPROVED ANTI-SEIZE COMPOUND AND FITTED WITH SPRING WASHERS OR A SIMILAR LOCKING DEVICE.

2.3.6 AFTER ASSEMBLY, ALL FLANGED JOINTS SHALL BE DEGREASED AND RE-PAINTED WITH PRIMER.

2.4 THREADED JOINTS

2.4.1 THE PIPE ASSEMBLY SHALL BE ARRANGED SO THAT:

ALL JOINTS MAY BE DISMANTLED FOR MAINTENANCE WITHOUT FORCING OR SPRINGING THE PIPING.

THERE IS ADEQUATE SPACE AROUND THE JOINT TO USE APPROPRIATE TOOLS TO ENSURE THAT THE JOINT IS PROPERLY MADE.

2.4.2 THE THREAD SHALL BE MADE WITH UNIFORM TAPERED THREADS PROPERLY CUT WITH SHARP, CLEAN DIES.

BEFORE ASSEMBLY:

THE CUT THREAD SHALL BE DEGREASED TO REMOVE CUTTING LUBRICANT.
THE INSIDE OF THE PIPE SHALL BE THOROUGHLY CLEANED OF ALL BURRS OR FOREIGN MATERIAL.

2.4.3 DURING ASSEMBLY, THE JOINT SHALL BE MADE PERFECTLY TIGHT WITH AN APPROVED FOOD GRADE SEALANT. UNION TYPE COUPLINGS SHALL BE COATED WITH AN APPROVED TYPE OF ANTI-SEIZE COMPOUND. TEFLON TAPE OR ANY DERIVATIVE IS NOT ACCEPTABLE.

2.4.4 AFTER ASSEMBLY, ALL THREADED JOINTS SHALL BE DEGREASED AND RE-PAINTED WITH PRIMER IN ACCORDANCE WITH THE SPECIFICATION FOR PIPING AND EQUIPMENT PAINTING.

3.0 EXECUTION

3.1 PREPARATION

3.1.1 CONTRACTOR SHALL CAREFULLY CHECK AND BECOME FAMILIAR WITH THE ARCHITECTURAL, STRUCTURAL, ELECTRICAL AND MECHANICAL DRAWINGS AND DETAILS AND MAKE NOTE OF ALL LOCATIONS WHERE WALLS, PARTITIONS, CEILINGS, STRUCTURAL MEMBERS, ETC. ARE CALLED FOR TO BE FURRED OR CLOSED IN.

3.1.2 MODIFICATIONS TO THE ARRANGEMENT OF PIPING SYSTEMS MAY BE REQUIRED TO SUIT STRUCTURAL CONDITIONS OR TO AVOID INTERFERENCE WITH THE WORK OF OTHER TRADES. CONTRACTOR SHALL FURNISH ALL OFFSETS, ADDITIONAL DETAIL FITTINGS, ETC., AS REQUIRED TO MEET THE INSTALLATION CONDITIONS WHETHER DETAILED ON THE PLANS OR NOT.

3.1.3. ANY QUESTIONABLE INFORMATION IN THE SPECIFICATIONS AND DRAWINGS, SHALL BE CALLED TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE FOR CLARIFICATION BEFORE PROCEEDING WITH FABRICATION OR ERECTION OF THE PARTS AFFECTED. IF, IN THE OPINION OF THE CONTRACTOR, ANY ADDITIONAL DETAIL DRAWINGS ARE NECESSARY, THE CONTRACTOR SHALL PREPARE THEM AT HIS OWN EXPENSE, TOGETHER WITH A BILL OF MATERIALS.

3.2 INSTALLATION

3.2.1 WHENEVER PRACTICABLE, PIPING SHALL BE GROUPED AND RUN OVERHEAD. SPECIFIC ELEVATIONS SHALL BE ESTABLISHED FOR ALL PIPING RUNNING IN ANY ONE DIRECTION AND AT ANOTHER SPECIFIC ELEVATION FOR PIPING RUNNING AT RIGHT ANGLES TO PROVIDE FOR BRANCH CONNECTIONS AND CROSSING OF LINES.

3.2.2 PIPING AT PUMP NOZZLES SHALL BE ARRANGED TO PERMIT REMOVAL OF PUMP OR DRIVE WITHOUT REMOVING BLOCK VALVES.

3.2.3 PERMANENT STRAINERS SHALL BE PROVIDED AS INDICATED ON PIPING AND INSTRUMENT DIAGRAMS.

3.2.4 ALL PIPING SHALL BE ARRANGED AND ALIGNED IN ACCORDANCE WITH THE DRAWINGS. REFERENCE ELEVATIONS GIVEN WAS BASED ON PLANT BENCHMARK ELEVATION. DIMENSIONS WHERE NOTED MUST BE HELD AS CLOSELY AS POSSIBLE. ALL DIMENSIONS ARE TO BE FIELD CHECKED FOR ACCURACY BEFORE PIPE IS FABRICATED. DO NOT SCALE DRAWINGS.

3.2.5 RUN PIPING IN WALL CHASES, PIPE SHAFT, CEILINGS, RECESSES, ETC., WHERE PROVIDED.

3.2.6 DO NOT MITER PIPES TO FORM ELBOWS, NOTCHING STRAIGHT PIPE RUNS TO FORM FULL FIXED TEES OR ANY SIMILAR CONSTRUCTION METHOD.

3.2.7 BENDING OF PIPE TO FORM ELBOWS IS NOT BE PERMITTED. BENDING OF TUBING MAY BE PERMITTED PROVIDED IT HAS BEEN REVIEWED AND APPROVED BY OWNER'S ENGINEER AND:

THE BEND RADIUS IS AT LEAST 5 TIMES THE PIPE DIAMETER.

THE BEND IS FREE OF ANY FLATTENING, WRINKLING, THINNING OR DIAMETER REDUCTION.

THE ELBOWS ARE STRESS RELIEVED AFTER BENDING BY AN APPROVED HEAT TREATMENT METHOD.

3.2.8 DRAWINGS IN GENERAL ARE TO SCALE. IN ORDER TO CLARIFY THE WORK, HOWEVER, SOME OF THE PIPING MAY BE SHOWN ON THE DRAWINGS NOT TO SCALE, THE CONTRACTOR SHALL USE DIMENSIONS AND GRADES, WHERE GIVEN. ALL DIMENSIONS, SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR BEFORE FINAL CONNECTIONS ARE FABRICATED. REPORT ANY CONFLICTS TO THE ENGINEER. DO NOT SCALE DRAWINGS.

3.2.9 DRAWINGS FOR SMALL BORE PIPING ARE IN GENERAL DIAGRAMMATIC AND THE EXACT LOCATION OF THESE LINES SHALL BE DETERMINED BY THE CONTRACTOR FROM FIELD MEASUREMENTS TAKEN BY HIM. THE ACTUAL ARRANGEMENT OF THE SMALL SIZE PIPING, WHEN ERECTED, SHALL FOLLOW THE GENERAL LOCATIONS SHOWN ON THE DRAWINGS AS FAR AS PRACTICABLE. THE INSTALLATION MADE IN THIS WAY SHALL BE NEAT IN APPEARANCE AND CONVENIENT TO OPERATE, AND SHALL PROVIDE FOR PROPER EXPANSION AND DRAINAGE.

3.2.10 INSTALLATION OF PIPING SYSTEMS SHALL BE COORDINATED WITH THE OTHER WORKED / OR WITH EXISTING FACILITIES, TO AVOID BLOCKING BUILDING OPENINGS, LIGHT FIXTURES, ETC. PIPING SHALL NOT INTERFERE WITH ACCESS TO VALVES OR EQUIPMENT AND SHALL NOT OBSTRUCT PASSAGEWAYS.

3.2.11 LINES SHALL NOT BE EXTENDED BY MEANS OF DEAD END BRANCH FOR THE PURPOSE OF PROVIDING SUPPORT.

3.2.12 ALL PIPES SHALL BE CUT TO EXACT MEASUREMENT TO BE INSTALLED WITHOUT FORCING, (EXCEPT WHERE COLD SPRINGING IS SPECIFICALLY CALLED FOR). AFTER CUTTING, ENDS SHALL BE REAMED AND CLEANED TO ELIMINATE FOREIGN MATTER.

3.2.13 CUTTING OR OTHER WEAKENING OF THE BUILDING STRUCTURE TO FACILITATE PIPING INSTALLATION WILL NOT BE PERMITTED.

3.2.14 ALL PIPE PENETRATIONS THROUGH WALLS SHALL BE THROUGH A SLEEVE WHICH IS WHICH IS SEALED AND DOES NOT RESTRAIN PIPE MOVEMENT. ALL PENETRATIONS THROUGH EXTERNAL WALLS OF THE BUILDINGS SHALL BE FINISHED IN AN APPROVED MANNER.

PIPE PENETRATIONS SHALL NOT BE USED FOR SUPPORT OR RESTRAINT UNLESS THE WALL HAS BEEN SPECIFICALLY DESIGNED TO ACCEPT THE ADDITIONAL LOADS. WHERE INSULATED PIPE PASSES THROUGH THE WALLS, THE PIPE PENETRATION SHALL ENSURE CONTINUITY OF THE INSULATION AND VAPOR BARRIER.

PIPES PASSING THROUGH FIRE RATED WALLS MUST BE FIRE STOPPED IN AN APPROVED MANNER TO MAINTAIN THE INTEGRITY OF THE FIRE RATING.

3.2.15 PIPING COMPONENTS (VALVES, FITTINGS OR JOINTS) SHALL NOT BE PLACED WITHIN 12" OF ANY WALL, FLOOR CEILING PENETRATION. SUCH FITTINGS SHALL NOT BE CONCEALED WITHIN ANY WALL, FLOOR OR CEILING.

3.2.16 CLOSE NIPPLES SHALL NOT BE PERMITTED; NIPPLES WITH A SHOULDER LENGTH OF LESS THAN 1-1/2" MUST BE OF SAME SCHEDULE AS CONNECTED PIPE.

3.2.17 UNLESS OTHERWISE SHOWN ON THE DRAWINGS, INSTALL ALL SUPPLY PIPING TO COILS, PUMPS AND OTHER EQUIPMENT INCLUDING VALVES AND STRAINERS THEREIN, AT LINE SIZE. IF A REDUCTION IS REQUIRED AT A PUMP OR CONTROL VALVE, THE REDUCER SHALL BE INSTALLED ABUTTING THE INLET AND OR OUTLET OF THE PUMP VALVE.

3.2.18 USE ECCENTRIC REDUCING FITTINGS OR ECCENTRIC REDUCING COUPLINGS TO PREVENT POCKETING OF LIQUID OR NON-CONDENSABLES.

3.2.19 REDUCTIONS IN LINE SIZE SHALL BE MADE WITH BUTT-WELDING REDUCERS, SWAGE NIPPLES, SCREWED OR SOCKET WELD REDUCERS. DO NOT USE BUSHINGS.

3.2.20 ALL PIPE SYSTEMS SHALL BE DESIGNED FOR EXPANSION AND / OR CONTRACTION UNDER START UP, OPERATING, SHUT-DOWN, AND STEAM-OUT CONDITIONS, WITHOUT OVER-STRESSING PIPING, VALVES OR EQUIPMENT.

3.2.21 PIPE ANCHORS, GUIDES, HANGERS AND SUPPORTS SHALL BE PROVIDED AS REQUIRED AND IN ACCORDANCE WITH PIPING DRAWINGS AND PIPE SUPPORT DETAILS.

3.2.22 SANITARY PIPING AT EQUIPMENT SHALL BE ARRANGED TO FACILITATE COMPLETE AND EASY REMOVAL OF EQUIPMENT. WHERE NECESSARY, REMOVAL OF PIECES WITH UNION OF FLANGE TYPE ENDS SHALL BE INSTALLED AT EQUIPMENT NOZZLES.

3.2.23 SYSTEM COMPONENTS WHICH REQUIRE OBSERVATION OPERATION OR MAINTENANCE SUCH AS VALVES, TRAPS, GAUGES, CONTROLS, STRAINERS, DIRT POCKETS, CLEANOUTS, UNIONS AND FLANGES, ETC. SHALL BE LOCATED SO AS TO BE READILY ACCESSIBLE.

3.2.24 INSTALL ALL VALVES WITH STEMS IN EITHER AN UPRIGHT (PREFERRED) OR HORIZONTAL POSITION. CONTROL VALVES SHALL BE INSTALLED WITH TOP WORKS UPWARD (UNLESS SPECIFICALLY SHOWN OTHERWISE.

3.2.25 CHECK VALVES SHALL BE INSTALLED HORIZONTALLY, OR IN A VERTICAL LINE WITH UPWARD FLOW ONLY.

3.2.26 ALL PIPING VALVES SHALL BE FREE DRAINING IN THEIR INSTALLED POSITION.

3.2.27 CLEANING THE USE OF COMPANION FLANGES IN PIPING SHALL BE LIMITED TO CONNECTIONS AT FLANGED EQUIPMENT AND DISSIMILAR METALS. FIELD JOINTS MAY BE FLANGED WHERE EXPEDIENT AND ECONOMICAL TO AVOID FIELD WELDING OF JOINT REQUIRING HEAT TREATMENT AND EXAMINATION.

3.2.28 THE LOCATION OF FLANGED JOINTS ARE SHOWN ON PIPING DRAWINGS, STRADDLE THE CENTER LINES OF PIPE UNLESS OTHERWISE SHOWN AND NOTED. EACH PIPING MATERIAL SPECIFICATION DESCRIBES THE TYPE OF FLANGES TO BE USED TOGETHER WITH THE MATERIAL FACING ETC.

3.2.29 VENTS AND DRAINS SHALL BE PROVIDED FOR PIPING AND EQUIPMENT AS INDICATED ON PIPING AND INSTRUMENTATION DIAGRAMS AND AS REQUIRED FOR THE PURPOSE OF FILLING AND DRAINING SYSTEMS FOR TESTING, START-UP, SHUT-DOWN AND IN BY-PASS PIPING. VENTS AND DRAINS SHALL BE PROVIDED IN ADDITION TO THOSE SHOWN ON PIPING AND INSTRUMENTATION DIAGRAMS WHEN THE PHYSICAL ARRANGEMENT OF PIPING RESULTS IN HIGH AND LOW POINTS THAT CANNOT BE VENTED OR DRAINED THROUGH CONNECTION SHOWN.

3.2.30 ALL DRAINS EMPTYING INTO OPEN OUTLET SHALL BE PROVIDED.

3.2.31 PUMP CASING VENTS AND DRAINS SHALL BE PROVIDED.

3.2.32 COMPRESSIBLE FLUID CONNECTIONS SHALL BE MADE EITHER ON TOP OR SIDE OF MAIN LINE, NEVER OFF THE BOTTOM.

3.2.33 VENT, DRAIN AND SAMPLE CONNECTIONS ON PIPING SHALL BE 3/4" UNLESS OTHERWISE NOTED ON PIPING AND INSTRUMENT DIAGRAMS.

3.2.34 VENTS AND DRAINS ON ALL LINES WITH SOCKET WELD VALVES TO HAVE PIPE NIPPLE WITH ONE END PLAIN AND ONE END THREADED WITH CAP.

3.2.35 INSTRUMENT CONNECTIONS ON PIPING AND EQUIPMENT SUCH AS LOCAL MOUNTED PRESSURE AND TEMPERATURE INSTRUMENTS, GAGE GLASS AND LEVEL CONTROLS, SHALL BE ACCESSIBLE FROM GRADE, PLATFORMS OR LADDERS.

3.2.36 SEAL WELDING IS NOT PREMITTED ON SCREWED THERMOMETERS AND THERMOCOUPLES.

3.2.37 PLATFORMS SHOULD BE PROVIDED FOR ACCESS WHEN THE LOWER CONNECTIONS OF THE GAGES AND LEVEL CONTROL ON THE PROCESS TANK OR VESSEL ARE 10'-0" AND MORE ABOVE FINISHED SURFACE.

3.2.38 ALL CONTROL VALVES SHALL BE ACCESSIBLE FROM GRADE OR PERMANENT PLATFORMS AND CONVENIENTLY LOCATED FOR OPERATION.

3.2.39 RELIEF VALVES SHALL BE IN AN UPRIGHT VERTICAL POSITION. WHEN DISCHARGING TO ATMOSPHERE, PROVIDE A 3/4" DIAMETER HOLE AT LOW POINT AND CHAMFER OUTLET PIPE END AT 30 DEGREE ANGLE.

3.2.40 PRESSURE RELIEF VALVE DISCHARGING LINES, VENTING NON TOXIC, NON FLAMMABLE GASES OR MEDIA BELOW 140°F TO ATMOSPHERE, SHALL TERMINATE A MINIMUM OF 10' ABOVE ANY SERVICE PLATFORM WITHIN A RADIUS OF 40' OF THE OUTLET. FOR TOXIC AND FLAMMABLE GASES THE CONTRACTOR SHALL SUBMIT A PROPOSED ARRANGEMENT FOR APPROVAL WITH THE OWNER.

3.2.41 INSTRUMENTS (I.E. PRESSURE GAUGES, THERMOMETERS, ETC.) WHERE SHOWN ON THE DRAWINGS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS. EXACT LOCATIONS SHALL CONSIDER VISIBILITY AND ANY SPECIAL INSTALLATION REQUIREMENTS, AND SHALL BE AS APPROVED BY OWNER'S REPRESENTATIVES. ANY RELOCATION REQUIRED BECAUSE CONTRACTOR FAILED TO OBTAIN APPROVAL SHALL BE DONE AT CONTRACTOR'S EXPENSE.

3.2.42 DRIP LEGS WITH STEAM TRAPS ARE TO BE PROVIDED UPSTREAM OF ALL PRESSURE REDUCING STATIONS, OR TEMPERATURE CONTROL STATIONS, AT LOW POINT OF PIPING SYSTEM AND AT THE END OF HEADERS AND MAINS.

3.2.43 INSULATION FOR ALL PIPING AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE INSULATION SPECIFICATION. NO LOOSE FIBER, WRAP TYPE, OR FIBERGLASS INSULATION SHALL BE PERMITTED ON SITE.

4.0 PIPE SUPPORTS

4.1.1 WELDING

WELDING OF PIPE SUPPORTS WHICH ARE WELDED TO THE PIPE DIRECTLY SHALL CONFORM TO THE SAME REQUIREMENTS AS FOR THE PIPE CONNECTION. ALL WELDING SHALL CONFORM TO THE STANDARD OF LATEST EDITION OF AWS.

4.1.2 FABRICATION

ALL SUPPORTS, INCLUDING ANCHOR BOLTS, SHALL BE FABRICATED TO THE DIMENSIONS AND MATERIALS CONFORMING TO PIPE SUPPORT DETAIL DRAWINGS UNLESS SPECIFIED OTHERWISE ON THE PIPING DRAWINGS. EACH SUPPORT SHALL BE FABRICATED AND ASSEMBLED SO THAT IT CANNOT BE DISENGAGED BY MOVEMENT OF THE SUPPORTED PIPING.

4.1.3 ERECTION

PIPE SUPPORTS SHALL BE PROPERLY LEVELED AND PLUMBED AS INDICATED ON PIPING DRAWINGS AND PIPE SUPPORT DETAIL SHEETS. SHIMS AND WEDGES MAY BE EMPLOYED FOR LEVELING AND ALIGNMENT OF THE SUPPORTS ON THE GRADE. RIGID TEMPORARY FRAMES OR OTHER SUITABLE DEVICES MAY BE USED SUPPORTING PIPING BEFORE INSTALLATION OF PIPE SUPPORTS. SUCH FRAMES SHALL BE RIGID SO AS NOT TO MISALIGN THE PIPING SYSTEM.

4.1.4 SUPPORTS PERMITTING PIPE MOVEMENT

SUPPORTS PERMITTING PIPE MOVEMENT SHALL BE ASSEMBLED TO ALLOW THE NECESSARY MOVEMENT OF PIPE AS CAUSED BY THERMAL EXPANSION AND CONTRACTION IN ACCORDANCE WITH THE PIPING DRAWING. REFER TO SPECIFICATIONS AND DETAILS ON DRAWINGS.

4.1.5 BRACING

THE FIRST NIPPLE AND VALVE OF SMALL CONNECTIONS INCLUDING INSTRUMENT CONNECTIONS TO PIPING, VESSEL OR EQUIPMENT SHALL BE BRACED TO PREVENT DAMAGE / BREAKAGE.

NOTE: FOR 2" AND SMALLER PIPING, ADDITIONAL PIPE SUPPORTS MAY BE REQUIRED TO IMPROVE THE STABILITY OF THE PIPING AFTER APPROVAL OF OWNER'S ENGINEER OR TO COMPLY WITH SUPPORT DETAILS REQUIRED BY THESE DOCUMENTS OR BY CODE.

5.0 QUALITY CONTROL FOR WELDING

5.1 INSPECTION AND MAINTENANCE OF WELDING MACHINE

WELDING MACHINES SHALL BE PERIODICALLY INSPECTED AT LEAST ONCE A MONTH.

THIS INSPECTION AND MAINTENANCE SHALL BE DONE MAINLY TO CHECK ELECTRICAL INSULATION, INTERNAL TROUBLES OF THE MACHINES, LUBRICATION, AND ADJUSTMENT OF ELECTRIC CURRENT FOR THE MACHINES.

ALL WELDING MACHINES SHALL BE NUMBERED FOR QUANTITY AND QUALITY CONTROL PURPOSE AND SHALL BE PERIODICALLY RECORDED ON A LIST SHOWING THE LOCATIONS AND CONDITIONS OF THE WELDING MACHINES BEING USED.

5.1.2 INSTALLATION

LOCATION OF WELDING MACHINES AND SWITCHBOARDS SHALL BE DECIDED IN CONSULTATION WITH OWNER TO PREVENT DISTURBING OTHER WORK AND TO PREVENT OVERLOADING OF THE SWITCH BOARDS, CABLES AND ELECTRICAL POWER SOURCES.

5.1.3 ELECTRICAL CABLES, SWITCH AND CONNECTIONS FOR WELDING MACHINES SHALL BE CAREFULLY CHECKED AND REPAIRED AT LEAST ONCE A MONTH AND BEFORE OPERATING THE WELDING MACHINES.

5.1.4 PORTABLE POWER CABLES USED WITH WELDING MACHINES SHALL BE CAREFULLY EXAMINED EVERY DAY AND REPAIRED AS NECESSARY.

5.2.1 QUALIFICATION OF WELDERS

ALL WELDING ON PIPING SHALL BE CARRIED OUT BY SUITABLY QUALIFIED WELDERS, WITH RECENT SIMILAR EXPERIENCE, WHO (MUST DOCUMENT AND COPY BE ON FILE WITH CONSTRUCTION MANAGER) HAVE PASSED AN APPROVED QUALIFICATION TEST WITHIN ONE MONTH OF COMMENCING WORK.

THE REQUIRED QUALIFICATION TESTS SHALL:

BE CARRIED OUT WITH THE MOST CRITICAL MATERIALS TO BE USED IN THE SYSTEM. TESTS ON MORE THAN ONE MATERIAL MAY BE NECESSARY.

USE WELDING METHOD APPROPRIATE FOR THE INSTALLATION.

TAKE INTO ACCOUNT WELDING POSITION IN DIFFICULT LOCATIONS.

BE APPROVED AND WITNESSED BY OWNER OR THIRD PARTY REPRESENTATIVE.

OWNER RESERVES THE RIGHT TO REJECT ANY WELDER, WHO IN THE OPINION OF OWNER OR THIRD PARTY REPRESENTATIVE, DOES NOT HAVE SUITABLE QUALIFICATIONS, EXPERIENCE OR COMPETENCE FOR THE REQUIRED WORK.

SEE SECTION 2.2.1 FOR RECOMMENDED TESTING PROCEDURE.

5.2.2 WELDER CERTIFICATES

CERTIFICATES SHALL BE GIVEN BY INSPECTION ENGINEER TO WELDERS WHO HAVE PASSED THE QUALIFICATIONS TEST. ALL WELDERS SHOULD KEEP THESE CERTIFICATES WITH THEM DURING THE WELDING WORK, SO THAT UPON REQUEST THEY CAN BE SHOWN.

5.2.3 IDENTIFICATION OF WELD

AN IDENTIFICATION NUMBER SHALL BE GIVEN TO EACH WELDER. EACH WELD SHALL BE IDENTIFIED BY THE WELDER'S IDENTIFICATION NUMBER. THIS SHALL BE MARKED ON THE WELDED SEAM OR ADJACENT PLACE, UNLESS OTHERWISE ELSEWHERE, SO THAT IN THE EVENT OF FAILURE OF THE WELD TO PASS INSPECTION, THE WELD MAY BE TRACED TO THE WELDER.

6.0 TESTING

6.0.1 THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ARRANGING AND EXECUTING ALL TESTING IN ACCORDANCE WITH SECTION AND INTERPRETATION OF RESULTS, INCLUDING ALL COSTS AND ENSURING THAT THE APPROPRIATE INSPECTORS ARE PRESENT TO WITNESS THE TESTS.

AT LEAST TWO (2) WORKING DAYS NOTICE IN WRITING SHALL BE GIVEN TO OWNER OR THIRD PARTY REPRESENTATIVE OF ANY TEST TO BE DONE ON ANY PART OF THE PIPING SYSTEM.

WHERE SUCH NOTICE IS NOT GIVEN, OWNER SHALL HAVE THE RIGHT TO REQUEST THAT THE TESTS BE REPEATED AND RE-TESTING SHALL BE AT THE CONTRACTOR'S EXPENSE.

WHILE THE INTERPRETATION OF THE TEST RESULTS IS THE CONTRACTORS' RESPONSIBILITY, OWNER RESERVES THE RIGHT TO HAVE THE RESULTS INTERPRETED BY A THIRD PARTY AT THE CONTRACTORS EXPENSE.

THE CONTRACTOR SHALL PROVIDE AT NO COST, ALL FILMS AND OTHER INFORMATION TAKEN DURING SUCH TEST.

WHERE THERE IS A CONFLICT IN THE INTERPRETATION, OWNER SHALL HAVE THE OPTION TO ACCEPT EITHER INTERPRETATION OR REQUEST A RE-TEST.

6.1 WELD INSPECTION

6.1.1 WELDS ARE TO BE INSPECTED IN ACCORDANCE WITH THE EXAMINATION AND ACCEPTANCE CRITERIA OF ASME B31-3 AND B31-9.

6.1.2 LINE CHECKS BEFORE PRESSURE TEST

AFTER COMPLETION OF THE FABRICATION AND INSTALLATION WORK AND PRIOR TO PRESSURE TEST, LINE CHECK SHALL BE CARRIED OUT FOR ALL WORK TO ASSURE THAT WORK HAS BEEN PERFORMED PROPERLY AND THAT QUALITY OF WORK IS ACCEPTABLE.

CHECK POINTS:

THIS SHALL INCLUDE THE FOLLOWING CONFIRMATION OF OVERALL AND INDIVIDUAL WORKMANSHIP; IT SHALL INCLUDE, BUT NOT BE LIMITED TO, THESE ITEMS:

LINES AND COMPONENTS

PIPING LAYOUT / INSTALLATION IS IN ACCORDANCE WITH THE APPLICABLE DRAWING INCLUDING P & ID.

SIZE, DIMENSIONS, RATINGS, AND MATERIAL SPECIFICATIONS ARE IN ACCORDANCE WITH THE APPLICABLE DRAWINGS AND SPECIFICATIONS.

ELBOWS, TEES, REDUCERS AND OTHER FITTINGS ARE IN ACCORDANCE WITH THE APPLICABLE DRAWINGS.

DRAINS, VENTS, THERMAL EXPANSION REQUIREMENTS, HEADERS AND OTHER COMPONENTS ARE IN ACCORDANCE WITH APPLICABLE DRAWINGS.

7.0 PRESSURE TEST

7.1 GENERAL

7.1.1 PRESSURE TESTS SHALL BE PERFORMED IN THE PRESENCE OF OWNER OR THIRD PARTY REPRESENTATIVE

7.1.2 TEST MEDIA SHALL BE WATER EXCEPT THAT PLANT AIR, MAY BE USED IF APPROVED BY OWNER OR THIRD PARTY REPRESENTATIVE.

7.1.3 NO INSULATION SHOULD BE INSTALLED BEFORE TESTING. IF INSULATION IS APPLIED BEFORE TESTING, ALL WELDS AND SCREWED CONNECTIONS SHALL BE LEFT EXPOSED UNTIL TESTING IS COMPLETED.

7.2 EXTENT OF TEST PRESSURE

7.2.1 PIPING SYSTEM SHALL BE FULLY PRESSURE TESTED NOT ONLY FOR FIELD FABRICATED PIPING BUT ALSO FOR SHOP FABRICATED PIPING.

7.2.2 THE FOLLOWING PIPING COMPONENTS SHOULD NOT BE INCLUDED IN THE PRESSURE TEST AND SHOULD BE ISOLATED BY VALVES OR OTHER SUITABLE MEANS.

PUMPS, TURBINES AND COMPRESSORS, ASSOCIATED LUBE AND SEAL OIL SYSTEMS WHICH COULD BE IMPAIRED BY THE PRESENCE OF WATER, CONTROL VALVES, SAFETY VALVES, FLAME ARRESTERS, RUPTURE DISCS AND FILTER ELEMENTS, PRESSURE GAGES, FLOW METERS AND OTHER INSTRUMENTS AS SPECIFIED BY THE OWNER OR THIRD PARTY INSPECTOR. EXPANSION JOINTS, STEAM TRAPS. ANY OTHER EQUIPMENT DESIGNATED BY THE OWNER OR THIRD PARTY INSPECTOR.

7.2.3 LINES AND SYSTEMS WHICH ARE OPEN TO THE ATMOSPHERE, SUCH AS DRAINS, VENTS, OPEN SAFETY VALVE DISCHARGES, AND ATMOSPHERIC SEWERS, DO NOT REQUIRE PRESSURE TESTING. OTHER THAN THOSE REQUIRED BY MECHANICAL BLDG. CODE AND STATE REQUIREMENTS.

7.2.4 INSTRUMENT TAKE-OFF PIPING SHALL BE TESTED UP TO THE FIRST BLOCK VALVE WITH THE PIPING OR EQUIPMENT TO WHICH IT IS CONNECTED, EXCEPT FOR PIPING FOR PRESSURE GAUGES WHICH SHALL BE TESTED UP TO THE PIPE COUPLINGS TO BE PLUGGED BEFORE THE PRESSURE GAUGES ARE INSTALLED.

7.2.5 PIPING SHALL BE ISOLATED BY VALVES OR TEST BLINDS AT THE POINT OF JUNCTION OF TWO DESIGN CONDITIONS, WHICH HAVE DIFFERENT TEST PRESSURES.

7.3 TEST PRESSURES

SPECIFIC TESTING REQUIREMENTS AND PROCEDURES ON PIPING AND EQUIPMENT MUST BE REVIEWED AND APPROVED BY OWNER'S ENGINEER PRIOR TO START OF TESTING. IN GENERAL THE TESTS WILL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE ASME B-31 CODE.

7.3.1 HYDROSTATIC TEST

7.3.1.1 THE HYDROSTATICALLY TEST PRESSURE TO BE USED FOR EACH LINE SHALL BE NOT LESS THEN 1.5 TIMES THE DESIGN PRESSURE, UNLESS THE TEST PRESSURE OF THE WEAKEST ELEMENT IN THE SYSTEM BEING TESTED IS LOWER THAN THAT. TEST PRESSURE SHALL NORMALLY BE MAINTAINED FOR A 4 TO 8 HOUR PERIOD; MINIMUM TIME ALLOWABLE IS 1 HOUR.

7.3.2 PNEUMATIC TEST

PNEUMATIC TESTING MAY BE USED ONLY WHEN ONE OF THE FOLLOWING CONDITION EXISTS AND WHEN APPROVED BY THE OWNER:

WHEN PIPING SYSTEMS ARE SO DESIGNED THAT THEY CANNOT BE FILLED WITH WATER. BY CASE APPROVAL ONLY.

WHEN PIPING SYSTEMS ARE TO BE USED IN SERVICES WHERE TRACES OF THE TESTING MEDIUM CANNOT BE TOLERATED, WITH APPROVAL ONLY ON CASE BASIS.

THE GAS USED AS THE TEST MEDIUM SHALL BE NON FLAMMABLE AND NON TOXIC. SINCE GAS MAY BE HAZARDOUS WHEN USED AS A TESTING MEDIUM, IT IS RECOMMENDED THAT SPECIAL PRECAUTIONS FOR PROTECTION OF PERSONNEL BE OBSERVED WHEN A GAS UNDER PRESSURE IS USED AS THE TEST MEDIUM. FOLLOW THE SAFETY RECOMMENDATIONS OF ASME B31 FOR PNEUMATIC TESTING

7.3.2.1 THE PNEUMATIC TEST PRESSURE SHALL BE NOT LESS THAN 1.1 NOR MORE THAN 1.5 TIMES THE DESIGNED PRESSURE OF THE PIPING SYSTEM. THE TEST PROCEDURE SHALL NOT EXCEED THE MAXIMUM ALLOWABLE TEST PRESSURE OF ANY NON-ISOLATED COMPONENT, SUCH AS VESSELS, PUMPS, OR VALVES, IN THE SYSTEM.

7.3.2.2 ANY PNEUMATIC TEST SHALL INCLUDE A PRELIMINARY CHECK AT NO MORE THAN 25 PSIG. ANY LEAK FOUND AT LOWER PRESSURE SHOULD BE MADE GOOD BEFORE RAISING THE PRESSURE.

7.3.2.3 THE PRESSURE OF THE SYSTEM SHALL GRADUALLY BE INCREASED TO NOT MORE THAN ONE-HALF OF THE TEST PRESSURE, AFTER WHICH THE PRESSURE SHALL BE INCREASED IN STEPS OF APPROXIMATELY ONE TENTH OF THE TEST PRESSURE UNTIL THE REQUIRED TEST PRESSURE HAS BEEN REACHED. THE PRESSURE SHALL BE CONTINUOUSLY MAINTAINED FOR A MINIMUM TIME OF 10 MINUTES. IT SHALL THEN BE REDUCED TO THE LESSER OF DESIGN PRESSURE OR 100 PSI AND HELD FOR SUCH TIME AS MAY BE NECESSARY TO CONDUCT THE EXAMINATION FOR LEAKAGE. EXAMINATION FOR LEAKAGE DETECTED BY SOAP BUBBLE OR EQUIVALENT METHOD SHALL BE MADE ON JOINTS AND CONNECTIONS.

7.3.2.4 PNEUMATIC TESTING OF OTHER PIPING IS ACCEPTABLE ONLY IF THE TEST PROCEDURE AND TEST PRESSURES HAVE BEEN APPROVED BY THE OWNER'S ENGINEER OR DESIGNATED THIRD PARTY INSPECTOR.

7.4 RETEST

REPAIRS OR ADDITIONS MADE AFTER THE PRESSURE TEST, SHALL BE RETESTED HYDROSTATICALLY OR PNEUMATICALLY WITH THE APPROVAL OF THE OWNER'S ENGINEER OR THIRD PARTY REPRESENTATIVE AT CONTRACTORS EXPENSE.

8.0 RECORDS

FABRICATION DETAILS AND RESULTS OF INSPECTION OF PIPING SHALL BE RECORDED ON THE PIPING DRAWINGS AND ATTACHED INSPECTION RECORD SHEETS.

10 IDENTIFYING DEVICES AND LABELS

10.1 SUBMITTALS

A. PRODUCT DATA FOR IDENTIFICATION MATERIALS AND DEVICES
B. SAMPLES OF COLOR, LETTERING STYLE, AND OTHER GRAPHIC REPRESENTATION REQUIRED FOR EACH IDENTIFICATION MATERIAL AND DEVICE.
C. VALVE SCHEDULES: SUBMIT VALVE SCHEDULES FOR EACH PIPING SYSTEM. REPRODUCE ON STANDARD-SIZED BOND PAPER. TABULATE VALVE NUMBER, PIPING SYSTEM, SYSTEM ABBREVIATION (AS SHOWN ON TAG), LOCATION OF VALVE (ROOM OR SPACE), AND VARIATIONS FOR IDENTIFICATION MARK VALVES INTENDED FOR EMERGENCY SHUTOFF AND SIMILAR SPECIAL USES. FURNISH EXTRA COPIES (IN ADDITION TO MOUNTED COPIES) FOR MAINTENANCE MANUALS.

10.2 QUALITY ASSURANCE

A. COMPLY WITH ASME A13.1 FOR LETTERING SIZE, LENGTH OF COLOR FIELD, COLORS AND VIEWING ANGLES OF IDENTIFICATION DEVICES.

10.3 SEQUENCING AND SCHEDULING

A. COORDINATE INSTALLATION OF IDENTIFYING DEVICES AFTER COMPLETION OF COVERING AND PAINTING WHERE DEVICES ARE APPLIED TO SURFACES. INSTALL IDENTIFYING DEVICES PRIOR TO INSTALLATION OF ACOUSTICAL CEILINGS AND SIMILAR CONCEALMENT.

10.4 EQUIPMENT NAMEPLATES

10.4.1 METAL OR ENGRAVED PLASTIC

10.4.2 NAMEPLATE PERMANENTLY FASTENED TO EQUIPMENT AND HAVING DATA ENGRAVED OR STAMPED.

10.4.3 DATA: MANUFACTURER, PRODUCT NAME, MODEL NUMBER, SERIAL NUMBER, CAPACITY, OPERATING AND POWER CHARACTERISTICS, LABELS OR TESTED COMPLIANCES, AND ESSENTIAL DATA.

10.4.4 LOCATION: AN ACCESSIBLE AND VISIBLE LOCATION

10.4.5 SUBMIT SAMPLES FOR APPROVAL.

10.5 PLASTIC PIPE MARKERS: MANUFACTURERS STANDARD PRE-PRINTED, SEMI-RIGID SNAP-ON, COLOR-CODED PIPE MARKERS CONFORMING TO ASME A13.1.

10.6 PRESSURE-SENSITIVE PIPE MARKERS: MANUFACTURERS STANDARD PRE-PRINTED COLOR-CODED, PRESSURE SENSITIVE VINYL PIPE MARKERS, WITH PERMANENT ADHESIVE CONFORMING TO ASME A13.1.

10.7 PIPES SMALLER THAN 6 INCHES: FULL-BAND PIPE MARKERS, EXTENDING 360 DEGREES AROUND PIPE AT EACH LOCATION.

10.5 PLASTIC PIPE MARKERS: MANUFACTURERS STANDARD PRE-PRINTED, SEMI-RIGID SNAP-ON, COLOR-CODED PIPE MARKERS CONFORMING TO ASME A13.1.

10.6 PRESSURE-SENSITIVE PIPE MARKERS: MANUFACTURERS STANDARD PRE-PRINTED COLOR-CODED, PRESSURE SENSITIVE VINYL PIPE MARKERS, WITH PERMANENT ADHESIVE CONFORMING TO ASME A13.1.

10.7 PIPES SMALLER THAN 6 INCHES: FULL-BAND PIPE MARKERS, EXTENDING 360 DEGREES AROUND PIPE AT EACH LOCATION.

10.8 PIPES 6 INCHES AND LARGER: EITHER FULL-BAND OR STRIP-TYPE PIPE MARKERS, AT LEAST 3 TIMES THE LETTER HEIGHT AND OF LENGTH REQUIRED FOR LABEL.

10.9 LETTERING: MANUFACTURER'S STANDARD PRE-PRINTED TERMS AS SELECTED BY OWNER'S ENGINEER. MUST MATCH EXISTING.

10.10 LETTERING: USE PIPING SYSTEM TERMS AS INDICATED AND ABBREVIATE ONLY AS NESCESSARY FOR EACH APPLICATION LENGTH.

10.10.1 ARROWS: EITHER INTEGRALLY WITH PIPING SYSTEM SERVICE LETTERING (TO ACCOMODATE BOTH DIRECTIONS), OR AS SEPERATE UNIT, ON EACH PIPEMARKER TO INDICATE DIRECTION OF FLOW.

10.11 PLASTIC TAPE: MANUFACTURER'S STANDARD COLOR-CODED, PRESSURE SENSITIVE, SELF-ADHESIVE, VINYL TAPE AT LEAST 3-MILS THICK.

10.11.1 WIDTH: 1-1/2-INCHES WIDE ON PIPES WITH OUTSIDE DIAMETER (INCLUDING INSULATION) LESS THAN 6-INCHES: 2-1/2 -INCHES WIDE FOR LARGER PIPES.

10.11.2 COLOR: COMPLY WITH ASME A13.1, EXCEPT WHERE ANOTHER COLOR SELECTION IS INDICATED.

10.12 VALVE TAGS: STAMPED OR ENGRAVED WITH 1/4-INCH LETTERS FOR PIPING SYSTEM ABBREVIATION AND 1/2 INCH SEQUENCED NUMBERS DESIGNATING WHICH PORTIONS OF A PARTICULAR SYSTEM THE VALVE CONTROLS. PROVIDE A 5/32-INCH HOLE FOR FASTENER.

10.12.1 ALL MAIN AND BRANCH SHUT OFF VALVES SHALL BE TAGGED.

10.12.2 MATERIAL: 18-GAGE STAINLESS STEEL.

10.12.3 SIZE: 2-INCH DIAMETER, EXCEPT AS OTHERWISE INDICATED.

10.12.4 PROVIDE TWO TYPE WRITTEN CHARTS INDICATING THE VALVE NUMBERS TOGETHER WITH THEIR LOCATION AND USE. MOUNT THE CHARTS IN 8-1/2 -INCH BY 11-INCH VALVE SCHEDULE FRAME WITH PROVISIONS FOR MOUNTING TO THE WALL.

10.12.5 NUMBER AND METHOD OF VALVE INDENTIFICATION WILL BE PROVIDED BY OWNER'S ENGINEER.

10.13 VALVE TAG FASTENERS: STAINLESS STEEL S-HOOKS.

10.13.1 SECURELY FASTEN THE DISC TAG TO THE VALVE STEM OR HANDLE.

10.14 ACCESS PANEL MARKERS: 1/16-INCH THICK LAMINATE MARKERS, WITH ABBREVIATED TERMS AND NUMBERS CORRESPONDING TO CONCEALED VALVE. PROVIDE 1/8 INCH CENTER HOLE FOR ATTACHMENT.

10.5 EXECUTION

10.5.1 LABELING AND IDENTIFYING

10.5.1.1 INSTALL PIPE MARKERS ON EACH PIPING SYSTEM. INCLUDE ARROWS SHOWING NORMAL DIRECTION OF FLOW.

10.5.2 LOCATE PIPE MARKERS AND COLOR BANDS AS FOLLOWS WHEREVER PIPING IS EXPOSED TO FINISHED SPACES, MACHINE ROOMS, ACCESSIBLE MAINTENANCE SPACES (SHAFTS, TUNNELS, PLENUMS) AND EXTERIOR NON-CONCEALED LOCATIONS.

10.5.2.1 NEAR EACH VALVE AND CONTROL DEVICE

10.5.2.2 NEAR EACH BRANCH CONNECTION, EXCLUDING SHORT TAKE-OFFS FOR FIXTURES AND TERMINAL UNITS. MARK EACH PIPE AT BRANCH, WHERE FLOW PATTERN IS NOT OBVIOUS.

10.5.2.3 NEAR PENETRATIONS THRU WALLS, FLOORS, CEILINGS, OR ENTER NON-ACCESSIBLE ENCLOSURES.

10.5.2.4 AT ACCESS DOORS, MANHOLES, AND SIMILAR ACCESS POINTS THAT PERMIT VIEW OF CONCELED PIPING.

10.5.2.5 NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGINATION AND TERMINATIONS.

10.2.5.6 SPACED AT A MAXIMUM OF 50-FEET INTERVALS ALONG EACH RUN. REDUCE INTERVALS TO 20 FEET IN CONGESTED AREAS OF PIPING AND EQUIPMENT.

10.5.2.7 ON PIPING ABOVE REMOVABLE ACOUSTICAL CEILINGS.

10.5.3 IDENTIFY PIPING AS FOLLOWS:

PIPE LINE CONTENTS	COLOR FIELD	COLOR OF LETTERS IN LEGEND
COMPRESSED AIR	BLUE	BLACK
HIGH PRESSURE STEAM > 15 PSIG	YELLOW	BLACK
CONDENSATE RETURN	YELLOW	BLACK
LOW PRESSURE STEAM < 15 PSIG	YELLOW	BLACK
COLD WATER	GREEN	BLACK
PROCESS COLD WATER	GREEN	BLACK
PROCESS HOT WATER	GREEN	BLACK
HEATING HOT WATER	YELLOW	BLACK
GAS	YELLOW	BLACK
GLYCOL, COLD WATER	GREEN	BLACK
TOWER WATER	GREEN	BLACK
CHILLED WATER	GREEN	BLACK

10.5.4 SIZE PIPING IDENTIFICATION AS FOLLOWS:

OUTSIDE DIAMETER OF PIPE OR PIPE INSULATION		LENGTH OF COLOR FIELD		SIZES OF LETTERS	
INCHES	MILLIMETERS (MM)	INCHES	MILLIMETERS (MM)	INCHES	MILLIMETERS (MM)
3/4 TO 1	19 TO 32	8	200	1/2	
1-1/2 TO 2	38 TO 51	8	200	3/4	
2-1/2 TO 6	64 TO 150	12	300	1-1/4	
8 TO 12	200 TO 250	24	600	2-1/2	

10.5.5 EQUIPMENT: INSTALL ENGRAVED PLASTIC LAMINATE SIGNS OR EQUIPMENT MARKERS ON OR NEAR EACH MAJOR ITEM OF MECHANICAL EQUIPMENT. PROVIDE SIGNS FOR FOLLOWING GENERAL CATEGORIES OF EQUIPMENT.

A) ALL OWNER FURNISHED EQUIPMENT AND ACCESSORIES.
B) MAIN CONTROL AND OPERATING VALVES, INCLUDING SAFETY DEVICES AND HAZARDOUS UNITS SUCH AS GAS OUTLETS.
C) METERS, GAGES, THERMOMETERS AND SIMILAR UNITS.
D) FUEL-BURNING UNITS INCLUDING BOILERS, FURNACES, HEATERS, STILLS, AND ABSORBTION UNITS.
E) PUMPS, COMPRESSORS, CHILLERS, CONDENSERS, AND SIMILAR MOTOR-DRIVEN UNITS.
F) HEAT EXCHANGERS, COILS, EVAPORATORS, COOLING TOWERS, HEAT RECOVERY UNITS, AND SIMILAR EQUIPMENT.
G) FANS, BLOWERS, PRIMARY BALANCING DAMPERS, AND MIXING BOXES.
H) TANKS AND PRESSURE VESSELS.
I) STRAINERS, FILTERS, HUMIDIFIERS, WATER TREATMENT SYSTEMS, AND SIMILAR EQUIPMENT.

11.0 PAINTING

11.1 THIS SPECIFICATION COVERS THE REQUIREMENTS FOR PAINTS AND SURFACE COATING MATERIALS AND THE SURFACE PREPERATION, APPLICATION AND INSPECTION OF PAINT AND PROTECTIVE COATINGS TO BE SHOP FABRICATED OR FIELD APPLIED.

11.2 GENERALLY THIS SECTION APPLIES TO NATURAL GAS AND COMPRESSED AIR PIPE IN NON FOOD PROCESSING AREAS OF THE PLANT AND UNINSULATED BOILER ROOM PIPING, HANGERS, SUPPORT STEEL ETC.

11.3 GENERAL

ALL MATERIAL, SURFACE PREPARATION AND APPLICATION SHALL BE RATED, TESTED AND CERTIFIED IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING CODES AND STANDARDS:
ASTM AMERICAN SOCIETY OF TESTING MATERIALS
SSPC STEEL STRUCTURES PAINTING COUNCIL
MSS MATERIAL SPECIFICATIONS STANDARDS

THE COATING MANUFACTURER'S SPECIFICATIONS COVERING SURFACE PREPARATION, PAINT AND PROTECTIVE COATINGS AND APPLICATION THEREOF BECOME PART OF THIS SPECIFICATION AND SHALL BE ADHERED TO IN DETAIL. THE PAINT PRODUCTS MUST BE SUITABLE FOR USE IN A FOOD PLANT ENVIRONMENT AND MUST BE APPROVED BY THE OWNER.

11.4 PREPARATION

11.4.1 SURFACE PREPARATION: CLEAN AND PREPARE SURFACES TO BE PAINTED ACCORDING TO MANUFACTURER'S INSTRUCTIONS FOR EACH PARTICULAR SUBSTRATE CONDITION, AND AS SPECIFIED.

11.4.1.1 FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP-COATED; REMOVE GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING MET THAT COMPLY WITH RECOMMENDATIONS OF THE STEEL STRUCTURES PAINTING COUNCIL (SSPC).

A. BLAST STEEL SURFACES CLEAN AS RECOMMENDED BY THE PAINT SYSTEM MANUFACTURER AND ACCORDING TO REQUIREMENTS OF THE SSPC SPECIFICATION SSPC-SP 10.
B. TREAT BARE AND SANDBLASTED OR PICKLED CLEAN METAL WITH A METAL TREATMENT WASH COAT BEFORE PRIMING.
C. TOUCH UP BARE AREAS AND SHOP-APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE-BRUSH CLEAN WITH SOLVENTS RECOMMENDED BY THE PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.

11.4.1.2 GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NONPETROLEUM BASED SOLVENTS SO THAT THE SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.

11.5 APPLICATION

11.5.1 GENERAL: APPLY PAINT ACCORDING TO MANUFACTURER'S DIRECTIONS. USE APPLICATORS AND TECHNIQUES BEST SUITED FOR SUBSTRATE AND TYPE OF MATERIAL BEING APPLIED.

11.5.2 MECHANICAL ITEMS TO BE PAINTED (IN NON FOOD PROCESSING AREAS) INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
A. PIPING
-NATURAL GAS PIPEWORK
-CONDENSER WATER PIPEWORK (AIR COMPRESSORS)
-COMPRESSED AIR
B. STEEL PIPE HANGERS, AND SUPPORTS

11.5.3 PRIME COATS: BEFORE APPLYING FINISH COATS, APPLY A PRIME COAT AS RECOMMENDED BY THE MANUFACTURER. RECOAT PRIMED AND SEALED SURFACES WHERE EVIDENCE OF SUCTION SPOTS OR UNSEALED AREAS IN FIRST APPEARS, TO ENSURE A FINISH COAT WITH NO BURN-THROUGH OR OTHER DEFECTS DUE TO INSUFFICIENT SEALING.

11.6 WARRANTY PERIOD

11.6.1 THE CONTRACTOR SHALL WARRANT ALL PAINTING WORKS FROM ANY DEFECTS SUCH AS PEELING OF PAINT BLEEDING AND DISCOLORATION, AND SURFACE CHALKING FOR A PERIOD OF TWELVE (12) MONTHS AFTER ACCEPTANCE BY THE OWNER

11.6.2 DURING THE WARRANTY PERIOD, THE CONTRACTOR SHALL BE LIABLE TO REPAIR SUCH DEFECTS AT HIS EXPENSE.

11.7 COATINGS

11.7.1 FERROUS METALS

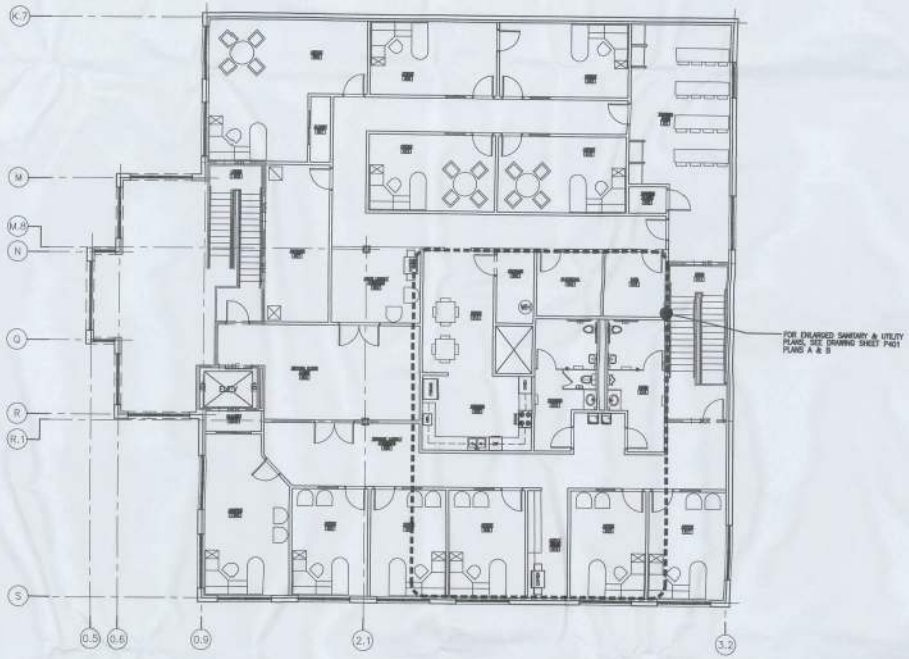
LUSTERLESS (FLAT) FINISH: TWO FINISH COATS OVER PRIMER WITH TOTAL DRY FILM THICKNESS NOT LESS THAN 2.5 MILS.

12.0 BALANCING

12.1 BALANCING HOT RECIRCULATION SYSTEM TO PROVIDE UNIFORM DOMESTIC WATER TEMPERATURE IN ALL MAINS, BRANCHES, & SUB BRANCHES.

UNITED STATES COLD STORAGE

JOB
DRAWN
CHECK
SCALE

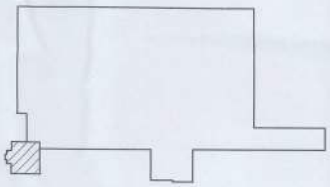


ENLARGED SANITARY & PROCESS PIPING FLOOR PLAN

N

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

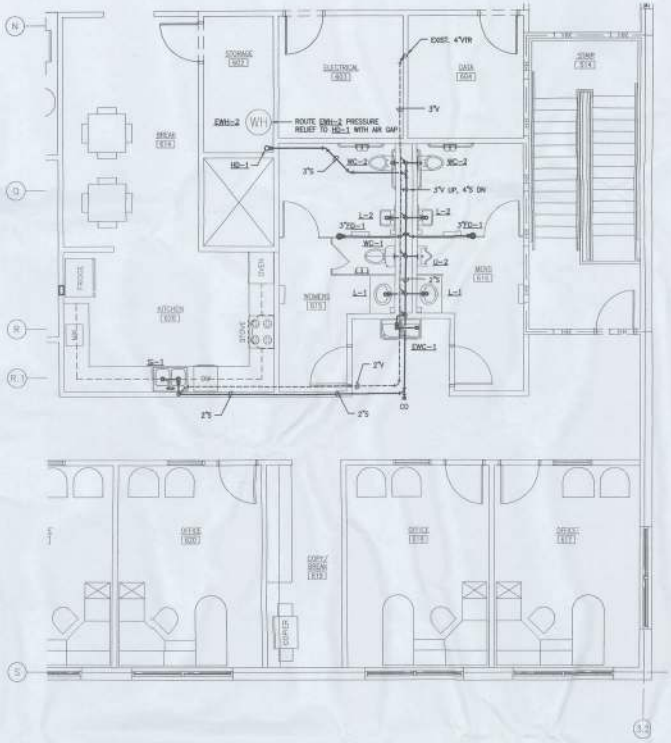
0 2' 4' 8' 16'



KEY PLAN

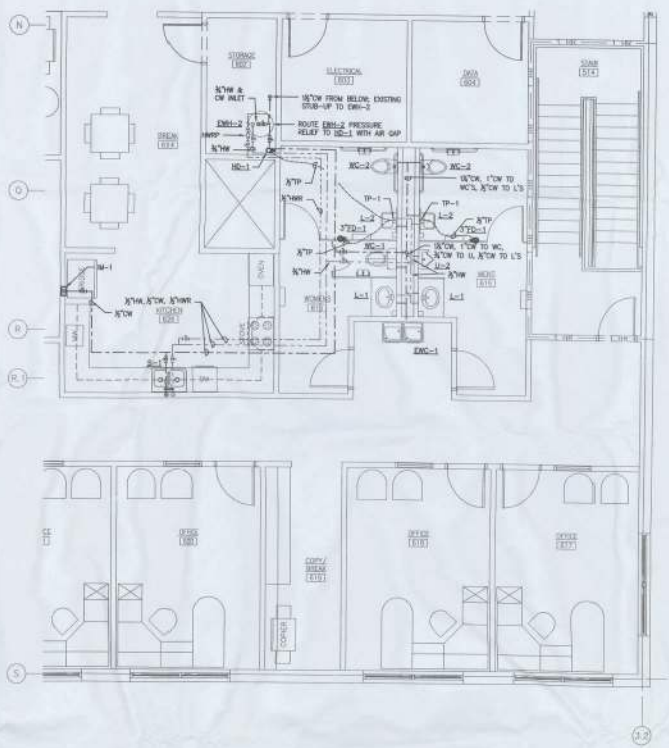
NOT TO SCALE

N



(A) ENLARGED SANITARY FLOOR PLAN

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



(B) ENLARGED UTILITY FLOOR PLAN

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

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UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

ENLARGED SANITARY & UTILITY FLOOR PLANS

REV.	DATE	BY	PERMIT ISSUE DESCRIPTION
A	08/06/14	JPB	

JOB NO. 71005332
DRAWN: JPB
CHECKED: WMW
SCALE: AS NOTED

P401
DRAWING NO.

NOT USED SCALE: N.T.S. (20)

NOT USED SCALE: N.T.S. (19)

NOT USED SCALE: N.T.S. (18)

NOT USED SCALE: N.T.S. (17)

NOT USED SCALE: N.T.S. (16)

NOT USED SCALE: N.T.S. (15)

NOT USED SCALE: N.T.S. (14)

NOT IUSED SCALE: N.T.S. (13)

NOT USED SCALE: N.T.S. (12)

NOT USED SCALE: N.T.S. (11)

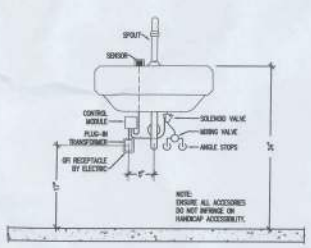
NOT USED SCALE: N.T.S. (10)

NOT USED SCALE: N.T.S. (9)

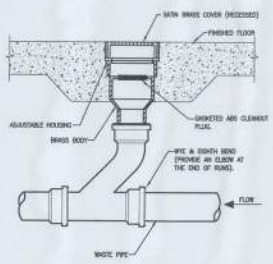
NOT USED SCALE: N.T.S. (8)

NOT USED SCALE: N.T.S. (7)

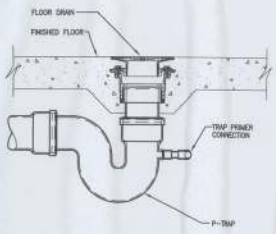
WATER CLOSET DETAIL SCALE: N.T.S. (6)



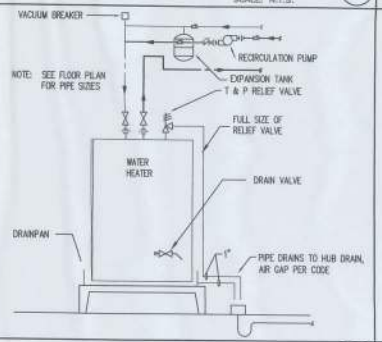
LAVATORY / SENSOR FAUCET DETAIL SCALE: N.T.S. (5)



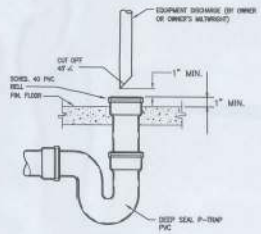
FLOOR CLEANOUT (FCO-1) SCALE: N.T.S. (4)



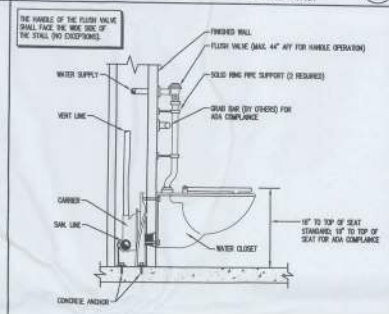
FLOOR DRAIN (FD-1) SCALE: N.T.S. (3)



ELECTRIC WATER HEATER PIPING DETAIL SCALE: N.T.S. (2)



HUB DRAIN (HD-1) SCALE: N.T.S. (1)



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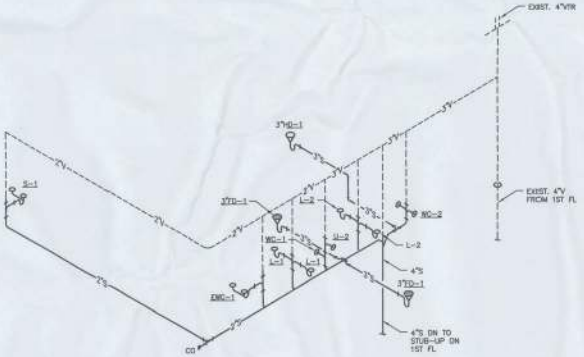
UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

PLUMBING DETAILS

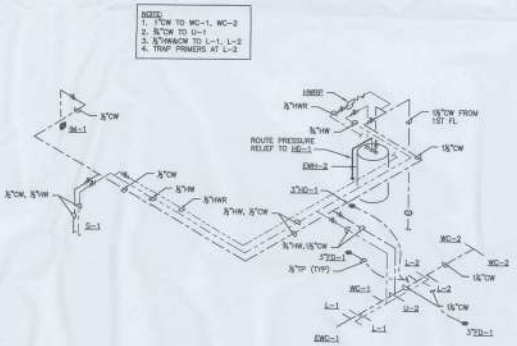
NO.	DESCRIPTION	BY	DATE
1	PERMIT ISSUE	JPB	8/8/14

JOB NO. 71005332
DRAWN: JPB
CHECKED: WMW
SCALE: AS NOTED

P501
DRAWING NO.



SANITARY RISER DIAGRAM



DOMESTIC WATER RISER DIAGRAM

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UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

PLUMBING RISER DIAGRAMS

REV	DATE	BY	PERMIT ISSUE DESCRIPTION
A	10/31/14	JPB	

JOB NO: 71005332
DRAWN: JPB
CHECKED: WMW
SCALE: AS NOTED

P801
DRAWING NO.

MECHANICAL LEGEND

- 14x18 — SQUARE OR RECTANGULAR DUCT. FIRST FIGURE IS DIMENSION OF SIDE SHOWN ON PLAN
- 14"ø — ROUND DUCT. FIGURE IS DIMETER OF THE DUCT
- DUCTWORK (POSITIVE PRESSURE)
- DUCTWORK (NEGATIVE PRESSURE)
- CEILING SUPPLY AIR DIFFUSER, SHADED AREA INDICATES BLANKED-OFF SECTION
- CEILING RETURN OR EXHAUST AIR GRILLE/REGISTER
- SIDEWALL SUPPLY AIR REGISTER
- SIDEWALL RETURN AIR GRILLE/REGISTER
- ROUND SPIN-IN TAP W/ MANUAL DAMPER
- ELBOW WITH TURNING VANES
- MANUAL VOLUME DAMPER (MVD)
- MOTORIZED (ELECTRIC OPERATED) DAMPER
- F/S/D — FIRE/SMOKE DAMPER (FS/D) AND SLEEVE PROVIDE ACCESS DOOR (AD)
- FLEXIBLE DUCT
- UNDERCUT DOOR 1"
- CONNECTION OF NEW WORK TO EXISTING
- (A) AIR DISTRIBUTION DEVICE
- (T) THERMOSTAT
- (H) HUMIDISTAT
- (S) DUCT MOUNTED SMOKE DETECTOR
- (S) MANUAL ON/OFF SWITCH
- —CD— CONDENSATE DRAIN PIPING
- —G— GAS PIPING
- —CWS— CHILLED WATER SUPPLY
- —CWR— CHILLED WATER RETURN
- —FILL— FILL LINE
- TEE (PLAN, UP, DOWN)
- ELBOW (90°, 45°)
- ELBOW (UP, DOWN)
- MBH — 1,000 BRITISH THERMAL UNITS PER HOUR
- CFM — CUBIC FEET PER MINUTE
- SA — SUPPLY AIR
- RA — RETURN AIR
- OA — OUTSIDE AIR
- OAC — OPENING ABOVE CEILING

NOTE: ALL SYMBOLS SHOWN MAY NOT APPEAR ON DRAWING.

DESIGN CONDITIONS

	INDOOR	OUTDOOR
SUMMER	75°db / 50RH	92°db / 77°wb (1%)
WINTER	72°db	32°db (99%)

NOTES:
db: DRY BULB TEMPERATURE.
wb: WET BULB TEMPERATURE.
RH: RELATIVE HUMIDITY.
SOURCE: 2001 ASHRAE FUNDAMENTALS HANDBOOK.

MECHANICAL SPECIFICATIONS

1.0 GENERAL

1.1 UPON COMPLETION OF WORK, THOROUGHLY CLEAN THE ENTIRE SYSTEM AND TEST TO ENSURE THAT THE SYSTEM PERFORMS TO REQUIREMENTS. LEAVE WORK IN PERFECT OPERATING CONDITION.

1.2 ALL EQUIPMENT SUPPLIED UNDER THIS DIVISION, WHICH MAY HAVE BEEN DAMAGED OR SCRATCHED, SHALL BE TOUCHED UP WITH THE MANUFACTURER'S PAINT OR COMPLETELY PAINTED IF SO DESIRED BY THE OWNER.

1.3 COOPERATE WITH OTHER TRADES AS REQUIRED. SUPPLY TO THE GENERAL CONTRACTOR, WHERE REQUIRED, THE LOCATIONS OF ALL HOLES, CHASES, ANCHOR BOLTS, SLEEVES AND INSERTS. OFFSETS IN PIPING AND DUCTS (INCLUDING ENCASED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST.

1.4 WORK TO EQUAL OR EXCEED MINIMUM STANDARDS FOR MATERIALS, INSTALLATION METHODS AND WORKMANSHIP AS SPECIFIED BY APPLICABLE LOCAL, STATE AND FEDERAL CONSTRUCTION CODES.

1.5 MATERIALS AND EQUIPMENT ARE SPECIFICALLY DESCRIBED AND NAMED IN THESE SPECIFICATIONS FOR THE PURPOSE OF ESTABLISHING A STANDARD OF MATERIALS AND WORKMANSHIP. THE PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON SUPPLY AND INSTALLATION OF MATERIALS AND EQUIPMENT AS SPECIFIED. ALTERNATES SHALL BE SUBMITTED AS AN EXTRA OR CREDIT TO THE BASE EQUIPMENT SPECIFIED BASIS.

1.6 ALL EQUIPMENT AND COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE EQUIPMENT MANUFACTURER.

1.7 WHERE A MANUFACTURER'S NAME APPEARS, NOTE THAT THE DESIGN IS BASED ON THE DIMENSIONS AND PHYSICAL CONFIGURATION OF THE MANUFACTURER'S EQUIPMENT LISTED.

1.8 THE DRAWINGS ARE TO BE CONSIDERED AS DIAGRAMMATICAL ONLY AND DO NOT SHOW ALL THE STRUCTURAL AND CONSTRUCTION DETAILS. ANY INFORMATION INVOLVING ACCURATE MEASUREMENTS OF THE BUILDING SHALL BE TAKEN AT THE SITE. ANY NECESSARY CHANGES OR ADDITIONS TO ACCOMMODATE STRUCTURAL CONDITIONS SHALL BE MADE WITHOUT ADDITIONAL COSTS.

1.9 ALL LOCATIONS ARE APPROXIMATE. OBTAIN DIRECTION FROM THE GENERAL CONTRACTOR FOR FINAL LOCATIONS.

1.10 DO ALL WORK IN ACCORDANCE WITH ALL RULES AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION. PROVIDE ALL ADDITIONAL COMPONENTS REQUIRED BY THESE AUTHORITIES.

1.11 ALL MATERIALS AND EQUIPMENT SHALL BE PROTECTED DURING CONSTRUCTION FROM ALL SOURCES OF DAMAGE.

1.12 VISIT THE SITE BEFORE SUBMITTING BID TO DETERMINE EXISTING CONDITIONS AND THE EXTEND TO WHICH THEY WILL AFFECT THE WORK UNDER THIS CONTRACT. FAILURE TO DID SO WILL NOT RELIEVE THIS CONTRACTOR FROM THE COST OF RESULTING ADDITIONAL WORK.

1.13 VERIFY ALL SPACES IN WHICH EQUIPMENT AND DUCTWORK ARE TO BE LOCATED.

1.14 ONLY FIRST CLASS WORKMANSHIP WILL BE ACCEPTED IN REGARD TO ACCEPTED STANDARD PRACTICES, SAFETY, ACCESSIBILITY, DURABILITY AND NEATNESS OF DETAIL.

1.15 ALL DAMAGE TO THE EXISTING STRUCTURE DUE TO MECHANICAL INSTALLATION UNDER THIS PROJECT SHALL BE REPAIRED AND MADE GOOD BY THIS CONTRACTOR.

1.16 ALL CORE DRILLING, CUTTING AND PATCHING OF STRUCTURE SHALL BE CARRIED OUT OUTSIDE NORMAL WORKING HOURS AT A TIME CONVENIENT TO THE PROJECT MANAGER. CUTTING AND CORE DRILLING SHALL NOT BE CARRIED OUT WITHOUT THE PERMISSION OF THE PROJECT STRUCTURAL ENGINEER.

1.17 THE DRAWINGS SHOW THE WORK IN ITS FINAL, COMPLETED FORM. EQUIPMENT REMOVED AND NOT REQUIRED TO SUIT NEW LAYOUT SHALL BE TURNED OVER TO OWNER OR DISPOSED OF AS PER PROJECT MANAGER'S INSTRUCTIONS.

1.18 AT THE END OF THE PROJECT, THE CONTRACTOR MUST PROVIDE TO THE OWNER/ ENGINEER A COMPLETE SET OF "AS-RECORDED" DRAWINGS IN PRINT FORM. FINAL PAYMENT OF THIS CONTRACT WILL BE SUBJECT TO THE OWNER/ENGINEER'S RECEIPT OF THE ABOVE.

1.19 ALL SERVICES SHALL BE INSTALLED PARALLEL TO BUILDING LINES.

1.20 ALL MECHANICAL SYSTEMS INDICATED ON THE DRAWINGS OR WITHIN THE SPECIFICATION ARE NEW. REFER TO ARCHITECTURAL DRAWINGS TO DETERMINE LOCATIONS OF NEW AND FUTURE CONSTRUCTION.

1.21 PRIOR TO ORDERING OR FABRICATING ANY EQUIPMENT, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND REPORT ANY DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL FIELD CONDITIONS TO THE ENGINEER.

1.22 MOUNT THE OUTDOOR GROUND MOUNTED EQUIPMENT ON 4-INCH THICK CONCRETE PADS WHICH EXTEND 6-INCHES BEYOND THE EQUIPMENT IN EACH DIRECTION. PROVIDE 6"x6" #WW REINFORCING IN THE SLABS. SECURE EQUIPMENT TO PADS.

1.23 CONTRACTOR SHALL COORDINATE MOUNTING OF UNITS WITH ALL TRADES TO ENSURE THAT UNITS CAN BE SERVICED AS REQUIRED BY ALL APPLICABLE CODES. SERVICING SHALL INCLUDE BUT NOT BE LIMITED TO CHANGING OF FILTERS AND REMOVAL OF COMPRESSORS, FANS AND DRIVES.

1.24 ELECTRICAL EQUIPMENT ROOMS: CAREFULLY COORDINATE THE INSTALLATION OF DUCTWORK AND PIPING WITH ELECTRICAL EQUIPMENT ROOMS TO PROVIDE CODE REQUIRED CLEARANCES IN FRONT OF AND ABOVE ELECTRICAL EQUIPMENT.

1.25 PLENUM RATED WIRE SHALL BE NEATLY BUNDLED IN GROUPS AND SHALL BE COMBINED WHERE APPLICABLE TO FOLLOW A SINGULAR PATH BETWEEN DEVICES. BUNDLES SHALL BE SUPPORTED WITH APPROPRIATE STRAPS INTENDED FOR THIS PURPOSE ON SPACING NOT TO EXCEED 6 FEET. AT RATED WALL ASSEMBLY PENETRATIONS PROVIDE A METAL CONDUIT SLEEVE TO EXTEND A MINIMUM OF ONE FOOT BEYOND EACH SIDE OF THE ASSEMBLY. SEAL CONDUIT ENDS WITH FIRE PROOF PUTTY UPON COMPLETION OF WIRE INSTALLATION.

1.26 EACH WIRE ENTERING THE CONTROL PANEL SHALL BE IDENTIFIED WITH A CODED NUMBER TAG. THE CODED NUMBER SHALL IDENTIFY THE WIRE'S FUNCTION, TYPE OF DEVICE SERVED AND WHERE THE DEVICE IS LOCATED. A LEGEND CARD IDENTIFYING THE NUMBERED CODE SYSTEM SHALL BE PROVIDED. CORRESPONDING NUMBERED TAGS SHALL BE INSTALLED ON ALL WIRES AT INTERVALS NOT TO EXCEED 30 FEET AND AT ALL OUTBOUND WIRE TERMINATIONS.

1.27 ALL CONTROL WIRING SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. ALL CONTROL WIRING SHALL BE PLENUM RATED WIRE OR ROUTED WITHIN CONDUIT PER DIVISION 16 SPECIFICATIONS.

1.28 COORDINATE EXACT LOCATIONS OF ROOF MOUNTED EQUIPMENT WITH STRUCTURAL DRAWINGS.

1.29 COORDINATE EXACT LOCATIONS OF ROOF MOUNTED EQUIPMENT WITH EXISTING STRUCTURE. PROVIDE ADDITIONAL STEEL AS REQUIRED.

1.30 CURBS PROVIDED FOR ROOF MOUNTED EQUIPMENT SHALL MATCH ROOF PITCH SUCH THAT NAILER IS LEVEL.

1.31 MECHANICAL EQUIPMENT SHALL BE LOCATED A MINIMUM OF 10 FEET FROM THE NEAREST ROOF EDGE. EQUIPMENT LOCATED WITHIN THE 10 FEET FROM THE ROOF EDGE WILL REQUIRE A HANDRAIL ALONG EDGE OF ROOF.

1.32 ALL AIR DISTRIBUTION SYSTEMS SHALL BE TESTED AND BALANCED BY AN INDEPENDENT TESTING, ADJUSTING AND BALANCING AGENCY. TAB AGENCY SHALL ALSO REVIEW REFRIGERATION DRAWINGS AND PROVIDE TESTING AND BALANCING OF ALL PANELS. FINAL PRESSURE BALANCE OF RMALS AND ETS IN PROCESS AREAS TO MAINTAIN PROPER AIRFLOWS FOR SANITATION SHALL BE PERFORMED BY THE TAB AGENCY. A CERTIFIED TAB REPORT DEMONSTRATING COMPLIANCE WITH THE DESIGN SHALL BE PROVIDED TO THE ENGINEER.

2.0 HEATING, VENTILATION AND AIR CONDITIONING

2.1 GENERAL:

2.1.1 PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO COMPLETE THE WORK AS INDICATED.

2.1.2 ALL MECHANICAL EQUIPMENT SHALL BE FURNISHED COMPLETE WITH MOTOR STARTERS AND HEATER CONTACTORS. ALL OPERATING CONTROLS AND SAFETIES SHALL BE UL OR ETL LISTED. PROVIDE ELECTRICAL DISCONNECT PER NFPA 70.

2.1.3 PROVIDE SYSTEMS AND EQUIPMENT IDENTIFICATION.

2.1.4 BALANCE REGS, VALVS, ETS, DIFFUSERS AND GRILLES TO AIR FLOWS SHOWN ON THE DRAWINGS.

2.1.5 SUPPORT AIR CONDITIONING INDOOR UNITS FROM BAR JOISTS WITH MINIMUM OF FOUR THREADED RODS AND SPRING TYPE VIBRATION ISOLATORS.

2.1.6 PROVIDE AUXILIARY CONDENSATE DRAIN PAN BELOW INTERIOR UNITS ABOVE COOLING AHUS AUXILIARY DRAIN PAN SHALL EXTEND THREE INCHES BEYOND LENGTH AND WIDTH OF UNIT. PAN SHALL BE CONSTRUCTED OF NOT LESS THAN NO. 24 GAUGE GALVANIZED SHEET METAL.

2.1.7 ROUTE CONDENSATE PIPING FROM AUXILIARY DRAIN PANS ON AHUS TO DISCHARGE OVER HUB SINK. CONDENSATE PIPING SHALL BE 1-INCH MIN.

2.1.8 ADJUST EXACT DIFFUSER, REGISTER AND GRILLE LOCATIONS IN FIELD IN ORDER TO FIT THE CEILING GRID AS ACTUALLY INSTALLED.

2.1.9 AN AIR BALANCING DAMPER MAY NOT BE OMITTED FROM A SUPPLY DIFFUSER EVEN WHEN AN ACCESSIBLE BALANCING DAMPER IS PROVIDED IN THE BRANCH DUCT SERVING THE DIFFUSER.

2.1.10 PROVIDE SMOKE DETECTOR ON SUPPLY AND/OR RETURN DUCTWORK AS SHOWN ON THE DRAWINGS. INTERLOCK WITH FAN FOR SHUTDOWN UPON ACTIVATION. PROVIDE SIGNAL TO CENTRAL FIRE ALARM SYSTEM. SMOKE DETECTORS SHALL BE 24-VOLT POWER AND POWERED BY THE CONTROL TRANSFORMER FROM THE UNIT SERVED. SMOKE DETECTORS SHALL BE PROVIDED, INSTALLED AND WIRED TO RTU BY THE MECHANICAL CONTRACTOR. WIRING TO THE CENTRAL FIRE ALARM SHALL BE DONE BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SAMPLING TUBE SHALL EXTEND THE FULL WIDTH OF THE DUCT AND A ACCESS DOOR IS REQUIRED FOR SERVICE AND INSPECTION.

2.1.11 THERMOSTATS SHALL BE LOCATED AT 4'-8" AFF (UNLESS INDICATED OTHERWISE).

2.1.12 CONDENSATE PIPING FOR MECHANICAL ROOFTOP EQUIPMENT SHALL BE PVC TYPE DWV ROUTED TO ROOF DRAIN OR GUTTER AND COATED WITH UV PROTECTANT. PROVIDE TRAP IN PIPING AT UNIT.

2.2 DUCTWORK:

2.2.1 PROVIDE ALL DUCTWORK SHOWN. MAKE ALL NECESSARY CONNECTIONS TO COMPLETE THE SYSTEM.

2.2.2 ALL NEW DUCTWORK SHALL BE FABRICATED AND INSTALLED TO THE LATEST STANDARDS PUBLISHED BY ASHRAE AND SMACNA.

2.2.3 DUCTWORK SHALL BE FREE FROM NOISE AND VIBRATION AND WITH ALL NECESSARY REINFORCEMENT BRACKETS AND GAGEETING.

2.2.4 PRIOR TO ORDERING OR FABRICATING ANY NEW EQUIPMENT, THIS CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND REPORT ANY DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL FIELD CONDITIONS TO THE PROJECT MANAGER.

2.2.5 ALL DUCTWORK DIMENSIONS SHOWN ARE INSIDE DIMENSIONS.

2.2.6 DUCT CONNECTIONS TO EQUIPMENT INTAKES: TRANSITION FROM DUCT SIZE INDICATED ON PLAN TO THE FULL SIZE ON THE FAN INLET AT CONNECTION TO THE FAN. MAXIMUM TRANSITION IS 30 DEGREES.

2.2.7 PROVIDE CURBS FOR ROOF MOUNTED EQUIPMENT AND DUCT PENETRATIONS TO MATCH ROOF PITCH SUCH THAT NAILER IS LEVEL. ALL ROOF MOUNTED EQUIPMENT SHALL BE PROVIDED WITH CURBS THAT MATCH THE UNIT FROM THE RESPECTIVE EQUIPMENT SUPPLIER OF AT-LEAST 12" IN HEIGHT. CURB INSULATION SHALL BE DOW STYROFOAM WITH FOIL FACING. CURB CONSTRUCTION SHALL BE ALUMINUM.

2.2.8 CURB MOUNTED EQUIPMENT SHALL BE SECURED TO THE CURB IN SUCH A WAY TO SUSTAIN 120 MPH WINDS.

2.2.9 COORDINATE FINAL ON SITE LOCATIONS OF ROOF MOUNTED EQUIPMENT WITH ARCHITECTURAL, STRUCTURAL AND REFRIGERATION DRAWINGS.

2.2.10 LOADS SUSPENDED FROM THE ROOF OR FLOOR STRUCTURE ABOVE SHALL HANG DIRECTLY FROM THE STRUCTURAL ROOF MEMBER (CONCRETE TEE BEAM, BAR JOIST, STEEL BEAM, ETC) NOT ROOF DECK. PROVIDE SECONDARY SUPPORT MATERIAL DESIGNED TO CARRY THE LOAD, BETWEEN THE STRUCTURAL MEMBERS. DO NOT SUPPORT LOADS FROM BRIDGING OR ROOF DECK.

2.2.11 THIS CONTRACTOR SHALL COORDINATE MOUNTING OF ALL UNITS WITH ALL TRADES TO INSURE THAT UNITS CAN BE SERVICED IN ACCORDANCE WITH ALL APPLICABLE CODES AND NORMAL GOOD TRADE PRACTICE.

2.2.12 SECURE EQUIPMENT TO SUPPORTS PER LOCAL CODE AUTHORITY. PROVIDE SEISMIC BRACING PER LOCAL CODE AUTHORITY. THIS CONTRACTOR SHALL PROVIDE SHOP DRAWINGS INDICATING METHODS INTENDED.

2.2.13 DUCTWORK SHALL BE SUSPENDED IN ACCORDANCE WITH SMACNA STANDARDS. ON INSULATED DUCTWORK, MAINTAIN VAPOR BARRIER INTEGRITY OF DUCTWORK INSULATION. PROTECT INSULATION WITH GALV. STEEL SHIELDS 6" LONG MIN.

2.2.14 REFER TO THE ARCHITECTURAL AND STRUCTURAL DRAWINGS TO DETERMINE LOCATIONS OF STRUCTURAL CONSTRUCTION FEATURES.

2.2.15 HANGER RODS SHALL BE PLAIN GALV. STEEL ROD WITH THREADED ENDS. CONTINUOUSLY THREADED ROD WILL NOT BE PERMITTED.

2.2.16 RUN DUCTWORK PARALLEL TO THE BUILDING STRUCTURE.

2.2.17 SEAL OUTLETS AIR TIGHT TO DUCTWORK.

2.2.18 DUCTWORK SHALL BE IN ACCERDANCE WITH SPECIFICATION ON THIS SHEET, UNLESS NOTED OTHERWISE ON DRAWINGS.

2.2.19 FLEXIBLE DUCTWORK SHALL BE THE SAME SIZE AS THE NECK OF AIR DISTRIBUTION DEVICE WHICH IT SERVES.

2.2.20 FIRE DAMPERS SHALL BE RATED PER HOURLY RATING OF WALLS AND FLOORS AS INDICATED ON ARCHITECTURAL DRAWINGS.

2.3 DUCT INSULATION:

2.3.1 SUBMIT MANUFACTURER'S DESCRIPTIVE PRODUCT DATA SHEETS ON CATALOGUED ITEMS TO BE USED.

2.3.2 SUBMIT SHOP DRAWINGS SHOWING DETAILS OF DUCTWORK INSULATION AND DUCTWORK INSULATION COVERINGS.

2.3.3 MATERIALS: UL LISTED, FLAME SPREAD/FUEL CONTRIBUTED/SMOKE DEVELOPED RATING OF 25/50/50 IN ACCORDANCE WITH ASTM E84.

2.3.5 TYPE B: MINERAL FIBER BOARD THERMAL INSULATION EQUAL TO "OWENS CORNING 700 SERIES INSULATION" (1.5 pcf) WITH FRK FACED VAPOR BARRIER.

A. ADHERE SHEET TO THE DUCT SURFACE, USING GALVANIZED STEEL PINS AND CUPS AND 100% ADHESIVE COVERAGE. ADJACENT SHEETS SHALL BE ADJUSTED USING THE COMPRESSION FIT METHOD. APPLY THE ADHESIVE ON BOTH SURFACES TO BE JOINED WITH A BRUSH OR SHORT-NAP ROLLER. JOIN SURFACES AFTER THE ADHESIVE IS DRY TO THE TOUCH.

B. FOR SQUARE AND RECTANGULAR DUCTS, APPLY SHEET INSULATION FIRST ON THE BOTTOM SURFACE, NEATLY FITTING THE WIDTH. EXTEND SIDE INSULATION DOWN OVER THE EDGES OF THE BOTTOM INSULATION. THE TOP INSULATION SHALL EXTEND OVER THE TOP OF THE INSULATION ON BOTH SIDES.

2.3.6 APPLY THE SAME SHEET INSULATION THICKNESS ON STANDING METAL DUCT SEAMS AS INSTALLED ON THE DUCT SURFACE.

2.3.7 ADHESIVES:

A. FIRE RESISTANT ADHESIVE FOR SECURING INSULATION TO METAL DUCTWORK SHALL BE FOSTER 85-20 AS MANUFACTURED BY H.B. FULLER CO., OR APPROVED EQUAL.

B. ADHESIVE FOR FLEXIBLE SYNTHETIC ELASTOMER DUCT INSULATION APPLICATION AND JOINT SEALER SHALL BE RUBBER SIDE CONTACT ADHESIVE 8520 AS MANUFACTURED BY ARMSTRONG WORLD INDUSTRIES OR APPROVED EQUAL.

2.3.8 INSTALL EXTERIOR MATERIALS AFTER DUCTWORK HAS BEEN TESTED AND APPROVED.

2.3.9 CLEAN SURFACES FOR ADHESIVES.

2.3.10 INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

2.3.11 OUTDOOR INSULATION JACKET SHALL BE LISTED IN DUCT INSULATION SPECIFICATION.

2.3.12 PVC JACKET SHEET MATERIAL SHALL BE LOSMOKE, FROM 25/50 RATED SHEET AND ADHESIVE. APPLY THE ADHESIVE TO BOTH THE INSULATION USING A SOLVENT BASED CONTACT AND ALLOW TO FLASH. CAREFULLY ADHERE PVC TO INSULATION. FINISH JOINTS AND MATERIAL USING A WHITE SOLVENT BASED ADHESIVE THAT BONDS THE PVC TOGETHER ATTACH THE ANGLES TO EFFECT A WATERPROOF MEMBRANE.

2.3.13 ALL DUCTWORK INSULATION THICKNESS HAS BEEN CHECKED FOR R-VALUE AND COMPLIES TO ASHRAE 90.1.

2.3.14 DUCTWORK, INSULATION AND JACKET SHALL BE IN ACCORDANCE WITH THE SPEC. ON THIS SHEET UNLESS NOTED OTHERWISE ON DRAWINGS.

2.3.15 INSULATE NON-INTERNALLY LINED SUPPLY AND RETURN DUCTWORK WHICH IS EXPOSED TO THE NON-AIR CONDITIONED SPACE ABOVE THE CEILING.

2.3.16 INSULATE THE BACKS OF ALL CEILING MOUNTED AIR DISTRIBUTION DEVICES.

2.4 SHOP DRAWINGS:

2.4.1 CONTRACTOR TO SUBMIT SHOP DRAWINGS ON MECHANICAL EQUIPMENT PROVIDED UNDER THIS CONTRACT FOR REVIEW.

2.4.2 SHOP DRAWINGS: SUBMIT TO THE ENGINEER FOR REVIEW, BEFORE COMMENCING WORK, SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT TO BE PROVIDED UNDER THIS CONTRACT. THE FOLLOWING APPLIES TO THE SHOP DRAWINGS.

A. SUBMIT DRAWINGS OR CUTS OF ALL MATERIALS AND EQUIPMENT FOR REVIEW BY ENGINEER. SUCH SUBMITTALS MUST CONTAIN OUTLINE DIMENSIONS, OPERATING CLEARANCES, INSTALLATION, OPERATING AND MAINTENANCE INFORMATION AND SUFFICIENT ENGINEERING DATA TO INDICATE SUBSTANTIAL COMPLIANCE WITH SPECIFICATIONS. ALL SHOP DRAWINGS FOR ONE SECTION OF WORK OR ONE MECHANICAL SYSTEM SHALL BE SUBMITTED AT ONE TIME IN LOOSE-LEAF THREE RING BINDERS. NO REVIEW WILL BE GIVEN IF SUBMITTED PIECEMEAL.

B. WHERE SUBCONTRACTOR CONSIDERS ADDITIONAL DETAIL OR SHOP DRAWING ESSENTIAL TO PROPER FABRICATION OR INSTALLATION OF EQUIPMENT AND PIPING, THEY SHALL PREPARE SUCH DRAWINGS AND SUBMIT FOR REVIEW.

C. DESIGN IS BASED ON MANUFACTURER NAMED ON DRAWINGS OR IN SPECIFICATIONS. SHOP DRAWINGS SHALL INDICATE EXCEPTIONS TO OR DEVIATIONS FROM THE DESIGN BASIS.

D. CHANGES IN FOUNDATIONS, BASES, CONNECTIONS, CONTROLS, STARTERS, ELECTRICAL EQUIPMENT, WIRING AND CONDUIT, SPACE OPENINGS, WALLS AND CEILINGS, AND SOUND AND VIBRATION ISOLATION REQUIRED FOR PROM APPROVED EQUAL EQUIPMENT SHALL BE MADE AT NO COST TO ENGINEER.

E. INDICATE ON EACH SHOP DRAWING THAT SUBCONTRACTOR HAS CHECKED THAT IT COMPLIES WITH THE DRAWINGS AND SPECIFICATIONS BY AFFIXING A STAMP, NOTE INDICATING THAT MANUFACTURER IS AC SPECIFIED OR THAT MANUFACTURER IS TO BE APPROVED AS "OR EQUAL", AND SIGNATURE OF PERSON REVIEWING SHOP DRAWING.

F. SUBCONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND RECEIVE ENGINEER'S REVIEW BEFORE INSTALLING MATERIALS AND EQUIPMENT LISTED.

3.0 PERMITS:

3.1 THE CONTRACTOR WILL MAKE APPLICATION AND PAY ALL FEES FOR ALL BUILDING PERMITS AND APPLICATIONS TO LOCAL AUTHORITIES.

3.2 PROVIDE COPIES OF CERTIFICATES AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH THE LAWS AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION.

DUCTWORK SPECIFICATIONS

SYSTEM	DUCT TYPE	SEAL CLASS	MATERIAL	LATERAL JOINTS	LONGITUDINAL SEAMS	ELBOWS	TAKE OFF	DUCT REINFORCEMENT	PRESSURE RATING	CODE REFERENCES AND PERFORMANCE	DUCTWORK COMMENTS
BREAK ROOM DUCTWORK AND OFFICE AREA MAIN TRUNK RUNS OUT TO VAV BOXES	RECTANGULAR AND ROUND	SMACNA CLASS "B"	GALVANIZED SHEET METAL	SMACNA FIG. 1-4, TYPES 1-17 THROUGH 1-19, TYPES 1-21 THROUGH 1-23	SMACNA - FIG. 1-5 - PITTSBURGH LOCK SEAM	SQUARE TURN WITH SINGLE THICKNESS TURNING VANES - SMACNA FIG. 2-3 OR 1-1/2 RADIUS ROUND ELBOWS.	SMACNA FIG. 2-7 AND 2-8. CONNECTION SHALL BE SEALED FOR AIR TIGHT CONSTRUCTION.	PER LATEST EDITION OF SMACNA DUCT CONSTRUCTION STANDARDS - EXTERNAL ONLY. NO TIE RODS.	LOW - 2 INCH WG. POSITIVE OR NEGATIVE, VELOCITIES LESS THAN 2,500 FPM	NFPA, ASTM - A167, ASHRAE, SMACNA, UL, ANSI/ASTM - A924, ASTM - E84, ASTM - C177.	1. SEAL ALL JOINTS AND SEAMS WITH GLASS CLOTH AND DUCT SEALER.

DUCTWORK INSULATION SPECIFICATIONS

SYSTEM	DUCT LOCATION	DUCT SYSTEM	INSULATION MATERIAL	INSULATION THICKNESS	JACKET MATERIAL	JACKET THICKNESS	INSULATION COMMENTS
BREAK ROOM DUCTWORK AND OFFICE AREA MAIN TRUNK RUNS	INDOOR	SUPPLY AIR	MINERAL FIBER WRAP	TWO INCH	VAP FACING	–	1. INSULATION SHALL BE EQUAL TO OWENS CORNING TYPE 700 (1.00 PCF) ALL SERVICE DUCT WRAP. SEWON MECHANICAL SPECIFICATION.
	–	RETURN / EXHAUST AIR	MINERAL FIBER WRAP	TWO INCH	VAP FACING	–	2. SEAL ALL SHEET METAL JOINTS PRIOR TO INSULATING DUCTS.
DUCTWORK FROM OUTLET OF VAV BOXES	INDOOR	SUPPLY AIR	MINERAL FIBER BOARD	1-1/2 INCH	FOIL FACING	–	3. PROVIDE SEALED VAPOR BARRIER FOR INSULATION.
	–	RETURN / EXHAUST AIR	MINERAL FIBER BOARD	1-1/2 INCH	FOIL FACING	–	4. INSULATION SHALL BE EQUAL TO "OWENS CORNING TYPE 800 DUCT BOARD" PER SEWON MECHANICAL SPECIFICATION.
	–	–	–	–	–	–	2. SEAL ALL SHEET METAL JOINTS PRIOR TO INSULATING DUCTS.
	–	–	–	–	–	–	3. PROVIDE SEALED VAPOR BARRIER FOR INSULATION.

UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

MECHANICAL LEGEND NOTES & SPECS

NO.	DATE	BY	DESCRIPTION
A	08-08-14	JHL	PERMIT ISSUE

JOB NO. 71005332
DRAWN: JHL
CHECKED: WMW
SCALE: N/A

M001
DRAWING NO.

STRAIGHT COOLING ROOFTOP UNIT SCHEDULE

PLAN SYMBOL	AREA SERVED	COOLING 95 db/78 wb TOTAL (MBH)	COOLING 95 db/78 wb SENS. (MBH)	ELEC. HEAT (KW)	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	EXT. S.P. (IN. WG)	EVAPORATOR FAN MOTOR HP	NO. OF COMP.	NO. OF COND. FANS	VOLTAGE / PHASE	MCA	MOCP	SEER / EER	IEER	DUCT CONNECTIONS LOCATION	DUCT CONNECTIONS SUPPLY	DUCT CONNECTIONS RETURN	WEIGHT (LBS.)	BASIS OF DESIGN	NOTES
RTU-4	2ND FLR. TENANT AREA	85.3	70.2	27.0	2,800	200	0.75	2	2	2	460/3	48.0	60	12.0	14.5	DOWNFLOW	33" x 18"	33" x 18"	930.0	TRANE—THD092	1 THROUGH 16
RTU-5	2ND FLR. WELFARE AREA	166.2	135.6	36.0	5,000	400	1.25	5	2	2	460/3	80.0	70	12.0	-	DOWNFLOW	69" x 27"	77" X 20"	1,900.0	TRANE—THD180	1 THROUGH 16
-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

1. WHILE INDIVIDUAL UNIT COMPONENT ELECTRICAL REQUIREMENTS MAY VARY, THE TOTAL UNIT DESIGN CIRCUIT AMPACITY AND DESIGN BRANCH CIRCUIT BREAKER SIZE SHALL NOT EXCEED THE SCHEDULED VALUES. IF ELECTRICAL DATA VARIES, PROVIDE ELECTRICAL SHOP DRAWINGS WITH HVAC SHOP DRAWING INDICATING CHANGES TO CIRCUIT, OVERCURRENT PROTECTION, PANEL AND FEEDER.
2. SCHEDULED EXTERNAL STATIC PRESSURE DOES NOT INCLUDE PRESSURE DROP FOR COILS, FILTERS, CASING, ETC.
3. PROVIDE UNIT WITH SINGLE POINT POWER CONNECTION, FACTORY MOUNTED DISCONNECT AND THRU THE BOTTOM ELECTRICAL CONNECTIONS.
4. PROVIDE GALV. INSULATED ROOF CURB OF SUFFICIENT HEIGHT TO PROVIDE A MINIMUM 12 INCHES FROM FINISHED ROOF SURFACE TO TOP OF NAILER. CURB INSULATION SHALL BE 2" FIBERBOARD W/ FOIL FACING.
5. PROVIDE COMPRESSOR SHORT CYCLE PROTECTION TO PREVENT COMPRESSOR RESTART FOR AT LEAST 5 MINUTES AFTER SHUTDOWN.
6. NOT USED
7. PROVIDE FILTER ENCLOSURE AND 2" PLEATED THROW AWAY FILTER (MERV 7).
8. PROVIDE SMOKE DETECTOR IN SUPPLY AIR DUCT AS SHOWN ON DRAWINGS.
9. NOT USED.
10. PROVIDE NORMALLY OPEN AUXILIARY CONTACT FOR INTERLOCKED EQUIPMENT. COORDINATE AMP RATING WITH LOAD RATING.
11. PROVIDE FACTORY MOUNTED POWERED CONVENIENCE OUTLET. OUTLET SHALL BE INDEPENDENTLY WIRED.
12. PROVIDE CONTROLS FOR STARTING AND OPERATING THE UNIT IN THE COOLING MODE AT LOW AMBIENT TEMPERATURES.
13. NOT USED
14. PROVIDE ECONOMIZER WITH BAROMETRIC RELIEF DAMPER.
15. PROVIDE CONTROL INTERLOCKS WITH DRY CONTACTS FOR DDC INTERFACE.
16. PROVIDE STAGED CONTROLS FOR ELECTRIC HEAT.
17. PROVIDE INSECT SCREEN FOR OUTSIDE AIR INLET.

POWER VENTILATOR SCHEDULE

MARK	AREA SERVED	FAN TYPE	WHEEL TYPE	CONST	VOLUME (CFM)	ESP (IN WC)	FRPM	DRIVE	HP	VOLT / PHASE	ROOF / WALL OPENING	WEIGHT (LBS.)	EQUIPMENT INTERLOCK	MFG	MODEL	NOTES
EF-11	ADMIN. RESTROOMS	DOWNBLAST	CENT	ALUMINUM	1,070	0.500	1,107	DIRECT	1/2	120/1	14.5" X 14.5"	50.00000	RTU-2	GREENHECK	G123A	1 THROUGH 6
-	-	-		-	-	-	-	-	-	-	-		-	-	-	-

NOTES:

1. PROVIDE FACTORY MOUNTED AND WIRED DISCONNECT.
2. REMOVE EXISTING FAN AND RE-USE EXISTING CURB.
3. PROVIDE ALUMINUM INSECT SCREEN.
4. PROVIDE ADJUSTABLE BELT DRIVE.
5. PROVIDE GRAVITY BACKDRAFT DAMPER.
6. PROVIDE 120 MPH HOLD DOWN STRAPS FOR CURB AND FAN HEAD.

VARIABLE AIR VOLUME UNIT SCHEDULE

MARK	AREA SERVED	PRIMARY CFM	MIN. COOL CFM	MIN. HEAT CFM	ASSOC. RTU	TYPE	HEAT (KW)	STEPS	VOLTAGE / PHASE	INLET SIZE	S.P. (" W.G.)	WGT. (LBS)	MFG.	MODEL	NOTES
VAV-4-1	OFFICE (623)	750	300	315	RTU-4	SINGLE DUCT	4.0	SCR	480/3	8Ø	0.13	50	TRANE	VCE08	1 THRU 10
VAV-4-2	SOUTH OFFICES	1,600	640	705	RTU-4	SINGLE DUCT	9.0	SCR	480/3	12Ø	0.13	70	TRANE	VCE12	1 THRU 10
VAV-4-3	OFFICE (617)	450	200	240	RTU-4	SINGLE DUCT	3.0	SCR	480/3	6Ø	0.13	46	TRANE	VCE06	1 THRU 10
VAV-5-1	TRAINING ROOM (611)	1,050	450	450	RTU-5	SINGLE DUCT	6.0	SCR	480/3	10Ø	0.13	70	TRANE	VCE10	1 THRU 10
VAV-5-2	LOBBY/BREAK ROOM	1,525	650	705	RTU-5	SINGLE DUCT	9.0	SCR	480/3	12Ø	0.13	70	TRANE	VCE12	1 THRU 10
VAV-5-3	INT. OFFICES (612 & 613)	500	250	270	RTU-5	SINGLE DUCT	3.5	SCR	480/3	8Ø	0.13	70	TRANE	VCE08	1 THRU 10
VAV-5-4	UPPER ENT. LOBBY	1,500	800	800	RTU-5	SINGLE DUCT	10.0	SCR	480/3	12Ø	0.13	70	TRANE	VCE12	1 THRU 10
VAV-5-5	NORTH OFFICES (609 & 610)	500	250	270	RTU-5	SINGLE DUCT	3.5	SCR	480/3	8Ø	0.13	70	TRANE	VCE08	1 THRU 10
VAV-5-6	OFFICE (608)	700	350	380	RTU-5	SINGLE DUCT	5.0	SCR	480/3	8Ø	0.13	50	TRANE	VCE08	1 THRU 10
-	-	-			-	- -	-	-	-	-	-	-	-	-	-

NOTES:

1. PROVIDE DOUBLE WALL CONSTRUCTION.
2. PROVIDE FACTORY INSTALLED, ETL LISTED, ELECTRIC UNIT HEATER.
3. PROVIDE AUTOMATIC THERMAL CUTOUTS, AIR FLOW SENSOR AND LINE TERMINAL BLOCK.
4. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
5. MOUNT VAV'S AWAY FROM WALLS AND OTHER OBSTRUCTIONS PER MANUFACTURER'S RECOMMENDED CLEARANCES.
6. PROVIDE 24 V CONTROL TRANSFORMER.
7. PROVIDE WIRELESS DIGITAL DISPLAY ADJUSTABLE ZONE SENSOR.
8. PROVIDE FACTORY MOUNTED VAV BOX CONTROLLER.
9. PROVIDE ARI CERTIFIED UNIT.
10. PROVIDE UL LISTED UNIT.
11. PROVIDE WIRELESS COMMUNICATION INTERFACE FOLLOWING ZIGBEE PROTOCOL.

AIR DISTRIBUTION DEVICES SCHEDULE

MARK	CFM	NECK SIZE	FACE SIZE (IN.)	DESCRIPTION
A	140 - 250	8"Ø	24x24	SUPPLY DIFFUSER
	251 - 420	10"Ø	24x24	BASIS OF DESIGN: TITUS TMS-AA
	421 - 620	12"Ø	24x24	COLOR: WHITE
	621 - 750	14"Ø	24x24	MATERIAL: ALUMINUM
	751 - 980	16"Ø	24x24	ALUMINUM OPPOSED BLADE DAMPER: YES
C	000 - 500	22x8	24x10	RETURN / EXHAUST GRILLE (NON-DUCTED)
	501-1100	22x12	24x14	BASIS OF DESIGN: TITUS 50F
	1101-2200	22x22	24x24	MATERIAL: ALUMINUM
				ALUMINUM OPPOSED BLADE DAMPER: YES
H	000 - 175	12x12	12x12	DOOR GRILLE
	176 - 350	24x12	24x12	BASIS OF DESIGN: TITUS CT-700
	351 - 750	24x24	24x24	MATERIAL: ALUMINUM
	751 - 1150	30x30	30x30	BORDER TYPE: SURFACE MOUNT
R	000 - 140	000 - 140	7"Ø 8"Ø	SPOT DIFFUSER
	141 - 170	141 - 170	8"Ø 10"Ø	BASIS OF DESIGN: SEIHO
	171 - 330	171 - 330	10"Ø 13"Ø	MATERIAL: ALUMINUM
	331 - 460	331 - 460	12"Ø 14"Ø	BORDER TYPE: SURFACE MOUNT
	461 - 900	461 - 900	16"Ø 18"Ø	
	901 - 1150	901 - 1150	18"Ø 21"Ø	
	1151 - 1800	1151 - 1800	20"Ø 21"Ø	

NOTES:

1. AIR DISTRIBUTION DEVICES LOCATED WITHIN ACOUSTICAL TILE CEILINGS SHALL BE PROVIDED WITH BORDER TYPE 3 FOR LAY-IN MOUNTING. AIR DISTRIBUTION DEVICES LOCATED WITHIN GYPSUM BOARD CEILINGS OR WALLS SHALL BE PROVIDED WITH BORDER TYPE 1 FOR SURFACE MOUNTING. REFER TO ARCH DWGS FOR CEILING TYPES.
2. AIR DISTRIBUTION DEVICES LOCATED IN SMALL ROOMS WHERE FULL 24"x24" GRID ARE NOT AVAILABLE SHALL BE PROVIDED WITH SURFACE MOUNTING BORDERS IN LIEU OF LAY-IN. SECURE EACH DEVICE TO CEILING GRID WITH FIELD FABRICATED SUPPORTS.

stellar

UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

MECHANICAL SCHEDULES

REV.	DATE	BY	DESCRIPTION
A	[illegible]	JHL	PERMIT ISSUE

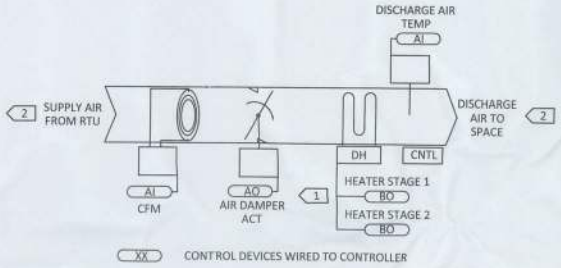
JOB NO. 71006332
DRAWN: JHL
CHECKED: WMW
SCALE: N/A

M002
DRAWING NO.

VARIABLE AIR VOLUME TERMINALS

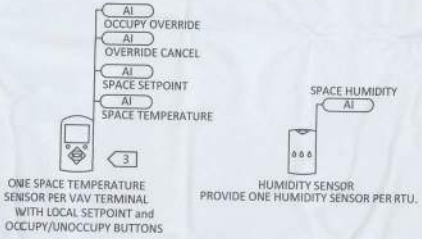
VAV TERMINAL WITH WITH ELECTRIC REHEAT (3)

(TYPICAL FOR ALL VAVs)



VAV SYSTEM POINTS LIST (TYPICAL FOR ALL VAVs)

CONTROLLER:	POINT TYPE							ALARMS					
SYSTEM POINT DESCRIPTION													
VAV													
VAV AIRFLOW (CFM)	X	AI											
VAV AIR VALVE ACTUATOR	X		AO					X	X				
VAV DISCHARGE AIR TEMPERATURE	X	AI											
VAV SPACE TEMPERATURE	X	AI						X	X				
VAV SPACE TEMPERATURE SETPOINT (ADJ.)	X	AI						X	X				X
VAV SPACE OCCUPY OVERRIDE COMMAND	X	BI						X	X				X
VAV SPACE OCCUPY CANCEL COMMAND	X	BI											
ELECTRIC REHEAT STAGE 1	X		BO										
ELECTRIC REHEAT STAGE 2	X		BO										
RTU SPACE HUMIDITY SENSOR (ONE PER RTU)	X	AI											
								X	X				X
OCCUPIED COOLING SETPOINT				X			74.0 deg. F						
OCCUPIED HEATING SETPOINT				X			70.0 deg. F						
OCCUPIED STANDBY COOLING SETPOINT				X			80.0 deg. F						
OCCUPIED STANDBY HEATING SETPOINT				X			66.0 deg. F						
UNOCCUPIED COOLING SETPOINT				X			85.0 deg. F						
UNOCCUPIED HEATING SETPOINT				X			60.0 deg. F						
OCCUPIED BYPASS TIMER				X			2.0 HRS						
DISCHARGE AIR TEMPERING SETPOINT				X			75.0 deg. F						
DISCHARGE AIR TEMPERATURE CONTROL POINTS				X									
BAS COMMUNICATION STATE	X			X									
MAINTENANCE REQUIRED				X			999 HRS						
GENERAL NOTES													
	1. DEVICE IS HARDWIRE INTERLOCKED. MANUAL RESET MAY BE REQUIRED												
	2. DISPLAYED AT THE SC USER INTERFACE IF PRESENT												
	3. CHECK MECHANICAL SCHEDULE FOR NUMBER OF VAVs OR FTUs TERMINALS												
	4. CHECK MECHANICAL SCHEDULE FOR NUMBER OF HEATING STAGES.												
	5. CHECK MECHANICAL SCHEDULE FOR NUMBER OF DX COOLING STAGES.												
	6.30000												



1 SEE THE MECHANICAL DRAWING'S SCHEDULE FOR THE NUMBER OF HEATI OR COOLING STAGES REQUIRED.

2 SCHEMATIC CONTROL FLOW DIAGRAM ONLY. SEE MECHANICAL DRAWING DUCTWORK DETAILS.

3 SEE MECHANICAL DRAWINGS FOR NUMBER OF VAV AND FTU TERMINALS.

VAV TERMINAL SEQUENCE OF OPERATION

Building Automation System Interface:

The Tracer System Controller shall send the VAV Controller an Occupied and Unoccupied command. The BAS may also send a Heat/Cool mode, priority shutdown commands and space temperature and/or space temperature setpoints. If communication is lost with the BAS, the VAV controller shall operate using its local setpoints.

Occupancy Modes:
The occupancy mode shall be communicated or hardwired to the VAV via a binary input. Valid Occupancy modes for the VAV shall be:

Occupied:
The space temperature will be maintained at its occupied setpoint of 75°F (adj.). On an increase in space temperature above the occupied space temperature setpoint (adj.) the VAV Controller will modulate the VAV damper between the minimum and maximum position to maintain the occupied setpoint. If communication to the BAS is lost, the space temperature shall be controlled to the local space sensor's default setpoint as programmed during commissioning.

On a decrease in zone space temperature below the occupied space temperature setpoint (adj.), the Controller shall modulate the VAV damper toward the minimum position to maintain the space temperature setpoint.

On a further decrease in space temperature, the VAV Terminal's electric duct heat shall cycle to maintain the space temperature setpoint.

On an increase in space temperature the reverse shall occur.

Applicable ventilation and airflow setpoints shall be enforced. The occupied mode shall be the default mode of the VAV.

Unoccupied (Night Setback):
When an average of selected space temperatures fall below the unoccupied heating setpoint of 60°F (adj), the supply fan shall start at the minimum CFM setting and the VAV shall open their dampers to the minimum position and shall cycle the electric duct heat to maintain the night setback setpoint of 60°F (adj.). When an average space temperature rises above the unoccupied heating setpoint 60°F (adj) plus the unoccupied differential 2°F (adj.) the supply fan will stop and the VAV electric duct heat shall be disabled.

When an average of selected space temperatures rise above the unoccupied cooling setpoint of 85°F (adj.), the supply fan will start and modulate between the minimum and maximum CFM settings (adj.) and the AHU chilled water valve will modulate to maintain the occupied discharge air temperature setpoint (adj.). The electric duct heat shall remain disabled. When the average space temperature falls below the unoccupied cooling setpoint of 85°F (adj.) minus the unoccupied differential 2°F (adj.), the supply fan will stop and the chilled water valve will close.

Occupied Bypass:
Mode used to temporarily place the unit into the occupied operation. Tenants shall be able to override the unoccupied mode from the space sensor. The override shall last for a maximum of 4 hours (adj.). The tenants shall be able to cancel the override from the space sensor at any time. During the override the unit shall operate in occupied mode.

Heat/Cool Mode:
The Heat/Cool mode shall be set by a communicated value. Heating mode shall command the VAV to heat only; it implies the primary air temperature is hot. Cooling mode shall command the VAV to cool only; it implies the primary air temperature is cold.

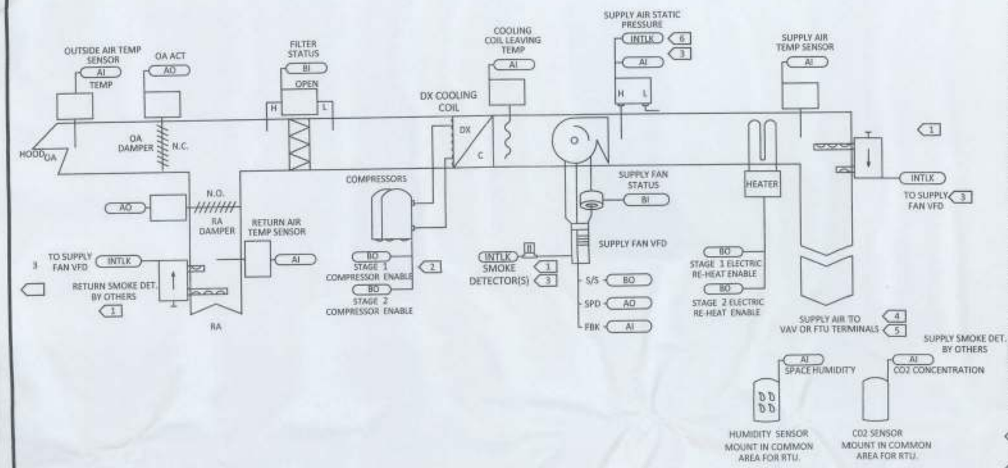
Heat/Cool Setpoint:
The space temperature setpoint shall be determined either by a locall (e.g., thumbwheel) setpoint, the VAV default setpoint or a communicated value. The VAV shall use the locally stored default setpoints when neither a local setpoint nor communicated setpoint is present. If both a local setpoint and communicated setpoint exist, the VAV shall use the communicated value.

Occupied Humidity Control:
If the average space relative humidity is greater than 60% (adj.) for one hour (adj.), the discharge air temperature shall be reset to a setpoint of 50°F (adj.) and the chilled water valve shall modulate to maintain the new discharge air temperature setpoint. When the average space relative humidity falls below 55%RH (adj.), the dehumidification mode shall terminate and the discharge air setpoint: shall be reset back to the normal occupied setpoint.

Unoccupied Humidity Control:
If the average space relative humidity is greater than 60% (adj.) for one hour (adj.), the supply fan shall start and the outside air and relief dampers shall remain closed. Any relief fan shall be inhibited from operating. The AHU discharge air temperature shall be reset to a setpoint of 50°F (adj.) and the chilled water valve shall modulate to maintain the new discharge air temperature setpoint. When the average space relative humidity falls below 55%RH (adj.), the dehumidification mode shall terminate and the AHU and associated equipment shall return to their unoccupied mode.

Space Sensor Failure:
If there is a fault with the operation of the sensor, an alarm shall be annunciated at the BAS. Space sensor failure shall cause the VAV to drive the damper to minimum air flow if the VAV is in the occupied mode, or drive it closed if the VAV is in the unoccupied mode.

USCS LAKE CITY VARIABLE AIR VOLUME ROOFTOP UNITS
(TYPICAL FOR RTU-4 AND 5)



USCS LAKE CITY RTU-4 - SYSTEM POINTS LIST (TYPICAL FOR RTU-5)

CONTROLLER:	POINT TYPE							ALARMS							
SYSTEM POINT DESCRIPTION	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NOTES
RTU															
RETURN AIR SMOKE DETECTION	X				X										NOTE 1
SUPPLY AIR SMOKE DETECTION	X				X										NOTE 1
DISCHARGE AIR TEMPERATURE	X	AI						X	X			X		SENSOR FAILURE	
COOLING COIL LEAVING TEMPERATURE	X	AI						X	X			X		SENSOR FAILURE	
RETURN AIR TEMPERATURE	X	AI						X	X			X		SENSOR FAILURE	
OUTSIDE AIR TEMPERATURE	X	AI						X	X			X		SENSOR FAILURE	
OUTSIDE AIR DAMPER	X		AO												
RETURN/MIXED AIR DAMPER	X		AO												
DX COOLING STAGE 1 ENABLE	X		BO												NOTE 5
DX COOLING STAGE 2 ENABLE	X		BO												NOTE 5
SUPPLY FAN START/STOP (VFD)	X		BO												
ELECTRIC REHEAT STAGE 1 ENABLE	X		BO												NOTE 4
ELECTRIC REHEAT STAGE 2 ENABLE	X		BO												NOTE 4
SUPPLY FAN SPEED REQUEST (VFD)	X		AO												
SUPPLY FAN (VFD) FEEDBACK CFM (AIRFLOW)	X	AI						X	X						
SUPPLY DUCT STATIC PRESSURE	X	AI						X	X						NOTE 1
SUPPLY FAN STATUS (VFD)	X	BI								X					NOTE 6
FILTER STATUS	X	BI								X				DIRTY FILTER	
CO2 SPACE SENSOR	X	AI						X	X			X		SENSOR FAILURE	
OCCUPIED COOLING SETPOINT				X			74.0 deg. F								
OCCUPIED HEATING SETPOINT				X			70.0 deg. F								
OCCUPIED STANDBY COOLING SETPOINT				X			80.0 deg. F								
OCCUPIED STANDBY HEATING SETPOINT				X			65.0 deg. F								
UNOCCUPIED COOLING SETPOINT				X			85.0 deg. F								
UNOCCUPIED HEATING SETPOINT				X			60.0 deg. F								
OCCUPIED BYPASS TIMER				X			2.0 HRS								
DISCHARGE AIR TEMPERING SETPOINT				X			55.0 deg. F								
DISCHARGE AIR TEMPERATURE CONTROL POINTS				X											
BAS COMMUNICATION STATE	X			X									X		
MAINTENANCE REQUIRED				X			800 HRS								

GENERAL NOTES:
1. DEVICE IS HARDWIRE INTERLOCKED, MANUAL RESET MAY BE REQUIRED
2. CHECK MECHANICAL SCHEDULE FOR NUMBER OF EXHAUST FANS THAT NEED TO BE STARTED AND STOPPED, WHICH ONES ARE INTERLOCKED.
3. CHECK MECHANICAL SCHEDULE FOR NUMBER OF VAV TERMINALS AND NUMBER OF STAGES OF ELECTRIC DUCT REHEAT PER VAV TERMINAL.
4. CHECK MECHANICAL SCHEDULE FOR NUMBER OF HEATING STAGES.
5. CHECK MECHANICAL SCHEDULE FOR NUMBER OF DX COOLING STAGES.
6. INSTALL A CURRENT SENSING SWITCH, MOUNT IN THE FAN VFD OR STARTER FOR POSITIVE STATUS FEEDBACK.

1. SMOKE DETECTORS ARE FURNISHED AND WIRED BY THE ELECTRICAL DIVISION BUT MOUNTED BY MECHANICAL DIVISION. INTERLOCK AUX CONTACT WIRING WITH VFD TO STOP FAN ON ALARM CONDITION. TYPICAL FOR SUPPLY AND RETURN FANS VFDs. BUILDING FIRE ALARM PANEL WIRING BY OTHERS.
2. SEE THE MECHANICAL DRAWING'S SCHEDULE FOR THE NUMBER OF COOLING STAGES REQUIRED.
3. WIRE SAFETY DEVICES IN SERIES WITH SUPPLY FAN VFD'S INTERLOCK CIRCUIT TO STOP THE FAN IN AN ALARM CONDITION.
4. SCHEMATIC CONTROL FLOW DIAGRAM ONLY. SEE MECHANICAL DRAWINGS FOR DUCTWORK DETAILS.
5. SEE MECHANICAL DRAWINGS FOR NUMBER OF VAV AND FTU TERMINALS.
6. PROVIDE EXTRA BINARY INPUT AND OUTPUT (BI/BO) POINTS TO TIE IN ADDITIONAL EXHAUST FANS AS REQUIRED. SEE MECHANICAL SCHEDULE FOR NUMBER OF EFANS ASSOCIATED WITH EACH RTU.

USCS LAKE CITY VAV RTU SEQUENCE OF OPERATION
(TYPICAL FOR RTU-4 AND RTU-5)

The Tracer System Controller will send Occupied, Unoccupied, Optimal Start, Night Setback Heat / Cool and Timed Override commands. If communication is lost with the BAS, or a BAS is not present, Morning Warm-up and Morning Cool-down will be disabled and the RTU Controller shall control to the default settings installed at commissioning/start-up.

Unoccupied Mode: When the building is indexed for unoccupied operation, the RTU's supply fan shall be stopped, the DX Cooling Circuits shall be inhibited from operating, the outside air damper shall be positioned closed and the return air damper shall be positioned open. All the associated interlocked exhaust fans shall be stopped.

Unoccupied (Night Setback):
When the space temperature falls below the unoccupied heating setpoint (60°F adj.) the supply fan will start and the RTU's Electric Duct Reheat shall be energized. The zone VAV/FPB heating coils will modulate as required to help warm up the space temperature. When the space temperature rises above the unoccupied heating setpoint (60°F adj.) plus the unoccupied differential (2°F adj.) the supply fan will stop, the Electric Duct Reheat shall de-energize and the zone VAV/FPB terminals shall return to their Unoccupied Mode.

When the space temperature rises above the Unoccupied Cooling Setpoint 85°F (adj.) the supply fan will start and the DX Cooling Stage(s) shall energize. The zone VAV/FPB terminals shall drive their dampers to the maximum open position to help cool down the space temperature. When the space temperature falls below the unoccupied cooling setpoint 85°F (adj.), minus the unoccupied differential (2°F adj.), the supply fan will stop, the DX Cooling Stage(s) shall de-energized and the zone VAV/FPB terminals shall return to their Unoccupied Mode.

Morning Warm-up: During the Optimal Start Mode, if the space temperature is 3°F or more below the occupied heating setpoint, a morning warm-up sequence will be activated with 100% return air. The supply fan will start and the electric duct heat shall be energized to raise the space temperature to the occupied heating setpoint. The OA damper shall remain closed and all exhaust fans shall be off. The discharge temperature shall not be under control. This shall occur at a minimum of 30 minutes prior to the occupied mode. The Warm-up Mode will terminate when the space temperature reaches the occupied heating setpoint.

Morning Cool-Down: During Optimal Start Mode, if the space temperature is 3°F above the occupied cooling setpoint, a morning cool-down sequence will be activated and shall operate with 100% return air. The supply fan will start and the DX Cooling will energize to lower the space temperature to the occupied cooling setpoint. The OA damper shall remain closed and all exhaust fans shall be off. The Morning Cool-Down Mode will terminate when the space temperature reaches the occupied cooling setpoint.

Unoccupied Override: An override mode shall be provided that will permit operation of the rooftop unit to feed the zone in override. When in override, the unit shall operate as described for occupied operation. The associated exhaust fans shall remain off. Override may be accomplished by use of the override button on the room temperature sensor or by manual input to the computer.

Occupied Mode: When the building is indexed for occupied operation, if the unit is not running, the RTU Unit shall start and the RTU Unit outdoor air damper shall be modulated 100% open or until the Outdoor Air Setpoint iss met. If the OA is still low when the damper is 100% open, then the return air damper shall be modulated toward the closed position to maintain the minimum outside air quantity scheduled. All associated exhaust fans shall be started only after the unit OA dampers has been proven open. The actual time for occupied operation shall be one hour prior to the normal occupancy time to permit an IAQ pre-operation period.

Should the CO2 sensor in the AHU zone exceed the minimum setpoint, the outdoor air damper shall be modulated open to maintain the minimum outside air setpoint. (See Indoor Air Quality Control below).

Occupied (Humidity Control): On a rise in space relative humidity above 60% RH, the Cooling Coil Temperature Setpoint shall be set down to 52°F (adj.). The DX Cooling stage(s) shall be cycled to maintain the Cooling Coil Setpoint Temperature. The Electric Duct Reheat Stage(s) shall modulate to maintain the Discharge Air Temperature Cooling Setpoint of 55°F (adj.) The VAV zone heating coils will modulate as required to maintain their space temperatures. The system shall remain under this control until the space relative humidity drops below 58% RH. (adj.). If the space relative humidity sensor fails the dehumidification sequence will be terminated and an alarm will be annunciated.

Space (Temperature Control):
The space temperature will be maintained between the occupied cooling setpoint (74°F adj.) and the occupied heating setpoint (68°F adj.). The unit will transition to the cooling mode when the space temperature rises one degree above the occupied cooling setpoint (74°F adj.). The unit will transition to the heating mode when the space temperature drops one degree below the occupied heating setpoint 68°F (adj.).

Indoor Air Quality Control: (If required shown on drawings and/or AHU schedule): When the air handling unit is indexed for occupied operation, the indoor air quality shall be monitored by a CO2 sensor located in the space mounted between 3'-5' above finished floor (refer to the drawings). The minimum outdoor air introduced into the building shall be varied between the OA Maximum CFM listed on the schedule and the partially occupied Minimum OA CFM listed on the schedule. The OA damper shall be set to the minimum setpoint until the sensor reads 800+ PPM. After going above this setting the OA damper shall modulate open to the maximum OA CFM until sensor reads below 800 PPM for a duration of 30 minutes. During the partially occupied mode or CO2 mode the OA introduced into the building is only enough to satisfy the occupants and the buildings minimum pressurization requirements of no more than 5%. All interlocked associated exhaust and relief fans shall be off, unless otherwise noted. When the building is occupied and the OA setpoint is per the maximum OA CFM on the schedule all exhaust and relief fans shall be energized. The contractor shall demonstrate this to the Owner and engineer during substantial completion.

Supply Fan and Duct Pressure Control: The Building Control System (BCS) shall continuously monitor the damper position of all VAV terminal units. The discharge duct static pressure shall be sensed directly at the discharge of each air handler. The sensor must be mounted in a non-turbulent location.

When any VAV damper is more than 75% (adj.) open, the supply fan discharge duct static pressure setpoint shall be reset upward by 0.1 in W.C. (adj.), at a frequency of 15 minutes (adj.), until no damper is more than 75% open or the static pressure setpoint has reset upward to the system maximum duct static pressure setpoint or the AHU variable-frequency drive is at the maximum speed setting.

When all VAV dampers are less than 65% (adj.) open, the supply fan discharge duct static pressure setpoint shall be reset downward by 0.1 in W.C.(adj.), at a frequency of 15 minutes (adj.), until at least one damper is more than 65% open or the static pressure setpoint has reset downward to the system minimum duct static pressure setpoint or the AHU variable-frequency drive is at the minimum speed setting.

The control bands, setpoint increment values, setpoint decrement values and adjustment frequencies shall be adjusted to maintain maximum static pressure optimization with stable system control and maximum comfort control.

The BCS shall have the capability to allow the operator to exclude "problem" zones that should not be considered when determining the optimized setpoint.
The BCS shall also read the status of the supply air static pressure sensor and display the active duct static pressure reading on the status screen.

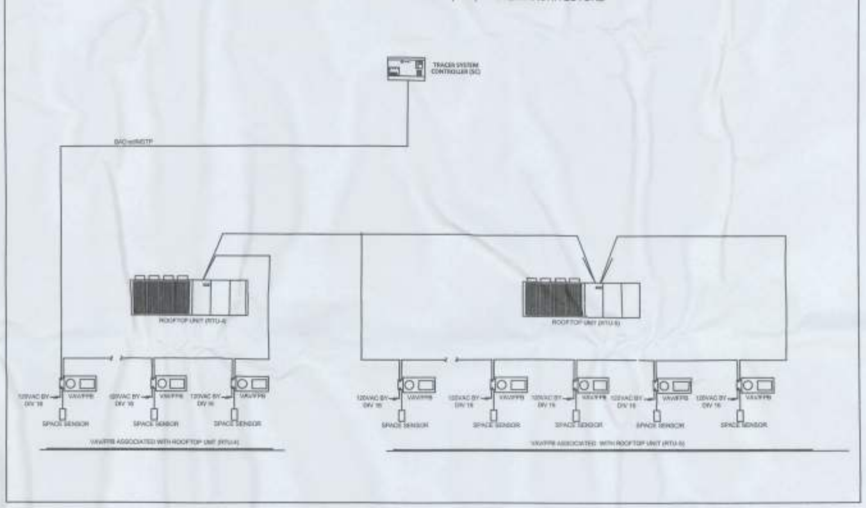
The BCS shall have the ability to identify, and display to the user, the VAV box that serves the Critical Zone (that is, the zone with the most wide-open VAV damper). This information shall update dynamically as the location of the Critical Zone changes based on building load, and duct static pressure setpoint optimization control.

Smoke Detection Alarm: Should products of combustion be detected by the supply or return air smoke detectors, the supply fan shall be stopped and associated smoke dampers shall close and an alarm sent to the Building Fire Alarm System.

Indoor Air Quality Control: (If required, shown on the mechanical drawings and/or AHU schedule): When the air handling unit is indexed for occupied operation, the indoor air quality shall be monitored by a CO2 sensor located in the space mounted between 3'-5' above finished floor (refer to the drawings). The minimum outdoor air introduced into the building shall be varied between the OA CFM listed on the schedule and the partially occupied CO2 CFM listed on the schedule. The OA damper shall be set to the minimum setpoint until the sensor reads 800+ PPM. After going above this setting the OA damper shall modulate open to the full OA CFM until sensor reads below 800 PPM for a duration of 30 minutes. During the partially occupied mode the OA introduced into the building is only enough to satisfy the occupants and the buildings minimum pressurization requirements. All interlocked associated exhaust and relief fans shall be off. When the building is occupied and the OA setpoint is per the maximum OA CFM on the schedule all exhaust and relief fans shall be energized. The contractor shall demonstrate this to the Owner and engineer during substantial completion.

Filter Status Alarm: When the filter pressure drop exceeds 1.0" W.G., a filter change alarm shall be made through the BCS.

BUILDING AUTOMATION SYSTEM (BAS) SYSTEM ARCHITECTURE



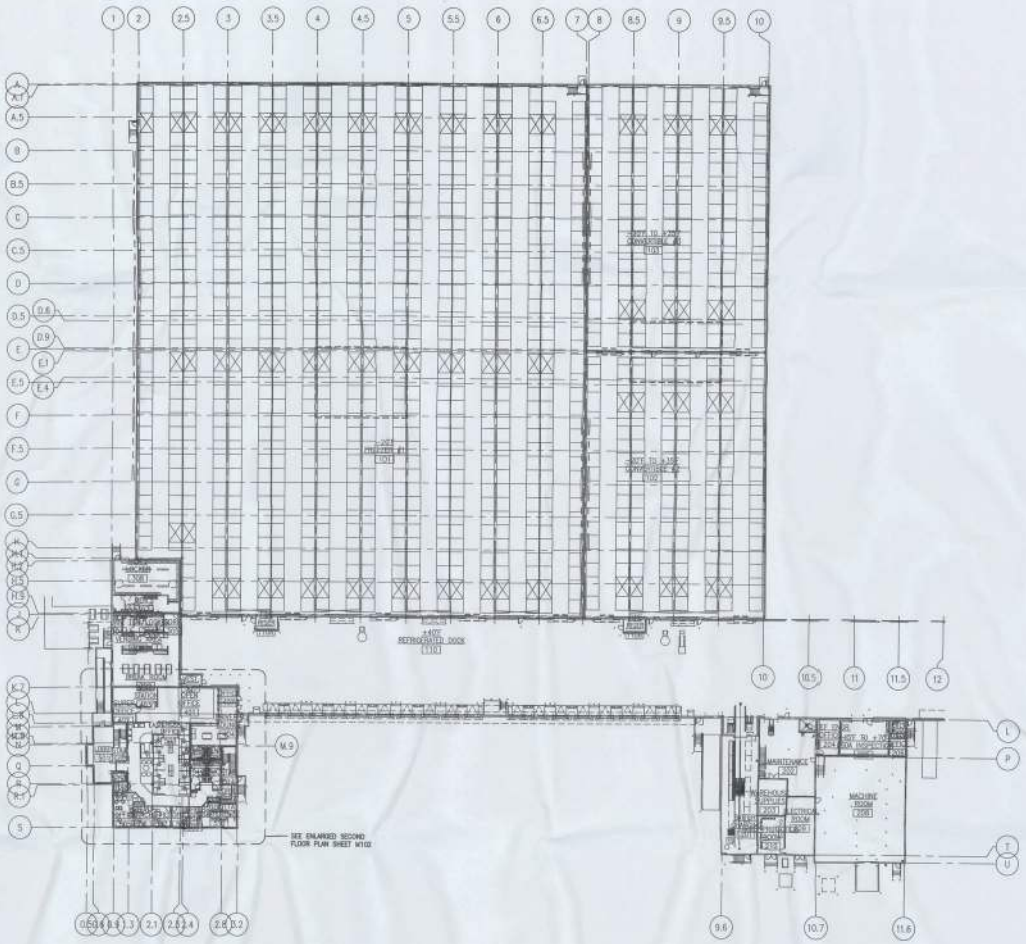
UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

MECHANICAL SEQUENCE OF OPERATIONS

REV.	DATE	BY	DESCRIPTION
A	[illegible]	JHL	PERMIT ISSUE

JOB NO. 71005332
DRAWN: JHL
CHECKED: WMW
SCALE: N/A

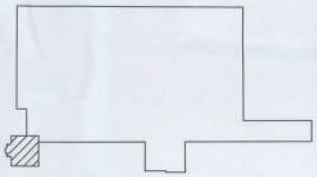
M004
DRAWING NO.



MECHANICAL OVERALL FLOOR PLAN

SCALE: 1/32" = 1'-0"

N



KEY PLAN

NOT TO SCALE

N

stellar

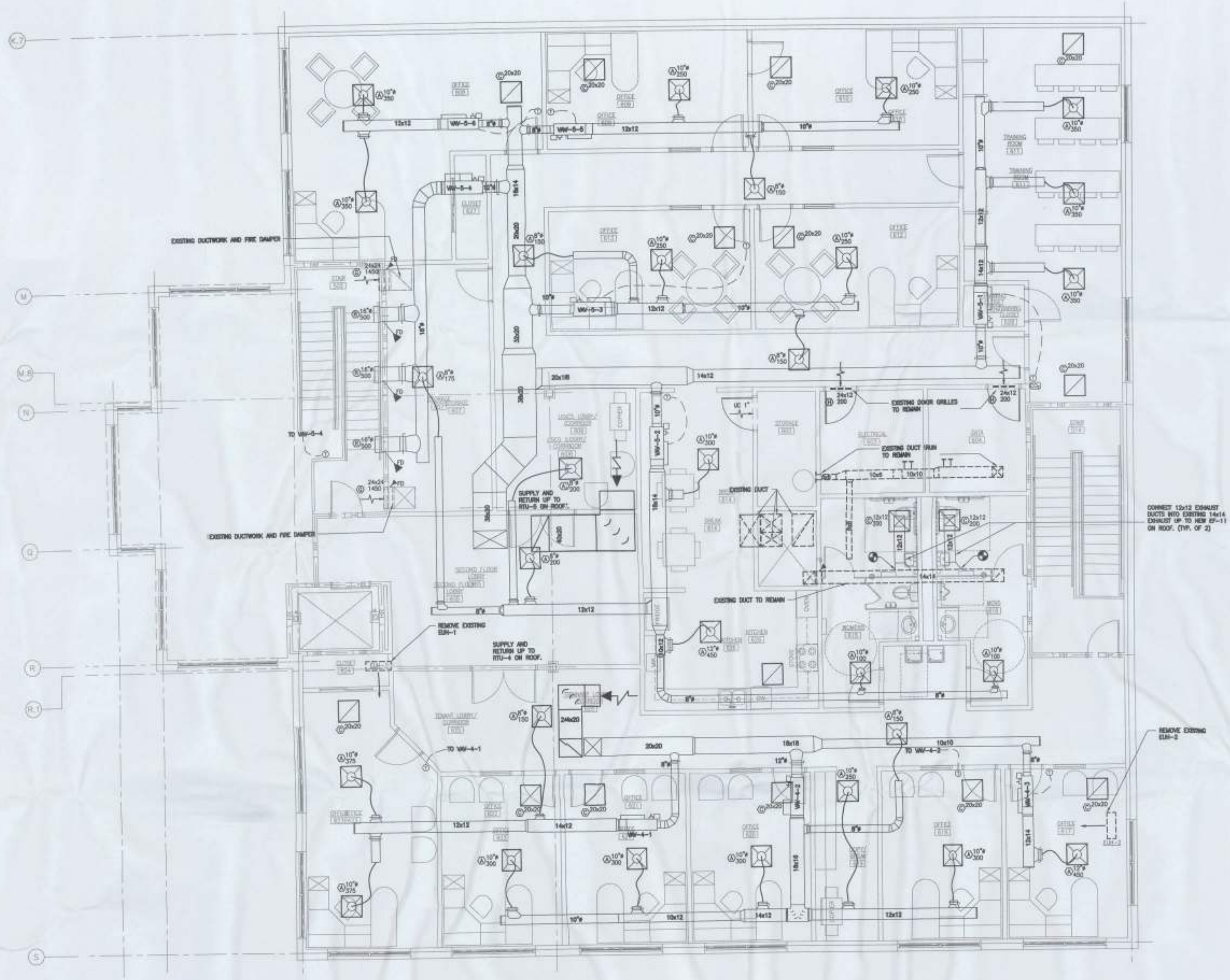
UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

MECHANICAL OVERALL FLOOR PLAN

REV.	DATE	BY	PERMIT ISSUE DESCRIPTION
A	10-31-17	JHL	

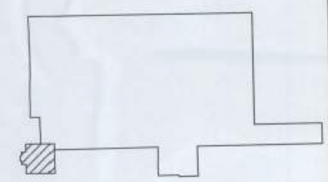
JOB NO.	71005332
DRAWN:	JHL
CHECKED:	WMW
SCALE:	AS NOTED

M101
DRAWING NO.



MECHANICAL ENLARGED FLOOR PLAN

SCALE: ¼" = 1'-0"



KEY PLAN

NOT TO SCALE

stellar

UNITED STATES COLD STORAGE

SECOND FLOOR OFFICE BUILD-OUT

LAKE CITY, FLORIDA

MECHANICAL ENLARGED FLOOR PLAN

A		JHL	PERMIT ISSUE
REV.	DATE	BY	DESCRIPTION

JOB NO. 71005332

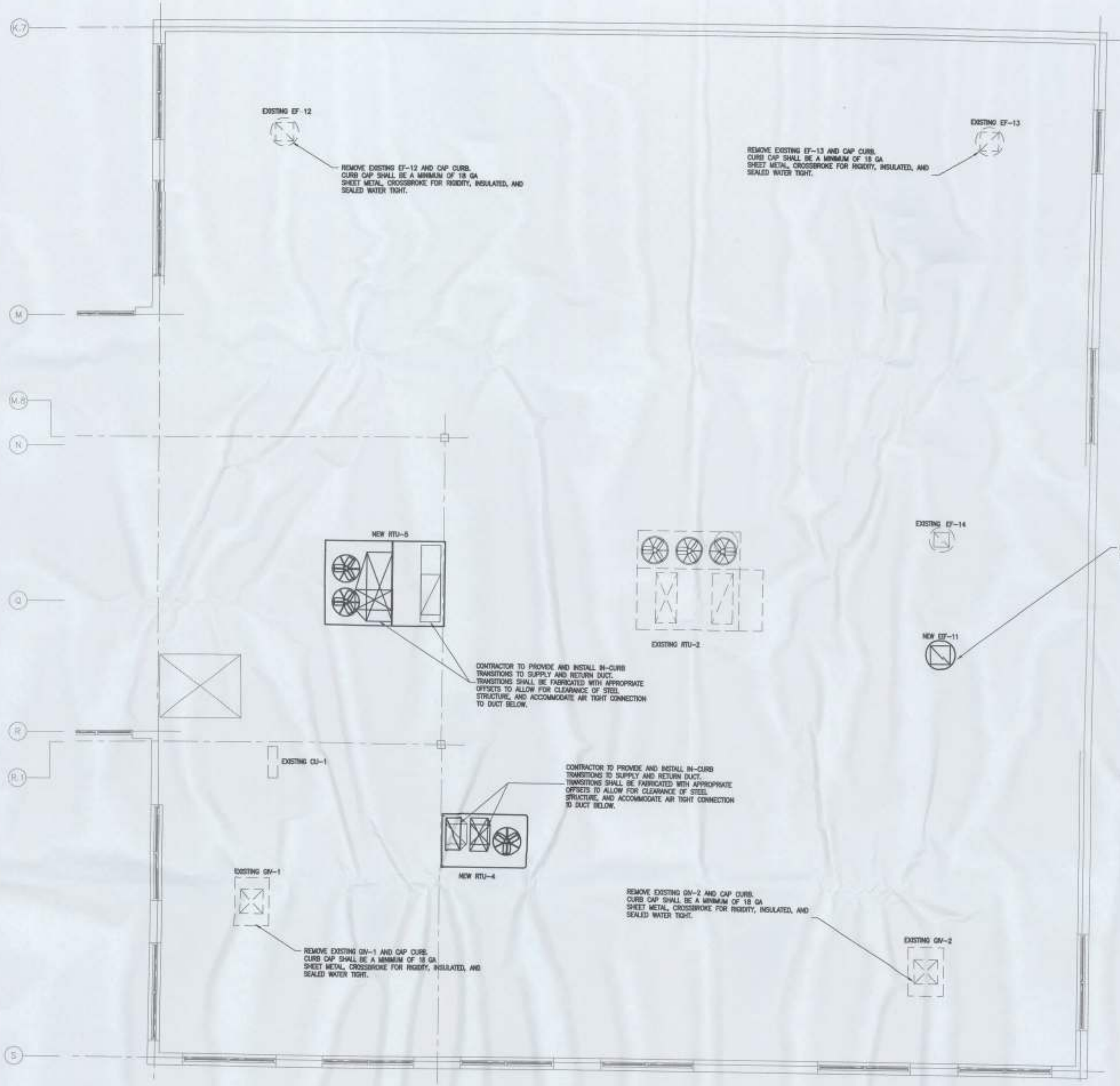
DRAWN: JHL

CHECKED: WMW

SCALE: AS NOTED

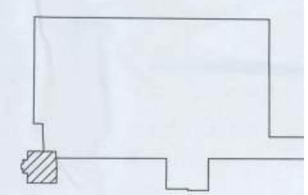
M102

DRAWING NO.



MECHANICAL ENLARGED ROOF PLAN

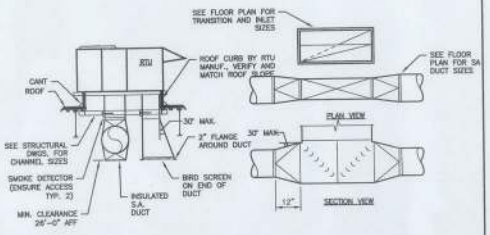
SCALE: ¼" = 1'-0"



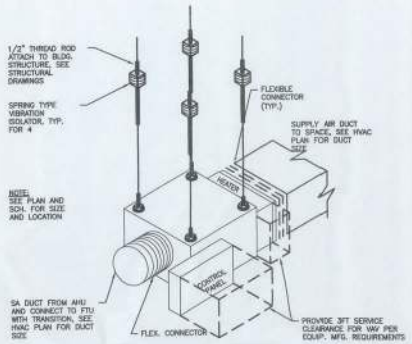
KEY PLAN

NOT TO SCALE

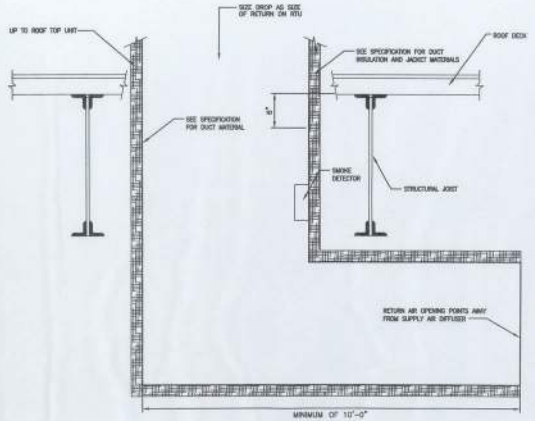
Last Saved By: JLOWE Date: 8/7/2014 5:16:49 PM Plotted: 8/8/2014 1:36:37 PM



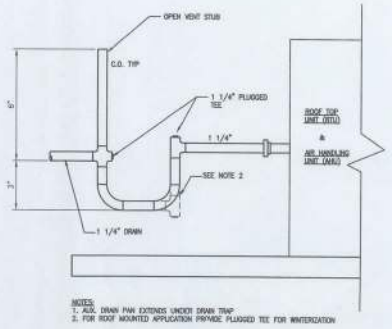
ROOF TOP UNIT DETAIL SCALE: N.T.S. (1)



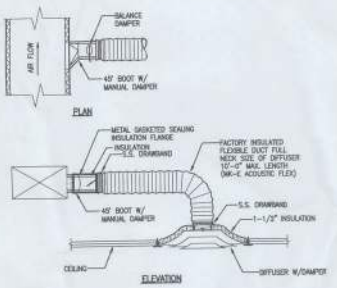
VAV DETAIL SCALE: N.T.S. (2)



RETURN DUCT DETAIL SCALE: N.T.S. (3)



COOLING COIL CONDENSATE DRAIN (TYPICAL) SCALE: N.T.S. (4)

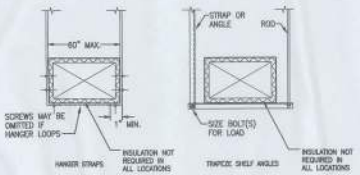


NOTE: PROVIDED AND INSTALLED BY CONTRACTOR

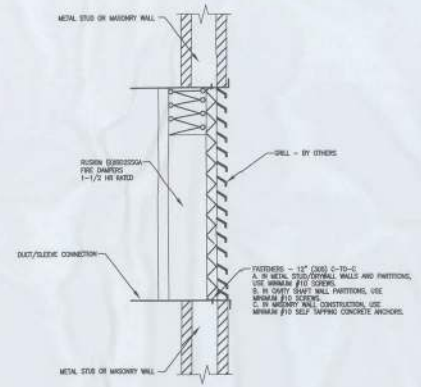
BRANCH DUCT TAKE-OFF DETAIL SCALE: N.T.S. (5)

LONGEST DUCT DIMENSION	STRAP HANGERS	TRAPEZE SHELF ANGLE	MAX. SPACING
-18"	1" x 22 GAUGE	1" x 1" x 1/8"	8'-0"
19"-30"	1" x 20 GAUGE	1" x 1" x 1/8"	8'-0"
31"-42"	1" x 18 GAUGE	1-1/2" x 1-1/2" x 1/8"	8'-0"
43"-60"	1" x 18 GAUGE	1-1/2" x 1-1/2" x 1/8"	8'-0"

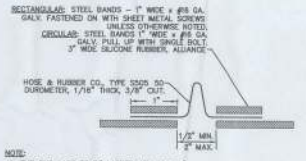
NOTES:
1. ALL HANGERS MUST BE SECURELY ATTACHED TO A STRUCTURAL MEMBER AND NOT TO THE ROOF DECK.
2. SEAL ALL INSULATION PENETRATIONS W/ MASTIC.



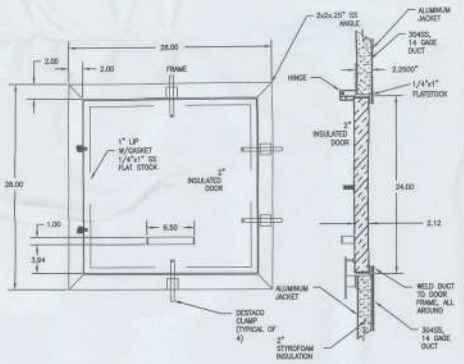
HANGERS FOR RECTANGULAR DUCT SCALE: N.T.S. (6)



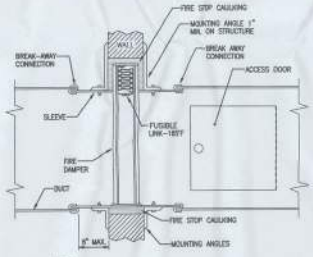
GRILL ACCESS FIRE DAMPER SCALE: N.T.S. (7)



FLEXIBLE CONNECTION DETAIL SCALE: N.T.S. (8)



DUCT ACCESS DOOR DETAIL SCALE: N.T.S. (9)



NOTES:
1. DAMPERS SHALL BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH UNDERWRITERS LABORATORIES SAFETY STANDARD 555.
3. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS
3. CLEARANCE BETWEEN FIRE DAMPER SLEEVE AND OPENING SHALL BE 1/8" PER FOOT OF HEIGHT (OR WIDTH).
4. SEE LIFE SAFETY PLAN FOR LOCATIONS OF FIRE WALLS AND PROVIDE FIRE DAMPERS AS REQUIRED.

FIRE DAMPER DETAIL SCALE: N.T.S. (10)

– SCALE: N.T.S. (11)

– SCALE: N.T.S. (12)

stellar

UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

MECHANICAL DETAILS

REV	DATE	BY	PERMIT ISSUE DESCRIPTION
A	09-05-14	JHL	

JOB NO.	71005332
DRAWN:	JHL
CHECKED:	WMW
SCALE:	N/A

M501
DRAWING NO.

BASE LUMINAIRE SCHEDULE

TYPE	LUMINAIRE DESCRIPTION	MANUFACTURER AND CATALOG NO. (OR APPROVED EQUAL)		INPUT DATA VOLTS	INPUT DATA WATTS	QTY.	LAMP INFORMATION DESCRIPTION	REFERENCE NOTES
D	DOWN LIGHT DIMMABLE	LITHONIA	LFBN-2/32TRT-FB03AZ-MVOLT-ADEZ	277	69	2	32 WATT, TRIPLE TUBE 3500K, 80+ CRI	4
D1	DOWN LIGHT	LITHONIA	LFBN-2/32TRT-FB03AZ-MVOLT	277	69	2	32 WATT, TRIPLE TUBE 3500K, 80+ CRI	–
D1E	DOWN LIGHT W/BATT	LITHONIA	LFBN-2/32TRT-FB03AZ-MVOLT-EL	277	69	2	32 WATT, TRIPLE TUBE 3500K, 80+ CRI	1,4
F3	2x4 LAY-IN FLUORESCENT TROFFER	LITHONIA	2GTB-3-32-A12125-MVOLT-GEB10IS	277	88	3	32 WATT, T8 3500K, 80+ CRI	5
F3E	2x4 LAY-IN FLUORESCENT TROFFER W/BATT	LITHONIA	2GTB-3-32-A12125-MVOLT-GEB10IS-EL14	277	88	3	32 WATT, T8 3500K, 80+ CRI	1,5
SL	STRIP LIGHT –	LITHONIA	C-2-32-MVOLT-GEB10IS-MOCUN-HC36	277	54	2	32 WATT, T8 3500K, 80+ CRI	–
X	EXIT LIGHT –	LITHONIA	LQM-S-3R-120/277-ELN	277	1	–	LED INCLUDED –	1,2

ALTERNATE LUMINAIRE SCHEDULE

TYPE	LUMINAIRE DESCRIPTION	MANUFACTURER AND CATALOG NO. (OR APPROVED EQUAL)		INPUT DATA VOLTS	INPUT DATA WATTS	QTY.	LAMP INFORMATION DESCRIPTION	REFERENCE NOTES
D	DOWN LIGHT DIMMABLE	LITHONIA	DOM6-900L-40K-277-DO6-DIM	277	25	–	LED INCLUDED	4
D1	DOWN LIGHT	LITHONIA	DOM6-900L-40K-277-DO6	277	25	–	LED INCLUDED	–
D1E	DOWN LIGHT W/BATT	LITHONIA	DOM6-900L-40K-277-DO6-DIM-ELRB722	277	25	–	LED INCLUDED –	1,4
F3	2x4 LAY-IN FLUORESCENT TROFFER	LITHONIA	2TL4-46L-FW-A12-DS0-LP840-N80	277	46	–	LED INCLUDED –	5
F3E	2x4 LAY-IN FLUORESCENT TROFFER W/BATT	LITHONIA	2TL4-46L-FW-A12-DS0-LP840-N80-EL14L	277	46	–	LED INCLUDED –	1,5
SL	STRIP LIGHT –	LITHONIA	ZL1-L48-2800L-LP840	277	32	–	LED INCLUDED –	–
X	EXIT LIGHT –	LITHONIA	LQM-S-3R-120/277-ELN	277	1	–	LED INCLUDED –	1,2

LUMINAIRE SCHEDULE NOTES:

1. ALL EMERGENCY EGRESS LUMINAIRES REQUIRE AN UNSWITCHED CONNECTION. WHERE EMERGENCY EGRESS DEVICES ARE CONTAINED WITHIN NORMAL USE LUMINAIRES, PROVIDE LOCAL SWITCHING AS INDICATED ON DRAWINGS.
2. EXIT LIGHTING: ALL EXIT SIGNS SHALL BE MOUNTED 7'-6" A.F.F. (UON)
3. FOR MOUNTING HEIGHTS AND DETAILS NOT LISTED ON SCHEDULE, REFER TO LIGHTING DRAWINGS.
4. PROVIDE ELECTRONIC DIMMING BALLAST.
5. PROVIDE FIXTURE WITH 2 BALLASTS FOR INBOARD OUTBOARD SWITCHING. LED ALTERNATE FIXTURE HAS 0-10V FULL RANGE DIMMING STANDARD.

GENERAL NOTES

1. COORDINATE FINAL LOCATIONS OF ALL MECHANICAL AND REFRIGERATION EQUIPMENT WITH THE APPROPRIATE TRADE.
2. FLEXIBLE CONDUIT INSTALLED OUTDOORS OR INDOORS SHALL BE LIQUID TIGHT FLEX WITH SUITABLE FITTINGS.
3. CONDUIT SHALL PASS THROUGH WALLS ONLY AT 90 DEGREES AND TO BE RUN PARALLEL OR PERPENDICULAR TO WALLS.
4. BRANCH CIRCUIT HOMERUNS SHALL BE MINIMUM #12 WIRE AND 3/4" CONDUIT. EVERY NEW CONDUIT SHALL HAVE A GROUND WIRE (#12 MINIMUM). CONTROL WIRING SHALL USE #14 SIGNAL AND GROUND (MINIMUM).
5. ALL UNDERGROUND CONDUIT RUNS ENTERING THE BUILDING SHALL BE SEALED TO PREVENT THE ENTRANCE OF MOISTURE AND GASES.
6. ALL LIGHTING FIXTURES SHALL BE PROVIDED WITH ALL THE APPROPRIATE MOUNTING HARDWARE FOR A COMPLETE INSTALLATION.
7. PROVIDE NEW PLASTIC ENGRAVED NAMEPLATES ON ALL NEW PANELBOARDS (INCLUDING NAMEPLATES FOR CIRCUITS IN I-LINE PANELBOARDS), SWITCHGEAR, MOTOR CONTROL CENTERS AND TRANSFORMERS. USE NAMES PER THIS RISER DIAGRAM. COORDINATE IN FIELD FOR NAMEPLATES OF EQUIPMENT NOT SHOWN ON RISER DIAGRAM. PROVIDE NAMEPLATE INFORMATION AS INDICATED IN FIELD ON AS BUILT DRAWINGS. ALL ELECTRICAL DEVICES SHALL HAVE THE CIRCUIT(S) WHICH SERVE THE DEVICE CLEARLY IDENTIFIED FOR THE USER.
8. CONDUIT SHALL BE AS DESCRIBED IN THE SPECIFICATIONS AND THESE GENERAL NOTES.
9. ALL GEAR AND PANELS SHALL BE FULLY RATED FOR AVAILABLE FAULT CURRENT AS INDICATED. SERIES AND OR INTEGRATED RATINGS ARE NOT ACCEPTABLE.
10. ALL WORK SHALL BE PER NEC 2008 AND ALL OTHER LOCAL, STATE AND NATIONALLY ENFORCED CODES.
11. BATHROOM SENSORS SHALL BE ABLE TO CONTROL 277V LTG CIRCUIT AND 120V EXHAUST FAN CKT SIMULTANEOUSLY USE MYTEC # RR-SS-TB-DC-W.
12. SEE MECHANICAL DRAWINGS FOR DIRECTION ON CONTROL SEQUENCE WIRING.
13. ELECTRICAL CONTRACTOR MAY NOT DE-RATE CONDUCTORS IN THE FIELD WITHOUT SPECIFIC ENGINEER'S APPROVAL.
14. SEAL ALL PENETRATIONS THROUGH FIRE WALLS TO MAINTAIN THE RATING OF WALL/FLOOR. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS.
15. PROVIDE CONDUIT AND DEVICE BOXES FOR MECHANICAL EQUIPMENT THERMOSTATS. ELECTRICAL CONTRACTOR WILL BE RESPONSIBLE FOR WIRING THERMOSTATS DEPENDING ON VOLTAGE. SEE MECHANICAL DRAWINGS FOR FURTHER DIRECTION.
16. PROVIDE POWER AND CONTROL CONNECTIONS AND WIRING FOR MECHANICAL EQUIPMENT INCLUDING ALL MOTORIZED DAMPERS. SEE MECHANICAL DRAWINGS FOR FURTHER DIRECTION.
17. THESE DOCUMENTS PERTAIN TO ELECTRICAL ONLY. THIS DESIGN SHALL NOT BE USED TO QUALIFY OTHER DISCIPLINES NOR SHALL IT BE RESPONSIBLE FOR OTHER DISCIPLINE REQUIREMENTS OR PROPERTY ASSETS NOT A PART OF THE ELECTRICAL CONTRACT.
18. EQUIPMENT AND LIGHTING SHALL NOT EXCEED THE POWER REQUIREMENTS SPECIFIED IN THE EQUIPMENT AND LIGHTING SCHEDULE.
19. REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS.
20. DEVICES MOUNTED TO CMU WALLS SHALL BE INSTALLED FLUSH WITH WALL. SURFACE MOUNTING SHOULD BE AVOIDED.
21. FAILURE TO FOLLOW THESE REQUIREMENTS WILL BE CONSIDERED INADEQUATE WORK. ALL DISCREPANCIES SHALL BE CORRECTED WITH NO EXPENSE TO STELLAR OR FACILITY OWNER.
22. THE ELECTRICAL CONTRACTOR SHALL REVIEW ALL NAMEPLATE DATA FOR DISCREPANCIES, WHICH SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
23. IN NO INSTANCE SHALL LIGHT FIXTURES BE LOCATED DIRECTLY OVER PIPING OR DUCTWORK. IF PIPING IS RUN DIRECTLY UNDER A SET LIGHT FIXTURE, THE LIGHT FIXTURE SHALL BE RELOCATED AT NO ADDITIONAL COST. COORDINATE WITH MECHANICAL TRADES FOR LOCATION OF MAJOR PIPE RUNS AND DUCTWORK. IN AREAS WITH HEAVY PIPE AND DUCT WORK, IT IS PERMISSIBLE TO MOUNT LIGHT FIXTURES UNDERNEATH PIPING OR DUCTWORK, PROVIDED AMPLE HEAD ROOM IS AVAILABLE.
24. ALL CONDUIT PENETRATIONS GOING THROUGH AREAS WITH A DIFFERENCE IN TEMPERATURE OF 15 DEGREES OR MORE SHALL BE SEALED PER DETAIL 3/E501.
25. IN GENERAL CONDUCTORS SHALL BE THHN/THWN COPPER. CONDUCTORS RUN IN 0 DEG. F. SPACES (OR BELOW) SHALL BE XHHW COPPER FOR THE ENTIRE LENGTH.
26. CONDUIT INDOORS SHALL BE EMT 12'-0" ABOVE FINISHED FLOOR IN DRY AREAS WHERE NOT SUBJECT TO DAMAGE. COMPRESSION TYPE FITTINGS USED FOR 1-1/2" AND SMALLER SET SCREW MAY BE USED FOR SIZES LARGER THAN 1-1/2". EMT/MC CABLE SHALL BE USED IN OFFICE SPACES. CONDUIT OUTDOORS ABOVE GRADE SHALL BE IMC.
27. PROVIDE FINAL CONNECTIONS OF ALL POWER AND CONTROL WIRING FOR ALL DEVICES AND EQUIPMENT FOR ALL TRADES UNLESS OTHERWISE NOTED ON THE DRAWINGS.
28. ELECTRICAL CONTRACTOR SHALL PROVIDE STARTUP SUPPORT TO INCLUDE COMMISSIONING OF ALL VARIABLE SPEED DRIVES, SOFT STARTS, AND OTHER ELECTRICAL GEAR CONTRACTOR IS PROVIDING. COMMISSIONING SHALL INCLUDE CONFIGURATION OF ALL EQUIPMENT FOR THE INTENDED APPLICATION INCLUDING ENTERING MOTOR DATA AND/OR PROTECTION SETTINGS, AND SETTING UP COMMUNICATIONS PARAMETERS IN ACCORDANCE WITH ELECTRICAL/CONTROLS DRAWINGS.
29. ALL COMMUNICATION WIRING SHALL BE IN RACEWAYS. NO "FREE-AIR" WIRING IS PERMITTED.

ELECTRICAL LEGEND

- 2 x 4 FLUORESCENT LUMINAIRE
- EMERGENCY 2 x 4 FLUORESCENT LUMINAIRE
- FLUORESCENT STRIP LUMINAIRE
- EMERGENCY FLUORESCENT STRIP LUMINAIRE
- ENCLOSED FLUORESCENT LUMINAIRE
- EMERGENCY ENCLOSED FLUORESCENT LUMINAIRE
- WALL MOUNTED FLUORESCENT LUMINAIRE
- EMERGENCY WALL MOUNTED FLUORESCENT LUMINAIRE
- RECESSED OR PENDANT MOUNTED LUMINAIRE
- EMERGENCY RECESSED OR PENDANT MOUNTED LUMINAIRE
- WALL MOUNTED LUMINAIRE
- WALL MOUNTED LUMINAIRE WITH ADJUSTABLE ARM
- SURFACE MOUNTED ADJUSTABLE LUMINAIRE
- TRACK MOUNTED LUMINAIRES (4 SHOWN)
- POLE MOUNTED AREA LIGHT (ONE LUMINAIRE SHOWN)
- FLOOD LIGHT MOUNTING AS NOTED
- BUILDING MOUNTED WALL PACK
- EMERGENCY BATTERY PACK WITH TWO INTEGRAL LIGHTS
- EMERGENCY REMOTE SINGLE LIGHT HEAD
- EMERGENCY REMOTE DOUBLE LIGHT HEAD
- EXIT LIGHT (SINGLE, DOUBLE, WALL MOUNTED)
- S — SINGLE POLE SINGLE THROW SWITCH (SPST)
- DOUBLE POLE SINGLE THROW SWITCH (DPST)
- THREE WAY SPST SWITCH
- MOTOR RATED SWITCH (SPST UNLESS NOTED OTHERWISE)
- SLIDE TYPE DIMMER SWITCH (1200VA CAPACITY) LEVITON RENOIR SERIES
- WALL MOUNTED INFRARED OCCUPANCY DETECTOR LEVITON ODS15-ID (SINGLE LOAD SWITCHING)
- WALL MOUNTED INFRARED OCCUPANCY DETECTOR LEVITON ODS0D-ID (TWO LOAD SWITCHING)
- CEILING MOUNTED OCCUPANCY DETECTOR LEVITON OSC10-MOW (PROVIDE POWER PACK)
- DUPLEX RECEPTACLE WALL MOUNTED
- QUADRAPLEX RECEPTACLE WALL MOUNTED
- DUPLEX ISOLATED GROUND RECEPTACLE WALL MOUNTED
- DUPLEX RECEPTACLE WITH INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER
- EQUIPMENT MOUNTED DUPLEX RECEPTACLE WITH INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER AND WEATHERPROOF COVER
- FLUSH MOUNTED MULTI USE FLOOR OUTLET WITH COVER POWER, TELEPHONE AND DATA - AS SPECIFIED
- FLUSH MOUNTED FLOOR RECEPTACLE WITH COVER
- AC — DUPLEX RECEPTACLE ABOVE COUNTER
- TELE/DATA WALL OUTLET 4" SQUARE BOX WITH 3/4" CONDUIT STUB
- INFRARED CONTROLLED FLUSH VALVE SENSORS. COORDINATE WITH MECHANICAL CONTRACTOR.
- CEILING MOUNTED TRANSFORMER FOR ELECTRONIC VALVE
- CONNECT PRE-WIRED FURNITURE - 4 CIRCUITS FROM CEILING. CONCEAL CONDUIT IN COLUMN.
- 1 1/2"C. TO PRE-WIRED FURNITURE FROM CEILING. CONCEAL CONDUIT IN CEILING.
- F.A.P. — FIRE ALARM PANEL
- FIRE ALARM PULL STATION
- FIRE ALARM HORN
- FIRE ALARM AUDIO/VISUAL DEVICE
- FIRE ALARM STROBE DEVICE
- SD — SMOKE DETECTOR
- DSD — DUCT SMOKE DETECTOR
- HD — HEAT DETECTOR
- TS — TAMPER SWITCH - ELECTRICALLY SUPERVISED
- FS — FLOW SWITCH - ELECTRICALLY SUPERVISED
- LS — LIMIT SWITCH
- SS — SELECTOR SWITCH
- HOA — HAND/OFF/AUTO SELECTOR SWITCH
- OA — OFF/AUTO SELECTOR SWITCH
- HA — HAND/AUTO SELECTOR SWITCH
- CCTV — CLOSED CIRCUIT TELEVISON CAMERA
- ELECTRONIC CARD READER
- MAGNETIC DOOR LOCK
- ELECTRONIC DOOR SENSOR
- ELECTRONIC WINDOW SENSOR
- ELECTRONIC MOTION SENSOR
- JUNCTION BOX (SIZE PER N.E.C.)
- JUNCTION BOX FOR DOOR JAMB OR CONDENSATE HEAT (SIZE PER N.E.C.)
- NON-FUSED DISCONNECT SWITCH (FRAME SIZE/# POLES/ENCLOSURE)
- FUSED DISCONNECT SWITCH (FRAME SIZE/# POLES/FUSE SIZE/ENCLOSURE)
- COMBINATION STARTER (STARTER SIZE/# POLES/ENCLOSURE)
- MSP — MOTOR STARTER PROTECTOR (GROUP MOTOR STARTING) (STARTER SIZE/# POLES/ENCLOSURE) SIEMENS PRODUCT #SML + SIZE (OR APPROVED EQUAL)
- PANELBOARD (SEE SCHEDULE FOR CONFIGURATION)
- MOTOR - NUMBER DENOTES HORSEPOWER
- PP — POWER POLE WITH 2 SECTIONS
- CONDUIT
- UNDERFLOOR/UNDERGROUND CONDUIT
- EMERGENCY OR LOW VOLTAGE CONDUIT
- BRANCH CIRCUIT HOMERUN: SEE PANELBOARD CIRCUIT FOR NUMBER OF CONDUCTORS REQUIRED

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	DISC	DISCONNECT	MSB	MAIN SWITCHBOARD
AFG	ABOVE FINISHED GRADE	EF	EXHAUST FAN	N/C	NORMALLY CLOSED
AL	ALUMINUM	EWC	ELECTRIC WATER COOLER	N/O	NORMALLY OPEN
BATT	BATTERY	FVNR	FULL VOLTAGE NON REVERSING	PNL	PANEL
CONC	CONCRETE	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	RCP	REFRIGERATION CONTROL PANEL
CONTR	CONTRACTOR	HOA	HAND OFF AUTO	T/M	THERMAL MAGNETIC
CT	CURRENT TRANSFORMER	INST	INSTANTANEOUS	XFMR	TRANSFORMER
CPT	CONTROL POWER TRANSFORMER	MCC	MOTOR CONTROL CENTER	TYP	TYPICAL
CU	COPPER	MDP	MAIN DISTRIBUTION PANEL	UON	UNLESS OTHERWISE NOTED
				WP	WEATHERPROOF

GENERAL DEMOLITION NOTES:

1. VERIFY CIRCUITING ARRANGEMENTS ARE AS SHOWN ON DRAWINGS OR AS DETERMINED IN THE FIELD.
2. VERIFY THAT WIRING AND EQUIPMENT TO BE ABANDONED SERVES ONLY ABANDONED FACILITIES.
3. DEMOLITION DRAWINGS ARE BASED ON CASUAL FIELD OBSERVATION. REPORT DISCREPANCIES TO ENGINEER BEFORE DISTURBING EXISTING INSTALLATION.
4. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO PREPARING HIS BID IN ORDER TO FAMILIARIZE HIMSELF WITH CONDITIONS AS THEY EXIST. HE SHALL STUDY ALL AVAILABLE BUILDING PLANS, ARCHITECTURAL AND MECHANICAL DRAWINGS WHICH MAY BE AVAILABLE TO VIEW AT THE FACILITY, TO SATISFY HIMSELF AS TO THE EXTENT OF ALL CONTINGENCIES AND SHALL INCLUDE THE COST OF SAME IN HIS BID. BEGINNING OF DEMOLITION SHALL MEAN CONTRACTOR ACCEPTS EXISTING CONDITIONS.
5. DISCONNECT ELECTRICAL SYSTEMS IN WALLS, FLOORS, AND CEILINGS SCHEDULED FOR REMOVAL.
6. COORDINATE ANY UTILITY SERVICE OUTAGES WITH THE OWNER AND THE UTILITY COMPANY. PROVIDE 72 HOURS ADVANCED NOTICE MINIMUM. THERE SHALL NOT BE ANY INTERRUPTION TO SERVICES TO THE EXISTING FACILITY WITHOUT PRIOR SCHEDULING OF SUCH OUTAGES WITH THE OWNER. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS, USE ONLY PERSONNEL EXPERIENCED IN SUCH OPERATIONS AND USE THE PROPER PPE REQUIRED.
7. PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS, USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS AND USE THE PROPER PPE REQUIRED.
8. EXISTING ELECTRICAL SYSTEM: MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR SERVICE. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER AT LEAST 72 HOURS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA.
9. EXISTING FIRE ALARM SYSTEM: MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS ACCEPTED. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. NOTIFY OWNER AND LOCAL FIRE SERVICE AT LEAST 72 HOURS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA. PROVIDE A 24 HOUR MANNED WATCH IN ANY AREA WHERE THE FIRE ALARM SYSTEM IS DISABLED.
10. REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION.
11. REMOVE ABANDONED WIRING TO SOURCE OF SUPPLY.
12. REMOVE EXPOSED ABANDONED CONDUIT, INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILING FINISHES. CUT CONCEALED CONDUIT FLUSH WITH WALLS AND FLOORS, CAP, AND PATCH SURFACES.
13. DISCONNECT ABANDONED OUTLETS AND REMOVE DEVICES. REMOVE ABANDONED OUTLETS IF CONDUIT SERVICING THEM IS ABANDONED AND REMOVED. PROVIDE BLANK COVER FOR ABANDONED OUTLETS AND BOXES WHICH REMAIN AS SPLICING POINTS ARE NOT REMOVED.
14. DISCONNECT AND REMOVE ABANDONED PANELBOARDS AND DISTRIBUTION EQUIPMENT.
15. DISCONNECT AND REMOVE ELECTRICAL DEVICES AND EQUIPMENT SERVING UTILIZATION EQUIPMENT THAT HAS BEEN REMOVED.
16. DISCONNECT AND REMOVE ABANDONED LUMINAIRES. REMOVE ALL BRACKETS, STEMS, HANGERS, AND OTHER ACCESSORIES.
17. ALL SALVAGEABLE MATERIAL SHALL REMAIN THE PROPERTY OF THE OWNER. MOVE TO AND STORE AT A LOCATION ON SITE AS DIRECTED BY THE OWNER. IF THE OWNER CHOOSES NOT TO TAKE POSSESSION OF ALL OR SOME PORTION OF SALVAGEABLE MATERIAL, REMOVE THAT MATERIAL FROM SITE AND DISPOSE OF PROPERLY. OBTAIN A RECEIPT FOR ALL ITEMS REMOVED FROM THE SITE.
18. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK.
19. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANEL AS APPROPRIATE.
20. EXTEND EXISTING INSTALLATIONS USING MATERIALS AND METHODS COMPATIBLE WITH EXISTING ELECTRICAL INSTALLATIONS, OR AS SPECIFIED.
21. THE CONTRACTOR SHALL MAINTAIN ACCURATE RECORDS OF ANY MODIFICATIONS TO EXISTING SYSTEMS AND SHALL UPON COMPLETION DELIVER "AS-BUILT" DRAWINGS TO THE OWNER INDICATING ANY SUCH CHANGES.
22. ALL EXISTING DEVICES AND FIXTURES IN THE PATH OF RENOVATION SHALL BE REMOVED BY THE CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN EXISTING CIRCUITRY TO ALL REMAINING DEVICES AND FIXTURES. FOR EACH DEVICE OR FIXTURE REMOVED AT THE END OF A CIRCUIT, CONTRACTOR SHALL REMOVE WIRING FROM LAST REMAINING DEVICE. FOR EACH DEVICE OR FIXTURE REMOVED IN THE MIDDLE OF A CIRCUIT, CONTRACTOR SHALL REMOVE WIRING FROM FIRST DEVICE OR FIXTURE. NEW WIRING AND CONDUIT, SIZED THE SAME AS EXISTING, SHALL BE PULLED BETWEEN THE TWO REMAINING DEVICES OR FIXTURES. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK.
23. TO PERMIT INSTALLATION OF NEW PIPES OR DUCTS AS INDICATED ON MECHANICAL AND PLUMBING DRAWINGS, THE CONTRACTOR SHALL REMOVE AND REINSTALL OR RELOCATE ANY ELECTRICAL DEVICES OR CONDUITS NECESSARY TO FACILITATE SUCH WORK.
24. EXISTING DEVICES AND CONDUIT MAY BE REUSED ON THIS PROJECT IF IN GOOD CONDITION AND IF DRAWING REQUIREMENTS AND SPECS ARE MET.

TELEPHONE/DATA/WIRELESS ACCESS POINTS:
THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING CONDUIT STUBS TO ABOVE CEILING SPACE, FITTINGS, AND BOXES FROM DEVICE LOCATION TO THE NEAREST TELE/DATA IDF/MDF. COORDINATE WITH TELEPHONE/DATA CONTRACTOR.

SECURITY SYSTEM:
ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SYSTEM OF CONDUIT, FITTINGS, BOXES, AND PULL STRING FROM DEVICE LOCATION TO THE NEAREST SECURITY CONTROL PANEL. COORDINATE WITH SECURITY SYSTEM CONTRACTOR.

FIRE ALARM:
ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SYSTEM OF CONDUIT, FITTINGS, BOXES, AND PULL STRING FROM DEVICE LOCATION TO THE NEAREST FIRE ALARM PANEL. COORDINATE WITH FIRE ALARM SYSTEM CONTRACTOR.

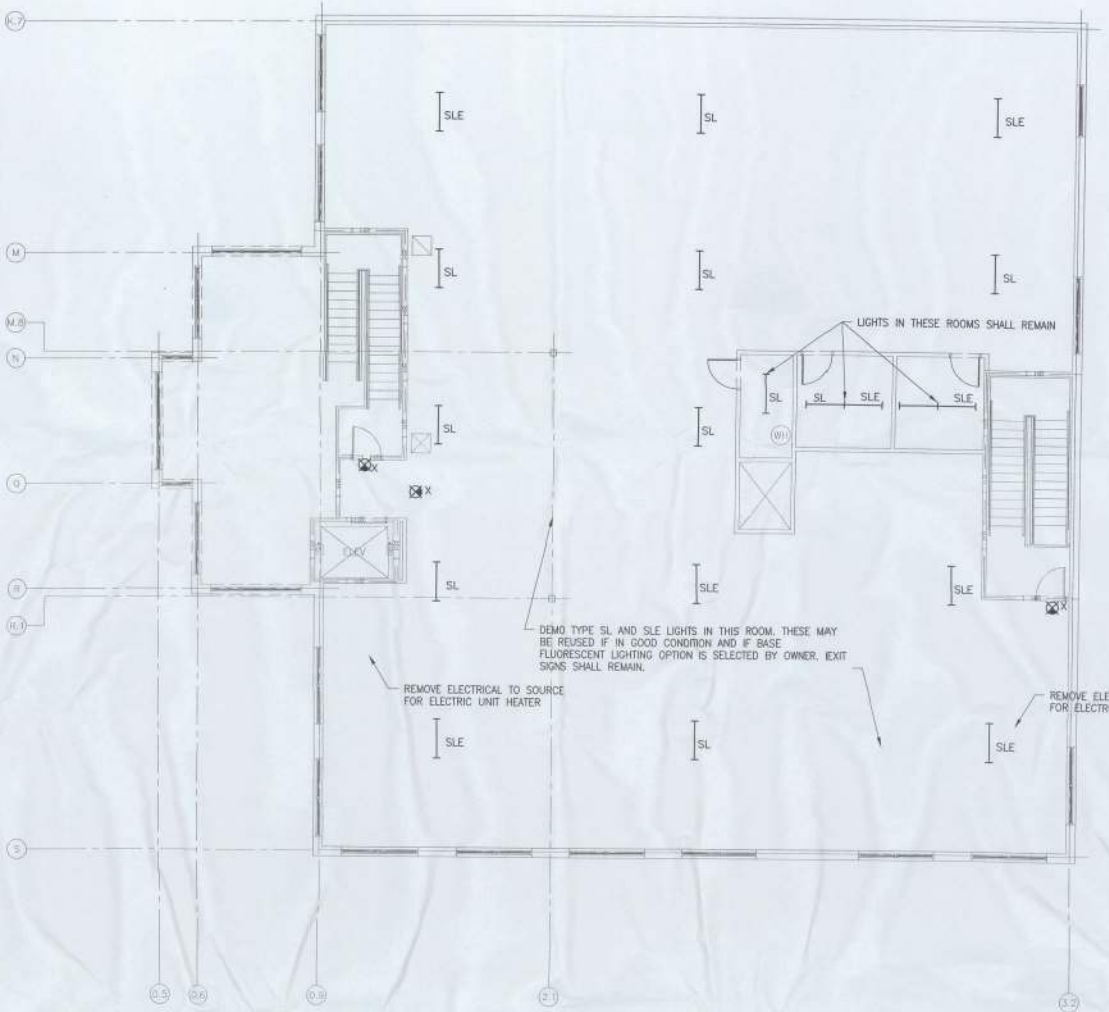
ELECTRICAL

UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

ELECTRICAL LEGEND, LUMINAIRE SCHEDULE, & GENERAL NOTES

REV.	DATE	BY	DESCRIPTION
A		CAS	PERMIT ISSUE

JOB NO. 71005332
DRAWN: CAS
CHECKED: JRP
SCALE: AS NOTED



ELECTRICAL DEMOLITION PLAN

stellar

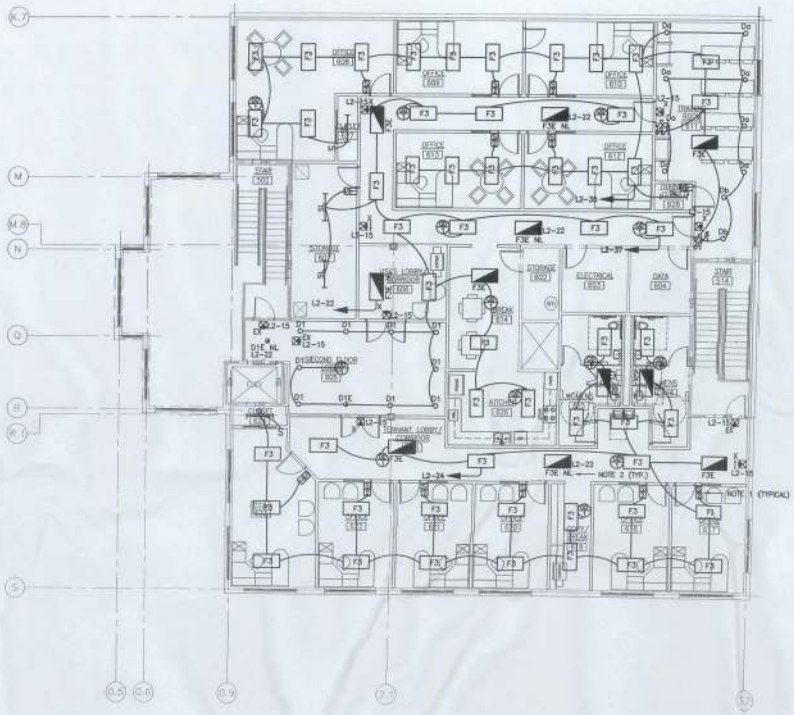
UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

ELECTRICAL DEMOLITION PLAN

REV	DATE	BY	DESCRIPTION
A	10.30.17	CAS	PERMIT ISSUE

JOB NO. 71005332
DRAWN: CAS
CHECKED: JRP
SCALE: AS NOTED

E002
DRAWING NO.

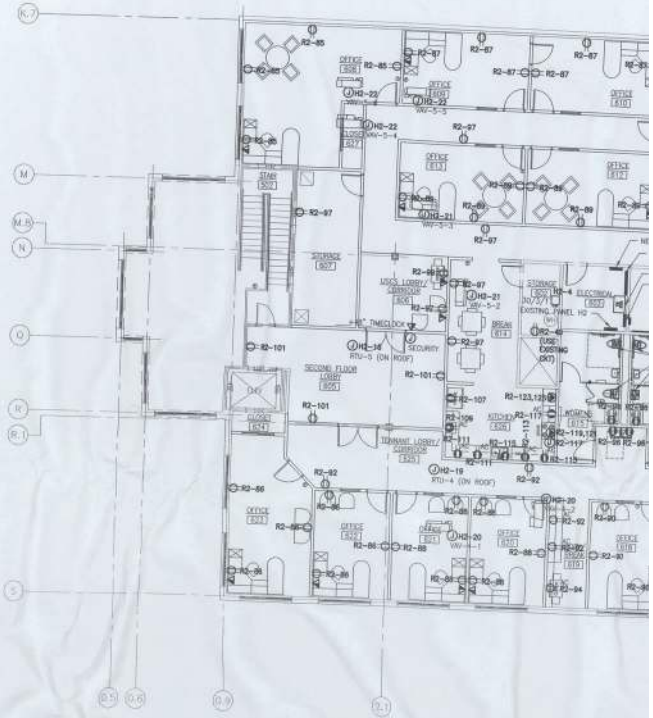


N

LIGHTING PLAN

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

0 2' 4' 8' 16'



N

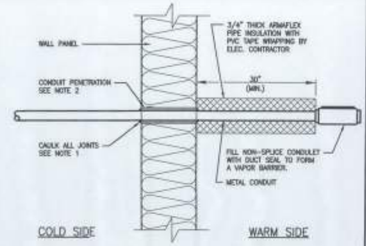
POWER PLAN

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

0 2' 4' 8' 16'

NOTES:

1. SWITCH INNER AND OUTER BALLASTS SEPARATELY FOR F3 LIGHTS IN ALL OFFICES AND TRAINING ROOM. IF LED ALTERNATE IS SELECTED PROVIDE FULL RANGE 0-10V DIMMING SWITCH COMPATIBLE WITH LUMINAIRE.
2. "NL" DESIGNATION STANDS FOR NIGHTLIGHT. THESE FIXTURES SHALL BE WIRED ALWAYS ON, UNSWITCHED.

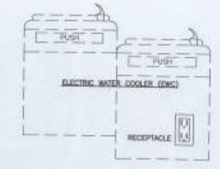


NOTES:
1. CAULKING & SEALING SHALL MAINTAIN VAPOR BARRIER CONTINUITY OF INSULATED PANEL.
2. PENETRATION SHALL BE DRILLED. AFTER CONDUIT IS INSTALLED AND PROPERLY SUPPORTED ON EACH SIDE OF WALL, REMAINING VOIDS SHALL BE FILLED COMPLETELY WITH USDA APPROVED SEALANT.

NOT TO SCALE

– (2)

CONDUIT PENETRATION (3)



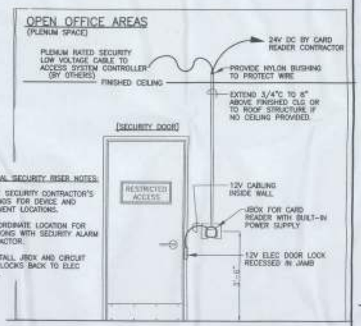
NOTE:
1. ELECTRICAL SUB-CONTRACTOR SHALL OBTAIN THE SHOP DRAWINGS AND LOCATE THE RECEPTACLE CONCEALED BEHIND THE WATER COOLER.

EWC RECEPTACLE MOUNTING (4)

(5)

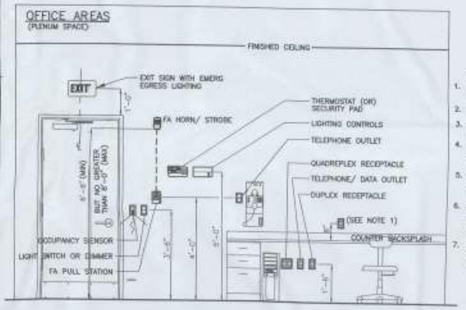
– (6)

– (7)



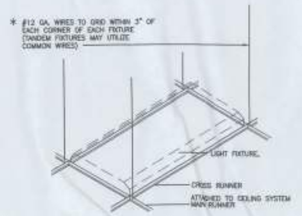
GENERAL SECURITY RISER NOTES:
1. SEE SECURITY CONTRACTOR'S DRAWINGS FOR DEVICE AND EQUIPMENT LOCATIONS.
2. COORDINATE LOCATION FOR JUNCTIONS WITH SECURITY ALARM CONTRACTOR.
3. INSTALL JBOX AND CIRCUIT DOOR LOCKS BACK TO ELEC PANEL.

SECURITY DIAGRAM (8)



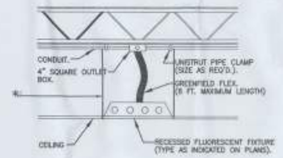
GENERAL DEVICE MOUNTING NOTES:
1. ELECTRICAL CONTRACTOR TO COORDINATE WITH OTHER DISCIPLINES FOR ANY CONFLICTS WITH LOCATION.
2. WAREHOUSE AREAS REQUIRE METAL COVER PLATES FOR POWER OUTLETS
3. EC SHALL PROVIDE AND INSTALL (2) 4" CONDUITS FROM TOP OF EACH IDF CABINET TO THE CEILING BAR JOIST ABOVE.
4. EC SHALL PROVIDE AND INSTALL A SINGLE GANG OUTLET RING WITH PULL STRING ATTACHED ABOVE THE ACCESSIBLE CEILING FOR EACH TELE/DATA OUTLET IN THE OFFICES.
5. EC SHALL PROVIDE AND INSTALL A 4"x4" BACK BOX WITH SINGLE GANG REDUCING RING WITH CONDUIT TO ABOVE ACCESSIBLE CEILING FOR EACH TELE/DATA OUTLET ON BLOCK WALL OR SURFACE MTD.
6. EC SHALL PROVIDE AND INSTALL A 4"x4" BACK BOX WITH SINGLE GANG REDUCING RING WITH CONDUIT TO CABLING PATHWAY FOR EACH TELE/DATA WALL TELE AND STD OUTLET LOCATION IN ALL AREAS WITHOUT A CONCIDALED WALL.
7. EC SHALL PROVIDE AND INSTALL A 4"x4" BACK BOX WITH SINGLE GANG REDUCING RING WITH CONDUIT TO CABLE TRAY FOR EACH TELE/DATA OUTLET INSTALLED IN THE DPS RACKING AREA.

DEVICE MOUNTING DIAGRAM (10)



(11)

LIGHT FIXTURE SUPPORT (12)



NOTES:
1. FIXTURE SHALL BE SCREWED TO T-BAR GRID AT OPPOSITE CORNERS, TOTAL OF TWO MINIMUM SCREWS BY FIXTURES.
2. FIXTURE SUPPORTING WIRES MUST HAVE THREE TURNS MINIMUM.

RECESSED FLUORESCENT FIXTURE MTG DETAIL (13)

NOTES:
1. ENGINEERING GRADE THERMOPLASTIC HOUSING IS IMPACT AND SCRATCH RESISTANT, AND CORROSION PROOF. UV STABLE RESIN RESISTANT DISCOLORATION FROM NATURAL AND MAN MADE LIGHT SOURCES.
2. UNIVERAL DIRECTIONAL CHEVRON INSERTS ARE EASILY REMOVED AND REINSERTED. UNIFORM GRAPHICS ILLUMINATION WITHOUT SHADOWS OR HOT SPOTS. REINFORCED IMPACT RESISTANT COLOR PANELS.
3. LEDS MOUNTED ON PRINTED CIRCUIT BOARDS. EPECTED LED LIFE OVER 25 YEARS. LOW ENERGY CONSUMPTION–LESS THAN ONE WATT. LED LAMP OPERATES IN NORMAL (AC INPUT) AND EMERGENCY (DC INPUT) MODES.
4. SEALED MAINTENANCE FREE NICKEL CADMIUM DELIVERS 90 MINUTE CAPACITY TO EMERGENCY LAMPS. AUTOMATIC RECHARGE AFTER BATTERY DISCHARGE.
5. CONSTANT CURRENT SERIES CHARGER MINIMIZES ENERGY CONSUMPTION AND PROVIDES LOW OPERATING COSTS.
6. UL LISTED AND LABELED, NEC AND OSHA ILLUMINATION STANDARDS.

LIGHT MOUNTING (14)

– (16)

– (17)

(18)

(19)

– (20)

stellar

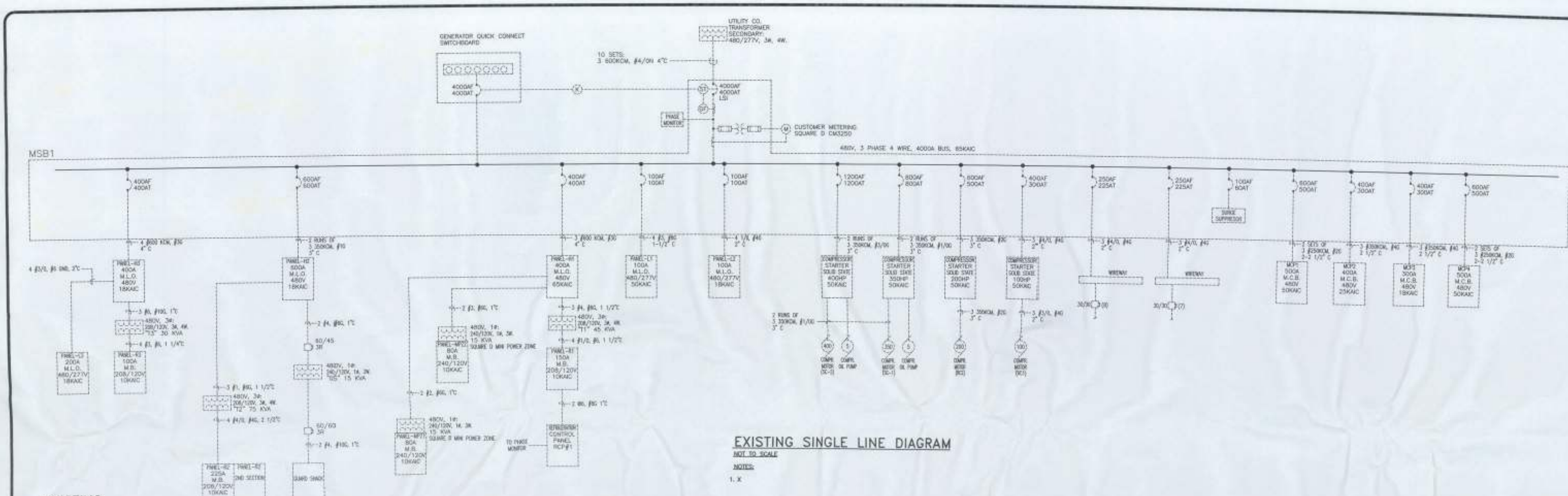
UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

ELECTRICAL DETAILS

REV.	DATE	BY	DESCRIPTION
A	[illegible]	CAS	PERMIT ISSUE

JOB NO. 71005332
DRAWN: CAS
CHECKED: JRP
SCALE: AS NOTED

E501
DRAWING NO.



EXISTING

NEW

PROVIDE 100A/3P BREAKER IN PANEL R2. MATCH EXISTING TYPE AND AIC RATING.

4 #3, #8G, 1 1/4"C

PANEL-R2
225A
M.L.O.
208/120V
10KAIC
3RD SECTION

NEW PANEL SECTION

SERVICE CALC – MSB1
EXISTING PEAK DEMAND: 1813KW @ 0.90PF = 2424A
EXISTING PEAK DEMAND * 1.25: 2424A * 1.25 = 3030A
EXISTING SWITCHBOARD SIZE: 4000A
REMAINING CAPACITY BEFORE NEW LOADS: 4000A – 3030A = 970A
ESTIMATED NEW LOAD ADDED: 174KVA = 209A

FEEDER CALC
EXISTING PEAK DEMAND PANEL H2: 75A
EXISTING PEAK DEMAND * 1.25: 75A * 1.25 = 94A
EXISTING PANEL SIZE: 600A
REMAINING CAPACITY BEFORE NEW LOADS: 600A – 94A = 506A
ESTIMATED NEW LOAD ADDED: 166KVA = 200A

EXISTING PEAK DEMAND PANEL R2: 32A
EXISTING PEAK DEMAND * 1.25: 32A * 1.25 = 40A
EXISTING PANEL SIZE: 225A
REMAINING CAPACITY BEFORE NEW LOADS: 225A – 40A = 185A
ESTIMATED NEW LOAD ADDED: 20KVA = 56A

MSB1

LOCATION: ELECTRICAL ROOM 209
FED FROM: UTILITY TRANSFORMER
480/277 VOLTS, 3Ø 4 WIRE; 4000 AMPS ☐ MAIN BREAKER ■ M.L.O.; ☐ GND. FAULT ■ SHUNT–TRIP ■ TOP FED ☐ BOTTOM FED; 65,000 AIC @ 480 VOLTS

CKT NO.	DESCRIPTION OF LOAD	NO. POLES	FRAME	TRIP	NO. SETS	WIRE AND CONDUIT	KVA
1	PANEL L1	3	100	100	1	SEE SINGLE LINE DIAGRAM	20.3
2	PANEL L2	3	100	100	1		54.6
3	PANEL H1	3	400	400	1		180.0
4	PANEL H2	3	600	600	1		442.9
5	PANEL H3	3	400	400	1		217.3
6	COMPRESSOR RC1 (100HP)	3	400	300	1		103.0
7	COMPRESSOR RC2 (200HP)	3	600	500	1		199.2
8	COMPRESSOR SC1 (350HP)	3	800	800	1		343.6
9	COMPRESSOR SC2 (400HP)	3	1200	1200	1		396.0
10	WIREWAY (BATTERY CHARGING)	3	250	225	1		150.0
11	WIREWAY (BATTERY CHARGING)	3	250	225	1		150.0
12	MCP1	3	600	500	1		257.0
13	MCP2	3	400	300	1		200.2
14	MCP3	3	400	300	1		228.0
15	MCP4	3	600	500	1		319.4
16	SPARE	3	–	–	1	–	–
17	SURGE SUPPRESSOR	3	100	80	1	–	–
18	SPARE	3	–	–	1	–	–
19	SPARE	3	–	–	1	–	–
20	SPARE	3	–	–	1	–	–

TOTAL CONNECTED KVA: 3261.2

R2

LOCATION: ELEC. RM. 603
FED FROM: PANEL H2 (VIA TRANSFORMER)
208/120 VOLTS, 3Ø 4 WIRE; 225 AMPS ■ MAIN BREAKER ☐ M.L.O.; ☐ FLUSH ■ SURFACE MOUNTED ■ TOP FED ☐ BOTTOM FED; 10,000 AIC @ 240 VOLTS

KVA	DESCRIPTION OF LOAD	TRIP	CKT	CKT	TRIP	DESCRIPTION OF LOAD	KVA
0.7	EF–11 & RECEPTS.	20	1	2	20	HAND DRYER – 406	1.2
0.2	RECEPTS. – ROOF	20	3	4	20	HAND DRYER – 405	1.2
1.2	HAND DRYER – 512	20	5	6	20	HAND DRYER – 513	1.2
1.2	GLOVE DRYER – 302	20	7	8	20	HAND DRYER – 307	1.2
1.2	GLOVE DRYER – 302	20	9	10	20	HAND DRYER – 306	1.2
0.2	AHU–1 – ELEV. MACHINE ROOM 304	15	11	12	15	CU–1 ROOF	0.3
0.8	AUTO FLUSH SENSORS – 307	20	13	14	20	RECEPT. – 401,403 WORK STATIONS	0.8
1.0	AUTO FLUSH SENSORS – 306, 307	20	15	16	20	RECEPT. – 403 WORK STATIONS	0.6
0.6	AUTO FLUSH SENSORS – 512	20	17	18	20	RECEPT. – 503,501,401	1.0
0.8	AUTO FLUSH SENSORS – 513	20	19	20	20	RECEPT. – 503 WORK STATIONS	0.6
1.0	RECEPT. – 303, MICROWAVE	20	21	22	20	RECEPT. – 502 WORK STATIONS	0.6
1.0	RECEPT. – 303, MICROWAVE	20	23	24	20	RECEPT. – 503 WORK STATIONS	0.6
1.0	RECEPT. – 303, MICROWAVE	20	25	26	20	RECEPT. – 503 WORK STATIONS	0.6
1.0	RECEPT. – 303, MICROWAVE	20	27	28	20	RECEPT. – 511,510	1.0
0.8	RECEPT. – 303, COUNTER	20	29	30	20	RECEPT. – 510 W. PROJECTOR SCREEN	1.0
1.2	RECEPT. – 303, REFRIGERATOR	20	31	32	20	RECEPT. – 509 U/C REFRIG. COUNTER	1.0
1.2	RECEPT. – 303, REFRIGERATOR	20	33	34	20	RECEPT. – 508 COUNTER	0.4
1.0	RECEPT. – 303, COFFEE (2)	20	35	36	20	RECEPT. – 404 VENDING (2)	1.0
0.8	RECEPT. – 303, COUNTER	20	37	38	20	RECEPT. – 404	1.0
2.0	RECEPT. – 304,300	20	39	40	20	RECEPT. – 601,603	0.4
1.0	RECEPT. – 401,402	20	41	42	20	RECEPT. – 604	0.8

TOTAL LOAD KVA: 36.0

R2

LOCATION: ELEC. RM. 603
SECTION 2 FED FROM SECTION 1
208/120 VOLTS, 3Ø 4 WIRE; 225 AMPS ☐ MAIN BREAKER ■ M.L.O.; ☐ FLUSH ■ SURFACE MOUNTED ☐ TOP FED ■ BOTTOM FED; 10,000 AIC @ 240 VOLTS

KVA	DESCRIPTION OF LOAD	TRIP	CKT	CKT	TRIP	DESCRIPTION OF LOAD	KVA
0.2	EF–12 (1/2 HP) GN–1	20	43	44	20	RECEPT. – 505, 506	1.2
0.2	EF–13 (1/2 HP) GN–2	20	45	46	20	RECEPT. – 507, 508	1.2
1.1	EF–14 & ROOF RECEPTACLES	20	47	48	20	SPARE	–
0.5	ELEV. PIT LIGHTING & RECEPTACLES	20	49	50	20	RECEPT. – 303 VENDING	1.0
0.5	ELEV. CAB LIGHTS	20	51	52	20	RECEPT. – 303 VENDING	1.0
0.2	ELEV. MACHINE ROOM RECEPTACLES	20	53	54	20	RECEPT. – 303 VENDING	1.0
0.7	EF–15	20	55	56	20	RECEPT. – 303 VENDING	1.0
–	SPARE	20	57	58	20	RECEPT. – 303 VENDING	1.0
–	SPARE	20	59	60	20	RECEPT. – 303 COUNTER	0.8
–	SPARE	20	61	62	20	RECEPT. – EMPLOYEE INFO.	0.6
–	SPARE	20	63	64	20	RECEPT. – EMPLOYEE INFO.	0.6
–	SPARE	20	65	66	–	SPACE	–
–	SPACE	–	67	68	–	SPACE	–
–	SPACE	–	69	70	–	SPACE	–
–	SPACE	–	71	72	–	SPACE	–
–	SPACE	–	73	74	–	SPACE	–
–	SPACE	–	75	76	–	SPACE	–
–	SPACE	–	77	78	–	SPACE	–
20.2	R2 SECTION 3 FEEDER BREAKER (1)	100	79	80	–	SPACE	–
	↓		81	82	–	SPACE	–
	↓		83	84	–	SPACE	–

TOTAL LOAD KVA: 14.6

R2 (SECT. 3)

LOCATION: EXISTING ELECTRICAL ROOM 603
SECTION 3 FED FROM SECTION 2
208/120 VOLTS, 3Ø 4 WIRE; 225 AMPS ☐ MAIN BREAKER ■ M.L.O.; ☐ FLUSH ■ SURFACE MOUNTED ☐ TOP FED ☐ BOTTOM FED; 10,000 AIC @ 240 VOLTS

KVA	DESCRIPTION OF LOAD	TRIP	CKT	CKT	TRIP	DESCRIPTION OF LOAD	KVA
0.8	RECEPT – OFFICE 608	20	85	86	20	RECEPT – TENANT OFFICE 623, 622	1.2
1.2	RECEPT – OFFICE 609, 610	20	87	88	20	RECEPT – TENANT OFFICE 621, 620	1.2
1.2	RECEPT – OFFICE 613, 612	20	89	90	20	RECEPT – TENANT OFFICE 618, 617	1.2
1.0	RECEPT – TRAINING	20	91	92	20	RECEPT – TENANT COPY/BREAK, CORRIDOR	1.0
0.4	RECEPT – TRAINING	20	93	94	20	RECEPT – TENANT COPY/BREAK COPIER	1.0
0.8	RECEPT – TRAINING	20	95	96	20	RECEPT – MENS/WOMENS, WATER COOLER	0.8
1.0	RECEPT – STORAGE, LOBBY/CORRIDOR, BREAK	20	97	98	20	EF–11	1.2
1.0	RECEPT – LOBBY COPIER	20	99	100	20	SPARE	–
0.6	RECEPT – 2ND FLOOR LOBBY	20	101	102	20	SPARE	–
–	SPARE	20	103	104	20	SPARE	–
–	SPARE	20	105	106	20	SPARE	–
1.0	RECEPT – KITCHEN FRIDGE	20	107	108	20	SPARE	–
1.5	RECEPT – KITCHEN MICROWAVE	20	109	110	20	SPARE	–
0.4	RECEPT – KITCHEN COUNTER	20	111	112	20	SPARE	–
0.4	RECEPT – KITCHEN COUNTER	20	113	114	20	SPARE	–
1.0	RECEPT – KITCHEN DISHWASHER	20	115	116	20	SPARE	–
0.4	RECEPT – KITCHEN COUNTER, HOOD	20	117	118	20	SPARE	–
5.0	RECEPT – KIT STOVE (2#8, #8N, #10G, 3/4"C)	50	119	120	20	SPARE	–
	↓	↓	121	122	20	SPARE	–
5.0	RECEPT – KIT OVEN (2#8, #8N, #10G, 3/4"C)	50	123	124	20	SPARE	–
	↓	↓	125	126	20	SPARE	–

TOTAL LOAD KVA: 30.3 DEMAND KVA: 20.2

H2

LOCATION: ELECTRICAL ROOM
FED FROM: UTILITY TRANSFORMER
480/277 VOLTS, 3Ø 3 WIRE; 600 AMPS ☐ MAIN BREAKER ■ M.L.O.; ☐ GND. FAULT ☐ SHUNT–TRIP ■ TOP FED ☐ BOTTOM FED; 18,000 AIC @ 480 VOLTS

CKT NO.	DESCRIPTION OF LOAD	NO. POLES	FRAME	TRIP	NO. SETS	WIRE AND CONDUIT	KVA
1	WATER HEATER (4.5 KW)	3	100	15	1	3 #12, #12 GND, 3/4"C	4.5
2	RTU–1	3	100	70	1	3 #3, #8 GND, 1"C	54.8
3	RTU–2	3	100	70	1	3 #4, #8 GND, 1"C	49.8
4	EWH–2 (4.5 KW) (EXISTING SPARE)	3	100	15	1	3#12, #12G, 3/4"C	4.5
5	VAV–1 & VAV–4	3	100	20	1	3 #12, #12 GND, 3/4"C	8.0
6	VAV–2	3	100	20	1	3 #12, #12 GND, 3/4"C	6.0
7	VAV–5	3	100	30	1	3 #12, #12 GND, 3/4"C	14.0
8	VAV–6	3	100	20	1	3 #12, #12 GND, 3/4"C	10.0
9	VAV–7 & VAV–9	3	100	20	1	3 #12, #12 GND, 3/4"C	9.0
10	VAV–8	3	100	20	1	3 #12, #12 GND, 3/4"C	9.0
11	ELEVATOR	3	100	70	1	3 #4, #8 GND, 1"C	37.4
12							
13	PANEL R2 (VIA TRANSFORMER T2)	3	225	125	1	SEE SINGLE LINE DIAGRAM	11.5
14	GUARD SHACK (VIA TRANSFORMER GS)	2	100	45	1	SEE SINGLE LINE DIAGRAM	39.8
15	VAV–3 & VAV–10	3	100	20	1	3 #12, #12 GND, 3/4"C	5.0
16	RTU–5 (OLD EUH CIRCUIT)	3	100	70	1	3#4, #8G, 1"C	49.9
17	LIFT STATION (2 @ 1.5HP)	3	100	15	1	3 #12, #12 GND, 1"C	4.3
18	WATER HEATER (4.5 KW)	3	100	15	1	3 #12, #12 GND, 3/4"C	4.5
19	RTU–4 (1)	3	100	50	1	3#8, #10G, 3/4"C	38.2
20	VAV–4–1 THRU 4–3 (1)	3	100	30	1	3#10, #10G, 3/4"C	16.0
21	VAV–5–1 THRU 5–3 (1)	3	100	30	1	3#10, #10G, 3/4"C	18.5
22	VAV–5–4 THRU 5–6 (1)	3	100	30	1	3#10, #10G, 3/4"C	18.5

TOTAL CONNECTED KVA: 413.2

L2

LOCATION: ELEC. ROOM 603
FED FROM: MSB1
480/277 VOLTS, 3Ø 4 WIRE; 100 AMPS ☐ MAIN BREAKER ■ M.L.O.; ☐ FLUSH ■ SURFACE MOUNTED ■ TOP FED ☐ BOTTOM FED; 18,000 AIC @ 480 VOLTS

KVA	DESCRIPTION OF LOAD	TRIP	CKT	CKT	TRIP	DESCRIPTION OF LOAD	KVA
0.8	BH–1 – 402	20	1	2	20	SITE LIGHTING	3.6
–	SPARE	20	3	4	↓	↓	
0.6	LIGHTING – 308,307,306,303,302	20	5	6	20	FLAG POLE LIGHTING	1.8
0.5	LIGHTING – 401,402,403,402,512,513,511	20	7	8	20	SPARE	–
4.5	LIGHTING – 501,502,505–510, 2ND FLOOR	20	9	10	20	EXTERIOR BUILDING LIGHTING	4.4
0.2	LIGHTING – 503	20	11	12	↓	↓	
0.3	LIGHTING – NIGHT LIGHTS	20	13	14	20	EXTERIOR BUILDING LIGHTING	2.5
0.3	EMERGENCY EGRESS LIGHTING	20	15	16	↓	↓	
2.1	LIGHTING – 101 FREEZER	20	17	18	20	LIGHTING 2ND FL. OVER LOBBY	3.1
0.3	LIGHTING – 101 FREEZER	20	19	20	20	LIGHTING – 504	0.2
2.3	LIGHTING – 101 FREEZER	20	21	22	20	EMER LIGHTING – 2 FL USCS/TENANT	0.4
2.6	LIGHTING – 101 FREEZER	20	23	24	20	LIGHTING – TENANT 2 FL OFFICE (1)	2.5
0.3	LIGHTING – 101 FREEZER	20	25	26	–	SPACE	–
2.6	LIGHTING – 101 FREEZER	20	27	28	–	SPACE	–
4.4	LIGHTING – 101 NITE LIGHTS	20	29	30	–	SPACE	–
0.5	EMERGENCY EGRESS LIGHTING	20	31	32	–	SPACE	–
0.0	EXISTING LIGHTING	20	33	34	–	SPACE	–
2.8	LIGHTING – USCS 2 FL OFFICE/TRAINING	20	35	36	–	SPACE	–
2.0	LIGHTING – USCS 2 FL CORR/LOB/STOR/BREAK	20	37	38	–	SPACE	–
–	FUTURE OUTSIDE LIGHTING	20	39	40	–	SPACE	–
	↓	↓	41	42	–	SPACE	–

TOTAL LOAD KVA: 59.5

GENERAL NOTES WHICH APPLY TO ALL CONDITIONS:

A: THE ELECTRICAL CONTRACTOR IS ENCOURAGED TO CONTACT THE STELLAR GROUP ELECTRICAL ENGINEERING DEPARTMENT TO VERIFY THAT THE DRAWINGS AND SPECIFICATIONS ARE CURRENT AT ALL TIMES. FAILURE TO DO SO WILL BE CONSIDERED INADEQUATE WORK AND ALL DISCREPANCIES CORRECTED WITH NO EXPENSE TO THE STELLAR GROUP OR FACILITY OWNER.

B: WIRE/CONDUIT SIZES ARE BASED ON ESTIMATED CONTINUOUS LOAD AND COPPER WIRE. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTMENTS TO WIRE AND CONDUIT SIZES, ALLOWING FOR VOLTAGE DROP BASED ON THE ACTUAL INSTALLED CONDITIONS OF FEEDERS. THE ELECTRICAL CONTRACTOR SHALL ALSO REVIEW ALL NAMEPLATE DATA FOR DISCREPANCIES, WHICH SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FINAL INSTALLATION.

C: VARIATIONS TO CIRCUIT POSITIONS ON PANELS SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL FROM ENGINEER. UN-APPROVED VARIATIONS WILL BE CORRECTED WITH NO EXPENSE IN TIME OR MONEY TO THE STELLAR GROUP OR FACILITY OWNER.

D: ALL BOARDS SHALL BE FULLY RATED FOR AVAILABLE FAULT CURRENT. SERIES / INTEGRATED RATINGS ARE NOT ACCEPTABLE.

E: UTILIZE SPARE BREAKERS IN EXISTING PANELS WHEN AVAILABLE. PROVIDE NEW BREAKERS AS NEEDED OR AS INDICATED.

F: EXISTING LOADS SHOWN ON PANELS IN LIGHTER SHADE. NEW LOADS SHOWN IN DARKER SHADE.

SPECIFIC NOTES WHICH APPLY AS SPECIFIED:

(1) PROVIDE NEW BREAKER IN EXISTING PANEL. USE EMPTY BREAKER SPACE TO MOUNT BREAKER IF AVAILABLE, OTHERWISE REPLACE EXISTING SPARE BREAKER. MATCH EXISTING TYPE AND AIC RATING.

(2) NOT USED

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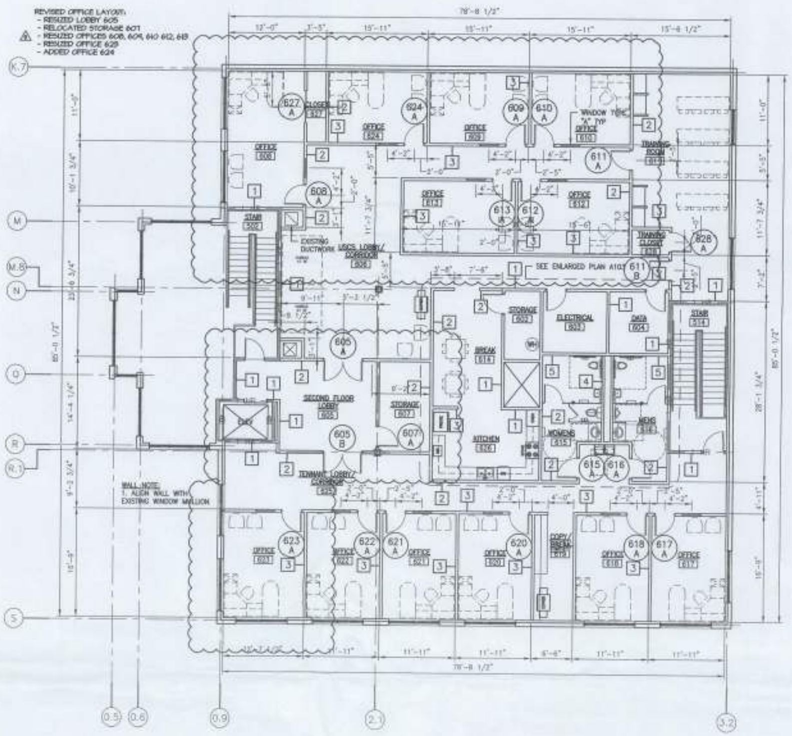
UNITED STATES COLD STORAGE
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

ELECTRICAL ONE LINE & PANEL SCHEDULES

REV.	DATE	BY	DESCRIPTION
A	08/08/14	CAS	PERMIT ISSUE

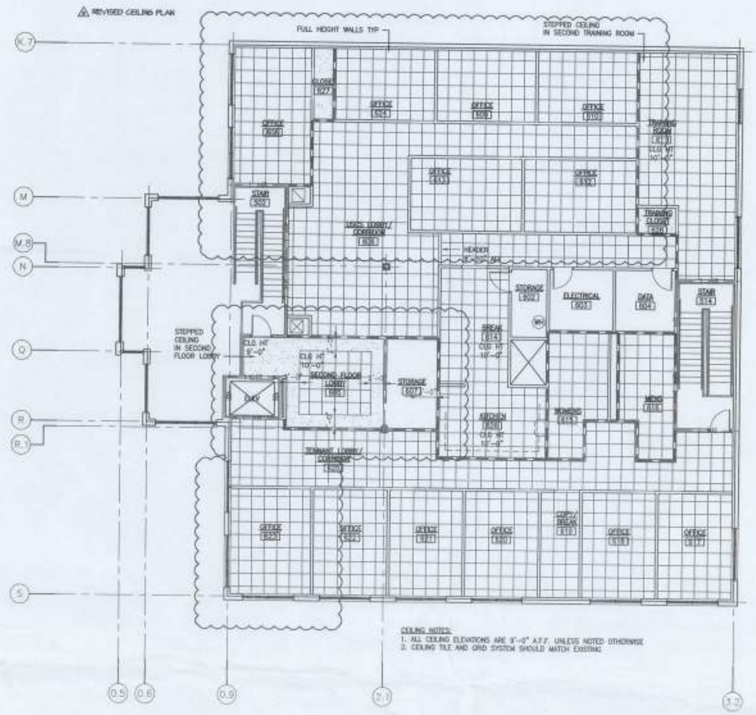
JOB NO. 71005332
DRAWN: CAS
CHECKED: JRP
SCALE: NONE

E601
DRAWING NO.



ENLARGED OFFICE FLOOR PLAN

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



REFLECTED CEILING FLOOR PLAN

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

WALL TYPES

1	EXISTING WALL – FINISH AS SCHEDULED
2	5/8" GYPSUM WALLBOARD EA. SIDE ON 3 5/8" METAL STUDS @ 16" O.C. WITH INSULATION (SOUND ATTENUATION) EXTEND UP TO THE UNDERSIDE OF METAL DECK
3	5/8" GYPSUM WALLBOARD EA. SIDE ON 3 5/8" METAL STUDS @ 16" O.C. STOP 6" ABOVE CEILING GRID
	PIPE CHASE:
4	1'-0" CLEAR BETWEEN (2) 3 5/8", 25 GA. METAL STUDS @ 16" O.C. W/ 5/8" GYPSUM WALL BOARD ON EACH FINISH SIDE. PROVIDE ONE SIDE OF WALL W/ INSULATION (SOUND ATTENUATION) & EXTEND INSULATION & WALL UP TO THE UNDERSIDE OF METAL DECK.
5	ABOVE EXISTING WALL, 5/8" GYPSUM WALLBOARD ON 3 5/8", METAL STUDS @ 16" O.C. WITH INSULATION (SOUND ATTENUATION) EXTEND UP TO THE UNDERSIDE OF METAL DECK

WALL NOTE: REPAIR, PATCH, AND PREP EXISTING WALL AS REQUIRED FOR NEW FINISHS.

SUSPENDED CEILING NOTES

1. SUSPENSION

A) VERTICAL HANGER WIRES SHALL BE #12 GA. WIRE AT 4'-0" O.C. ALONG EACH MAIN RUNNER. HANGER WIRES SHALL NOT HANG MORE THAN 1 IN 6 OUT-OF-PLUMB UNLESS COUNTER SLOPING WIRES ARE PROVIDED. WIRES SHALL NOT ATTACH TO, BEND AROUND OR REST AGAINST DUCTS, PIPES AND ETC.. EACH HANGER WIRE SHALL BE ATTACHED TO CEILING SUSPENSION MEMBER AND TO SUPPORT ABOVE WITH A MINIMUM OF THREE (3) TIGHT TURNS. ANY CONNECTION DEVICE AT THE SUPPORTING CONSTRUCTION SHALL BE CAPABLE OF SUPPORTING NOT LESS THAN ONE HUNDRED (100) POUNDS. VERTICAL WIRES TO START AT A MAXIMUM OF 8" OFF FACE OF WALLS FOR CROSS AND MAIN RUNNERS.

B) PERIMETER HANGERS, TERMINAL ENDS OF EACH CROSS RUNNER AND MAIN RUNNER SHALL BE SUPPORTED INDEPENDENTLY A MAXIMUM OF EIGHT (8) INCHES FROM EACH FACE OF WALL OR CEILING DISCONTINUITY WITH A #12 GA. WIRE.

C) LATERAL FORCE BRACING: PROVIDE FOUR (4) #12 GA WIRES SECURED TO MAIN RUNNER WITHIN TWO (2) INCHES OF THE CROSS RUNNER INTERSECTION AND SPLAYED NINETY (90) DEGREES FROM EACH OTHER AND AT AN ANGLE NOT EXCEEDING FORTY-FIVE (45) DEGREES FROM THE PLANE OF THE CEILING. A STRUT FASTENED TO THE MAIN RUNNER SHALL BE EXTENDED AND FASTENED TO THE STRUCTURAL MEMBERS SUPPORTING THE ROOF OR FLOOR ABOVE. THE STRUT SHALL BE ADEQUATE TO THE VERTICAL COMPONENT INDUCED BY THE BRACING WIRES. THESE HORIZONTAL RESTRAINT POINTS SHALL BE PLACED TWELVE (12) FEET O.C. IN BOTH DIRECTIONS WITH THE FIRST POINT WITHIN SIX (6) FEET FROM EACH WALL. LATERAL FORCE BRACING MEMBERS SHALL HAVE A MINIMUM OF SIX (6) INCHES FROM ALL HORIZONTAL PIPING OR DUCTWORK THAT IS NOT PROVIDED WITH BRACING RESTRAINTS FOR HORIZONTAL FORCES.

D) ENDS OF MAIN RUNNERS AND CROSS RUNNERS SHALL BE TIED TOGETHER TO PREVENT THEIR SPREADING.

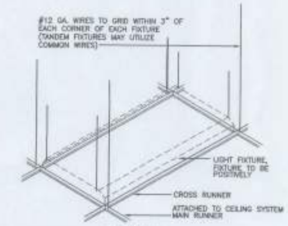
E) MAIN RUNNERS AND CROSS RUNNERS MAY BE ATTACHED TO WALL ANGLE AT TWO (2) ADJACENT WALLS ONLY. CLEARANCE BETWEEN WALL AND RUNNERS SHALL BE MAINTAINED AT THE OTHER TWO (2) WALLS.

2. LIGHTING FIXTURES

A) ATTACH #12 GA. HANGER WIRE TO THE GRID MEMBERS WITHIN THREE (3) INCHES OF EACH CORNER OF EACH FIXTURE. TANDEM FIXTURES MAY UTILIZE COMMON WIRES. ALL RECESSED OR DROP-IN LIGHT FIXTURES SHALL BE POSITIVELY ATTACHED TO THE SUSPENDED CEILING SYSTEM. THE ATTACHMENT DEVICE SHALL HAVE A CAPACITY OF ONE HUNDRED (100) PERCENT OF THE FIXTURE WEIGHT ACTING IN ANY DIRECTION. IN ADDITION, THE THE FIXTURE SHALL SUPPORTED DIRECTLY FROM FIXTURE HOUSING TO THE STRUCTURE ABOVE WITH A MINIMUM OF FOUR (4) #12 GA. WIRES, ONE LOCATED AT EACH CORNER. (SEE DETAIL)

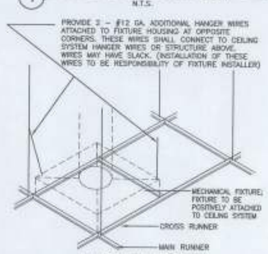
3. MECHANICAL FIXTURES

A) CEILING MOUNTED MECHANICAL GRILLES SHALL BE POSITIVELY ATTACHED TO THE CEILING SUSPENSION MAIN RUNNERS OR TO CROSS RUNNERS. IN ADDITION, THE FIXTURE SHALL HAVE TWO (2) #12 GA. HANGER WIRES CONNECTED FROM THE FIXTURE HOUSING TO THE CEILING SYSTEM HANGERS OR TO THE STRUCTURE ABOVE. THESE WIRES MAY BE SLACK. (SEE DETAIL)



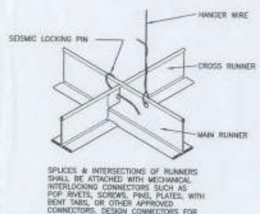
1 LIGHT FIXTURE SUPPORT

N.T.S.



2 MECHANICAL FIXTURE SUPPORT

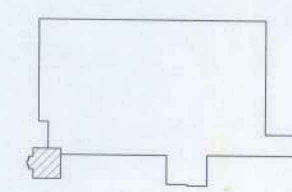
N.T.S.



3 SPLICE DETAIL

N.T.S.

Amendments



KEY PLAN

NOT TO SCALE

stellar

UNITED STATES COLD STORAGE INC
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

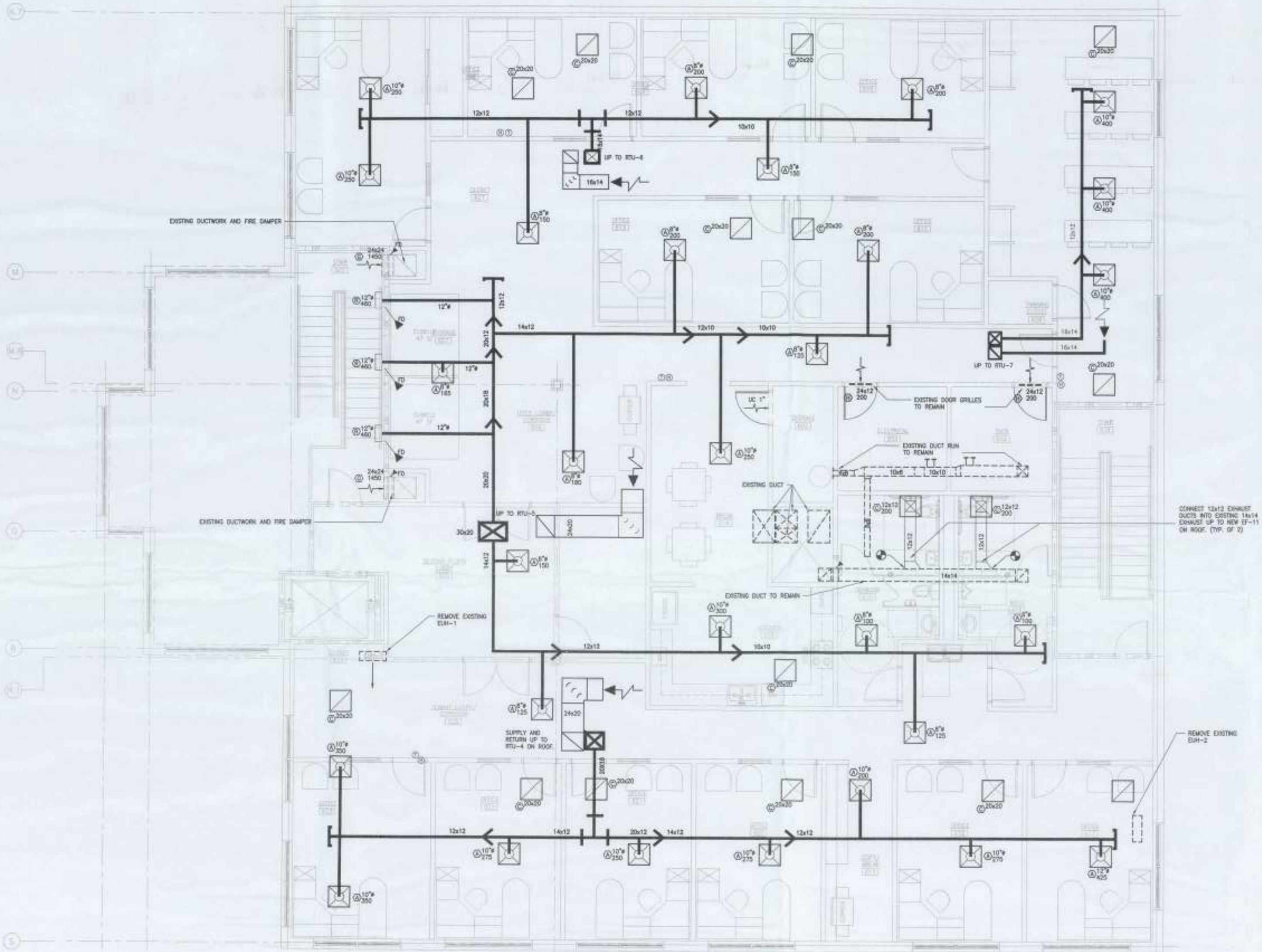
ENLARGED OFFICE FLOOR PLANS, NOTES, AND DEAILS

REV.	DATE	BY	DESCRIPTION
B		FRR	REVISED PERMIT ISSUE
A		FRR	PERMIT ISSUE

JOB NO.	71005332
DRAWN:	FRR
CHECKED:	RS
SCALE:	AS NOTED

A102

DRAWING NO.



NOTE:
USE JOHNS MANVILLE SUPER DUCT RC
IN LIEU OF INSULATED SHEET METAL DUCT WORK.
DUCT BOARD SHALL HAVE ANTI-MICROBIAL GROWTH
COATING PROTECTION.

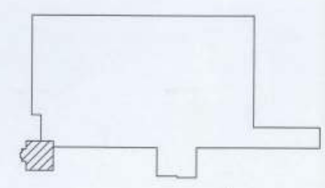
MECHANICAL ENLARGED FLOOR PLAN - OPTION 1

SCALE: ¼" = 1'-0"

STRAIGHT COOLING ROOFTOP UNIT SCHEDULE

PLAN SYMBOL	AREA SERVED	COOLING 95 DB/75 WB TOTAL (MBH)	SENS (MBH)	ELEC HEAT (KW)	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	EXT S.P. (IN. WG)	EVAPORATOR FAN MOTOR HP	NO. OF COMP	NO. OF COND. FANS	VOLTAGE / PHASE	MCA	MOCP	SEER / EER	IEER	DUCT CONNECTIONS LOCATION	SUPPLY	RETURN	WEIGHT (LBS.)	BASIS OF DESIGN	NOTES
RTU-4	2ND FLR. TENANT AREA	95.3	76.2	27.0	2,800	200	0.75	2	2	2	460/3	46.0	50	12.6	13.5	DOWNFLOW	33" x 18"	33" x 18"	650.0	TRANE—THC092	1 THROUGH 16
RTU-5	2ND FLR. WELFARE AREA	96.8	77.4	36.0	3,400	400	0.75	2	2	1	460/3	58.6		11.2	-	DOWNFLOW	33" x 17.5"	32.25" x 16.75"	856.0	TRANE—TSC102F4RHA	1 THROUGH 16
RTU-6	2ND FLR. OFFICE / CORRIDOR	34.7	28.3	12.0	1,200		0.75	1	2	1	460/3	21.1		13.0		DOWNFLOW	16" x 15.5"	23.25" x 13.25"	749.0	TRANE—TSC036E4REA	1 THROUGH 16
RTU-7	2ND FLR. TRAINING ROOM	34.7	28.3	12.0	1,200		0.75	1	2	1	460/3	21.1		13.0		DOWNFLOW	16" x 15.5"	23.25" x 13.25"	749.0	TRANE—TSC036E4REA	1 THROUGH 16
-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-

NOTES:
1. WHILE INDIVIDUAL UNIT COMPONENT ELECTRICAL REQUIREMENTS MAY VARY THE TOTAL UNIT DESIGN CIRCUIT AMPACITY AND DESIGN BRANCH CIRCUIT BREAKER SIZE SHALL NOT EXCEED THE SCHEDULED VALUES. IF ELECTRICAL DATA VARIES, PROVIDE ELECTRICAL SHOP DRAWINGS WITH HVAC SHOP DRAWING INDICATING CHANGES TO CIRCUIT, OVERCURRENT PROTECTION, PANEL AND FEEDER.
2. SCHEDULED EXTERNAL STATIC PRESSURE DOES NOT INCLUDE PRESSURE DROP FOR COILS, FILTERS, CASING, ETC.
3. PROVIDE UNIT WITH SINGLE POINT POWER CONNECTION. FACTORY MOUNTED DISCONNECT AND THRU THE BOTTOM ELECTRICAL CONNECTIONS.
4. PROVIDE GALV. INSULATED ROOF CURB OF SUFFICIENT HEIGHT TO PROVIDE A MINIMUM 12 INCHES FROM FINISHED ROOF SURFACE TO TOP OF NAILER. CURB INSULATION SHALL BE 2" FIBERBOARD W/ FOIL FACING.
5. PROVIDE COMPRESSOR SHORT CYCLE PROTECTION TO PREVENT COMPRESSOR RESTART FOR AT LEAST 5 MINUTES AFTER SHUTDOWN.
6. NOT USED.
7. PROVIDE FILTER ENCLOSURE AND 2" PLEATED THROW AWAY FILTER (MERV 7).
8. PROVIDE SMOKE DETECTOR IN SUPPLY AIR DUCT AS SHOWN ON DRAWINGS.
9. NOT USED.
10. PROVIDE NORMALLY OPEN AUXILIARY CONTACT FOR INTERLOCKED EQUIPMENT. COORDINATE AMP RATING WITH LOAD RATING.
11. PROVIDE FACTORY MOUNTED POWERED CONVENIENCE OUTLET. OUTLET SHALL BE INDEPENDENTLY WIRED.
12. PROVIDE CONTROLS FOR STARTING AND OPERATING THE UNIT IN THE COOLING MODE AT LOW AMBIENT TEMPERATURES.
13. NOT USED.
14. PROVIDE ECONOMIZER WITH BAROMETRIC RELIEF DAMPER.
15. PROVIDE CONTROL INTERLOCKS WITH DRY CONTACTS FOR DDC INTERFACE.
16. PROVIDE STAGED CONTROLS FOR ELECTRIC HEAT.
17. PROVIDE INSECT SCREEN FOR OUTSIDE AIR INLET.



KEY PLAN
NOT TO SCALE

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UNITED STATES COLD STORAGE INC
SECOND FLOOR OFFICE BUILD-OUT
LAKE CITY, FLORIDA

MECHANICAL ENLARGED FLOOR PLAN

JOB NO.	71005332
DRAWN:	JHL
CHECKED:	WMW
SCALE:	AS NOTED

M104
DRAWING NO.

SILENT KNIGHT	Global Project Values:	
	Project Name: US Cold Storage Addition	Standby Hours: 24
	Project ID: G14-031	Alarm Mins: 5
	Prepared By: AA	Derating Factor: 1.2
	Date: 10/27/2014	Voltage Drop Warning Threshold %: 10

Configure 5495 #: 1 2 3 4 5 6 7 8

Command Shortcuts: Print 5495 Detail | Print Circuits Detail | Edit Device Database

5495 (1)

Panel ID: 5495(NPE) — Model: Silent Knight 5495 Power Expander — Max Circuit Current: 3 Amps
Location: BOILER RM 006F — Volts: 24 VDC — Max Panel Current: 6 Amps

Ckt.#	Circuit Name	Current Draw Standby	Current Draw Alarm	
1	5495(OUT1) Circuit H1	0.000	1.267	
2	5495(OUT2) Circuit C2	0.000	1.000	
3	5495(OUT3) Spare	0.000	0.000	
4	5495(OUT4) Spare	0.000	0.000	
Aux	5495(AP) Aux Pwr Out	0.000	0.000	
5495	5495 Power Expander	0.075	0.205	2.327 (Amps) Total Output Power Required
	Total Standby Current (Amps)	0.075	2.532	Total Alarm Current (Amps)
	Standby Time In Hours	24	0.083	Alarm Time In Minutes / 60 (5 Mins)
	Total Standby AH Required	1.800	0.211	Total Alarm AH Required
	Total Combined AH Required	2.01		
	Multiply By The Derating Factor	1.20		
	Minimum Battery AmpHours Required	2.41		
	BATTERIES PROVIDED:	7.2 AH		

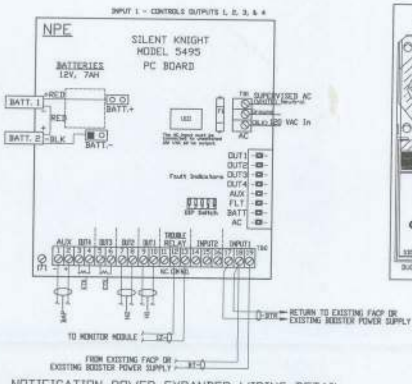
NOTIFICATION APPLIANCE CIRCUIT (NAC) LOAD CALCULATIONS - NAC'S TIED TO NPE

PANEL & OUTPUT NUMBER DEVICE IS TIED TO	CIRCUIT NUMBER	NOTIFICATION APPLIANCE DESCRIPTION	QTY.	X	ALARM CURRENT (AMPS)	SUB TOTAL (AMPS)
NPE - OUTPUT 1	H1	P2R Horn/Strobe (Set at 15 Cd)	1	X	0.079	0.079
	H1	P2R Horn/Strobe (Set at 75 Cd)	6	X	0.176	1.056
	H1	SR Strobe (Set at 15 Cd)	2	X	0.066	0.132
	H1 NOTIFICATION APPLIANCE CIRCUIT TOTAL LOAD (AMPS) =========					1.267
NPE - OUTPUT 2	H2	P2R Horn/Strobe (Set at 15 Cd)	1	X	0.079	0.079
	H2	P2R Horn/Strobe (Set at 75 Cd)	4	X	0.176	0.704
	H2	PC2R Clg. Mounted Horn/Strobe (Set at 15 Cd)	1	X	0.079	0.079
	H2	SR Strobe (Set at 15 Cd)	5	X	0.066	0.138
	H2 NOTIFICATION APPLIANCE CIRCUIT TOTAL LOAD (AMPS) =========					1.000
NPE - OUTPUT 3		SPARE				0.000
	0 NOTIFICATION APPLIANCE CIRCUIT TOTAL LOAD (AMPS) =========					0.000
NPE - OUTPUT 4		SPARE				0.000
	0 NOTIFICATION APPLIANCE CIRCUIT TOTAL LOAD (AMPS) =========					0.000

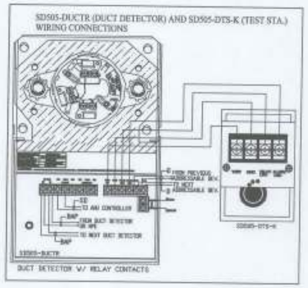
NAC VOLTAGE DROP CALCULATIONS

VOLTAGE DROP CALCULATIONS DESIGN THRESHOLD: SUPPLY VOLTAGE = 24 VOLTS ;
MINIMUM VOLTAGE REQUIRED AT EACH NAC DEVICE = 16 VOLTS (PER MANUFACTURER) ;
CURRENT = 80% OF CIRCUIT SIZE. (EXAMPLE: 3 AMP (MAX) x 0.80 = 2.40 AMPS) ; CLASS B - STYLE "Y" WIRING;
WIRING RESISTANCE PER 1000 FEET OF WIRE (PAIR) ; #12 AWG. = 3.5 OHMS; #14 AWG. = 5.2 OHMS; #16 AWG. = 8 OHMS; #18 AWG. = 13 OHMS

(NAC) NOTIF. APPL. CIRCUIT NUMBER	CIRCUIT LENGTH (FEET)		TOTAL CIRCUIT CURRENT (AMPS)		WIRE RESISTANCE PER 1000 FT. FOR #14 AWG. (OHMS)				VOLTAGE DROP (VOLTS)	LEFT BLANK	PANEL STARTING VOLTAGE (VOLTS)		VOLTAGE DROP (VOLTS)		END OF LINE VOLTAGE (VOLTS)
H1	145	X	1.267	X	5.2	÷	1000	=	0.96		24	-	0.96	=	23.04
H2	190	X	1.000	X	5.2	÷	1000	=	1.05		24	-	1.05	=	22.95



NOTIFICATION POWER EXPANDER WIRING DETAIL
N.T.S.



FIRE ALARM EQUIPMENT SCHEDULE

SYMBOLS	DESCRIPTION & MOUNTING	MFG.	PART #	BACK BOX
NPE	FIRE ALARM 6 AMP REMOTE NOTIFICATION POWER EXPANDER PANEL SEE WALL MOUNTED EQUIP. ELEVATION MOUNTING HEIGHTS DETAIL	S.K.	5495	DIM. 12.25"W. x 16"H. x 3"D.
SP	120 VAC HARDWIRED SURGE PROTECTOR	EDCO	FAS-120AC	MOUNT IN 4" SQ. 2-1/8"D. J-BOX
EX P	ADDRESSABLE PHOTOELECTRIC SMOKE DETECTOR - CEILING MOUNTED DEVICE WITH SUBSCRIPT "EX" DENOTES EXISTING TO REMAIN	S.K.	SD505-APS (HEAD) SD505-6AB (BASE)	4" OCTAGON BOX, 2-1/8" DEEP
	ADDRESSABLE DUCT MOUNTED SMOKE DETECTOR - REFER TO MECHANICAL PRINTS AND NFPA90A FOR INSTALLATION AND LOCATION. (P) - PHOTOELECTRIC (S) - MOUNT TO SUPPLY DUCT ; (R) - MOUNT TO RETURN DUCT	S.K.	SD505-DUCTR (DUCT DET. ASSY.) SD505-T# (SAMPLING TUBE)	4" SQ. FLEX TO DUCT HOUSING
	REMOTE TEST W/ ALARM INDICATOR LIGHT FOR DUCT DETECTOR. WALL MOUNTED 48" A.F.F. BELOW DUCT DETECTOR LOCATION. LABEL COVERPLATE PER ASSOCIATED AHU.	S.K.	SD505-DTS-K	SINGLE GANG BOX - 2-1/8" DEEP
	ADDRESSABLE SINGLE ACTION PULL STATION - WALL MOUNTED 48" A.F.F. TO TOP OF DEVICE	S.K.	SD500-PS	4" SQ. - 2-1/8" DEEP WITH SINGLE GANG PLASTER RING
MM	ADDRESSABLE SINGLE INPUT MONITOR MODULE	S.K.	SD500-AIM	4"SQ. 2-1/8"DEEP
15 30 75 110	FIRE ALARM MULTI-SELECTABLE CANDELA HORN/STROBE SIGNAL DEVICE - WALL MOUNTED MIN. 80" A.F.F. FROM THE BOTTOM OF STROBE LENS. DIMENSION IS TAKEN FROM FINISHED FLOOR, NOT FROM SLAB SEE WALL MOUNTED EQUIP. ELEVATION MOUNTING HEIGHTS DETAIL	SYS. SENSOR	P2R (RED)	4"SQ. 2-1/8"DEEP
	FIRE ALARM CEILING MOUNTED MULTI-SELECTABLE CANDELA HORN/STROBE SIGNAL DEVICE	SYS. SENSOR	PC2R (RED)	4"SQ. 2-1/8"DEEP
15 30 75 110	FIRE ALARM MULTI-SELECTABLE CANDELA STROBE SIGNAL DEVICE - WALL MOUNTED MIN. 80" A.F.F. FROM THE BOTTOM OF STROBE LENS. DIMENSION IS TAKEN FROM FINISHED FLOOR, NOT FROM SLAB SEE WALL MOUNTED EQUIP. ELEVATION MOUNTING HEIGHTS DETAIL	SYS. SENSOR	SR (RED)	4"SQ. 2-1/8"DEEP
EOL	END OF THE LINE RESISTOR	—	VALUE PER MFR'S. REQ.	MOUNT BEHIND LAST DEVICE ON CIRCUIT

##— 24 VDC FIRE ALARM CIRCUIT RUNS. "##" - DENOTES CABLE TYPE
—///— 120VAC CIRCUIT. SLASH LINES DENOTES NUMBER OF CONDUCTORS.

NOTE: STANDARD BACK BOXES AND CONDUITS ARE PROVIDED BY ELECTRICAL CONTRACTOR

A.F.F.=ABOVE FINISHED FLOOR — S.K.=SILENT KNIGHT — J.S.C.=JAX SOUND & COMMUNICATIONS — F.B.O.=FURNISHED BY OTHERS

NOTIFICATION SIGNAL DEVICE'S SUBSCRIPT NOTES:

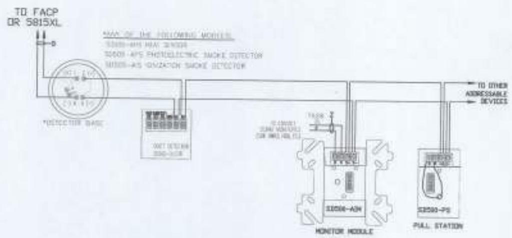
15 H#-? HORN/STROBE
- DEVICE NUMBER TIED TO HORN/STROBE CIRCUIT
- DENOTES HORN/STROBE SIGNAL CIRCUIT NUMBER
- DENOTES STROBE CANDELA RATING

15 H#-? STROBE
- DEVICE NUMBER TIED TO HORN/STROBE CIRCUIT
- DENOTES HORN/STROBE SIGNAL CIRCUIT NUMBER
- DENOTES STROBE CANDELA RATING

ADDRESSABLE DEVICES' SUBSCRIPT NOTES:

- TYPICAL INTELLIGENT DEVICE
33### — TYPICAL DEVICE'S ADDRESS NUMBER
- DENOTES DEVICE'S NUMBER
- DENOTES SLC (DATA LOOP) NUMBER - "33" - DATA LOOP 1; "34" - DATA LOOP 2; "35" - DATA LOOP 3; "36" - DATA LOOP 4

ADDRESSABLE DEVICES ACTUAL ADDRESS NUMBER WILL BE PROVIDED AT THE COMPLETION OF JOB (AS-BUILT DRAWINGS).



ADDRESSABLE DEVICES WIRING DIAGRAM
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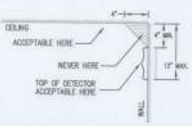
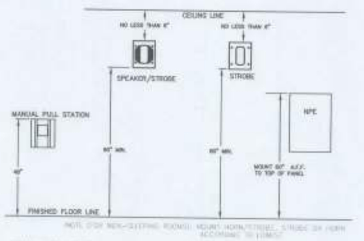


SMOKE/HEAT DETECTOR MOUNTING DETAIL

FIRE ALARM CABLE SCHEDULE

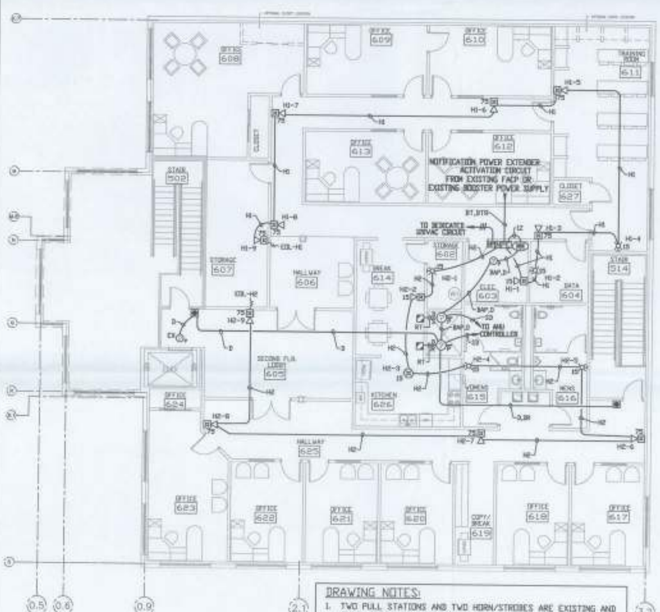
SYM.	DESCRIPTION	CABLE	COLOR
BAP	BOOSTER AUX. POWER	2 CONDUCTOR #14 AWG. (FPL)	RED JACKET
BT	BOOSTER TRIP	2 CONDUCTOR #14 AWG. (FPL)	RED JACKET
BTR	BOOSTER TRIP RETURN	2 CONDUCTOR #14 AWG. (FPL)	RED JACKET TAPED
D	DATA (SLC)	2 CONDUCTOR #16 AWG. (FPL)	RED JACKET
DR	DATA (SLC) RETURN	2 CONDUCTOR #16 AWG. (FPL)	RED JACKET TAPED
H#	HORN/STROBE	2 CONDUCTOR #14 AWG. (FPL)	RED JACKET
H#R	HORN/STROBE RETURN "#" - DENOTES HORN/STROBE CIRCUIT #	2 CONDUCTOR #14 AWG. (FPL)	RED JACKET TAPED
SD	SHUT DOWN	2 CONDUCTOR #14 AWG. (FPL)	RED JACKET
#Z	ZONE (STYLE B CCT.) "#" - DENOTES NUMBER OF PAIRS	2 CONDUCTOR #14 AWG. (FPL)	RED JACKET



WALL MOUNTED EQUIPMENT ELEVATION MOUNTING HEIGHTS DETAIL
N.T.S.

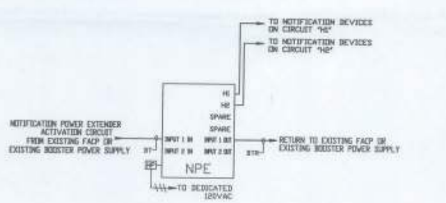
GENERAL NOTES

1) MINIMUM CONDUIT SIZE SHALL BE 3/4". SIZE AS NEEDED PER NEC.
2) REFER TO ARCHITECTURAL, ELECTRICAL, AND MECHANICAL CONTRACT PRINTS FOR EXACT LOCATION, MOUNTING, AND QUANTITIES OF DEVICES.
3) ALL AHU SHUTDOWN RELAY DEVICES MUST BE LOCATED WITHIN 3ft OF THE AHU's STARTER CONTROLS.
4) ALL CONDUIT SHALL BE FURNISHED WITH NYLON PULL STRING.
5) NOTIFICATION APPLIANCE CIRCUITS (NAC) SHALL BE STYLE "Y" (CLASS "B") WIRING.
6) SIGNALLING LINE CIRCUITS (SLC) SHALL BE STYLE 4 (CLASS "B") WIRING.
7) INITIATING DEVICE CIRCUITS (IDC) SHALL BE STYLE "B" (CLASS "B") WIRING.
8) 120VAC DEDICATED BRANCH CIRCUIT SHALL BE MECHANICALLY PROTECTED. THE CIRCUIT DISCONNECT MEANS SHALL BE MARKED IN RED, ACCESSIBLE TO AUTHORIZED PERSONNEL ONLY, AND IDENTIFIED AS "FIRE ALARM CIRCUIT". LOCATION OF CIRCUIT DISCONNECTING MEANS SHALL BE IDENTIFIED AT FIRE ALARM CONTROL UNIT, AND OVERCURRENT PROTECTION SHALL BE PROVIDED. (COMPLY WITH NFPA 72)
9) IF A DETECTOR IS LISTED AS SUITABLE FOR WALL MOUNTING, IT MUST BE MOUNTED BETWEEN 4 INCHES TO THE TOP OF THE DETECTOR FROM THE CEILING, OR 12 INCHES TO THE BOTTOM OF DETECTOR FROM THE CEILING. THE DETECTOR'S EDGE CANNOT BE MOUNTED LESS THAN 4 INCHES FROM THE CORNER WHERE THE CEILING AND WALLS MEET.
10) WIRING FOR ZONE INITIATING AND INDICATING CIRCUITS MUST BE INSTALLED IN A CONTINUOUS RUN FROM DEVICE TO DEVICE WITHOUT ANY "T-TAPS" TO THE INSTALLATION WIRING. WIRING TO THESE CIRCUITS MUST BE "IN-OUT".
11) INSTALLATION OF THE WIRING, RACEWAYS, AND DEVICES WILL BE IN ACCORDANCE WITH ALL APPLICABLE COUNTY/CITY CODES, NFPA 72, NFPA 101, FIRE PREVENTION CODE (LATEST ADOPTED EDITIONS), UNIFORM RULES, AND REGULATIONS OF THE STATE FIRE MARSHALL'S OFFICE.
12) DETECTOR HEADS MUST BE COVERED DURING CONSTRUCTION UNTIL FINAL CERTIFICATION BY JSC. FAILURE TO COVER HEADS FROM DUST OR DAMAGE COULD VOID WARRANTY. THEREFORE, THE CONTRACTOR RESPONSIBLE WILL BE SUBJECTED TO THE COST OF REPLACING OR CLEANING THE HEADS.
13) INSTALL ALL DUCT MOUNTED SMOKE DETECTORS PER FACTORY RECOMMENDATIONS AND NFPA-90A.
14) DETECTORS SHOULD NOT BE LOCATED IN A DIRECT AIRFLOW OR CLOSER THAN 1 METER (3 FEET) FROM AN AIR SUPPLY DIFFUSER OR RETURN AIR OPENING.



DRAWING NOTES:
1. TWO PULL STATIONS AND TWO HORN/STROBES ARE EXISTING AND SHALL BE RELOCATED AS NECESSARY.

SECOND FLOOR - FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"



FIRE ALARM ONE-LINE RISER DIAGRAM
N.T.S.

NOTE:
FIRE ALARM RISER DIAGRAM IS SHOWN FOR DIAGRAMATIC PURPOSE ONLY. REFER TO FLOOR PLAN FOR ACTUAL LOCATION OF DEVICES, CONDUIT ROUTING AND WIRING OF DEVICES.

JACKSONVILLE SOUND & COMMUNICATIONS
a Division of JSC Systems
LICENSES
FLORIDA: EF20000375 GEORGIA: LVU405422

PROJECT NAME:
UNITED STATES COLD STORAGE
FIRE ALARM SYSTEM ADDITION
211 NE McCLOSKEY AVENUE LAKE CITY, FL 32055
DATE: 10-24-2014 — SCALE: 1/8" = 1'-0"
FILE NAME: G14031-FA.DWG — DRAWN BY: AMA
DWG. TYPE: SUBMITTAL — APPROVED BY:

DESCRIPTION: FIRE ALARM SYSTEM EQUIP. & CABLE SCH.; 2ND FLOOR PLAN; WIRING DETAILS; RISER DIAGRAM; ELEVATION MTG. HTS. DET.

JSC JOB NUM.: G14-031
SHEET: FA.01
SHEET NUM.: 01 of 01