DEPARTMENT OF VETERANS AFFAIRS

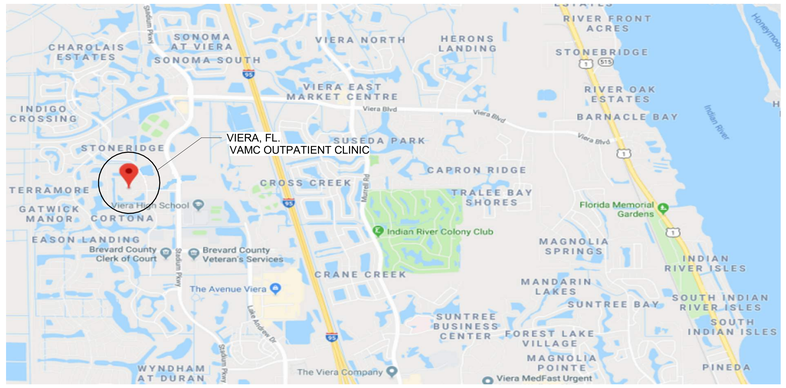
VIERA VA OUTPATIENT CLINIC

2900 VETERANS WAY
VIERA, FL
32940

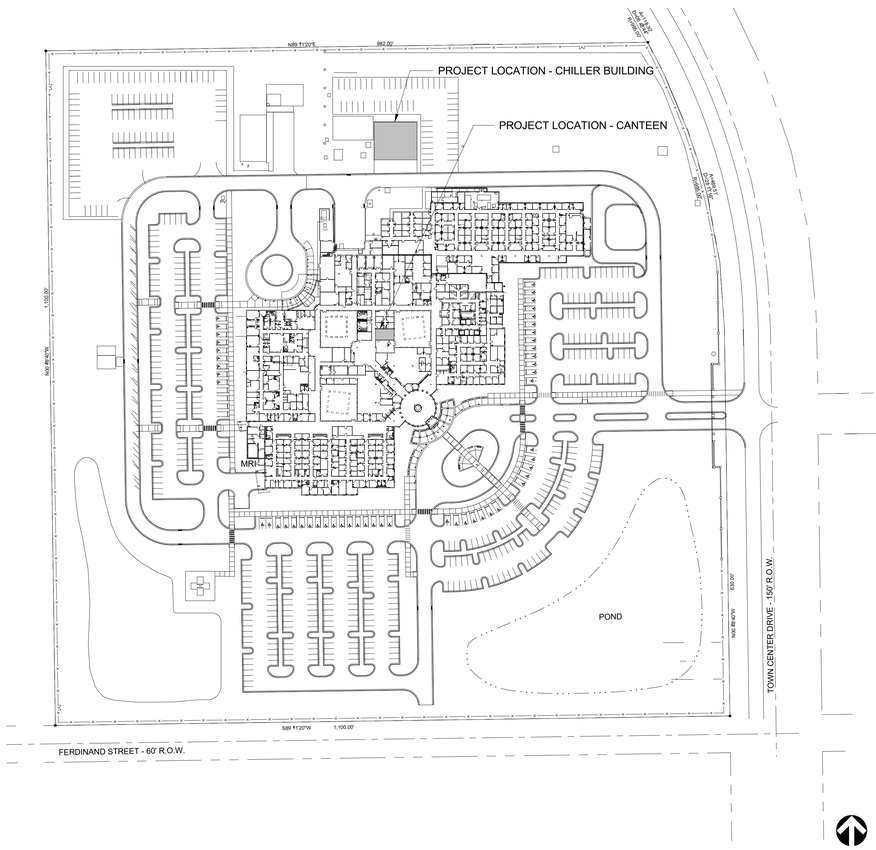
DESIGN BUILD - REPLACE CHILLERS - VIERA

PROJECT #: 675-18-151

LOCATION MAP



KEY SITE PLAN
1" = 100'-0"



LIST OF DRAWINGS

DWG #	SHEET NAME	SHEET #
GENERAL		
GI001	COVER SHEET	1
GI002	PHASING PLAN	2
CIVIL		
CD100	DEMOLITION PLAN	3
CS101	SITE PLAN	4
CG101	PAVING, GRADING, & DRAINAGE PLAN	5
CU101	UTILITY PLAN	6
CJ501	CONSTRUCTION DETAILS	7
STRUCTURAL		
SA001	STRUCTURAL ABBREVIATIONS AND SYMBOLS	8
SA002	STRUCTURAL NOTES	9
SA003	BUILDING WIND LOAD DIAGRAM	10
SD001	DEMOLITION PLAN	11
SF101	FOUNDATION AND SLAB PLAN	12
SF102	ROOF FRAMING PLAN	13
SF103	SCREEN WALL PLAN	14
SJ501	STRUCTURAL DETAILS	15
SJ502	STRUCTURAL DETAILS	16
SJ503	STRUCTURAL DETAILS	17
ARCHITECTURAL		
AE101	CHILLER BUILDING FLOOR PLAN	18
AE102	CANTEEN FLOOR PLAN	19
AE103	CHILLER BUILDING ROOF PLAN	20
AE104	REFLECTED CEILING PLAN	21
LS101	LIFE SAFETY PLAN NOTES	22
AE201	DETAILS, SCHEDULES	23
AE301	CHILLER BUILDING ELEVATIONS	24
AE302	CHILLER BUILDING ELEVATIONS	25
AE401	CHILLER BUILDING SECTIONS	26
AE402	CHILLER BUILDING WALL SECTIONS, DETAILS	27
AE403	SECTIONS, DETAILS	28
FIRE PROTECTION		
FP001	FIRE PROTECTION SYMBOLS, LEGEND, & NOTES	29
FP100	FIRE PROTECTION SITE PLAN	30
FP101	CHILLER BUILDING FIRE PROTECTION PLAN	31
FP102	FREEZER/COOLER FIRE PROTECTION PLAN	32
FP501	FIRE PROTECTION DETAILS	33
PLUMBING		
P-001	PLUMBING SYMBOLS, SCHEDULE, NOTES AND ABBREVIATIONS	34
P-101	PLUMBING PLANS	35
P-501	PLUMBING DETAILS AND RISERS	36
MECHANICAL		
M-001	MECHANICAL LEGEND, NOTES, AND ABBREVIATIONS	37
MD101	MECHANICAL DEMOLITION PLAN	38
MD201	FREEZER/COOLER MECHANICAL DEMOLITION PLAN	39
M-101	CHILLER PLANT MECHANICAL NEW WORK PLAN	40
M-201	FREEZER/COOLER MECHANICAL NEW WORK PLAN	41
M-301	MECHANICAL SECTIONS	42
M-501	MECHANICAL DETAILS	43
M-502	MECHANICAL DETAILS	44
M-601	MECHANICAL SCHEDULES	45
M-701	BAS - MECHANICAL CHW SYSTEM SEQUENCE OF OPERATION	46
M-702	BAS - CHW PLANT CONTROL DIAGRAM	47
M-703	BAS - MECHANICAL EQUIPMENT SEQUENCES OF OPERATION	48
M-704	BAS - MECHANICAL EQUIPMENT SEQUENCES OF OPERATION	49
M-705	BAS - MECHANICAL EQUIPMENT SEQUENCES OF OPERATION	50
M-706	BAS - MECHANICAL EQUIPMENT SEQUENCES OF OPERATION	51
M-707	BAS - CONTROL SYSTEM ARCHITECTURE	52
M-708	BAS - MECHANICAL CONTROLS ROOF PLAN	53
ELECTRICAL		
E-001	ELECTRICAL SYMBOL LEGEND, AND ABBREVIATIONS	54
E-002	ELECTRICAL, FIRE ALARM, AND DEMOLITION GENERAL NOTES	55
ED101	ELECTRICAL PLAN - DEMOLITION	56
ED501	ELECTRICAL ONE-LINE DIAGRAM - DEMOLITION	57
EL101	ELECTRICAL PLAN - LIGHTING & LIGHTING FIXTURE SCHEDULE	58
EP101	ELECTRICAL PLAN - POWER	59
EP201	ELECTRICAL PLAN - FREEZER/COOLER - POWER	60
EP501	ELECTRICAL POWER DETAILS	61
EP601	ELECTRICAL ONE-LINE DIAGRAM	62
EP701	ELECTRICAL PANEL SCHEDULES	63
ES101	ELECTRICAL SITE PLAN	64
ET101	ELECTRICAL PLAN - SYSTEMS	65
ET501	ELECTRICAL SYSTEMS DETAILS	66
EY101	ELECTRICAL PLAN - LIGHTNING PROTECTION	67
EY501	LIGHTNING PROTECTION DETAILS	68

100% CONSTRUCTION DOCUMENTS

Revisions:	Date:

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STAMP

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

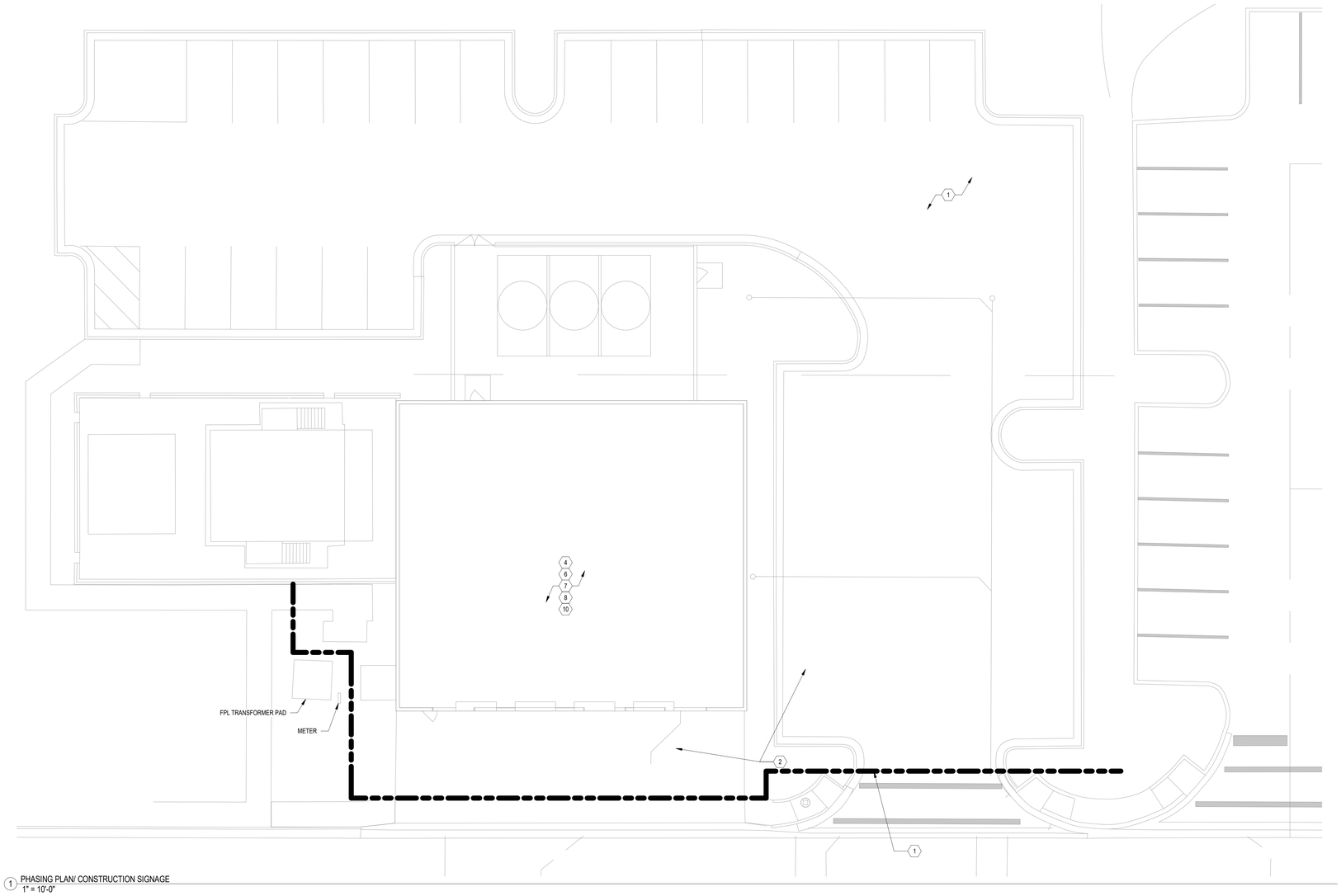
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Approved: -

Phase: 100% CONSTRUCTION DOCUMENTS
FULLY SPRINKLERED

Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
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Issue Date: 12-20-2019
Checked: CGT
Drawn: BAW

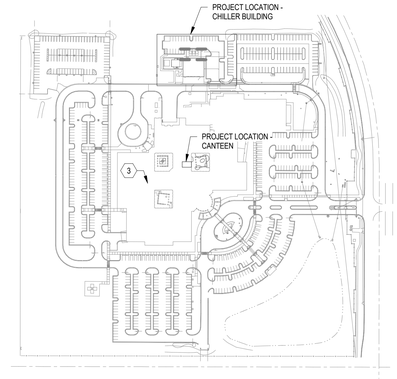
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Building Number: -
Drawing Number: GI001
1 OF 68

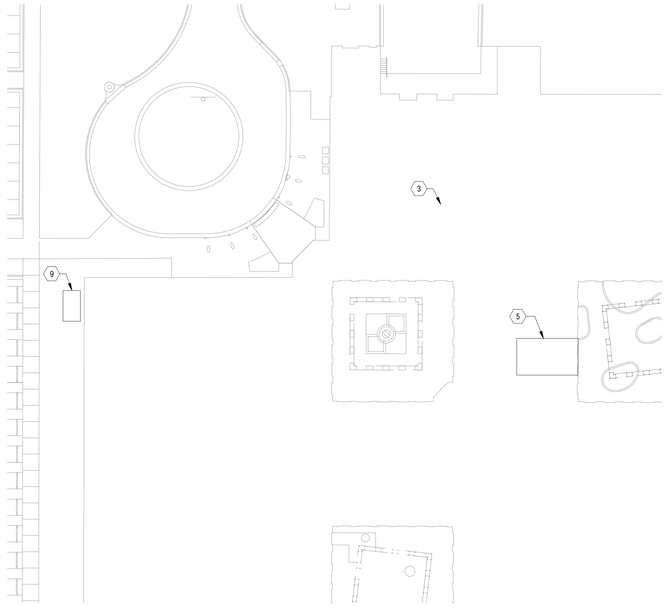
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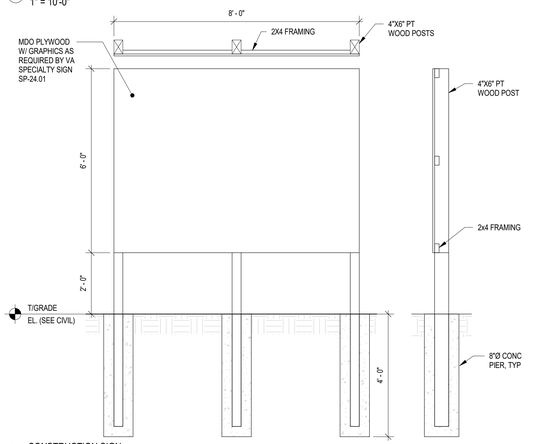
1 PHASING PLAN/ CONSTRUCTION SIGNAGE
1" = 10'-0"

VICINITY MAP

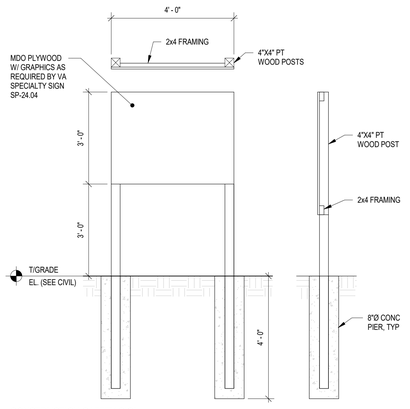




2 PHASING PLAN CANTEEN AREA
1" = 30'-0"



3 CONSTRUCTION SIGN
1/2" = 1'-0"



4 CONSTRUCTION SAFETY SIGN
1/2" = 1'-0"

PHASING PLAN NOTES

1. ERECT CONSTRUCTION FENCE TO PROVIDE SAFE WORKING AREA FOR EMPLOYEES AND PUBLIC. ESTABLISH OFFICE/STORAGE/LAY DOWN AREA.THE CURRENT GOVERNMENT VEHICLE PARKING AREAS THAT SOUNDS THE EXISTING CHILLER YARD WILL NOT BE AVAILABLE FOR GOVERNMENT VEHICLE OR PATIENT PARKING DURING THE ENTIRE CONSTRUCTION PHASE.
2. INSTALL TEMPORARY CHILLERS. AS WITH ALL WORK REQUIRING OUTAGES, THIS WILL BE COORDINATED WITH THE VA WITHIN VA REQUIRED NOTIFICATION PERIODS.
3. PER THE RFP WORK ON THE NEW BACNET BAS SYSTEM (BOTH EXISTING ITEMS IDENTIFIED IN THE RFP AND NEW ITEMS) WILL START AT THE BEGINNING OF THE CONSTRUCTION PHASE.
4. CONSTRUCT NEW CHILLER PLANT. THIS WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING ITEMS IN SEQUENCE:
   - A. DEMOLITION OF EXISTING CHILLER YARD / WALL
   - B. INSTALLATION OF UNDER FOOTING UTILITIES / PATCH FOOTING
   - C. INSTALLATION OF CONCRETE WALLS / COLUMN FOUNDATIONS
   - D. ROUGH IN UNDER-SLAB UTILITIES
   - E. INSTALL SITE UTILITIES
   - F. PLACE CONCRETE CHILLER PADS AND SLAB-ON-GRADE
   - G. ERECT STRUCTURAL STEEL
   - H. INSTALL ROOFING SYSTEM
   - I. INSTALL DOORS
   - J. SET NEW CHILLERS, COOLING TOWERS, PUMPS
   - K. ROUGH IN MECHANICAL / ELECTRICAL SYSTEMS
   - L. INSULATE MECHANICAL SYSTEMS
   - M. PAINTING / FINISHES
   - N. INSTALL COOLING TOWER YARD LOUVER FENCE
   - O. FINISH MECHANICAL / ELECTRICAL SYSTEMS
5. DURING THE CONSTRUCTION OF THE CHILLER PLANT BUILDING WORK RELATED TO THE REMOVAL AND REPLACEMENT OF THE CANTEEN COOLER / FREEZER WILL ALSO BE TAKING PLACE. ALL WORK WILL BE COORDINATED WITH THE VA INCLUDING LOCATION OF TEMPORARY COOLER / FREEZER EQUIPMENT.
6. THROUGHOUT THE CONSTRUCTION PHASE THE COMMISSIONING AGENT WORK WILL BE ON-GOING
7. TESTING OF ALL SYSTEMS
8. TRAINING OF VA PERSONNEL
9. DEMOLISH OR CHILLER
10. DEMOBILIZATION
11. CLOSE OUT DOCUMENTATION

Revisions:	Date:

CONTRACTOR
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CIVIL
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ARCHITECT/ENGINEER OF RECORD

ARCHITECT:	STRUCTURAL/MEP:
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AA 0003432	COA 15

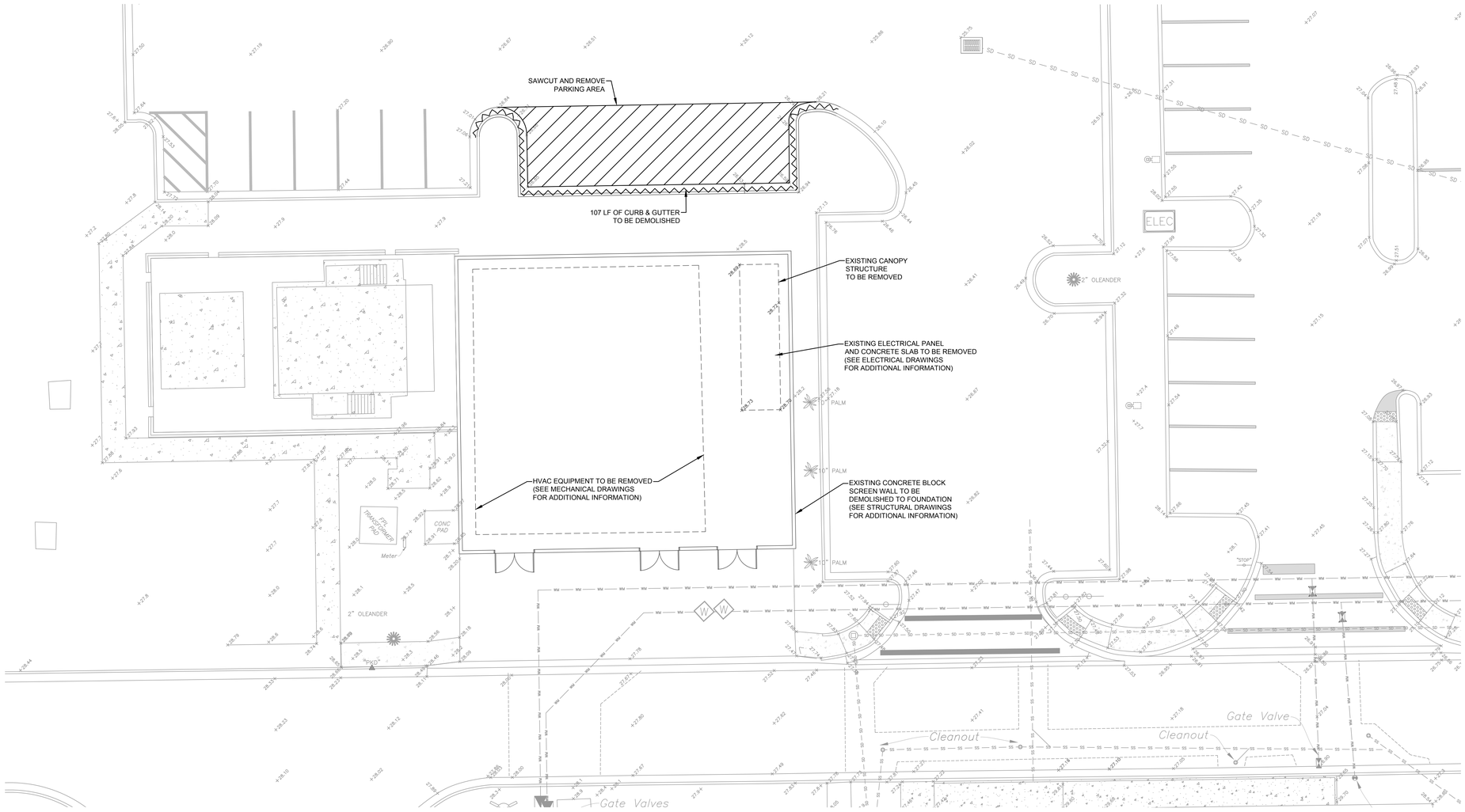
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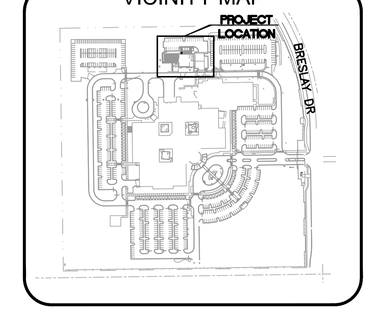
Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	PHASING PLAN AND CONSTRUCTION SIGNAGE
Phase	100% CONSTRUCTION DOCUMENTS
Approved:	
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date	11-15-2019
Checked	CGT
Drawn	AED
Project Number	675-18-151
Building Number	
Drawing Number	GI002
	2 OF 68

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VA





NORTH

0 10' 20'

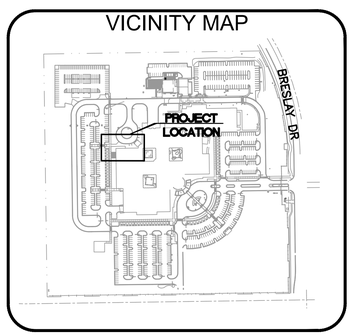
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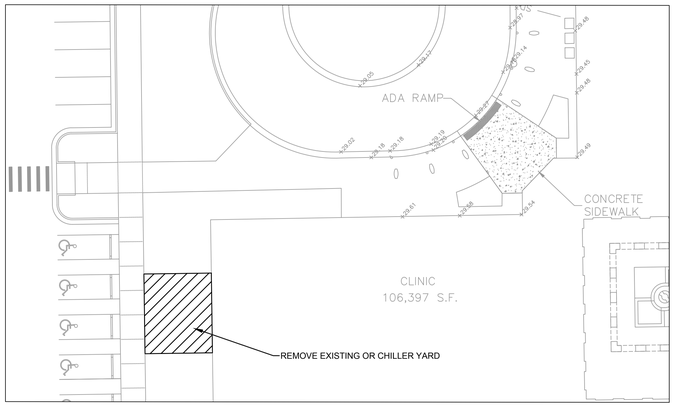
GENERAL NOTES

1. EXISTING UTILITIES ARE TO BE PROTECTED BY THE CONTRACTOR. ANY UTILITIES DAMAGED BY THIS CONSTRUCTION WILL BE REPAIRED AT THE CONTRACTORS EXPENSE.
2. CONTRACTOR SHALL NOTIFY UTILITY COMPANIES A MINIMUM OF 48 HOURS IN ADVANCE OF ANY EXCAVATION INVOLVING THEIR LINES SO THEIR OWNER'S REPRESENTATIVES MAY BE PRESENT PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES IN THE FIELD WITH UTILITY OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION. ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND PLAN CONDITIONS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY.
4. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE LATEST REVISED AND APPROVED PLANS FROM THE DESIGN FIRM. ANY QUESTIONS AND OR DESIGN DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING DIMENSIONS AND SITE CONDITIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
6. THE CONTRACTOR MUST OBTAIN ALL REQUIRED PERMITS BEFORE THE COMMENCEMENT OF CONSTRUCTION.
7. THE CONTRACTOR MUST NOTIFY THE ENGINEER IF SOIL OR SUBSURFACE CONDITIONS UNSUITABLE FOR CONSTRUCTION ARE ENCOUNTERED. ALL EXCAVATED MATERIALS DEEMED UNSUITABLE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AT HIS OWN EXPENSE.
8. ITEMS IN CONFLICT WITH THE CONSTRUCTION OF THE DESIGN SUCH AS EXISTING SIDEWALKS, PAVEMENT, DRAINAGE STRUCTURES, AND EXCESS EXCAVATION ARE TO BE REMOVED BY THE CONTRACTOR. THE DISPOSAL OF SUCH ITEMS MUST BE DONE IN A LEGAL AND PROPER MANNER AWAY FROM THE JOB SITE.
9. WHEN REFERENCED TO F.D.O.T. REFERS TO FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY AND TRAFFIC DESIGN STANDARDS.
10. THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY THIS CONSTRUCTION TO A CONDITION EQUAL TO, OR BETTER THAN EXISTING.
11. CONTRACTOR IS RESPONSIBLE TO PROTECT AND/OR REPLACE ANY DISTURBED/REMOVED SURVEY MONUMENTATION DURING CONSTRUCTION WITHIN THE PROJECT LIMITS/PROPERTY BY A LICENSED SURVEYOR IN THE STATE OF FLORIDA.

DEMOLITION NOTES:

1. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND INVERTS OF EXISTING UTILITIES AND TAKE PROTECTIVE MEASURES WHEN NECESSARY PRIOR TO PROCEEDING WITH THE DEMOLITION PLAN.
2. THE CONTRACTOR SHALL PERFORM HIS WORK IN ACCORDANCE WITH REQUIREMENTS OF THE VARIOUS PERMITS INCLUDED IN THE SPECIFICATIONS. ENVIRONMENTAL CONTROLS SHALL BE USED AT LOCATIONS DESIGNATED IN THE PLANS AND/OR DESIGNATED BY THE ENGINEER.
3. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES IS BASED ON AVAILABLE RECORDS AND SURVEYS BUT IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR SHALL MAKE HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO AND IS RESPONSIBLE FOR COORDINATING UTILITY RELOCATION WITH PROJECT CONSTRUCTION. PRIOR TO ORDERING DRAINAGE STRUCTURES, THE CONTRACTOR SHALL DETERMINE IF DRAINAGE/UTILITY CONFLICTS EXIST. INFORMATION ON CONFLICTS IS TO BE SUBMITTED TO THE OWNER'S REPRESENTATIVE AS SOON AS POSSIBLE AFTER DISCOVERY FOR RESOLUTION.
4. WHERE NEW PAVEMENT IS CONSTRUCTED ADJACENT OF EXISTING PAVEMENT, THE ASPHALT SHALL BE SAWCUT AND REMOVED 12 INCHES FROM THE EDGE OF THE TRAVEL LANE TO OFFSET THE ASPHALT/BASE COURSE JOINT.
5. ALL ASPHALT, SIDEWALK & CURB SAW-CUTS SHALL BE STRAIGHT.





NORTH

0 20' 40'

GRAPHIC SCALE
SCALE: 1" = 20'
HALF SIZE: 1" = 40'

Revisions:	Date:

CONTRACTOR
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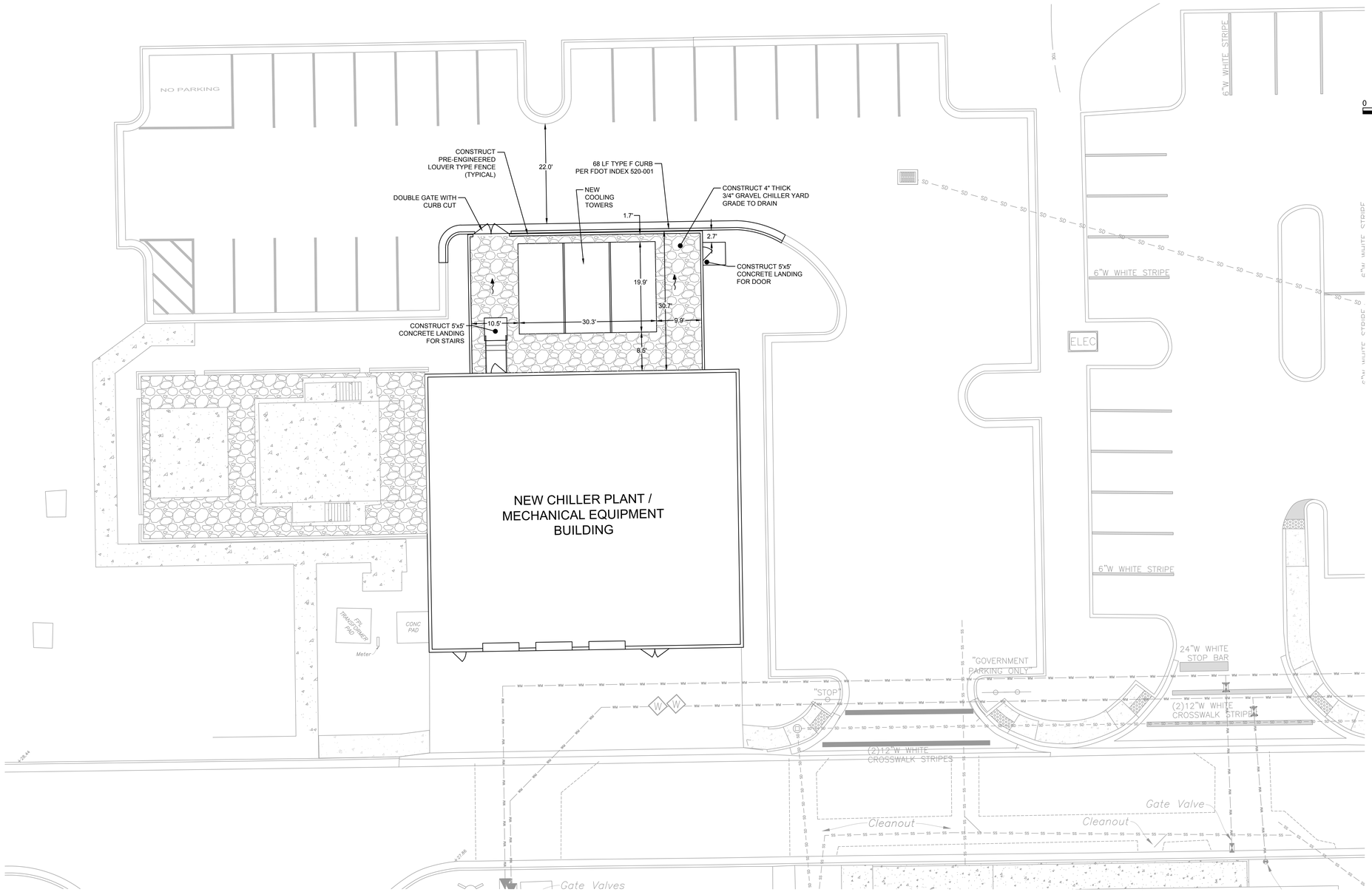
CIVIL ENGINEER / SURVEY
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Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: DEMOLITION PLAN	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved: -	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940	Building Number: -
		Issue Date: 12-20-2019 / Checked: AK / Drawn: DD	Drawing Number: CD100 3 OF 68

VA FORM 08 - 6231

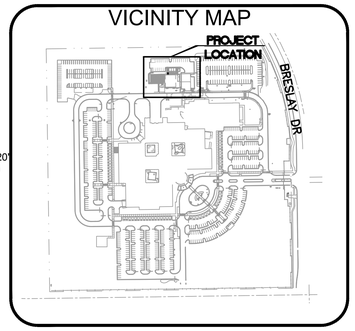


NORTH

0 10' 20'

GRAPHIC SCALE
SCALE: 1" = 10'
HALF SIZE: 1" = 20'

VICINITY MAP



GENERAL NOTES

1. PLEASE REFER TO MECHANICAL / STRUCTURAL PLANS FOR ADDITIONAL INFORMATION ON THE CHILLER PLANT AREA.

Revisions:	Date:

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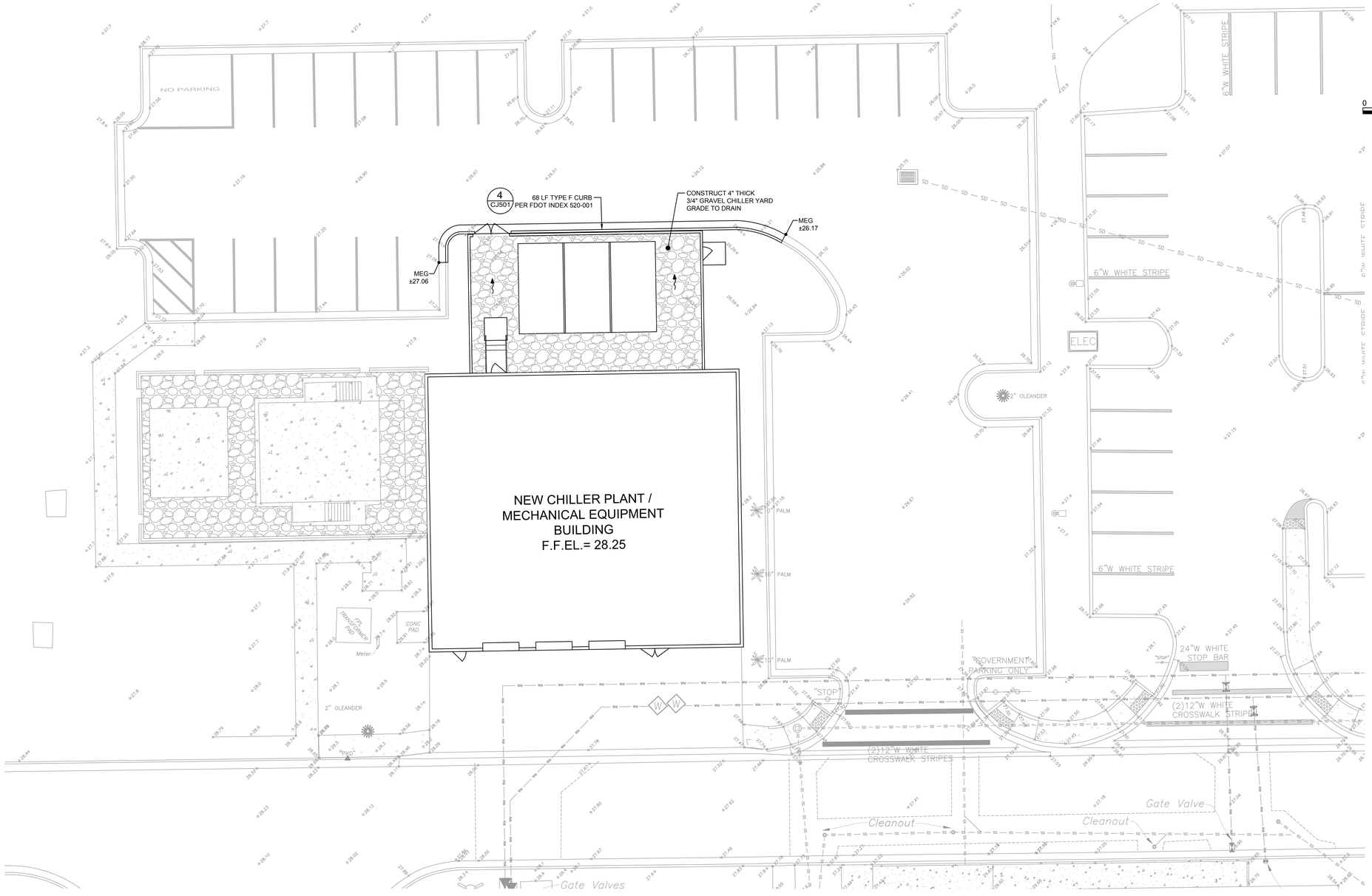
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: SITE PLAN	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved: -	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940	Building Number: -
		Issue Date: 12-20-2019 / Checked: AK / Drawn: DD	Drawing Number: CS101
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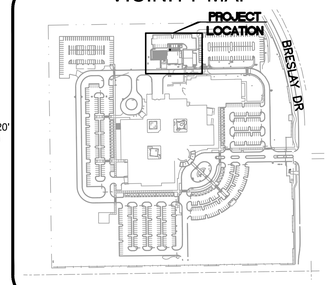


NORTH

0 10' 20'

GRAPHIC SCALE
SCALE: 1" = 10'
HALF SIZE: 1" = 20'

VICINITY MAP



GENERAL NOTES

1. PLEASE REFER TO MECHANICAL / STRUCTURAL PLANS FOR ADDITIONAL INFORMATION ON THE CHILLER PLANT AREA.

Revisions:	Date:

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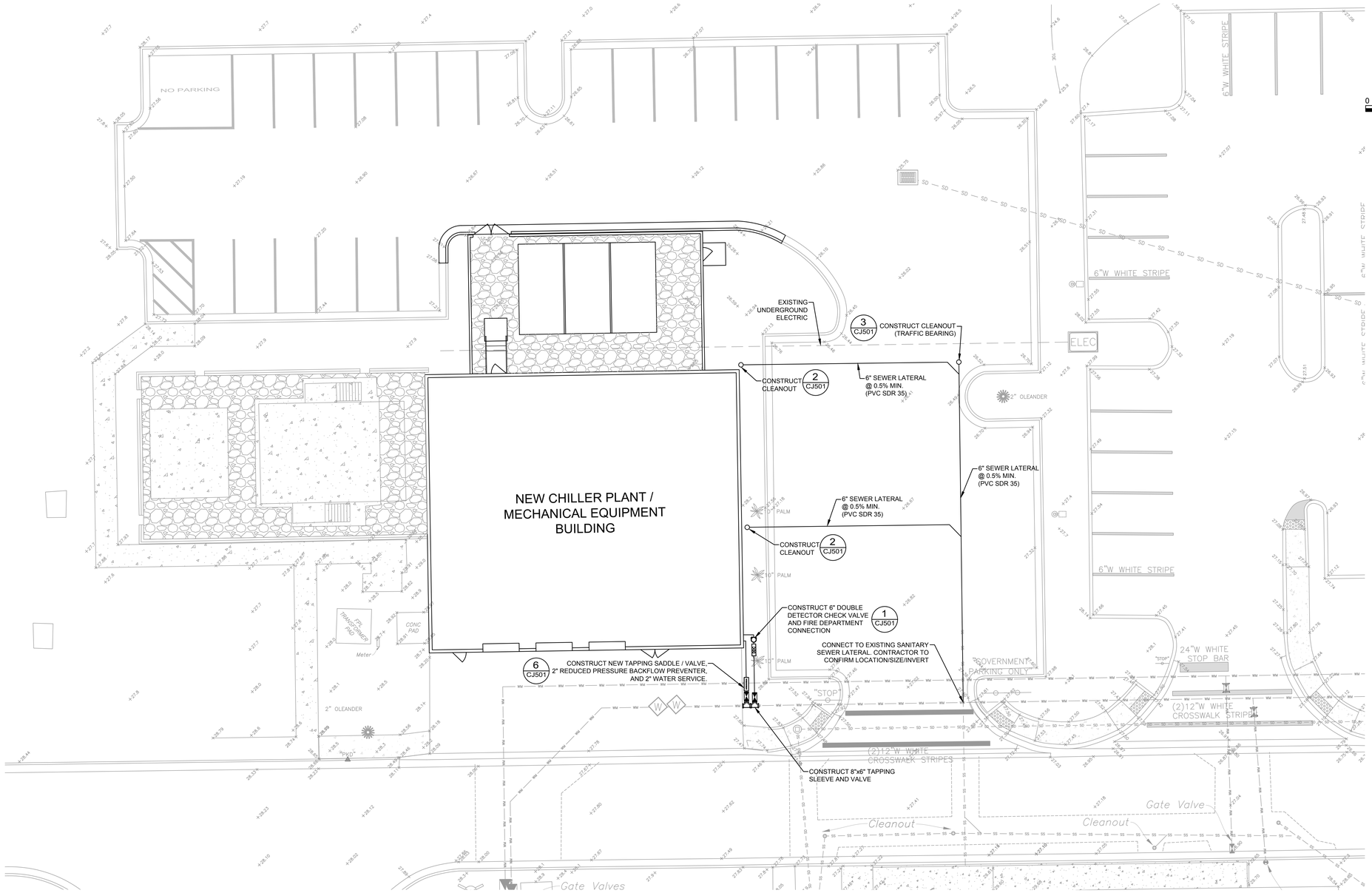
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: PAVING, GRADING & DRAINAGE PLAN	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved: -			Building Number: -
	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940	Drawing Number: CG101
		Issue Date: 12-20-2019 / Checked: AK / Drawn: DD	5 OF 68

VA FORM 08 - 6231

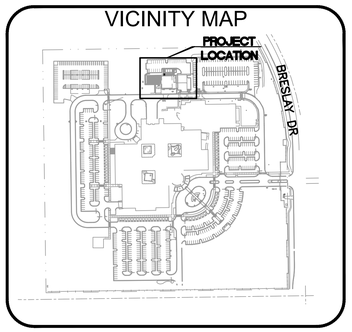


NORTH

0 10' 20'

GRAPHIC SCALE
SCALE: 1" = 10'
HALF SIZE: 1" = 20'

VICINITY MAP



POTABLE WATER DISTRIBUTION SYSTEM NOTES:

1. SHOP DRAWINGS OF ALL PIPE, VALVES, AND FITTINGS SHALL BE SUBMITTED TO, REVIEWED, AND APPROVED BY THE ENGINEER OF RECORD AND VA PRIOR TO ORDERING MATERIALS.
2. PERMANENT ACCESS SHALL BE PROVIDED BY AN UNOBSTRUCTED, 20 FOOT WIDE, ALL WEATHER DRIVING SURFACE CAPABLE OF SUPPORTING A 32-TON EMERGENCY VEHICLE. THE DRIVING SURFACE SHALL BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION.
3. ALL WATER MAINS TO HAVE A MINIMUM COVER OF 36" UNLESS OTHERWISE NOTED.
4. ALL WATER MAIN SHALL HAVE RESTRAINED JOINTS. RESTRAINED JOINTS SHALL BE EBAA IRON, INCLUDING MECHANICAL JOINT SYSTEM.
5. ALL POINTS OF CONNECTION TO THE EXISTING WATER SUPPLY MUST BE COORDINATED, APPROVED AND SUPERVISED BY THE UTILITY CONTRACTOR.

UTILITY GENERAL NOTES:

1. CONTRACTOR IS TO VERIFY ALL EXISTING UTILITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. CONTRACTOR SHALL MAINTAIN UNINTERRUPTED UTILITY SERVICE TO THE PROJECT AREA AT ALL TIMES.
3. ALL DISTURBED AREAS TO BE SODDED. CONTRACTOR SHALL RESTORE ALL AREAS TO "BETTER THAN EXISTING" CONDITION.
4. THE MINIMUM LENGTH OF PIPE TO BE RESTRAINED ON EACH SIDE OF THE FITTING SHALL BE AS SHOWN ON THE RESTRAINT TABLE OR PER MANUFACTURER'S RECOMMENDATIONS, WHICHEVER IS GREATER. SEE DETAIL ON SHEET CJ501.
5. A CONTINUITY TEST SHALL BE PERFORMED ON THE TRACING WIRE AT FINAL INSPECTION, TYPICAL FOR POTABLE WATER DISTRIBUTION.

Revisions:	Date:

CONTRACTOR
MORAN CONSTRUCTION, INC
113 KING ST
COCOA, FL 32922
(321) 639-5970

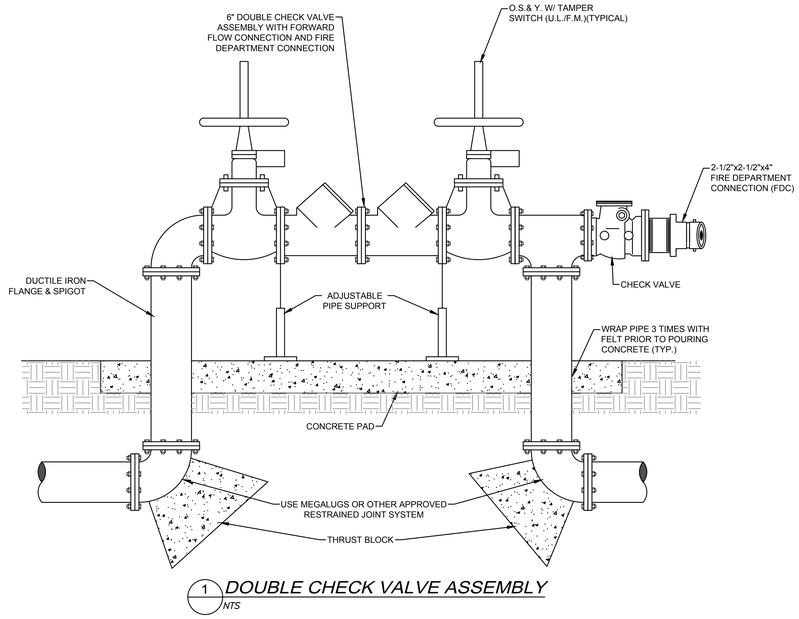
CIVIL ENGINEER / SURVEY
MORGAN & Associates
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Civil Engineers and Land Surveyors - E.B. # 7903 / L.B. #7040
504 N. Harbor City Blvd. Melbourne, FL 32935
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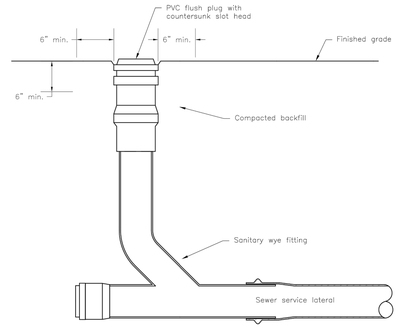
Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title	UTILITY PLAN
Approved: -	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date	12-20-2019
Checked	AK
Drawn	DD
Project Number	675-18-151
Building Number	-
Drawing Number	CU101
	6 OF 68

VA FORM 08 - 6231



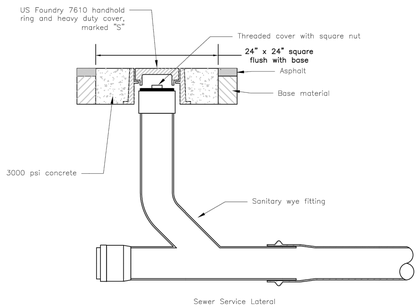
1 *DOUBLE CHECK VALVE ASSEMBLY*
NTS



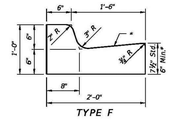
NOTES:

1. Cleanout diameter to match service lateral diameter.
2. Maximum spacing distance between cleanouts is 100 feet.
3. All cleanouts within vehicular traffic areas to have traffic bearing covers.
4. Cleanouts shall not be located in sidewalks or driveways.
5. Cleanouts shall not be substituted for manholes or installed at the end of mains greater than 150 feet in length.

2 *CLEANOUT DETAIL*



3 *TRAFFIC BEARING CLEANOUT DETAIL*



4 *TYPE F CURB DETAIL*
NTS

MINIMUM LENGTH (FT) TO BE RESTRAINED ON EACH SIDE OF FITTING(S)								
TYPE	PIPE SIZE							
	4"	6"	8"	10"	12"	16"	20"	24"
90°BEND	21	29	38	45	53	66	79	91
45°BEND	9	12	16	19	22	45	33	38
22-1/2°BEND	5	6	8	9	11	14	16	19
11-1/4°BEND	3	3	4	5	6	7	8	9
PLUG, BRANCH OF TEE, VALVE	58	82	107	128	151	193	234	273

NOTES:

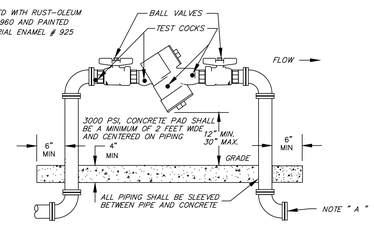
1. FITTINGS SHALL BE RESTRAINED JOINTS.
2. INSTALL FULL LENGTH JOINTS WITH TOTAL LENGTH EQUAL TO OR GREATER THAN SHOWN IN THE TABLE.
3. WHERE TWO OR MORE FITTINGS ARE TOGETHER, USE FITTING WHICH YIELDS GREATEST LENGTH OF RESTRAINED PIPE.
4. ALL LINE VALVES AND THROUGH RUN OF TEES SHALL BE RESTRAINED.
5. LENGTHS SHOWN IN THE TABLE HAVE BEEN CALCULATED IN ACCORDANCE WITH THE PROCEDURE OUTLINED IN "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" AS PUBLISHED BY DIPRA, WITH THE FOLLOWING ASSUMPTIONS:

   WORKING PRESSURE: 150 PSI
   SOIL DESIGNATION: SM (SAND SILT)
   LAYING CONDITIONS: 3

6. TABLE IS FOR PVC AND WRAPPED DUCTILE IRON.

5 *RESTRAINED PIPE TABLE*
NTS

ASSEMBLY SHALL BE PRIMED WITH RUST-OLEUM RUST INHIBITIVE PRIMER # 960 AND PAINTED WITH RUST-OLEUM INDUSTRIAL ENAMEL # 925 FEDERAL SAFETY BLUE.



NOTE "A"
ALL PIPING AND FITTINGS SHALL BE SWEATED COPPER OR THREADED BRASS, FROM WATER METER TO THE POINT WHERE THE 90° BEND MEETS THE THE CUSTOMERS SERVICE LINE UNDERGROUND.

6 *WATER SERVICE REDUCED PRESSURE BACKFLOW PREVENTER*
NTS

Revisions:	Date:

CONTRACTOR
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Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title	CONSTRUCTION DETAILS
Approved: -	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date	12-20-2019
Checked	AK
Drawn	DD
Project Number	675-18-151
Building Number	-
Drawing Number	CJ501
	7 OF 68

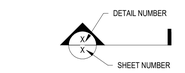
VA FORM 08 - 6231

STRUCTURAL ABBREVIATIONS

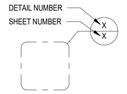
ABBREV	ABBREVIATION
ACI	AMERICAN CONCRETE INSTITUTE
ADD	ADDITIVE
ADDL	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
ALT	ALTERNATE/ALTERNATIVE
ALUM	ALUMINUM
ARCH	ARCHITECTURE/ARCHITECTURAL
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS
AWS	AMERICAN WELDING SOCIETY
B/	BOTTOM OF
BCX	BOTTOM CHORD EXTENSION
BLDG	BUILDING
BLK	BLOCK
BM	BEAM
BOT	BOTTOM
BP	BASE PLATE/BEARING PLATE
BRG	BEARING
BTWN	BETWEEN
C	CHANNEL
CB	CONCRETE BEAM
CC	CONCRETE COLUMN
CF	CUBIC FEET (FOOT)
CIP	CAST IN PLACE
CJ	CONTRACTION JOINT
CL	CENTERLINE
CLR	CLEAR/CLEARANCE
CM	CONCRETE MASONRY
CMU	CONCRETE MASONRY UNIT
CO	COMPANY
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CONN	CONNECTION
CONST	CONSTRUCTION
COORD	COORDINATE
CSJ	CONSTRUCTION JOINT
CTR	CENTER
CTRD	CENTERED
CY	CUBIC YARD
DEPT	DEPARTMENT
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIST	DISTANCE
DL	DEAD LOAD
DN	DOWN
DWG	DRAWING
EA	EACH
EE	EACH END
EF	EACH FACE
EHPA	EMERGENCY HURRICANE PROTECTION AREA
EJ	EXPANSION JOINT
ELEC	ELECTRIC/ELECTRICAL
EL, ELEV	ELEVATION
ENGR	ENGINEER
EOD	EDGE OF DECK
EOR	ENGINEER OF RECORD
EQ SP	EQUAL SPACED
ES	EACH SIDE
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F	FOUNDATION
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FINISHED FLOOR
FIN	FINISH
FIN GR	FINISH GRADE
FLR	FLOOR
FS	FAR SIDE
FT	FEET/FOOT
FTG	FOOTING
GA	GAGE/GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GC	GENERAL CONTRACTOR
GEN	GENERAL
GL	GRID LINE
GS	GALVANIZED STEEL
HD	HOT DIPPED
HDG	HOT DIPPED GALVANIZED
HORIZ	HORIZONTAL
HSA	HEADED STUD ANCHOR
HSS	HOLLOW STRUCTURAL SECTION
HT	HEIGHT
I	MOMENT OF INERTIA
ID	INSIDE DIAMETER
I.F.	INSIDE FACE
IN.	INCH
INT	INTERIOR
JST	JOIST
JT	JOINT
K	KIP (1000 LB)
KLF	KIPS PER LINEAL FOOT
KSI	KIPS PER SQUARE INCH
KWY	KEYWAY

LB	POUND
LGTH	LENGTH
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONG.	LONGITUDINAL
LSL	LAMINATED STRAND LUMBER
LT WT	LIGHT WEIGHT
LVL	LAMINATED VENEER LUMBER
MATL	MATERIAL
MAX	MAXIMUM
MB	MASONRY BEAM
MC	MISCELLANEOUS CHANNEL/MASONRY COLUMN
MECH	MECHANICAL
MET	METAL
MFR	MANUFACTURE/MANUFACTURER
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MPH	MILES PER HOUR
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NIC	NOT IN CONTRACT
NO.	NUMBER
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTERS
OD	OUTSIDE DIAMETER
O.F.	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
P/C	PRECAST CONCRETE/PILE CAP
P/T	POST TENSIONED
PAR	PARALLEL
PCB	PRECAST CONCRETE BEAM
PCC	PRECAST CONCRETE COLUMN
PCF	POUNDS PER CUBIC FEET
PEMB	PRE-ENGINEERED METAL BUILDING
PEN	PENETRATION
P.J.	PANEL JOINT CENTERLINE
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PLMG	PLUMBING
PLY.	PLYWOOD
PREFAB	PREFABRICATED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSL	PARALLEL STRAND LUMBER
PT	PRESSURE TREATED
R/W	REINFORCED WITH
RD	ROOF DRAIN
REF	REFERENCE
REINF	REINFORCING
REQD	REQUIRED
REV	REVISION
RTU	ROOF TOP UNIT
SB	SOFFIT BEAM
SCHED	SCHEDULE
S.F.	SQUARE FEET
SF	STRIP FOUNDATION
SIM	SIMILAR
SPC	SPACE/SPACES
SPECS	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
STRUCT	STRUCTURAL
SYM	SYMMETRICAL
T/	TOP OF
TB	TIE BEAM
T&B	TOP AND BOTTOM
TCX	TOP CHORD EXTENSION
TDS	TURN DOWN SLAB
TE	THICKENED EDGE
TEMP	TEMPERATURE
TENS	TENSION
THD	THREAD/THREADED
THK	THICK
TOL	TOLERANCE
TRANS	TRANSVERSE
TS	TUBE STEEL
T.S.	THICKENED SLAB
TWF	THICKENED WALL FOUNDATION
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VOL	VOLUME
W	WIDE FLANGE SECTION
W/	WITH
W/O	WITHOUT
WD	WOOD
WF	WALL FOOTING
WP	WATERPROOF
W.P.	WORKING POINT
WS	WELDED STUD
WT	WEIGHT/STRUCTURAL TEE SECTION
WWF	WELDED WIRE FABRIC
@	AT DESIGNATION
#	POUNDS / REBAR SIZE NUMBER
+/-	PLUS OR MINUS
L	ANGLE
C.L.	CENTER LINE
&	AND
Sx	SECTION MODULUS
Ix	MOMENT OF INERTIA

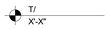
STRUCTURAL SYMBOLS AND LEGEND



SECTION / DETAIL MARK



PLAN / DETAIL MARK



ELEVATION MARK



RECESS OR STEP IN SLAB

SLOPED SURFACE



PLAN NOTE


MOMENT CONNECTION



JOIST BEARING ELEVATION



BOLTED JOIST CONNECTION



STEPPED FOUNDATION



COLUMN AND FOUNDATION TYPE MARKS



SPOT ELEVATION, TYPICALLY TOP OF ITEM TAGGED (T/WALL, T/FOUNDATION, ETC)

SPAN DIRECTION


NORTH ARROW

COLUMN GRID LINE


CONCRETE COLUMN BELOW


METAL DECK


CAST-IN-PLACE CONCRETE SLAB

WALL TYPES

CIP CONCRETE WALL

CMU WALL

NOTE: SYMBOLS AND LEGEND SHOWN ARE GENERIC AND DO NOT NECESSARILY INDICATE ACTUAL OCCURRENCES IN THESE DRAWINGS.

Revisions:	Date:

CONTRACTOR

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COCOA, FL 32922
(321) 639-5970

CIVIL

MORGAN & ASSOCIATES CONSULTIING ENGINEERS, INC.
504 N. HARBOR CITY BLVD.
MELBOURNE, FL 32935
(321) 751-6088

ARCHITECT/ENGINEER OF RECORD

ARCHITECT:
LCA ARCHITECTURE, INC.
1975 SANSBURY'S WAY, STE 108
WEST PALM BEACH, FL 33411
(561) 493-4787

STRUCTURAL/MEP:
TLC ENGINEERING SOLUTIONS, INC.
874 DIXON BLVD.
COCOA, FL 32922
(321) 636-0274
COA 15

STAMP

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: STRUCTURAL ABBREVIATIONS AND SYMBOLS

Approved: -

Phase: 100% CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title: DESIGN BUILD REPLACE CHILLERS VIERA

Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940

Issue Date: 11-15-2019
Checked: CGT
Drawn: BAW

Project Number: 675-18-151
Building Number: -
Drawing Number: SA001
8 OF 68

12/19/2019 10:27:02 AM
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VA

GENERAL NOTES

1. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH PROJECT SPECIFICATIONS AND ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND SITE DRAWINGS. CONSULT THESE DRAWINGS FOR OPENINGS, DEPRESSIONS, EQUIPMENT WEIGHTS AND LOCATIONS, EMBEDDED ITEMS AND OTHER DETAILS NOT SHOWN ON STRUCTURAL DRAWINGS.
2. DIMENSIONS AND CONDITIONS MUST BE VERIFIED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD BEFORE PROCEEDING WITH THE AFFECTED PART OF THE WORK.
3. NO STRUCTURAL MEMBER OR COMPONENT SHALL BE CUT, NOTCHED, OR OTHERWISE ALTERED UNLESS APPROVED IN WRITING BY THE ENGINEER OF RECORD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL COSTS INCURRED BY THE ENGINEER OF RECORD FOR REVIEW OF ANY SUCH DEVIATIONS.
4. DO NOT SCALE DRAWINGS.
5. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS COMPLETE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCE TO ENSURE SAFETY OF THE BUILDING AND ITS COMPONENTS DURING ERECTION. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIEDOWNS.
6. DETAILS LABELED "TYPICAL DETAILS" ON THE DRAWINGS SHALL APPLY TO ALL SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. THE APPLICABILITY OF THE DETAIL TO ITS LOCATION ON THE DRAWINGS CAN BE DETERMINED BY THE TITLE OF DETAIL. SUCH DETAILS SHALL APPLY WHETHER OR NOT THEY ARE REFERENCED AT EACH LOCATION. QUESTIONS REGARDING APPLICABILITY OF TYPICAL DETAILS SHALL BE DETERMINED BY THE ENGINEER OF RECORD.
7. THE GENERAL CONTRACTOR SHALL COMPARE THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, CIVIL AND STRUCTURAL DRAWINGS AND REPORT ANY DISCREPANCIES BETWEEN EACH SET OF DRAWINGS AND WITHIN EACH SET OF DRAWINGS TO THE ARCHITECT AND ENGINEER OF RECORD PRIOR TO THE FABRICATION AND INSTALLATION OF ANY STRUCTURAL MEMBERS.
8. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, SEQUENCE AND SAFETY. THE ENGINEER DOES NOT HAVE CONTROL OR CHARGE OF, AND SHALL NOT BE RESPONSIBLE FOR, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES, FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, FOR THE ACTS OR OMISSION OF THE CONTRACTOR, SUBCONTRACTOR OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
9. THE STRUCTURAL ENGINEER'S OBLIGATIONS TO REVIEW SHOP DRAWINGS AND OTHER SUBMITTALS AND TO RETURN THEM IN A TIMELY MANNER ARE CONDITIONED UPON THE PRIOR REVIEW AND APPROVAL OF THE SHOP DRAWINGS OR SUBMITTALS BY THE CONTRACTOR AS REQUIRED IN THE CONSTRUCTION CONTRACT AND THE CONTRACTOR'S SUBMITTAL OF THE SHOP DRAWINGS AND OTHER SUBMITTALS IN ACCORDANCE WITH A WRITTEN SCHEDULE DISTRIBUTED IN ADVANCE TO THE ENGINEER IDENTIFYING THE DATES FOR THE SUBMITTAL OF THE VARIOUS SHOP DRAWINGS AND SUBMITTALS.
10. PERIODIC SITE OBSERVATION BY FIELD REPRESENTATIVES OF TLC ENGINEERING SOLUTIONS, INC. IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS PROCEEDING IN GENERAL ACCORDANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION SHALL NOT BE CONSTRUED AS EXHAUSTIVE OR CONTINUOUS TO CHECK THE QUALITY OR QUANTITY OF THE WORK.
11. STRUCTURAL ENGINEER OF RECORD IS NOT RESPONSIBLE FOR THE DESIGN OF STEEL STAIRS, HANDRAILS, CURTAIN WALL/WINDOW WALL SYSTEMS, COLD-FORMED STEEL FRAMING, OR OTHER SYSTEMS NOT SHOWN IN THE STRUCTURAL DOCUMENTS. SUCH SYSTEMS SHALL BE DESIGNED, FURNISHED, AND INSTALLED AS REQUIRED BY OTHER PORTIONS OF THE CONTRACT DOCUMENTS.
12. IN THE PROFESSIONAL OPINION OF TLC ENGINEERING SOLUTIONS, INC. THE STRUCTURAL CONTRACT DOCUMENTS FOR THIS PROJECT HAVE BEEN PREPARED IN ACCORDANCE WITH THE DESIGN CRITERIA AS SET FORTH IN THE FLORIDA BUILDING CODE (FBC) 6th EDITION (2017).
13. NO PROVISIONS HAVE BEEN MADE FOR VERTICAL OR HORIZONTAL EXPANSION EXCEPT AS SHOWN ON CONTRACT DOCUMENTS.
14. FINISH FLOOR ELEVATION (FIRST FLOOR) OF 0'-0" IS USED AS A REFERENCE ELEVATION. CIVIL EL= 28.25'
15. THE USE OF REPRODUCTIONS OF THESE CONTRACT DOCUMENTS AND USE OF CAD FILES BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFY HIS ACCEPTANCE OF ALL INFORMATION SHOWN HEREON AS CORRECT, AND OBLIGATES HIMSELF TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING DUE TO ANY ERRORS THAT MAY OCCUR HEREON.

DESIGN LOADS

1. THE STRUCTURAL SYSTEM FOR THIS BUILDING HAS BEEN DESIGNED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, 6th EDITION (2017), AND AS SUPPLEMENTED BY LOCAL AMENDMENTS.
2. THE FOLLOWING SUPERIMPOSED LOADINGS HAVE BEEN UTILIZED:

2.1 DEAD LOADS

ROOF STRUCTURE	15 PSF
M/E/P LOADS	15 PSF

2.2 LIVE LOADS

ROOF	20 PSF
FLOOR (MECH/ELECTRICAL ROOM)	150 PSF

2.3 WIND LOADS: PER FLORIDA BUILDING CODE, SECTION 1609.

SEE SHEET S1.3 FOR COMPONENTS AND CLADDING PRESSURES

ULTIMATE DESIGN WIND SPEED, Vult	157 MPH (3 SEC. GUST)
NOMINAL DESIGN WIND SPEED, Vasd	122 MPH (3 SEC. GUST)
RISK CATEGORY	IV
EXPOSURE	C

2.4 SEISMIC LOADS: PER FLORIDA BUILDING CODE, SECTION 1610.

SPECTRAL RESPONSE ACCELERATION, SHORT DURATION (Ss)	0.057
SPECTRAL RESPONSE ACCELERATION, 1.0 SECOND DURATION (S1)	0.032
SITE CLASSIFICATION	D
SEISMIC USE GROUP	III
SEISMIC DESIGN CATEGORY	A
SEISMIC IMPORTANCE FACTOR	1.50

REQUEST FOR INTERPRETATION (RFI)

1. RFI SHALL ORIGINATE WITH CONTRACTOR AND SHALL BE SUBMITTED IN THE FORM SPECIFIED WITHIN CONTRACT DOCUMENTS. RFI SHALL BE SUBMITTED IN A PROMPT MANNER AS TO AVOID DELAYS IN CONTRACTORS WORK.
2. RFI RESPONSES ARE NOT INTENDED TO AUTHORIZE ANY INCREASE IN CONSTRUCTION COST, SCHEDULE OR TIME EXTENSIONS, OR CONSTRUCTION IN CONFLICT WITH ANY APPLICABLE CODES OR SPECIFIED DESIGN STANDARDS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE DESIGN TEAM IMMEDIATELY OF ANY PERCEIVED SCOPE, SCHEDULE, OR COST IMPACTS OR ADJUSTMENTS. IF CONTRACTOR REQUESTS ANY ADDITIONAL COST, INCREASE IN SCHEDULE OR ADJUSTMENT IN SCOPE, THE CONTRACTOR SHALL NOT PROCEED WITH ADDITIONAL WORK UNTIL APPROVED IN WRITING BY THE CONSTRUCTION ADMINISTRATOR.

SHOP DRAWING REVIEW

1. SHOP DRAWINGS SHALL ADEQUATELY DEPICT THE STRUCTURAL ELEMENTS AND CONNECTIONS SHOWN ON THE CONTRACT DOCUMENTS. SHOP DRAWINGS WILL BE REVIEWED FOR GENERAL COMPLIANCE WITH THE DESIGN INTENT OF THE CONTRACT DOCUMENTS ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY COMPLIANCE WITH THE CONTRACT DOCUMENTS AS TO QUANTITY, LENGTH, ELEVATIONS, DIMENSIONS, ETC. REVIEW OF SUBMITTALS AND SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR ERRORS AND OMISSIONS ASSOCIATED WITH THE PREPARATION OF THE SHOP DRAWINGS.
2. SHOP DRAWINGS SHALL BE REVIEWED BY THE CONTRACTOR AND MARKED "APPROVED" PRIOR TO SUBMITTAL TO THE ARCHITECT/ENGINEER. NON-CONFORMING DRAWING SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.
3. CHANGES AND ADDITIONS MADE ON RE-SUBMITTALS SHALL BE CLEARLY FLAGGED AND NOTED. THE PURPOSE OF THE RE-SUBMITTALS SHALL BE CLEARLY NOTED ON THE LETTER OF TRANSMITTAL. ARCHITECT/ENGINEER OF RECORD REVIEW WILL BE LIMITED TO THOSE ITEMS CAUSING THE RE-SUBMITTAL.

SHOP DRAWINGS FOR SPECIALTY ENGINEERED PRODUCTS

1. THE FOLLOWING SYSTEMS AND COMPONENTS AS A MINIMUM REQUIRE FABRICATION AND ERECTION DRAWINGS PREPARED BY A DELEGATED ENGINEER:
   A. OPEN WEB STEEL JOISTS
   B. STRUCTURAL STEEL CONNECTIONS REQUIRING ENGINEERING
   C. TEMPORARY WALL BRACING
   D. FORMWORK AND TEMPORARY SHORING
2. SUBMITTALS SHALL CLEARLY IDENTIFY THE SPECIFIC PROJECT AND APPLICABLE CODES. LIST THE DESIGN CRITERIA, AND SHOW ALL DETAILS AND DRAWINGS NECESSARY FOR PROPER FABRICATION AND INSTALLATION. SHOP DRAWINGS AND CALCULATIONS SHALL IDENTIFY SPECIFIC PRODUCT UTILIZED. GENERIC PRODUCTS WILL NOT BE ACCEPTED.
3. SHOP DRAWINGS AND CALCULATIONS SHALL BE PREPARED UNDER THE DIRECT SUPERVISION AND CONTROL OF THE DELEGATED ENGINEER.
4. SHOP DRAWINGS AND CALCULATIONS SHALL BE SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE STATE OF FLORIDA (IN WHICH THE PROJECT RESIDES). COMPUTER PRINTOUTS ARE AN ACCEPTABLE SUBSTITUTE FOR MANUAL COMPUTATIONS PROVIDED THEY ARE ACCOMPANIED BY SUFFICIENT DESCRIPTIVE INFORMATION TO PERMIT THEIR PROPER EVALUATION. SUCH DESCRIPTIVE INFORMATION SHALL BE SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE STATE OF FLORIDA (IN WHICH THE PROJECT RESIDES) AS AN INDICATION THAT HE/SHE HAS ACCEPTED RESPONSIBILITY FOR THE RESULTS. THE STRUCTURAL ENGINEER WILL RETAIN ONE SIGNED AND SEALED SET FOR THEIR RECORDS.
5. DRAWINGS PREPARED SOLELY TO SERVE AS A GUIDE FOR FABRICATION AND INSTALLATION (SUCH AS REINFORCING STEEL SHOP DRAWINGS OR STRUCTURAL STEEL ERECTION DRAWINGS) AND REQUIRING NO ENGINEERING, DO NOT REQUIRE THE SEAL OF A DELEGATED ENGINEER.
6. CATALOG INFORMATION ON STANDARD PRODUCTS DOES NOT REQUIRE THE SEAL OF A DELEGATED ENGINEER.
7. REVIEW BY THE STRUCTURAL ENGINEER OF RECORD OF SUBMITTALS IS LIMITED TO VERIFYING THE FOLLOWING:
   A. THAT THE SPECIFIED STRUCTURAL SUBMITTALS HAVE BEEN FURNISHED.
   B. THAT THE STRUCTURAL SUBMITTALS HAVE BEEN SIGNED AND SEALED BY THE DELEGATED ENGINEER.
   C. THAT THE DELEGATED ENGINEER HAS UNDERSTOOD THE DESIGN INTENT AND HAS USED THE SPECIFIED STRUCTURAL CRITERIA NO DETAILED CHECK OF CALCULATIONS WILL BE MADE.
   D. THAT THE CONFIGURATION SET FORTH IN THE STRUCTURAL SUBMITTALS IS CONSISTENT WITH THE CONTRACT DOCUMENTS. NO DETAILED CHECK OF DIMENSIONS OR QUANTITIES WILL BE MADE.
8. SUBMITTALS NOT MEETING THE ABOVE CRITERIA WILL NOT BE REVIEWED AND WILL BE RETURNED.

SUBMITTALS

1. ALL SHOP DRAWINGS MUST BE REVIEWED AND STAMPED APPROVED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTAL.
2. THE GENERAL CONTRACTOR SHALL SUBMIT FOR ENGINEER REVIEW SHOP DRAWINGS FOR THE FOLLOWING ITEMS:
   • ITEMS MARKED (D) SHALL HAVE SHOP DRAWINGS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA.
   • ITEMS MARKED (#) SHALL BE SUBMITTED FOR ENGINEERS RECORD ONLY.
   A. STRUCTURAL STEEL (D)
   B. REINFORCING STEEL
   C. FORMWORK, SHORING, RESHORING (D,#)
   D. CONCRETE MIX DESIGNS
   E. TEMPORARY WALL BRACING (D)
   F. MECHANICAL ANCHORS (#)
   G. CHEMICAL (ADHESIVE) ANCHORS (#)
   H. FORMWORK AND TEMPORARY SHORING (D)
   I. OPEN WEB STEEL JOISTS (D)
   J. METAL ROOF DECK
3. MANUFACTURER'S LITERATURE. SUBMIT TWO COPIES OF MANUFACTURER'S LITERATURE FOR ALL MATERIALS AND PRODUCTS USED IN CONSTRUCTION ON THE PROJECT.

DEMOLITION NOTES

1. THE CONTRACTOR IS REQUIRED TO PROVIDE ALL TEMPORARY SCAFFOLDING, PLATFORMS, BARRICADES, RAILINGS, SCREENING, ETC. NECESSARY TO PROTECT EXISTING FACILITIES, STRUCTURES AND THE PUBLIC DURING DEMOLITION AND ERECTION OF THE NEW CONSTRUCTION, AS WELL AS FOR JOB SAFETY. JOB SAFETY, CONSTRUCTION AND DEMOLITION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONS TO MINIMIZE VIBRATION, NOISE, DUST AND DEBRIS IN ALL AREAS ADJACENT TO AREAS OF DEMOLITION.
2. THE CONTRACTOR IS REQUIRED TO COORDINATE WITH THE OWNER FOR THE TEMPORARY SUSPENSION OF USE OF ANY FACILITY OR PORTION THEREOF, AND THE ASSOCIATED BARRICADING REQUIREMENTS WITHIN A MINIMUM OF 7 DAYS PRIOR TO COMMENCING WORK.
3. THE CONTRACTOR IS REQUIRED TO PERFORM HIS WORK IN A MANNER, WHICH WILL NOT CONFLICT WITH ANY OPERATION, WHICH IS TO REMAIN FUNCTIONAL DURING THE COURSE OF THE PROJECT, UNTIL SUCH OPERATION IS SCHEDULED TO BE SHUT DOWN.
4. THE CONTRACTOR IS REQUIRED TO COORDINATE WITH OWNER FOR THE TEMPORARY SUSPENSION OF USE OF ANY UTILITY SYSTEM, A MINIMUM OF 3 DAYS PRIOR TO COMMENCING WORK.
5. AT ALL LOCATIONS WHERE NEW CONSTRUCTION WILL INTERFACE WITH EXISTING ELEMENTS, CUT THROUGH EXISTING STRUCTURE IN STRAIGHT AND TRUE LINES TO INSURE A NEAT INTERFACE.
6. AT ALL LOCATIONS WHERE THE DEMOLITION OF A CONCRETE MEMBER LEAVES THE ENDS OF REINFORCING STEEL EXPOSED, PROVIDE THE FOLLOWING:
   A. CHIP CONCRETE FROM AROUND THE STEEL TO A DEPTH OF 1".
   B. CUT OFF REINFORCING STEEL NOT LESS THAN 3/4" BELOW THE CONCRETE SURFACE.
   C. FILL THE CAVITY FLUSH WITH A HIGH MODULUS GEL EPOXY. SEE SPECIFICATION FOR ACCEPTED MANUFACTURERS.
7. BEFORE DEMOLISHING ANY STRUCTURAL ELEMENT, INSTALL ALL REQUIRED TEMPORARY AND/OR PERMANENT BRACING AND SUPPORTS.
8. REMOVE COMPLETELY FROM THE SITE AND LEGALLY DISPOSE ALL DEBRIS GENERATED BY THE DEMOLITION WORK AS THE WORK PROGRESSES. STOCKPILING OF DEBRIS AND BURNING OF DEBRIS ON THE PREMISES IS STRICTLY PROHIBITED.

EXISTING STRUCTURE

1. INFORMATION SHOWN FOR THE EXISTING STRUCTURE ON THESE DRAWINGS WAS TAKEN FROM THE DRAWINGS THAT WERE PREPARED FOR:

PREPARED BY:	CAPE DESIGN ENGINEERING Co.
ENTITLED:	VIERA VA ROOF/HVAC RENOVATION
DATED:	APRIL 05, 2011

2. WORK SHOWN ON THESE DRAWINGS ASSUMES THAT THE ORIGINAL CONSTRUCTION WAS PERFORMED IN ACCORDANCE WITH THE ABOVE INDICATED ORIGINAL DRAWINGS INCLUDING (BUT NOT LIMITED TO) DIMENSIONS, ELEVATIONS, MEMBER SIZES, MATERIALS, DETAILS, ETC. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE CONDITIONS RELATING TO THE EXISTING STRUCTURE AND TO NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICTS.

FOUNDATIONS - W/O SOIL REPORTS

1. IN THE ABSENCE OF ANY GEOTECHNICAL RECOMMENDATIONS, THE COOLING TOWER FOUNDATIONS ARE DESIGNED FOR A PRESUMPTIVE ALLOWABLE SOIL BEARING PRESSURE OF 2,000 PSF VERTICAL AND 150 PSF LATERAL WITH A COEFFICIENT OF FRICTION OF 0.25 ON COMPACTED FILL.
2. THE EXISTING FOUNDATIONS TO BE REUSED ARE ANALYZED BASE ON A PRESUMPTIVE BEARING PRESSURE OF 2,000PSF.
3. PRESUMPTIVE SOIL CONDITIONS ARE IN ACCORDANCE WITH TABLE 1806.2 OF THE FLORIDA BUILDING CODE (6TH EDITION (2017).
4. IN THE ABSENCE OF ANY GEOTECHNICAL RECOMMENDATIONS, NO WARRANTIES, EXPRESSED OR IMPLIED, ARE MADE BY TLC FOR THE PERFORMANCE OF THE FOUNDATION.
5. AT A MINIMUM, SITE PREPARATION WORK SHALL INCLUDE:
   A. STRIPPING AND GRUBBING OF THE BUILDING FOOTPRINT PLUS A MARGIN OF 5 FEET AROUND THE BUILDING, REMOVING ALL ORGANIC MATERIALS.
   B. PROOF ROLLING THE BUILDING SITE TO LOCATE ANY UNFORESEEN SOFT AREAS. ANY SOFT AREAS SHALL BE EXCAVATED AND REPLACED WITH CLEAN FILL. A DENSITY OF AT LEAST 95% FOR A DEPTH OF 2 FEET IS REQUIRED UNDER THE BUILDING FOOTPRINT.
   C. ALL FILL SHALL BE CLEAN SAND AND FREE OF ORGANIC MATERIALS. COMPACT FILL IN 12 INCH (UNCOMPACTED THICKNESS) LIFTS TO A MINIMUM OF 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY VALUE.
   D. EXCAVATIONS FOR FOUNDATIONS SHALL BE COMPACTED TO 95% FOR A DEPTH OF AT LEAST 2 FEET BELOW THE BOTTOM OF THE FOUNDATION.
   E. DEWATERING MAY BE REQUIRED TO ACHIEVE THE REQUIRED COMPACTION VALUES, AND IF USED, SHOULD DRAW DOWN THE WATER LEVEL TO AT LEAST 2 FEET BELOW THE BOTTOM OF THE EXCAVATION.
6. SLABS ON GRADE SHALL BE PLACED OVER A 15 MIL, CLASS "A" VAPOR RETARDER. VAPOR RETARDER SHALL BE LAPPED A MINIMUM OF 6", OR AS RECOMMENDED BY THE MANUFACTURER (WHICHEVER IS GREATER) AND TAPED AT ALL JOINTS. ALL PUNCTURES IN THE VAPOR RETARDER SHALL BE REPAIRED PER MANUFACTURER'S WRITTEN INSTRUCTIONS. ALL PENETRATIONS THROUGH THE VAPOR RETARDER (COLUMNS, PLUMBING, CONDUITS, ETC) SHALL BE SEALED PER MANUFACTURER'S WRITTEN INSTRUCTIONS. VAPOR RETARDER SHALL BE CONTINUOUS UNDER WALL FOUNDATIONS OR SEALED TO EXTERIOR WALLS PER MANUFACTURER'S WRITTEN INSTRUCTIONS.

REINFORCING STEEL

1. SHALL BE ASTM A615 GRADE 60 DEFORMED BARS, FREE FROM OIL, SCALE AND RUST AND PLACED IN ACCORDANCE WITH THE TYPICAL BENDING DIAGRAM AND PLACING DETAILS OF ACI STANDARDS AND SPECIFICATIONS.
2. PROVIDE CONCRETE COVER OVER PRIMARY REINFORCEMENT, TIES, AND STIRRUPS, AS FOLLOWS, UNLESS OTHERWISE NOTED:

	LOCATION AND CONDITION	MINIMUM COVER
A.	CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	ALL BARS 3"
B.	CONCRETE EXPOSED TO EARTH OR WEATHER	#6 OR GREATER 2" #5 OR SMALLER 1.5"
C.	CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	
1.	SLABS AND WALLS	#11 OR SMALLER 3/4"
2.	BEAMS AND COLUMNS	ALL BARS 1.5"

3. SECURE APPROVAL OF SHOP DRAWINGS PRIOR TO COMMENCING FABRICATION.
4. PROVIDE STANDARD HOOKS AT DISCONTINUOUS ENDS OF ALL TOP BARS.
5. WHERE REINFORCING IS SHOWN CONTINUOUS, SPLICE BOTTOM BARS OVER SUPPORTS AND TOP BARS AT CENTER OF SPAN. ALL OTHER LAP SPLICES SHALL BE IN ACCORDANCE WITH SPLICE TABLES AND DETAILS SHOWN ON DRAWINGS.
6. PROVIDE DOWELS INTO FOOTINGS. TO MATCH VERTICAL BARS WITH CLASS B TENSION LAP SPLICES, U.N.O.
7. LENGTH OF LAP SPLICES AND BAR EMBEDMENT SHALL BE AS SHOWN IN TABLE, UNLESS OTHERWISE NOTED:

	BAR SIZE	3000 PSI	4000 PSI	5000 PSI
T<12"	#6 OR LESS	57 Db	49 Db	44 Db
	#7 OR MORE	71 Db	61 Db	55 Db
T>12"	#6 OR LESS	74 Db	65 Db	57 Db
	#7 OR MORE	81 Db	79 Db	72 Db

WHERE "T" IS DEPTH OF CONCRETE UNDER BARS AND "Db" IS BAR DIAMETER.
UTILIZE CLASS "B" SPLICE FOR ALL SPLICES, U.N.O. ON PLANS OR DETAILS.

8. AT CHANGES IN DIRECTION OF CONCRETE WALLS, PROVIDE CORNER BARS OF SAME SIZE AND SPACING AS HORIZONTAL STEEL.
9. WHERE HOOKS ARE SHOWN ON THE PLANS OR DETAILS, HOOKS SHALL BE DETAILED TO EXTEND DEEP ENOUGH INTO SUPPORTING STRUCTURE TO DEVELOP THE FULL STRENGTH OF THE HOOKED BAR. PROVIDE ADDITIONAL TIES OR STIRRUPS IN SUPPORTING STRUCTURE AS REQUIRED TO SATISFY ACI 318 HOOK DEVELOPMENT, CONFINEMENT, AND ANCHORAGE CRITERIA.

FORMWORK AND SHORING

1. NO STRUCTURAL CONCRETE SHALL BE STRIPPED UNTIL IT HAS REACHED AT LEAST TWO-THIRDS OF THE 28-DAY DESIGN STRENGTH.
2. DESIGN, ERECTION AND REMOVAL OF ALL FORMWORK, SHORES AND RESHORES SHALL MEET THE REQUIREMENTS SET FORTH IN ACI STANDARDS 347 AND 301.

CONSTRUCTION JOINTS

1. ANY DEVIATION OR ADDITION OF CONSTRUCTION JOINTS FROM THAT SHOWN ON THE DRAWINGS MUST BE REVIEWED AND APPROVED IN WRITING BY THE ENGINEER OF RECORD.
2. ALTERNATE OR ADDED CONSTRUCTION JOINT LOCATIONS ARE ACCEPTABLE ONLY AS A CHANGE ORDER, WHICH WILL INCLUDE ENGINEERING CHARGES BY THE ENGINEER OF RECORD FOR REDESIGN OF THE STRUCTURE, SHORING, ETC.

WELDED WIRE FABRIC

1. SHALL CONFORM TO ASTM A-185, FREE FROM OIL, SCALE AND RUST AND PLACED IN ACCORDANCE WITH THE TYPICAL PLACING DETAILS OF ACI STANDARDS AND SPECIFICATIONS.
2. MINIMUM LAP SHALL BE ONE SPACE PLUS TWO INCHES.
3. USE OF FLAT MANUFACTURED SHEETS IS REQUIRED (NO ROLLS).
4. INSTALL WWF ON BRICKS OR BOLSTERS AT MID DEPTH OF SLAB U.N.O.; SPACING OF SUPPORTS SHALL BE ADEQUATE TO PREVENT SHIFTING OF WWF DURING CONSTRUCTION, BUT SHALL NOT EXCEED 24" O.C.

CONCRETE

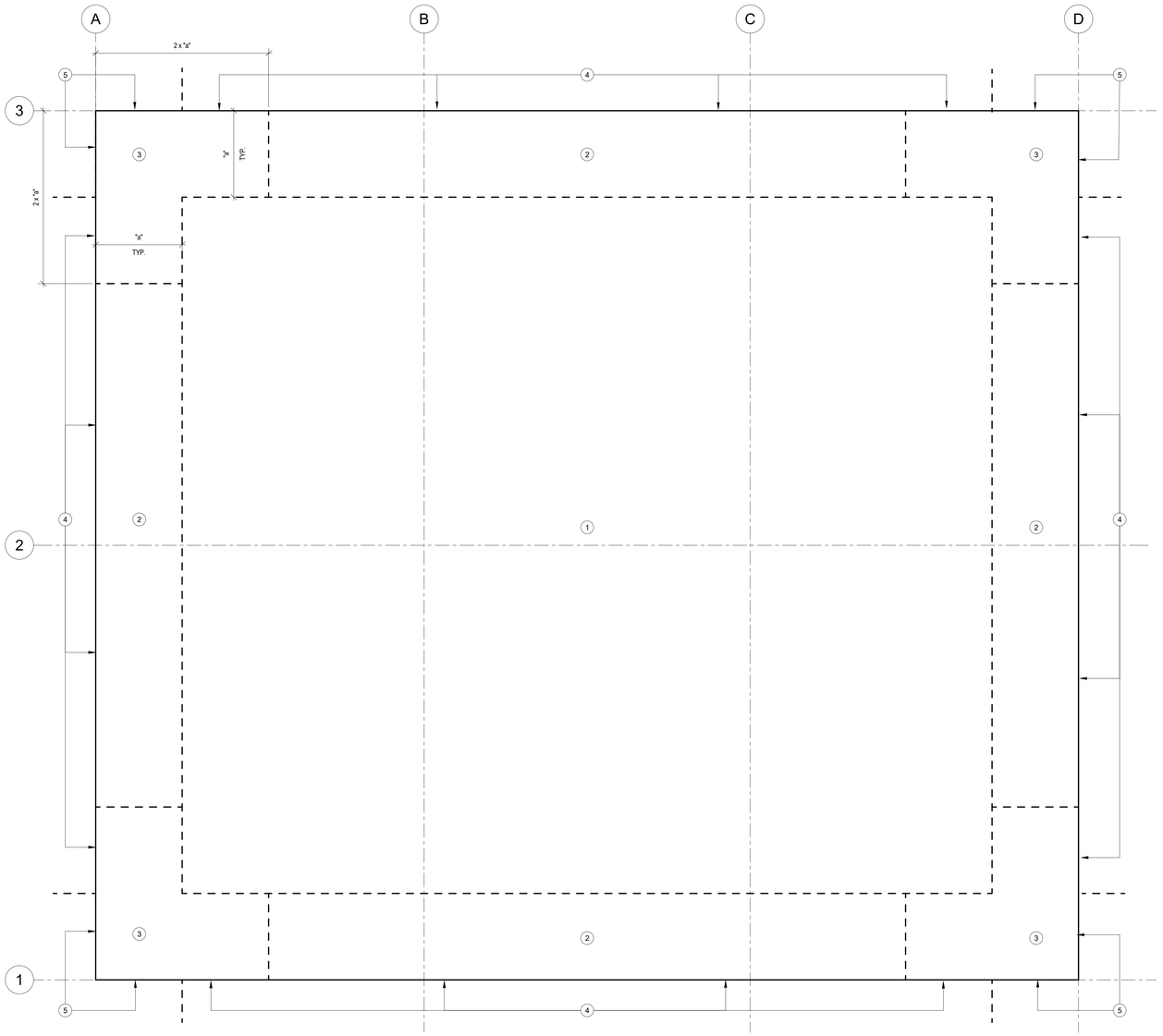
1. SHALL BE PER AN APPROVED MIX DESIGN PROPORTIONED TO ACHIEVE A STRENGTH AT 28 DAYS AS LISTED BELOW WITH A PLASTIC AND WORKABLE MIX:

CONCRETE STRUCTURE TYPE	COMPRESSIVE STRENGTH	SLUMP	MAXIMUM AGGREGATE	MAXIMUM W/C RATIO
FOUNDATIONS	3000 PSI	4-6"	1"	0.50
SLABS-ON-GRADE	4000 PSI	4-6"	3/4"	0.50
CONCRETE WALLS	4000 PSI	4-6"	3/4"	0.48

2. CONCRETE SHALL BE PLACED AND CURED ACCORDING TO ACI STANDARDS AND SPECIFICATIONS.
3. SUBMIT PROPOSED MIX DESIGN WITH RECENT FIELD CYLINDER OR LAB TESTS FOR REVIEW PRIOR TO USE. MIX SHALL BE UNIQUELY IDENTIFIED BY MIX NUMBER OR OTHER POSITIVE IDENTIFICATION. MIX SHALL MEET THE REQUIREMENTS OF ASTM C33 FOR COARSE AGGREGATE.
4. CONCRETE SHALL COMPLY WITH THE REQUIREMENTS OF ASTM STANDARD C94 FOR MEASURING, MIXING, TRANSPORTING, ETC. CONCRETE TICKETS SHALL BE TIME STAMPED WHEN CONCRETE IS BATCHED.
5. THE MAXIMUM TIME ALLOWED FROM THE TIME THE MIXING WATER IS ADDED UNTIL IT IS DEPOSITED IN ITS FINAL POSITION SHALL NOT EXCEED ONE AND ONE HALF (1-1/2) HOURS. IF FOR ANY REASON THERE IS A LONGER DELAY THAN THAT STATED ABOVE, THE CONCRETE SHALL BE DISCARDED. IT SHALL BE THE RESPONSIBILITY OF THE TESTING LAB TO NOTIFY THE OWNER'S REPRESENTATIVE AND THE CONTRACTOR OF ANY NONCOMPLIANCE WITH THE ABOVE.
6. SLABS SHALL BE CURED USING A DISSIPATING CURING COMPOUND MEETING ASTM STANDARD C309 TYPE 1-CLASS D AND SHALL HAVE A FUGITIVE DYE. THE COMPOUND SHALL BE PLACED AS SOON AS THE FINISHING IS COMPLETED OR AS SOON AS THE WATER HAS LEFT THE UNFINISHED CONCRETE. SCUFFED OR BROKEN AREAS IN THE CURING MEMBRANE SHALL BE RECOATED DAILY.
7. CALCIUM CHLORIDES SHALL NOT BE UTILIZED; OTHER ADMIXTURES MAY BE USED ONLY WITH THE APPROVAL OF THE ENGINEER.
8. CONCRETE MIX DESIGNS SHALL INCLUDE A WRITTEN DESCRIPTION INDICATING WHERE EACH PARTICULAR MIX IS TO BE PLACED WITHIN THE STRUCTURE.
9. CONDUITS, PIPES AND SLEEVES SHALL BE PLACED AND SPACED IN ACCORDANCE WITH ACI 318, 6.3.
10. CONCRETE DESIGN MIX SUBMITTALS SHALL INCLUDE TESTED, STATISTICAL BACK-UP DATA AS PER CHAPTER 5 OF ACI 318.
11. CONCRETE SLABS ON GRADE SHALL BE REINFORCED WITH #3 @ 10" O.C. EACH WAY AT MID-DEPTH OF SLAB.

CHEMICAL (ADHESIVE) ANCHORS

1. SHALL BE A TWO PART EPOXY POLYMER INJECTION SYSTEM, SUCH AS HILTI HIT HY200, HILTI RE500 SD, DEWALT PURE 100+, DEWALT AC200+, OR SIMPSON SET ADHESIVE SYSTEM, OR ENGINEER APPROVED SUBSTITUTION.
2. EPOXY TYPES AND BRANDS VARY IN THEIR BOND STRENGTH AND SUITABILITY OF USE. DEPENDING ON TYPE OF LOADING, ANCHOR SPACING, ETC., WHEN A PARTICULAR TYPE OF EPOXY IS SPECIFIED IN THESE DRAWINGS, A UNIQUE CALCULATION HAS BEEN MADE BASED ON THE PROPERTIES OF THAT SPECIFIC TYPE OF EPOXY FOR THE SPECIFIC CONDITION SHOWN IN THE DETAIL. SUBSTITUTION OF EPOXY TYPE IS NOT ALLOWED WHERE DETAIL SPECIFIES ONLY ONE TYPE OF EPOXY, WITHOUT PRIOR WRITTEN APPROVAL BY THE ENGINEER OF RECORD. NOT ALL EPOXY BRANDS OR TYPES WILL BE ALLOWED AS SUBSTITUTES. ICC-ES REPORTS FOR PROPOSED ANCHOR SUBSTITUTIONS MUST BE SUBMITTED TO EOR FOR REVIEW. EOR MAY REQUIRE ENGINEERED CALCULATIONS FOR REVIEW AND APPROVAL.
3. SUBSTITUTION OF EPOXIES IN ONE CONDITION SHALL NOT BE CONSTRUED AS APPROVAL TO MAKE SIMILAR SUBSTITUTION OF EPOXIES IN OTHER DIFFERING CONDITIONS. EACH SUBSTITUTION MUST RECEIVE PRIOR WRITTEN APPROVAL BY THE ENGINEER OF RECORD.
4. INSTALL ANCHORS IN STRICT ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) IN CONJUNCTION WITH EDGE DISTANCE, SPACING, AND EMBEDMENT SPECIFIED ON DRAWINGS.
5. ADHESIVE ANCHORS INSTALLED IN HORIZONTAL TO VERTICALLY OVERHEAD ORIENTATION TO SUPPORT SUSTAINED TENSION LOADS SHALL BE DONE BY A CERTIFIED ADHESIVE ANCHOR INSTALLER (AAI) AS CERTIFIED THROUGH ACI/CRSI (ACI 318-14 D.9.2.2). PROOF OF CURRENT CERTIFICATION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF INSTALLATION.
6. THE MANUFACTURER'S REPRESENTATIVE SHALL TRAIN INSTALLERS FOR ALL PRODUCTS TO BE USED PRIOR TO COMMENCEMENT OF WORK. ONLY TRAINED INSTALLERS SHALL PERFORM POST INSTALLED ANCHOR INSTALLATION. A RECORD OF TRAINING SHALL BE MADE AVAILABLE TO THE EOR AS REQUESTED.
7. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL HOLE CLEAN-OUT REQUIREMENTS ARE FULLY COMPLETED BY THE INSTALLERS PRIOR TO INJECTING EPOXY INTO THE HOLES IN ACCORDANCE WITH THE MANUFACTURERS MPII.
8. NO LOAD SHALL BE APPLIED TO THE EPOXY ANCHORS UNTIL THE EPOXY HAS FULLY CURED AND HAS ACHIEVED IT'S SPECIFIED STRENGTH. CURE TIME SHALL BE PER MANUFACTURERS PUBLISHED VALUES FOR SPECIFIC PRODUCT BEING USED.
9. IF DETAIL SHOWS EPOXY ANCHORS IN SLOTTED HOLES, IT IS IMPERATIVE THAT ANY EXCESS EPOXY IS CLEANED UP FROM AROUND THE ANCHOR ROD, SO THAT IT DOES NOT INTERFERE WITH ADJUSTABILITY OF ANCHOR ROD IN SLOTTED HOLE.
10. ADHESIVE ANCHORS IN CONCRETE SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND



1 BUILDING WIND LOAD DIAGRAM
1/4" = 1'-0"

NOMINAL C&C WIND PRESSURES (ASCE 7-10)

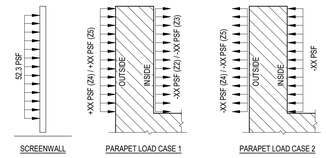
BUILDING	a (FT)	Vult (MPH)	Vasd (MPH)	A (SF)	ZONE 1 (PSF)	ZONE 2 (PSF)	ZONE 3 (PSF)	ZONE 4 (PSF)	ZONE 5 (PSF)	ZONE (2H) (PSF)	ZONE (3H) (PSF)
MAIN	6.1	157	122	<10	+13.3 -32.7	+13.3 -54.8	+13.3 -82.5	+29.9 -32.4	+29.9 -39.9	-47.1	-77.5
				20	+12.5 -31.8	+12.5 -49.0	+12.5 -68.4	+28.6 -31.1	+28.6 -37.2	-46.2	-60.9
				50	+11.4 -30.7	+11.4 -41.3	+11.4 -49.6	+26.8 -29.3	+26.8 -33.7	-45.1	-38.8
				100+	+10.5 -29.9	+10.5 -35.4	+10.5 -35.4	+25.5 -28.0	+25.5 -31.1	-44.3	-22.2

NOMINAL C&C WIND PRESSURE PLAN NOTES:

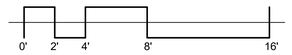
1. PRESSURES SHOWN ABOVE ARE NOMINAL COMPONENTS AND CLADDING PRESSURES, CONVERTED FROM ULTIMATE PRESSURES USING A 0.6 MULTIPLIER FACTOR. NO FURTHER REDUCTION IS ALLOWED.

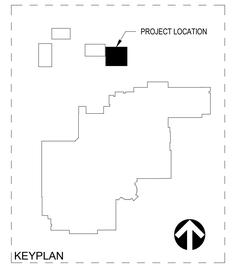
   A - INDICATES TRIBUTARY AREA IN S.F.
   a - INDICATES END ZONE WIDTH IN FT.
   Vult - INDICATES ULTIMATE DESIGN WIND SPEED IN MPH
   Vasd - INDICATES NOMINAL DESIGN WIND SPEED IN MPH

2. GROSS PRESSURES ARE FOR JOISTS, WINDOWS, DOORS, VENEER, LIGHT GAGE METAL FRAMING, METAL DECK ATTACHMENTS, ROOFING, ROOFING ACCESSORIES AND OTHER BUILDING COMPONENTS AND CLADDING.
3. GROSS PRESSURES SHALL BE LINEARLY INTERPOLATED FOR (A) NOT SHOWN IN TABLE.
4. POSITIVE PRESSURES INDICATE PRESSURES ACTING TOWARD A PROJECTED SURFACE. NEGATIVE PRESSURES INDICATE PRESSURES ACTING AWAY FROM A PROJECTED SURFACE.
5. ROOF AND ZONES (1) THRU (3)
6. WALL ZONES (4) AND (5)
7. OVERHANG ZONES (2H) AND (3H) APPLY ONLY TO ROOF OVERHANGS WHERE THE COMPONENT OR CLADDING RECEIVES PRESSURE SIMULTANEOUSLY ON BOTH SIDES (UPWARD SUCTION ON TOP AND UPWARD PRESSURE ON BOTTOM, SUCH AS AT OPEN SOFFITS), AND IS CONTINUOUS WITH FIELD OF ROOF.
8. NET DESIGN ROOF PRESSURES SHALL BE CALCULATED USING THE SELFWEIGHT (DEAD LOAD) OF THE MATERIALS. HOWEVER, THE MAXIMUM REDUCTION OF WIND UPLIFT PRESSURES SHALL BE LIMITED TO THE SELF WEIGHT OF THE ROOF SYSTEM PLUS 5 PSF FOR SUPERIMPOSED DEAD LOADS.
9. INTERNAL PRESSURE COEFFICIENT FOR ENCLOSED BUILDING EQUALS +0.18 AND -0.18
   INTERNAL PRESSURE COEFFICIENT FOR OPEN STRUCTURE EQUALS +/- 0.00
   INTERNAL PRESSURE COEFFICIENT FOR PARTIALLY ENCLOSED STRUCTURE EQUALS +/- 0.55
10. AT ALCOVES AND CANOPIES, THE TOTAL UPLIFT PRESSURE ON THE ALCOVE SOFFIT OR CANOPY SHALL EQUAL THE WALL PRESSURE IN THAT AREA.
11. PARAPET DESIGN WIND PRESSURE LOAD CASES:
    LOAD CASE 1: OUTSIDE FACE: +XX PSF (ZONE 4) AND +XX PSF (ZONE 5)
    INSIDE FACE: -XX PSF (ZONE 2) AND -XX PSF (ZONE 3)
    LOAD CASE 2: OUTSIDE FACE: -XX PSF (ZONE 4) AND -XX PSF (ZONE 5)
    INSIDE FACE: +XX PSF
    NOTE THAT CASE 1 & CASE 2 WIND PRESSURES ARE APPLIED INDEPENDENTLY.



SCREENWALL | PARAPET LOAD CASE 1 | PARAPET LOAD CASE 2





Revisions:	Date:

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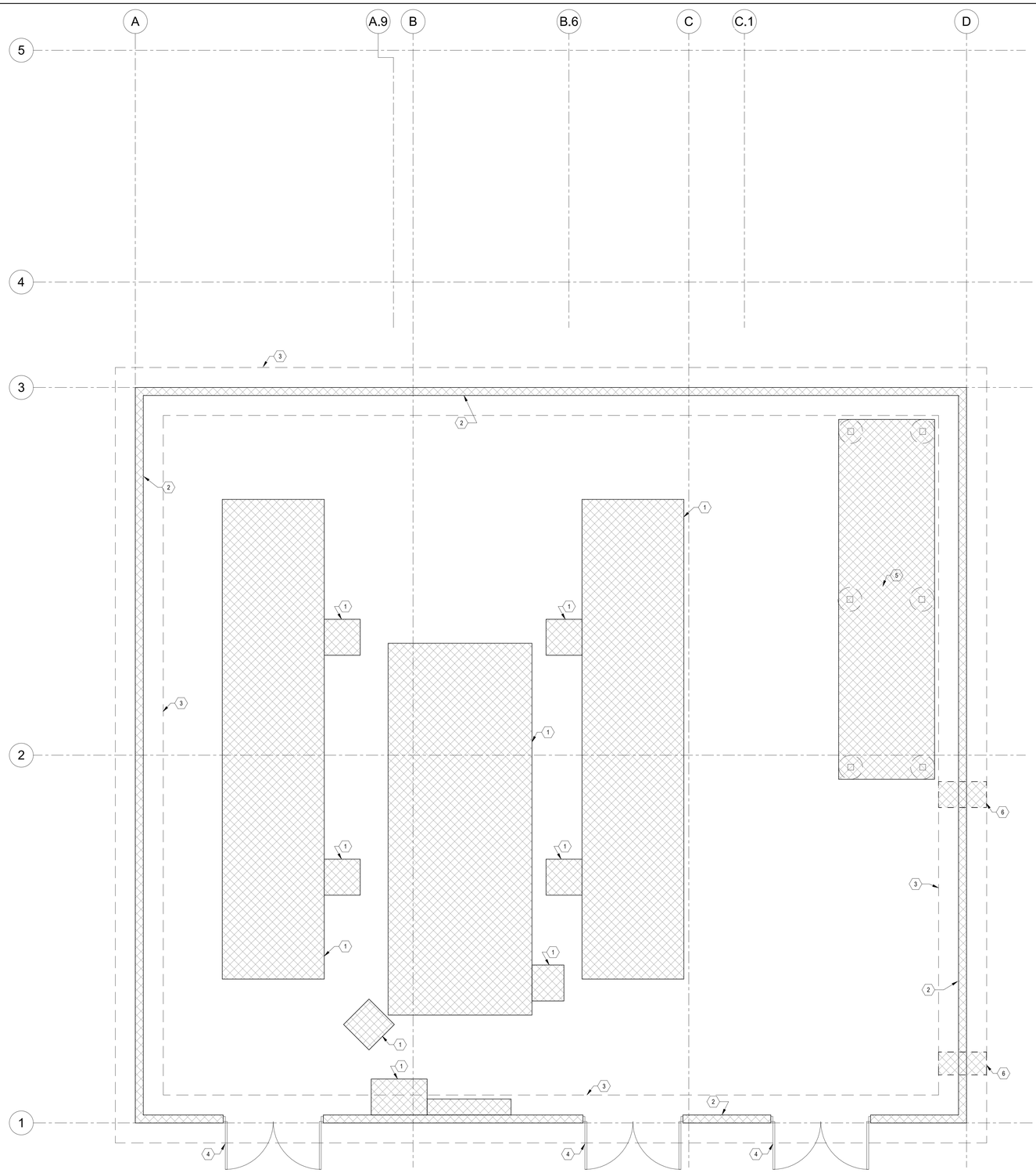
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: BUILDING WIND LOAD DIAGRAM
Phase: 100% CONSTRUCTION DOCUMENTS
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Project Number: 675-18-151
Building Number: -
Approved: -
FULLY SPRINKLERED
Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date: 11-15-2019
Checked: CGT
Drawn: BAW
Drawing Number: SA003
10 OF 68

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VA

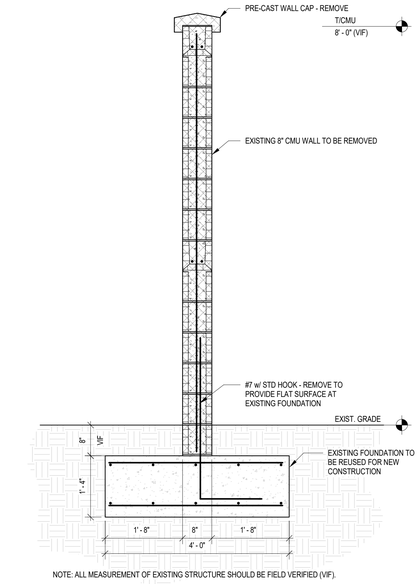


1 DEMOLITION PLAN
1/4" = 1'-0"

DEMOLITION PLAN NOTES

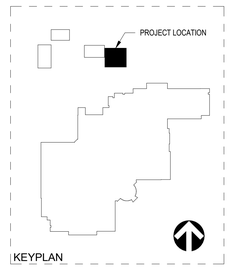
1. EXISTING CONCRETE PAD TO BE REMOVED.
2. EXISTING 8" CMU SCREEN WALL TO BE REMOVED .
3. EXISTING FOUNDATION.
4. EXISTING DOORS AT SCREENWALL TO BE REMOVED.
5. EXISTING CANOPY AND CONCRETE PAD AT ELECTRICAL EQUIPMENT TO BE REMOVED.
6. COORDINATE WITH MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS TO LOCATE SUBGRADE MEP LOCATIONS. REMOVE EXISTING FOUNDATION AS REQUIRED - SEE 8/SJ501 FOR MORE INFORMATION.

AREAS NOTED BY ▨ TO BE REMOVED PRIOR TO NEW CONSTRUCTION.



NOTE: ALL MEASUREMENT OF EXISTING STRUCTURE SHOULD BE FIELD VERIFIED (VIF).

2 SECTION AT EXISTING SCREENWALL
3/4" = 1'-0"



0' 2' 4' 8' 16'

Revisions:	Date:

CONTRACTOR
MORAN CONSTRUCTION, INC
113 KING ST
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CIVIL
MORGAN & ASSOCIATES CONSULTIING ENGINEERS, INC.
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ARCHITECT:	STRUCTURAL/MEP:
LCA ARCHITECTURE, INC.	TLC ENGINEERING SOLUTIONS, INC.
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AA 0003432	COA 15

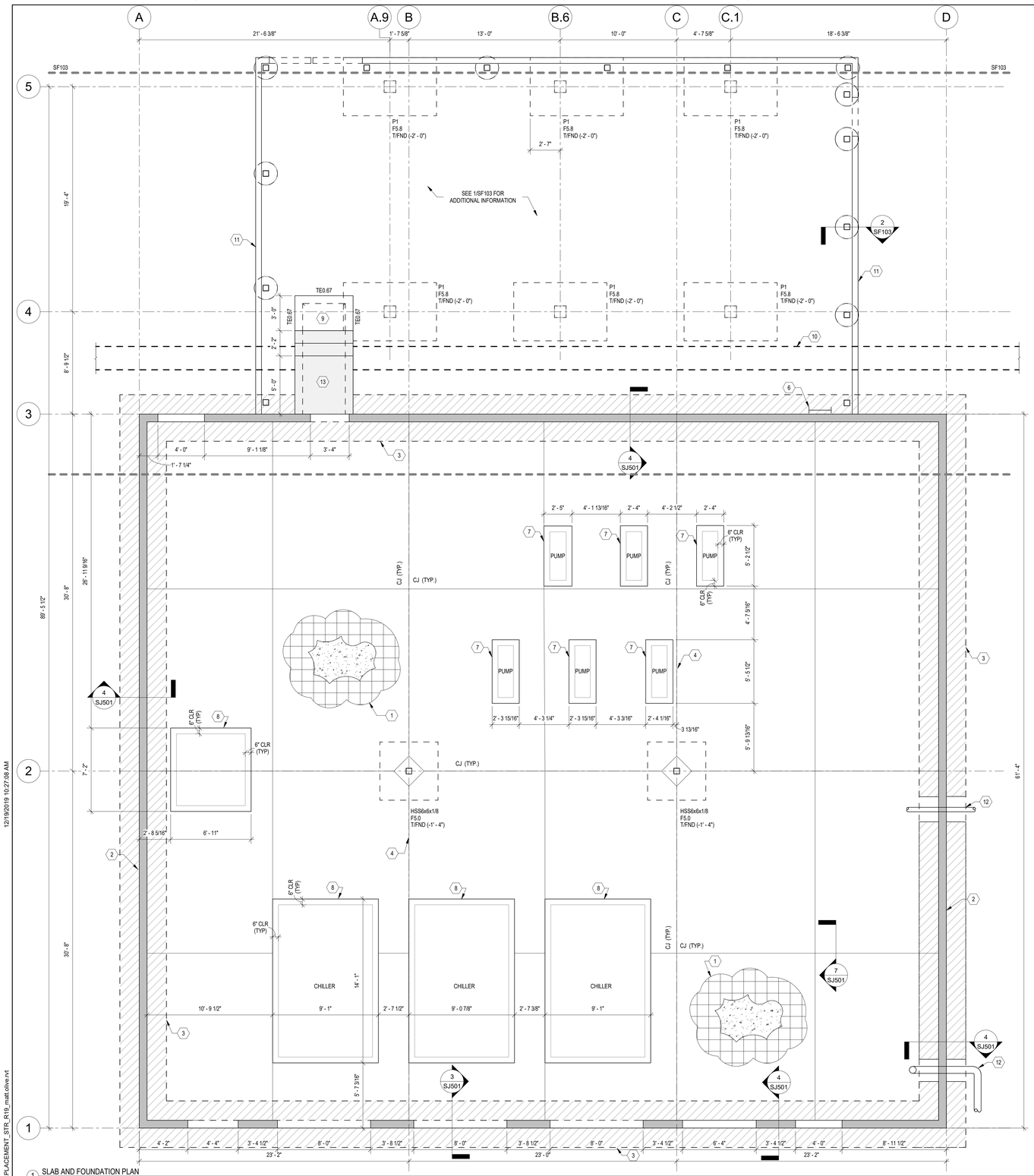
STAMP

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: DEMOLITION PLAN	Phase: 100% CONSTRUCTION DOCUMENTS
Approved: -	FULLY SPRINKLERED
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
	Building Number: -
Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940	Drawing Number: SD001
Issue Date: 11-15-2019 / Checked: CGT / Drawn: BAW	11 OF 68

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1 SLAB AND FOUNDATION PLAN
1/4" = 1'-0"

FOUNDATION PLAN NOTES

1. 6" CONC SLAB-ON-GRADE ON 15 MIL CLASS-A VAPOR BARRIER. REINFORCED WITH #3 BAR @ 10" O.C. EACH WAY AT MID-DEPTH OF SLAB.
2. 7 1/4" CAST-IN-PLACE CONCRETE WALL REINFORCED WITH A #5@12" O.C. VERT. AND #4@ 12" O.C. HORIZ.
3. EXISTING FOUNDATION - REFER TO 4/SJ501
4. CJ INDICATES SLAB CRACK CONTROL JOINT. REFER TO 7/SJ501 FOR TYPICAL DETAIL.
5. F#.# INDICATES COLUMN FOUNDATION. REFER TO SCHEDULE IN DETAIL 9/SJ501 FOR SIZE AND REINFORCEMENT.
6. PRE-ENGINEERED ROOF ACCESS LADDER WITH OSHA COMPLIANT PERSONAL FALL ARREST SYSTEM. ATTACH LADDER TO CONCRETE WALL WITH OFF FLOOR BRACKETS.
7. 4" CONCRETE HOUSEKEEPING PAD. PROVIDE 6" CLR FROM MECHANICAL EQUIPMENT TO EDGE OF SLAB - SEE 2/SJ501 FOR REINF AND CONSTRUCTION
8. 6" CONCRETE ISOLATED EQUIPMENT PAD. PROVIDE 6" CLR FROM MECHANICAL EQUIPMENT TO EDGE OF SLAB - SEE 2/SJ501 FOR REINF AND CONSTRUCTION
9. 4" CONCRETE SLAB-ON-GRADE AT STAIR REINFORCED w/ 6x6 W2.9/W2.9. PROVIDE THICKENED SLAB EDGE - SEE 1/SJ501.
10. EXISTING DUCT BANK - COORDINATE LOCATION WITH CIVIL
11. LOUVER TYPE FENCE AT YARD - SEE SF-103 FOR MORE INFORMATION.
12. COORDINATE WITH MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS TO LOCATE SUBGRADE MEP LOCATIONS. REMOVE AND REPLACE FOUNDATION AS REQUIRED - SEE 8/SJ501 FOR MORE INFORMATION.
13. CONCRETE STEPS - SEE 10/SJ501

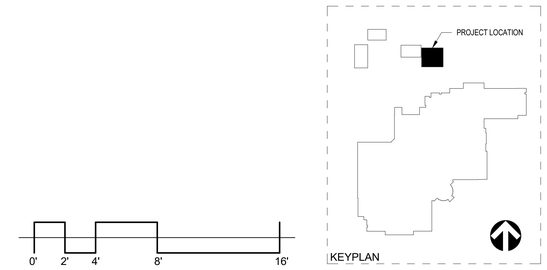
EXISTING STRUCTURE. ALL MEASUREMENTS SHOULD BE VERIFIED IN FIELD (VIF).

P1 - 12"x12" CAST-IN-PLACE CONCRETE PIER CENTERED ON SPREAD FOUNDATION. REINFORCEMENT: 8 #4 BARS WITH #3 TIES @ 6" O.C.

STRUCTURAL ELEVATIONS:

ALL ELEVATIONS ARE TO BE CONSIDERED FROM A REFERENCE DATUM OF (+0'-0"). FOR ACTUAL FLOOR ELEVATION, REFER TO GENERAL NOTES #14, ON SA002.

- T/EXISTING STRIP FOUNDATION = -0'-8" (VIF)
- T/SPREAD FOUNDATION = SEE PLAN



0' 2' 4' 8' 16'

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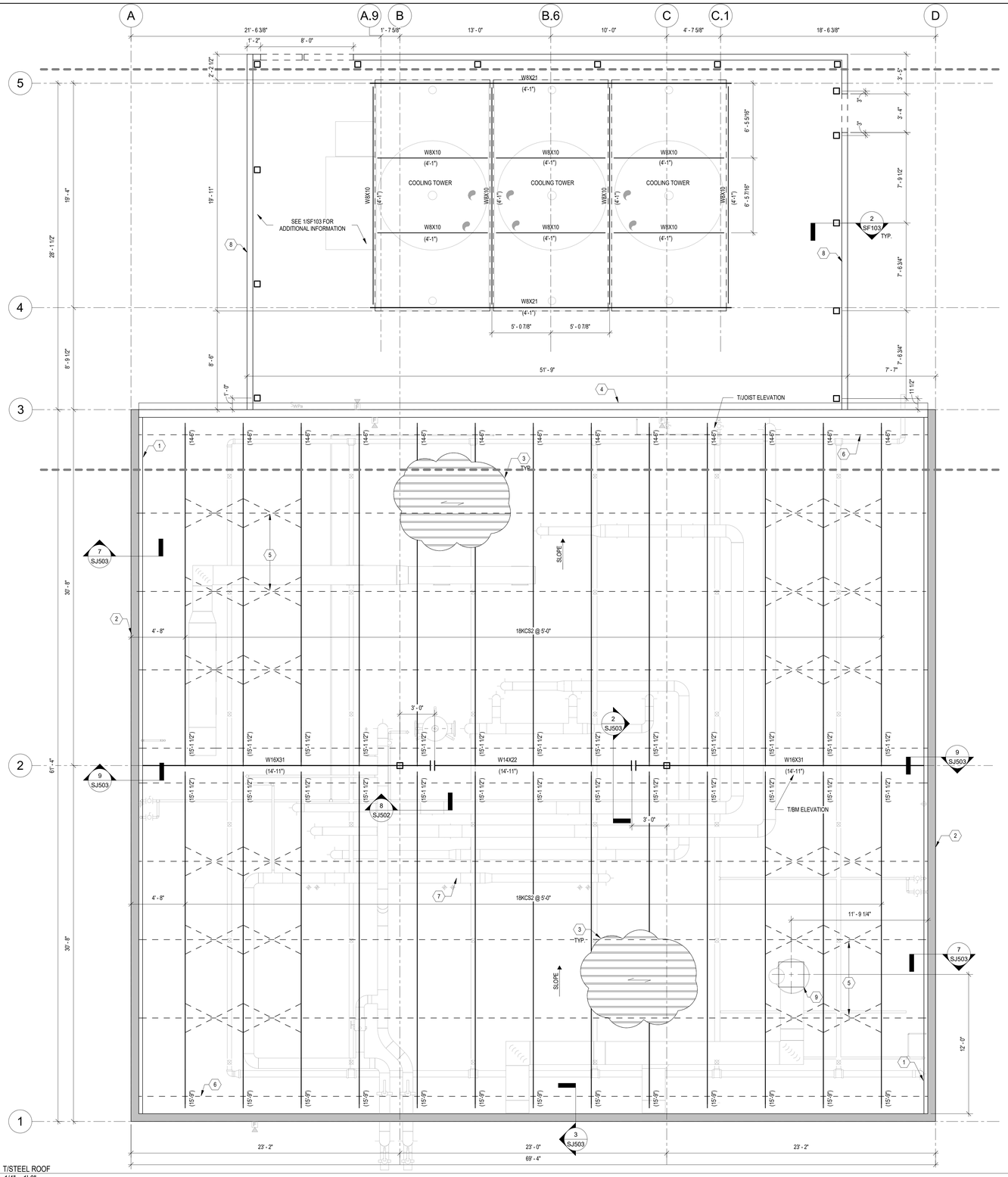
Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: FOUNDATION AND SLAB PLAN	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved: -	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940	Building Number: -
		Issue Date: 11-15-2019 / Checked: CGT / Drawn: BAW	Drawing Number: SF101

12 OF 68

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1 T/STEEL ROOF
1/4" = 1'-0"

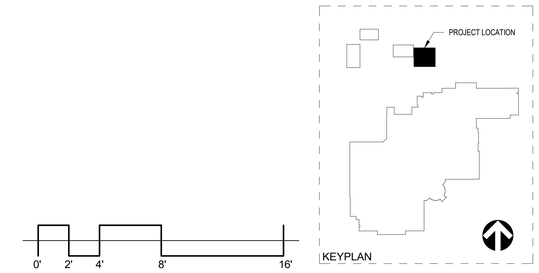
ROOF FRAMING PLAN NOTES

1. CONT. L5x3x1/4 LLV ROOF DECK SUPPORT ANGLE; SEE TYPICAL DETAIL 7/SJ503 FOR ADDITIONAL INFORMATION.
2. 7 1/4" CONCRETE LOAD-BEARING WALLS
3. 1 1/2", 18 GA, GALVANIZED (G90) METAL ROOF DECK, SEE 1/SJ503 FOR DECK ATTACHMENT
4. GUTTER - SEE ARCHITECTURAL DRAWING AE301 AND AE402
5. HORIZONTAL BRIDGING PER SJI, EQUALLY SPACED. IN ADDITION, AT A MINIMUM, A SINGLE LINE OF BOTTOM CHORD BRIDGING MUST BE PROVIDED NEAR THE FIRST BOTTOM CHORD PANEL POINT AT EACH END OF JOIST DUE TO WIND UPLIFT, TYP. PROVIDE DIAGONAL BRIDGING OF SECOND AND THIRD SPACING FROM EXTERIOR WALLS AND TERMINATORS.
6. JOIST UPLIFT BRIDGING AT FIRST BOTTOM CHORD PANEL POINT. JOIST BRIDGING TO BE SIZED, SUPPLIED, & INSTALLED BY JOIST MANUFACTURER & INSTALLER.
7. MECHANICAL, ELECTRICAL, AND PLUMBING SHOWN BELOW FOR COORDINATION - REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS.
8. LOUVER TYPE FENCE AT YARD - SEE SF-103 FOR INFORMATION.
9. 26"X26" OPENING FOR EXHAUST DUCT - SEE 8/SJ503 FOR ROOF OPENING FRAMING. VERIFY OPENING SIZE WITH FINAL EQUIPMENT TO BE SUPPLIED.

STRUCTURAL ELEVATIONS:

ALL ELEVATIONS ARE TO BE CONSIDERED FROM A REFERENCE DATUM OF (+0'-0"). FOR ACTUAL FLOOR ELEVATION, REFER TO GENERAL NOTES #14, SA002.

- T/STEEL = SEE PLAN
- T/PARAPET = SEE ARCH DRAWING AE301 AND AE302



Revisions:	Date:

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COA 15

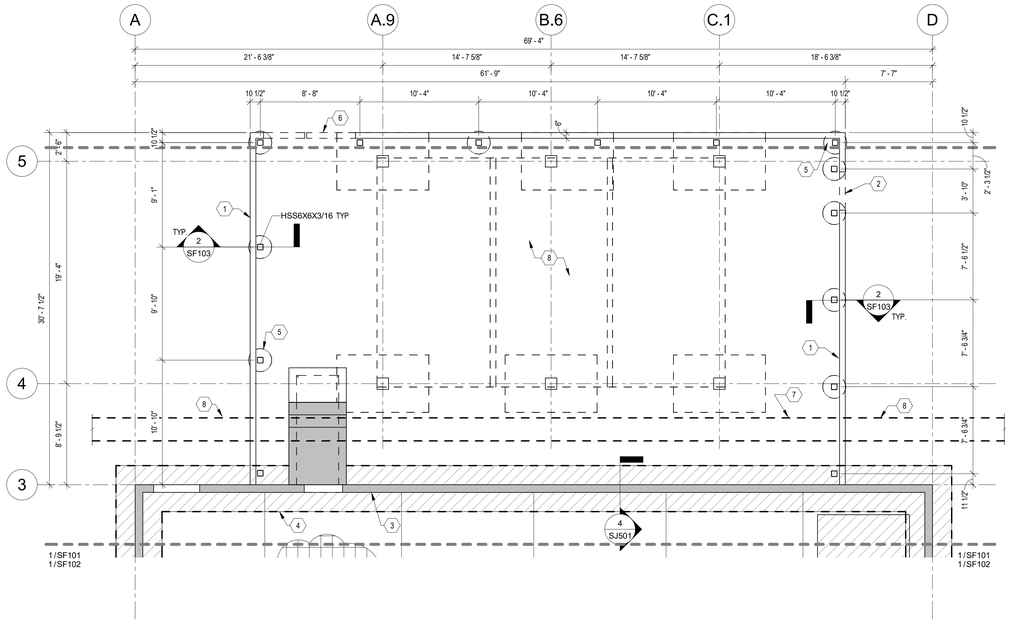
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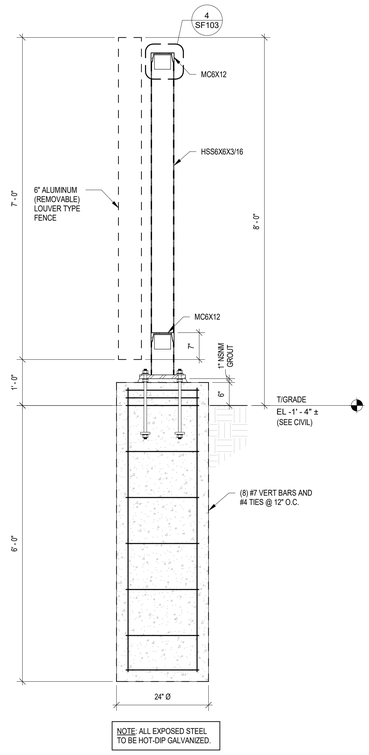
VA U.S. Department of Veterans Affairs

Drawing Title: ROOF FRAMING PLAN	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved: -	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940	Building Number: -
		Issue Date: 11-15-2019 / Checked: CGT / Drawn: BAW	Drawing Number: SF102 13 OF 68

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1 COOLING TOWER YARD - FOUNDATION & LOUVER FENCE PLAN
3/16" = 1'-0"



2 8 FOOT LOUVER TYPE FENCE
3/4" = 1'-0"

FOUNDATION PLAN NOTES

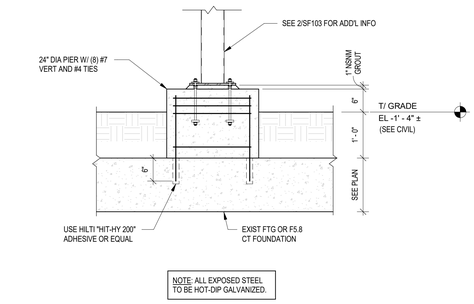
1. 6" LOUVER TYPE FENCE (REMOVABLE) - SUPPORTED BY TUBE STEEL BACK-UP. ALUMINUM LOUVER SYSTEM TO BE ATTACHED TO THE MC6X12 CHANNELS. THE LOUVER SYSTEM IS TO BE REMOVABLE BY UN-BOLTING THE CHANNEL FROM THE CONNECTION AT THE COLUMNS. DISSIMILAR METALS TO BE ISOLATED FROM EACH OTHER.
2. HINGED MAN DOOR IN LOUVER TYPE FENCE.
3. 7 1/4" CAST-IN-PLACE CONCRETE WALL - SEE SF-101 FOR REINF.
4. EXISTING FOUNDATION - REFER TO 4/SJ501.
5. CONCRETE PIER FOUNDATION AT LOUVER TYPE FENCE. REFER TO 2/SF-103 FOR SIZE AND REINFORCEMENT.
6. DOUBLE GATE IN LOUVER TYPE FENCE - SEE ARCH
7. EXISTING DUCT BANK - COORDINATE LOCATION WITH CIVIL
8. COOLING TOWERS - SEE SF-101 AND SF-102 FOR STRUCTURE.

EXISTING STRUCTURE. ALL MEASUREMENTS SHOULD BE VERIFIED IN FIELD (VIF).

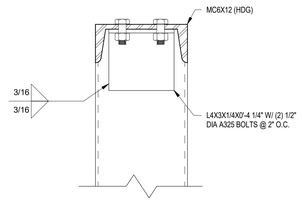
STRUCTURAL ELEVATIONS:

ALL ELEVATIONS ARE TO BE CONSIDERED FROM A REFERENCE DATUM OF (+0'-0"). FOR ACTUAL FLOOR ELEVATION, REFER TO GENERAL NOTES #14, ON SA002.

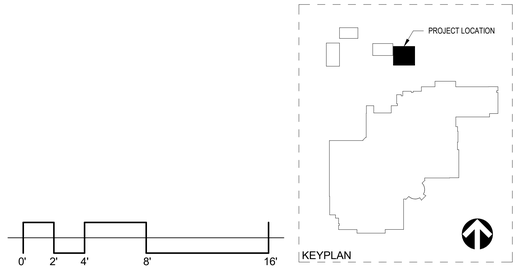
- T/EXISTING STRIP FOUNDATION = -0'-8" (VIF)



3 8 FOOT LOUVER TYPE FENCE AT SHALLOW FOUNDATION
3/4" = 1'-0"



4 CHANNEL TO COLUMN CONN.
3" = 1'-0"



Revisions:	Date:

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ARCHITECT/ENGINEER OF RECORD

ARCHITECT:	STRUCTURAL/MEP:
LCA ARCHITECTURE, INC.	TLC ENGINEERING SOLUTIONS, INC.
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AA 0003432	COA 15

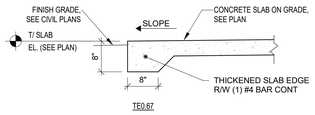
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Office of Construction and Facilities Management

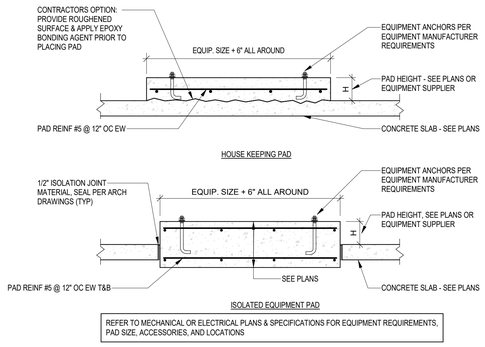
VA U.S. Department of Veterans Affairs

Drawing Title	SCREEN WALL PLAN
Approved: -	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date	11-15-2019
Checked	CGT
Drawn	BAW
Project Number	675-18-151
Building Number	-
Drawing Number	SF103
	14 OF 68

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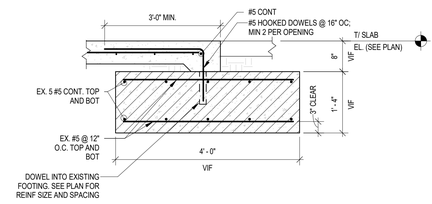


1 THICKENED SLAB EDGE DETAIL (TE0.67)
3/4" = 1'-0"

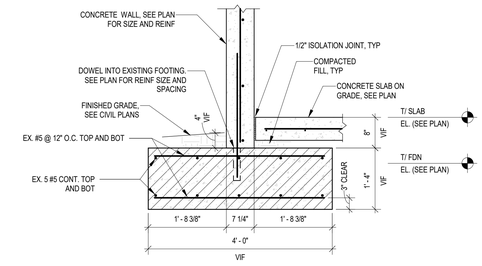


REFER TO MECHANICAL OR ELECTRICAL PLANS & SPECIFICATIONS FOR EQUIPMENT REQUIREMENTS, PAD SIZE, ACCESSORIES, AND LOCATIONS

2 TYPICAL EQUIPMENT PAD / HOUSE KEEPING PAD
3/4" = 1'-0"



3 TYPICAL WALL FOUNDATION AT OPENINGS
3/4" = 1'-0"



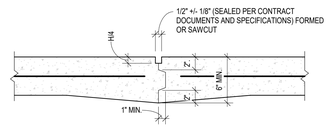
4 TYPICAL SECTION AT EXISTING EXTERIOR CONCRETE WALL FOUNDATION
3/4" = 1'-0"

NOTE: LOCATE CONSTRUCTION JOINT @ 30'-0" OC MAX

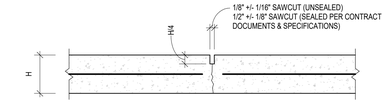
5 TYPICAL CONSTRUCTION JOINT AT CONCRETE WALL
3/4" = 1'-0"

NOTE:
ENCASE STEEL BELOW GRADE W/ 3" MIN CONCRETE

6 TYPICAL ISOLATION JOINT AT INTERIOR COLUMN
3/4" = 1'-0"

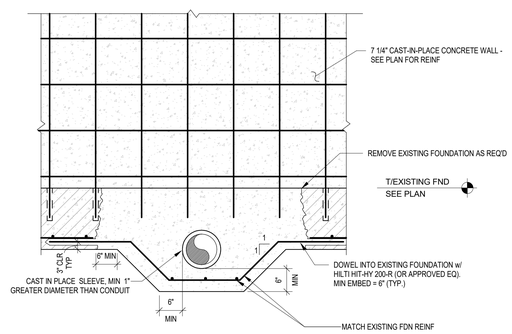


CONSTRUCTION JOINT
(LABELED CSJ ON PLANS)
(CONTRACTION JOINT MAY BE SUBSTITUTED) SUBMIT PROPOSED CONSTRUCTION JOINT LOCATIONS FOR APPROVAL PRIOR TO CONCRETE PLACEMENT.

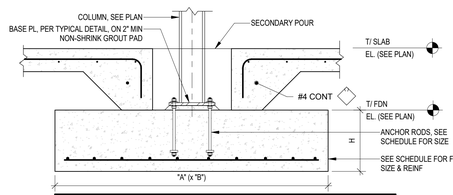


CONTRACTION JOINT
(LABELED CJ ON PLAN)
SEE PLAN FOR SLAB THICKNESS AND REINF
CONTROL JOINTS TO BE LOCATED AS SHOWN ON PLANS AND AT 3H MAX AND SHALL BE SAW CUT AS SOON AS POSSIBLE BUT NO LATER THAN 8 HOURS AFTER CONCRETE PLACEMENT.

7 TYPICAL SLAB ON GRADE CONTROL JOINTS
3/4" = 1'-0"

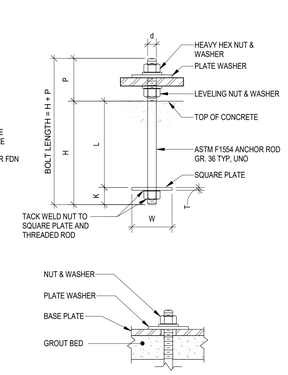


8 TYPICAL FOUNDATION CONDUIT SLEEVE AT EXISTING FOUNDATION
3/4" = 1'-0"



LETTERED DIMENSIONS		ANCHOR ROD DIAMETER (F1554 GR. 36)							
		1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4
BASE PL HOLE DIA.		1	1 1/8	1 5/16	1 9/16	1 13/16	2 1/16	2 5/16	2 3/4
SQUARE PLATE	W	2	2	2 1/2	2 3/4	3	4 1/4	4 1/2	5 1/2
	T	1/2	1/2	1/2	3/4	3/4	1	1	1
	HOLE DIA.	5/8	3/4	7/8	1	1 1/8	1 3/8	1 5/8	1 7/8
L (UNO)		8	10	10	15	17	22	27	35
H (UNO)		9½	11½	11½	17	19	24½	30	38½
K		1½	1½	1½	2	2	2½	3	3½
P (MIN)		5		6			8		
PLATE WASHER		1/4"x2"x2"			3/8"x3"x3"			1/2"x4"x4"	
HOLE DIAMETER		9/16	11/16	13/16	15/16	1 1/16	1 5/16	1 9/16	1 13/16

*ANCHOR EMBEDMENT DEPTH "H" BASED ON 6" MIN SPACING UP TO 1"Ø AND 8" MIN SPACING OVER 1"Ø, f'c = 3000 PSI, AND PURE TENSION LOADING.



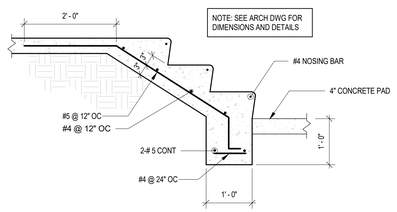
BOLT PROJECTION

9 TYPICAL STEEL COLUMN SPREAD FOUNDATION
3/4" = 1'-0"

FDN SCHEDULE					
FDN DESIGNATION	DIMENSION "A"	DIMENSION "B"	FDN THICKNESS	REBAR (EA. WAY BOTTOM U.N.O.)	REMARKS
F5.0	5'-0"	5'-0"	1'-4"	6-#5	
F5.8	5'-0"	8'-0"	1'-6"	7-#5 PARALLEL 8' DIM 14-#5 PARALLEL 5' DIM	

BASE PLATE AND ANCHOR BOLT SCHEDULE			
COLUMN SIZE	BASE PLATE SIZE	ANCHOR BOLTS	REMARKS
HSS6x6	1 1/4"x14" SQ.	(4) 3/4"Ø	

NOTE: ALL ANCHOR RODS, NUTS, WASHERS AND PLATES SHALL BE HOT DIP GALVANIZED AND SHIPPED AS COMPLETE ASSEMBLIES BY THE FABRICATOR.



10 TYPICAL SECTION AT CONCRETE STAIR
3/4" = 1'-0"

Revisions:	Date:

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WEST PALM BEACH, FL 33411
(561) 493-4787

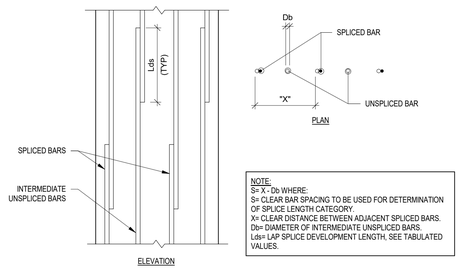
STRUCTURAL/MEP:
TLC ENGINEERING SOLUTIONS, INC.
874 DIXON BLVD.
COCOA, FL 32922
(321) 636-0274
COA 15

STAMP

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: STRUCTURAL DETAILS
Phase: 100% CONSTRUCTION DOCUMENTS
Approved: -
FULLY SPRINKLERED
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date: 11-15-2019
Checked: CGT
Drawn: BAW
Project Number: 675-18-151
Building Number: -
Drawing Number: SJ501
15 OF 68

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VA



ELEVATION

PLAN

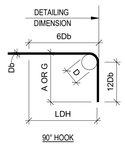
NOTE:
S= X - Db WHERE:
S= CLEAR BAR SPACING TO BE USED FOR DETERMINATION OF SPLICE LENGTH CATEGORY.
X= CLEAR DISTANCE BETWEEN ADJACENT SPLICED BARS.
Db= DIAMETER OF INTERMEDIATE UNSPLICED BARS.
Lds= LAP SPLICE DEVELOPMENT LENGTH, SEE TABULATED VALUES.

LENGTH OF LAP SPLICES AND BAR EMBEDMENT SHALL BE AS SHOWN IN TABLE, UNLESS OTHERWISE NOTED:

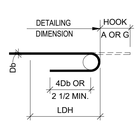
MIN SPLICE LENGTH FOR DEFORMED BARS			
	BAR SIZE	3000 PSI *CLASS B	4000 PSI *CLASS B
T<12"	#3	23"	20"
	#4	29"	25"
	#5	37"	32"
	#6	43"	38"
	#7	63"	55"
	#8	72"	63"
	#9	81"	71"
	#10	91"	80"
	#11	102"	88"
	#14	121"	106"
	#18	162"	141"

NOTE:
1. WHERE DEPTH OF FRESH CONCRETE BELOW SPLICED REINF BARS IS GREATER THAN 12", MULTIPLY TABULATED SPLICE LENGTH BY 1.3.
2. "Db" IS BAR DIAMETER.
3. FOR ALL REINF SPLICES UTILIZE CLASS "B" SPLICE, U.N.O. ON PLANS OR DETAILS.

1 TYPICAL LAP SPLICE SCHEDULE
3/4" = 1'-0"



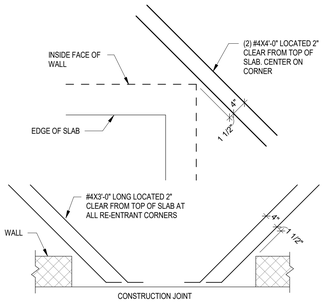
90° HOOK



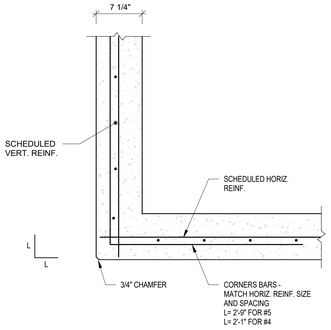
180° HOOK

RECOMMENDED END HOOKS, ALL GRADES					
BARS SIZE	FINISHED BEND DIAMETER D (IN.)	180° HOOKS		90° HOOK	F'c = 4000 PSI
		A OR G, (IN.)	J, (IN.)	A OR G, (IN.)	LDH
#3	2 1/4	5	4	6	7
#4	3	6	4	8	9
#5	4 1/2	7	5	10	11
#6	2 1/2	8	6	12	14
#7	5 1/4	10	7	14	16
#8	6	11	8	16	18
#9	9 1/2	15	11 3/4	19	21
#10	10 3/4	17	13 1/4	22	23
#11	12	19	14 3/4	24	26
#14	18 1/4	27	21 3/4	31	29
#18	24	36	28 1/2	41	38

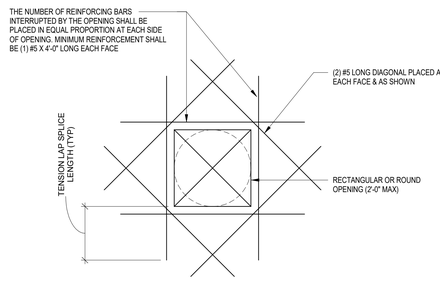
2 TYPICAL END HOOK SCHEDULE
3/4" = 1'-0"



3 RE-ENTRANT CORNER REINFORCING
3/4" = 1'-0"

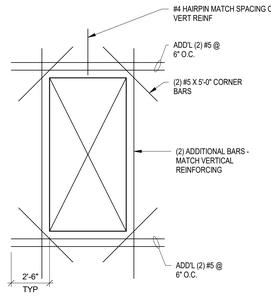


4 TYPICAL CONCRETE WALL REINF AT CORNER
3/4" = 1'-0"

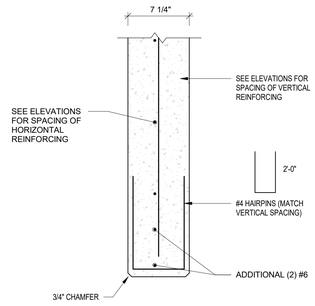


NOTE:
OPENINGS LESS THAN 5" IN LARGEST DIMENSION THAT DO NOT INTERRUPT REINFORCING DO NOT REQUIRE ADDITIONAL REINFORCEMENT.

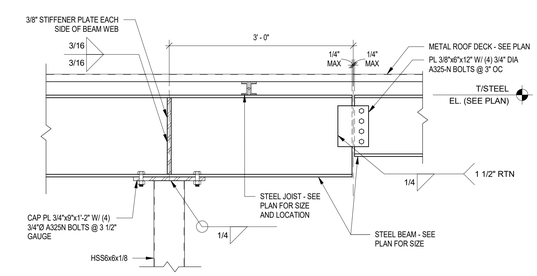
5 TYPICAL REINFORCING AT SMALL WALL OPENINGS NOT SHOWN ON ELEVATIONS (2'-0" MAX.)
3/4" = 1'-0"



6 TYPICAL REINFORCING AT WALL OPENING (GREATER THAN 2'-0" AND LESS THAN 4'-0")
1/4" = 1'-0"



7 TYPICAL CONCRETE WALL REINF AT TOP OF OPENING
1" = 1'-0"



8 TYPICAL ROOF BEAM CONN AT HSS COLUMN
1" = 1'-0"

Revisions:	Date:

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MORAN CONSTRUCTION, INC
113 KING ST
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CIVIL
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ARCHITECT/ENGINEER OF RECORD

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Issue Date: 11-15-2019
Checked: CGT
Drawn: BAW
Project Number: 675-18-151
Building Number: -
Drawing Number: SJ502
16 OF 68

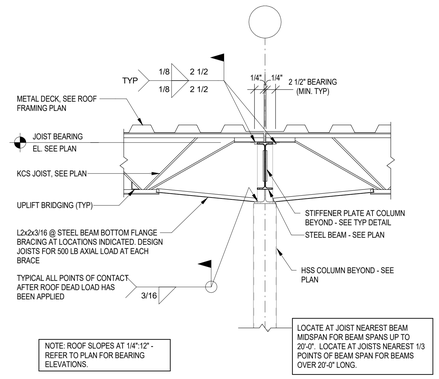
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ROOF DECK FASTENING PATTERN

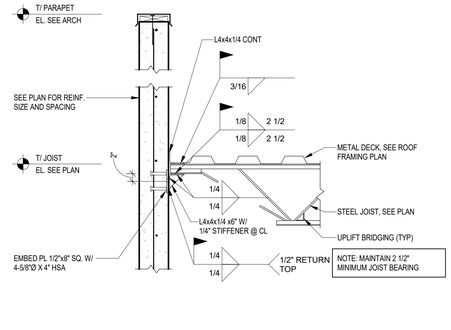
BUILDING	ROOF ZONE	ROOF DECK MINIMUM FASTENING PATTERN
CHILLER	1	36/4 5/8" PUDDLE WELDS WITH #10 TEK SCREW SIDELAPS @ 18" O.C.
	2	36/7 5/8" PUDDLE WELDS WITH #10 TEK SCREW SIDELAPS @ 18" O.C.
	3	36/7 5/8" PUDDLE WELDS WITH #10 TEK SCREW SIDELAPS @ 18" O.C.

NOTE: SEE SA003 FOR ROOF ZONES.

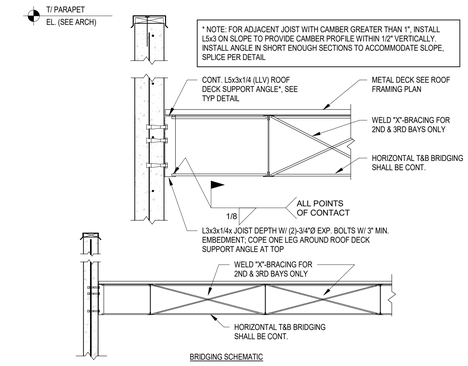
1 ROOF DECK FASTENING SCHEDULE
3/32" = 1'-0"



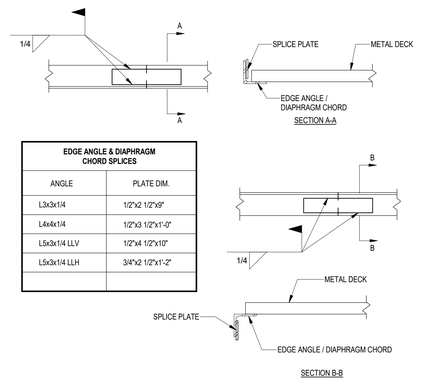
2 TYPICAL JOIST ON STEEL BEAM DETAIL
3/4" = 1'-0"



3 TYPICAL "K" JOIST SUPPORT AT CONCRETE WALL DETAIL
3/4" = 1'-0"

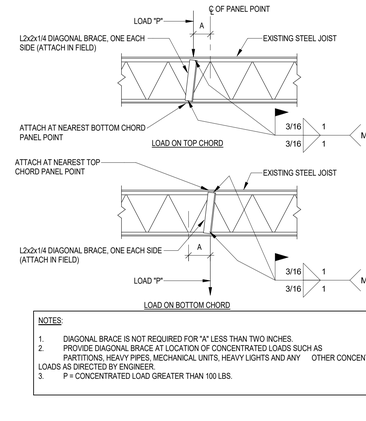


4 TYPICAL BRIDGING DETAIL AT CONCRETE WALL
3/4" = 1'-0"



EDGE ANGLE & DIAPHRAGM CHORD SPLICES	
ANGLE	PLATE DIM.
L3x3x1/4	1/2"x2 1/2"x9"
L4x4x1/4	1/2"x3 1/2"x1'-0"
L5x3x1/4 LLV	1/2"x4 1/2"x10"
L5x3x1/4 LLH	3/4"x2 1/2"x1'-2"

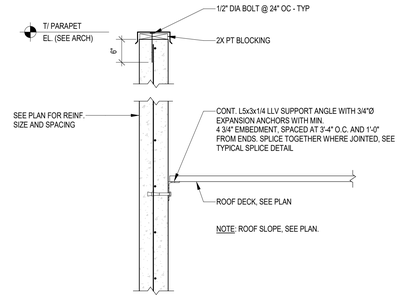
5 TYPICAL DIAPHRAGM CHORD SPLICE
1 1/2" = 1'-0"



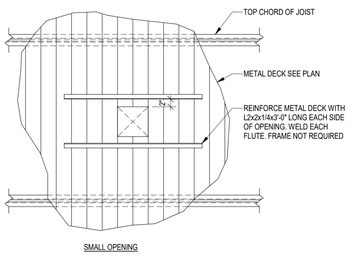
NOTES:

1. DIAGONAL BRACE IS NOT REQUIRED FOR "A" LESS THAN TWO INCHES.
2. PROVIDE DIAGONAL BRACE AT LOCATION OF CONCENTRATED LOADS SUCH AS PARTITIONS, HEAVY PIPES, MECHANICAL UNITS, HEAVY LIGHTS AND ANY OTHER CONCENTRATED LOADS AS DIRECTED BY ENGINEER.
3. P = CONCENTRATED LOAD GREATER THAN 100 LBS.

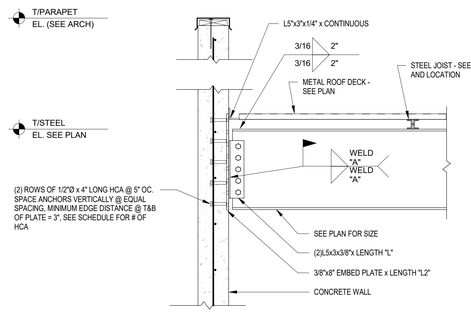
6 TYPICAL JOIST REINFORCING
3/4" = 1'-0"



7 TYPICAL ROOF DECK SUPPORT ANGLE
3/4" = 1'-0"



8 TYPICAL ROOF OPENING DETAIL
3/4" = 1'-0"



SCHEDULE					
BM	# BOLTS	PLATE LENGTH "L"	WELD "A"	PLATE LENGTH "L2"	# HCA
W16	4	1'-0"	1/4"	1'-9"	10

9 TYPICAL STEEL BEAM CONNECTION AT CONCRETE WALL
3/4" = 1'-0"

Revisions:	Date:

CONTRACTOR
MORAN CONSTRUCTION, INC
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STRUCTURAL/MEP:
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COA 15

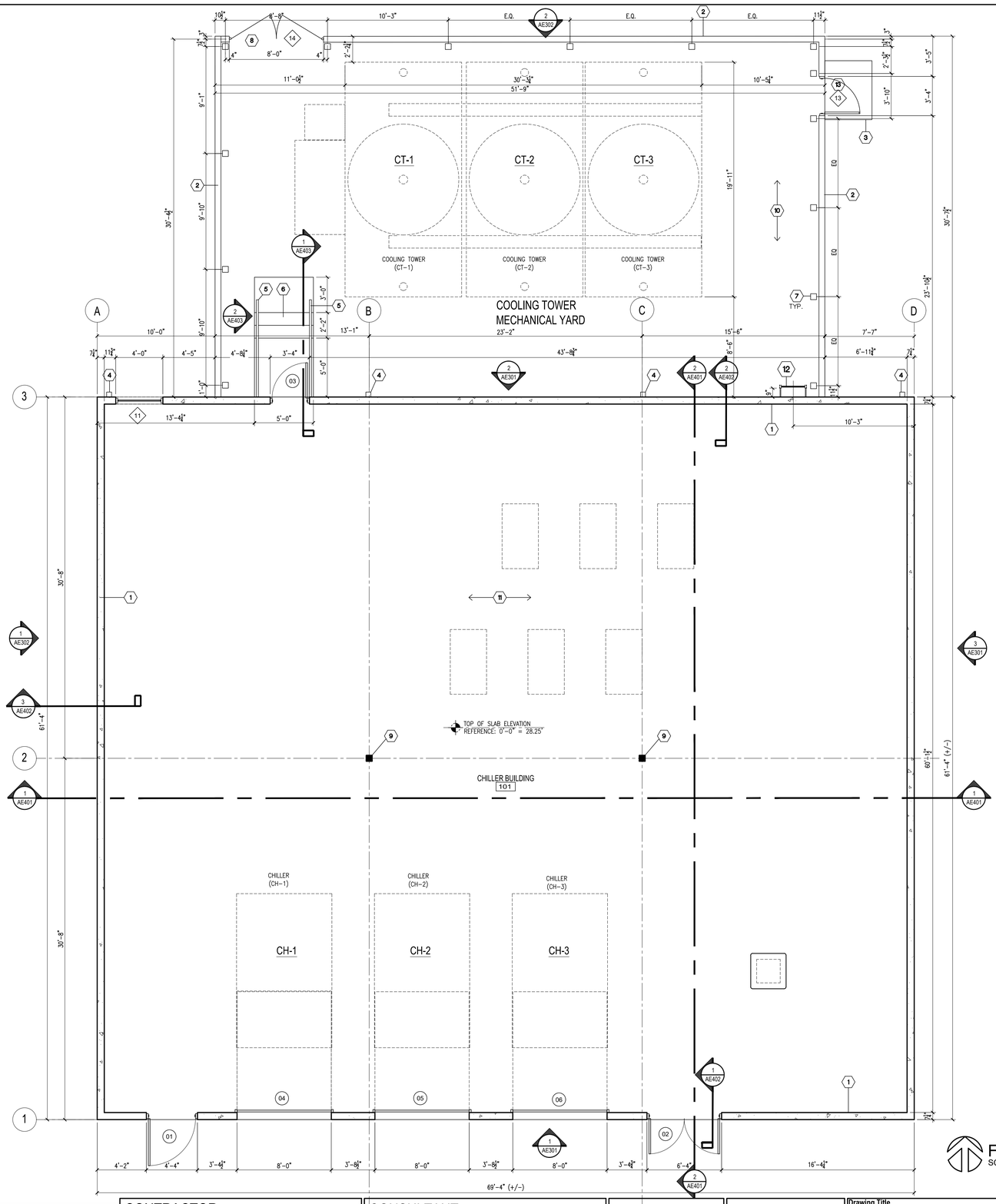
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: STRUCTURAL DETAILS
Phase: 100% CONSTRUCTION DOCUMENTS
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Project Number: 675-18-151
Building Number: -
Approved: -
Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date: 11-15-2019
Checked: CGT
Drawn: BAW
Drawing Number: SJ503
17 OF 68

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VA



FLOOR PLAN KEYNOTES

1. 7-1/4" CAST-IN-PLACE CONCRETE WALL FOR CHILLER BUILDING
2. LOUVER TYPE FENCE
3. CONCRETE STOOP/ LANDING
4. DOWNSPOUT AND SPLASH BLOCK
5. METAL HANDRAIL @ 34", GUARDRAIL IS NOT REQUIRED
6. CONCRETE STEPS
7. FENCE COLUMN, TYP.
8. 8'-0" WIDE DOUBLE GATES, DESIGN MATCHING FENCE
9. STEEL COLUMN
10. GRAVEL.
11. SLAB ON GRADE ON VAPOR BARRIER ON CLEAN COMPACTED TERMITE TREATED FILL
12. ROOF ACCESS LADDER
13. 3'-0" WIDE SINGLE GATE, DESIGN MATCHING FENCE

SYMBOL LEGEND

- 100 — DENOTES DOOR TAG, SEE SHEET AE201
- 1 — DENOTES OPENING TYPE TAG, SEE SHEET AE201
- 1 / A.501 — DETAIL NUMBER; DENOTES DETAIL; SHEET NUMBER
- 1 / A.501 — BUILDING SECTION NUMBER; DENOTES SECTION; SHEET NUMBER
- REVISION CLOUD-SCOPE
- 1 — REVISION NUMBER TAG
- NORTH ARROW
- 4 — KEYNOTE TAG

ROOM FINISH SCHEDULE

Number	ROOM NAME	FLOOR	BASE		WALLS				CEILING	NOTES
			MATERIAL	FINISH	N	S	E	W	MATL	
101	CHILLER BUILDING	CONCRETE	NONE	---	PAINT	PAINT	PAINT	PAINT	EXPOSED	--

FINISH NOTES

CONCRETE: CONCRETE, SEALED, NATURAL

PAINT: SHERWIN WILLIAMS PRO-INDUSTRIAL, MULTI-SURFACE ACRYLIC, COLOR T.B.D.

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

Revisions:	Date:

CONTRACTOR
MORAN CONSTRUCTION, INC
113 KING ST
COCOA, FL 32922
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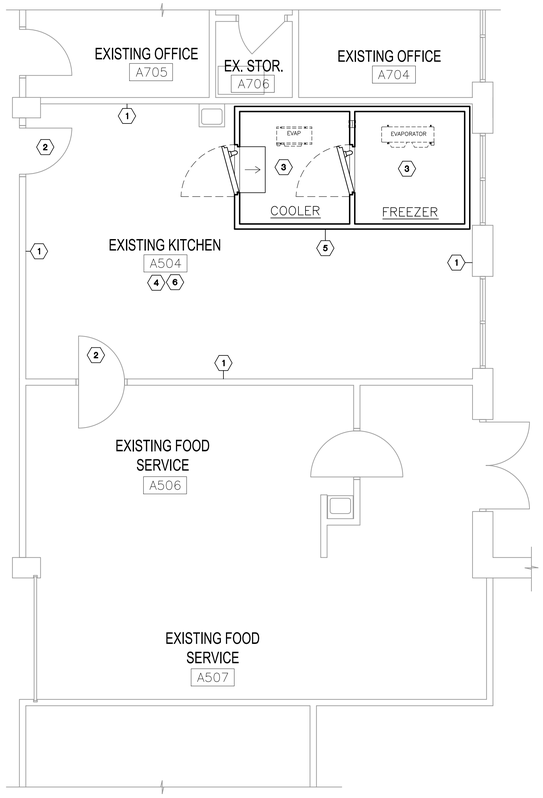
CONSULTANT
ARCHITECT
LCA ARCHITECTURE, INC.
1975 SANSBURY'S WAY # 108
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561-493-4787

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	CHILLER BUILDING FLOOR PLAN
Phase	100% CONSTRUCTION DOCUMENTS
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Project Number	675-18-151
Building Number	-
Approved:	-
	FULLY SPRINKLERED
Location	VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date	12-20-2019
Checked	LAC
Drawn	RR
Drawing Number	AE101
	SHEET 18 OF 68



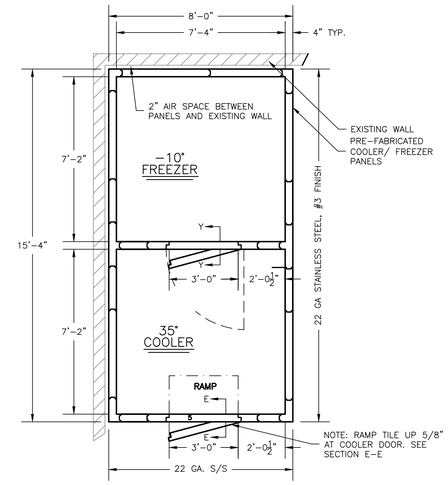
PARTIAL FLOOR PLAN
SCALE: 1/4"=1'-0"

FLOOR PLAN KEYNOTES

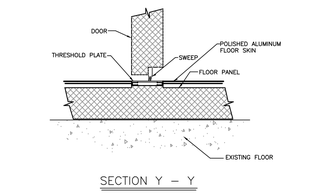
1. PAINT EXISTING WALLS, EXISTING BASE TO REMAIN
2. PAINT EXISTING DOOR AND FRAME
3. NEW STAINLESS STEEL FLOOR WITH REMOVABLE STAINLESS STEEL RAISED GRATING
4. CLEAN EXISTING FLOOR AND REPAIR WHERE AFFECTED BY NEW WORK, APPLY EPOXY PAINT
5. NEW COOLER/ FREEZER, SEE ENLARGED PLAN THIS SHEET
6. EXISTING CEILING TO REMAIN

INTERIOR FINISH REQUIREMENTS - SPRINKLERED

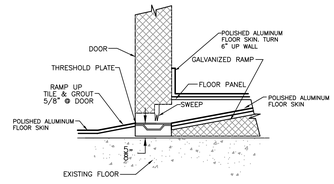
INTERIOR EXIST STAIRWAYS, RAMPS AND EXIT PASSAGEWAYS	CLASS B
CORRIDORS AND ENCLOSURES FOR EXIT ACCESS	CLASS B
ROOMS AND ENCLOSED SPACES	CLASS B



COOLER/ FREEZER PLAN
SCALE: 3/8"=1'-0"



SECTION Y - Y



SECTION E - E

~ SPECIFICATIONS ~

BOX HEIGHT:	7'-6" OVERALL (6'-10 1/4" INTERIOR)
CONSTRUCTION:	FOAMED IN PLACE NSF STANDARD 7
INSULATION:	4" URETHANE, FINISHED PANEL UL CLASSIFIED FLAME SPREAD 20
INSTALLATION:	INDOOR
FLOOR:	FREEZER - STANDARD COOLER - STANDARD W/INTERIOR RAMP
WALK-IN DOORS:	FREEZER - 1 @ 36" x 77" COOLER - 1 @ 36" x 77"
DOOR HARDWARE & ACCESSORIES: (EACH DOOR)	KEYED LATCH & INSIDE RELEASE (EXTERIOR DOORS ONLY) FRAME HEATER WIRE HYDRAULIC DOOR CLOSER ROCKER TYPE LIGHT SWITCH W/PILOT INCANDESCENT VAPOR PROOF LIGHT FIXTURE STANDARD DIAL THERMOMETER 2 - STD. CAM LIFT HINGES 1/16" D.A.T.P. KICKPLATES 36" HIGH I/S & O/S
ACCESSORIES:	1 - PRESSURE RELIEF VENT
METAL FINISHES:	INTERIOR WALLS & CEILING - 22 GA. STAINLESS STEEL, #3 FINISH EXPOSED EXTERIOR - 22 GA STAINLESS STEEL, #3 FINISH UNEXPOSED EXTERIOR - .032 STUCCO ALUMINUM EXTERIOR FLOOR & CEILING - 26 GA STUCCO GALVANIZED INTERIOR FLOOR - 14 GA GALVANIZED STEEL NOT NSF APPROVED IF EXPOSED
REFRIGERATION:	U.L. LISTED, AIR COOLED, OUTDOORS W/25' OF PRE-CHARGED LINES
FREEZER (HERMETIC)	1 - REMOTE QUICK CONNECT 2.0 HP MODEL# AH2478ZC 208/60/1 R-404A 17.4 UNIT AMPACITY 1 - LET-065BJ EVAP 208-230/60/1 2.4/7.4 AMPS
COOLER (HERMETIC)	1 - REMOTE QUICK CONNECT .50 HP MODEL# AKA9446EXAXC 115/60/1 R-22 12.4 UNIT AMPACITY 1 - AA18-53 EVAP 115/60/1 2.0 AMPS
REFRIGERATION ACCESSORIES:	2 - COMPRESSOR COVER (16010, 16044) 4 - 1" PVC SLEEVES 2 - 3" PVC SLEEVES

COOLER/ FREEZER SECTIONS
SCALE: 1/2"=1'-0"

COOLER/ FREEZER NOTES

THIS IS NOT A RENOVATION
ALL ITEMS ARE EXISTING EXCEPT COOLER/ FREEZER
PROVIDE SHOP DRAWINGS FOR REVIEW

BUILDING CLASSIFICATION

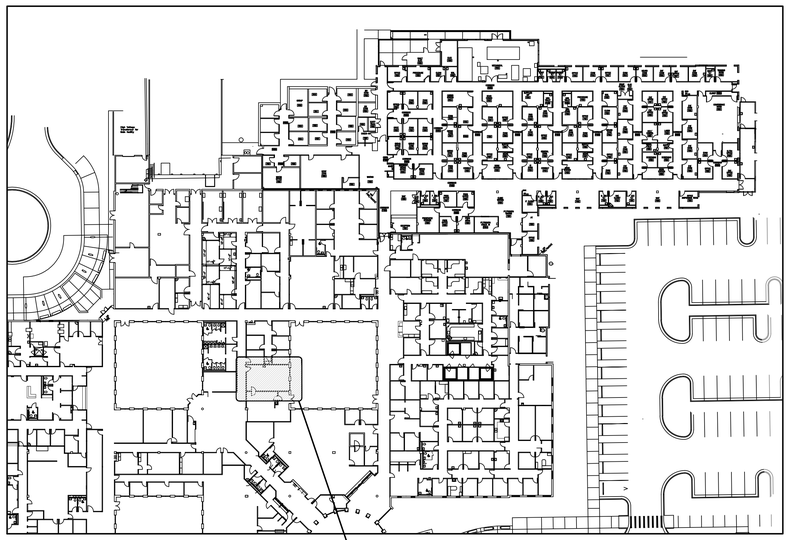
OCCUPANCY:
EXISTING I-2 HOSPITAL (IBC)
EXISITNG HEALTHCARE (LSC)

BUILDING TYPE
EXISTING BUILDING UNAFFECTED, NOT RENOVATED AND NOT ALTERED

AREA
THIS ROOM 517 SF

OCCUPANT LOAD
STORAGE 300 SF/PERSON GROSS
OCCUPANT LOAD THIS ROOM: 1

HAZARD OF CONTENT: ORDINARY



KEY PLAN
N.T.S.

Revisions:	Date:

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WEST PALM BEACH, FL 33411
561-493-4787

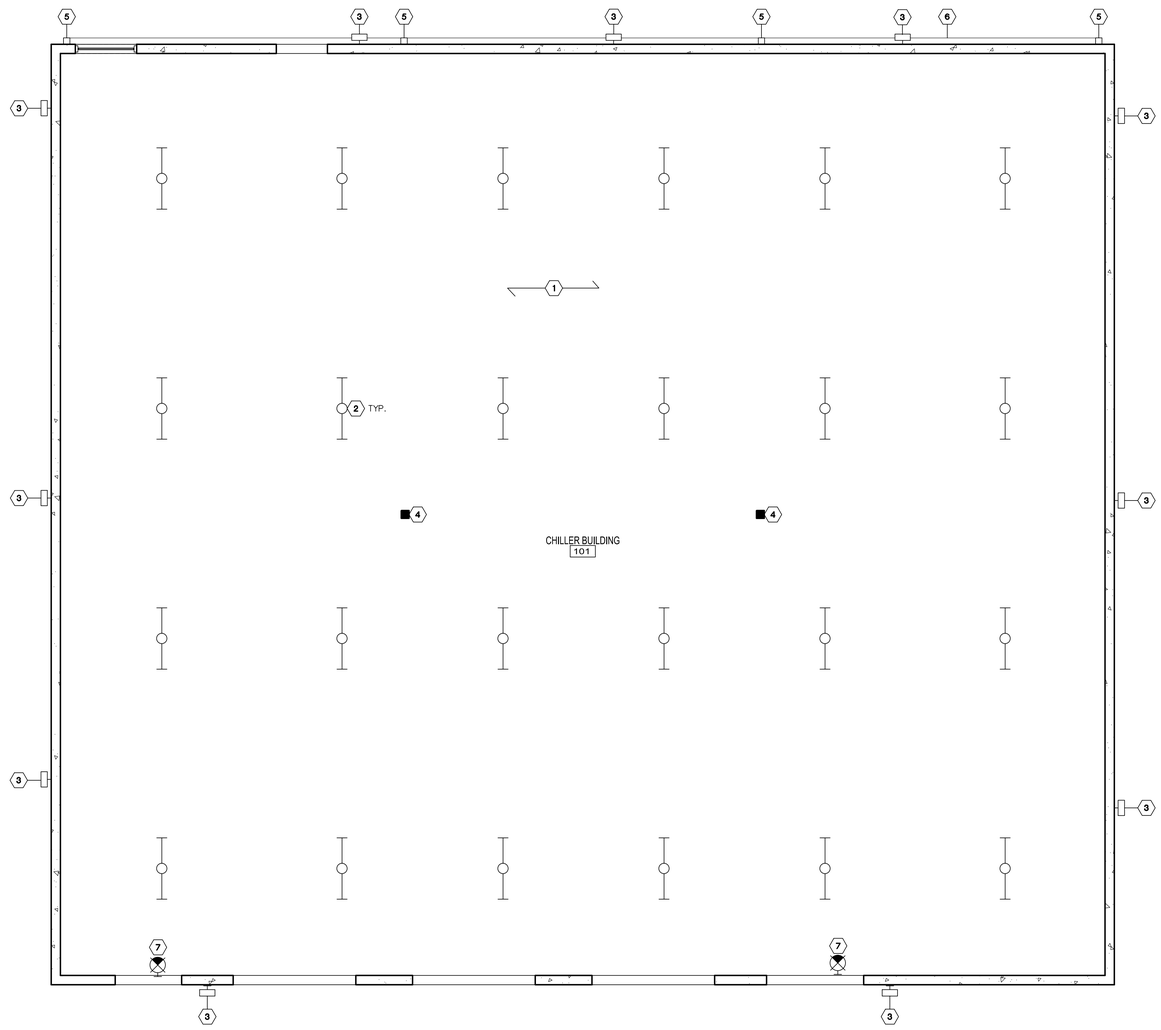
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VA U.S. Department of Veterans Affairs

Drawing Title: CANTEEN FLOOR PLAN
Approved: -
Phase: 100% CONSTRUCTION DOCUMENTS
FULLY SPRINKLERED
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date: 12-20-2019
Checked: LAC
Drawn: RR
Project Number: 675-18-151
Building Number: -
Drawing Number: AE102
SHEET 19 OF 68

KEYNOTES

1. EXPOSED STRUCTURE
2. SUSPENDED INTERIOR LIGHT FIXTURE. REFER TO SHEET AE105 FOR FIXTURES WITH EMERGENCY BATTERY BACKUP.
3. WALL MOUNTED EXTERIOR LIGHT FIXTURE
4. STRUCTURAL COLUMN
5. DOWNSPOUT
6. GUTTER
7. WALL MOUNTED EXIT SIGN



REFLECTED CEILING PLAN
SCALE: 1/4"=1'-0"

Revisions:	Date:

CONTRACTOR

MORAN CONSTRUCTION, INC
113 KING ST
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CONSULTANT

ARCHITECT
LCA ARCHITECTURE, INC.
1975 SANSBURY'S
WAY # 108
WEST PALM BEACH, FL 33411
561-493-4787

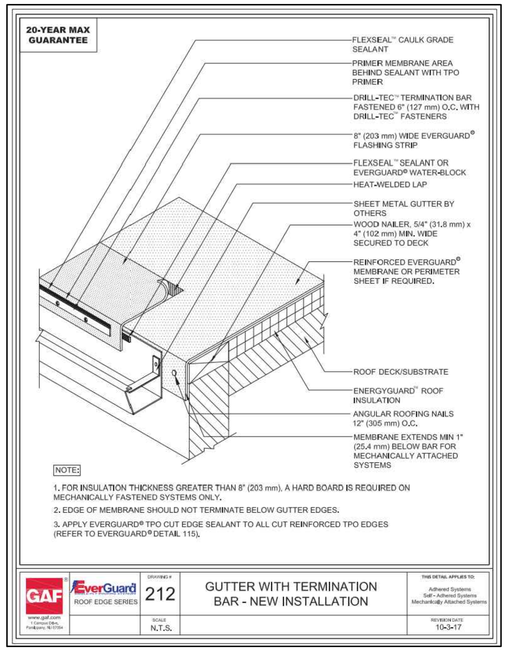
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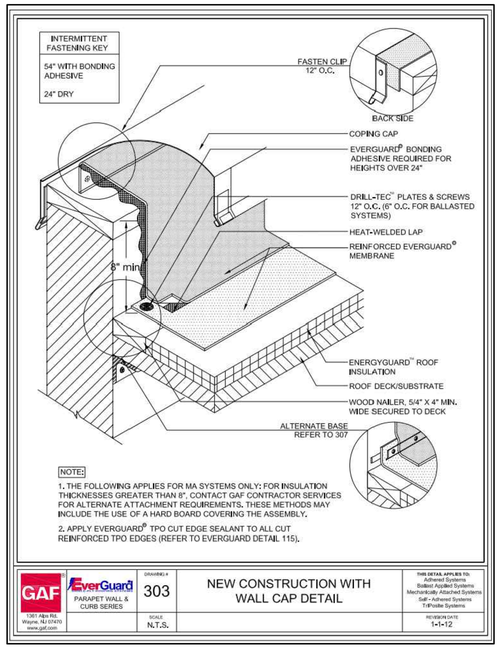
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Drawing Title: REFLECTED CEILING PLAN	Phase: 100% CONSTRUCTION DOCUMENTS
Approved: -	FULLY SPRINKLERED

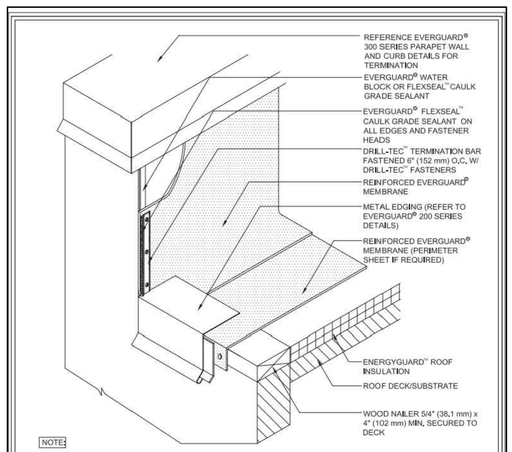
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Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940	Building Number: -
Issue Date: 12-20-2019 / Checked: LAC / Drawn: RR	Drawing Number: AE103
	SHEET 20 OF 68



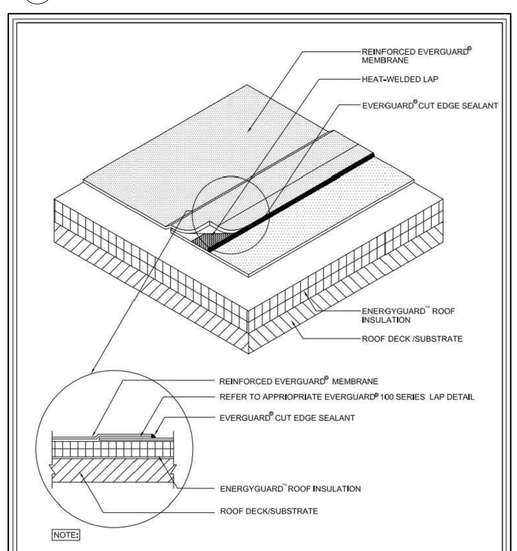
1 - DETAIL
N.T.S.



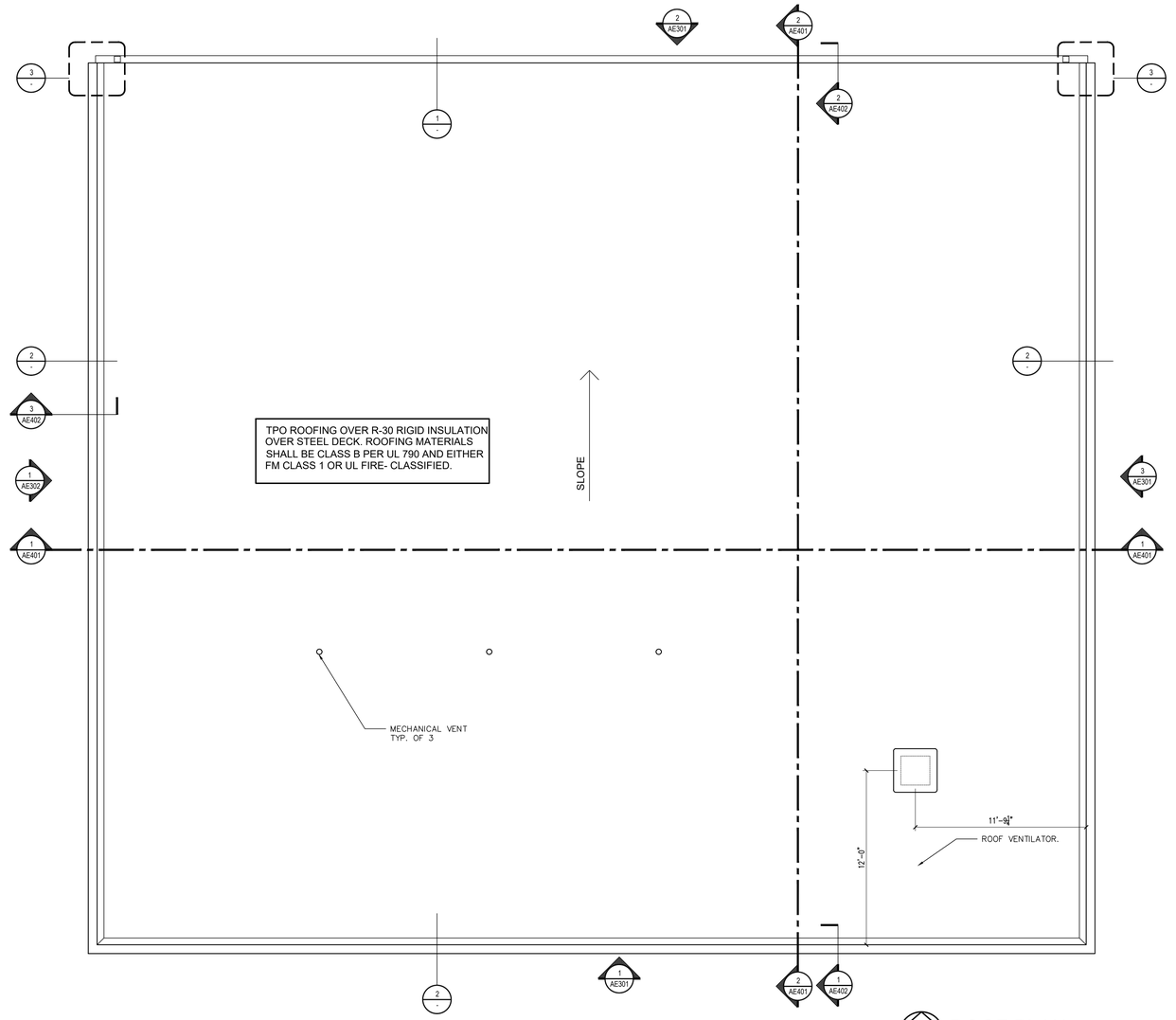
2 - DETAIL
N.T.S.



3 - DETAIL
N.T.S.



4 - TYPICAL DETAIL
N.T.S.



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

Revisions:	Date:

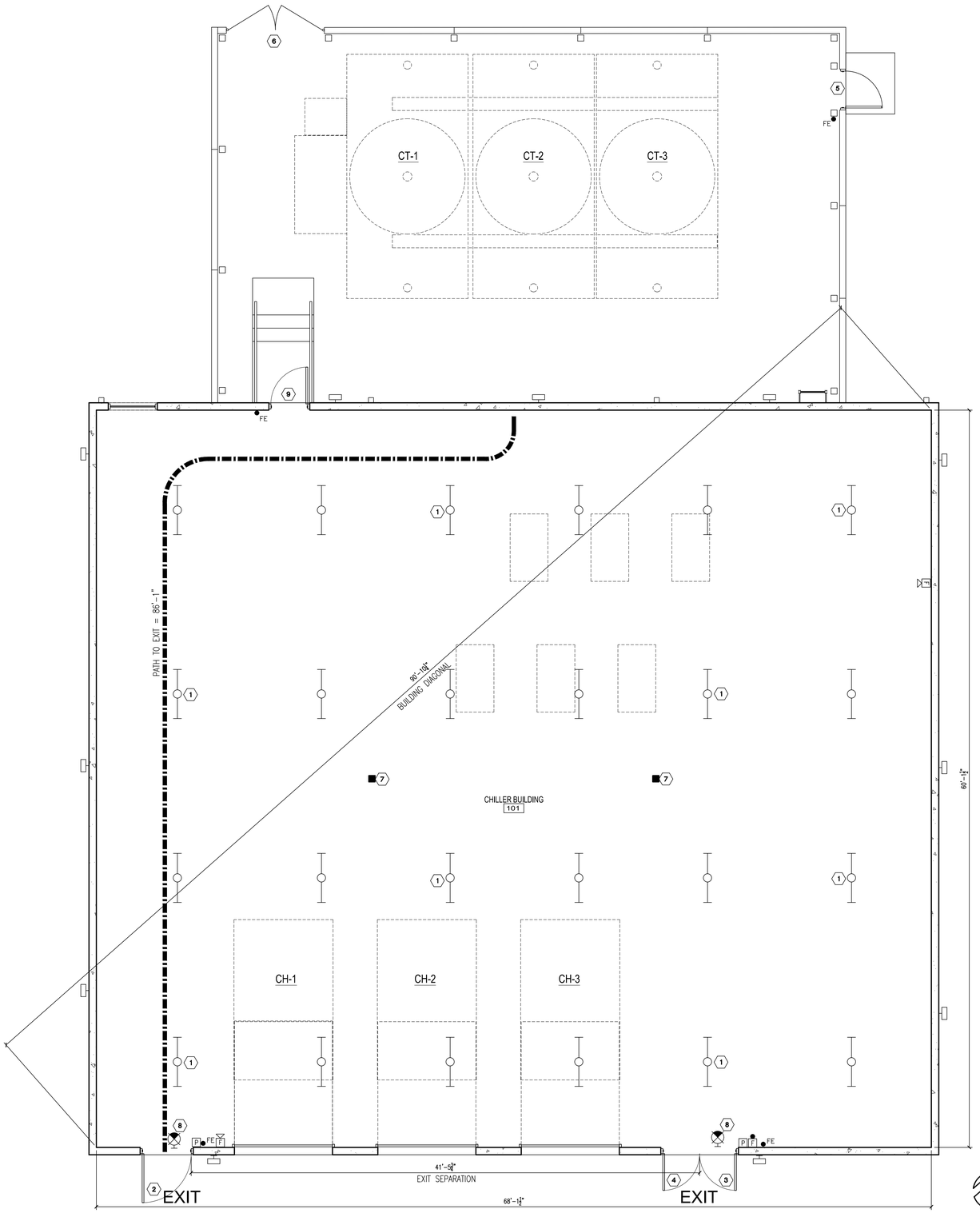
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Drawing Title: CHILLER BUILDING ROOF PLAN, DETAILS
Approved: -
Phase: 100% CONSTRUCTION DOCUMENTS
FULLY SPRINKLERED
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date: 12-20-2019
Checked: LAC
Drawn: RR
Project Number: 675-18-151
Building Number: -
Drawing Number: AE104
SHEET 21 OF 68



LIFE SAFETY PLAN
SCALE: 1/4"=1'-0"

KEYNOTES

1. FIXTURE WITH EMERGENCY BATTERY BACKUP
2. 48" WIDE EXIT DOOR LEAF WITH PANIC HARDWARE
3. 36" WIDE ACTIVE EXIT DOOR LEAF WITH PANIC HARDWARE
4. PASSIVE LEAF WITH FLUSH BOLTS
5. GATE WITH LEVER TYPE LOCK SET OPERABLE IN DIRECTION OF EXIT, NO LOCKING DEVICE AT EXTERIOR ALLOWED
6. GATE WITH J-BOLTS, "NOT AN EXIT" SIGN
7. STRUCTURAL COLUMN
8. WALL MOUNTED EXIT SIGN
9. 36" DOOR WITH "NOT AN EXIT" SIGN

LIFE SAFETY PLAN LEGEND

- WALL OR PARTITION PER PARTITION
- F — WALL MOUNT HORN/FLASHING STATION BOTTOM OF DEVICE 80" A.F.F.
- F — WALL MOUNT FIRE ALARM FLASHING STATION
- P — WALL MOUNT FIRE ALARM PULL STATION
- SD — CEILING MOUNTED SMOKE DETECTOR
- L — STROBE LIGHT AT 80" A,F,F,
- FE — WALL HUNG FIRE EXTINGUISHER
- FEC — RECESSED FIRE EXTINGUISHER CABINET
- EXIT SIGN WITH EMERGENCY BACKUP
- SUSPENDED LIGHT FIXTURE, EMERGENCY FUNCTION NOTED ON PLAN
- P — MANUAL FIRE ALARM PULL STATION @48" AFF

SOME SYMBOLS MAY NOT BE IN THE PLAN

BUILDING CLASSIFICATION

OCCUPANCY:
S-1 MODERATE HAZARD STORAGE (IBC)
STORAGE MODERATE HAZARD (LSC)

TYPE OF CONSTRUCTION (FULLY SPRINKLERED):
FBC 2017: TYPE II B (ALLOWED VB)
NFPA 101: TYPE II (000) (ALLOWED TYPE V(000))

EXISTING STRUCTURE PROTECTION:

EXTERIOR WALLS (NON-BEARING)	NON-COMBUSTIBLE 0-HOUR
COLUMNS SUPPORT FLOORS	NOT IN PROJECT
COLUMN SUPPORT ROOF	NON-COMBUSTIBLE 0-HOUR
BEAMS, GIRDERS, TRUSSES SUPPORTING FLOOR	NOT IN PROJECT
BEAMS, GIRDERS, TRUSSES SUPPORTING ROOF	NON-COMBUSTIBLE 0-HOUR
FLOOR / CEILING CONSTRUCTION	NOT IN PROJECT
ROOF/ CEILING CONSTRUCTION	NON-COMBUSTIBLE 0-HOUR

STRUCTURAL SYSTEM:
STRUCTURAL SYSTEM CONSISTS OF CONCRETE SLAB ON GRADE, CAST-IN-PLACE CONCRETE WALL PANELS, STEEL COLUMNS AND METAL DECK OVER STEEL JOIST

FLOOR AREA:
ALLOWED: 46,500 SF, PROPOSED: 4,252 SF

MAXIMUM HEIGHT:
ALLOWED: 75', PROPOSED: 17'-1 ½"

MAXIMUM STORIES ABOVE GRADE
ALLOWED: 3, PROPOSED: 1

OCCUPANT LOAD
MACHINE ROOM 300 SF/PERSON GROSS OCCUPANT LOAD: 14

HAZARD OF CONTENT: ORDINARY

INTERIOR FINISH REQUIREMENTS - SPRINKLERED

INTERIOR EXIST STAIRWAYS, RAMPS AND EXIT PASSAGEWAYS	CLASS C
CORRIDORS AND ENCLOSURES FOR EXIT ACCESS	CLASS C
ROOMS AND ENCLOSED SPACES	CLASS C

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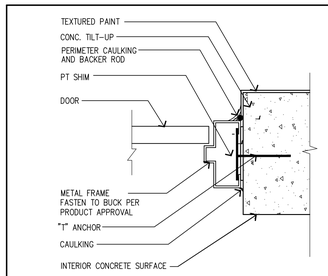
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561-493-4787

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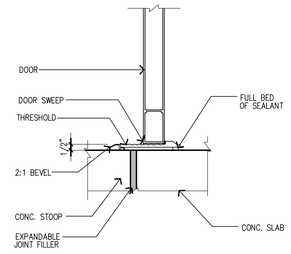
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VA U.S. Department of Veterans Affairs

Drawing Title	LIFE SAFETY PLAN NOTES
Approved: -	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date	12-20-2019
Checked	LAC
Drawn	RR
Project Number	675-18-151
Building Number	-
Drawing Number	LS101
	SHEET 22 OF 68



1/-
METAL FRAME IN CONC WALL JAMB & HEAD (SIM.)
SCALE: 3" = 1'-0"



2/-
DOOR SILL
SCALE: 3" = 1'-0"

DOOR AND FRAME SCHEDULE

MARK	STYLE	DOOR SIZE WD	DOOR SIZE HGT	DOOR SIZE THK	DOOR MATERIAL	DOOR FINISH	FRAME MATERIAL	FRAME FINISH	FIRE RATING LABEL	HARDW. SET	HARDW. KEY	NOTES
1	A1	4'-0"	7'-0"	1 3/4"	METAL	PAINT	METAL	PAINT	NONE	01	YES	--
2	A2	6'-0"	7'-0"	1 3/4"	METAL	PAINT	METAL	PAINT	NONE	03	YES	--
3	A1	3'-0"	7'-0"	1 3/4"	METAL	PAINT	METAL	PAINT	NONE	01	YES	--
4	O1	8'-0"	10'-0"	1 3/4"	METAL	PAINT	METAL	PAINT	NONE	02	NO	NOTE A
5	O1	8'-0"	10'-0"	1 3/4"	METAL	PAINT	METAL	PAINT	NONE	02	NO	NOTE A
6	O1	8'-0"	10'-0"	1 3/4"	METAL	PAINT	METAL	PAINT	NONE	02	NO	NOTE A

GENERAL DOOR NOTES

1) EXIT BARS SHALL BE ON ACTIVE LEAF OF DOUBLE DOORS WHERE PANIC DEVICE IS SPECIFIED.
2) ALL DOOR HARDWARE (EXCEPT DOORS TYPE 01) TO COMPLY WITH 101 AND FBC 2017 AND IT SHALL NOT REQUIRE KEY OPERATION IN DIRECTION OF EXIT.
3) ALL DOOR HARDWARE SHALL BE ACCESSIBLE PER ADA AND FBC 2017 ACCESSIBILITY
4) NO THRU-BOLTS FOR CLOSERS. DOORS TO BE ORDERED WITH SOLID STILE

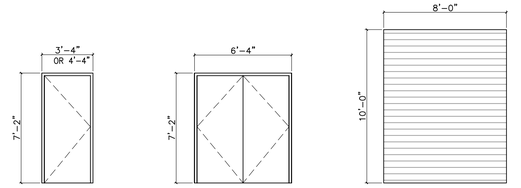
DOOR SCHEDULE NOTES:

NOTE A – PROVIDE CHAIN AND DEAD BOLTS

HARDWARE SETS REFER TO SPECIFICATION SECTION 08-71-00

SET 01: SPECIFICATION HW-E3
SET 02: SPECIFICATION HW-E5
SET 03: SPECIFICATION HW-E8

DOOR TYPES

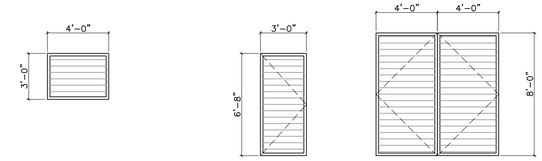


A1
SINGLE SWING INSULATED METAL

A2
DOUBLE SWING INSULATED METAL

O1
ELECTRICALLY OPERATED OVERHEAD COILING DOOR

OTHER OPENINGS



11 METAL LOUVER
12 NOT USED
13 SINGLE LOUVERED METAL GATE
14 DOUBLE LOUVERED METAL GATE

Revisions:	Date:

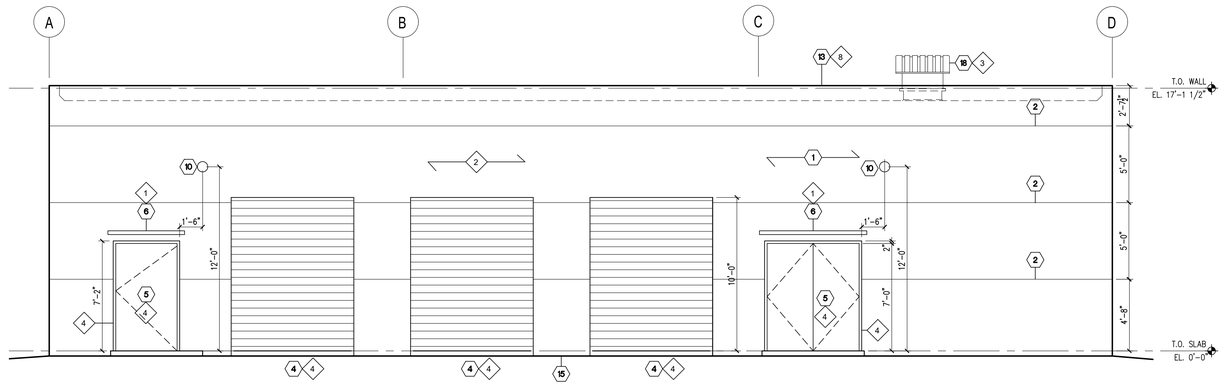
CONTRACTOR
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(321) 639-5970

CONSULTANT
ARCHITECT
LCA ARCHITECTURE, INC.
1975 SANSBURY'S WAY # 108
WEST PALM BEACH, FL 33411
561-493-4787

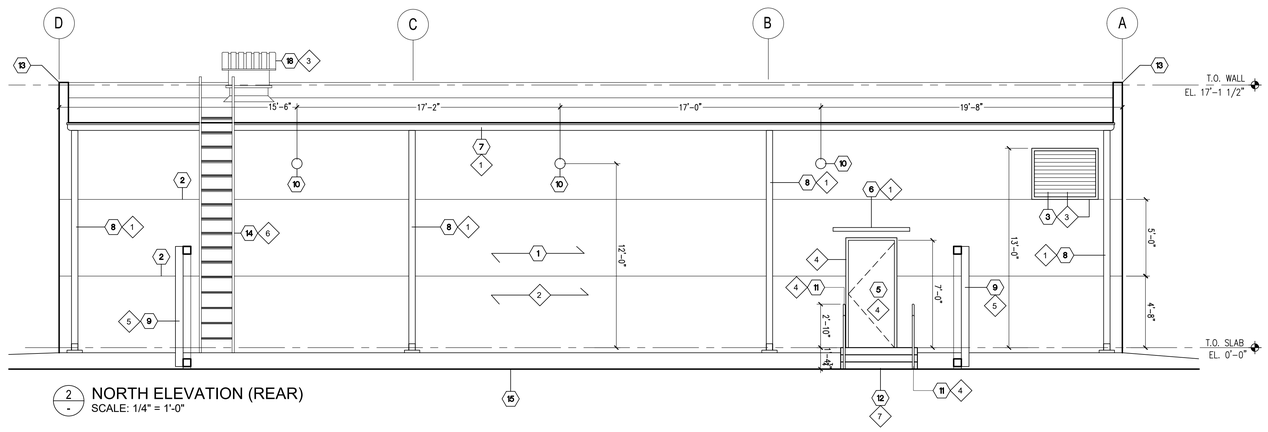
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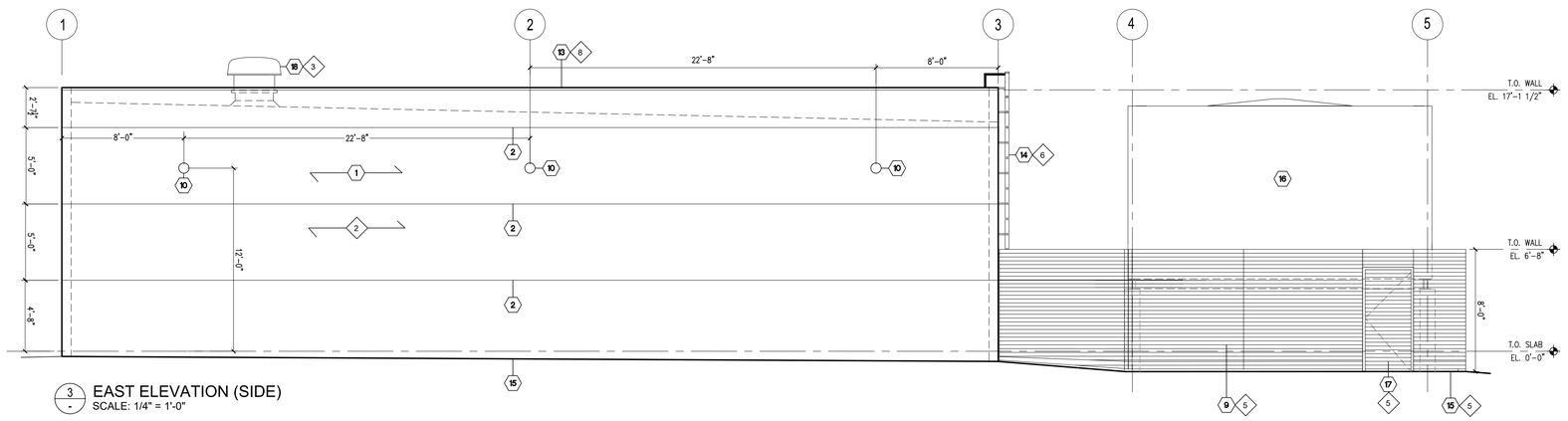
Drawing Title: DETAILS, SCHEDULES
Approved: -
Phase: 100% CONSTRUCTION DOCUMENTS
FULLY SPRINKLERED
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date: 12-20-2019
Checked: LAC
Drawn: RR
Project Number: 675-18-151
Building Number: -
Drawing Number: AE 201
SHEET 23 OF 68



1 - SOUTH ELEVATION (FRONT)
SCALE: 1/4" = 1'-0"



2 - NORTH ELEVATION (REAR)
SCALE: 1/4" = 1'-0"



3 - EAST ELEVATION (SIDE)
SCALE: 1/4" = 1'-0"

KEYNOTES

1	TEX-COTE FINISH ON CAST-IN-PLACE CONCRETE WALL
2	3/4" FORM LINER REVEAL
3	4'-0" X 3'-0" LOUVER
4	OVERHEAD COILING DOOR, FACTORY PAINT
5	INSULATED METAL DOOR PAINTED
6	STAINLESS STEEL RAIN DIVERTER
7	STAINLESS STEEL GUTTER
8	STAINLESS STEEL DOWNSPOUT
9	LOUVERED FENCE
10	LIGHT FIXTURE
11	METAL HANDRAIL
12	CONCRETE STEPS
13	METAL COPING CAP
14	ROOF ACCESS LADDER
15	APPROXIMATE FINISHED GRADE
16	COOLING TOWER
17	3'-0" WIDE SINGLE GATE, DESIGN TO MATCHING FENCE
18	ROOF MOUNTED VENTILATOR

COLOR SCHEDULE

TAG	TYPE OF SUBSTRATE	COLOR (SHERWIN WILLIAMS)
1	METAL SPECIALTIES	NATURAL STAINLESS STEEL
2	CONCRETE WALL	COLOR TO MATCH NEARBY BUILDING AND TO BE SELECTED BY VA
3	LOUVERS, ROOF VENTILATORS	ALUMINUM MILL FINISH
4	METAL DOORS FRAMES AND RAILINGS	COLOR TO MATCH NEARBY BUILDING AND TO BE SELECTED BY VA
5	METAL FENCE	ALUMINUM MILL FINISH
6	METAL LADDER	HOT DIP GALVANIZED
7	CONCRETE	NATURAL FINISH
8	METAL COPING	NATURAL STAINLESS STEEL

Revisions:	Date:

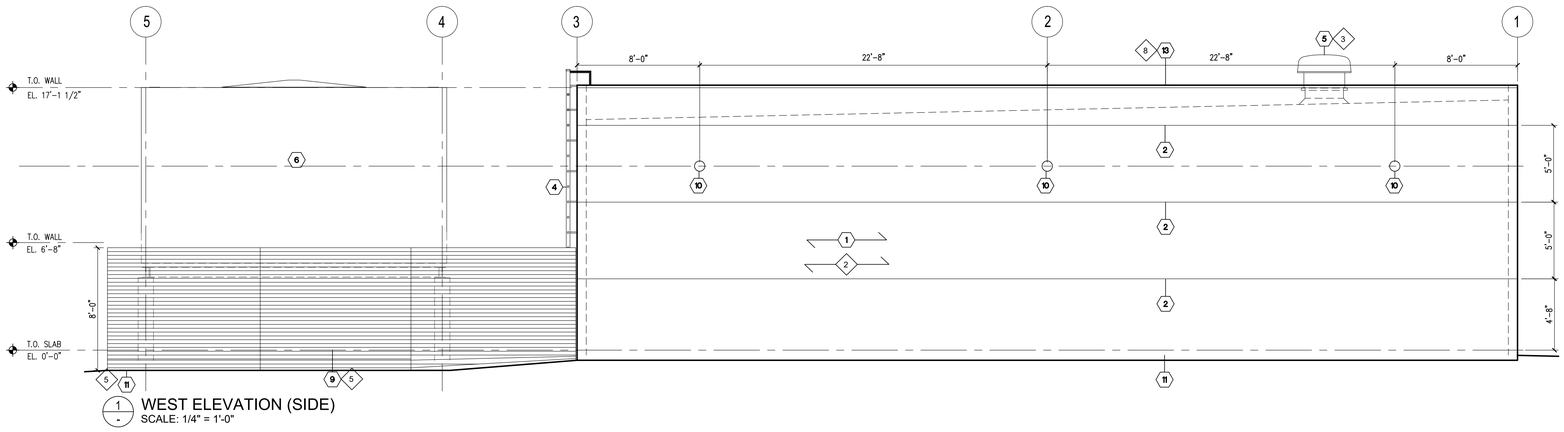
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WAY # 108
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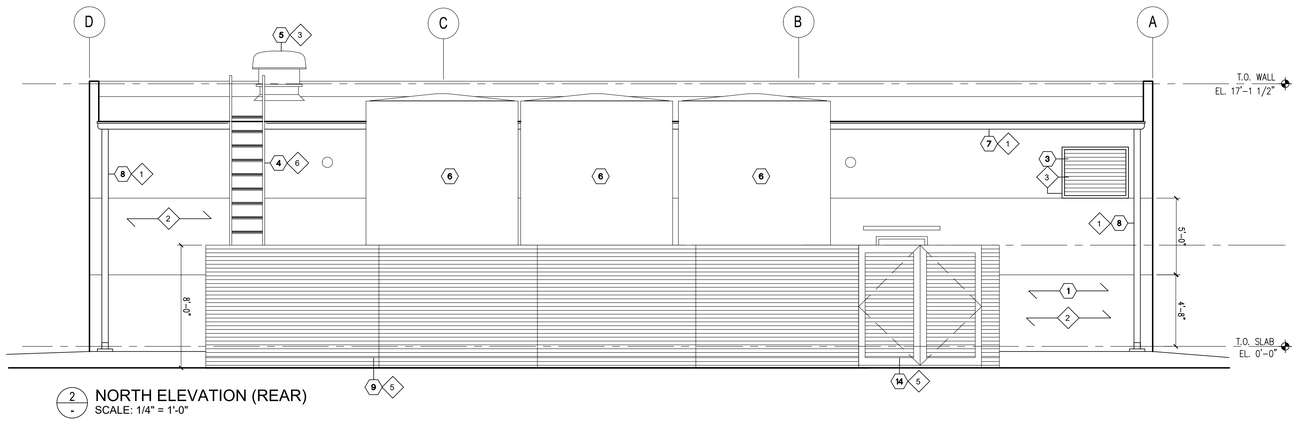
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Drawing Title: CHILLER BUILDING EXTERIOR ELEVATIONS
Approved: -
Phase: 100% CONSTRUCTION DOCUMENTS
FULLY SPRINKLERED
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date: 12-20-2019
Checked: LAC
Drawn: RR
Project Number: 675-18-151
Building Number: -
Drawing Number: AE301
SHEET 24 OF 68



1 / - WEST ELEVATION (SIDE)
SCALE: 1/4" = 1'-0"



2 / - NORTH ELEVATION (REAR)
SCALE: 1/4" = 1'-0"

KEYNOTES

1	TEX-COTE FINISH ON CAST-IN-PLACE CONCRETE WALL
2	3/4" FORM LINER REVEAL
3	4'-0" X 3'-0" LOUVER
4	ROOF ACCESS LADDER
5	ROOF MOUNTED VENTILATOR
6	COOLING TOWER
7	STAINLESS STEEL GUTTER
8	STAINLESS STEEL DOWNSPOUT
9	LOUVERED FENCE
10	LIGHT FIXTURE
11	APPROXIMATE FINISHED GRADE
12	CONCRETE STEPS
13	METAL COPING CAP
14	8'-0" WIDE DOUBLE GATES, DESIGN TO MATCH FENCE

COLOR SCHEDULE

TAG	TYPE OF SUBSTRATE	COLOR (SHERWIN WILLIAMS)
1	METAL SPECIALTIES	NATURAL STAINLESS STEEL
2	CONCRETE WALL	COLOR TO MATCH NEARBY BUILDING AND TO BE SELECTED BY VA
3	LOUVERS, ROOF VENTILATORS	ALUMINUM MILL FINISH
4	METAL DOORS FRAMES AND RAILINGS	COLOR TO MATCH NEARBY BUILDING AND TO BE SELECTED BY VA
5	METAL FENCE	ALUMINUM MILL FINISH
6	NOT USED	
7	NOT USED	
8	METAL COPING	NATURAL STAINLESS STEEL

Revisions:	Date:

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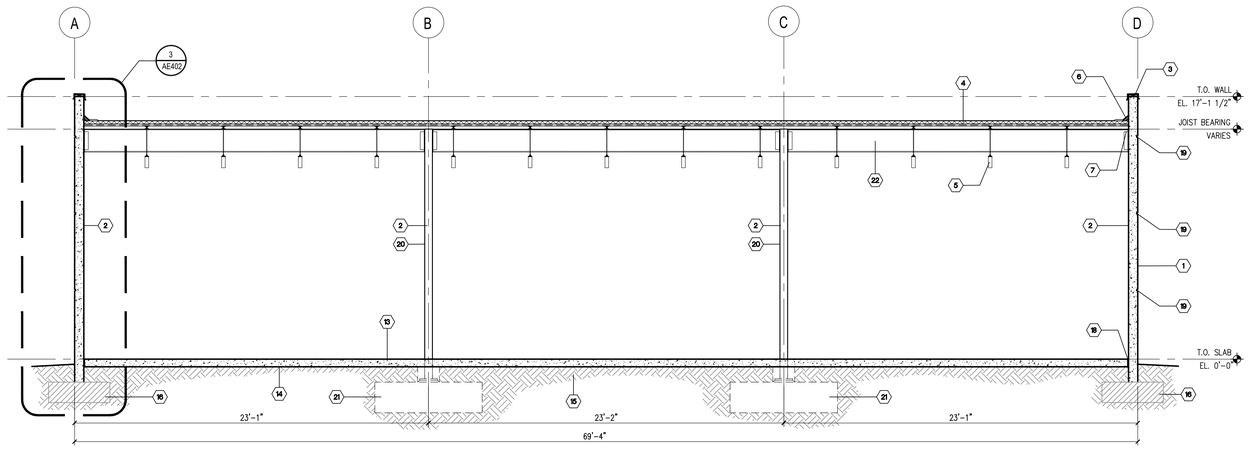
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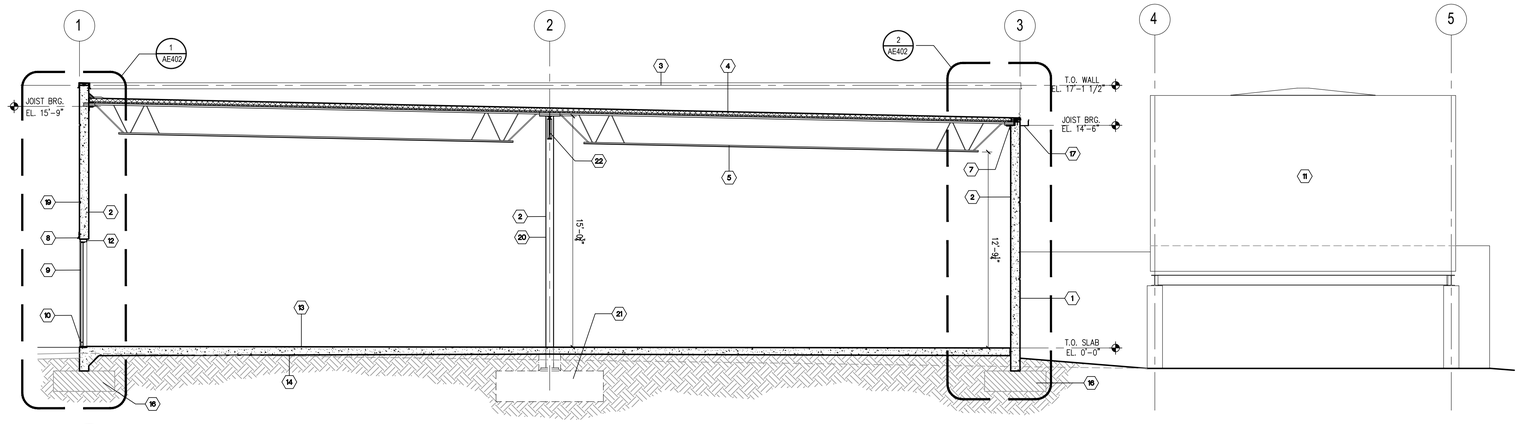
Drawing Title: CHILLER BUILDING EXTERIOR ELEVATIONS
Approved: -
Phase: 100% CONSTRUCTION DOCUMENTS
FULLY SPRINKLERED
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date: 12-20-2019
Checked: LAC
Drawn: RR
Project Number: 675-18-151
Building Number: -
Drawing Number: AE302

KEYNOTES

1. TEXT–COTE FINISH ON CAST–IN–PLACE CONCRETE WALL.
2. PAINT
3. METAL COPING CAP
4. TPO MECHANICALLY FASTENED MEMBRANE ROOFING ON RIGID INSULATION AND METAL DECK
5. STEEL JOIST
6. CANT STRIP AND TPO FLASHING (RUN UP THE WALL)
7. LEDGER STEEL ANGLE
8. RAIN DIVERTER
9. INSULATED METAL DOOR
10. ALUMINUM THRESHOLD SET IN FULL BED OF SEALANT
11. COOLING TOWER
12. PAINTED METAL DOOR FRAME
13. CONCRETE SLAB ON GRADE
14. VAPOR BARRIER
15. COMPACTED FILL
16. EXISTING PERIMETER STRIP FOUNDATION
17. STAINLESS STEEL GUTTER
18. PRE–MOLDED ISOLATION JOINT
19. 3/4" FORM LINER REVEAL
20. STEEL COLUMN
21. NEW FOUNDATION FOR COLUMN
22. STEEL GIRDER



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



2 / - BUILING SECTION
SCALE: 1/4" = 1'-0"

Revisions:	Date:

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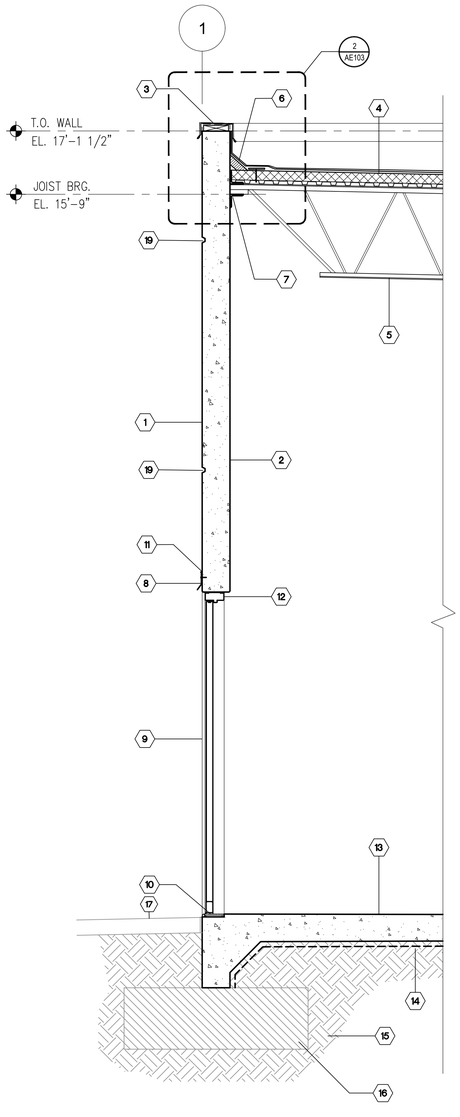
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Drawing Title: CHILLER BUILDING BUILDING SECTIONS
Approved: -

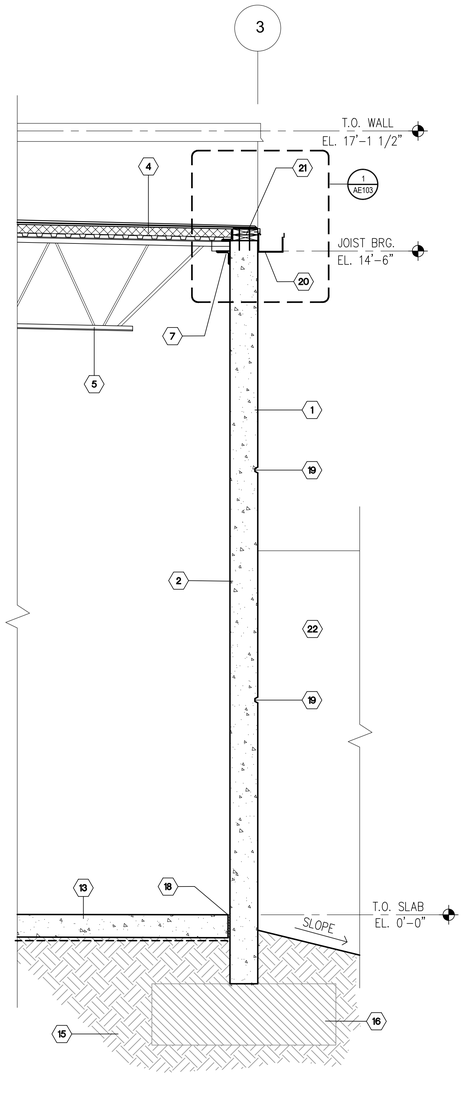
Phase: 100% CONSTRUCTION DOCUMENTS
FULLY SPRINKLERED

Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
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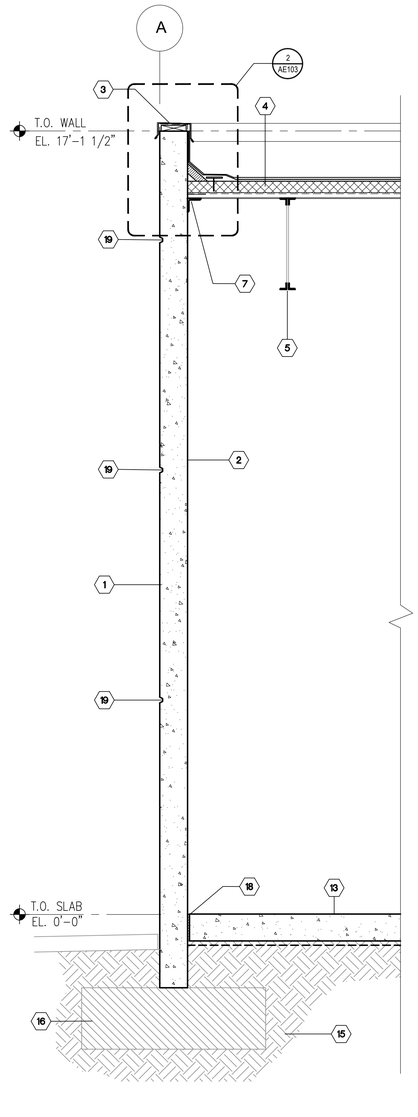
Project Number: 675-18-151
Building Number: -
Drawing Number: AE401
SHEET 26 OF 68



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



2 WALL SECTION
SCALE: 3/4" = 1'-0"



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

KEYNOTES

1. TEXT-COTE FINISH ON CAST-IN-PLACE CONCRETE WALL
2. PAINT
3. METAL COPING CAP
4. TPO MECHANICALLY FASTENED MEMBRANE ROOFING ON RIGID INSULATION AND METAL DECK
5. STEEL JOIST
6. CANT STRIP AND TPO FLASHING (RUN UP THE WALL)
7. LEDGER STEEL ANGLE
8. RAIN DIVERTER
9. INSULATED METAL DOOR
10. ALUMINUM THRESHOLD SET IN FULL BED OF SEALANT
11. SEALANT
12. PAINTED METAL DOOR FRAME
13. CONCRETE SLAB ON GRADE
14. VAPOR BARRIER
15. COMPACTED FILL
16. EXISTING PERIMETER STRIP FOUNDATION
17. REPAIR EXISTING PAVEMENT AFFECTED BY NEW CONSTRUCTION
18. PRE-MOLDED ISOLATION JOINT
19. 3/4" FORM LINER REVEAL
20. STAINLESS STEEL GUTTER
21. 2x P.T BLOCKING
22. MECH. YARD FENCE BEYOND

Revisions:	Date:

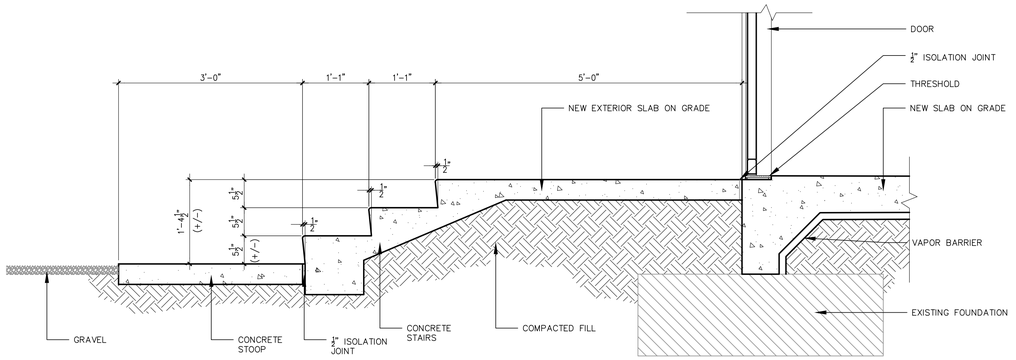
CONTRACTOR
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CONSULTANT
ARCHITECT
LCA ARCHITECTURE, INC.
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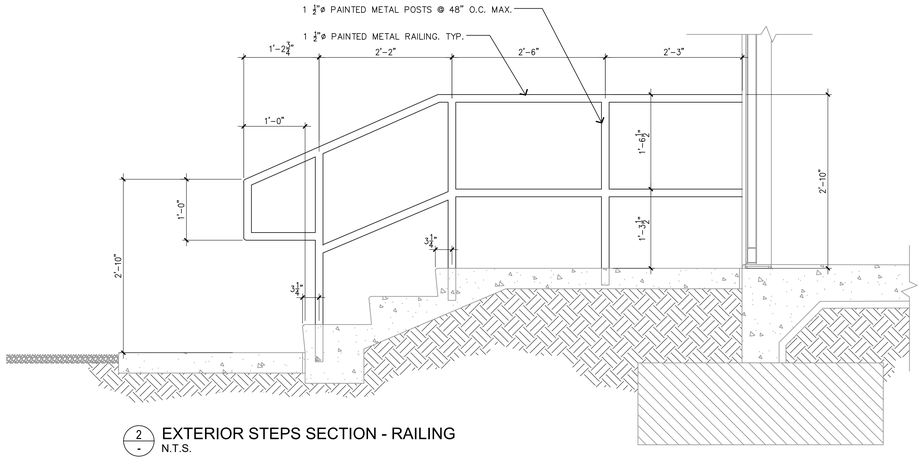
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Drawing Title: CHILLER BUILDING WALL SECTIONS, DETAILS
Approved: -
Phase: 100% CONSTRUCTION DOCUMENTS
FULLY SPRINKLERED
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date: 12-20-2019
Checked: LAC
Drawn: RR
Project Number: 675-18-151
Building Number: -
Drawing Number: AE402
SHEET 27 OF 68



1/- EXTERIOR STEPS SECTION
N.T.S.



2/- EXTERIOR STEPS SECTION - RAILING
N.T.S.

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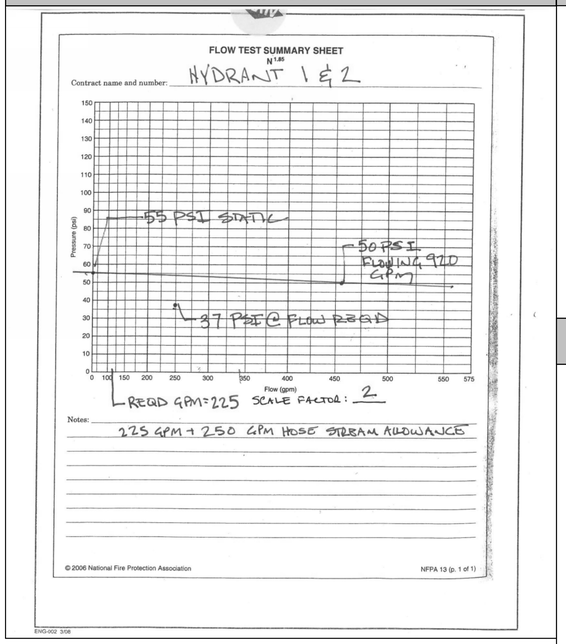
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Drawing Title: SECTIONS, DETAILS
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Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL, 32940
Issue Date: 12-20-2019
Checked: LAC
Drawn: RR
Project Number: 675-18-151
Building Number: -
Drawing Number: AE403
SHEET 28 OF 68

FLOW TEST SUMMARY



FLOW TEST SUMMARY SHEET

Contract name and number: HYDRANT 1 & 2

Pressure (psi) 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Flow (gpm) 0 100 150 200 250 300 350 400 450 500 550 575

55 PSI STATIC

50 PSI FLOWING 920 GPM

37 PSI @ FLOW READ

READ GPM=225 SCALE FACTOR: 2

Notes: 225 GPM = 250 GPM HOSE STREAM ALLOWANCE

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NFPA 13 (p. 1 of 1)

ENG-002 3/08

DESIGN CRITERIA

SOURCE: VA FIRE PROTECTION DESIGN GUIDELINES

STORAGE, MECH./ELEC. ROOMS:

OCCUPANCY CLASSIFICATION:	ORDINARY HAZARD GROUP I
SYSTEM TYPE:	WET PIPE
DESIGN DENSITY:	.15 GPM/SQ.FT.
HYDRAULIC REMOTE AREA:	1,500 SQ. FT.
SPRINKLER ORIFICE SIZE:	1/2"
DURATION OF SUPPLY:	60 - 90 MIN.
MAX. COVERAGE/SPRINKLER HEAD:	130 SQ. FT. OR SPRINKLER LISTING
HOSE STREAM ALLOWANCE:	250 GPM

REFERENCE PUBLICATIONS:

THE FOLLOWING PUBLICATIONS SHALL BE USED AS A REFERENCE FOR DESIGN OF THE FIRE SUPPRESSION SYSTEM ON THIS PROJECT.

1. FLORIDA FIRE PREVENTION CODE, SIXTH EDITION
2. NFPA 13, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS, 2013 EDITION
3. NFPA 25, STANDARD FOR THE INSPECTION, TESTING, AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS, 2014 EDITION

SPRINKLER TYPE CRITERIA:

ALL SPRINKLERS IN AREAS WITH NO CEILINGS TO HAVE BRASS UPRIGHT SPRINKLERS, AND SHALL BE RATED AT 200° F WITH A 5.6 K-FACTOR. PROVIDE SPRINKLER HEAD WITH GUARDS IN MECHANICAL/ELECTRICAL ROOMS.

FLORIDA ADMINISTRATIVE CODE CHAPTER 61G15-32 NOTES:

1. THE FIRE PROTECTION SYSTEM SCOPE OF WORK SHALL INCLUDE THE PREPARATION OF THE FIRE PROTECTION SYSTEM LAYOUT DOCUMENTS (WORKING PLANS). PROVIDE ALL EQUIPMENT, MATERIALS, COMPONENTS, ASSEMBLIES AND SUPPORT SYSTEMS REQUIRED, AS DESCRIBED, IN NFPA 13. THE FIRE PROTECTION CONTRACTOR SHALL CONDUCT A HYDRANT FLOW TEST AND PERFORM HYDRAULIC CALCULATIONS FOR PREPARATION OF THE FIRE PROTECTION SYSTEM LAYOUT DOCUMENTS (WORKING PLANS).
2. THE FIRE PROTECTION DESIGN, CALCULATIONS, INSTALLATION AND THE ACCEPTANCE TESTING OF THE FIRE PROTECTION SYSTEM SHALL BE IN ACCORDANCE WITH NFPA 13, 2013 EDITION; NFPA 24, 2013 EDITION; THE FLORIDA BUILDING CODE 2017 AND THE FLORIDA FIRE PREVENTION CODE 2017 EDITION AND ALL LOCAL CODES REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
3. AREA OCCUPANCIES AND HAZARD CLASSIFICATIONS ARE LISTED IN THE DESIGN CRITERIA NOTE LOCATED ON THE CONTRACT DOCUMENTS.
4. THE STRUCTURAL SUPPORTS AND OPENINGS FOR THE FIRE PROTECTION SYSTEM HAVE BEEN COORDINATED WITH THE STRUCTURAL ENGINEER.
5. ALL SYSTEM CONTROL VALVES SHALL BE PROVIDED WITH TAMPER SWITCHES AND INTERFACE WITH THE FACP ON THE SUPERVISORY CIRCUIT, ALL FLOW SWITCHES SHALL INTERFACE WITH THE FACP ON THE ALARM CIRCUIT.
6. THE FIRE PROTECTION CONTRACTOR SHALL PREPARE AND PROVIDE FIRE PROTECTION SYSTEM LAYOUT DOCUMENTS WITH HYDRAULIC CALCULATIONS. FIRE PROTECTION SYSTEM LAYOUT DOCUMENTS WITH HYDRAULIC CALCULATIONS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER AND THE LOCAL AHJ FOR ACCEPTANCE PRIOR TO PERMITTING.
7. ALL FIRE PROTECTION EQUIPMENT AND COMPONENTS SHALL BE LISTED AND TESTED FOR FIRE PROTECTION USE. ALL FIRE PROTECTION EQUIPMENT AND COMPONENTS SHALL BE THE U.L. LISTED AND FM APPROVED.
8. THE WATER SUPPLY FOR THE FIRE PROTECTION SYSTEM HAS NOT SHOWN ANY EVIDENCE OF MICROBIAL INDUCED CORROSION (MIC). THE FIRE PROTECTION CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY EVIDENCE OF MIC AND PROVIDE NECESSARY WATER TREATMENT AS NEED TO REDUCE OR ELIMINATE MIC.

FIRE PROTECTION FLOW TEST DATA

STATIC HYDRANT	FLOW HYDRANT	DATE: 05-21-2019
STATIC - 55 PSI RESIDUAL - 50 PSI	FLOW - 920 GPM	TIME: 7:30 AM

LOCATION: VIERA VA OPC, HYDRANTS #1 & #2

TEST CONDUCTED BY: JOHN FOERG

FIRE PROTECTION GENERAL NOTES

1. FIRE PROTECTION DESIGN SHALL COMPLY WITH NFPA 13, 25, AND VA FIRE PROTECTION STANDARDS. REFER TO DESIGN CRITERIA REFERENCE PUBLICATIONS SECTION ON THIS SHEET.
2. FINAL INSPECTION AND APPROVAL BY VA AND ARCHITECT/ENGINEER.
3. THE FIRE PROTECTION SYSTEMS SHOWN REPRESENT THE DESIGN INTENT OF THE ENGINEER, IN ACCORDANCE WITH STATE REGULATION 61G15-32. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE INSTALLATION WITH ALL OTHER TRADES. SUBMIT COMPLETE SPRINKLER SYSTEM LAYOUT DRAWINGS WITH ANY ADDITIONAL OFFSETS, SPRINKLERS OR SYSTEM COMPONENTS AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM AND TO AVOID CONFLICTS WITH OTHER TRADES.
4. SPRINKLER SHOP DRAWINGS AND MATERIAL CUT SHEETS SHALL BE SUBMITTED TO THE ARCHITECT AND LOCAL FIRE MARSHAL FOR APPROVAL PRIOR TO ANY INSTALLATION.
5. PIPE ROUTING SHOWN IS SCHEMATIC ONLY. PROVIDE ALL ADDITIONAL OFFSETS REQUIRED FOR PROPER INSTALLATION AND COORDINATION WITH OTHER TRADES.
6. INSTALL PIPING IN AREAS WITH EXPOSED STRUCTURE AS HIGH AS POSSIBLE TO ALLOW THE OWNER MAXIMUM USE OF THE SPACE.
7. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILING DESCRIPTIONS AND HEIGHTS.
8. COORDINATE SPRINKLERS WITH ALL DIFFUSERS, SPEAKERS, LIGHTING FIXTURES AND LISTING OF THE SPRINKLER.
9. SPRINKLERS IN AREAS WITH EXPOSED STRUCTURE (UNOBSTRUCTED CONSTRUCTION) SHALL BE INSTALLED 1" TO 12" BELOW THE ROOF DECK IN COMPLIANCE WITH NFPA 13, 8.6.4.1.1
10. PROVIDE A PERMANENTLY ATTACHED NAME TAG TO THE RISER STATING THE REQUIRED DESIGN CRITERIA FOR EACH HYDRAULICALLY-DESIGNED SYSTEM.
11. PROVIDE SPRINKLERS UNDERNEATH ALL EXPOSED DUCTWORK WHICH IS OVER 48" WIDE AND SPACE HEADS AROUND ALL OBSTRUCTIONS IN ACCORDANCE WITH NFPA 13. HEADS UNDER DUCTS ARE NOT INDICATED ON THE DRAWINGS BUT ARE REQUIRED. PROVIDE IN ACCORDANCE WITH NFPA 13. COORDINATE SPRINKLER LOCATIONS UNDER DUCTWORK AND AROUND OBSTRUCTIONS WITH FINAL INSTALLED LOCATIONS.
12. PROVIDE SPRINKLER GUARDS ON ALL HEADS IN ELECTRIC ROOMS, TELEPHONE ROOMS, ELEVATOR ROOMS, ELEVATOR SHAFTS, STORAGE ROOMS, UTILITY ROOMS AND ON ANY HEADS LESS THAN 7'-0" ABOVE THE FLOOR.
13. PROVIDE HANGERS ON END HEADS IN PENDANT POSITION WITHIN 12" OF END OF LINE, IN ACCORDANCE WITH NFPA 13, WHEN SYSTEM PRESSURE EXCEEDS 100 PSI.
14. COORDINATE PIPING WITH ALL ELECTRICAL EQUIPMENT (PANELS, TRANSFORMERS, ETC.) PRIOR TO ANY INSTALLATION. DO NOT ROUTE ANY PIPING OVER ANY ELECTRICAL PANELS UNDER ANY CIRCUMSTANCES. REROUTE ANY PIPING RUN OVER ELECTRICAL EQUIPMENT.
15. PROVIDE 20-GAUGE STEEL SPRINKLER CANOPY SHIELD AT SPRINKLERS IN TRASH CHUTE PER NFPA #13.
16. ALL DRAIN AND DRY PIPE SYSTEM PIPING AND FITTINGS SHALL BE GALVANIZED BOTH INSIDE AND OUTSIDE.
17. PROVIDE TAMPER SWITCHES ON ALL CONTROL VALVES.
18. SLOPE ALL PIPING TO THE SYSTEM MAIN DRAIN AS REQUIRED TO INSURE PROPER DRAINAGE. INSTALL ADDITIONAL DRAINS AND PLUGS WHERE REQUIRED TO COMPLY WITH THE ABOVE REFERENCED CODES.
19. PROVIDE ROLL GROOVED OR CUT GROOVED COUPLINGS AND FITTINGS FROM A SINGLE MANUFACTURER.
20. THIS BUILDINGS STRUCTURAL SYSTEM HAS BEEN DESIGNED TO SUPPORT THE ADDITIONAL WEIGHT ASSOCIATED WITH THE SPRINKLER SYSTEM.
21. PAINT ALL VISIBLE SPRINKLER PIPING, CLEAN, PRIME AND PAINT ALL EXPOSED PIPING RED, UNLESS OTHERWISE NOTED. COORDINATE ALL COLORS WITH THE ARCHITECT.
22. COORDINATE HANGER LOCATIONS WITH THE BUILDING STRUCTURE. SUPPORT PIPING IN ACCORDANCE WITH NFPA 13. PROVIDE ALL MISCELLANEOUS STEEL FRAMING AS REQUIRED TO SUPPORT PIPING. PROVIDE GALVANIZED OR COATED HANGERS AND RODS.

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: FIRE PROTECTION SYMBOLS, LEGEND, NOTES AND CALCULATION

Approved:

Phase: 100% CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title: DESIGN BUILD REPLACE CHILLERS VIERA

Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940

Issue Date: 12-20-2019 | Checked: JTW | Drawn: CEB

Project Number: 675-18-151

Building Number: -

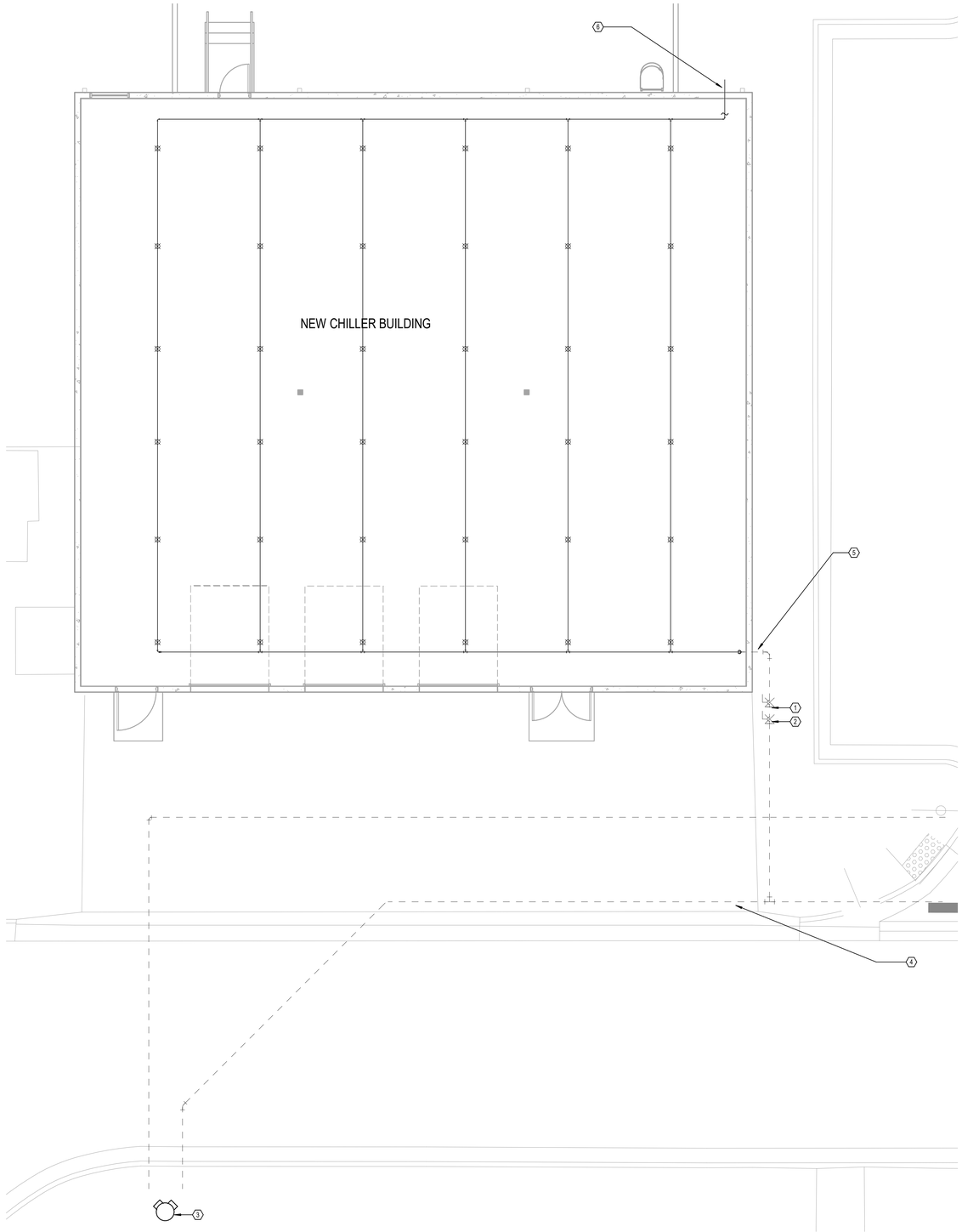
Drawing Number: FP001

29 OF 68

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VA



1 FIRE PROTECTION SITE PLAN
3/16" = 1'-0"

GENERAL NOTES

A. ALL DEMOLITION AND NEW CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH PROJECT SEQUENCE OF CONSTRUCTION AND BE COORDINATED WITH ALL OTHER TRADES.

B. COORDINATE ROUTE OF UNDERGROUND PIPING WITH EXISTING CONDITIONS AND UTILITIES. LOCATE ALL UTILITIES PRIOR TO BEGINNING WORK AND ADJUST EXACT CONDUIT ROUTE ACCORDINGLY.

C. THE FIRE PROTECTION SYSTEMS SHOWN REPRESENT THE DESIGN INTENT OF THE ENGINEER, IN ACCORDANCE WITH STATE REGULATION 61G15-32. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE INSTALLATION WITH ALL OTHER TRADES.

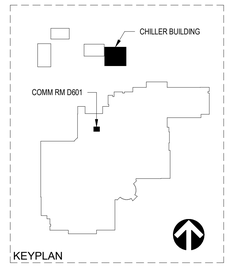
⟨7⟩ SHEET KEYNOTES

1. POINT OF CONNECTION (PER F.A.C 61G15)
2. BACKFLOW PREVENTER AND FIRE DEPARTMENT CONNECTION. SEE DETAIL 1, SHEET CJ501. THE FDC SHALL BE PROTECTED IN SUCH A MANNER AS TO LIMIT ACCESS ONLY TO AUTHORIZED PERSONNEL.
3. TESTED HYDRANT.
4. EXISTING WATER MAIN LOCATIONS - SEE SHEET CS101 FOR DETAILED LOCATION INFORMATION.
5. BUILDING CONNECTION POINT. PROVIDE ONE PIECE ELBOW WITH 90 DEGREE BEND. ELBOW SHALL BE WELDED AT ALL POINTS BELOW GRADE.
6. INSPECTOR TEST AND DRAIN CONNECTION. PROVIDE SPLASH BLOCK. SEE DETAIL 2, SHEET FP501

SPRINKLER HEAD LEGEND

⊠ UPRIGHT EXPOSED 200 F HEAD WITH HEAD GUARD





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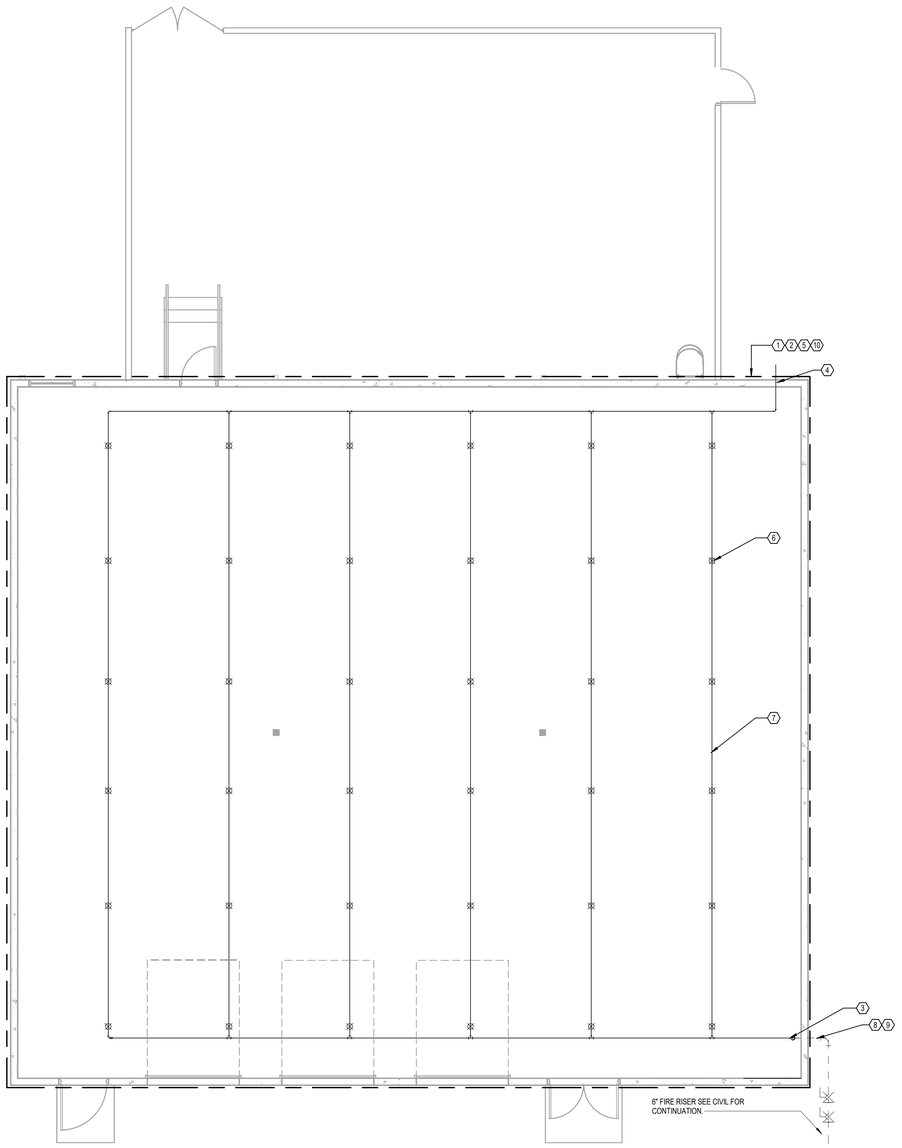
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Drawing Title: FIRE PROTECTION SITE PLAN	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
			Building Number: -
Approved:	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940	Drawing Number: FP100
		Issue Date: 12-20-2019 / Checked: JTW / Drawn: CEB	30 OF 68

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VA



1 CHILLER BUILDING FIRE PROTECTION PLAN
3/16" = 1'-0"

GENERAL NOTES

A. ALL NEW CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH PROJECT SEQUENCE OF CONSTRUCTION AND BE COORDINATED WITH ALL OTHER TRADES.

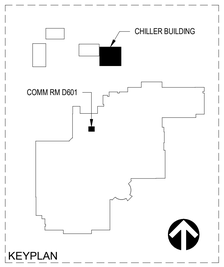
B. ALL SYSTEM OUTAGES SHALL BE CAREFULLY COORDINATED WITH OTHER TRADES, GENERAL CONTRACTOR, AND VA.

C. FOR SUSPENDED EQUIPMENT WITH A DIMENSION GREATER THAN 48" PROVIDE HEAD BELOW EQUIPMENT

SHEET KEYNOTES

1. PROVIDE A HYDRAULICALLY DESIGNED AUTOMATIC SPRINKLER SYSTEM WITH ORDINARY HAZARD GROUP 1 COVERAGE
2. AREA TO BE PROTECTED BY A WET PIPE SYSTEM. SEE SHEET FP001 FOR DESIGN DENSITIES, AREAS OF COVERAGE, ETC.
3. 6" FIRE SPRINKLER RISER. SEE DETAIL 1, SHEET FP501.
4. INSPECTOR TEST AND DRAIN CONNECTION SEE DETAIL 2, SHEET FP501.
5. PROVIDE QUICK REACTION, HIGH TEMPERATURE HEADS WITH SPRINKLER GUARDS
6. TYPICAL UPRIGHT SPRINKLER HEAD. SEE DETAIL 4, SHEET FP501.
7. PIPE SIZING BY CONTRACTOR BASED ON PRESSURE DROP CALCULATION.
8. PIPE ENTRY POINT. SEE DETAIL 1 SHEET FP501
9. PROVIDE STEEL PIPE AND WELDED FITTINGS TO 5 FEET AWAY FROM BUILDING. STEEL PIPE AND FITTINGS SHALL BE COMPLETELY ASPHALT COATED. SEE DETAIL 1 SHEET FP501.
10. SYSEM SHALL BE VENTED IN ACCORDANCE WITH NFPA 13, 7.1.5

0 4 12' 24



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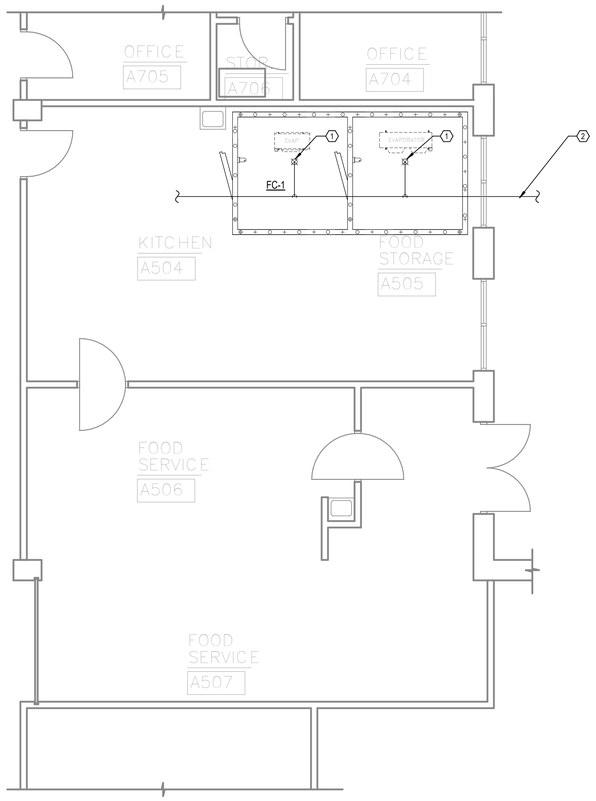
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Drawing Title: CHILLER BUILDING FIRE PROTECTION PLAN	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved:	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940	Building Number: -
		Issue Date: 12-20-2019 / Checked: JTW / Drawn: CEB	Drawing Number: FP101
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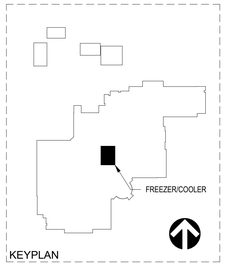


1 FIRE PROTECTION - FREEZER COOLER
1/4" = 1'-0"

⟨1⟩ GENERAL KEYED NOTES

1. REMOVE EXISTING FREEZE PROTECTION SPRINKLER HEAD AND REPLACE WITH NEW LISTED DRY SPRINKLER HEAD. CALCULATE FINAL LENGTH FOR COOLER/FREEZER TEMPERATURE OF 0 F.
2. EXISTING SPRINKLER BRANCH. CONFIRM FINAL LOCATION

0' 2' 4' 8' 16'



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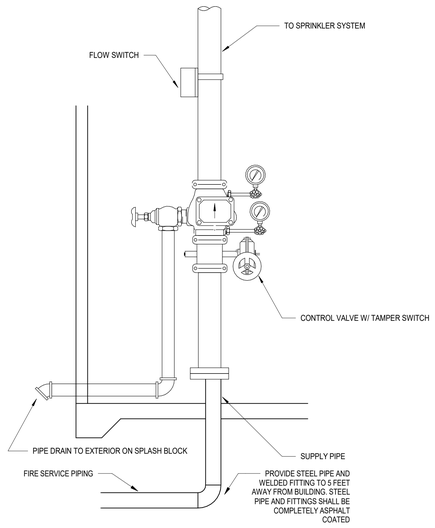
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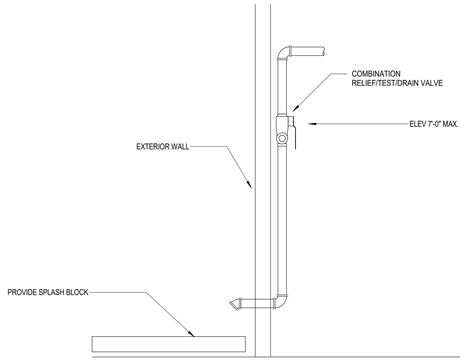
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		Issue Date: 12-20-2019 / Checked: JTW / Drawn: CEB	Drawing Number: FP102
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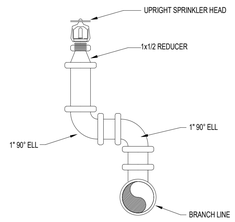
SPRINKLER RISER - WET PIPE SYSTEM
NTS

1



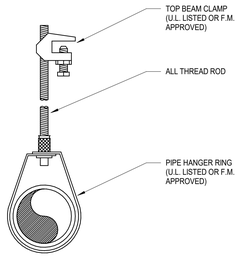
INSPECTOR'S TEST - WET PIPE SYSTEM
NTS

2



UPRIGHT SPRINKLER DETAIL
NTS

3



IF SYSTEM PRESSURE EXCEEDS 100 PSI PROVIDE HANGERS PER NFPA 13 9.2.3.4. AND 9.2.3.5.2 THAT PREVENTS UPWARD MOVEMENT OF THE PIPE FOR SPRINKLERS IN THE PENDENT POSITION. A MAXIMUM OF 12" FROM THE END SPRINKLER ON A BRANCH LINE AND ALL ARM-OVERS OVER 12".

HANGER - TBC
No Scale

4

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Drawing Title	FIRE PROTECTION DETAILS
Phase	100% CONSTRUCTION DOCUMENTS
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Project Number	675-18-151
Building Number	-
Approved:	
	FULLY SPRINKLERED
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	JTW
Drawn	CEB
Drawing Number	FP501
	33 OF 68

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FIXTURE SCHEDULE:

HD-1 FUNNEL FLOOR DRAIN

COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE TYPE "E" NICKEL BRONZE STRAINER, 9" ROUND TOP, TAPPED FOR TRAP PRIMER CONNECTION, VANDAL PROOF.

PROVIDE 6" FLOOR DRAIN AND P-TRAP UNLESS NOTED OTHERWISE ON DRAWINGS.

BASIS OF DESIGN
ZURN - SIOUXCHIEF 860 FATMAX MODEL# (860-6AIVTFA)

FD-1 FLOOR DRAIN

COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE TYPE "S" NICKEL BRONZE STRAINER, 6" SQUARE TOP, TAPPED FOR TRAP PRIMER CONNECTION, VANDAL PROOF.

PROVIDE 4" FLOOR DRAIN AND P-TRAP UNLESS NOTED OTHERWISE ON DRAWINGS.

BASIS OF DESIGN
ZURN - ZN415S-P

HB-1 WALL HYDRANT, FREEZE PROOF

FREEZE PROOF WALL ANTI-SIPHON WALL HYDRANT COMPLETE COMPLETE WITH BRONZE CASING, VACUUM BREAKER, ALL BRONZE INTERIOR PARTS AND NON TURNING OPERATING ROD WITH FREE FLOATING COMPRESSION CLOSURE VALVE WITH CHROME FINISH AND OPERATING KEY.

BASIS OF DESIGN
WOODFORD MODEL 26

HB-2 WALL HYDRANT WATER BOX, FREEZE PROOF

FREEZE PROOF ENCLOSED WALL ANTI-SIPHON WALL HYDRANT COMPLETE COMPLETE WITH BRONZE CASING, VACUUM BREAKER, ALL BRONZE INTERIOR PARTS AND NON TURNING OPERATING ROD WITH FREE FLOATING COMPRESSION CLOSURE VALVE. WATER BOX DOOR SHALL BE BRASS CASTING WITH CHROME FINISH AND OPERATING KEY.

BASIS OF DESIGN
WOODFORD MODEL B65

FCO FLOOR CLEANOUT

DURO-COATED CAST IRON CLEANOUT WITH MEMBRANE FLANGE WITH CADMIUM PLATED CAST IRON COUNTERSUNK PLUG. ADJUSTABLE HEAVY DUTY ROUND SCORIATED NICKEL BRONZE TOP

BASIS OF DESIGN
FLOOR - ZURN - ZN-1400

PLUMBING SYMBOLS

SYMBOL	DESCRIPTION
CD	- CONDENSATE DRAIN PIPING
CW	- DOMESTIC COLD WATER PIPING
HW	- DOMESTIC HOT WATER PIPING
HWR	- DOMESTIC HOT WATER RETURN PIPING
S	- SANITARY WASTE PIPING
V	- VENT PIPING
ST	- STORM DRAIN PIPING
STO	- OVERFLOW STORM DRAIN PIPING
G	- FUEL GAS PIPING
	- HOSE BIBB OR WALL HYDRANT
CO	- CLEANOUT PLUG
CO	- WALL CLEANOUT
CO	- FLOOR CLEANOUT / EXTERIOR CLEANOUT
FD	- FLOOR DRAIN
FS	- FLOOR SINK
DD	- DECK DRAIN
	- SHUT-OFF VALVE
	- BALL VALVE
	- CALIBRATED BALANCING VALVE
	- CHECK VALVE (SWING)
P	- PRESSURE REDUCING VALVE
S	- SOLENOID OPERATING VALVE
	- GAS COCK
	- GAS PRESSURE REGULATOR
4" / P4.101 (DETAIL No. / SHEET No. SHOWN ON)	- DETAIL REFERENCE
4" S (PIPE SIZE / PLUMBING SYSTEM)	- PIPE TAG
1	- REVISION REFERENCE

PLUMBING ABBREVIATIONS

ABBREVIATION		DESCRIPTION
CA	-	COMPRESSED AIR
AFF	-	ABOVE FINISH FLOOR
AW	-	ACID WASTE
AV	-	ACID VENT
CB	-	CATCH BASIN
CD	-	CONDENSATE DRAIN
CFH	-	CUBIC FEET PER HOUR
CO	-	CLEANOUT
CONT	-	CONTINUATION
CW	-	DOMESTIC COLD WATER
DI	-	DEIONIZED WATER
DN	-	DOWN
DS	-	DOWNSPOUT
DWG	-	DRAWING
EXIST	-	EXISTING
°F	-	DEGREE FAHRENHEIT
FCO	-	FLOOR CLEANOUT
FD	-	FLOOR DRAIN
FOF	-	FUEL OIL FILL
FOG	-	FUEL OIL GAGE
FOR	-	FUEL OIL RETURN
FOS	-	FUEL OIL SUPPLY
FOV	-	FUEL OIL VENT
FS	-	FLOOR SINK
FSE#	-	FOODSERVICE EQUIPMENT NUMBER
G	-	GAS
GPH	-	GALLONS PER HOUR
GPM	-	GALLONS PER MINUTE
GR	-	KITCHEN WASTE (GREASE)
HB	-	HOSE BIBB
HD	-	HUB DRAIN
HW	-	DOMESTIC HOT WATER
HWR	-	DOMESTIC HOT WATER RECIRCULATING
IE	-	INVERT ELEVATION
IW	-	INDIRECT WASTE
KW	-	KILOWATT
LBS	-	POUNDS
MH	-	MANHOLE
NC	-	NORMALLY CLOSED
NIC	-	NOT IN CONTRACT
NO	-	NORMALLY OPEN
NP	-	NON-POTABLE WATER
NTS	-	NOT TO SCALE
OD	-	OUTSIDE DIAMETER
PRV	-	PRESSURE REDUCING VALVE
PSI	-	POUNDS PER SQUARE INCH
PVC	-	POLYVINYL CHLORIDE PIPE
RD	-	ROOF DRAIN
RPBP	-	REDUCED PRESSURE BACKFLOW PREVENTOR
SAN	-	SANITARY
SD	-	STORM DRAIN
SF	-	SQUARE FEET
SH	-	SHEET
ST	-	STORM
STO	-	OVERFLOW STORM DRAIN
SW	-	SOFT COLD WATER
V	-	VENT
VAC	-	VACUUM
VC	-	VACUUM CLEANING
VTR	-	VENT THRU ROOF
WCO	-	WALL CLEANOUT
WTR	-	WATER

NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT

PLUMBING GENERAL NOTES

1. REFERENCE THE SPECIFICATIONS FOR MATERIAL AND EQUIPMENT INSTALLATION STANDARDS.
2. THE PLUMBING INSTALLATION SHALL COMPLY WITH VA PLUMBING DESIGN STANDARDS AND SPECIFICATIONS AND INTERNATIONAL PLUMBING CODE 2018.
3. UTILITIES AND SERVICES INDICATED ARE TAKEN FROM VARIOUS OLD AND NEW SURVEYS, AS-BUILT RECORDS AND FIELD INVESTIGATIONS. UNFORSEEN CONDITIONS PROBABLY EXIST AND NEW WORK MAY NOT BE FIELD LOCATED EXACTLY AS SHOWN ON DRAWINGS. COOPERATION WITH OTHER TRADES IN ROUTING AND BURIAL DEPTHS, AS DETERMINED DURING CONSTRUCTION, WILL BE NECESSARY.
4. FIELD VERIFY EXISTING INSTALLATIONS. MODIFY EXISTING PLUMBING SYSTEMS, WHICH ARE TO REMAIN ACTIVE, TO FACILITATE RECONNECTION AND EXTENSION OF THE NEW WORK.
5. NOTIFY OWNER AT LEAST 14 DAYS PRIOR TO INTERRUPTING EXISTING SERVICE. SCHEDULE DISCONNECTION AND TIE-INS TO MINIMIZE DISRUPTION OF SERVICES. SERVICES ARE NOT TO BE LEFT DISRUPTED DURING NON-NORMAL CONTRACTOR WORKING HOURS.
6. PLANS ARE NOT COMPLETELY TO SCALE. PIPE ROUTING SHOWN IS SCHEMATIC AND IS NOT INTENDED TO INDICATE EXACT ROUTING. CONTRACTOR SHALL PROVIDE ANY ADDITIONAL OFFSETS AND FITTINGS REQUIRED FOR PROPER INSTALLATION AND TO MAINTAIN CLEARANCES. VERIFY STRUCTURAL, MECHANICAL AND ELECTRICAL INSTALLATIONS AND OTHER POTENTIAL OBSTRUCTIONS AND ROUTE PIPING TO AVOID INTERFERENCES.
7. PROVIDE ALL OFFSETS AND FITTINGS AND MAKE CONNECTION TO SITE UTILITIES.
8. CONCEAL PIPING ABOVE CEILINGS, WITHIN WALLS OR CHASES EXCEPT IN MECHANICAL ROOMS OR AS SPECIFICALLY NOTED.
9. WHEN BEAM SLEEVE PENETRATIONS ARE NECESSARY, COORDINATE PENETRATIONS WITH ALL TRADES, THE ARCHITECT AND THE STRUCTURAL ENGINEER.
10. PROVIDE FOUNDATION PAD PENETRATION SLEEVES. ALLOW 1" MINIMUM CLEARANCE BETWEEN SLEEVE INSIDE SURFACE AND PIPE EXTERIOR.
11. SEE ARCHITECTURAL DRAWINGS FOR FIXTURE LOCATIONS AND MOUNTING HEIGHTS.
12. PROVIDE AUTOMATIC TRAP PRIMERS FOR FLOOR DRAIN TRAP SEALS.
13. PROVIDE AN AIR GAP, WHEN REQUIRED BY CODE, SERVING INDIVIDUAL FIXTURES, DEVICES, APPLIANCES AND APPARATUS.
14. MOUNT HOSE BIBBS 24" ABOVE FINISHED GRADE.
15. PROVIDE CLEANOUTS IN ACCORDANCE WITH ALL STATE AND LOCAL CODES. INSTALL CLEANOUT WITH COVER FLUSH TO FINISH SURFACE.
16. COORDINATE EXACT FLOOR DRAIN LOCATIONS WITH ARCHITECTURAL DRAWINGS. SET FLOOR DRAINS BELOW FINISHED FLOOR TO ALLOW FOR FLOOR SLOPING TO THE DRAIN.
17. COORDINATE PIPING WITH ALL ELECTRICAL EQUIPMENT (PANELS, TRANSFORMERS, ETC.) PRIOR TO ANY INSTALLATION. DO NOT ROUTE ANY PIPING OVER ANY ELECTRICAL PANELS UNDER ANY CIRCUMSTANCES. ANY PIPING RUN OVER PANELS SHALL BE RE-ROUTED AT NO ADDITIONAL COST.
18. PROVIDE SANITARY WASTE, VENT, DOMESTIC WATER, ETC. ROUGH-IN AND MAKE FINAL CONNECTIONS (TO INCLUDE PROVIDING ALL NECESSARY RELATED STOPS, VALVES, TRAPS, ETC. AND MAKE READY FOR USE) TO ALL EQUIPMENT, WHETHER FURNISHED BY THIS CONTRACTOR OR FURNISHED BY OTHERS.

Revisions:	Date:

CONTRACTOR
MORAN CONSTRUCTION, INC
113 KING ST
COCOA, FL 32922
(321) 639-5970

ENGINEER OF RECORD
STRUCTURAL/MEP:
TLC ENGINEERING SOLUTIONS, INC.
874 DIXON BLVD.
COCOA, FL 32922
(321) 636-0274
COA 15

TLC ENGINEERING SOLUTIONS THINK. LISTEN. CREATE.

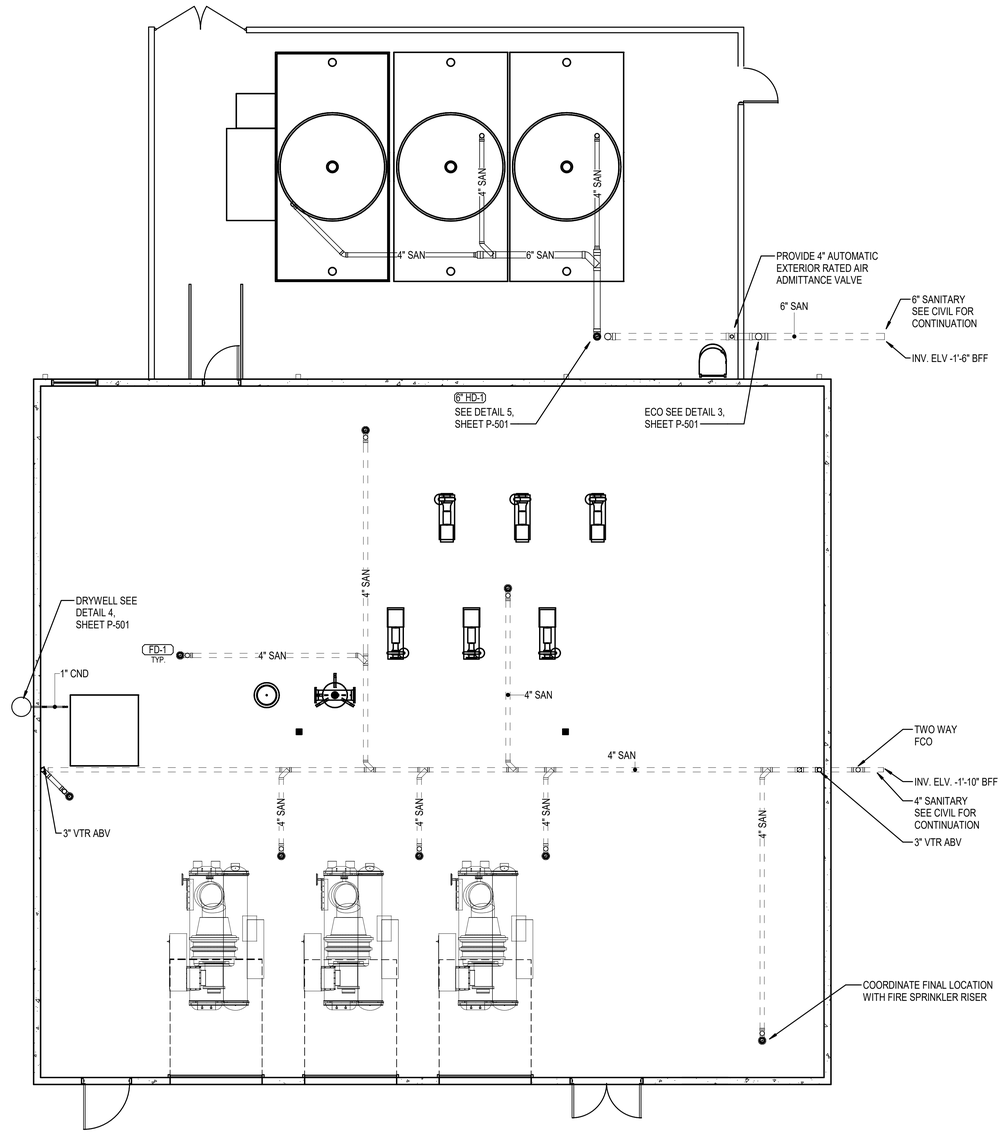
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Office of Construction and Facilities Management

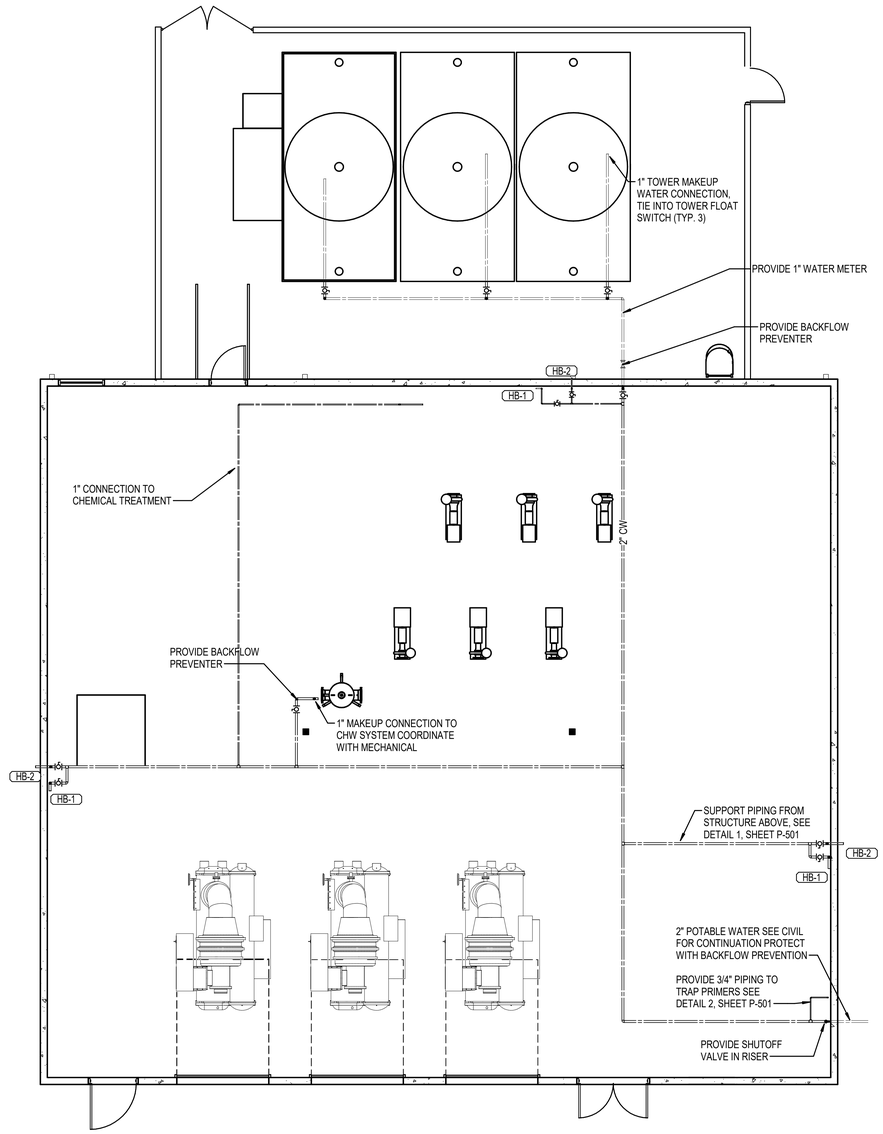
VA U.S. Department of Veterans Affairs

Drawing Title	PLUMBING SYMBOLS, SCHEDULE, NOTES AND ABBREVIATIONS
Phase	100% CONSTRUCTION DOCUMENTS
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Project Number	675-18-151
Building Number	-
Approved:	
	FULLY SPRINKLERED
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	JTW
Drawn	CHR
Drawing Number	P-001
	34 OF 68

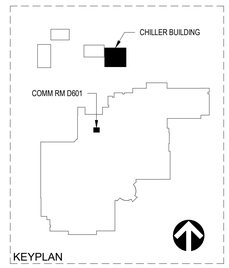
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VA



1 PLUMBING DRAINAGE PLAN
3/16" = 1'-0"



2 PLUMBING PRESSURE PLAN
3/16" = 1'-0"



0 4 12' 24

Revisions:	Date:

CONTRACTOR

MORAN CONSTRUCTION, INC
113 KING ST
COCOA, FL 32922
(321) 639-5970

ENGINEER OF RECORD

STRUCTURAL/MEP:
TLC ENGINEERING SOLUTIONS, INC.
874 DIXON BLVD.
COCOA, FL 32922
(321) 636-0274
COA 15

TLC ENGINEERING SOLUTIONS THINK. LISTEN. CREATE.

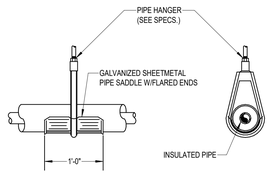
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Office of Construction and Facilities Management

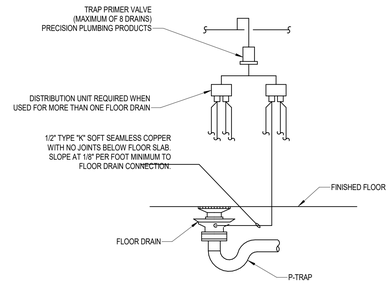
VA U.S. Department of Veterans Affairs

Drawing Title	PLUMBING PLANS
Phase	100% CONSTRUCTION DOCUMENTS
Approved:	
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	JTW
Drawn	CHR
Project Number	675-18-151
Building Number	-
Drawing Number	P-101
	35 OF 68

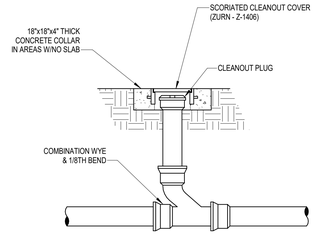
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VA



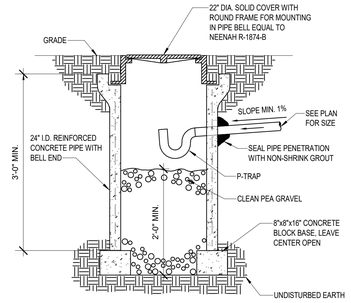
INSULATED PIPE HANGER
NTS — 1



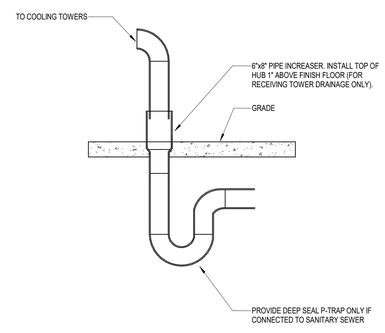
TRAP PRIMER
NTS — 2



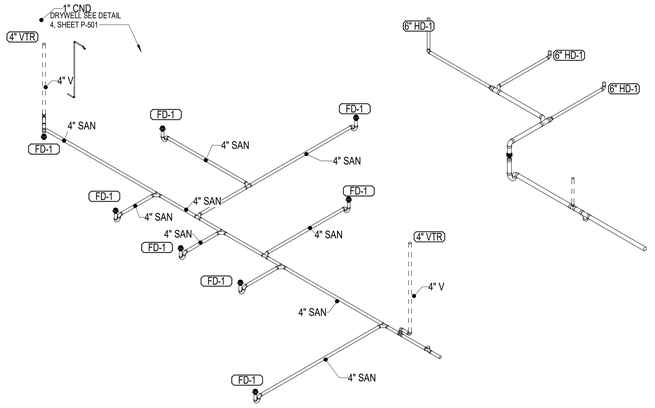
EXTERIOR CLEANOUT
NTS — 3



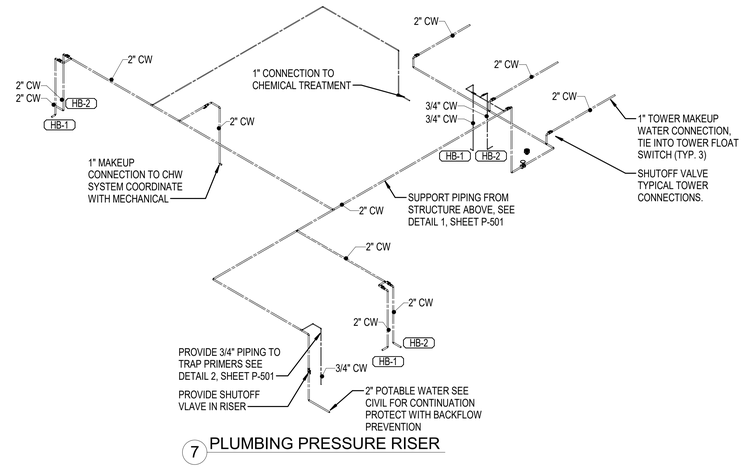
DRY WELL
NTS — 4



HUB DRAIN
NTS — 5



6 PLUMBING DRAINAGE RISER



7 PLUMBING PRESSURE RISER

Revisions:	Date:

CONTRACTOR
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(321) 639-5970

ENGINEER OF RECORD
STRUCTURAL/MEP:
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COA 15

TLC ENGINEERING SOLUTIONS — THINK. LISTEN. CREATE.

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	PLUMBING DETAILS AND RISERS
Phase	100% CONSTRUCTION DOCUMENTS
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Project Number	675-18-151
Building Number	-
Approved:	
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	JTW
Drawn	CHR
Drawing Number	P-501
	36 OF 68

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VA

HVAC SYMBOL LEGEND

SYMBOL	DESCRIPTION
	-CEILING DIFFUSER, ROUND NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)
	-ROUND DIFFUSER
	-CEILING RETURN
	-CEILING EXHAUST
	-CEILING DIFFUSER, RECTANGULAR OR SQUARE NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)
	-SUPPLY REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL)
	-RETURN/EXHAUST REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL)
1	-REVISION REFERENCE
M-1	-DETAIL REFERENCE; TOP-DETAIL#, BOTTOM-DRAWING# SHOWN ON
T	-THERMOSTAT/TEMPERATURE SENSOR
H	-HUMIDISTAT/HUMIDITY SENSOR
	-DUCT SMOKE DETECTOR
	-CONNECT TO EXISTING
	-DEMOLISH TO POINT INDICATED
M	-MOTORIZED CONTROL DAMPER
S	-TEMPERATURE SENSOR
P	-PRESSURE SENSOR
BD	-BACKDRAFT DAMPER
N	-NEUTRAL RELATIVE PRESSURE
P	-POSITIVE RELATIVE PRESSURE
N	-NEGATIVE RELATIVE PRESSURE
1	-SHEET NOTE CALLOUT
1	-SHEET NOTE CALLOUT
1	-SHEET NOTE CALLOUT
	-CEILING MOUNTED ACCESS DOOR

SYMBOL	DESCRIPTION
	-FIRE DAMPER (WITH ACCESS PANEL)
	-FIRE & SMOKE DAMPER (WITH ACCESS PANEL)
	-EXISTING FIRE DAMPER TO REMAIN
	-EXISTING FIRE & SMOKE DAMPER TO REMAIN
SA-1/	-SOUND ATTENUATOR
M	-MOTOR OPERATED CONTROL DAMPER (MOD)
FM	-AIR FLOW MEASURING STATION
	-MANUAL BALANCING DAMPER
	-DOOR GRILLE
1/2"	-UNDERCUT DOOR
M	-ACCESS DOORS, VERTICAL OR HORIZONTAL
	-STAINLESS STEEL DUCTWORK
	-FLEXIBLE CONNECTION
12x8	-FLAT OVAL DUCT
24x12	-NEW DUCTWORK, FIRST DIMENSION IS SIDE SHOWN
24x12	-EXISTING DUCTWORK TO REMAIN
24x12	-EXISTING DUCTWORK TO BE REMOVED
24x12	-DUCT ELBOW, POSITIVE PRESSURE (SUPPLY), FIRST
DOWN / UP W/IN FLOOR	DIMENSION INDICATES SIDE TO WHICH ARROW IS POINTING
	-DUCT ELBOW, EXHAUST
	-DUCT ELBOW, NEGATIVE PRESSURE, RETURN
	-DUCT ELBOW UP THROUGH ROOF OR SLAB ABOVE
	-RECTANGULAR DUCT SECTION UP, POSITIVE PRESSURE, SUPPLY OR OUTSIDE AIR
	-RECTANGULAR DUCT SECTION UP, NEGATIVE PRESSURE, RETURN
	-RECTANGULAR DUCT SECTION UP, EXHAUST
	-ROUND DUCT SECTION UP
	-FLAT OVAL DUCT SECTION UP

SYMBOL	DESCRIPTION
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME WITH ELECTRIC HEAT
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME WITH ELECTRIC HEAT
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED
	-TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT
	-ELECTRIC DUCT HEATER (W/ PANEL CLEARANCE)
	-HYDRONIC REHEAT COIL
	-INLINE CENTRIFUGAL FAN
	-PACKAGED TERMINAL AIR CONDITIONER (PTAC)
UP DN	-CHANGE OF ELEVATION
	-FLEXIBLE DUCT
	-TRANSITION, CONCENTRIC
	-TRANSITION, ECCENTRIC
10x8 8"	-TRANSITION, SQUARE TO ROUND
	-SQUARE THROAT TEE
12x8	-RADIUS TEE
	-RECTANGLE-TO-ROUND TAKE-OFF
	-STANDARD BRANCH TAKE-OFF
	-SPIN-IN TAKE-OFF
	-SQUARE THROAT ELBOW W/TURNING VANES
	-RADIUS ELBOW
	-RECTANGULAR/ROUND BRANCH TAKE-OFF OR ROUND/ROUND BRANCH TAKE-OFF
	-EXHAUST DUCT UP THROUGH SLAB W/ FAN ON ROOF ABOVE
	-EXHAUST FAN ON ROOF W/ DUCT DOWN THROUGH ROOF

HVAC ABBREVIATIONS

SYMBOL	DESCRIPTION
AFD	-ADJUSTABLE FREQUENCY DRIVE
AFF	-ABOVE FINISHED FLOOR
AFR	-ABOVE FINISHED ROOF
AHU	-AIR HANDLING UNIT
AP	-ACCESS PANEL
AS	-AIR/DIRT SEPARATOR
BOP	-BOTTOM OF PIPE
BHP	-BRAKE HORSEPOWER
BTU	-BRITISH THERMAL UNIT
CL	-CENTER LINE
CFM	-CFM (CUBIC FEET PER MINUTE)
CHW	-CHILLED WATER
CHWS	-CHILLED WATER SUPPLY
CHWR	-CHILLED WATER RETURN
CWS	-CONDENSER WATER SUPPLY
CWR	-CONDENSER WATER RETURN
CWP	-CONDENSER WATER PUMP
CHWP	-CHILLED WATER PUMP
CH	-CHILLER
CD	-CEILING DIFFUSER
CT	-COOLING TOWER
CV	-CONSTANT AIR VOLUME
ΔP	-CHANGE IN PRESSURE
ΔT	-CHANGE IN TEMPERATURE
CFM	-CUBIC FEET PER MINUTE
CU	-CONDENSING UNIT
DDC	-DIRECT DIGITAL CONTROLS
DN	-DOWN
EAT	-ENTERING AIR TEMPERATURE
EH	-EXHAUST FAN
ESP	-EXTERNAL STATIC PRESSURE
EWT	-ENTERING WATER TEMPERATURE
ET	-EXPANSION TANK
FCU	-FAN COIL UNIT
FD	-FIRE DAMPER
FF	-FINAL FILTERS
FLA	-FULL LOAD AMPS
FPM	-FEET PER MINUTE
GPM	-GALLONS PER MINUTE
KW	-KILOWATT
LAT	-LEAVING AIR TEMPERATURE
LWT	-LEAVING WATER TEMPERATURE
LD	-LINEAR DIFFUSER
MBH	-THOUSAND BTUs PER HOUR
MCA	-MINIMUM CIRCUIT AMPS
MOCP	-MAXIMUM OVER CURRENT PROTECTION
MOD	-MOTOR OPERATED CONTROL DAMPER (MOD)
NC	-NORMALLY CLOSED
NO	-NORMALLY OPEN
NTS	-NOT TO SCALE
OA	-OUTSIDE AIR
OAL	-OUTSIDE AIR LOUVER
PRV	-PRESSURE REDUCING VALVE
PRS	-PRESSURE REDUCING STATION
PSI	-POUNDS PER SQUARE INCH
PSIG	-PSI GAUGE
PTAC	-PACKAGED TERMINAL AIR CONDITIONER
PVC	-POLYVINYL CHLORIDE PIPE
RA	-RETURN AIR
RHC	-REHEAT COIL
RHP	-ROOFTOP HEAT PUMP
RPM	-REVOLUTIONS PER MINUTE
RS/L	-REFRIGERANT SUCTION & LIQUID LINES
RTU	-ROOFTOP AIR HANDLING UNIT
SA	-SUPPLY AIR
SP	-STATIC PRESSURE
TSP	-TOTAL STATIC PRESSURE
UNO	-UNLESS NOTED OTHERWISE
V/PH	-VOLTS/PHASE
VAV	-VARIABLE AIR VOLUME
VFD	-VARIABLE FREQUENCY DRIVE

HVAC GENERAL NOTES

1. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
2. DIMENSIONS SHALL BE FIELD-VERIFIED AND COORDINATED PRIOR TO PROCUREMENT OR FABRICATION. COORDINATE THE WORK WITH OTHER TRADES INVOLVED. FIELD MODIFICATIONS SUCH AS OFFSETS IN PIPING OR DUCTWORK (INCLUDING DIVIDED DUCTWORK) NEEDED DUE TO OBSTRUCTIONS OR INTERFERENCES SHALL BE PROVIDED AT NO ADDITIONAL COST. FOR PROJECTS INVOLVING RENOVATION, COORDINATE NEW WORK WITH EXISTING ELEMENTS SUCH AS THE BUILDING STRUCTURE AND ARCHITECTURAL FEATURES, SPRINKLER PIPING, LIGHTS, PLUMBING, AND ELECTRICAL CONDUIT.
3. DUCT CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARD.
4. SEE SPECIFICATIONS FOR GAUGES, THICKNESS, BRACING, REQUIREMENTS, ETC., OF DUCTWORK.
5. PROVIDE AIR TURNING VANES IN ALL 90 DEGREE RECTANGULAR DUCT ELBOWS.
6. DUCT SIZES AND ALL OPENINGS THROUGH BUILDING CONSTRUCTION SHALL SUIT EQUIPMENT FURNISHED.
7. COORDINATE DIFFUSER, GRILLE AND REGISTER LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND EQUIPMENT OF ALL TRADES.
8. LOCATE THERMOSTATS, TEMPERATURE SENSORS, HUMIDISTATS, AND HUMIDITY SENSORS AT 48" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. COORDINATE LOCATIONS WITH OTHER EQUIPMENT, FURNITURE, AND DOOR SWINGS.
9. ALL EQUIPMENT, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED AND/OR SPECIFIED. PROVIDE ADDITIONAL SUPPORTS AS REQUIRED TO PROVIDE A VIBRATION-FREE, RIGID INSTALLATION.
10. ALL DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
11. REFER TO TYPICAL DETAILS FOR PIPING AND INSTALLATION OF EQUIPMENT.
12. TRAPPED CONDENSATE DRAINS FROM ALL MECHANICAL EQUIPMENT SHALL BE PROVIDED FOR PROPER DRAINAGE TO SUIT EQUIPMENT FURNISHED.
13. ACCESS PANELS IN DUCTWORK AND CEILINGS SHALL BE PROVIDED WHERE REQUIRED FOR OPERATION, BALANCING OR MAINTENANCE OF ALL MECHANICAL EQUIPMENT.
14. ALL DUCTWORK AND PIPING IS SHOWN SCHEMATICALLY. PROVIDE ALL TRANSITIONS, TURNING VANES, ELBOWS, FITTINGS, ETC., TO ALLOW SMOOTH FLOWS. ALL SPLIT DUCT FITTINGS SHALL TRANSITION TO FULL SIZE OF THE SUM OF BOTH BRANCHES, UPSTREAM OF SPLIT.
15. PROVIDE CONCRETE HOUSEKEEPING PAD UNDER ALL FLOOR-MOUNTED EQUIPMENT. REFER TO SPECIFICATIONS FOR DETAILED REQUIREMENTS.
16. VERIFY FINISH WITH ARCHITECT PRIOR TO PURCHASING GRILLES, REGISTERS, DIFFUSERS, LOUVERS AND OTHER AIR DISTRIBUTION DEVICES.
17. PROVIDE FLEXIBLE DUCT CONNECTIONS ON ALL DUCTWORK CONNECTING TO EACH FAN, AIR HANDLING UNITS, AND FAN COIL UNITS.
18. PROVIDE TRANSITIONS AT DIFFUSER NECKS AS REQUIRED TO MATCH SIZES OF FLEX DUCTS TO BE CONNECTED.
19. INTERRUPTIONS TO EXISTING SERVICES SHALL BE SCHEDULED FOR TIMES OTHER THAN NORMAL OPERATING HOURS (SUCH AS NIGHTS AND WEEKENDS). SUCH INTERRUPTIONS TO SERVICES SHALL NOT BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER'S REPRESENTATIVE AND PROPER COORDINATION WITH OTHER TRADES. PRE-WORK SHALL BE PERFORMED TO MAKE THE SHUTDOWN PERIOD AS BRIEF AS POSSIBLE.
20. ALL EQUIPMENT, DUCTWORK, ETC., TO BE REMOVED SHALL REMAIN PROPERTY OF THE OWNER OR DISPOSED OF LEGALLY, AS DIRECTED BY OWNER.
21. MAINTAIN CLEARANCE OF A MINIMUM OF 6" BETWEEN DUCTWORK, PIPING, EQUIPMENT, ETC., AND ALL FIRE RATED AND FIRE/SMOKE RATED PARTITIONS, TO ALLOW FOR INSPECTIONS OF RATED WALLS.
22. LOCATE ALL OUTSIDE AIR INTAKES A MINIMUM OF 10' CLEAR FROM ALL PLUMBING VENTS AND EXHAUST AIR DISCHARGE LOCATIONS.
23. DUCT RUNOUTS TO DIFFUSERS SHALL MATCH THE SIZE OF THE DIFFUSER NECK.
24. WATER PRESSURE DROPS THROUGH COIL CONTROL VALVES SHALL NOT EXCEED 5 PSI.
25. UNLESS OTHERWISE NOTED, ALL EQUIPMENT AND VALVE DRAINS SHALL BE INDEPENDENTLY PIPED FULL SIZE TO THE NEAREST PLUMBING DRAIN.
26. SLEEVE AND SEAL ALL PIPING PENETRATIONS THROUGH BUILDING PARTITIONS. PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS IN CHILLED WATER AND HOT WATER PIPING.
27. PIPING, DUCTWORK, LEAK PROTECTION APPARATUS, OR OTHER EQUIPMENT FOREIGN TO ELECTRICAL SWITCHBOARDS, PANELBOARDS, DISTRIBUTION BOARDS, OR MOTOR CONTROL CENTERS SHALL NOT BE INSTALLED WITHIN THE REQUIRED SPACE FOR WORKING CLEARANCES OR DEDICATED SPACES OF THE ELECTRICAL EQUIPMENT, EXTENDING IN FRONT OF AND FROM FLOOR TO STRUCTURAL CEILING WITH A WIDTH AND DEPTH OF THE ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NEC-110.26.

HVAC PIPING SYMBOL LEGEND

SYMBOL	DESCRIPTION
CWS	-CONDENSER WATER SUPPLY
CWR	-CONDENSER WATER RETURN
CHWS	-CHILLED WATER SUPPLY
CHWR	-CHILLED WATER RETURN
CD	-CONDENSATE
CR	-CONDENSATE RETURN
PC	-PUMPED CONDENSATE
HWR	-HOT WATER RETURN
HWS	-HOT WATER SUPPLY
HPS	-HIGH PRESSURE STEAM SUPPLY
MPS	-MEDIUM PRESSURE STEAM SUPPLY
LPS	-LOW PRESSURE STEAM SUPPLY
HPR	-HIGH PRESSURE STEAM RETURN
MPR	-MEDIUM PRESSURE STEAM RETURN
LPR	-LOW PRESSURE STEAM RETURN
RL	-REFRIGERANT LIQUID
RS	-REFRIGERANT SUCTION
	-TEE, OUTLET DOWN
	-TEE, OUTLET UP
D D	-45° PIPE RISE (R) / DROP (D)
	-PIPE ANCHORS
	-CONCENTRIC REDUCER
	-ECCENTRIC REDUCER

SYMBOL	DESCRIPTION
	-FLOW DIRECTION
	-GATE VALVE
	-BALL VALVE
	-CALIBRATING BALANCING VALVE
	-BUTTERFLY VALVE
	-GAS COCK
	-UNION
	-STRAINER
	-CONTROL VALVE
	-SOLENOID VALVE
	-PSI REG.
	-CHECK VALVE
	-FLOW SWITCH
	-SLOPE DIRECTION (DOWN)
	-FLEX CONNECTION
	-O.S.&Y. GATE VALVE
	-STEAM TRAP
	-THREE-WAY CONTROL VALVE
	-THERMOMETER

SYMBOL	DESCRIPTION
EQUIP	- P-TRAP
	-TWO-WAY CHECK VALVE
MV	-MANUAL VENT
	-PRESSURE GAUGE
	-RELIEF VALVE
FM	-FLOW METER
M	-WATER METER
	-INLINE PUMP
	-INLINE PUMP
	-VALVE ON RISER
E	-CAP
	-CONNECTION, BOTTOM
	-CONNECTION, TOP
	-COUPLING
	-ELBOW, 90°
	-ELBOW, 45°
	-ELBOW, TURNED DOWN
	-ELBOW, TURNED UP

NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT

HVAC EQUIPMENT TAGS

TAG
A 200
CFM
-AIR DISTRIBUTION DEVICE

AHU NUMBER
AHU-1
-AIR HANDLING UNIT

AHU NUMBER
COIL NUMBER
RHC-1-1
-REHEAT COIL

VARIABLE/CONSTANT AIR VOLUME TERMINAL UNITS

TERMINAL UNIT TYPE
VTU - VARIABLE TERMINAL UNIT
CTU - CONSTANT TERMINAL UNIT
PTU - PARALLEL TERMINAL UNIT
STU - SERIES TERMINAL UNIT

AHU NUMBER
TERMINAL NUMBER
VTU-1-1

Revisions:	Date:

CONTRACTOR
MORAN CONSTRUCTION, INC
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ENGINEER OF RECORD
STRUCTURAL/MEP:
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL LEGEND, NOTES AND ABBREVIATIONS

Approved:

Phase: 100% CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title: DESIGN BUILD REPLACE CHILLERS VIERA

Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940

Issue Date: 12-20-2019 | **Checked:** JTW | **Drawn:** BKG

Project Number: 675-18-151

Building Number: –

Drawing Number: M-001

37 OF 68

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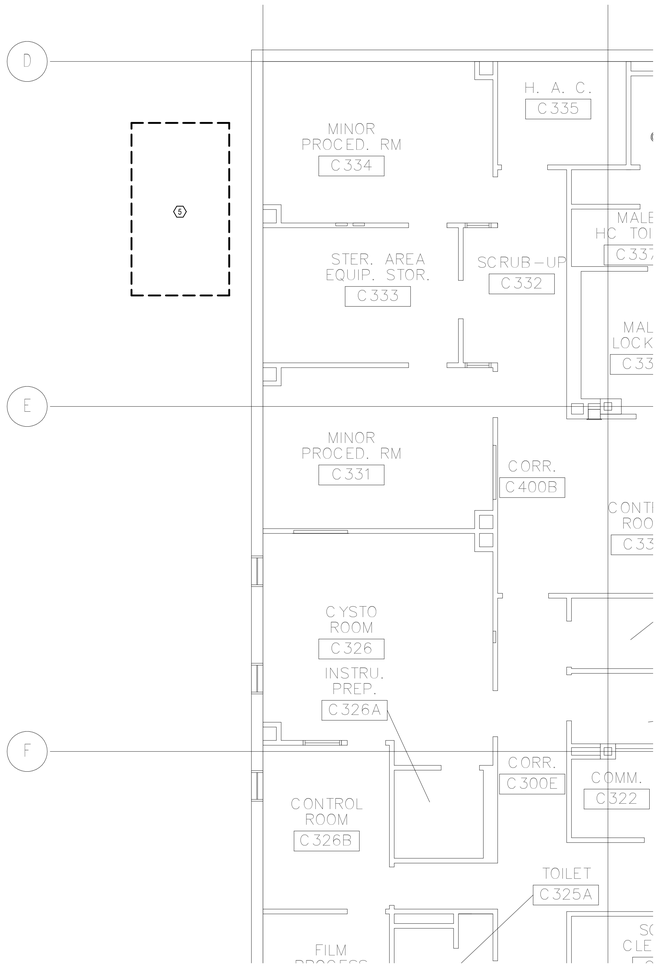
GENERAL NOTES

A. PROVIDE DEMOLITION AS REQUIRED TO COMPLETE THE SCOPE OF WORK. DEMOLITION DRAWINGS ARE INTENDED TO SHOW THE APPROXIMATE SCOPE OF WORK.

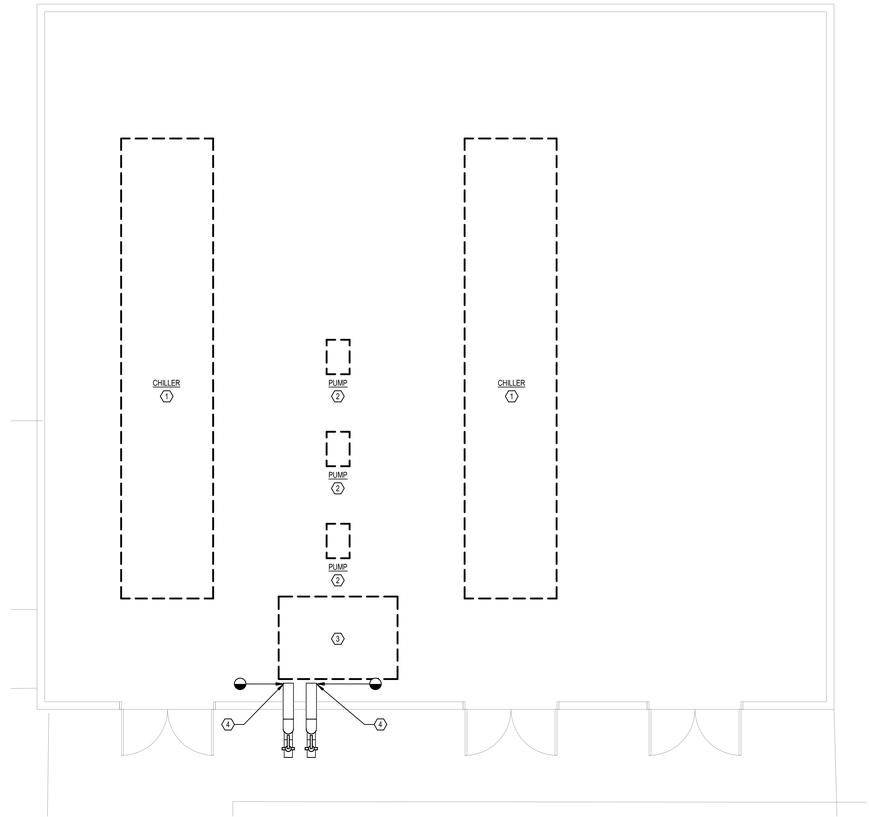
B. COORDINATE DEMOLITION OF MECHANICAL EQUIPMENT AND APPURTENANCES WITH OVERALL SCOPE OF WORK AND PROJECT SCHEDULE. COORDINATE ALL OUTAGES WITH OTHER TRADES AND THE VA.

⬡ SHEET KEYNOTES

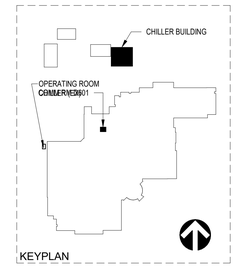
1. REMOVE EXISTING CHILLER AND ALL APPURTENANCES & ACCESSORIES.
2. REMOVE EXISTING PUMPS AND ALL APPURTENANCES & ACCESSORIES.
3. REMOVE EXISTING EXPANSION TANKS, AIR SEPARATOR, AND ALL OTHER HYDRONIC EQUIPMENT, PIPING AND ACCESSORIES.
4. DISCONNECT EXISTING CHW SUPPLY & RETURN PIPING AT THIS LOCATION. INSTALL 10" FLANGES AND BUTTERFLY VALVES TO ALLOW TEMPORARY CHILLERS TO CONNECT.
5. DISCONNECT & DEMOLISH EXISTING OPERATING ROOM CHILLER, PUMPS, AND ALL ASSOCIATED ACCESSORIES. DEMOLISH CHW SUPPLY & RETURN PIPING BACK TO ISOLATION VALVES AND INSTALL BLIND FLANGES AT VALVES.



1 OPERATING ROOM CHILLER PLAN - DEMOLITION
3/16" = 1'-0"



2 MECHANICAL FLOOR PLAN - DEMOLITION
3/16" = 1'-0"



0 4 12' 24

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Drawing Title: MECHANICAL DEMOLITION PLAN	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved:	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940	Building Number: -
		Issue Date: 12-20-2019 / Checked: JTW / Drawn: BKG	Drawing Number: MD101
			38 OF 68

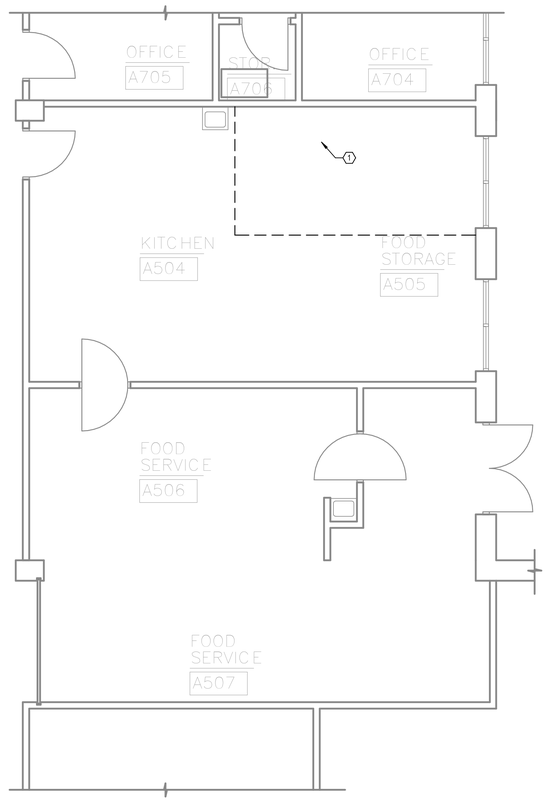
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GENERAL NOTES

A. SEE SHEET G001 FOR EXACT LOCATION OF FREEZER AND COOLER WITHIN BUILDING.

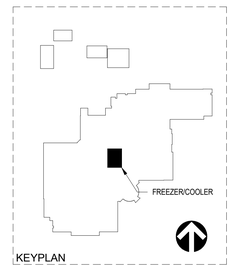
SHEET KEYNOTES

1. DISCONNECT EXISTING FREEZER AND COOLER. DEMOLISH ALL EXISTING REFRIGERANT LINES BETWEEN INDOOR AND OUTDOOR EQUIPMENT.



1 MECHANICAL PLAN - FREEZER COOLER DEMOLITION
1/4" = 1'-0"

0' 2' 4' 8' 16'



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Drawing Title	FREEZER/COOLER MECHANICAL DEMOLITION PLAN
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	JTW
Drawn	BKG
Project Number	675-18-151
Building Number	-
Drawing Number	MD201
	39 OF 68

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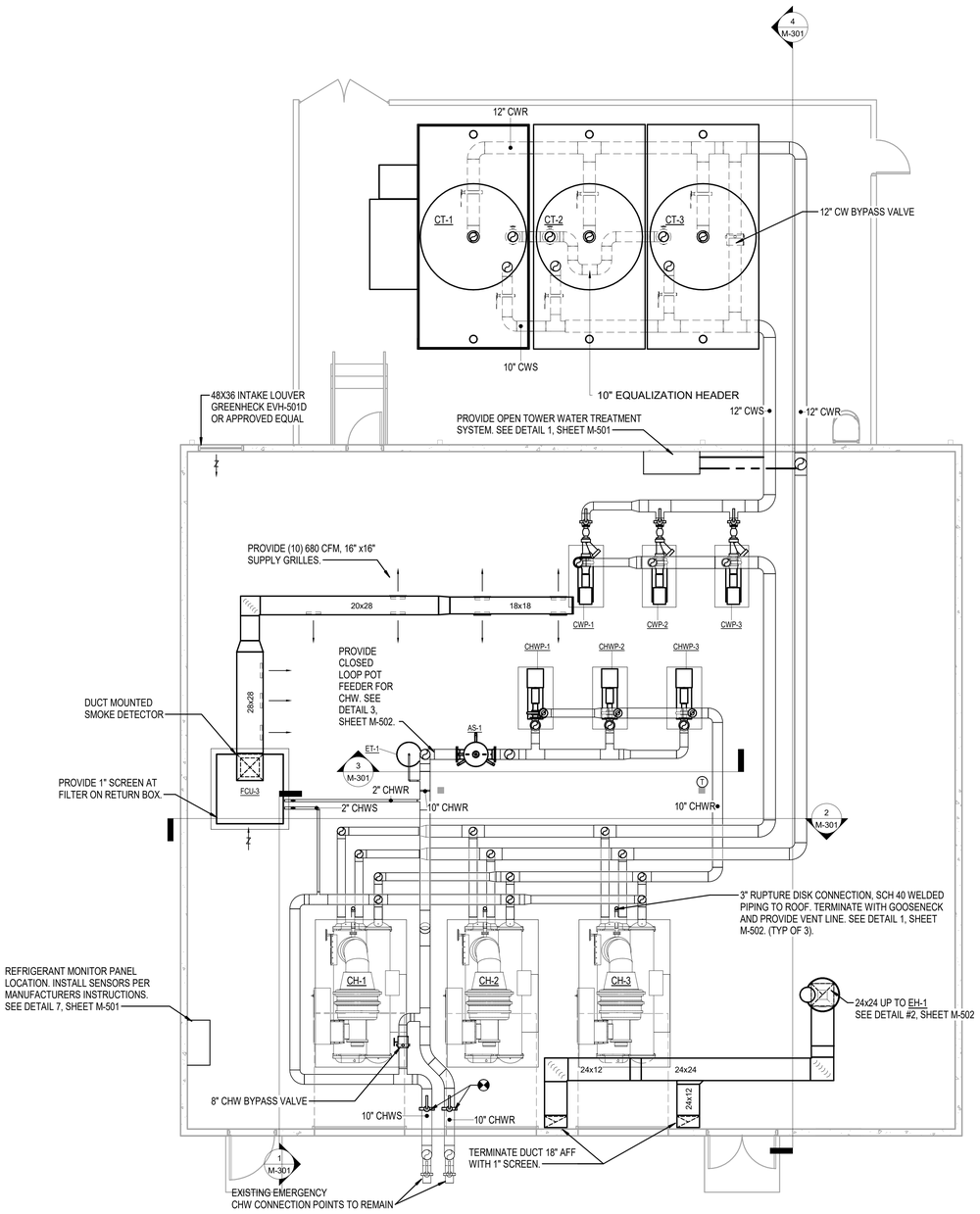
GENERAL NOTES

A. ALL DEMOLITION AND NEW CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH PROJECT SEQUENCE OF CONSTRUCTION AND BE COORDINATED WITH ALL OTHER TRADES.

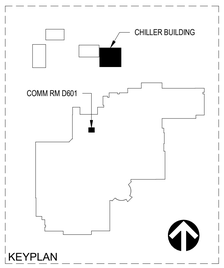
B. ALL SYSTEM OUTAGES SHALL BE CAREFULLY COORDINATED WITH OTHER TRADES, GENERAL CONTRACTOR, AND VA.

C. FOR SPECIFIC PIPE SIZES, REFER TO SHEET M-301

D. INSTALL ALL DUCTWORK TIGHT TO STRUCTURE.



1 MECHANICAL FLOOR PLAN
3/16" = 1'-0"



0 4 12' 24

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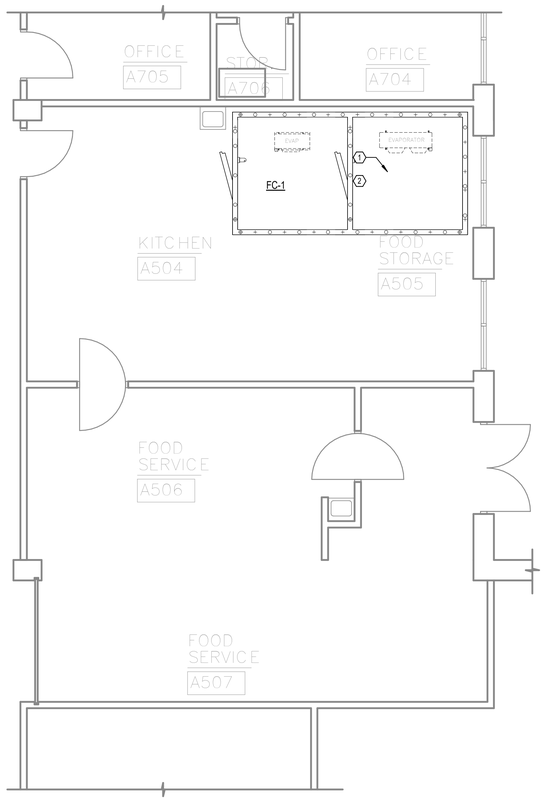
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: CHILLER PLANT MECHANICAL NEW WORK PLAN	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved:	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940	Building Number: -
		Issue Date: 12-20-2019 / Checked: JTW / Drawn: BKG	Drawing Number: M-101
			40 OF 68

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1 MECHANICAL PLAN - FREEZER COOLER
1/4" = 1'-0"

GENERAL NOTES

A. ALL DEMOLITION AND NEW CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH PROJECT SEQUENCE OF CONSTRUCTION AND BE COORDINATED WITH ALL OTHER TRADES.

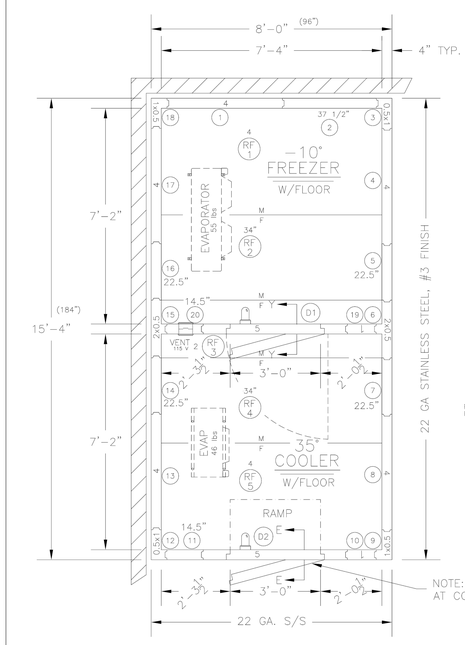
B. ALL SYSTEM OUTAGES SHALL BE CAREFULLY COORDINATED WITH OTHER TRADES, GENERAL CONTRACTOR, AND VA.

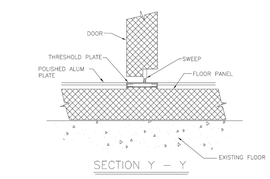
C. SEE SHEET GI001 FOR EXACT LOCATION OF FREEZER AND COOLER WITHIN BUILDING.

SHEET KEYNOTES

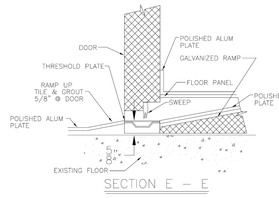
1. NEW FREEZER/COOLER FC-1 SHALL BE AMERICAN PANEL CORP. FOAMED IN PLACE URETHANE WALK-IN TYPE WITH 0.9HP COOLER REFRIGERATOR AND 2.0HP FREEZER REFRIGERATOR, OR APPROVED EQUAL. ROUTE NEW REFRIGERANT PIPING THROUGH EXISTING ROOF PENETRATION. REFER TO SHOP DRAWING ON THIS SHEET.

2. PIPE EVAPORATOR DRAINS TO EXISTING FLOOR DRAIN.





SECTION Y – Y



SECTION E – E

~ SPECIFICATIONS ~

BOX HEIGHT: 7'-6" OVERALL (6'-10 1/4" INTERIOR)

CONSTRUCTION: FOAMED IN PLACE NSF STANDARD 7

INSULATION: 4" URETHANE, FINISHED PANEL
UL CLASSIFIED FLAME SPREAD 20

INSTALLATION: INDOOR

FLOOR: FREEZER – STANDARD
COOLER – STANDARD W/INTERIOR RAMP

WALK-IN DOORS: FREEZER – 1 @ 36" x 77"
COOLER – 1 @ 36" x 77"

DOOR HARDWARE & ACCESSORIES: (EACH DOOR)
KEYED LATCH & INSIDE RELEASE (EXTERIOR DOORS ONLY)
FRAME HEATER WIRE
HYDRAULIC DOOR CLOSER
ROCKER TYPE LIGHT SWITCH W/PILOT
INCANDESCENT VAPOR PROOF LIGHT FIXTURE
STANDARD DIAL THERMOMETER
2 – STD. CAM LIFT HINGES
1/16" D.A.T.P. KICKPLATES 36" HIGH I/S & O/S

ACCESSORIES: 1 – PRESSURE RELIEF VENT

METAL FINISHES: INTERIOR WALLS & CEILING – 22 GA. STAINLESS STEEL, #3 FINISH
EXPOSED EXTERIOR – 22 GA STAINLESS STEEL, #3 FINISH
UNEXPOSED EXTERIOR – .032 STUCCO ALUMINUM
EXTERIOR FLOOR & CEILING – 26 GA STUCCO GALVANIZED
INTERIOR FLOOR – 14 GA GALVANIZED STEEL
NOT NSF APPROVED IF EXPOSED

REFRIGERATION: U.L. LISTED, AIR COOLED, OUTDOORS
W/25' OF PRE-CHARGED LINES

FREEZER (HERMETIC): 1 – REMOTE QUICK CONNECT 2.0 HP MODEL# AH2478ZC
208/60/1 R-404A 17.4 UNIT AMPACITY
1 – LET-065SJ EVAP 208-230/60/1 2.4/7.4 AMPS

COOLER (HERMETIC): 1 – REMOTE QUICK CONNECT .50 HP MODEL# AKA9446EXAXC
115/60/1 R-22 12.4 UNIT AMPACITY
1 – AA18-53 EVAP 115/60/1 2.0 AMPS

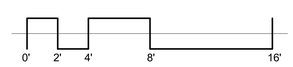
REFRIGERATION ACCESSORIES: 2 – COMPRESSOR COVER (16010, 16044)
4 – 1" PVC SLEEVES
2 – 3" PVC SLEEVES

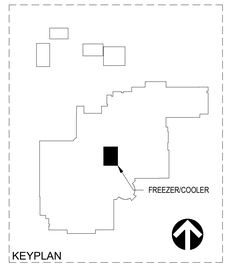
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UL

american panel corporation
5800 S.E. 78th St. Ocala, Florida 34472
Ph. (352) 245-7055 Fax (352) 245-0726

2 FREEZER/COOLER SHOP DRAWING
N.T.S.





KEYPLAN

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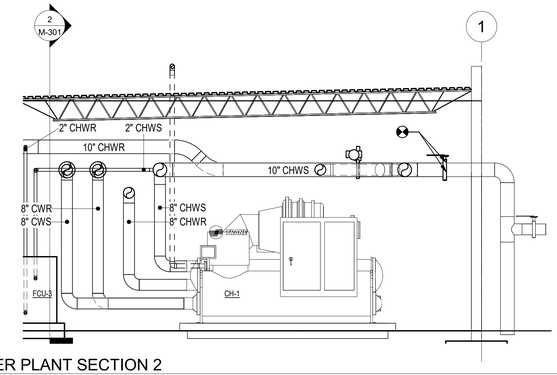
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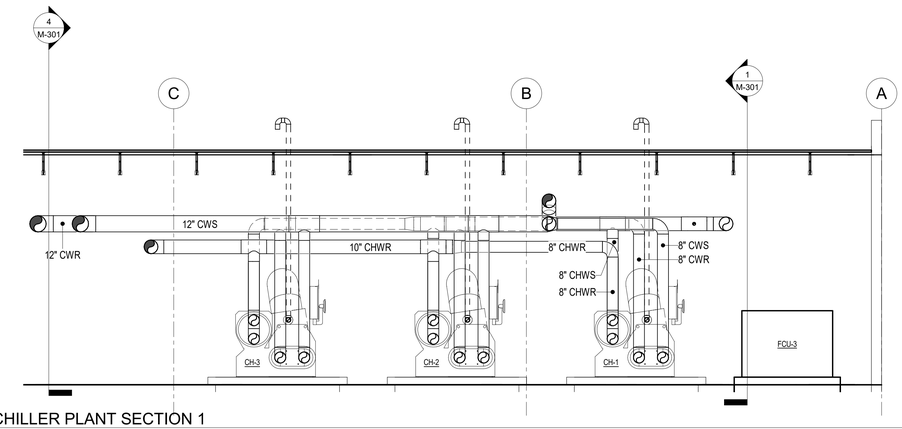
VA U.S. Department of Veterans Affairs

Drawing Title: FREEZER/COOLER MECHANICAL NEW WORK PLAN	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved:	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940	Building Number: -
		Issue Date: 12-20-2019 / Checked: JTW / Drawn: BKG	Drawing Number: M-201
			41 OF 68

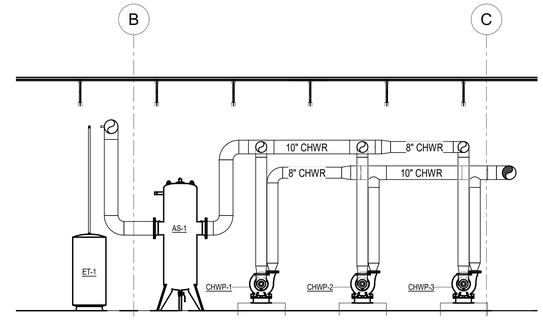
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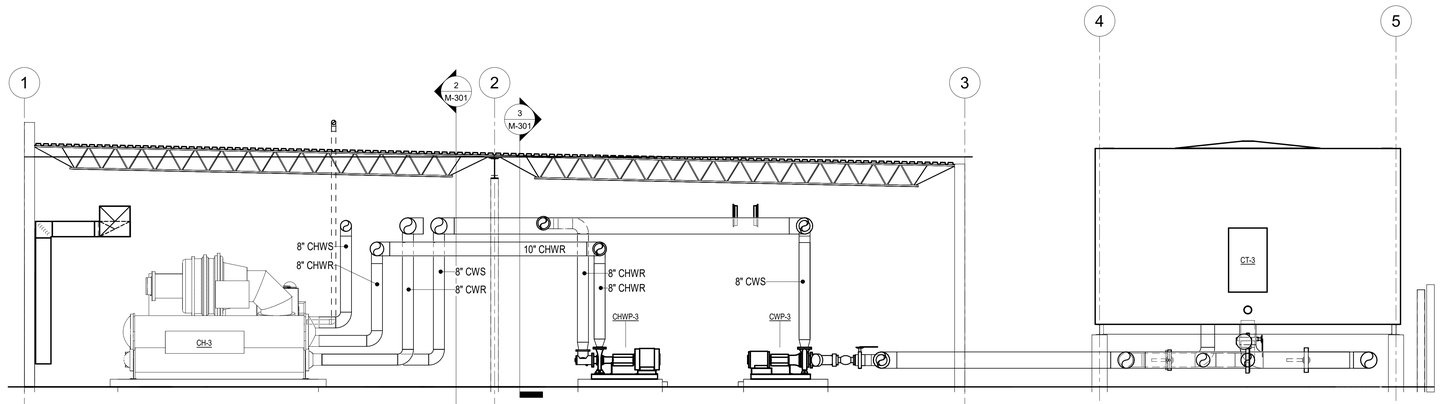
1 CHILLER PLANT SECTION 2
1/4" = 1'-0"



2 CHILLER PLANT SECTION 1
1/4" = 1'-0"



3 CHILLER PLANT SECTION 3
1/4" = 1'-0"



4 CHILLER PLANT SECTION 4
1/4" = 1'-0"

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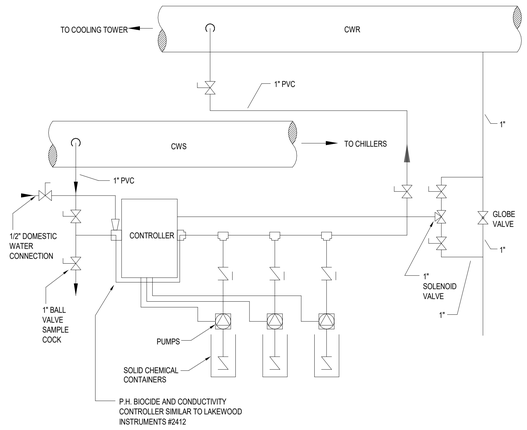
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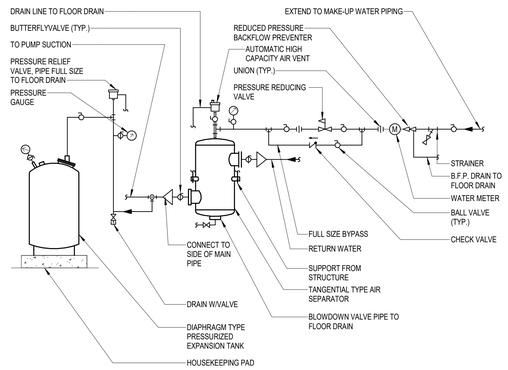
VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL SECTIONS	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved:	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940	Building Number: -
		Issue Date: 12-20-2019 / Checked: JTW / Drawn: BKG	Drawing Number: M-301
			42 OF 68

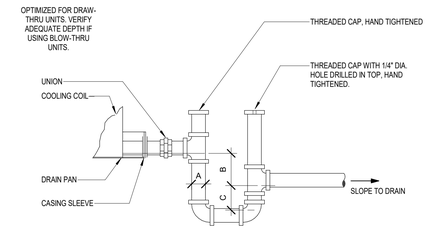
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1 CHEMICAL TREATMENT
N.T.S.



2 AIR SEPARATOR/ELIMIN. & EXPANSION TANK PIPING
N.T.S.

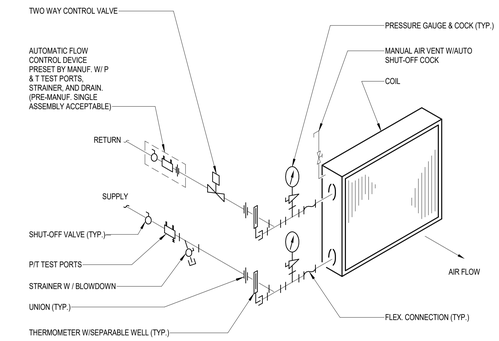


CONDENSATE DRAIN PIPING DIMENSIONS:

A = FULL SIZE OF UNIT DRAIN CONNECTION
B > 1-1/2" TIMES FAN SUCTION STATIC PRESSURE
C > FAN DISCHARGE STATIC PRESSURE PLUS 1/2" INCH

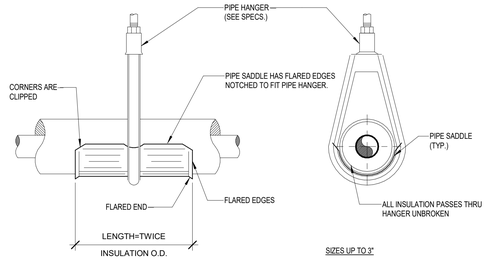
COORDINATE MOUNTING/CURB HEIGHT AS REQUIRED TO PROVIDE PROPER CONDENSATE DRAINAGE.

3 AHU CONDENSATE DRAIN TRAP
N.T.S.

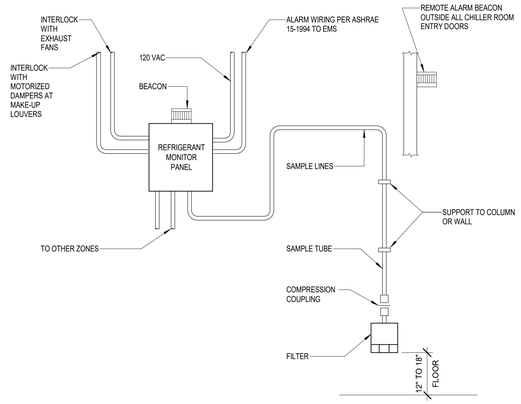


NOTES:
1. PROVIDE (4 x DIA.) OF STRAIGHT PIPE ON BOTH SIDES OF BALANCING VALVE
2. ALL COMPONENTS FULL LINE SIZE UNLESS NOTED OTHERWISE
3. LOCATE UNIONS TO ALLOW FOR COIL PULL

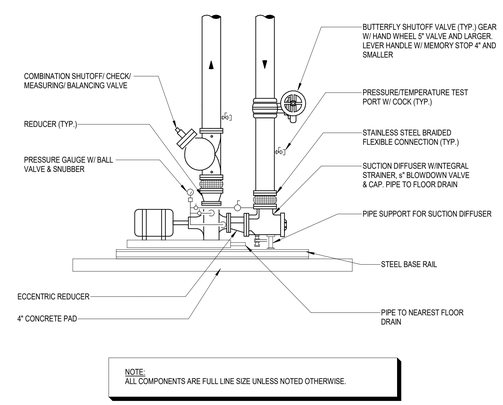
4 2-WAY COIL PIPING DIAGRAM
N.T.S.



5 INSULATED PIPE HANGERS
N.T.S.

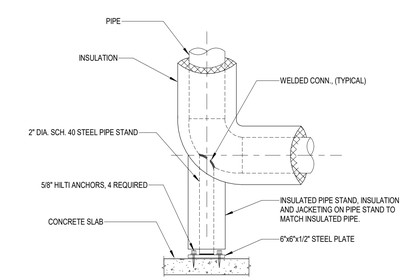


6 TYPICAL REFRIGERANT MONITOR
N.T.S.

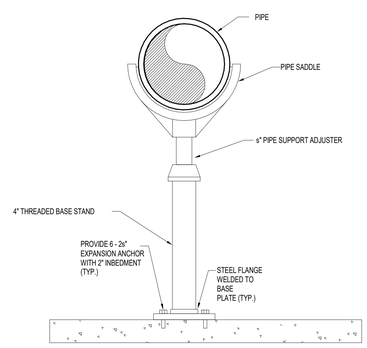


NOTE:
ALL COMPONENTS ARE FULL LINE SIZE UNLESS NOTED OTHERWISE.

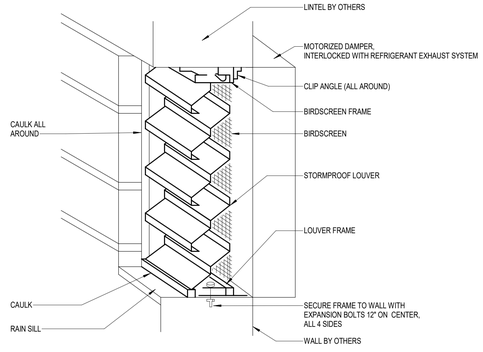
7 CHILLED WATER PUMP
N.T.S.



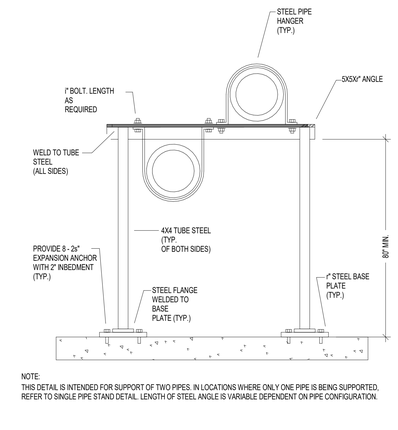
8 INSULATED VERTICAL PIPE SUPPORT
N.T.S.



9 TYPICAL SINGLE PIPE STAND DETAIL
N.T.S.



10 TYPICAL WALL LOUVER
N.T.S.



NOTE:
THIS DETAIL IS INTENDED FOR SUPPORT OF TWO PIPES. IN LOCATIONS WHERE ONLY ONE PIPE IS BEING SUPPORTED, REFER TO SINGLE PIPE STAND DETAIL. LENGTH OF STEEL ANGLE IS VARIABLE DEPENDENT ON PIPE CONFIGURATION.

11 PIPE STAND
N.T.S.

Revisions:	Date:

CONTRACTOR
MORAN CONSTRUCTION, INC
113 KING ST
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ENGINEER OF RECORD
STRUCTURAL/MEP:
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TLC ENGINEERING SOLUTIONS THINK. LISTEN. CREATE.

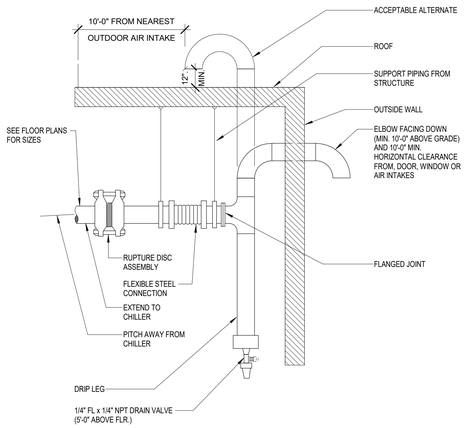
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	MECHANICAL DETAILS
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	JTW
Drawn	BKG
Project Number	675-18-151
Building Number	–
Drawing Number	M-501
	43 OF 68

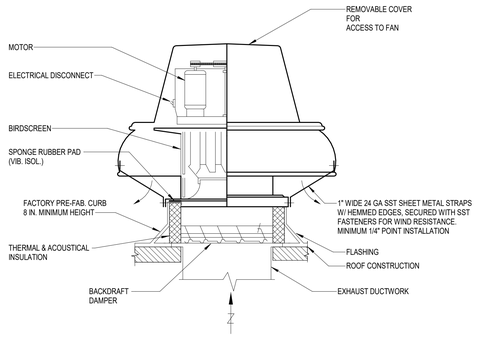
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RELIEF PIPING SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH ASHRAE STANDARD 15. MINIMUM RELIEF PIPING SIZE INDICATED ON FLOOR PLAN. DEVIATION FROM SIZE INDICATED IS ACCEPTABLE ONLY AFTER RECOMMENDATION FROM CHILLER MANUFACTURER AND APPROVAL OF THE ENGINEER.

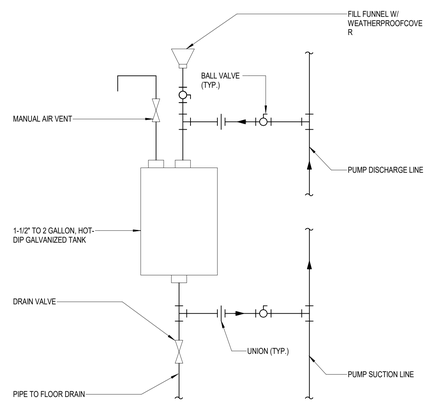
COORDINATE RELIEF PIPING REQUIREMENTS WITH CHILLER MANUFACTURER.

1 RUPTURE DISC & REFRIGERANT RELIEF PIPING
N.T.S.

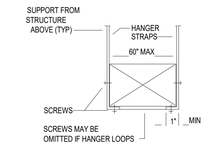


NOTE:
ALL ROOF MOUNTED EQUIPMENT MUST ADHERE TO CURRENT HRRICANE CODE REGRDING ROOF TIE-IN AND WIND RESISTANCE.

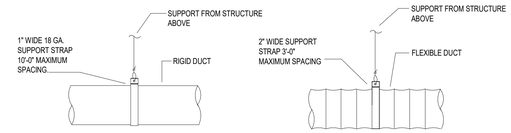
2 ROOF MOUNTED EXHAUST FAN
NTS



3 CHEMICAL SHOT FEEDER
N.T.S.



NOTE: STRAP HANGER SIZE (WIDTH x THICK-NESS) AND MAXIMUM HANGER SPACING SHALL COMPLY WITH REQUIREMENTS OF SECTION IV SMACNA HVAC DUCT CONSTRUCTION STANDARDS.



STRAP HANGER - ROUND DUCT

4 TYPICAL DUCT SUPPORT
N.T.S.

Revisions:	Date:

CONTRACTOR

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ENGINEER OF RECORD

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TLC ENGINEERING SOLUTIONS THINK. LISTEN. CREATE.

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Office of Construction and Facilities Management

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Drawing Title: MECHANICAL DETAILS	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA		Project Number: 675-18-151
				Building Number: -
Approved:	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940		Drawing Number: M-502
		Issue Date: 12-20-2019	Checked: JTW / Drawn: BKG	44 OF 68

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WATER COOLED CHILLER SCHEDULE

MARK	NOMINAL TONS	REFRIGERANT		EVAPORATOR DATA				CONDENSER DATA				IPLV	FULL LOAD KW/TON	ELECTRICAL					BASIS OF DESIGN
		TYPE	CHARGE (LBS)	FLOW (GPM)	PRESSURE DROP (PSI)	EWT (DEG F)	LWT (DEG F)	FLOW (GPM)	PRESSURE DROP (PSI)	EWT (DEG F)	LWT (DEG F)			MCA	MOCP	PHASE	VOLTAGE	STARTER	
CH-1	400	R-514A	550	800	22	54	42	1200	16	85	95	0.3737	0.5899	392	600	3	460	VFD	TRANE CVHE-400
CH-2	400	R-514A	550	800	22	54	42	1200	16	85	95	0.3737	0.5899	392	600	3	460	VFD	TRANE CVHE-400
CH-3	400	R-514A	550	800	22	54	42	1200	16	85	95	0.3737	0.5899	392	600	3	460	VFD	TRANE CVHE-400

NOTES:
1. PROVIDE BASIN SINGLE POINT ELECTRICAL SONNECTION.
2. PROVIDE UNIT MOUNTED VFDS.

COOLING TOWER SCHEDULE

MARK	AMBIENT WET BULB	WATER FLOW (GPM)	EWT (DEG F)	LWT (DEG F)	FAN MOTOR HP	ELECTRICAL		BASIS OF DESIGN
						PHASE	VOLTAGE	
CT-1	80.0	1200	95	85	30	3	460	MARLEY NC8405SAN3
CT-2	80.0	1200	95	85	30	3	460	MARLEY NC8405SAN3
CT-3	80.0	1200	95	85	30	3	460	MARLEY NC8405SAN3

NOTES:
1. PROVIDE BASIN SWEEPER PIPING SYSTEM AND SIDESTREAM CENTRIFUGAL DIRT SEPERATOR.
2. BASIN HEATERS.

PUMP SCHEDULE

MARK	SERVICE	FLOW (GPM)	TDH (FT)	NPSHR (FT)	MINN. EFF. (%)	MOTOR HP	MOTOR RPM	ELECTRICAL		BASIS OF DESIGN	NOTES
								PHASE	VOLTAGE		
CWP-1	CONDENSER WATER	1200	40	8.3	82	20	1800	3	460	TACO-FI5009D	1
CWP-2	CONDENSER WATER	1200	40	8.3	82	20	1800	3	460	TACO-FI5009D	1
CWP-3	CONDENSER WATER	1200	40	8.3	82	20	1800	3	460	TACO-FI5009D	1
CHWP-1	CHILLED WATER	800	120	21.5	80	40	1800	3	460	TACO-FI4013D	1
CHWP-2	CHILLED WATER	800	120	21.5	80	40	1800	3	460	TACO-FI4013D	1
CHWP-3	CHILLED WATER	800	120	21.5	80	40	1800	3	460	TACO-FI4013D	1

NOTES:
1. PROVIDE VFD WITH FUSED DISCONNECT.

FAN COIL UNIT SCHEDULE

MARK	FAN CFM	FAN MOTOR HP	COOLING COIL				ELECTRICAL			BASIS OF DESIGN	NOTES
			TOTAL CAP (MBH)	SENS CAP (MBH)	CHW EWT/LWT (DEG F)	CHW FLOW (GPM)	FLA	PHASE	VOLTAGE		
FCU-3	6800	3.0	237	55	42 / 56	33.8	11.5	3	208	TRANE UCCAA14	1,2

NOTES:
1. PROVIDE DISCONNECT.
2. PROVIDE MERV 8 RATED FILTERS.

EXPANSION TANK SCHEDULE

MARK	SERVICE	TANK VOLUME (GAL)	SIZE (IN)		OPERATING WEIGHT	WORKING PRESSURE	CONNECTION SIZE	BASIS OF DESIGN	NOTES
			H	DIA.					
ET-1	CHILLED WATER	119	70	24	1150	125 PSI	1 1/2"	TACO CA450-125	1, 2

NOTES:
1. TANK SHALL BE BLADDER TYPE
2. NOMINAL VOLUME LISTED

EXHAUST FAN SCHEDULE

MARK	TYPE	CFM	ESP (IN)	MOTOR HP	ELECTRICAL			BASIS OF DESIGN
					FLA	PHASE	VOLTAGE	
EH-1	UPBLAST ROOF EXHAUST	2900	1.0	1	2.1	3	460	GREENHECK GB-161

NOTES:
1. FAN SHALL RUN CONTINUOUSLY.

AIR SEPARATOR SCHEDULE

MARK	SERVICE	PIPE SIZE	FLOW RATE (GPM)	OPERATING WEIGHT (LBS)	BASIS OF DESIGN	NOTES
AS-1	CHILLED WATER	10"	1400	1200	TACO AC10-125	1

NOTES:
1. INSULATE PER DETAILS

Revisions:	Date:

CONTRACTOR
MORAN CONSTRUCTION, INC
113 KING ST
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ENGINEER OF RECORD
STRUCTURAL/MEP:
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Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL SCHEDULES
Approved:
Phase: 100% CONSTRUCTION DOCUMENTS
FULLY SPRINKLERED
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date: 12-20-2019
Checked: JTW
Drawn: BKG
Project Number: 675-18-151
Building Number: -
Drawing Number: M-601
45 OF 68

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SYSTEM GENERAL DESCRIPTION:
THE CHILLED WATER / CONDENSER WATER SYSTEM CONSISTS OF THE FOLLOWING:
- THREE (3) CHILLERS, CONFIGURED AS: ONE (1) LEAD, ONE (1) LAG, AND ONE (1) STANDBY
- THREE (3) MANIFOLDED, CONSTANT-SPEED CONDENSER WATER PUMPS: ONE (1) LEAD, ONE (1) - LAG AND ONE (1) STANDBY
- ONE (1) CONDENSER WATER ISOLATION VALVE PER CHILLER
- THREE (3) COOLING TOWERS WITH VALVES
- THREE (3) MANIFOLDED, VARIABLE-SPEED PRIMARY CHILLED WATER PUMPS: ONE (1) LEAD, ONE (1) LAG AND ONE (1) STANDBY
- ONE (1) CHILLED WATER ISOLATION VALVE PER CHILLER

THE BUILDING AUTOMATION SYSTEM (BAS) CONTROLLER PROVIDES STAND-ALONE CONTROL OR CONTROL FROM A HIGHER LEVEL BAS OF THE CONDENSER WATER SETPOINT (ADJ.) BY CONTROLLING THE TOWER FAN VFD ENABLE/DISABLE AND SPEED CONTROL INPUTS AND THE TOWER BYPASS VALVE POSITION SIGNAL INPUT. THE CONTROLLER AND OPTIONAL HIGHER LEVEL BAS ALSO CONTROLS THE CHILLER CONDENSER DIFFERENTIAL PRESSURE SETPOINT (ADJ.) BY CONTROLLING THE CONDENSER WATER PUMP VFD ENABLE/DISABLE AND SPEED CONTROL INPUTS.

THE BUILDING AUTOMATION SYSTEM (BAS) CONTROLLER PROVIDES STAND-ALONE CONTROL OR CONTROL FROM A HIGHER LEVEL BAS AND PROVIDES LEAD/LAG/STANDBY CONTROL FOR THE CHILLED WATER PUMPS AND MAINTAINS MINIMUM FLOW THROUGH OPERATING CHILLERS.

CHILLED WATER SYSTEM ENABLE/DISABLE:
THE CHILLED WATER SYSTEM SHALL BE ENABLED ON A CONTACT CLOSURE FROM ANY SYSTEM CHILLER, WHEN ENABLED, THE BAS CONTROLLER SHALL OPEN THE ISOLATION VALVE AND START THE LEAD CHILLED WATER PUMP. AS ADDITIONAL CHILLERS MAKE CHILLED WATER REQUESTS, THE NEXT PUMP IN THE SEQUENCE SHALL BE ENABLED AND CHILLER ISOLATION VALVES OPENED.

WHEN THE CHILLED WATER SYSTEM IS DISABLED, THE CHILLED WATER PUMPS SHALL BE OFF AND THE ISOLATION VALVES SHALL BE CLOSED UNLESS REQUESTED BY ONE OF THE CHILLERS. THE ISOLATION VALVE FOR THE FIRST CHILLER IN THE SEQUENCE SHALL BE AN EXCEPTION TO THIS. IF THE PLANT IS DISABLED, THE ISOLATION VALVE FOR THAT CHILLER SHALL BE OPENED SO THAT THE PUMP CAN START IMMEDIATELY WHEN THE PLANT IS ENABLED.

CHILLER LEAD/LAG:
THE CHILLER LEAD/LAG SEQUENCE SHALL BE ROTATED ON A WEEKLY SCHEDULE. THE SEQUENCE SHALL BE BASED ON CALCULATED RUN TIME WITH THE CHILLER HAVING THE LEAST RUN TIME AS LEAD, THE CHILLER WITH THE HIGHER RUN TIME SHALL BE THE LAG CHILLER. FROM THE BAS OR WITH TRACER TU AN OPERATOR SHALL BE ABLE TO MANUALLY CHANGE THE LEAD/LAG/STANDBY SEQUENCE.

THE LEAD CHILLER SHALL OPERATE UNDER INTERNAL CONTROLS TO MAINTAIN THE CHILLED WATER SUPPLY SETPOINT OF 42 DEG. F (ADJ.)AS MEASURED AT THE CHILLED WATER SUPPLY HEADER. IF THE CHILLED WATER SETPOINT CANNOT BE MAINTAINED BY A MARGIN OF 2 DEG. F (ADJ.) FOR A PERIOD OF 10 MINUTES (ADJ.), THE BAS SHALL START THE LAG CHILLER.

WHEN THE BAS CALLS FOR THE LAG SHILLER TO START, THE CHILLED WATER BYPASS VALVE SHALL MODULATE OPEN TO ENSURE MINIMUM FLOW THROUGH BOTH CHILLERS.

WHEN BOTH CHILLERS HAVE BEEN RUNNING AT LESS THAN 40% RLA (ADJ.) FOR MORE THAN 5 MINUTES (ADJ.), THE LAG CHILLER SHALL BE STOPPED.

PRIMARY CHILLED WATER PUMP START/STOP:
THE BAS CONTROLLER SHALL START A CHILLED WATER PUMP THROUGH A CONTACT CLOSURE OF THE PUMPS VARIABLE FREQUENCY DRIVE (VFD) DRIVE RUN-ENABLE CONTACTS.

PRIMARY CHILLED WATER PUMP STATUS:
THE BAS CONTROLLER SHALL DETECT CHILLED WATER PUMP RUN STATUS BY A VFD CURRENT SWITCH.

PRIMARY CHILLED WATER PUMP LEAD/LAG:
THE CHILLED WATER PUMP LEAD/LAG SEQUENCE SHALL BE ROTATED ON A WEEKLY SCHEDULE. THE SEQUENCE SHALL BE BASED ON CALCULATED RUN TIME WITH THE PUMP HAVING THE LEAST RUN TIME AS LEAD, THE PUMP WITH THE HIGHER RUN TIME SHALL BE THE LAG PUMP. FROM THE BAS OR WITH TRACER TU AN OPERATOR SHALL BE ABLE TO MANUALLY CHANGE THE LEAD/LAG/STANDBY SEQUENCE.

PRIMARY CHILLED WATER PUMP FAILURE:
IF THE LEAD START/STOP RELAY IS ENABLED AND THE CURRENT SWITCH STATUS IS OFF FOR MORE THAN 30 SECONDS (ADJ.), THE BAS CONTROLLER SHALL ANNUNCIATE A CHILLED WATER PUMP FAILURE ALARM TO THE BAS AND SHALL START THE NEXT PUMP IN THE SEQUENCE. ONCE THE PROBLEM HAS BEEN CORRECTED, THE OPERATOR SHALL BE ABLE TO CLEAR THE ALARM FAILURE FROM THE BAS CONTROLLER USING TRACER TU, FROM A BAS OR BY MANUALLY OVERRIDING THE PUMP ON MOMENTARILY.

THIS SHALL RE-ENABLE THE LEAD/LAG/STANDBY SEQUENCE.

PRIMARY CHILLED WATER PUMP SPEED:
THE BAS CONTROLLER SHALL MONITOR THE CHILLED WATER SYSTEM DIFFERENTIAL PRESSURE SENSOR. WHEN THE PUMP VFD IS ENABLED, THE BAS CONTROLLER SHALL CONTROL THE ANALOG SPEED SIGNAL THAT IS SENT TO THE PUMP VFD TO MAINTAIN THE CHILLED WATER DIFFERENTIAL PRESSURE SETPOINT OF 15 PSIG (ADJ.).

CHILLER ISOLATION VALVES:
CHILLER ISOLATION VALVES SHALL PREVENT THE FLOW OF WATER THROUGH NON-OPERATING CHILLERS. CHILLER CHILLED WATER PUMP OPERATION WILL BE COORDINATED WITH THE ISOLATION VALVE OPERATION.

CONDENSER WATER SYSTEM ENABLE/DISABLE:
THE CONDENSER WATER SYSTEM SHALL BE ENABLED ON A CONTACT CLOSURE FROM ANY CHILLER. WHEN ENABLED, THE BAS CONTROLLER SHALL START THE LEAD CONDENSER WATER PUMP AND CONTROL THE COOLING TOWER FANS AND TOWER BYPASS VALVE TO MAINTAIN THE CONDENSER WATER SETPOINT (ADJ.). AS ADDITIONAL CHILLERS MAKE CONDENSER WATER REQUESTS, THE LAG PUMP(S) WILL BE ENABLED.

WHEN THE CONDENSER WATER SYSTEM IS DISABLED, THE CONDENSER WATER PUMP AND COOLING TOWER FAN SHALL BE OFF.

CONDENSER PUMP START/STOP:
THE BAS CONTROLLER SHALL START A CONDENSER WATER PUMP THROUGH A CONTACT CLOSURE OF THE PUMP STARTER RUN-ENABLE CONTACTS.

CONDENSER PUMP STATUS:
THE BAS CONTROLLER SHALL DETECT CONDENSER WATER PUMP RUN STATUS BY A CURRENT SWITCH.

CONDENSER PUMP LEAD/STANDBY:
THE CONDENSER WATER PUMP LEAD/LAG SEQUENCE SHALL BE ROTATED ON A WEEKLY SCHEDULE. THE SEQUENCE SHALL BE BASED ON CALCULATED RUN TIME WITH THE PUMP HAVING THE LEAST RUN TIME AS LEAD, THE PUMP WITH THE HIGHER RUN TIME SHALL BE THE LAG PUMP. FROM THE BAS OR WITH TRACER TU AN OPERATOR SHALL BE ABLE TO MANUALLY CHANGE THE LEAD/LAG/STANDBY SEQUENCE.

CONDENSER PUMP FAILURE:
IF THE LEAD START/STOP RELAY IS ENABLED AND THE CURRENT SWITCH STATUS IS OFF FOR MORE THAN 30 SECONDS (ADJ.), THE BAS CONTROLLER SHALL ANNUNCIATE A CONDENSER WATER PUMP FAILURE ALARM TO THE BAS AND SHALL START THE NEXT PUMP IN THE SEQUENCE. ONCE THE PROBLEM HAS BEEN CORRECTED, THE OPERATOR SHALL BE ABLE TO CLEAR THE ALARM FAILURE FROM THE BAS CONTROLLER USING TRACER TU, FROM A BAS OR BY MANUALLY OVERRIDING THE PUMP ON MOMENTARILY.

THIS SHALL RE-ENABLE THE LEAD/LAG/STANDBY SEQUENCE.

CHILLER ISOLATION VALVES:
CHILLER ISOLATION VALVES SHALL PREVENT THE FLOW OF CONDENSER WATER THROUGH NON-OPERATING CHILLERS. CHILLER CONDENSER WATER PUMP OPERATION SHALL BE COORDINATED WITH THE ISOLATION VALVE OPERATION.

TOWER ISOLATION VALVES:
COOLING TOWERS SHALL OPERATE WITH CONDENSER WATER PUMPS. TOWER ISOLATION VALVES SHALL CONTROL IN CONJUNCTION WITH THE CONDENSER WATER SYSTEM AND ALLOW TOWER TEMPERATURE CONTROL TO FUNCTION.

TOWER BYPASS VALVE CONTROL:
WHEN THE CONDENSER WATER SYSTEM IS ENABLED, THE COOLING TOWER SHALL MAINTAIN THE ENTERING CONDENSER WATER TEMPERATURE BY FIRST MODULATING THE NORMALLY OPEN BYPASS VALVE. WHEN THE VALVE IS IN FULL TOWER BYPASS AND THE ENTERING CONDENSER WATER TEMPERATURE IS GREATER THAN THE ENTERING CONDENSER WATER T EMPERATURE SETPOINT MINUS 2.0 DEG. F (ADJ.), THE BYPASS VALVE SHALL BEGIN TO CLOSE SENDING WATER TO THE COOLING TOWER. THE BYPASS VALVE SHALL CONTINUE TO MODULATE CLOSED TO MAINTAIN THE ENTERING CONDENSER WATER TEMPERATURE SETPOINT WITHOUT THE TOWER FANS.

WHEN THE BYPASS VALVE IS FULLY CLOSED AND THE ENTERING CONDENSER WATER TEMPERATURE REACHES CONDENSER WATER TEMPERATURE SETPOINT PLUS 2.0 DEG. F(ADJ.) THE CONDENSER WATER TEMPERATURE SHALL BE MAINTAINED BY OPERATING THE COOLING TOWER FANS TO MAINTAIN THE ENTERING CONDENSER WATER TEMPERATURE SETPOINT.

CONDENSER WATER TEMPERATURE RESET:
CONDENSER WATER SUPPLY TEMPERATURE SETPOINT SHALL BE RESET TO MAINTIN A SUPPLY TEMP 7 DEG. F (ADJ) ABOVE THE OUTDOOR WET BULB TEMPERATURE.

TOWER FAN CONTROL:
COOLING TOWER SEQUENCE SHALL BE ROTATED ON A WEEKLY SCHEDULE. FROM THE BAS OR THE SERVICE TOOL AN OPERATOR SHALL BE ABLE TO MANUALLY CHANGE THE STAGING SEQUENCE. WHEN A CHILLER IS OPERATING AND THE COOLING TOWER BASIN TEMPERATURE RISES TO 2.0 DEG. F (ADJ.) ABOVE THE CURRENT TOWER LEAVING WATER SETPOINT THE LEAD ILAG COOLING TOWER FANS SHALL BE TURNED ON AT MINIMUM SPEED AND THE DDC CONTROL LOOP ENABLED. WHEN OPERATING FANS ARE RUNNING AT MINIMUM SPEED AND THE TOWER SUPPLY WATER TEMPERATURE IS 5.0 DEG. F (ADJ.) BELOW THE CURRENT TOWER LEAVING WATER SETPOINT THE TOWER FANS SHALL BE TURNED OFF. COOLING TOWER FANS SHALL HAVE 5 MINUTE (ADJ.) MINIMUM ON AND OFF DELAYS.

TOWER FAN START/STOP:
THE BAS CONTROLLER SHALL START A TOWER FAN THROUGH A CONTACT CLOSURE OF THE FAN VFD RUN-ENABLE CONTACTS.

TOWER FAN STATUS:
THE BAS CONTROLLER SHALL DETECT TOWER FAN STATUS BY A VFD CURRENT SWITCH.

TOWER FAN FAILURE:
IF THE LEAD TOWER FAN START/STOP RELAY IS ENABLED AND THE CURRENT SWITCH STATUS IS OFF FOR MORE THAN 15 SECONDS (ADJ.), THE BAS CONTROLLER SHALL ANNUNCIATE A TOWER FAN FAILURE ALARM TO THE BAS AND START THE STANDYBY TOWER IN THE SEQUENCE. WHEN A TOWER FAN FAILURE EXISTS, LEAD/LAG/STANDBY AUTOMATION SHALL BE DISABLED AND THE CURRENTLY RUNNING TOWER CELL BECOMES LEAD CELL. ONCE THE PROBLEM HAS BEEN CORRECTED, THE OPERATOR SHALL BE ABLE TO CLEAR THE ALARM FAILURE FROM THE BAS CONTROLLER USING TRACER TU, FROM A BAS, OR BY MOMENTARILY OVERRIDING THE FAN ON. THIS ACTION SHALL RE-ENABLE THE LEAD/LAG/STANDBY SEQUENCE.

COOLING TOWER SUMP CONTROL:
THE SUMP HEAT SHALL ONLY BE ENABLED WHEN THE OUTDOOR TEMPERATURE IS BELOW 45.0 DEG. F (ADJ.) AND THE SYSTEM IS DISABLED. SUMP HEATERS SHALL BE CONTROLLED TO MAINTAIN A SUMP WATER TEMPERATURE OF 38.0 DEG. F (ADJ.)

LEVEL ALARMS:
A MULTIPLE POSITION COOLING TOWER SUMP LEVEL SENSOR SHALL PROVIDE THE FOLLOWING INFORMATION TO THE BAS.
A) HIGH WATER ALARM
B) LOW WATER ALARM

CHILLED WATER SYSTEM I/O SUMMARY

SYSTEM POINT DESCRIPTION	POINT TYPE: GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	HARDWIRE INTERLOCK	DEFAULT VALUE	ALARMS: HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL	DIAGNOSTICS
COOLING TOWER 3 VIBRATION DETECTION LOCAL					X								
COOLING TOWER 2 VIBRATION DETECTION LOCAL					X								
COOLING TOWER VIBRATION DETECTION LOCAL					X								
CHILLED WATER RETURN TEMPERATURE LOCAL	X	AI					X	X					
CHILLED WATER SUPPLY TEMPERATURE LOCAL	X	AI					X	X					
CHILLED WATER SYSTEM DIFFERENTIAL...	X	AI					X	X					
CHILLER 1 CHW DIFFERENTIAL PRESSURE	X	AI					X	X					
CHILLER 2 CHW DIFFERENTIAL PRESSURE	X	AI					X	X					
CHILLER 3 CHW DIFFERENTIAL PRESSURE	X	AI					X	X					
COMMON CONDENSING WATER SUPPLY...	X	AI					X						
CONDENSER WATER DIFFERENTIAL PRESSURE	X	AI					X	X					
CT 1 BASIN LEVEL LOCAL LEVEL 1	X	AI							X				
CT 1 BASIN TEMPERTURE LOCAL	X	AI					X	X					
CT 1 CONDENSER WATER SUPPLY TEMPERATURE...	X	AI					X	X					
CT 2 BASIN LEVEL LOCAL LEVEL 1	X	AI							X				
CT 2 BASIN TEMPERTURE LOCAL	X	AI					X	X					
CT 2 CONDENSER WATER SUPPLY TEMPERATURE...	X	AI					X	X					
CT 3 BASIN LEVEL LOCAL LEVEL 1	X	AI							X				
CT 3 BASIN TEMPERTURE LOCAL	X	AI					X	X					
CT 3 CONDENSER WATER SUPPLY TEMPERATURE...	X	AI					X	X					
OUTDOOR AIR HUMIDITY LOCAL	X	AI									X		SENSOR FAILURE
OUTDOOR AIR TEMPERATURE LOCAL	X	AI									X		SENSOR FAILURE
CHILLED WATER PUMP 1 STATUS	X	BI								X	X		PUMP FAILURE
CHILLED WATER PUMP 2 STATUS	X	BI								X	X		PUMP FAILURE
CHILLED WATER PUMP 3 STATUS	X	BI								X	X		PUMP FAILURE
CHILLER 1 CHILLED WATER FLOW STATUS OPEN	X	BI											
CHILLER 1 CHILLED WATER PUMP REQUEST IN		BI											
CHILLER 1 CHW ISOLATION VALVE CLOSE		BI											
CHILLER 1 CHW ISOLATION VALVE OPEN		BI											
CHILLER 1 CONDENSER WATER FLOW STATUS...	X	BI											
CHILLER 1 CONDENSER WATER PUMP REQUEST IN		BI											
CHILLER 1 CW ISOLATION VALVE CLOSE		BI											
CHILLER 1 CW ISOLATION VALVE OPEN		BI											
CHILLER 2 CHILLED WATER FLOW STATUS OPEN	X	BI											
CHILLER 2 CHILLED WATER PUMP REQUEST IN	X	BI											
CHILLER 2 CHW ISOLATION VALVE CLOSE		BI											
CHILLER 2 CHW ISOLATION VALVE OPEN		BI											
CHILLER 2 CONDENSER WATER FLOW STATUS...	X	BI											
CHILLER 2 CONDENSER WATER PUMP REQUEST IN	X	BI											
CHILLER 2 CW ISOLATION VALVE CLOSE		BI											
CHILLER 2 CW ISOLATION VALVE OPEN		BI											
CHILLER 3 CHILLED WATER FLOW STATUS OPEN	X	BI											
CHILLER 3 CHILLED WATER PUMP REQUEST IN	X	BI											
CHILLER 3 CHW ISOLATION VALVE CLOSE		BI											
CHILLER 3 CHW ISOLATION VALVE OPEN		BI											
CHILLER 3 CONDENSER WATER FLOW STATUS...	X	BI											
CHILLER 3 CONDENSER WATER PUMP REQUEST IN	X	BI											
CHILLER 3 CW ISOLATION VALVE CLOSE		BI											
CHILLER 3 CW ISOLATION VALVE OPEN		BI											
CONDENSER WATER PUMP 1 STATUS	X	BI								X	X		PUMP FAILURE
CONDENSER WATER PUMP 2 STATUS	X	BI								X	X		PUMP FAILURE
CONDENSER WATER PUMP 3 STATUS	X	BI								X	X		PUMP FAILURE
COOLING TOWER 1 FAN VFD STATUS	X	BI								X	X		TOWER FAILURE
COOLING TOWER 2 FAN VFD STATUS	X	BI								X	X		TOWER FAILURE
COOLING TOWER 3 FAN VFD STATUS	X	BI								X	X		TOWER FAILURE
CT 1 OUTLET ISOLATION VALVE CLOSE		BI											
CT 1 OUTLET ISOLATION VALVE OPEN		BI											
CT 2 INLET ISOLATION VALVE CLOSE		BI											
CT 2 INLET ISOLATION VALVE OPEN		BI											
CT 2 OUTLET ISOLATION VALVE CLOSE		BI											
CT 2 OUTLET ISOLATION VALVE OPEN		BI											
CT1 INLET ISOLATION VALVE CLOSE		BI											
CT1 INLET ISOLATION VALVE OPEN		BI											
CT 3 INLET ISOLATION VALVE CLOSE		BI											
CT 3 INLET ISOLATION VALVE OPEN		BI											
CT 3 OUTLET ISOLATION VALVE CLOSE		BI											
CT 3 OUTLET ISOLATION VALVE OPEN		BI											

CHILLED WATER SYSTEM I/O SUMMARY

SYSTEM POINT DESCRIPTION	POINT TYPE: GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	HARDWIRE INTERLOCK	DEFAULT VALUE	ALARMS: HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL	DIAGNOSTICS
CHILLED WATER BYPASS VALVE	X		AO										
CHILLED WATER PUMP 1 SPEED	X		AO										
CHILLED WATER PUMP 2 SPEED	X		AO										
CHILLED WATER PUMP 3 SPEED	X		AO										
COMMON CONDENSING WATER BYPASS VALVE	X		AO										
CONDENSER WATER PUMP 1 SPEED	X		AO										
CONDENSER WATER PUMP 2 SPEED	X		AO										
CONDENSER WATER PUMP 3 SPEED	X		AO										
COOLING TOWER 1 FAN VFD SPEED	X		AO										
COOLING TOWER 2 FAN VFD SPEED	X		AO										
COOLING TOWER 3 FAN VFD SPEED	X		AO										
CHILLED WATER PUMP 1 START STOP	X		BO										
CHILLED WATER PUMP 2 START STOP	X		BO										
CHILLED WATER PUMP 3 START STOP	X		BO										
CHILLER 1 CHILLED WATER PUMP REQUEST OUT			BO										
CHILLER 1 CHW ISOLATION VALVE VALVE	X		BO										
CHILLER 1 CONDENSER WATER PUMP REQUEST...			BO										
CHILLER 1 CW ISOLATION VALVE VALVE	X		BO										
CHILLER 2 CHILLED WATER PUMP REQUEST OUT	X		BO										
CHILLER 2 CHW ISOLATION VALVE VALVE	X		BO										
CHILLER 2 CONDENSER WATER PUMP REQUEST...	X		BO										
CHILLER 2 CW ISOLATION VALVE VALVE	X		BO										
CHILLER 3 CHILLED WATER PUMP REQUEST OUT	X		BO										
CHILLER 3 CHW ISOLATION VALVE VALVE	X		BO										
CHILLER 3 CONDENSER WATER PUMP REQUEST...	X		BO										
CHILLER 3 CW ISOLATION VALVE VALVE	X		BO										
CONDENSER WATER PUMP 1 START STOP	X		BO										
CONDENSER WATER PUMP 2 START STOP	X		BO										
CONDENSER WATER PUMP 3 START STOP	X		BO										
COOLING TOWER 1 FAN VFD START STOP	X		BO										
COOLING TOWER 2 FAN VFD START STOP	X		BO										
COOLING TOWER 3 FAN VFD START STOP	X		BO										
CT 1 BASIN HEAT START/STOP	X		BO										
CT 1 OUTLET ISOLATION VALVE VALVE	X		BO										
CT 2 BASIN HEAT START/STOP	X		BO										
CT 2 INLET ISOLATION VALVE VALVE	X		BO										
CT 2 OUTLET ISOLATION VALVE VALVE	X		BO										
CT1 INLET ISOLATION VALVE VALVE	X		BO										
CT 3 BASIN HEAT START/STOP	X		BO										
CT 3 OUTLET ISOLATION VALVE VALVE	X		BO										
CT 3 INLET ISOLATION VALVE VALVE	X		BO										
CHILLER PLANT ENABLE				X		OFF							
CHILLED WATER SUPPLY TEMPERATURE SETPOINT				X		42.0 deg....							
OUTSIDE AIR TEMPERATURE ENABLE SETPOINT				X		60.0 deg. F							
BAS COMMUNICATION STATE				X								X	
CONTROLLER SPARE HARDWARE POINTS													
ANALOG INPUT(S)		4											
UNIVERSAL INPUT(S)		9											
ANALOG OUTPUT(S)			2										

AFS AIR FLOW STATION
AI ANALOG INPUT
AO ANALOG OUTPUT
BAS BUILDING AUTOMATION SYSTEM
BI BINARY INPUT
BO BINARY OUTPUT
CHW CHILLED WATER
CHWR CHILLED WATER RETURN
CHWS CHILLED WATER SUPPLY
CLS CLOSE
COMM COMMUNICATION
CW CONDENSER WATER
CWR CONDENSER WATER RETURN
CWS CONDENSER WATER SUPPLY
D DAMPER
DA DAMPER ACTUATOR
DDC DIRECT DIGITAL CONTROL
DIFF DIFFERENTIAL
ISO ISOLATION
NC NORMALLY CLOSED
NO NORMALLY OPEN
OPN OPEN
RTN RETURN
S/S START/STOP
SPD SPEED
STR START
STS STATUS
SUP SUPPLY
UCM COMM MODULE
VAL VALVE

1 CHILLED WATER SYSTEM SEQUENCE OF OPERATIONS
N.T.S.

2 BAS ABBREVIATIONS
N.T.S.

Revisions:	Date:

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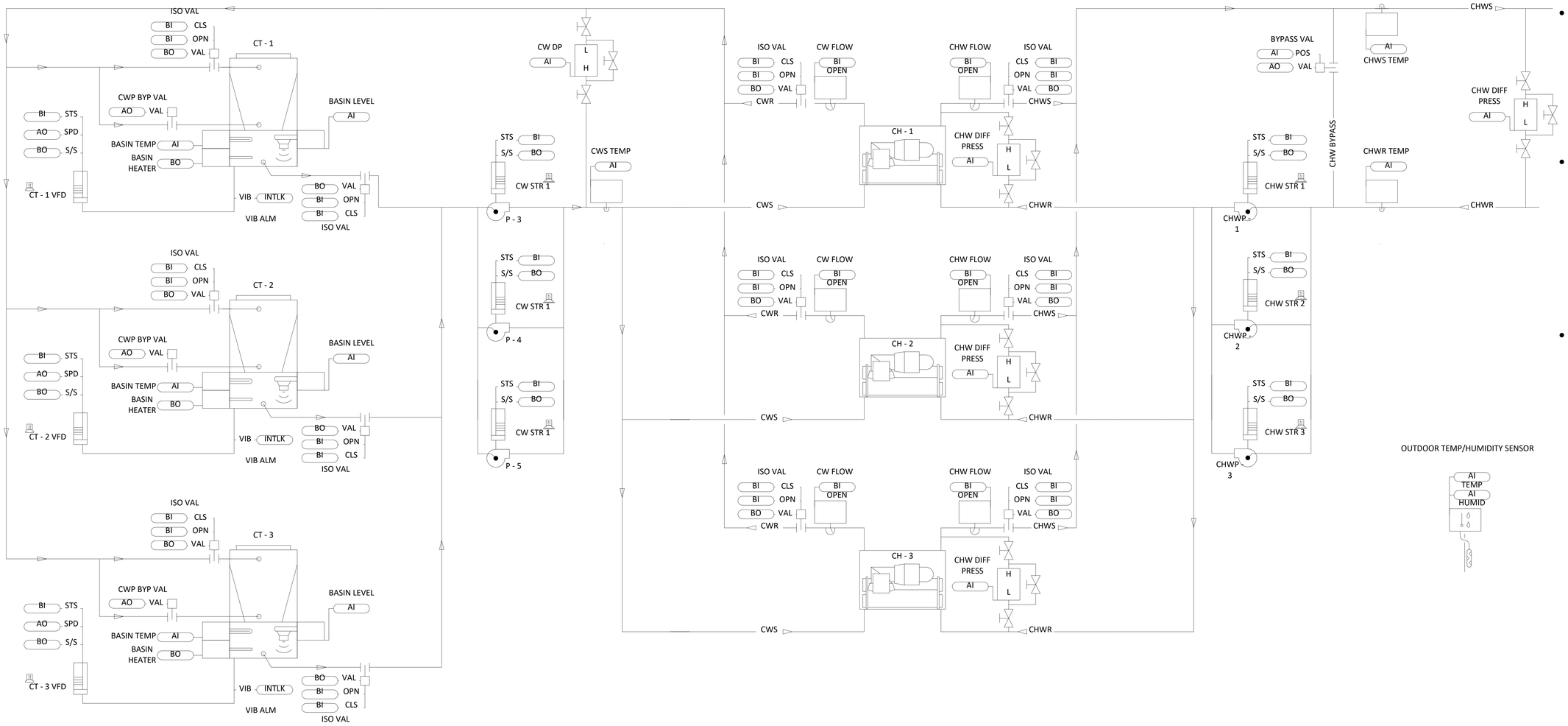
Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: BAS - MECHANICAL CHW SYSTEM SEQUENCE OF OPERATION
Phase: 100% CONSTRUCTION DOCUMENTS
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Project Number: 675-18-151
Building Number: -
Approved:
FULLY SPRINKLERED
Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date: 12-20-2019
Checked: JTW
Drawn: BKG
Drawing Number: M-701
46 OF 68

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GENERAL NOTES

A. DEVICES AND EQUIPMENT DIAGRAMMED ON THIS SHEET CORRESPOND WITH THE DIAGRAMS AND SEQUENCES SHOWN ON SHEET M-701.



1 CHW PLANT CONTROL DIAGRAM
N.T.S.

Revisions:	Date:

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TLC ENGINEERING SOLUTIONS
THINK. LISTEN. CREATE.

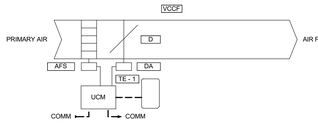
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	BAS - CHW PLANT CONTROL DIAGRAM
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	JTW
Drawn	BKG
Project Number	675-18-151
Building Number	-
Drawing Number	M-702
	47 OF 68

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VA



NOTE: AFS, D, DA AND UCM ARE FACTORY INSTALLED AND WIRED. TE(s) IS/ARE FIELD INSTALLED AND WIRED.

SEQUENCE OF OPERATION (TB'S WITH NO HEAT)

OCCUPANCY CONTROL
THE TERMINAL BOX CONTROLLER SHALL BE INDEXED TO THE OCCUPIED OR THE UNOCCUPIED MODE BY THE BAS. THE TIME SCHEDULE SHALL BE ADJUSTABLE AT THE OPERATOR'S WORKSTATION.

DURING THE UNOCCUPIED MODE THE CONTROLLER SHALL MAINTAIN A COOLING SETPOINT OF 85 DEG. F (ADJ.)

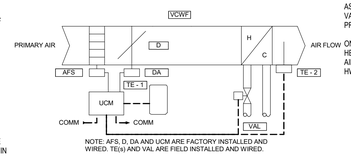
DURING THE OCCUPIED MODE THE CONTROLLER SHALL MAINTAIN A TENANT ADJUSTABLE SETPOINT. THE RANGE SHALL BE LIMITED TO 55 DEG. F.

OCCUPIED MODE - WHEN THE SPACE TEMPERATURE EXCEEDS THE COOLING SETPOINT THE DAMPER SHALL MODULATE TOWARD THE OPEN POSITION TO INCREASE AIR FLOW. A FALL IN ROOM TEMPERATURE BELOW THE SETPOINT, THE DAMPER SHALL SLOWLY MODULATE TOWARDS A CLOSED POSITION TO DECREASE THE AIRFLOW DOWN TO THE MINIMUM SCHEDULED VALUE AND CYCLE TO MAINTAIN SPACE TEMPERATURE.

UNOCCUPIED MODE – WHEN A SUFFICIENT NUMBER (AS DEFINED AT THE OPERATORS WORKSTATION – ADJ.) OF TERMINAL BOX SPACE TEMPERATURE SENSORS BELOW/ABOVE THE UNOCCUPIED SETBACK/SETUP TEMPERATURE, THE AIR HANDLING UNIT SHALL BE STARTED IF IN THE OFF POSITION. CONTROL SHALL BE AS DESCRIBED ABOVE FOR THE SETBACK/SETUP TEMPERATURE SETTINGS. THE AIR HANDING UNIT SHALL BE RUN FOR A MINIMUM OF 15 MINUTES TO LIMIT THE AMOUNT OF STARTS TO FOUR PER HOUR.

A MANUAL OVERRIDE BUTTON LOCATED ON THE ROOM TEMPERATURE SENSOR SHALL OVERRIDE THE UNOCCUPIED CYCLE FOR A PERIOD OF 2 HOURS (ADJ.) WHEN DEPRESSED, INDEXING THE BOX TO THE OCCUPIED CONTROL PARAMETERS.

VAV W/OUT REHEAT SEQUENCE OF OPERATIONS



NOTE: AFS, D, DA AND UCM ARE FACTORY INSTALLED AND WIRED. TE(s) AND VAL ARE FIELD INSTALLED AND WIRED.

SEQUENCE OF OPERATION FOR VAV TERMINAL UNITS WITH REHEAT

EACH TERMINAL UNIT SHALL BE PRESSURE INDEPENDENT WITH INDEPENDENT COOLING MAXIMUM AND MINIMUM AIRFLOW LIMITS, AND AN INDEPENDENT HEATING AIRFLOW SET POINT.

AS THE SPACE TEMPERATURE DROPS BELOW THE COOLING SET POINT OF 74 DEG. F (ADJ.) THE VAV TERMINAL'S DDC CONTROLLER SHALL GRADUALLY REDUCE SUPPLY AIR VOLUME TO A PRESET COOLING MINIMUM (ADJ.) AS SCHEDULED.

ON A FURTHER DROP IN SPACE TEMPERATURE, THE TERMINAL UNIT SHALL BE INDEXED TO HEATING MODE AND THE SUPPLY AIR VOLUME SHALL BE REST TO THE PRESET HEATING AIRFLOW SET POINT (ADJ.) AS SCHEDULED. THE CONTROLLER SHALL MODULATE THE TWO-WAY HW COIL CONTROL VALVE TO MAINTAIN THE HEATING SET POINT OF 70 DEG. F (ADJ.).

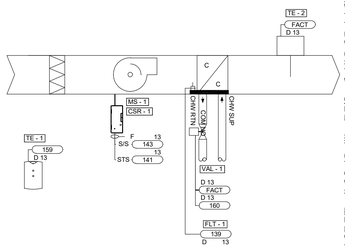
VAV W/ REHEAT SEQUENCE OF OPERATIONS

VAV SYSTEM POINTS LIST

SYSTEM POINT DESCRIPTION	VISIBLE TO USER AT WORKSTATION	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	DEFAULT VALUE	HARDWARE CONFIGURATION	APPLICATION PROGRAM: OPTIMAL START	OPTIMAL STOP	UNOCC. ECONOMIZING (NIGHT PURGE)	AIRSIDE ECONOMIZER ENABLE	DUCT PRESSURE OPTIMIZATION	VENTILATION OPTIMIZATION	SUPPLY AIR TEMPERATURE RESET
	POINT TYPE						APPLICATION PROGRAM						
OCCUPANCY MODE	x			X			X	X	X	X	X	X	X
VAV TERMINAL HEAT-COOL MODE	x			X			X	X	X	X	X	X	X
RTU HEAT-COOL MODE	x			X			X	X	X	X	X	X	X
ZONE TEMPERATURE	X			X			X	X	X				X
ZONE OCCUPIED COOLING SETPOINT				X			X	X	X				X
ZONE OCCUPIED HEATING SETPOINT				X			X	X					
FACILITY OUTDOOR DRY-BULB TEMPERATURE	X			X			X	X	X	X			X
FACILITY OUTDOOR RELATIVE HUMIDITY	X			X						X			X
AIRSIDE ECONOMIZER ENABLE	X			X					X	X			
ZONE VAV DAMPER POSITION REQUEST				X							X		X
FURTHEST OPEN VAV DAMPER POSITION	X			X							X		
FURTHEST OPEN VAV DAMPER ZONE NAME	X			X							X		
MINIMUM DUCT STATIC PRESSURE SETPOINT				X	1.0 in.						X		
MAXIMUM DUCT STATIC PRESSURE SETPOINT				X	2.0 in.						X		
ACTIVE DUCT STATIC PRESSURE SETPOINT	X			X							X		
ZONE PRIMARY AIRFLOW				X								X	
ZONE VENTILATION AIRFLOW SETPOINT				X								X	
ZONE VENTILATION RATIO				X								X	
HIGHEST ZONE VENTILATION RATIO	X			X								X	
HIGHEST ZONE VENTILATION RATIO ZONE NAME	X			X								X	
VENTILATION RATIO LIMIT (AT VAV TERMINAL)				X	60%							X	
VENTILATION RATIO LIMIT (AT RTU)				X								X	
ACTIVE AHU OUTDOOR AIRFLOW SETPOINT	X			X								X	
MINIMUM SUPPLY AIR TEMPERATURE SETPOINT				X	55F								X
MAXIMUM SUPPLY AIR TEMPERATURE SETPOINT				X	60F								X
STARTUP SUPPLY AIR TEMPERATURE SETPOINT				X	55F								X
OUTDOOR TEMPERATURE TO BEGIN SAT RESET				X	65F								X
OUTDOOR TEMPERATURE TO END SAT RESET				X	55F								X
ACTIVE SUPPLY AIR TEMPERATURE SETPOINT	X			X									X
OUTDOOR DEW POINT TO DISABLE SAT RESET				X	60F								X
MINIMUM ZONE TEMPERATURE	X			X									
MINIMUM ZONE TEMPERATURE ZONE NAME	X			X									
MAXIMUM ZONE TEMPERATURE	X			X									
MAXIMUM ZONE TEMPERATURE ZONE NAME	X			X									
AVERAGE ZONE TEMPERATURE	X			X									
NOTES:													

FAN COIL UNIT - SYSTEM POINT LIST

SYSTEM POINT DESCRIPTION		GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	DEFAULT VALUE	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL	DIAGNOSTICS	NOTES:
		POINT TYPE					ALARMS							
ZONE SENSOR	ZONE TEMPERATURE (THERM)	X	AI				X	X			X		SENSOR FAILURE	
	ZONE TEMPERATURE SETPOINT		AI								X		SENSOR FAILURE	NOTE 1
	ON/CANCEL													NOTE 1
SUPPLY FAN START/STOP		X		BO										
CHILLED WATER COIL VALVE		X		AO										
HOT WATER COIL VALVE		X		AO										
MIXED AIR TEMPERATURE		X	AI				X	X			X		SENSOR FAILURE	
ZONE HUMIDITY		X	AI				X	X			X		SENSOR FAILURE	
DISCHARGE AIR TEMPERATURE		X	AI				X	X			X		SENSOR FAILURE	
LOW LIMIT THERMOSTAT		X	BI						X	X			LOW LIMIT TEMPERATURE	NOTE 2
SUPPLY FAN STATUS		X	BI						X	X			FAN FAILURE	
FILTER STATUS		X	BI						X				DIRTY FILTER	
OCCUPIED COOLING SETPOINT					X	74°F								
OCCUPIED HEATING SETPOINT					X	70°F								
OCCUPIED STANDBY COOLING SETPOINT					X	80°F								
OCCUPIED STANDBY HEATING SETPOINT					X	65°F								
OCCUPIED BYPASS TIMER					X	2.0 HRS								
RETURN AIR TEMPERATURE LOW LIMIT SETPOINT					X	50°F								
DISCHARGE AIR COOLING SETPOINT					X	55°F								
DISCHARGE AIR HEATING SETPOINT					X	100°F								
BAS COMMUNICATION STATE		X			X							X		NOTE 3
CONTROLLER SPARE HARDWARE POINTS														
UNIVERSAL INPUT(S)			4											NOTE 4 & 5
ANALOG OUTPUT(S)				4										NOTE 4
BINARY OUTPUT(S)				5										NOTE 4
NOTES:														
	1. OPTIONAL FEATURE													
	2. DEVICE IS HARDWIRE INTERLOCKED TO FAN STARTER, MANUAL RESET REQUIRED													
	3. DISPLAYED AT THE BAS USER INTERFACE IF PRESENT													
	4 SPARE OR UNUSED POINTS													
	5. CONTROLLER WILL ACCEPT RTD SENSOR ON INPUTS 1-4 ONLY													



SEQUENCE OF OPERATIONS: FCU WITH HYDRONIC COOLING/HEATING

BUILDING AUTOMATION SYSTEM INTERFACE:
THE BAS WILL SEND OCCUPIED, UNOCCUPIED, OPTIMAL START, NIGHT 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.

UNOCCUPIED (NIGHT SETBACK):
WHEN THE SPACE TEMPERATURE IS BELOW THE UNOCCUPIED HEATING SETPOINT(60°F ADJ.) THE SUPPLY FAN WILL START AND THE HOT WATER VALVE WILL OPEN. 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 AND THE HOT WATER VALVE WILL CLOSE. WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT (85°F ADJ) THE SUPPLY FAN WILL START AND THE CHILLED WATER VALVE WILL OPEN. 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 AND THE CHILLED WATER VALVE WILL CLOSE.

OCCUPIED:
DURING OCCUPIED PERIODS THE SUPPLY FAN WILL RUN CONTINUOUSLY. ALL VALVES WILL MODULATE TO MAINTAIN THE ACTIVE SPACE TEMPERATURE SETPOINT.

SPACE TEMPERATURE CONTROL:
THE SPACE TEMPERATURE WILL BE MAINTAINED BETWEEN THE OCCUPIED COOLING SETPOINT (74°F ADJ.) AND THE OCCUPIED HEATING SETPOINT (71°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 (71°F ADJ).

MORNING WARM-UP:
DURING OPTIMAL START, IF THE SPACE TEMPERATURE IS 3°F O R MORE BELOW THE OCCUPIED HEATING SETPOINT, A MORNING WARM-UP SEQUENCE WILL BE ACTIVATED. THE SUPPLY FAN WILL START AND THE HOT WATER VALVE WILL OPEN TO RAISE THE SPACE TEMPERATURE TO THE OCCUPIED HEATING SETPOINT. MODE WILL TERMINATE WHEN THE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT.

MORNING COOL-DOWN:
DURING OPTIMAL START, IF THE SPACE TEMPERATURE IS 3°F A BOVE THE OCCUPIED COOLING SETPOINT, A MORNING COOL-DOWN SEQUENCE WILL BE ACTIVATED. THE SUPPLY FAN WILL START AND THE CHILLED WATER VALVE WILL OPEN TO LOWER THE SPACE TEMPERATURE TO THE OCCUPIED COOLING SETPOINT. MODE WILL TERMINATE WHEN THE SPACE TEMPERATURE REACHES THE OCCUPIED COOLING SETPOINT.

SUPPLY FAN OPERATION:
THE FAN WILL BE OFF IN THE UNOCCUPIED MODE. WHEN THE CONTROLLER IS IN THE OCCUPIED MODE THE FAN WILL TURN ON AND RUN UNTIL THE CONTROLLER TURNS THE UNIT OFF.

FCU W/ HEAT & COOL SEQUENCE OF OPERATIONS

Revisions:	Date:

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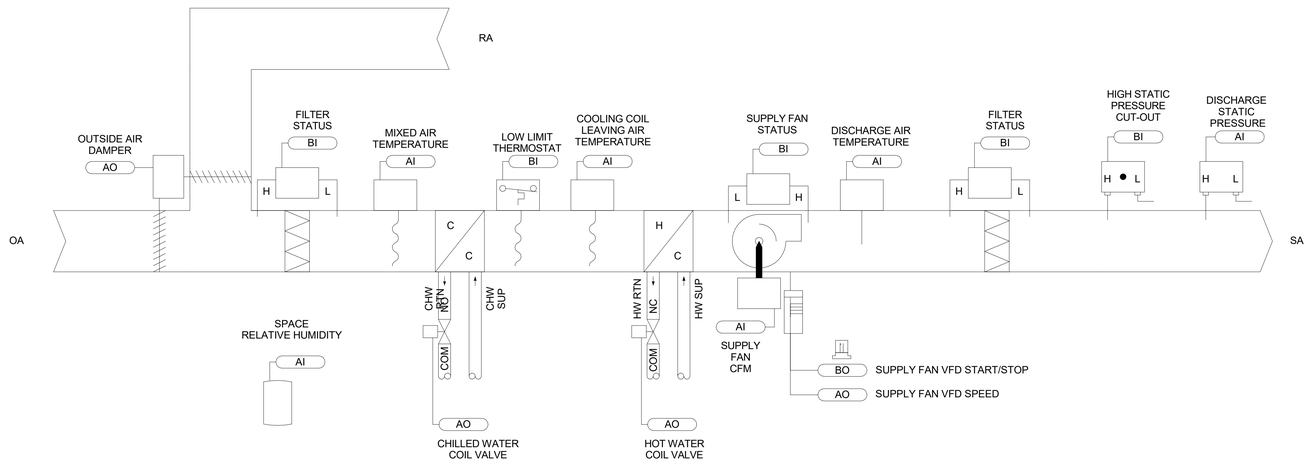
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Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: BAS - MECHANICAL EQUIPMENT SEQUENCES OF OPERATION
Phase: 100% CONSTRUCTION DOCUMENTS
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Project Number: 675-18-151
Building Number: -
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Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date: 12-20-2019
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48 OF 68

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VA



SEQUENCE OF OPERATIONS

BUILDING AUTOMATION SYSTEM INTERFACE:
THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE CONTROLLER OCCUPIED BYPASS, MORNING WARM-UP/PRE-COOL, OCCUPIED/UNOCCUPIED AND HEAT/COOL MODES. THE BAS SHALL ALSO SEND THE DISCHARGE AIR TEMPERATURE SETPOINT AND THE DUCT STATIC PRESSURE SETPOINT. IF A BAS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BAS THE CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS.

OCCUPIED:
DURING OCCUPIED PERIODS, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN MINIMUM VENTILATION REQUIREMENTS. THE CHILLED WATER AND HOT WATER VALVES SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. IF ECONOMIZING IS ENABLED THE OUTSIDE AIR DAMPER SHALL ALSO MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. IF THE DISCHARGE AIR TEMPERATURE SENSOR FAILS THE CHILLED WATER AND HOT WATER VALVES SHALL CLOSE AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS.

UNOCCUPIED:
WHEN THE SPACE TEMPERATURE IS BELOW THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL START. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AND THE HOT WATER VALVE SHALL OPEN. WHEN THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) PLUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP AND THE HOT WATER VALVE SHALL CLOSE. WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL START, THE OUTSIDE AIR DAMPER SHALL OPEN IF ECONOMIZING IS ENABLED AND REMAIN CLOSED IF ECONOMIZING IS DISABLED AND THE CHILLED WATER VALVE SHALL OPEN. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP, THE CHILLED WATER VALVE SHALL CLOSE AND THE OUTSIDE AIR DAMPER SHALL CLOSE.

OPTIMAL START:
THE BAS SHALL MONITOR THE SCHEDULED OCCUPIED TIME, OCCUPIED SPACE SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL START OCCURS.

MORNING WARM-UP MODE:
DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT A MORNING WARM-UP MODE SHALL BE ACTIVATED. WHEN MORNING WARM-UP IS INITIATED THE UNIT SHALL ENABLE THE HEATING AND SUPPLY FAN. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED. WHEN THE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

PRE-COOL MODE:
DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS ABOVE THE OCCUPIED COOLING SETPOINT, PRE-COOL MODE SHALL BE ACTIVATED. WHEN PRE-COOL IS INITIATED THE UNIT SHALL ENABLE THE FAN AND COOLING OR ECONOMIZER. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, UNLESS ECONOMIZING. WHEN THE SPACE TEMPERATURE REACHES OCCUPIED COOLING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

OPTIMAL STOP:
THE BAS SHALL MONITOR THE SCHEDULED UNOCCUPIED TIME, OCCUPIED SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL STOP OCCURS. WHEN THE OPTIMAL STOP MODE IS ACTIVE THE UNIT CONTROLLER SHALL MAINTAIN THE SPACE TEMPERATURE TO THE SPACE TEMPERATURE OFFSET SETPOINT. OUTSIDE AIR DAMPER SHALL REMAIN ENABLED TO PROVIDE VENTILATION.

OCCUPIED BYPASS:
THE BAS SHALL MONITOR THE STATUS OF THE "ON" AND "CANCEL" BUTTONS OF THE SPACE TEMPERATURE SENSORS. WHEN AN OCCUPIED BYPASS REQUEST IS RECEIVED FROM A SPACE SENSOR, THE UNIT SHALL TRANSITION FROM ITS CURRENT OCCUPANCY MODE TO OCCUPIED BYPASS MODE AND THE UNIT SHALL MAINTAIN THE SPACE TEMPERATURE TO THE OCCUPIED SETPOINTS (ADJ.).

OCCUPIED HUMIDITY CONTROL:
IF THE SPACE RELATIVE HUMIDITY IS GREATER THAN 50% (ADJ.), THE CHILLED WATER VALVE SHALL MODULATE TO MAINTAIN SPACE RELATIVE HUMIDITY SETPOINT OF 50% (ADJ.) AND THE REHEAT VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE COOLING SETPOINT OF 55.0 DEG. F (ADJ.). MODE SHALL TERMINATE WHEN THE SPACE RELATIVE HUMIDITY FALLS BELOW THE RELATIVE HUMIDITY SETPOINT OF 50% (ADJ.) MINUS 3% (ADJ.). IF THE SPACE RELATIVE HUMIDITY SENSOR FAILS THE DEHUMIDIFICATION SEQUENCE SHALL BE TERMINATED AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS.

SUPPLY FAN:
THE FAN SHALL BE OFF IN THE UNOCCUPIED MODE. WHEN THE UNIT CONTROLLER IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY AND ITS SPEED SHALL BE MODULATED TO MAINTAIN THE DUCT STATIC PRESSURE SETPOINT. THE DUCT STATIC PRESSURE SETPOINT SHALL BE SENT BY THE BAS AND SHALL BE RESET BETWEEN THE MINIMUM AND MAXIMUM STATIC PRESSURE LIMITS TO MAINTAIN THE CRITICAL ZONE VAV AIR DAMPER IN A POSITION BETWEEN 65% AND 75% OPEN.

IF THE SUPPLY FAN FAILS TO PROVE STATUS FOR 30 SECONDS (ADJ.), THE FAN SHALL BE COMMANDED OFF, THE OUTSIDE AIR DAMPER SHALL CLOSE, ALL VALVES WILL CLOSE AND AN ALARM WILL BE ANNUNCIATED AT THE BAS. A MANUAL RESET SHALL BE REQUIRED TO RESTART THE FAN. A HARDWIRED, HIGH STATIC PRESSURE CUT-OFF SWITCH SHALL BE ELECTRICALLY INTERLOCKED WITH THE VARIABLE SPEED DRIVE. IF THE HIGH STATIC PRESSURE CUT-OFF SWITCH IS TRIPPED THE FAN SHALL STOP. THE OUTSIDE AIR DAMPER SHALL CLOSE, ALL VALVES WILL CLOSE AND AN ALARM WILL BE ANNUNCIATED AT THE BAS. A MANUAL RESET OF THE HIGH STATIC PRESSURE CUT-OFF SWITCH SHALL BE REQUIRED TO RESTART THE FAN.

MIXED AIR LOW LIMIT:
THE INITIAL DAMPER OPENING RATE SHALL BE LIMITED TO 2% PER MINUTE (ADJ.) UNTIL THE DAMPER HAS REACHED ITS MINIMUM VENTILATION POSITION. THE OUTSIDE AIR DAMPER SHALL MODULATE TO A POSITION LESS THAN THE MINIMUM DAMPER POSITION IF THE MIXED AIR TEMPERATURE DROPS BELOW 50.0 DEG. F (ADJ.). IF THE MIXED AIR TEMPERATURE SENSOR FAILS AN ALARM SHALL BE ANNUNCIATED AT THE BAS AND THE OUTSIDE AIR DAMPER SHALL RETURN TO THE MINIMUM POSITION.

FREEZE PROTECTION:
A HARDWIRED, LOW LIMIT TEMPERATURE SWITCH SHALL BE ELECTRICALLY INTERLOCKED WITH THE VARIABLE SPEED DRIVE. IF THE LOW LIMIT TEMPERATURE SWITCH IS TRIPPED 38.0 DEG. F (ADJ.), THE OUTSIDE AIR DAMPER SHALL CLOSE, ALL VALVES SHALL OPEN TO 100% (ADJUST PER CLIMATE) AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS. A MANUAL RESET OF THE LOW LIMIT TEMPERATURE SWITCH SHALL BE REQUIRED TO RESTART THE FAN.

FILTER STATUS:
A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER WHEN THE FAN IS RUNNING. IF THE SWITCH CLOSES DURING NORMAL OPERATION A DIRTY FILTER ALARM SHALL BE ANNUNCIATED AT THE BAS.

RTU SEQUENCE OF OPERATIONS

RTU SYSTEM POINT LIST

SYSTEM POINT DESCRIPTION	POINT TYPE: GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	DEFAULT VALUE	ALARMS: HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL	DIAGNOSTICS	NOTES:
SUPPLY FAN VFD START/STOP	X		BO										
SUPPLY FAN VFD SPEED	X		AO										
CHILLED WATER COIL VALVE	X		AO										
HOT WATER COIL VALVE	X		AO										
OUTSIDE AIR DAMPER	X		AO										
COOLING COIL DISCHARGE TEMPERATURE	X	AI				X	X			X		SENSOR FAILURE	
MIXED AIR TEMPERATURE	X	AI				X	X			X		SENSOR FAILURE	
ZONE HUMIDITY	X	AI				X	X			X		SENSOR FAILURE	
DISCHARGE AIR TEMPERATURE	X	AI				X	X			X		SENSOR FAILURE	
LOW LIMIT THERMOSTAT	X	BI						X	X			LOW LIMIT TEMPERATURE	NOTE 4
HIGH STATIC PRESSURE CUT-OUT	X	BI						X	X			HIGH STATIC PRESSURE	NOTE 4
SUPPLY FAN CFM	X	AI											
SUPPLY FAN STATUS	X	BI						X	X			FAN FAILURE	
FILTER STATUS	X	BI						X				DIRTY FILTER	
DISCHARGE STATIC PRESSURE	X	AI				X	X			X		SENSOR FAILURE	
OCCUPIED COOLING SETPOINT				X	74°F								
OCCUPIED HEATING SETPOINT				X	70°F								
OCCUPIED STANDBY COOLING SETPOINT				X	80°F								
OCCUPIED STANDBY HEATING SETPOINT				X	65°F								
UNOCCUPIED COOLING SETPOINT				X	85°F								
UNOCCUPIED HEATING SETPOINT				X	60°F								
OCCUPIED BYPASS TIMER				X	2.0 HRS								
MIXED AIR TEMPERATURE LOW LIMIT SETPOINT				X	50°F								
DISCHARGE AIR COOLING SETPOINT				X	55°F								
DISCHARGE AIR HEATING SETPOINT				X	100°F								
BAS COMMUNICATION STATE	X			X						X			NOTE 1
CONTROLLER SPARE HARDWARE POINTS													
UNIVERSAL INPUT(S)		2											NOTE 2 & 3
ANALOG OUTPUT(S)			2										NOTE 2
BINARY OUTPUT(S)			5										NOTE 2

NOTES:

1. DISPLAYED AT THE BAS USER INTERFACE IF PRESENT
2. SPARE OR UNUSED POINTS
3. CONTROLLER WILL ACCEPT RTD SENSOR ON INPUTS 1-4 ONLY
4. DEVICE IS HARDWIRE INTERLOCKED TO VFD, MANUAL RESET REQUIRED

Revisions:	Date:

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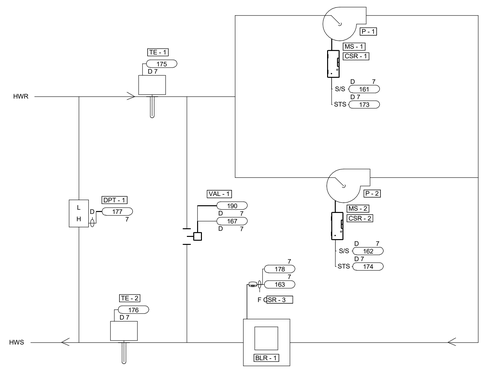
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Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: BAS - MECHANICAL EQUIPMENT SEQUENCES OF OPERATION
Approved:
Phase: 100% CONSTRUCTION DOCUMENTS
FULLY SPRINKLERED
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date: 12-20-2019
Checked: JTW
Drawn: BKG
Project Number: 675-18-151
Building Number: -
Drawing Number: M-704
49 OF 68

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SEQUENCE OF OPERATION – BOILER

LEAD PUMP SHALL RUN CONTINUOUSLY. ANY TIME HEATING HOT WATER TEMPERATURE FALLS BELOW SETPOINT, ELECTRIC BOILER SHALL START. ANYTIME HEATING HOT WATER RISES ABOVE SETPOINT ELECTRIC BOILER SHALL SHUT DOWN. THE LEAVING HOT WATER TEMPERATURE SHALL BE RESET INVERSELY WITH THE OUTDOOR AIR TEMPERATURE AS SCHEDULED. CONTROL POINT SHALL BE RESETTABLE FROM BAS. A LEAD/LAG PROGRAM SHALL ENSURE THAT MONTHLY ROTATION AND ALSO ENABLE LAG PUMP IF LEAD PUMP FAILS. PUMP STATUS SHALL BE MONITORED BY CURRENT SENSOR.

BYPASS VALVE CONTROL:
BYPASS VALVE IS TO BE MODULATED BY THE DDC BASED ON THE DIFFERENTIAL PRESSURE BETWEEN THE SUPPLY AND RETURN HOT WATER LINES. DIFFERENTIAL PRESSURE SETPOINT TO BE DETERMINED BY T&B.

BOILER SYSTEM SEQUENCE OF OPERATIONS

BOILER SYSTEM POINT LIST

SYSTEM POINT DESCRIPTION		POINT TYPE: GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	DEFAULT VALUE	ALARMS: HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL	DIAGNOSTICS	NOTES:
OA SENSOR	OUTSIDE AIR TEMP (THERM)	X	AI				X	X			X		SENSOR FAILURE	NOTE 2, 5
	OUTSIDE AIR RH (4-20MA, 0-100%)												SENSOR FAILURE	NOTE 1, 2
	BOILER 1 ENABLE	X		BO										
	HWP 1 START/STOP	X		BO										
	HWP 2 START/STOP	X		BO										
	HW SUPPLY TEMP (THERM)	X	AI				X	X			X		SENSOR FAILURE	NOTE 5
	HW RETURN TEMP (THERM)	X	AI				X	X			X		SENSOR FAILURE	NOTE 5
	HWP 1 STATUS	X	BI						X	X			PUMP FAILURE	
	HWP 2 STATUS	X	BI						X	X			PUMP FAILURE	
	BOILER 1 ALARM	X	BI						X				BOILER ALARM	
	CALL FOR DEHUMIDIFICATION HEAT				X	OFF								
	HW DISTRIBUTION SUPPLY TEMP SETPOINT				X	120-1...								
	OUTSIDE AIR TEMPERATURE ENABLE SETPOINT				X	60°F								
	HWP LEAD				X	1								
	BAS COMMUNICATION STATE	X			X							X		NOTE 3
CONTROLLER SPARE HARDWARE POINTS														
	UNIVERSAL INPUT(S)		2											NOTE 4 & 5
	ANALOG OUTPUT(S)			4										NOTE 4
	BINARY OUTPUT(S)			0										NOTE 4

NOTES:

1. OPTIONAL FEATURE
2. CAN BE A COMMUNICATED VALUE
3. DISPLAYED AT THE BAS USER INTERFACE IF PRESENT
4. SPARE OR UNUSED POINTS
5. CONTROLLER WILL ACCEPT RTD SENSOR ON INPUTS 1-4 ONLY

Revisions:	Date:

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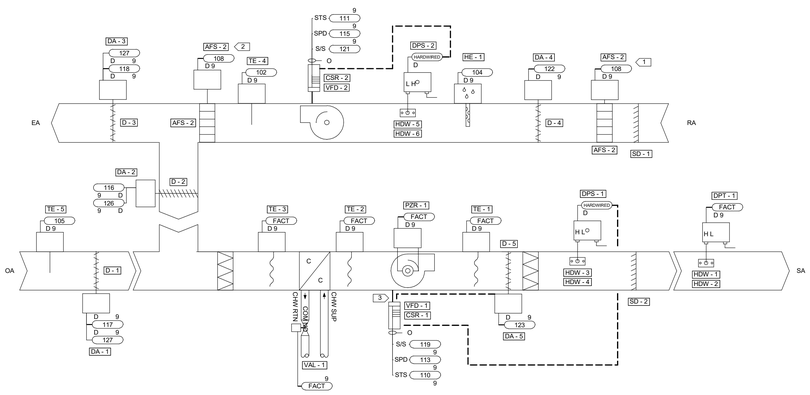
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Office of Construction and Facilities Management
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Drawing Title: BAS - MECHANICAL EQUIPMENT SEQUENCES OF OPERATION
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Phase: 100% CONSTRUCTION DOCUMENTS
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Checked: JTW
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TYPICAL FOR 2
AHU - 1 & 2



AHU 1 & 2 SEQUENCE OF OPERATIONS

SEQUENCE OF OPERATION FOR AHU – 1 & 2

GENERAL: UNIT IS NORMALLY STARTED AND STOPPED BY THE BAS. H-O-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "HAND" AND "OFF" SHALL BE USED ONLY OR MAINTENANCE. WHEN THE UNIT IS "OFF" D-1 SHALL BE FULLY CLOSED. WHEN THE UNIT IS "ON", DAMPER D-1 SHALL BE FULLY OPEN. DAMPER D-2 AND DAMPER D-3 SHALL MODULATE IN ACCORDANCE WITH THE SEQUENCE AS FOLLOWS. ASSOCIATED RETURN FAN SHALL BE INTERLOCKED TO RUN WHEN THE AHU IS ON. ASSOCIATED EXHAUST FAN SHALL BE INTERLOCKED TO RUN WHEN THE AHU IS ON.

TEMPERATURE CONTROL:
THE SUPPLY AIR TEMPERATURE SENSED BY TE-1 SHALL BE MAINTAINED AT SETPOINT (SET AT 55 DEG. ADJ.) BY DDC MODULATING CONTROL VALVE VAL-1 OR DAMPERS D-2 AND D-3 IN SEQUENCE. WHEN THE OUTSIDE AIR TEMPERATURE SENSED BY TE-5 IS ABOVE 65 DEG. F, DAMPER D-3 SHALL BE FULLY CLOSED AND DAMPERS D-1 AND D-2 SHALL BE FULLY OPENED. THE DDC SHALL MODULATE CONTROL VALVE VAL-1 TO MAINTAIN THE SUPPLY AIR TEMPERATURE SENSED BY TE-1. WHEN THE OUTSIDE AIR TEMPERATURE SENSED BY TE-5 IS BETWEEN 65 DEG. F AND THE SUPPLY AIR TEMP SETPOINT, DAMPER D-2 SHALL BE FULLY CLOSED AND DAMPERS D-1 AND D-3 SHALL BE FULLY OPENED. THE DDC SHALL MODULATE CONTROL VALVE VAL-1 TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT. WHEN THE OUTSIDE AIR TEMPERATURE SENSED BY TE-5 IS BELOW THE SUPPLY AIR TEMPERATURE SETPOINT, DAMPER D-1 SHALL BE FULLY OPENED AND DAMPERS D-2 AND D-3 SHALL MODULATE TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT.

AIR FLOW CONTROL :
THE SUPPLY AIRFLOW SHALL BE CONTROLLED BY THE DDC MODULATING THE SUPPLY FAN VARIABLE SPEED MOTOR CONTROLLER TO MAINTAIN THE DUCT STATIC PRESSURE SETPOINT (SET AT 1.50" STATIC PRESSURE ADJUSTABLE) SENSED BY DPT-1. THE DDC USING TOTAL SUPPLY AND RETURN AIRFLOWS SIGNALS, SHALL RESET THE RETURN AIR FAN VFD TO MAINTAIN A CONSTANT CFM DIFFERENCE BETWEEN CFM FOR SUPPLY FAN AND THE CFM FOR THE RETURN FAN. THE DCP USING HIGH PRESSURE SENSOR DPS-1 LOCATED AT FAN DISCHARGE SHALL PREVENT THE SUPPLY FAN FROM DEVELOPING OVER 4" OF STATIC PRESSURE. IF STATIC PRESSURE AT DPS-1 EXCEEDS 4" WC THE SUPPLY FAN SHALL SHUT DOWN.

FREEZE PROTECTION:
IF THE MIXED AIR TEMPERATURE FALLS BELOW 45 DEG.F, AN ALARM SIGNAL SHALL INDICATE AT THE OPERATOR'S WORKSTATION AND THE UNIT SUPPLY AND RETURN AIR SHALL SHUT DOWN.

AUTOMATIC SHUT DOWN/RESTART:
DUCT SMOKE DETECTORS SHALL BE HARD WIRED TO THE MOTOR CONTROL CENTER BY FIRE ALARM. WHEN SMOKE IS DETECTED BY ANY DUCT SMOKE DETECTOR, THE SUPPLY AND RETURN FAN SERVING THAT ZONE SHALL SHUTDOWN AND AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE BY THE FIRE ALARM SYSTEM. EXHAUST FAN SERVING THAT ZONE SHALL CONTINUE TO RUN. SUPPLY AND RETURN FANS SHALL RESTART WHEN FIRE ALARM CIRCUIT IS RESET. UPON ACTIVATION OF THE HIGH OR LOW LIMIT STATIC SENSOR, SUPPLY AND RETURN FAN SHALL SHUT DOWN.

EMERGENCY CONSTANT SPEED OPERATION: UPON FAILURE OF VFD, ASSOCIATED FAN SHALL BE STARTED/STOPPED MANUALLY AT THE VFD THROUGH THE BY-PASS STARTER. FAN SHALL THE RUN AT CONSTANT SPEED.

AHU 1& 2 SYSTEM POINT LIST

SYSTEM POINT DESCRIPTION	POINT TYPE					ALARMS							
	GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	DEFAULT VALUE	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL	DIAGNOSTICS	NOTES:
SUPPLY FAN VFD START/STOP	X		BO										
RETURN FAN VFD START/STOP	X		BO										
SUPPLY FAN VFD SPEED	X		AO										
CHILLED WATER COIL VALVE	X		AO										
OUTSIDE AIR DAMPER	X		AO										
MIXED AIR TEMPERATURE	X	AI				X	X			X		SENSOR FAILURE	
DISCHARGE AIR TEMPERATURE	X	AI				X	X			X		SENSOR FAILURE	
LOW LIMIT THERMOSTAT	X	BI						X	X			LOW LIMIT TEMPERATURE	NOTE 4
HIGH STATIC PRESSURE CUT-OUT	X	BI						X	X			HIGH STATIC PRESSURE	NOTE 4
SUPPLY FAN CFM	X	AI											
SUPPLY FAN STATUS	X	BI						X	X			FAN FAILURE	
FILTER STATUS	X	BI						X				DIRTY FILTER	
RETURN FAN STATUS	X	BI						X	X			FAN FAILURE	
DISCHARGE STATIC PRESSURE	X	AI				X	X			X		SENSOR FAILURE	
SPACE STATIC PRESSURE	X	AI				X	X			X		SENSOR FAILURE	
RETURN FAN VFD SPEED	X		AO										
EXHAUST AIR DAMPER	X		AO										
RETURN FAN CFM	X	AI											
RETURN FAN HIGH STATIC PRESSURE CUT-OUT	X	BI						X	X			HIGH STATIC PRESSURE	NOTE 4
OCCUPIED COOLING SETPOINT				X	74°F								
OCCUPIED HEATING SETPOINT				X	70°F								
OCCUPIED STANDBY COOLING SETPOINT				X	80°F								
OCCUPIED STANDBY HEATING SETPOINT				X	65°F								
UNOCCUPIED COOLING SETPOINT				X	85°F								
UNOCCUPIED HEATING SETPOINT				X	60°F								
OCCUPIED BYPASS TIMER				X	2.0 HRS								
MIXED AIR TEMPERATURE LOW LIMIT SETPOINT				X	50°F								
DISCHARGE AIR COOLING SETPOINT				X	55°F								
DISCHARGE AIR HEATING SETPOINT				X	100°F								
BAS COMMUNICATION STATE	X			X							X		NOTE 1
CONTROLLER SPARE HARDWARE POINTS													
UNIVERSAL INPUT(S)		13											NOTE 2& 3
ANALOG OUTPUT(S)			9										NOTE 2
BINARY OUTPUT(S)			12										NOTE 2

NOTES:

1. DISPLAYED AT THE BAS USER INTERFACE IF PRESENT
2. SPARE OR UNUSED POINTS
3. CONTROLLER WILL ACCEPT RTD SENSOR ON INPUTS 1-4 ONLY
4. DEVICE IS HARDWIRE INTERLOCKED TO VFD, MANUAL RESET REQUIRED

Revisions:	Date:

CONTRACTOR
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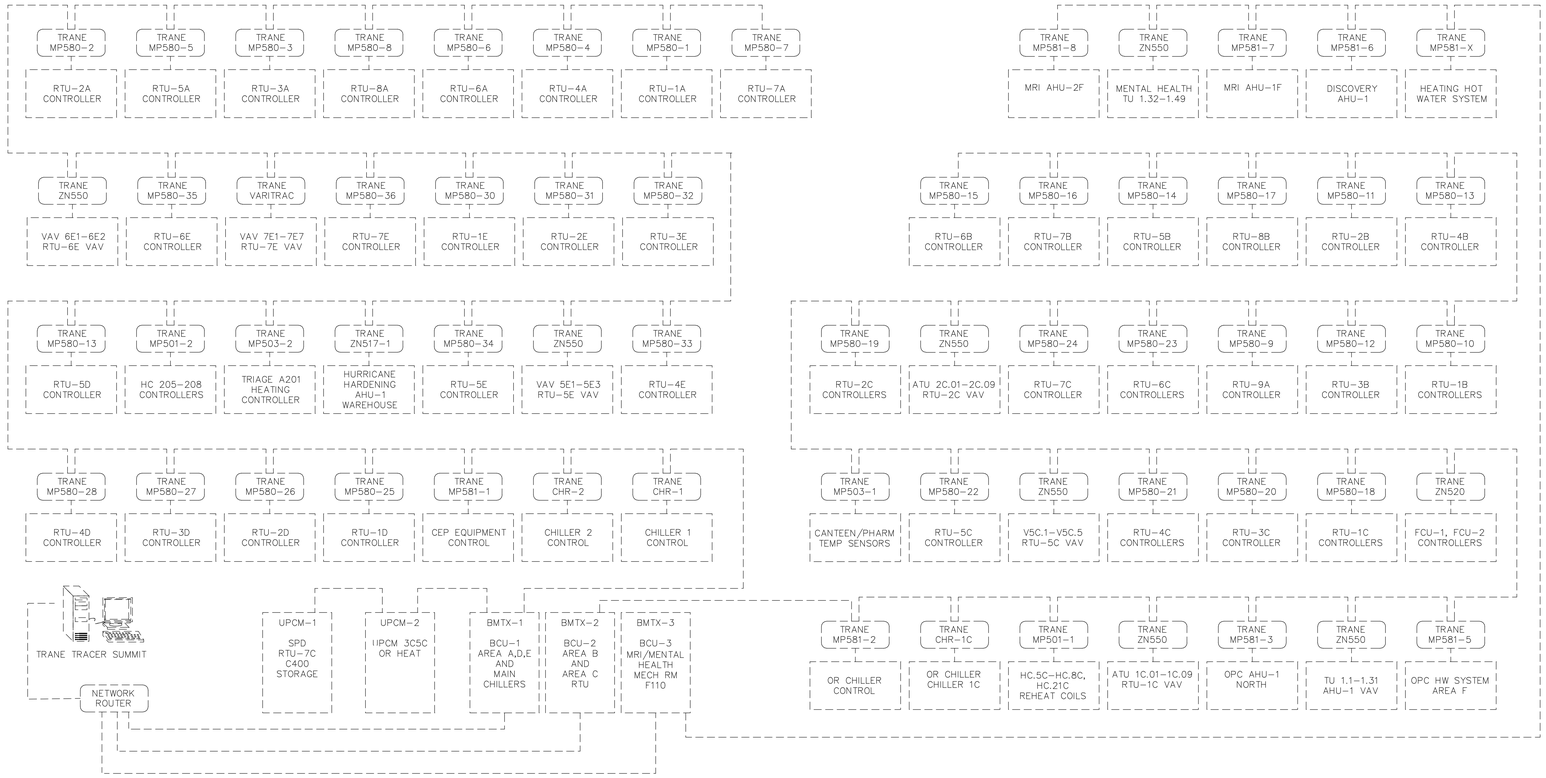
ENGINEER OF RECORD
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Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: BAS - MECHANICAL EQUIPMENT SEQUENCES OF OPERATION
Phase: 100% CONSTRUCTION DOCUMENTS
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Project Number: 675-18-151
Building Number: -
Approved:
FULLY SPRINKLERED
Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date: 12-20-2019
Checked: JTW
Drawn: BKG
Drawing Number: M-706
51 OF 68

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VA



1 EXISTING DDC RISER DEMOLITION DIAGRAM
N.T.S.

BAS REPLACEMENT NOTES:

1. REMOVE EXISTING LON DDC CONTROLLERS.
2. EXISTING LON DDC SYSTEM MUST REMAIN OPERATIONAL DURING CHANGE OVER TO BACNET.
3. ALL EXISTING CONTROL POINTS AND SEQUENCES WILL REMAIN.
4. ALL CONDUIT AND WIRE FOR EXISTING END DEVICES SHALL REMAIN IN PLACE.
5. ALL EXISTING SENSORS, VALVES, ACTUATORS, DAMPERS, AND OTHER RE-USED CONTROLS FIELD DEVICES SHALL BE INSPECTED AND RE-CALIBRATED AS NECCESSARY TO PROVIDE A COMPLETE AND FULLY FUNCTIONAL CONTROL SYSTEM. IF A DEVICE IS NOT RE-CALIBRATABLE OR DOES NOT FUNCTION IT SHALL BE REPLACED.

Revisions:	Date:

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TLC ENGINEERING SOLUTIONS THINK. LISTEN. CREATE.

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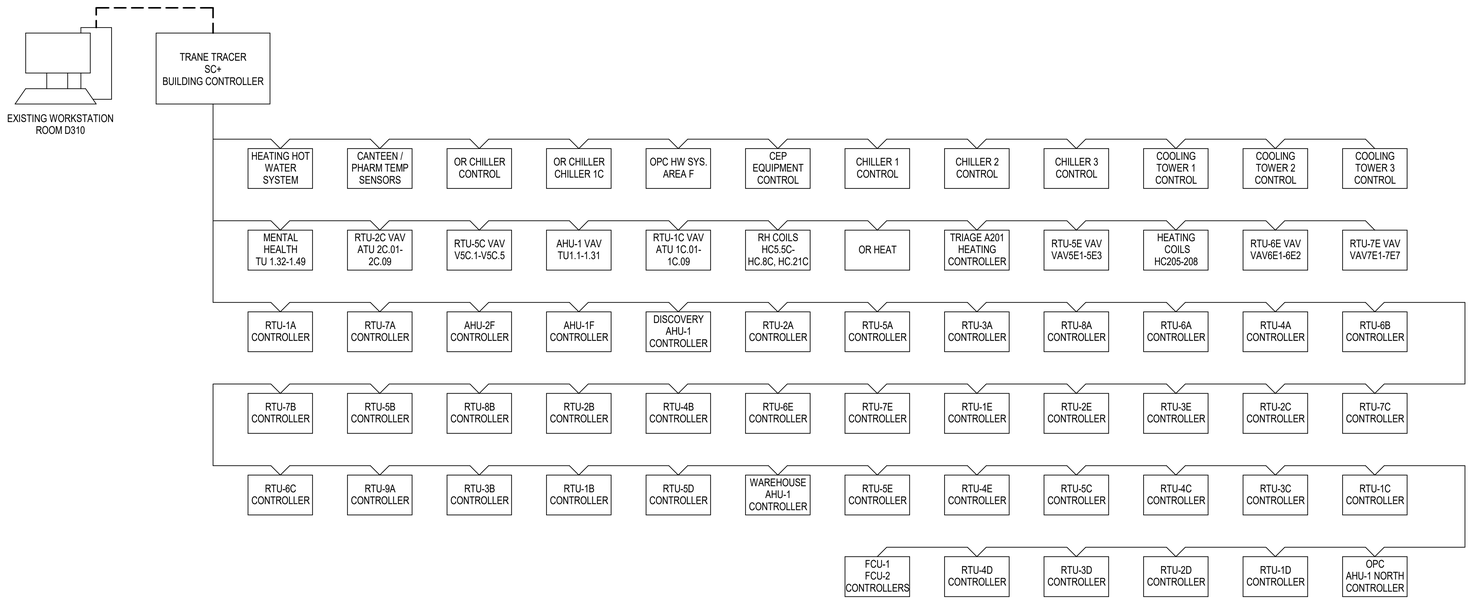
Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: BAS - EXISTING CONTROL SYSTEM ARCHITECTURE	Phase: 100% CONSTRUCTION DOCUMENTS
Approved:	FULLY SPRINKLERED

Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
	Building Number: -
Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940	Drawing Number: M-707
Issue Date: 12-20-2019 / Checked: JTW / Drawn: BKG	52 OF 68

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1 BACNET RISER DIAGRAM
N.T.S.

BAS REPLACEMENT NOTES:

1. INSTALL NEW BACNET DDC CONTROLLERS.
2. INSTALL NEW BACNET COMMUNICATION NETWORK.
3. EXISTING LON DDC SYSTEM MUST REMAIN OPERATIONAL DURING CHANGE OVER TO BACNET.
4. ALL EXISTING CONTROL POINTS AND SEQUENCES WILL REMAIN.
5. PROVIDE NEW CONTROL SUBMITTAL IDENTIFYING NEW DDC BACNET CONTROLLERS.
6. ALL CONDUIT AND WIRE FOR EXISTING END DEVICES TO BE REUSED.
7. NEW ROOFTOP UNITS PROVIDED WITH BACNET CONTROLLERS UNDER SEPARATE CONTRACT. CONNECT TO NEW BACNET BAS INSTALLED UNDER THIS SCOPE OF WORK.
8. THE NETWORKS SHALL UTILIZE ONLY COPPER AND OPTICAL FIBER COMMUNICATION MEDIA AS APPROPRIATE AND SHALL COMPLY WITH APPLICABLE CODES, ORDINANCES AND REGULATIONS. THE CONTROLS NETWORK MAY ALSO UTILIZE DIGITAL WIRELESS TECHNOLOGIES AS APPROPRIATE TO THE APPLICATION AND IF APPROVED BY THE VA.
9. REPLACE EXISTING SENSORS, VALVES, ACTUATORS, DAMPERS, AND OTHER RE-USED CONTROLS FIELD DEVICES FOUND NOT TO BE RE-CALIBRATABLE OR FULLY FUNCTIONAL.
10. NEW BACNET SYSTEM SHALL BE INSTALLED AND ALL POINTS TRANSFERRED AND BE FULLY FUNCTIONAL BEFORE DEMOLITION OF EXISTING BAS SYSTEM.

Revisions:	Date:

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Drawing Title: BAS - NEW CONTROL SYSTEM ARCHITECTURE
Approved:
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Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date: 12-20-2019
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53 OF 68

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ELECTRICAL SYMBOL LEGEND

BASIC MATERIALS

SYMBOL	DESCRIPTION
	DEVICE ABBREVIATION TAGS: 6C = POKE-THRU WITH 6" CORE DRILL 8C = POKE-THRU WITH 8" CORE DRILL 4G = FOUR-GANG FLOOR BOX 6G = SIX-GANG FLOOR BOX 8G = EIGHT-GANG FLOOR BOX AV = DOUBLE DUPLEX RECEPTACLE WITH DEDICATED CIRCUIT FOR AV RACK OR CART C = RECEPTACLE CONTROLLED PER ASHRAE 90.1 (2010); PROVIDE POWER PACK FOR RECEPTACLE CIRCUIT, TO BE CONTROLLED THROUGH LOCAL ROOM OCCUPANCY SENSOR(S); PROVIDE DEVICE WITH BLUE DOT OR UNIVERSAL POWER SYMBOL ETR = EXISTING TO REMAIN H = HOSPITAL GRADE HB = HIGH BAY IG = ISOLATED GROUND (ORANGE DEVICE) P = PENDANT MOUNTED R = RELAY/REMOTE CONTROL OF RECEPTACLE CIRCUIT FOR AUTOMATIC SHUTOFF RL = RELOCATED T = TAMPERPROOF TV = RECEPTACLE MOUNTED ADJACENT TO TV OUTLET USB = DUPLEX RECEPTACLE WITH (2) USB PORTS WP = WEATHERPROOF
S_a	SINGLE POLE SWITCH (SUBSCRIPT INDICATES ITEM CONTROLLED)
S_3	THREE-WAY SWITCH
S_4	FOUR-WAY SWITCH
S_K	SINGLE POLE KEY SWITCH
S_{OSab}	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR SWITCH, DUAL RELAY
S_{OS}	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR SWITCH
S_{VS}	WALL MOUNTED DUAL TECHNOLOGY VACANCY SENSOR SWITCH
$S_{D,OS}$	WALL MOUNTED DUAL TECHNOLOGY DIMMING/OCCUPANCY SENSOR SWITCH
	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
	CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
S_F	FAN SWITCH
S_M	MANUAL MOTOR STARTER WITH OVERLOADS
S_D	DIMMER SWITCH
	PHOTOCELL, MOUNTED ON ROOF FACING NORTH
	NOTE: DIAGONAL MARKS INDICATED ON ANY DEVICE REPRESENTS DEVICE CONNECTED TO EMERGENCY CIRCUIT (RED DEVICE FOR RECEPTACLE); TYPICAL FOR ANY DEVICE IN LEGEND
	SINGLE RECEPTACLE
	DUPLEX RECEPTACLE
	TWO DUPLEX RECEPTACLES (QUAD) WITH COMMON COVERPLATE
	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER
	TWO DUPLEX RECEPTACLES (QUAD) WITH COMMON COVER MOUNTED ABOVE COUNTER
	DUPLEX RECEPTACLE; EACH RECEPTACLE ON SEPARATE CIRCUIT (PROVIDE BREAKER WITH 2-POLE COMMON TRIP HANDLE)
	SPLIT-WIRED DUPLEX RECEPTACLE WITH TOP-HALF SWITCHED
	GFCI RECEPTACLE; "WP" INDICATES CAST METAL "IN-USE" WEATHERPROOF COVER, WEATHER-RESISTANT LISTED
	TWO GFCI DUPLEX RECEPTACLES (QUAD) WITH COMMON COVERPLATE
	GFCI RECEPTACLE MOUNTED ABOVE COUNTER
	SPECIAL PURPOSE RECEPTACLE, NEMA CONFIGURATION AS NOTED
	JUNCTION BOX WALL MOUNTED
	JUNCTION BOX MOUNTED IN OR ABOVE CEILING OR IN STRUCTURE
	WALL MOUNTED FURNITURE FEED POWER CONNECTION
E	ELECTRICAL EQUIPMENT CONNECTION. PROVIDE FLEXIBLE CONDUIT CONNECTION PER SPECIFICATIONS.
GND	GROUND BUS BAR, COPPER
SPD	SURGE PROTECTIVE DEVICE
ST	SHUNT-TRIP PUSHBUTTON; SEMI-FLUSH WALL MOUNTED UNLESS OTHERWISE NOTED; NEMA 3R FOR EXTERIOR LOCATIONS
EPO	EMERGENCY POWER OFF SHUNT-TRIP PUSHBUTTON, RED MUSHROOM HEAD, CLEAR LEXAN PROTECTIVE COVER
O O O	OVERHEAD DOOR PUSHBUTTON CONTROL STATION
E	PUSHBUTTON STATION
	MOTOR CONNECTION
MD	MOTORIZED DAMPER CONNECTION
VFD	VARIABLE FREQUENCY DRIVE
DDC	DIRECT DIGITAL CONTROL PANEL
BAS	BUILDING AUTOMATION SYSTEM CONTROL PANEL
LCP	LIGHTING CONTROL PANEL

SYMBOL	DESCRIPTION
MH	MANHOLE
PB	PULLBOX
HH	HANDHOLE
T	TRANSFORMER
ATS	AUTOMATIC TRANSFER SWITCH
L 30AR 3R NF	NEMA RATING; NEMA 1 UNLESS OTHERWISE NOTED NON-FUSED DISCONNECT SWITCH, RATING AS NOTED NF = NON-FUSED AR = AMPERE RATING OF SWITCH 4X SS = NEMA 4X STAINLESS STEEL ENCLOSURE
L 30AR 3R 20AF	NEMA RATING; NEMA 1 UNLESS OTHERWISE NOTED FUSED DISCONNECT AF = AMPERE RATING OF FUSE AR = AMPERE RATING OF SWITCH 4X SS = NEMA 4X STAINLESS STEEL ENCLOSURE
MCP AMPERE RATING L 3P3 3R N	# OF POLES NEMA RATING; NEMA 1 UNLESS OTHERWISE NOTED COMBINATION MAGNETIC MOTOR STARTER, SIZE AS NOTED, 3-POLE UNLESS OTHERWISE NOTED 4X SS = NEMA 4X STAINLESS STEEL ENCLOSURE NEMA STARTER SIZE
	SWITCHBOARD/ SWITCHGEAR/ DISTRIBUTION PANEL
	BRANCH CIRCUIT PANELBOARD, OVER 250 VOLTS, SURFACE MOUNTED
	BRANCH CIRCUIT PANELBOARD, OVER 250 VOLTS, FLUSH MOUNTED
	BRANCH CIRCUIT PANELBOARD, UNDER 250 VOLTS, SURFACE MOUNTED
	BRANCH CIRCUIT PANELBOARD, UNDER 250 VOLTS, FLUSH MOUNTED
	CONDUIT CONCEALED ABOVE CEILING OR IN WAL
	CONDUIT EXPOSED
	CONDUIT CONCEALED IN SLAB, UNDERGROUND OR UNDER FLOOR
	CONDUIT HOMERUN TO ELECTRICAL PANEL
UP	CONDUIT TURNING UP
DN	CONDUIT TURNING DOWN
	CONDUIT STUBBED OUT OR UP
	CONDUIT CONTINUED
	FLEXIBLE CONDUIT
	CONDUIT SEAL-OFF FITTING
	GROUND OR GROUND ROD AS NOTED
	EXISTING TO BE REMOVED (HEAVY, DASHED LINE)
	EXISTING TO REMAIN (LIGHT, SOLID LINE)
	NEW (HEAVY, SOLID LINE)

LIGHTING

SYMBOL	DESCRIPTION
	LED OR FLUORESCENT STRIP FIXTURE FIXTURE TYPE
A 2 B ZX-X	LED OR FLUORESCENT FIXTURE, RECESSED, PENDANT OR SURFACE CEILING LOWER CASE LETTER INDICATES CONTROLLING SWITCH CIRCUIT NUMBER LIGHTING CONTROL ZONE NUMBER
	LED OR FLUORESCENT FIXTURE RECESSED, PENDANT OR SURFACE CEILING
	DIAGONAL HALF SHADING INDICATE FIXTURE CONNECTED TO EMERGENCY CIRCUIT OR PROVIDED WITH INTEGRAL EMERGENCY BATTERY PACK; "E" AFTER FIXTURE TYPE TAG INDICATES INTEGRAL BATTERY PACK UNLESS OTHERWISE NOTED ON LIGHT FIXTURE SCHEDULE (TYPICAL FOR ALL LIGHT FIXTURE SYMBOLS)
	LED OR FLUORESCENT FIXTURE, WALL MOUNTED
	LED, FLUORESCENT, HID, RECESSED, PENDANT OR SURFACE CEILING
	LED, FLUORESCENT, HID, WALL MOUNTED
	LED, FLUORESCENT, HID - CEILING WALLWASHER, ACCENT LIGHT, LANDSCAPING TREE ACCENT LIGHT, FACADE LIGHT
	TRACK WITH TRACK LIGHT FIXTURE (TRIANGLES INDICATE QUANTITY OF TRACK HEADS)
	EMERGENCY TWIN-HEAD LIGHT WITH INTEGRAL BATTERY PACK, WALL MOUNTED
	LINEAR FLUORESCENT, LED, RECESSED, PENDANT OR SURFACE CEILING
	EXTERIOR POLE-MOUNTED AREA LIGHT FIXTURE, ARMS AS INDICATED ON DRAWINGS
	EXTERIOR PEDESTRIAN SIDEWALK BOLLARD OR POST-TOP LIGHT FIXTURE
	EXIT LIGHT, LED, CEILING OR PENDANT MOUNTED; DIRECTIONAL ARROWS AS INDICATED; SHADED QUADRANT INDICATES FACE(S) OF FIXTURE
	EXIT LIGHT, LED, WALL MOUNTED

FIRE ALARM/DETECTION SYSTEM

SYMBOL	DESCRIPTION
F	MANUAL PULL STATION
S	CEILING SMOKE DETECTOR, PHOTOELECTRIC TYPE UNLESS OTHERWISE NOTED E = ELEVATOR WITH RECALL CONTACTS I = IONIZATION
S	DUCT SMOKE DETECTOR R = RETURN S = SUPPLY
S BR B R	BEAM SMOKE DETECTOR BR OR R = BEAM DETECTOR RECEIVER BT OR T = BEAM DETECTOR TRANSMITTER
H	HEAT DETECTOR 135°F FIXED TEMPERATURE, UNLESS OTHERWISE NOTED, CEILING MOUNTED
R	SUPERVISED ADDRESSABLE FIRE ALARM CONTROL RELAY
SD	DUCT SMOKE DETECTOR REMOTE TEST SWITCH WITH INDICATING LAMP, WALL MOUNTED AT 48" AFF, UNLESS OTHERWISE NOTED
F XXCD	COMBINATION SPEAKER/STROBE, WALL MOUNTED, 75CD UNLESS OTHERWISE NOTED CD = CANDELA RATING
H	HORN ONLY, WALL MOUNTED
F XXCD	STROBE, CEILING MOUNTED, 75 CD UNLESS OTHERWISE NOTED CD = CANDELA RATING
FS XXCD	COMBINATION SPEAKER/STROBE, CEILING MOUNTED, 75CD UNLESS OTHERWISE NOTED CD = CANDELA RATING
SS	SPEAKER ONLY, CEILING MOUNTED
SS	SPEAKER ONLY, WALL MOUNTED
F	STROBE, WALL MOUNTED, 75CD UNLESS OTHERWISE NOTED
P	FIREMAN'S PHONE JACK
TS	SPRINKLER TAMPER SWITCH CONNECTION
FS	SPRINKLER WATERFLOW SWITCH CONNECTION
PS	PRESSURE SWITCH CONNECTION
SS	SURGE SUPPRESSOR
EH	ELECTROMAGNETIC DOOR HOLD OPEN DEVICE
FACP	FIRE ALARM CONTROL PANEL
FATC	FIRE ALARM TERMINAL CABINET
FAA	FIRE ALARM ANNUNCIATOR PANEL - FLUSH MOUNTED
EVAC	VOICE EVACUATION PANEL
MNS	MASS NOTIFICATION SYSTEM PANEL

VOICE/DATA SYSTEM

SYMBOL	DESCRIPTION
	4"SQ X 2-1/8"D ELECTRICAL BOX FOR VOICE/DATA OUTLET 1" CONDUIT ROUTED TO COMMUNICATIONS BACKBOARD UNLESS OTHERWISE NOTED; PROVIDE (4) CAT 6 CABLES AND (4) RJ45 JACKS PER OUTLET UNLESS OTHERWISE NOTED. (1) JACK SHALL BE USED FOR VOICE. C = ABOVE COUNTER
W	4"SQ X 2-1/8"D ELECTRICAL BOX FOR TELEPHONE WALL OUTLET WITH 1" CONDUIT ROUTED TO COMMUNICATIONS BACKBOARD UNLESS OTHERWISE NOTED; PROVIDE WITH (1) CAT 6 CABLE AND RJ45 JACK UNLESS OTHERWISE NOTED W = WALL MOUNTED AT 52" AFF FOR HOUSE PHONE
	3/4"THICK X 8' HIGH A/C PLYWOOD BACKBOARD MOUNTED 6" AFF FROM BOTTOM, PAINTED WITH GRAY FIRE-RETARDANT PAINT, WIDTH AS INDICATED ON FLOOR PLAN

LIGHTNING PROTECTION SYSTEM

SYMBOL	DESCRIPTION
	CLASS I MAIN CONDUCTOR CABLE
S	SPLICE, UNLESS OTHERWISE NOTED
X	AIR TERMINAL; PROVIDE PARAPET TYPE BASE WHERE MOUNTED ON PARAPET; PROVIDE FLAT BASE FOR MECHANICAL EQUIPMENT OR ROOF PERIMETER WITH NO PARAPET; PROVIDE BLUNT TIP WHERE MOUNTED ON INTERIOR OF ROOF. UNLESS OTHERWISE NOTED ON LIGHTNING PROTECTION PLANS; 'X' INDICATES TYPE. SEE SHEET EY501.
X	GROUND TERMINAL; 'X' INDICATES TYPE. SEE SHEET EY501.
	BONDING CONDUCTOR
	COUNTERPOISE CONDUCTOR
X	DOWNLEAD; 'X' INDICATES TYPE. SEE SHEET EY501.

ABBREVIATIONS

AC	ALTERNATING CURRENT
ADA	AMERICANS WITH DISABILITIES ACT
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AMP	AMPERE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GUAGE
BAS	BUILDING AUTOMATION SYSTEM
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT OR RACEWAY
CKT	CIRCUIT
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CT	CURRENT TRANSFORMER
CU	COPPER
DF	DEMAND FACTOR
DISC	DISCONNECT
DISC SW	DISCONNECT SWITCH
EMT	ELECTRIC METALLIC TUBING
EOL	END OF LINE
EOR	ENGINEER OF RECORD
ETR	EXISTING TO REMAIN
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FATC	FIRE ALARM TERMINAL CABINET
FBC	FLORIDA BUILDING CODE
FLA	FULL LOAD AMPERES
FT	FEET
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFR	GROUND FAULT RELAY
GND, G	GROUND
HP	HORSEPOWER
IBC	INTERNATIONAL BUILDING CODE
IMC	INTERMEDIATE METAL CONDUIT
IN	INCHES
JB OR J-BOX	JUNCTION BOX
KCMIL	ONE THOUSAND CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KW	KILOWATT
KWH	KILOWATT HOURS
LBS	POUNDS
LED	LIGHT EMITTING DIODE
LP	LIGHTNING PROTECTION
LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND
LSIA	LONG TIME, SHORT TIME, INSTANTANEOUS, ALARM
LSI	LONG TIME, SHORT TIME, INSTANTANEOUS
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN SERVICE DISTRIBUTION PANEL
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MSB	MAIN SERVICE SWITCHBOARD
MTS	MANUAL TRANSFER SWITCH
N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NF	NON-FUSED
P	POLE
PF	POWER FACTOR
PIV	POST INDICATOR VALVE
PSG	PARALLELING SWITCHGEAR
PVC	POLYVINYLCHLORIDE
REC, RECEPT	RECEPTACLE
REF	REFRIGERATOR
RGS, GRC	RIGID GALVANIZED STEEL CONDUIT
RLA	RUNNING LOAD AMPERES
RMS	ROOT-MEAN-SQUARE
SCA	SHORT CIRCUIT AMPERES
S/N	SOLID NEUTRAL
SPD	SURGE PROTECTIVE DEVICE
SS	STAINLESS STEEL
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TEL	TELEPHONE
TTB	TELEPHONE TERMINAL BOARD
TTC	TELEPHONE TERMINAL CABINET
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UL	UNDERWRITERS LABORATORIES
V	VOLT
VA	VOLTAMPERE
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHER PROOF
XFMR	TRANSFORMER

NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT.

Revisions:	Date:

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: ELECTRICAL SYMBOL LEGEND AND ABBREVIATIONS

Approved:

Phase: 100% CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title: DESIGN BUILD REPLACE CHILLERS VIERA

Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940

Project Number: 675-18-151

Building Number: -

Drawing Number: E-001

54 OF 68

Issue Date: 12-20-2019 | **Checked:** MMH | **Drawn:** AMH

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ELECTRICAL GENERAL NOTES

GENERAL:

1. THE DRAWINGS AND APPLICABLE SPECIFICATIONS SHALL BE CONSIDERED SUPPLEMENTARY, ONE TO THE OTHER AND ARE CONSIDERED THE "CONTRACT DOCUMENTS". ALL WORKMANSHIP, METHODS AND/OR MATERIALS DESCRIBED OR IMPLIED BY ONE AND NOT DESCRIBED OR IMPLIED BY THE OTHER SHALL BE PROVIDED, FURNISHED OR PERFORMED AS IF IT HAD APPEARED IN BOTH SECTIONS. THE TERM "CONTRACT DOCUMENTS" DESCRIBED HEREIN IS NOT LIMITED SOLELY TO THE ELECTRICAL PORTION OF THE DRAWINGS AND SPECIFICATIONS, BUT ENCOMPASSES THE DRAWINGS AND SPECIFICATIONS OF ALL DIVISIONS AS A WHOLE.
2. INCLUDE ALL COSTS FOR EXCAVATION, SAW CUTTING, DIRECTIONAL BORING, CORE DRILLING, BACKFILLING, SURFACE RESTORATION, REPAIR OF FINISHES, ETC. THAT IS REQUIRED IN ORDER TO MEET THE PROJECT REQUIREMENTS.
3. PROVIDE A COMPLETE UL LISTED LIGHTNING PROTECTION SYSTEM WITH A MASTER LABEL FOR THE ENTIRE FACILITY PER THE REQUIREMENTS OF NFPA 780, AND THE DIVISION 26 SPECIFICATIONS, UNLESS NOTED OTHERWISE. LIGHTNING PROTECTION SYSTEM SHALL INCLUDE BURIED COUNTERPOISE, UNLESS NOTED OTHERWISE.
4. LOCATE, IDENTIFY, PROTECT AND DOCUMENT ALL UTILITY LINES LOCATED WITHIN THE PROJECT BOUNDARY. FOR LOCATING SITE UTILITIES, CONTACT SUNSHINE STATE ONE CALL OF FLORIDA, INC. AT LEAST 48 HOURS IN ADVANCE PRIOR TO DIGGING, AT 1-800-432-4770.

COORDINATION:

1. VERIFY AND COORDINATE LOCATIONS OF ANY MISCELLANEOUS EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS (I.E., COPIERS, FAX MACHINES, PRINTERS, KITCHEN APPLIANCES, LAUNDRY APPLIANCES, PROJECTION SCREENS, SHOP TOOLS, MACHINE, ELEVATORS, ETC.) WITH APPROVED SHOP DRAWINGS, MANUFACTURER'S SPECIFICATION SHEETS, MANUFACTURER'S INSTRUCTIONS, AND EQUIPMENT NAMEPLATE INFORMATION, PRIOR TO ROUGH IN, AND PROVIDE ALL NECESSARY ELECTRICAL REQUIRED.
2. VERIFY AND COORDINATE LOCATIONS AND EXACT ELECTRICAL REQUIREMENTS FOR ALL MECHANICAL, PLUMBING AND FIRE PROTECTION EQUIPMENT PRIOR TO SUBMITTAL OF SHOP DRAWINGS OF ELECTRICAL EQUIPMENT. PROVIDE ALL NECESSARY RACEWAYS, CONDUCTORS, BOXES, EQUIPMENT, ACCESSORIES, ASSOCIATED DISCONNECT SWITCHES, CIRCUIT BREAKERS, CONTROL TRANSFORMERS, FIRE ALARM SHUTDOWN, ETC. REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. COORDINATE WITH APPROPRIATE TRADE'S APPROVED SHOP DRAWINGS, MANUFACTURER'S INSTRUCTIONS, AND EQUIPMENT NAMEPLATE INFORMATION, PRIOR TO ROUGH IN, AND PROVIDE ALL NECESSARY ELECTRICAL REQUIRED, UNLESS OTHERWISE NOTED.
3. THIS PROJECT REQUIRES COORDINATION DRAWINGS BY THE CONTRACTOR. PARTICIPATE IN THE COORDINATION DRAWING PREPARATION PROCESS AND PROVIDE ALL NECESSARY INFORMATION REQUIRED TO COORDINATE ALL TRADE INFORMATION.
4. ALL WORK ON THE ELECTRICAL SYSTEM REQUIRED BY THE CONTRACT DOCUMENTS SHALL BE COORDINATED WITH THE WORK OF ALL OTHER DIVISIONS/TRADES PRIOR TO COMMENCEMENT OF WORK. AVOID INTERFERENCES WITH THE PROGRESS OF OTHER DIVISIONS/TRADES.
5. THE DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO SHOW EVERY DETAIL OF CONSTRUCTION, METHODS, MATERIALS AND EQUIPMENT, OR EXACT LOCATIONS, ROUTING, ETC. THEY INDICATE THE RESULT TO BE ACHIEVED BY THE ASSEMBLAGE OF SEVERAL SYSTEMS FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM. DO NOT SCALE THE CONTRACT DOCUMENTS. COORDINATE EXACT EQUIPMENT LOCATIONS WITH THE ARCHITECTURAL, CIVIL AND STRUCTURAL CONTRACT DOCUMENTS, AS WELL AS FIELD CONDITIONS, APPROVED SHOP DRAWINGS AND WORK OF ALL OTHER DIVISIONS/TRADES.
6. THE TERM "PROVIDE" USED IN THE CONTRACT DOCUMENTS INDICATES TO FURNISH AND INSTALL MATERIALS REQUIRED FOR CORRECT INSTALLATION OF A COMPLETE SYSTEM, UNLESS SPECIFICALLY NOTED OTHERWISE.
7. UNLESS NOTED AS EXISTING, ALL ELECTRICAL INDICATED ON THE CONTRACT DOCUMENTS SHALL BE NEW, SHALL BE U.L. LISTED, AND SHALL BEAR A U.L. LABEL WHERE NO U.L. LABEL OR LISTING IS AVAILABLE. THE MATERIAL SHALL BE LISTED WITH AN APPROVED, NATIONALLY RECOGNIZED ELECTRICAL TESTING AGENCY.
8. PROVIDE EXPERIENCED, QUALIFIED AND RESPONSIBLE SUPERVISION FOR ALL WORK REQUIRED BY THE CONTRACT DOCUMENTS. ALL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, TO THE SATISFACTION OF THE ARCHITECT/ENGINEER AND OWNER.
9. CARRY ALL INSURANCE REQUIRED TO PROTECT AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THIS PROJECT.
10. IF HAZARDOUS MATERIALS ARE ENCOUNTERED, COMPLY WITH ALL APPLICABLE RULES, REGULATIONS AND GUIDELINES CONCERNING REMOVAL, HANDLING, DISPOSAL AND PROTECTION AGAINST ENVIRONMENTAL EXPOSURE OR POLLUTION. PROVIDE DOCUMENTATION OF SAID COMPLIANCE.
11. PROVIDE ELECTRONIC SUBMITTALS (PRODUCT DATA & SHOP DRAWINGS) FOR EACH MAJOR COMPONENT OF THE ELECTRICAL SYSTEM FOR REVIEW BY THE A/E AND OWNER. MAJOR COMPONENTS INCLUDE, BUT ARE NOT LIMITED TO, RACEWAYS, BOXES, WIRE AND CABLE, EQUIPMENT, DEVICES, LIGHT FIXTURES, SWITCHGEAR, PANELBOARDS, CIRCUIT BREAKERS, SAFETY SWITCHES, FIRE ALARM SYSTEM, ETC. ALL SUBMITTALS ARE TO BE REVIEWED AND APPROVED BY THE CONTRACTOR FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS PRIOR TO SUBMITTING TO THE A/E. ALLOW A MINIMUM OF TEN (10) BUSINESS DAYS FOR REVIEW BY A/E, UNLESS OTHERWISE NOTED IN DIVISION 1.
12. THE ELECTRICAL PORTION OF THE CONTRACT DOCUMENTS ARE COORDINATED WITH THE DESIGN BASIS EQUIPMENT SPECIFIED BY DIVISION 26 AND OTHER DIVISIONS. WHERE THE CONTRACTOR ELECTS TO SUBSTITUTE A PRODUCT IN LIEU OF PROVIDING THE DESIGN BASIS, AND SAID SUBSTITUTION IS ACCEPTED BY THE A/E AND OWNER, THE CONTRACTOR SHALL MAKE ALL CORRECTIONS TO THE ELECTRICAL SYSTEM NECESSARY IN ORDER TO ENSURE A COMPLETE AND OPERATIONAL INSTALLATION OF THE EQUIPMENT AT NO ADDITIONAL COSTS. WHERE THE CONTRACTOR'S DESIGN SUBSTITUTION RESULTS IN THE NEED FOR THE ENGINEER TO REVISE THE CONTRACT DOCUMENTS, THE ENGINEER RESERVES THE RIGHT TO REQUEST COMPENSATION FROM THE CONTRACTOR FOR SAID SERVICES.
13. MAINTAIN A CURRENT AND ACCURATE SET OF PROJECT RECORD DOCUMENTS (AS-BUILTS) AT THE SITE THROUGHOUT THE DURATION OF THE PROJECT. RECORD DRAWINGS SHALL BE UPDATED EACH DAY TO REFLECT THE ACTUAL LOCATIONS, SIZES, ROUTING, ETC. OF EACH PORTION OF THE ELECTRICAL SYSTEM AFFECTED BY THIS WORK. A FINAL SET OF RECORD DOCUMENTS SHALL BE ISSUED TO THE A/E FOR REVIEW AND THEN SUBMITTED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF FINAL ACCEPTANCE. PROVIDE RECORD DRAWINGS OF THE ACTUAL INSTALLATION INCLUDING SINGLE LINE DIAGRAM, POWER RISER DIAGRAM OF THE BUILDING ELECTRICAL DISTRIBUTION SYSTEM, SITE PLANS AND ALL ELECTRICAL FLOOR PLANS, DETAILS, PANEL SCHEDULES, ETC.
15. WHERE STRUCTURAL WALLS ARE OF TILT-UP CONSTRUCTION, PROVIDE COORDINATION FOR EXACT DIMENSIONS AND OPENINGS REQUIRED FOR ALL ELECTRICAL COMPONENTS INSTALLED WITHIN TILT-UP WALLS DURING THE SHOP DRAWING REVIEW PROCESS OF THE TILT-UP WALLS, PRIOR TO MANUFACTURE OF THE TILT-UP WALLS.
16. LOCATIONS OF VFD'S, DISCONNECTS, MOTOR STARTERS, ETC. FOR HVAC EQUIPMENT ARE DIAGRAMMATIC ON THE PLAN DRAWINGS. EXACT LOCATIONS ARE TO BE COORDINATED WITH CONTRACTOR'S COORDINATION DRAWINGS PRIOR TO ROUGHING IN TO ENSURE PROPER NEC CLEARANCES AND APPROPRIATE MOUNTING SURFACE.
17. REFER TO ARCHITECTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, CIVIL, LANDSCAPE, INTERIOR DESIGN, TECHNOLOGY, STRUCTURAL, AND KITCHEN EQUIPMENT DRAWINGS FOR RELATED INFORMATION AND ADDITIONAL INSTALLATION REQUIREMENTS TO BE PERFORMED AS PART OF THE WORK.
18. WHERE A DISCREPANCY OR CONFLICT IS FOUND BETWEEN ONE DRAWING AND ANOTHER, OR BETWEEN A DRAWING AND APPLICABLE SPECIFICATIONS, NOTIFY THE ARCHITECT/ENGINEER IMMEDIATELY IN WRITTEN FORM. IN GENERAL, THE MOST STRINGENT REQUIREMENT SHALL GOVERN UNLESS THE DISCREPANCY CONFLICTS WITH APPLICABLE CODES OR OWNER'S DESIGN STANDARDS, WHEREIN THE CODE OR OWNER'S DESIGN STANDARDS SHALL GOVERN.
19. ANY TEMPORARY INTERRUPTION ON POWER REQUIRED FOR THE SYSTEM TIE-IN OR SWITCHOVER FOR ANY PORTION OF THE ELECTRICAL SYSTEM SHALL BE PRE-APPROVED IN WRITING BY THE OWNER AND SCHEDULED IN ADVANCE.
20. CONDUCT WORK OPERATIONS AND DEBRIS REMOVAL IN A MANNER THAT ENSURES MINIMUM INTERFERENCE WITH NORMAL BUSINESS OPERATIONS, TRAFFIC, PARKING, ETC. ONGOING IN ADJACENT OCCUPIED SPACES OR FACILITIES. PROVIDE ALL THAT IS REQUIRED TO EFFECTIVELY PROTECT SURROUNDING OCCUPANTS, EQUIPMENT, FINISHES, FURNITURE, ETC. FROM DAMAGE OR EXCESSIVE NOISE THROUGHOUT THE DURATION OF THIS PROJECT. CONTRACTOR IS RESPONSIBLE FOR ANY LOSSES OR DAMAGE, AND DAMAGE RESULTING FROM THE FAILURE TO ADHERE TO THIS REQUIREMENT. RESTORE DAMAGED ELEMENTS TO ORIGINAL CONDITION BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT/ENGINEER AND OWNER, AT NO ADDITIONAL COSTS. REPORT OF ANY SUCH OCCURRENCE TO THE ARCHITECT/ENGINEER AND OWNER IMMEDIATELY AND AWAIT WRITTEN DIRECTION PRIOR TO PROCEEDING WITH REPAIRS.
21. COORDINATE THE LOCATION OF ALL LIGHT FIXTURES, DEVICES AND BOXES WITH WINDOWS, MIRRORS, MILLWORK, CABINETS, GLASS CURTAIN WALLS, AND GLASS WALLS PRIOR TO INSTALLATION OF CONDUITS OR BOXES.

ELECTRICAL EQUIPMENT:

1. EQUIPMENT SHALL BE OF MATERIALS SUITABLE FOR AND RATED FOR THE ENVIRONMENT IN WHICH THEY ARE TO BE INSTALLED. ALL COMPONENTS OF THE ELECTRICAL SYSTEM LOCATED OUTDOORS OR INDOORS WHERE EXPOSED TO SIGNIFICANT MOISTURE SHALL BE WEATHERPROOF, NEMA 3R, AS A MINIMUM, WHETHER INDICATED ON THE CONTRACT DRAWINGS OR NOT.
2. TERMINATION PROVISIONS FOR ALL ELECTRICAL EQUIPMENT (PANELBOARDS, SWITCHBOARD, TRANSFORMERS, DISCONNECT SWITCHES, MOTOR CONTROLLERS, AUTOMATIC TRANSFER SWITCHES, ENCLOSED CIRCUIT BREAKERS, WIREWAYS, ETC.) SHALL BE LISTED AND IDENTIFIED FOR USE WITH MINIMUM 75 DEG. F CONDUCTORS IN ACCORDANCE WITH NEC.
3. WORKING CLEARANCES FOR ELECTRICAL EQUIPMENT SHALL BE IN COMPLIANCE WITH NEC.
4. THE EXCLUSIVELY DEDICATED SPACE EXTENDING FROM FLOOR TO 6' ABOVE EQUIPMENT OR STRUCTURAL CEILING, WHICHEVER DISTANCE IS LOWER, WITH A WIDTH AND DEPTH OF THE PANELBOARD OR SWITCHBOARD MUST BE CLEAR OF ALL PIPING, DUCTS, EQUIPMENT FOREIGN TO THE ELECTRICAL EQUIPMENT OR ARCHITECTURAL APPURTENANCES IN ACCORDANCE WITH NEC.
5. PROVIDE A REINFORCED CONCRETE PAD, SIZED 4" LARGER IN ALL DIRECTIONS THAN THE FOOTPRINT OF THE EQUIPMENT, AND 4" HIGH, FOR ALL FREESTANDING, FLOOR-MOUNTED ELECTRICAL EQUIPMENT. PROVIDE VIBRATION ISOLATORS AND/OR ANCHORS PER MANUFACTURER'S INSTRUCTIONS.
6. PROVIDE HACR RATED CIRCUIT BREAKER FOR ALL HVAC EQUIPMENT.
7. CONTRACTOR IS TO SUBMIT FOR APPROVAL TO THE ENGINEER OF RECORD FINAL COORDINATED SETTINGS REQUIRED FOR MAIN CIRCUIT BREAKER AND ALL DOWNSTREAM ADJUSTABLE OVERCURRENT PROTECTIVE DEVICES, BASED ON SELECTED EQUIPMENT MANUFACTURER.

IDENTIFICATION:

1. PROVIDE TYPED PANEL DIRECTORIES FOR ALL NEW PANELBOARDS, AND EXISTING PANELBOARDS AFFECTED BY THIS PROJECT. DIRECTORIES SHALL REFLECT PROJECT AS- BUILT CONDITIONS FOR ALL BRANCH CIRCUITS. DIRECTORIES SHALL INCLUDE WHERE EACH PANEL IS FED FROM. ADDITIONALLY, EACH BRANCH CIRCUIT LOAD DESCRIPTION SHALL INCLUDE THE ROOM NUMBER(S) FOR EACH LOAD SERVICE (I.E., RECEPTACLES-RMS 501 503). ROOM NUMBERS SHALL BE BASED ON ACTUAL ROOM SIGNAGE INSTALLED IN FIELD. COORDINATE EXACT ROOM NUMBERS WITH A/E AND OWNER PRIOR TO COMPLETION OF PANEL DIRECTORIES.
2. PROVIDE ENGRAVED PLASTIC LAMINATE NAME TAGS ON EACH SWITCHBOARD, SWITCHGEAR, DISTRIBUTION PANEL, PANELBOARD, MOTOR CONTROL CENTER, SAFETY SWITCH, ENCLOSED CIRCUIT BREAKER, CABINET, STEP-DOWN TRANSFORMER, TRANSFER SWITCH, ETC., AND ANY OTHER MAJOR COMPONENT OF THE ELECTRICAL SYSTEM.
3. PROVIDE ENGRAVED PLASTIC LAMINATE NAME TAGS FOR EACH DISTRIBUTION BREAKER OR BRANCH CIRCUIT BREAKER IN SWITCHGEAR, SWITCHBOARDS, MOTOR CONTROL CENTERS AND OTHER DISTRIBUTION EQUIPMENT. NAME TAG SHALL INCLUDE LOAD DESCRIPTION AND ROOM NUMBER FOR EACH LOAD SERVICE.
4. ARC FLASH DANGER/WARNING LABELS SHALL BE APPLIED TO SWITCHBOARD, PANELBOARDS, AND EQUIPMENT CONTROLLERS PER NEC.
5. PROVIDE LABELS ON THE INSIDE OF EACH DEVICE COVERPLATE, IDENTIFYING THE PANEL(S)/ CIRCUIT NUMBER(S) DEVICE IS CONNECTED TO.
6. PROVIDE NEATLY, HANDWRITTEN IDENTIFICATION ON THE EXTERIOR COVER OF ALL JUNCTION BOXES, PULLBOXES AND WIREWAYS, IDENTIFYING THE PANEL(S)/ CIRCUIT NUMBER(S) CONTAINED WITHIN.
7. PROVIDE A PERMANENT LABEL ON ALL PANELBOARDS, SWITCHBOARDS, SWITCHGEAR, MOTOR CONTROLS CENTERS AND DISTRIBUTION PANELS STATING "DO NOT WORK ON EQUIPMENT WHILE ENERGIZED. LOCK-OUT TAG-OUT REQUIRED".
8. PROVIDE REQUIRED IDENTIFICATION PER ANSI STANDARDS, NEC REQUIREMENTS, AND OWNER'S PUBLISHED DESIGN STANDARDS WHERE APPLICABLE.

ELECTRICAL DEVICES, OUTLET BOXES, JUNCTION BOXES:

1. LIGHT SWITCHES SHALL BE MOUNTED 48 INCHES ABOVE FINISHED FLOOR TO CENTER LINE OF DEVICE, UNLESS OTHERWISE NOTED.
2. RECEPTACLES, VOICE/DATA OUTLETS, WALL FURNITURE FEEDS SHALL BE MOUNTED 18 INCHES ABOVE FINISHED FLOOR TO CENTER LINE OF DEVICE, UNLESS OTHERWISE NOTED. ABOVE COUNTER RECEPTACLES SHALL BE MOUNTED 6" ABOVE BACK SPLASH TO CENTERLINE OF DEVICE, UNLESS OTHERWISE NOTED.
3. WHEN ELECTRICAL BOXES ARE LOCATED IN VERTICAL FIRE-RESISTIVE ASSEMBLIES, (CLASSIFIED AS FIRE/SMOKE AND SMOKE PARTITIONS), THEY SHALL BE INSTALLED WITHOUT AFFECTING THE FIRE CLASSIFICATION. ALL OF THE FOLLOWING CONDITIONS SHALL BE MET:
   A. ALL ELECTRICAL BOXES SHALL BE METALLIC.
   B. BOX OPENING SHALL OCCUR ONLY ON ONE SIDE OF FRAMING SPACE.
   C. BOX OPENING SHALL NOT EXCEED 16 SQUARE INCHES.
   D. ALL CLEARANCES BETWEEN OUTLET BOX AND GYPSUM BOARD SHALL BE COMPLETELY FILLED WITH JOINT COMPOUND (OR OTHER APPROVED MATERIAL).
   E. PROVIDE A WALL AROUND OUTLETS LARGER THAN 16 SQUARE INCHES. THE INTEGRITY OF THE WALL RATING SHALL BE MAINTAINED.
   F. THE TOTAL AGGREGATE SURFACE AREA OF THE BOXES SHALL NOT EXCEED 100 SQUARE INCHES PER 100 SQUARE FEET.
   G. OUTLET BOXES LOCATED ON OPPOSITE SIDES OF FIRE RESISTIVE ASSEMBLIES SHALL BE SEPARATED BY A MINIMUM HORIZONTAL DISTANCE OF 24 INCHES.
   H. OUTLET BOXES SHALL BE SECURELY FASTENED TO WALL FRAMING MEMBERS.
   I. THE OPENING IN THE GYPSUM BOARD FACING SHALL BE CUT NOT TO EXCEED 1/8 INCH BETWEEN THE EDGES OF THE OUTLET BOX AND THE EDGES OF THE OPENING.
4. ALL DEVICES SHALL BE MOUNTED VERTICALLY, UNLESS OTHERWISE NOTED.
5. ALL RECEPTACLES SHALL BE MOUNTED SUCH THAT THE GROUND PIN IS MOUNTED UP.
6. ALL EXTERIOR RECEPTACLES OR RECEPTACLES LOCATED IN AREAS SUBJECT TO MOISTURE (PARKING GARAGE, WASHDOWN AREAS IN KITCHEN, ETC) SHALL BE GFCI TYPE. ALL EXTERIOR RECEPTACLES SHALL BE PROVIDED WITH CAST METAL, IN-USE COVER UNLESS NOTED OTHERWISE.

RACEWAYS:

1. FLEXIBLE METAL CONDUIT AND LIQUIDTIGHT METAL CONDUIT (FMC & LFMC) SHALL NOT BE USED IN LENGTHS THAT EXCEED 6'-0" UNLESS SPECIFICALLY NOTED OTHERWISE, OR UNLESS A/E GRANTS WRITTEN PERMISSION.
2. ALL FEEDER AND BRANCH CIRCUIT CONDUCTORS, INCLUDING LOW VOLTAGE SYSTEMS, SHALL BE INSTALLED IN A COMPLETE RACEWAY SYSTEM (CONDUIT) UNLESS SPECIFIED NOTED OTHERWISE.
3. THE USE OF ELECTRICAL NONMETALLIC TUBING (ENT) AND LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT (LFNC) ARE PROHIBITED UNLESS SPECIFICALLY NOTED OTHERWISE, OR UNLESS A/E OR OWNER GRANTS WRITTEN PERMISSION.
4. CONNECTIONS TO TRANSFORMERS, AHU'S, AND PUMPS SHALL BE WITH LIQUIDTIGHT, FLEXIBLE METAL CONDUIT.
5. NO PVC CONDUIT MAY BE USED INSIDE OF BUILDING UNLESS ROUTED UNDERGROUND, AND UNLESS OTHERWISE NOTED.
6. ALL CONDUIT TERMINATIONS AT TERMINAL BOARDS ARE TO HAVE GROUNDING BUSHINGS AT CONDUIT ENDS.
7. ALL CONDUITS ARE TO BE CONCEALED UNLESS IMPOSSIBLE DUE TO EXISTING CONDITIONS (I.E., EXPOSED CEILINGS, BUILDING EXTERIOR WALL RUNS). CONCEAL ALL CONDUITS ABOVE CEILINGS OR IN WALLS AND MILLWORK. WHERE EXISTING CONDITIONS DICTATE THAT CONDUITS CANNOT BE CONCEALED, NOTIFY ARCHITECT/ENGINEER PRIOR TO INSTALLING CONDUIT FOR RESOLUTION TO ROUTING.
8. SEAL ALL PENETRATIONS AND OPENINGS MADE DURING EXECUTION OF WORK IN FIRE-RATED WALLS. WALLS SHALL BE SEALED WITH UL-APPROVED PRODUCT WITH THE SAME OR GREATER RATING OF WALL PENETRATED.
9. PROVIDE ALL PENETRATIONS THROUGH FLOORS, WALL, CEILINGS AND ROOFS WHERE REQUIRED. COORDINATE LOCATIONS AND SIZES WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS, FIELD CONDITIONS AND WORK OF ALL OTHER DIVISIONS/TRADES. ALL OPENINGS ARE TO BE SEALED WATERTIGHT.
10. ALL RACEWAYS THAT TURN UP INTO THE SLAB OR ELECTRICAL EQUIPMENT FROM UNDERGROUND SHALL BE RIGID GALVANIZED STEEL (RGS) WITH BITUMASTIC COATING FOR AT LEAST THE FINAL 18" IN LENGTH. THE USE OF NON-METALLIC CONDUIT ABOVE GRADE IS PROHIBITED.
11. PANEL SCHEDULES AND FLOOR PLANS MAY INDICATE DEDICATED HOMERUNS FOR EACH BRANCH CIRCUIT. BRANCH CIRCUITS MAY BE GROUPED IN A COMMON HOMERUN WHERE THE HOMERUN DOES NOT EXCEED 3 PHASE CONDUCTORS, 3 NEUTRAL CONDUCTORS, AND 1 EQUIPMENT GROUND. THE HOMERUN RACEWAY SIZE AND CONDUCTOR SIZE SHALL BE INCREASED AS NECESSARY TO COMPLY WITH THE NEC FOR 40% MAXIMUM FILL AND DERATING REQUIREMENTS.
13. PROVIDE SEAL OFF FITTINGS, APPROVED FOR SUCH USE, WHERE RACEWAYS PENETRATE BETWEEN A DRY, CONDITIONED ENVIRONMENT AND THE EXTERIOR OR WET ENVIRONMENTS SUCH AS WALK-IN COOLERS OR FREEZERS, KITCHEN WASH-DOWN AREAS, ETC.
14. PROVIDE POLYOLEFIN JET-LINE #232 (NYLON PULL STRING) IN EACH EMPTY CONDUIT WITH ENGRAVED METAL TAG INDICATING CONDUIT DESIGNATION.
15. MINIMUM RACEWAY SIZE SHALL BE 3/4" UNLESS NOTED OTHERWISE.

CONDUCTORS:

1. ALL WIRE SHALL BE SIZED AS SHOWN ON THE DRAWINGS. IF NO SIZE IS SHOWN, THEN WIRE SHALL BE #12 AWG, EXCEPT THAT BRANCH HOMERUNS OVER 100' IN LENGTH SHALL BE MINIMUM #10 AWG FOR 120/208 VOLT CIRCUITS, AND HOMERUNS OVER 200' IN LENGTH SHALL BE MINIMUM #10 AWG FOR 277/480 VOLT CIRCUITS. REFER TO BRANCH CIRCUIT VOLTAGE DROP TABLES BELOW. BRANCH CIRCUIT WIRING SHALL BE SIZED TO LIMIT THE VOLTAGE DROP TO 3% OF NOMINAL VOLTAGE OR LESS.
2. BRANCH CIRCUITS SHALL BE INCREASED IN SIZE AS REQUIRED TO COMPENSATE FOR VOLTAGE DROP FROM LENGTH OF CIRCUIT DUE TO FIELD ROUTING. FINAL INSTALLATION SHALL NOT EXCEED A MAXIMUM OF 3% VOLTAGE DROP FOR BRANCH CIRCUITS. REFER TO VOLTAGE DROP TABLE BELOW FOR CONDUCTOR SIZES FOR BRANCH CIRCUITS:

120V (BASED ON 1500W LOAD) CIRCUIT LENGTH	MIN. CONDUCTOR SIZE INCREASE FOR VOLTAGE DROP
0 FT - 70 FT	#12 AWG
71 FT - 115 FT	#10 AWG
116 FT - 180 FT	#8 AWG

181 FEET AND LONGER, SUBMIT WIRE SIZE TO ENGINEER OF RECORD FOR WRITTEN APPROVAL.

277V (BASED ON 4150W LOAD) CIRCUIT LENGTH	MIN. CONDUCTOR SIZE INCREASE FOR VOLTAGE DROP
0 FT - 140 FT	#12 AWG
141 FT - 220 FT	#10 AWG
221 FT - 350 FT	#8 AWG

3. ALL WIRE SIZES ARE BASED ON AMPACITIES FOR 75 DEG. F TEMPERATURE RATING LISTED IN NEC.
4. ALL CONDUCTORS IN CABINETS MUST BE CAREFULLY FORMED AND HARNESSED SO THAT EACH CONDUCTOR DROPS OFF DIRECTLY OPPOSITE TO TERMINAL.
5. ALL CONDUCTORS SHALL BE COPPER, THHN/THWN , AND SOLID FOR #10 AWG AND SMALLER, AND STRANDED FOR #8 AWG AND LARGER.
6. THE USE OF ALUMINUM CONDUCTORS, RACEWAYS, BOXES, BUSSING, WINDINGS, ETC. ARE PROHIBITED. ALL MATERIALS SHALL BE COPPER, UNLESS SPECIFICALLY NOTED OTHERWISE OR UNLESS A/E OR OWNER GRANTS WRITTEN PERMISSION.

GROUNDING:

1. FIRE PROTECTION PIPING SHALL NOT BE USED FOR GROUNDING.
2. ALL FEEDERS AND BRANCH CIRCUITS SHALL INCLUDE AN EQUIPMENT GROUND CONDUCTOR. METAL RACEWAYS SHALL NOT BE USED AS EQUIPMENT GROUND.
3. WHERE A PHASE CONDUCTOR IS INCREASED IN SIZE DUE TO VOLTAGE DROP, THE EQUIPMENT GROUND CONDUCTOR SHALL BE INCREASED IN SIZE PROPORTIONATELY.
4. PROVIDE A GROUND BUS BAR IN EACH ELECTRICAL ROOM AND TELECOMMUNICATIONS / IDF/ MDF ROOM FOR ALL NEW CONSTRUCTION AND NEW ROOMS IN EXISTING CONSTRUCTION, AND IN EXISTING CONSTRUCTION WHERE THERE IS NONE INSTALLED WITHIN AN EXISTING ROOM.

LIGHTING:

1. MODIFY ALL LIGHT FIXTURE CATALOG NUMBERS AS REQUIRED TO COORDINATE WITH THE LIGHTING BRANCH CIRCUIT VOLTAGES INDICATED. COORDINATE THE CATALOG NUMBERS WITH THE EXACT FIXTURE MOUNTING AND TRIM REQUIRED BY THE CEILING IN WHICH EACH FIXTURE IS BEING INSTALLED.
2. PROVIDE UL WET LABEL OR IP67 RATED LIGHT FIXTURES FOR ALL FIXTURES LOCATED OUTSIDE OR IN PARKING GARAGES, IN SHOWERS, OR OPEN STRUCTURES.
3. PROVIDE ALL TEMPORARY NORMAL LIGHTING, EMERGENCY LIGHTING AND EXIT SIGNAGE REQUIRED DURING THE PROJECT CONSTRUCTION PHASE.
4. WHERE THERE IS NO EMERGENCY GENERATOR/ LIFE SAFETY DISTRIBUTION BRANCH AVAILABLE, PROVIDE INTEGRAL BATTERY PACKS, RATED FOR A MINIMUM OF 90 MINUTES, FOR FIXTURES SHOWN WITH SOLID SHADING AND/OR WITH "E" AFTER FIXTURE TAG, AND FOR ALL EXIT LIGHTS, OR UNLESS OTHERWISE NOTED.
5. REFER TO LIGHT FIXTURE SCHEDULE FOR LIGHT FIXTURE TYPES, DESCRIPTIONS, CATALOG NUMBERS AND ADDITIONAL INFORMATION PERTINENT TO THE LIGHT FIXTURE OR INSTALLATION THEREOF.
6. COORDINATE LIGHT FIXTURE TRIM TYPE AND FINISH COLOR WITH ARCHITECT PRIOR TO ORDERING.
7. EACH LIGHTING CIRCUIT SHALL BE PROVIDED WITH A DEDICATED NEUTRAL.
8. ALL NEW LIGHTING FIXTURES SHALL BE LED TYPE.

FIRE ALARM SYSTEM NOTES

1. ALL FIRE ALARM EQUIPMENT IS TO BE NEW, UL LISTED FOR FIRE SERVICE, AND SHALL BE COMPATIBLE WITH THE SYSTEM BEING USED.
2. ALL WIRING AND CONDUIT IS TO CONFORM TO NEC ARTICLE 760. WIRING SHALL BE UL LISTED, MINIMUM 300V TYPE FPLP PLENUM RATED SOLID COPPER OR STANDARD COPPER WITH MAXIMUM 19 STRANDS.
3. LOW VOLTAGE CONDUCTORS: PROVIDE CONDUCTORS IN ACCORDANCE WITH NFPA 70 AND NFPA 72, AND AS RECOMMENDED BY THE FIRE ALARM SYSTEM MANUFACTURER. CONDUCTORS SHALL BE COPPER, MINIMUM NO. 14 AWG, TWISTED SHIELDED PAIR.
4. CONTRACTOR/VENDOR SHALL PREPARE FLORIDA LICENSE P.E. WORKING DRAWINGS INCORPORATING THE FIRE ALARM CRITERIA DESIGN AND CONFIRMING TO AHJ REQUIREMENTS. CONTRACTOR SHALL PROVIDE ALL MATERIAL REQUIRED PER AHJ AND DESIGN CRITERIA FOR A FULLY FUNCTIONING AND PERMITTABLE FIRE ALARM SYSTEM. SUBMIT TO DESIGN PROFESSIONAL AS A SHOP DRAWING FOR REVIEW. SUBMIT COMPLETE SIGNED & SEALED DRAWINGS TO PERMITTING AGENCY AND FOR CERTIFICATE OF OCCUPANCY. COMPLETED FIRE ALARM CERTIFICATION SHALL BE PROVIDED TO OWNER AT COMPLETION OF CONSTRUCTION.
5. MANUAL PULL STATIONS ARE TO BE INSTALLED AT 42" TO BOTTOM OF DEVICE AND NO HIGHER THAN 48" TO HANDLE ABOVE FINISHED FLOOR.
6. PROVIDE MINIMUM 3/4" CONDUIT AND WIRING BETWEEN EACH FIRE ALARM DEVICE AND FROM LAST DEVICE TO FACP UNLESS OTHERWISE NOTED.
7. PROVIDE FIRE ALARM RELAY AND DUCT DETECTOR CONNECTED TO FIRE ALARM SYSTEM, WITHIN 5' OF ALL DUCT PENETRATIONS THROUGH FIRE/SMOKE WALLS, WHETHER INDICATED ON ELECTRICAL OR MECHANICAL PLANS OR NOT.
8. FIRE ALARM CONTROL PANEL IS TO BE PROVIDED WITH DEDICATED 120V CIRCUIT WITH EQUIPMENT GROUND CONNECTION PER MANUFACTURER'S RECOMMENDATIONS AND ARTICLE 760 OF THE NEC. PROVIDE MINIMUM #12 AWG FOR GROUND CONNECTION. NOTE: PANEL NEUTRAL OR CONDUIT GROUND IS NOT ACCEPTABLE. 120V CIRCUIT SHALL BE FROM LIFE SAFETY BRANCH WHERE AVAILABLE.
9. SECONDARY BACK-UP POWER SHALL BE PROVIDED BY INTEGRAL BATTERIES WITHIN THE FIRE ALARM CONTROL PANEL TO SUPPLY POWER TO THE SYSTEM UNDER QUIESCENT LOAD FOR A MINIMUM OF 24 HOURS, AND THEN BE CAPABLE OF AN ADDITIONAL 15 MINUTES ALARM OPERATION AT MAXIMUM CONNECTED LOAD.
10. ALL FIRE ALARM POWER CIRCUITS SHALL HAVE A DEDICATED 120V 20A BREAKER THAT SHALL BE RED IN COLOR AND MECHANICALLY PROTECTED (LOCKABLE IN THE "ON" POSITION), MARKED AS "FIRE ALARM CIRCUIT".
11. A SUPERVISORY SIGNAL SHALL BE ANNUNCIATED UPON ANY TAMPER SWITCH ACTIVATION. FAILURE OR REMOVAL OF ANY DETECTION OR MANUAL DEVICE SHALL ACTIVATE A TROUBLE SIGNAL.
12. A CERTIFICATION OF COMPLETION AND UL LISTING SHALL BE ISSUED AND INSTALLED ON THE FIRE ALARM CONTROL PANEL.
13. MINIMUM CANDELA RATING OF STROBES IS 75; "110" ADJACENT TO DEVICE INDICATES 110 CANDELA RATING. PROVIDE SYNCHRONIZATION OF STROBES IN ALL ADJACENT AREAS WHERE STROBES ARE VISIBLE TO EACH OTHER.
14. ALL ST

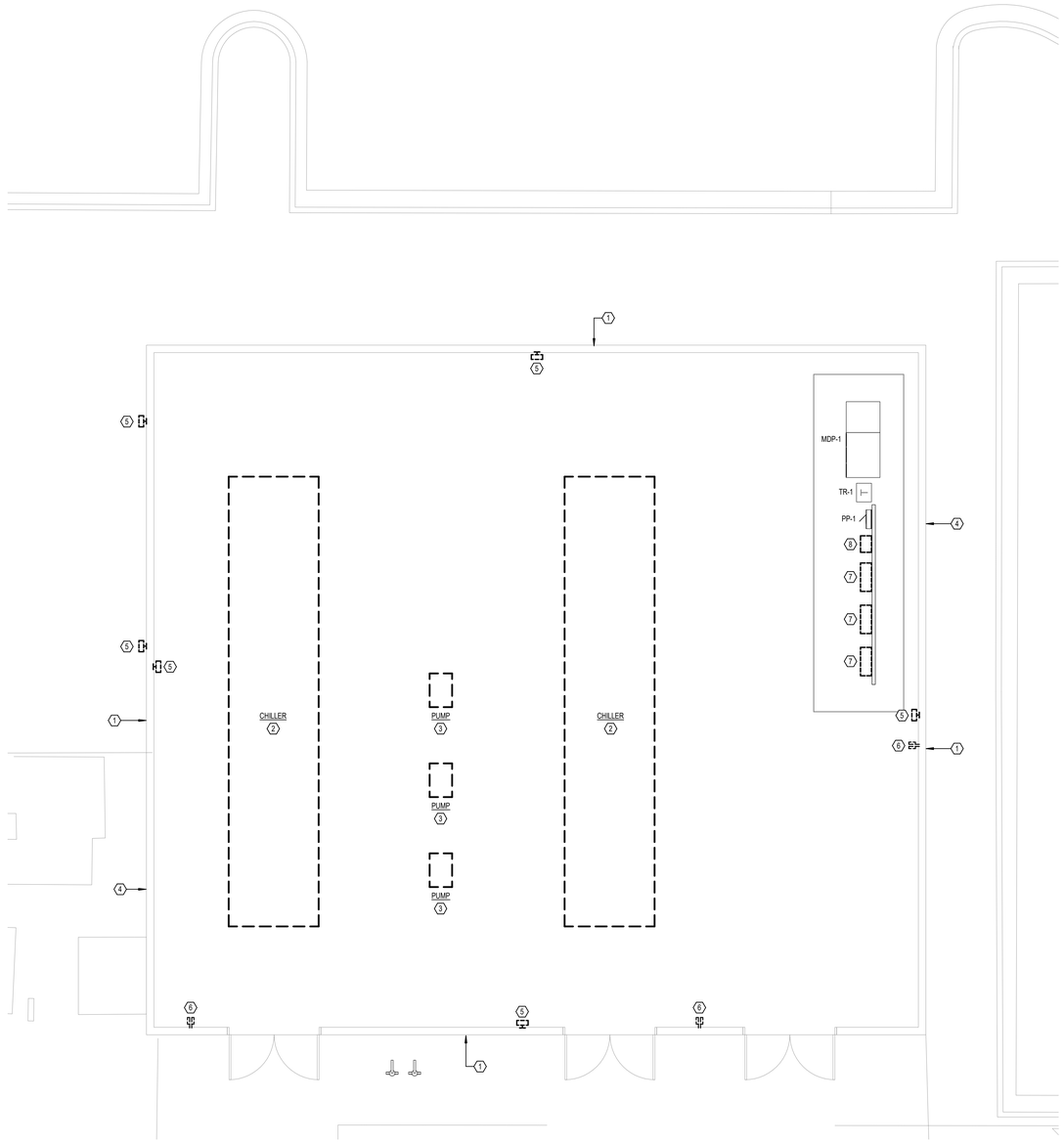
GENERAL NOTES

A. PROVIDE DEMOLITION AS REQUIRED TO COMPLETE THE SCOPE OF WORK. DEMOLITION DRAWINGS ARE INTENDED TO SHOW THE APPROXIMATE SCOPE OF WORK.

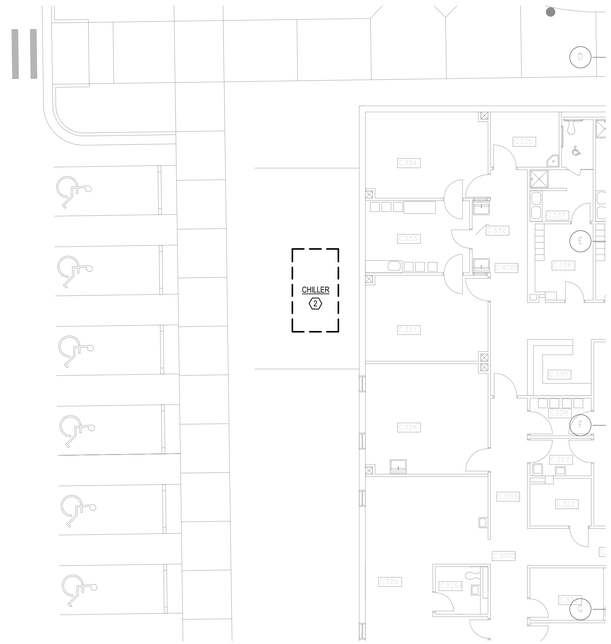
B. COORDINATE DEMOLITION OF ELECTRICAL EQUIPMENT AND APPURTENANCES WITH OVERALL SCOPE OF WORK AND PROJECT SCHEDULE. COORDINATE ALL OUTAGES WITH OTHER TRADES AND THE VA.

⬡ SHEET KEYNOTES

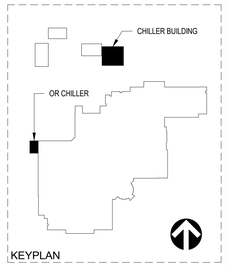
1. REMOVE EXISTING LIGHTNING PROTECTION AND ASSOCIATED EXPOSED CONDUITS AT WALLS AND EQUIPMENT. LIGHTNING PROTECTION BELOW GRADE IS EXISTING TO REMAIN.
2. DISCONNECT EXISTING CHILLER AND REMOVE EXISTING CONDUITS AND CONDUCTORS BACK TO SOURCE. BELOW GRADE CONDUITS SHALL BE ABANDONED IN PLACE.
3. DISCONNECT EXISTING PUMP AND REMOVE EXISTING CONDUCTORS BACK TO SOURCE. BELOW GRADE CONDUITS SHALL BE ABANDONED IN PLACE.
4. EXISTING CONDUIT PENETRATION AT DEMOLISHED WALL TO BE REWORKED AS REQUIRED FOR NEW BUILDING. MAINTAIN CONTINUITY OF SERVICE OR COORDINATE DOWN TIME AS NECESSARY.
5. REMOVE EXISTING LIGHTING FIXTURE AND ASSOCIATED EXPOSED CONDUITS. REMOVE ASSOCIATED CONDUCTORS BACK TO SOURCE. BELOW-GRADE CONDUITS SHALL BE ABANDONED IN PLACE.
6. REMOVE EXISTING RECEPTACLE AND ASSOCIATED EXPOSED CONDUITS. REMOVE ASSOCIATED CONDUCTORS BACK TO SOURCE. BELOW-GRADE CONDUITS SHALL BE ABANDONED IN PLACE.
7. REMOVE EXISTING VFD. REMOVE ASSOCIATED CONDUCTORS BACK TO SOURCE. BELOW-GRADE CONDUITS SHALL BE ABANDONED IN PLACE.
8. DISCONNECT EXISTING CHILLER CONTROL UNIT. REMOVE ASSOCIATED POWER CONDUCTORS BACK TO SOURCE. BELOW-GRADE CONDUITS SHALL BE ABANDONED IN PLACE.



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



2 ELECTRICAL PLAN - OR CHILLER DEMOLITION
1" = 10'-0"



Revisions:	Date:

CONTRACTOR
MORAN CONSTRUCTION, INC
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(321) 639-5970

ENGINEER OF RECORD
STRUCTURAL/MEP:
TLC ENGINEERING SOLUTIONS, INC.
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COA 15

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: ELECTRICAL PLAN - DEMOLITION	Phase: 100% CONSTRUCTION DOCUMENTS
Approved:	FULLY SPRINKLERED

Project Title: DESIGN BUILD REPLACE CHILLERS VIERA			Project Number: 675-18-151
			Building Number: -
Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940			Drawing Number: ED101
Issue Date: 12-20-2019	Checked: MMH	Drawn: AMH	56 OF 68

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VA

MDP-1 DEMOLISHED LOAD CALCULATION		
LOAD	NORMAL	EMERGENCY
CHILLER 1 CIRCUIT NO 1	342 KVA	342 KVA
CHILLER 1 CIRCUIT NO 2	342 KVA	342 KVA
CHILLER 2 CIRCUIT NO 1	342 KVA	0 KVA*
CHILLER 2 CIRCUIT NO 2	342 KVA	0 KVA*
CHWP-1	43 KVA	43 KVA
CHWP-2	43 KVA	43 KVA
CHWP-3	43 KVA	43 KVA
NET MDP-1 DEMOLISHED LOAD	1,497 KVA	813 KVA

* FOR THE EXISTING CONFIGURATION, ONLY ONE CHILLER IS OPERATIONAL DURING EMERENCY OPERATION.

PSG DEMOLISHED LOAD CALCULATION	
LOAD	EMERGENCY*
MDP-1 DEMOLISHED LOAD	813 KVA
OR CHILLER DEMOLISHED LOAD	150 KVA
NET PSG DEMOLISHED LOAD	963 KVA

* PARALLELING SWITCHGEAR ONLY EXPERIENCES LOAD IN EMERGENCY MODE.

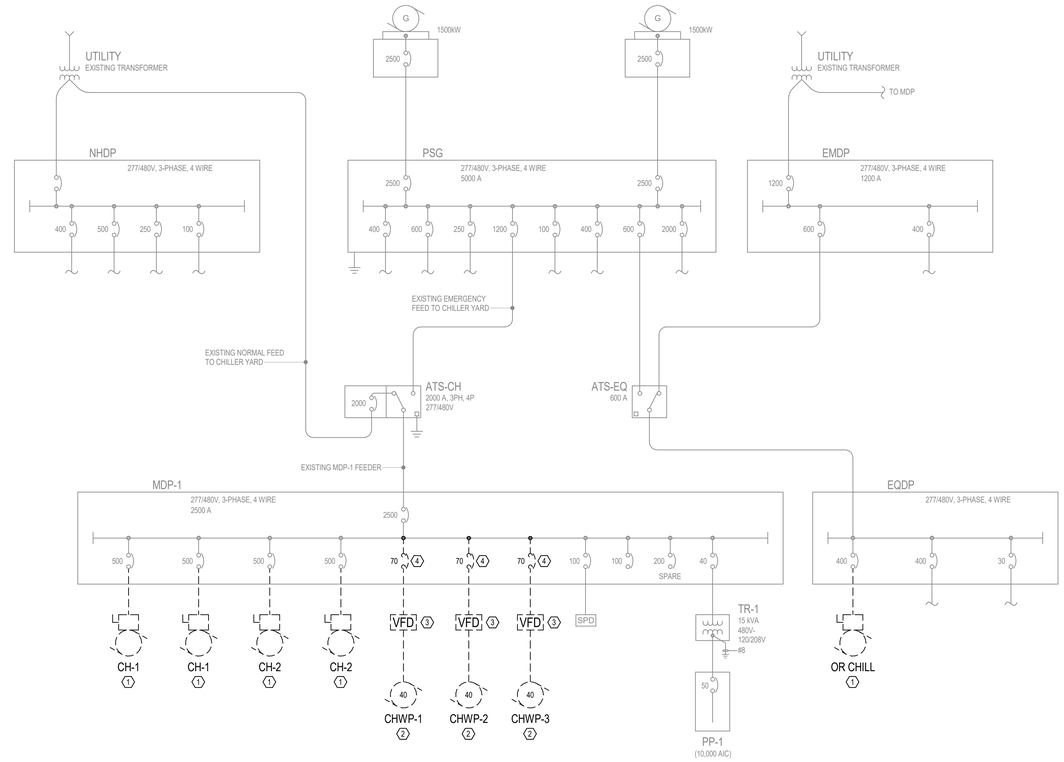
GENERAL NOTES

A. PROVIDE DEMOLITION AS REQUIRED TO COMPLETE THE SCOPE OF WORK. DEMOLITION DRAWINGS ARE INTENDED TO SHOW THE APPROXIMATE SCOPE OF WORK.

B. COORDINATE DEMOLITION OF ELECTRICAL EQUIPMENT AND APPURTENANCES WITH OVERALL SCOPE OF WORK AND PROJECT SCHEDULE. COORDINATE ALL OUTAGES WITH OTHER TRADES AND THE VA.

SHEET KEYNOTES

1. DISCONNECT EXISTING CHILLER AND REMOVE EXISTING CONDUITS AND CONDUCTORS BACK TO SOURCE. BELOW GRADE CONDUITS SHALL BE ABANDONED IN PLACE.
2. DISCONNECT EXISTING PUMP AND REMOVE EXISTING CONDUCTORS BACK TO SOURCE. BELOW GRADE CONDUITS SHALL BE ABANDONED IN PLACE.
3. REMOVE EXISTING VFD. REMOVE ASSOCIATED CONDUCTORS BACK TO SOURCE. BELOW-GRADE CONDUITS SHALL BE ABANDONED IN PLACE.
4. REMOVE EXISTING BREAKER AND PREPARE SPACE FOR NEW BREAKER.



1 PARTIAL ONE-LINE DIAGRAM - DEMOLITION
N.T.S.

Revisions:	Date:

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Drawing Title	ELECTRICAL ONE-LINE DIAGRAM - DEMOLITION
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	MMH
Drawn	AMH
Project Number	675-18-151
Building Number	-
Drawing Number	ED601
	57 OF 68

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VA

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	MODEL	VOLTAGE	REQUIRED LAMPS		VA	COMMENTS
					TYPE	LAMPS		
A	INDUSTRIAL LENSED LINEAR LED LIGHT FIXTURE, 4000K, 80CRI	LITHONIA	LBL4 6000L 840 USPOM	277 V	LED	INTEGRAL TO FIXTURE	52 VA	
AE	INDUSTRIAL LENSED LINEAR LED LIGHT FIXTURE, 4000K, 80CRI, EMERGENCY DRIVER	LITHONIA	LBL4 6000L 840 EM USPOM	277 V	LED	INTEGRAL TO FIXTURE	52 VA	
W1	INDUSTRIAL LED WALL PACK, FULL CUTOFF, 4000K, 80CRI	LITHONIA	WST LED P3 40K VW MVOLT USPOM	277 V	LED	INTEGRAL TO FIXTURE	60 VA	
W1E	INDUSTRIAL LED WALL PACK, FULL CUTOFF, 4000K, 80CRI, EMERGENCY DRIVER	LITHONIA	WST LED P3 40K VW MVOLT EM USPOM	277 V	LED	INTEGRAL TO FIXTURE	60 VA	
W2	INDUSTRIAL LED WALL-MOUNTED FLOOD, 4000K, 80CRI	LITHONIA	DSXF2 P2 40K FL MVOLT DDBXD USPOM	277 V	LED	INTEGRAL TO FIXTURE	78 VA	
X	LED EXIT SIGN FIXTURE, WALL MOUNTED, RED LETTERS, WHITE THERMO PLASTIC HOUSING	LITHONIA	LQM-S-W-3-R-120/277-ELN-SD USPOM	277 V	LED	INTEGRAL TO FIXTURE	10 VA	

GENERAL NOTES

A. ALL NEW LIGHTING FIXTURES SHALL BE LED TYPE.

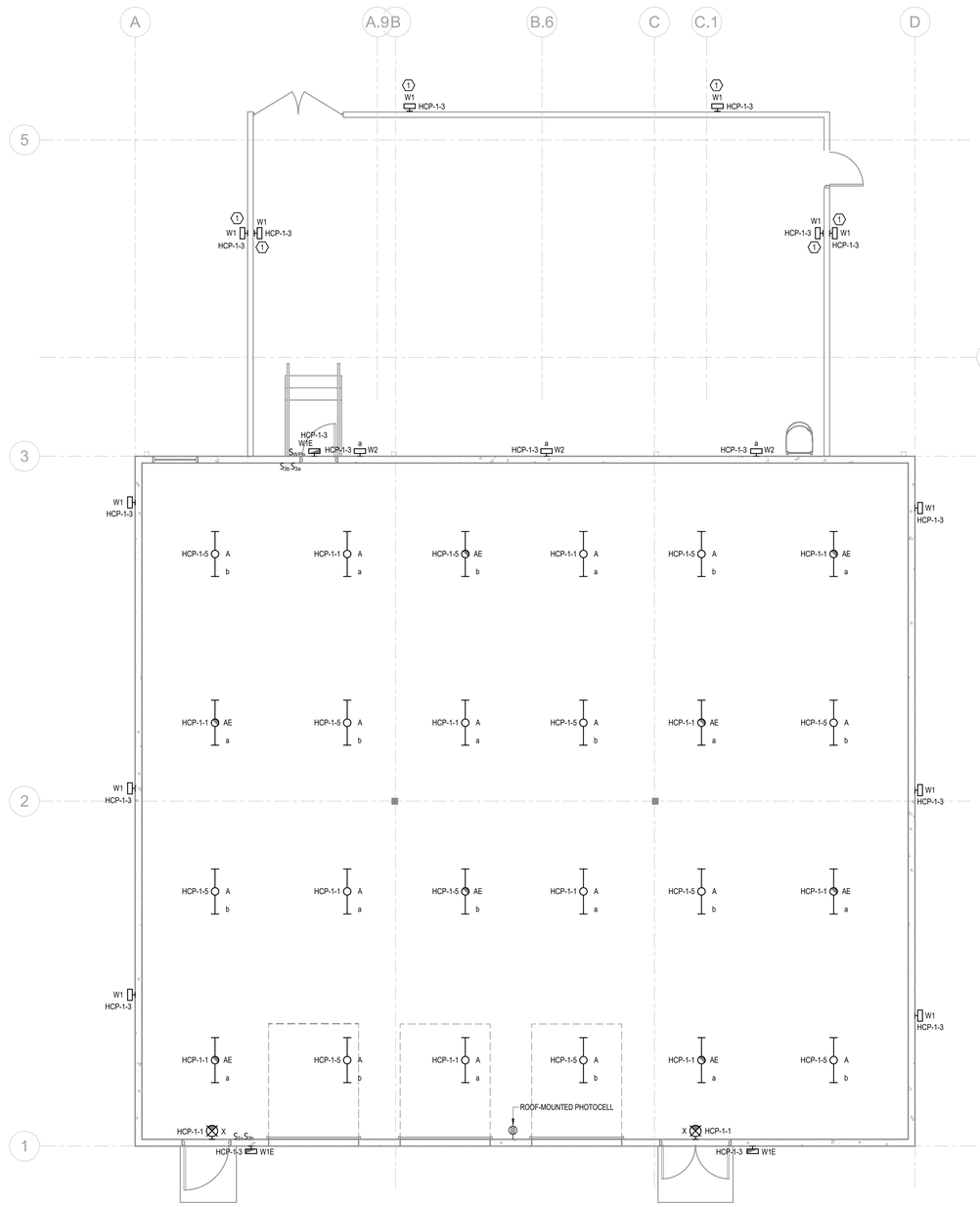
B. ROUTE EXTERIOR LIGHTING CIRCUITS TO PANELBOARD VIA TIMECLOCK AND PHOTOCELL. SEE SHEET EP101 FOR TIMECLOCK LOCATION.

C. SUSPEND INTERIOR LIGHTING FIXTURES AT 14' AFF. COORDINATE FINAL FIXTURE ARRANGEMENT WITH HVAC PIPING, DUCTWORK, AND EQUIPMENT.

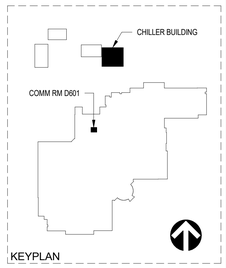
D. MINIMUM FOOTCANDLES FOR INTERIOR MECHANICAL ROOMS PER VA DESIGN GUIDE: 20FC. PROVIDED AVERAGE FOOTCANDLES: 31FC.

SHEET KEYNOTES

1. SURFACE-MOUNT FIXTURE TO NEAREST COLUMN.



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



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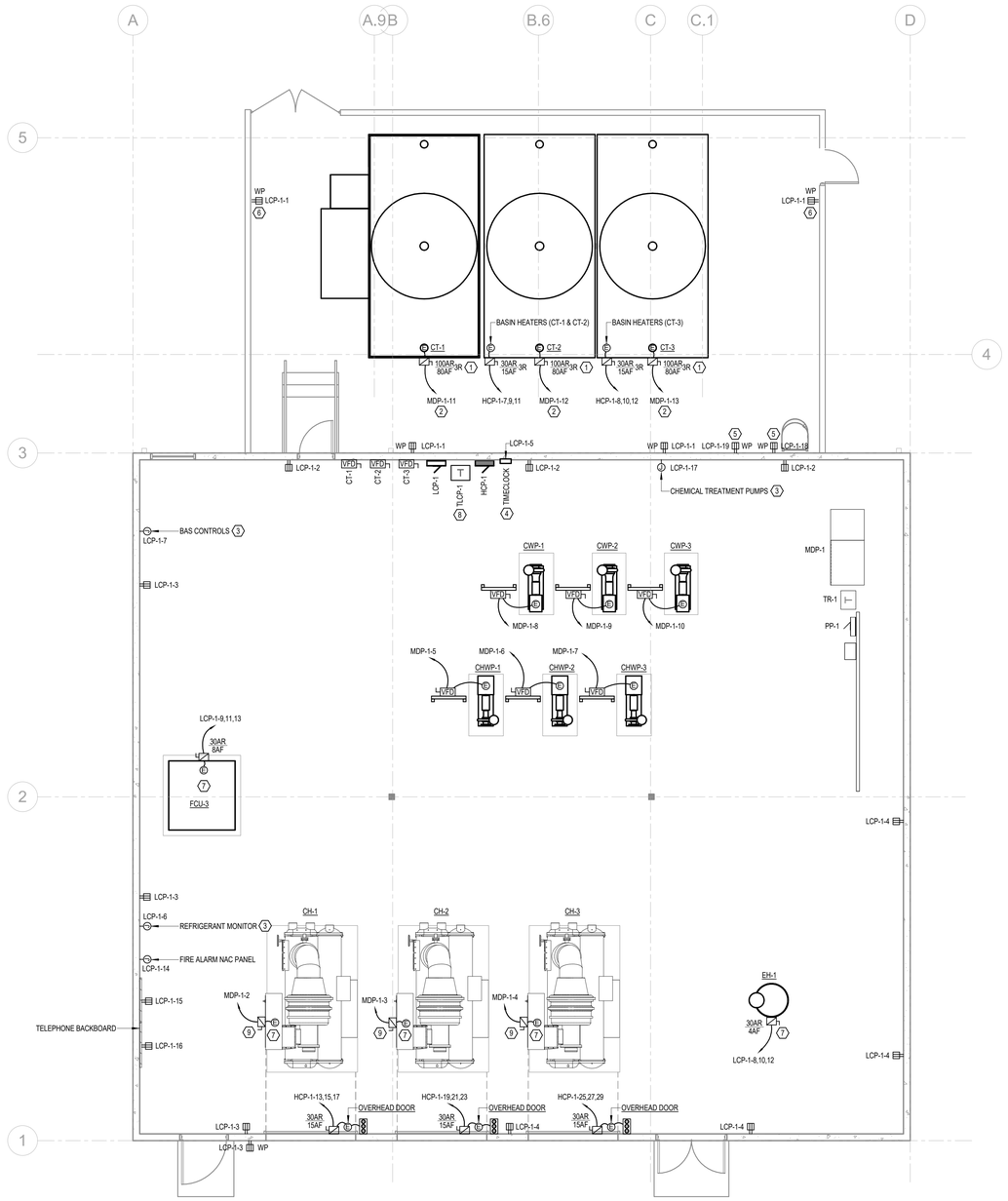
STAMP

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VA U.S. Department of Veterans Affairs

Drawing Title	ELECTRICAL PLAN - LIGHTING & LIGHTING FIXTURE SCHEDULE
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	MMH
Drawn	AMH
Project Number	675-18-151
Building Number	-
Drawing Number	EL101
	58 OF 68

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

GENERAL NOTES

A. ALL DEMOLITION AND NEW CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH PROJECT SEQUENCE OF CONSTRUCTION AND BE COORDINATED WITH ALL OTHER TRADES.

B. ALL ELECTRICAL OUTAGES SHALL BE CAREFULLY COORDINATED WITH OTHER TRADES, GENERAL CONTRACTOR, AND VA.

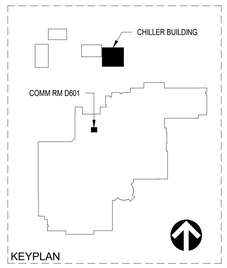
C. COORDINATE PROVISION OF ALL VFD'S, MOTOR STARTERS, AND DISCONNECTS FOR MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR.

D. COORDINATE DISCONNECT, STARTER, AND VFD LOCATIONS WITH EQUIPMENT SERVED. WHERE EQUIPMENT IS NOT INTEGRAL TO EQUIPMENT, PROVIDE UNISTRUT AND OTHER MOUNTING ACCESSORIES AS REQUIRED.

E. SEE ONE-LINE DIAGRAM FOR MECHANICAL EQUIPMENT CONDUIT AND CONDUCTOR SIZES.

SHEET KEYNOTES

1. PROVIDE DISCONNECT WITH AUXILLIARY CONTACTS. PROVIDE CONTROL CONDUCTORS IN 1"C TO VFD TO INDICATE WHEN DISCONNECT IS IN "OFF" POSITION.
2. ROUTE TO MDP VIA VFD.
3. COORDINATE FINAL LOCATION WITH MECHANICAL CONTRACTOR.
4. PROVIDE DIGITAL ASTRONOMIC 2-CIRCUIT TIMECLOCK.
5. HEAT TRACE RECEPTACLE. COORDINATE EXACT MOUNTING HEIGHT AND LOCATION WITH HEAT TRACE INSTALLATION DATA AND MECHANICAL CONTRACTOR.
6. SURFACE-MOUNT TO NEAREST COLUMN.
7. STARTER/VFD PROVIDED WITH EQUIPMENT.
8. PROVIDE HOUSE-KEEPING PAD.
9. DISCONNECT IS INTEGRAL TO VFD ENCLOSURE DOOR HANDLE.



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VA U.S. Department of Veterans Affairs

Drawing Title	ELECTRICAL PLAN - POWER
Phase	100% CONSTRUCTION DOCUMENTS
Approved:	
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Project Number	675-18-151
Building Number	–
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Drawing Number	EP101
Issue Date	12-20-2019
Checked	MMH
Drawn	AMH
	59 OF 68

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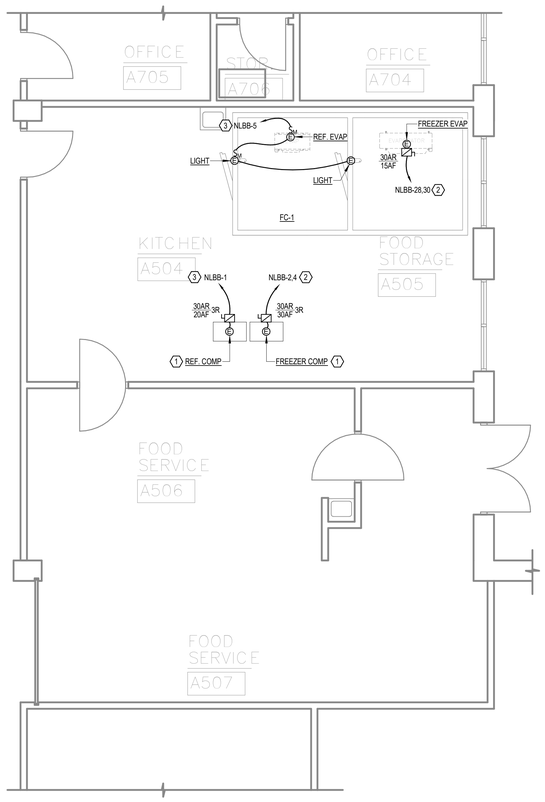
GENERAL NOTES

A. SEE SHEET G001 FOR EXACT LOCATION OF FREEZER AND COOLER WITHIN BUILDING.

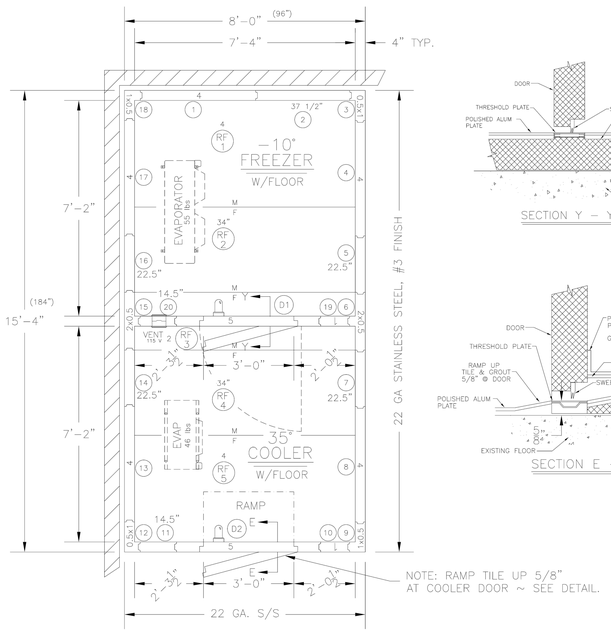
B. REUSE EXISTING CONDUIT, CONDUCTORS, AND CIRCUIT BREAKERS TO THE MAXIMUM EXTENT POSSIBLE.

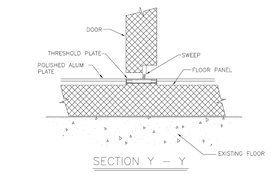
SHEET KEYNOTES

1. LOCATED ON ROOF. REUSE EXISTING CURB.
2. REWORK EXISTING CIRCUIT TO NEW EQUIPMENT. ENSURE CONDUCTORS ARE RATED FOR 30A BREAKER.
3. REWORK EXISTING CIRCUIT TO NEW EQUIPMENT. ENSURE CONDUCTORS ARE RATED FOR 20A BREAKER.

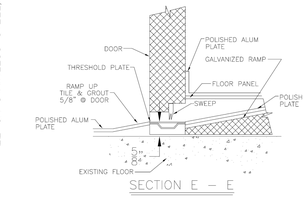


1 ELECTRICAL PLAN - FREEZER COOLER - POWER
1/4" = 1'-0"





SECTION Y – Y



SECTION E – E

2 FREEZER/COOLER DETAIL
N.T.S.

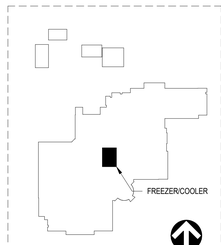
~ SPECIFICATIONS ~

BOX HEIGHT:	7'-6" OVERALL (6'-10 1/4" INTERIOR)
CONSTRUCTION:	FOAMED IN PLACE NSF STANDARD 7
INSULATION:	4" URETHANE, FINISHED PANEL UL CLASSIFIED FLAME SPREAD 20
INSTALLATION:	INDOOR
FLOOR:	FREEZER – STANDARD COOLER – STANDARD W/INTERIOR RAMP
WALK-IN DOORS:	FREEZER – 1 @ 36" x 77" COOLER – 1 @ 36" x 77"
DOOR HARDWARE & ACCESSORIES: (EACH DOOR)	KEYED LATCH & INSIDE RELEASE (EXTERIOR DOORS ONLY) FRAME HEATER WIRE HYDRAULIC DOOR CLOSER ROCKER TYPE LIGHT SWITCH W/PILOT INCANDESCENT VAPOR PROOF LIGHT FIXTURE STANDARD DIAL THERMOMETER 2 – STD. CAM LIFT HINGES 1/16" D.A.T.P. KICKPLATES 36" HIGH I/S & O/S
ACCESSORIES:	1 – PRESSURE RELIEF VENT
METAL FINISHES:	INTERIOR WALLS & CEILING – 22 GA. STAINLESS STEEL, #3 FINISH EXPOSED EXTERIOR – 22 GA STAINLESS STEEL, #3 FINISH UNEXPOSED EXTERIOR – .032 STUCCO ALUMINUM EXTERIOR FLOOR & CEILING – 26 GA STUCCO GALVANIZED INTERIOR FLOOR – 14 GA GALVANIZED STEEL NOT NSF APPROVED IF EXPOSED
REFRIGERATION:	U.L. LISTED, AIR COOLED, OUTDOORS W/25' OF PRE-CHARGED LINES
FREEZER (HERMETIC)	1 – REMOTE QUICK CONNECT 2.0 HP MODEL# AH247BZC 208/60/1 R-404A 17.4 UNIT AMPACITY 1 – LET-065BJ EVAP 208-230/60/1 2.4/7.4 AMPS
COOLER (HERMETIC)	1 – REMOTE QUICK CONNECT .50 HP MODEL# AKA9446EXAXC 115/60/1 R-22 12.4 UNIT AMPACITY 1 – AA18-53 EVAP 115/60/1 2.0 AMPS
REFRIGERATION ACCESSORIES:	2 – COMPRESSOR COVER (16010, 16044) 4 – 1" PVC SLEEVES 2 – 3" PVC SLEEVES

NSF

UL

american panel corporation
5800 S.E. 78th St, Ocala, Florida 34472
Ph: (352) 245-7055 Fax (352) 245-0726



KEYPLAN

Revisions:	Date:

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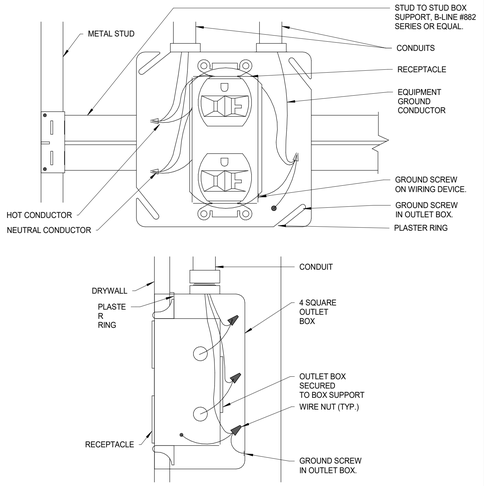
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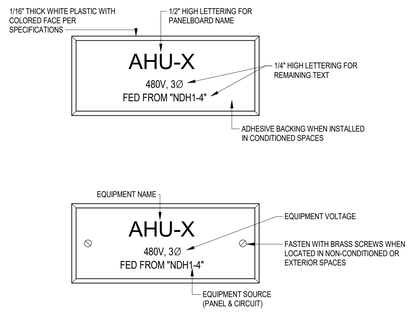
VA U.S. Department of Veterans Affairs

Drawing Title: ELECTRICAL PLAN - FREEZER/COOLER - POWER	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved:	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940	Building Number: -
		Issue Date: 12-20-2019 / Checked: MMH / Drawn: AMH	Drawing Number: EP201
			60 OF 68

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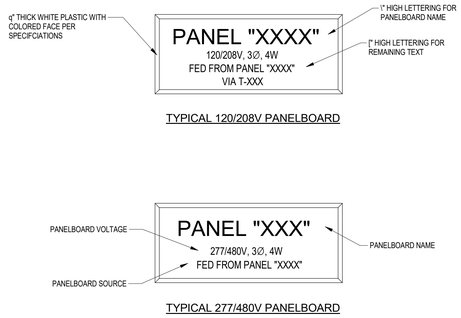


TYPICAL RECEPTACLE MOUNTING DETAIL
N.T.S. — 1



TYPICAL EQUIPMENT

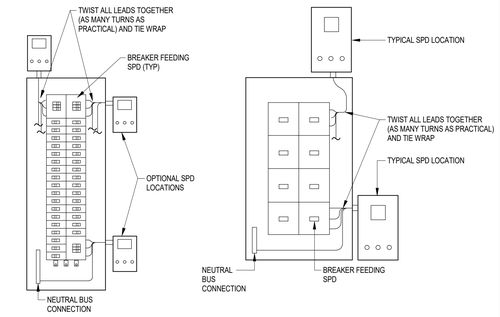
EQUIPMENT NAMEPLATE
N.T.S. — 2



TYPICAL 120/208V PANELBOARD

TYPICAL 277/480V PANELBOARD

PANELBOARD NAMEPLATE
N.T.S. — 3

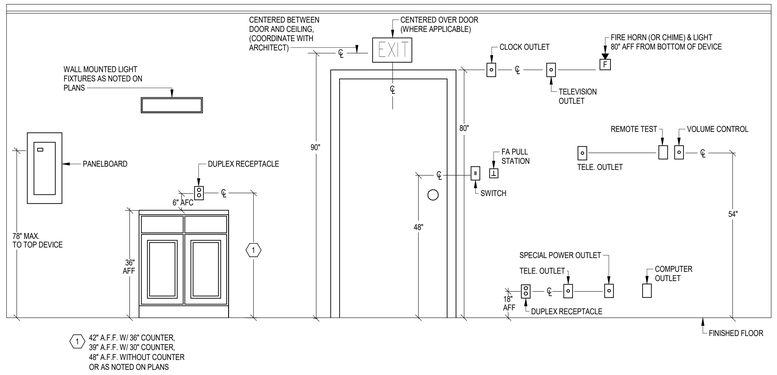


PANELBOARD

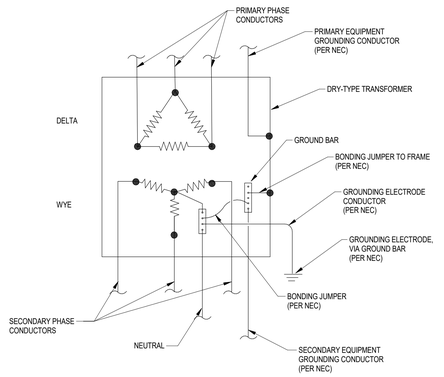
SERVICE ENTRANCE OR DISTRIBUTION PANEL

NOTE: MOUNT SPD IN A LOCATION TO MAINTAIN ALL LEADS AS SHORT AS POSSIBLE. (18" MAX.)

SPD EXTERIOR MOUNT INSTALLATION
N.T.S. — 4



MOUNTING HEIGHTS
N.T.S. — 5



STEP DOWN TRANSFORMER GROUNDING
(3 PHASE, 3 WIRE, DELTA PRIMARY / 3 PHASE, 4 WIRE, WYE SECONDARY) — 6

Revisions:	Date:

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Drawing Title	ELECTRICAL POWER DETAILS
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	MMH
Drawn	AMH
Project Number	675-18-151
Building Number	-
Drawing Number	EP501
	61 OF 68

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GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL ENGAGE EQUIPMENT MANUFACTURER TO PERFORM THE FOLLOWING STUDIES AS PART OF THE EQUIPMENT MANUFACTURER'S BID PRICE: SHORT CIRCUIT STUDY, COORDINATION STUDY, AND ARC FLASH STUDY.

B. ELECTRICAL CONTRACTOR SHALL PROVIDE ARC FLASH LABELS PER NEC SECTION 110.16.

C. VFDS AND EQUIPMENT SHALL BE RATED FOR THE SHORT CIRCUIT AMPACITY INFORMATION PROVIDED IN THE ONE-LINE DIAGRAM.

MDP-1 NEW LOAD CALCULATION*

LOAD	NORMAL	EMERGENCY
CHILLERS	566 KVA	566 KVA
CONDENSER WATER PUMPS	24 KVA	24 KVA
CHILLED WATER PUMPS	88 KVA	88 KVA
COOLING TOWERS	68 KVA	68 KVA
MISC LOAD	24 KVA	24 KVA
TOTAL NEW CONNECTED LOAD	770 KVA	770 KVA

* SEE MDP-1 PANEL SCHEDULE FOR INDIVIDUAL LOAD KVA.

MDP-1 NET LOAD DIFFERENTIAL

LOAD	NORMAL	EMERGENCY
DEMOLISHED LOAD	- 1,497 KVA (2 CHILLERS)	- 813 KVA (1 CHILLER)
NEW DEMAND LOAD	862 KVA (2 CHILLERS)	862 KVA (2 CHILLERS)
NET LOAD DIFFERENTIAL	- 635 KVA	49 KVA

MDP-1 NET LOAD CALCULATION

LOAD	NORMAL	EMERGENCY
EXISTING LOAD	1,512 KVA	828 KVA
DEMOLISHED LOAD	-1,497 KVA	- 813 KVA
NEW CONNECTED LOAD	770 KVA	770 KVA
TOTAL CONNECTED LOAD	785 KVA	785 KVA
DEMAND LOAD FACTOR	110 %	110 %
TOTAL DEMAND LOAD	862 KVA	862 KVA
TOTAL DEMAND LOAD AMPACITY	1037 A	1037 A
FEEDER BREAKER AMPACITY	2000 A, ELECTRONIC TRIP	1200 A, ELECTRONIC TRIP
OPERATION STATUS	OK	OK

PSG NET LOAD CALCULATION

LOAD	EMERGENCY*
PSG DEMOLISHED LOAD (SEE SHEET ED601)	- 963 KVA
PSG NEW LOAD (FROM MDP-1)	862 KVA
NET PSG LOAD DIFFERENTIAL	- 101 KVA

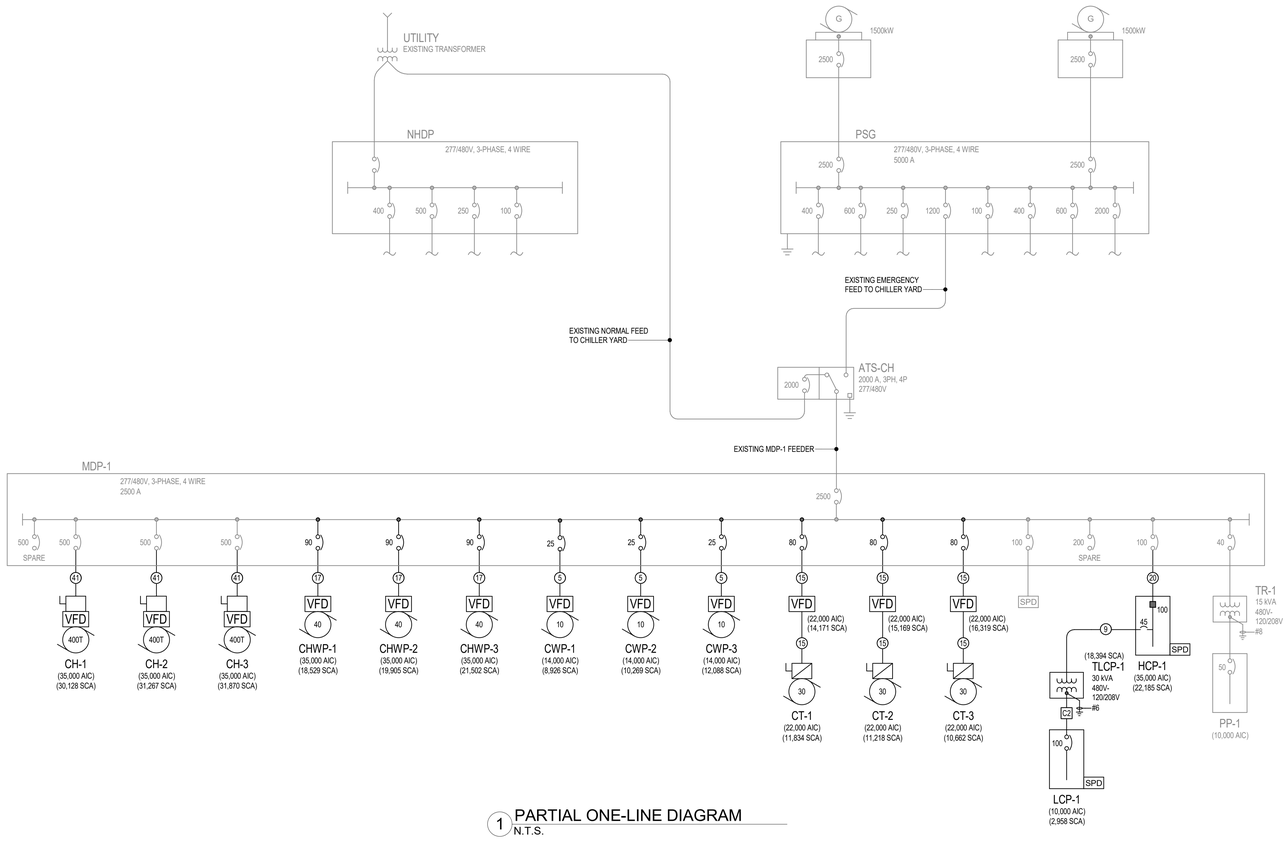
* PARALLELING SWITCHGEAR ONLY EXPERIENCES LOAD IN EMERGENCY MODE.

TRANSFORMER SECONDARY FEEDER SCHEDULE (CU)

DESIG.	TRANSFORMER KVA RATING	FUSE OR CIRCUIT BREAKER AMP RATING/# POLES	NUMBER OF SETS	NUMBER OF CONDUCTORS	FEEDER SIZE		
					CONDUCTORS	SUPPLY SIDE BONDING JUMPER	CONDUIT
C1	15	60/3	1	4	#4 AWG	#8 AWG	1"
C2	30	100/3	1	4	#1 AWG	#6 AWG	1 1/2"
C3	45	175/3	1	4	#2/0 AWG	#4 AWG	2"
C4	75	300/3	1	4	#350 KCMIL	#2 AWG	3"
C5	112.5	400/3	1	4	#600 KCMIL	#2/0 AWG	4"
C6	150	600/3	2	4	#350 KCMIL	#2/0 AWG	3"
C7	225	800/3	3	4	#300 KCMIL	#2/0 AWG	3"
C8	300	1000/3	3	4	#400 KCMIL	#3/0 AWG	4"
C9	500	1600/3	5	4	#400 KCMIL	#3/0 AWG	4"

FEEDER SCHEDULE (CU)

DESIG.	FUSE OR CIRCUIT BREAKER AMP RATING/# POLES	NUMBER OF SETS	NUMBER OF CONDUCTORS	FEEDER SIZE		
				CONDUCTORS	EQUIP. GRD.	CONDUIT
1	15/3	1	3	#12 AWG	#12 AWG	3/4"
2			4			3/4"
3	20/3	1	3	#12 AWG	#12 AWG	3/4"
4			4			3/4"
5	30/3	1	3	#10 AWG	#10 AWG	3/4"
6			4			3/4"
7	40/3	1	3	#8 AWG	#10 AWG	1"
8			4			1"
9	50/3	1	3	#6 AWG	#10 AWG	1"
10			4			1"
11	60/3	1	3	#4 AWG	#10 AWG	1 1/4"
12			4			1-1/4"
13	70/3	1	3	#4 AWG	#8 AWG	1 1/4"
14			4			1-1/4"
15	80/3	1	3	#3 AWG	#8 AWG	1-1/4"
16			4			1-1/4"
17	90/3	1	3	#2 AWG	#8 AWG	1-1/2"
18			4			1-1/2"
19	100/3	1	3	#1 AWG	#8 AWG	1-1/2"
20			4			1-1/2"
21	125/3	1	3	#1 AWG	#6 AWG	1-1/2"
22			4			2"
23	150/3	1	3	#1/0 AWG	#6 AWG	1-1/2"
24			4			2"
25	175/3	1	3	#2/0 AWG	#6 AWG	2"
26			4			2"
27	200/3	1	3	#3/0 AWG	#6 AWG	2"
28			4			2"
29	225/3	1	3	#4/0 AWG	#4 AWG	2 1/2"
30			4			2-1/2"
31	250/3	1	3	#250 KCMIL	#4 AWG	3"
32			4			3"
33	300/3	1	3	#350 KCMIL	#4 AWG	3"
34			4			3"
35	350/3	1	3	#500 KCMIL	#3 AWG	3"
36			4			4"
37	400/3	1	3	#600 KCMIL	#3 AWG	4"
38			4			4"
39	450/3	2	3	#4/0 AWG	#2 AWG	2 1/2"
40			4			2-1/2"
41	500/3	2	3	#250 KCMIL	#2 AWG	3"
42			4			3"
43	600/3	2	3	#350 KCMIL	#1 AWG	3"
44			4			3"
45	800/3	3	3	#300 KCMIL	#1/0 AWG	3"
46			4			3"
47	1000/3	3	3	#400 KCMIL	#2/0 AWG	3"
48			4			3"
49	1200/3	4	3	#350 KCMIL	#3/0 AWG	3"
50			4			3"
51	1600/3	4	3	#600 KCMIL	#4/0 AWG	4"
52			4			4"
53	2000/3	5	3	#600 KCMIL	#250 KCMIL	4"
54			4			4"
55	3000/3	8	3	#500 KCMIL	#400 KCMIL	4"
56			4			4"
57	4000/3	9	3	#750 KCMIL	#500 KCMIL	4"
58			4			5"



1 PARTIAL ONE-LINE DIAGRAM
N.T.S.

Revisions:	Date:

CONTRACTOR
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ENGINEER OF RECORD
STRUCTURAL/MEP:
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TLC ENGINEERING SOLUTIONS THINK. LISTEN. CREATE.

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	ELECTRICAL ONE-LINE DIAGRAM
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	MMH
Drawn	AMH
Project Number	675-18-151
Building Number	-
Drawing Number	EP601
	62 OF 68

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VA

Branch Panel: NLBB

Location: EXISTING
Supply From: EXISTING
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 400 A
MCB Rating: 400 A
Neutral Rating: 100.00%

Notes:
EXISTING PANELBOARD. ALL LOADS ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE. PROVIDE NEW PANELBOARD DIRECTORY.

CKT	Circuit Description	Note	Trip	Pole	A	B	C	Pole	Trip	Note	Circuit Description	CKT
1	REFRIGERATOR COMPRESSOR	1	20 A	1	1.5 kVA	1.8 kVA		2	30 A	1	FREEZER COMPRESSOR	2
3	WARMER SERVICE LINE A-506		20 A	1			0.0 kVA	1.8 kVA				4
5	REFRIGERATOR EVAP/LIGHTS	1	20 A	1								6
7					0.0 kVA	0.0 kVA						8
9	PANEL NLBC		70 A	3			0.0 kVA	0.0 kVA				10
11								0.0 kVA	0.0 kVA		SPARE	12
13	DISPOSAL SINK A-505		20 A	1	0.0 kVA	0.0 kVA					SPARE	14
15	SHUNT TRIP	--	--	--			0.0 kVA	0.0 kVA				16
17								0.0 kVA	0.0 kVA			18
19	UPPER CONVECTION OVEN		40 A	3	0.0 kVA	0.0 kVA						20
21							0.0 kVA	0.0 kVA				22
23	SHUNT TRIP	--	--	--								24
25					0.0 kVA	0.0 kVA						26
27	FRYER A-506		60 A	3			0.0 kVA	0.8 kVA				28
29								0.0 kVA	0.8 kVA			30
31	HOT DOG DISP.		20 A	1	0.0 kVA	0.0 kVA						32
33	SPARE		20 A	1			0.0 kVA	0.0 kVA				34
35	SHUNT TRIP	--	--	--								36
37	DMRG TABLE		20 A	1	0.0 kVA	0.0 kVA						38
39	RECPT. SIGN MENU		20 A	1			0.0 kVA	0.0 kVA				40
41	SPARE		20 A	1								42
			Total Load:		3.3 kVA		2.6 kVA		2.1 kVA			
			Total Amps:		28 A		22 A		18 A			

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Kitchen Equipment - Non-Dwelling Unit	8.0 kVA	70.00%	5.6 kVA		
				Total Conn. Load:	8.0 kVA
				Total Est. Demand:	5.60 kVA
				Total Conn. Current:	22 A
				Total Est. Demand Current:	16 A

Notes:
1. REUSE EXISTING CIRCUIT BREAKER TO FEED NEW EQUIPMENT.

Branch Panel: LCP-1

Location: CHILLER PLANT
Supply From: TLCP-1
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A
Neutral Rating: 100.00%

Notes:
NEW PANELBOARD

CKT	Circuit Description	Note	Trip	Pole	A	B	C	Pole	Trip	Note	Circuit Description	CKT
1	CHILLER PLANT RECEPTACLES		20 A	1	0.8 kVA	0.6 kVA						2
3	CHILLER PLANT RECEPTACLES		20 A	1			0.8 kVA	0.8 kVA				4
5	LIGHTING CONTROL POWER		20 A	1								6
7	BAS CONTROL POWER		20 A	1	0.5 kVA	0.6 kVA						8
9							0.7 kVA	0.6 kVA				10
11	AHU-1		15 A	3								12
13					0.7 kVA	0.5 kVA						14
15	COMM BACKBOARD		20 A	1			0.2 kVA	0.2 kVA				16
17	CHEMICAL TREATMENT PUMPS		20 A	1								18
19	HEAT TRACE		20 A	1	1.0 kVA	0.0 kVA						20
21	SPARE		20 A	1			0.0 kVA	0.0 kVA				22
23	SPARE		20 A	1								24
25	SPARE		20 A	1	0.0 kVA	0.0 kVA						26
27	SPARE		20 A	1			0.0 kVA	0.0 kVA				28
29	SPARE		20 A	1								30
			Total Load:		4.7 kVA		3.3 kVA		4.5 kVA			
			Total Amps:		40 A		27 A		39 A			

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	3.8 kVA	113.16%	4.3 kVA		
Other	3.2 kVA	100.00%	3.2 kVA	**Total Conn. Load:**	12.4 kVA
Receptacle	5.4 kVA	100.00%	5.4 kVA	**Total Est. Demand:**	12.90 kVA
				Total Conn. Current:	34 A
				Total Est. Demand Current:	36 A

Notes:

Switchboard: MDP-1

Location: CHILLER PLANT
Supply From: ATS-CH
Mounting: FLOOR
Enclosure: N-3R

Volts: 480/277 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 65,000
Mains Type: MCB
Mains Rating: 2500 A
MCB Rating: 2500 A
Neutral Rating: 100.00%

Notes:
EXISTING SWITCHBOARD TO REMAIN; EXISTING BREAKERS TO REMAIN AND BE REUSED UNLESS OTHERWISE NOTED BELOW. PROVIDE NEW SWITCHBOARD DIRECTORY.

CKT	Circuit Description	# of Poles	Trip Rating	Load	Remarks
MDP-1-1	SPARE	3	500 A	0.0 kVA	
MDP-1-2	CH-1	3	500 A	283.0 kVA	
MDP-1-3	CH-2	3	500 A	283.0 kVA	
MDP-1-4	CH-3	3	500 A	0.0 kVA	NOTE 1
MDP-1-5	CHWP-1	3	90 A	43.2 kVA	NOTE 2
MDP-1-6	CHWP-2	3	90 A	43.2 kVA	NOTE 2
MDP-1-7	CHWP-3	3	90 A	0.0 kVA	NOTE 1,2
MDP-1-8	CWP-1	3	25 A	11.7 kVA	NOTE 2
MDP-1-9	CWP-2	3	25 A	11.7 kVA	NOTE 2
MDP-1-10	CWP-3	3	25 A	0.0 kVA	NOTE 1,2
MDP-1-11	CT-1	3	80 A	33.2 kVA	NOTE 3
MDP-1-12	CT-2	3	80 A	33.2 kVA	NOTE 3
MDP-1-13	CT-3	3	80 A	0.0 kVA	NOTE 1,3
MDP-1-14	SPACE	--	--	0.0 kVA	--
MDP-1-15	SPD	3	100 A	0.0 kVA	
MDP-1-16	PANEL HCP-1	3	100 A	43.3 kVA	
MDP-1-17	SPARE	3	200 A	0.0 kVA	
MDP-1-18	PANEL PP-1 VIA TR-1	3	40 A	10.8 kVA	
				796.3 kVA	
				958 A	

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	569.8 kVA	112.42%	640.6 kVA		
Lighting	2.4 kVA	125.00%	3.0 kVA	**Total Conn. Load:**	796.3 kVA
Motor	176.2 kVA	106.13%	187.0 kVA	**Total Est. Demand:**	878.5 kVA
Other	42.5 kVA	100.00%	42.5 kVA	**Total Conn. Current:**	958 A
Receptacle	5.4 kVA	100.00%	5.4 kVA	**Total Est. Demand...**	1057 A

Notes:
1. N+1 LOAD. LOAD WILL NOT RUN CONCURRENTLY WITH OTHER LOADS.
2. PROVIDE NEW BREAKER IN EXISTING SPACE.
3. REMOVE EXISTING BREAKER AND PROVIDE NEW BREAKER IN CREATED SPACE.

Branch Panel: PP-1

Location: CHILLER PLANT
Supply From: TR-1
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 10,000
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 50 A
Neutral Rating: 100.00%

Notes:
EXISTING PANELBOARD

CKT	Circuit Description	Note	Trip	Pole	A	B	C	Pole	Trip	Note	Circuit Description	CKT
1	EXISTING LOAD		20 A	1	0.0 kVA	0.0 kVA						2
3	EXISTING LOAD		20 A	1			0.0 kVA	0.0 kVA				4
5	EXISTING LOAD		20 A	1								6
7	EXISTING LOAD		20 A	1	0.0 kVA	0.0 kVA						8
9	EXISTING LOAD		20 A	1			0.0 kVA	0.0 kVA				10
11	EXISTING LOAD		20 A	1								12
13	EXISTING LOAD		20 A	1	0.0 kVA	0.0 kVA						14
15	SPARE		20 A	1			0.0 kVA	0.0 kVA				16
17	SPARE		20 A	1								18
19	SPARE		20 A	1	0.0 kVA	0.0 kVA						20
21	SPARE		20 A	1			0.0 kVA	0.0 kVA				22
23	SPARE		20 A	1								24
25					3.6 kVA	0.0 kVA						26
27	MAIN		50 A	3			3.6 kVA	0.0 kVA				28
29								3.6 kVA	0.0 kVA			30
			Total Load:		3.6 kVA		3.6 kVA		3.6 kVA			
			Total Amps:		30 A		30 A		30 A			

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	10.8 kVA	100.00%	10.8 kVA		
				Total Conn. Load:	10.8 kVA
				Total Est. Demand:	10.80 kVA
				Total Conn. Current:	30 A
				Total Est. Demand Current:	30 A

Notes:

Branch Panel: HCP-1

Location: CHILLER PLANT
Supply From: MDP-1
Mounting: Surface
Enclosure: Type 1

Volts: 480/277 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 35,000
Mains Type: MLO
Mains Rating: 100 A
Neutral Rating: 100.00%

Notes:
NEW PANELBOARD

CKT	Circuit Description	Note	Trip	Pole	A	B	C	Pole	Trip	Note	Circuit Description	CKT
1	CHILLER PLANT LIGHTING		20 A	1	0.6 kVA	4.7 kVA						2
3	CHILLER PLANT LIGHTING		20 A	1			1.1 kVA	3.3 kVA				4
5	CHILLER PLANT LIGHTING		20 A	1								6
7					3.0 kVA	1.5 kVA						8
9	BASIN HEATERS CT-1, CT-2		15 A	3			3.0 kVA	1.5 kVA				10
11												12
13					1.7 kVA	0.0 kVA						14
15	OVERHEAD DOOR		20 A	3			1.7 kVA	0.0 kVA				16
17												18
19					1.7 kVA	0.0 kVA						20
21	OVERHEAD DOOR		20 A	3			1.7 kVA	0.0 kVA				22
23												24
25					1.7 kVA	0.0 kVA						26
27	OVERHEAD DOOR		20 A	3			1.7 kVA	0.0 kVA				28
29												30
			Total Load:		14.8 kVA		13.9 kVA		14.6 kVA			
			Total Amps:		54 A		50 A		53 A			

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	3.8 kVA	113.16%	4.3 kVA		
Lighting	2.4 kVA	125.00%	3.0 kVA	**Total Conn. Load:**	43.3 kVA
Other	31.7 kVA	100.00%	31.7 kVA	**Total Est. Demand:**	44.40 kVA
Receptacle	5.4 kVA	100.00%	5.4 kVA	**Total Conn. Current:**	52 A
				Total Est. Demand Current:	53 A

Notes:

Revisions:	Date:

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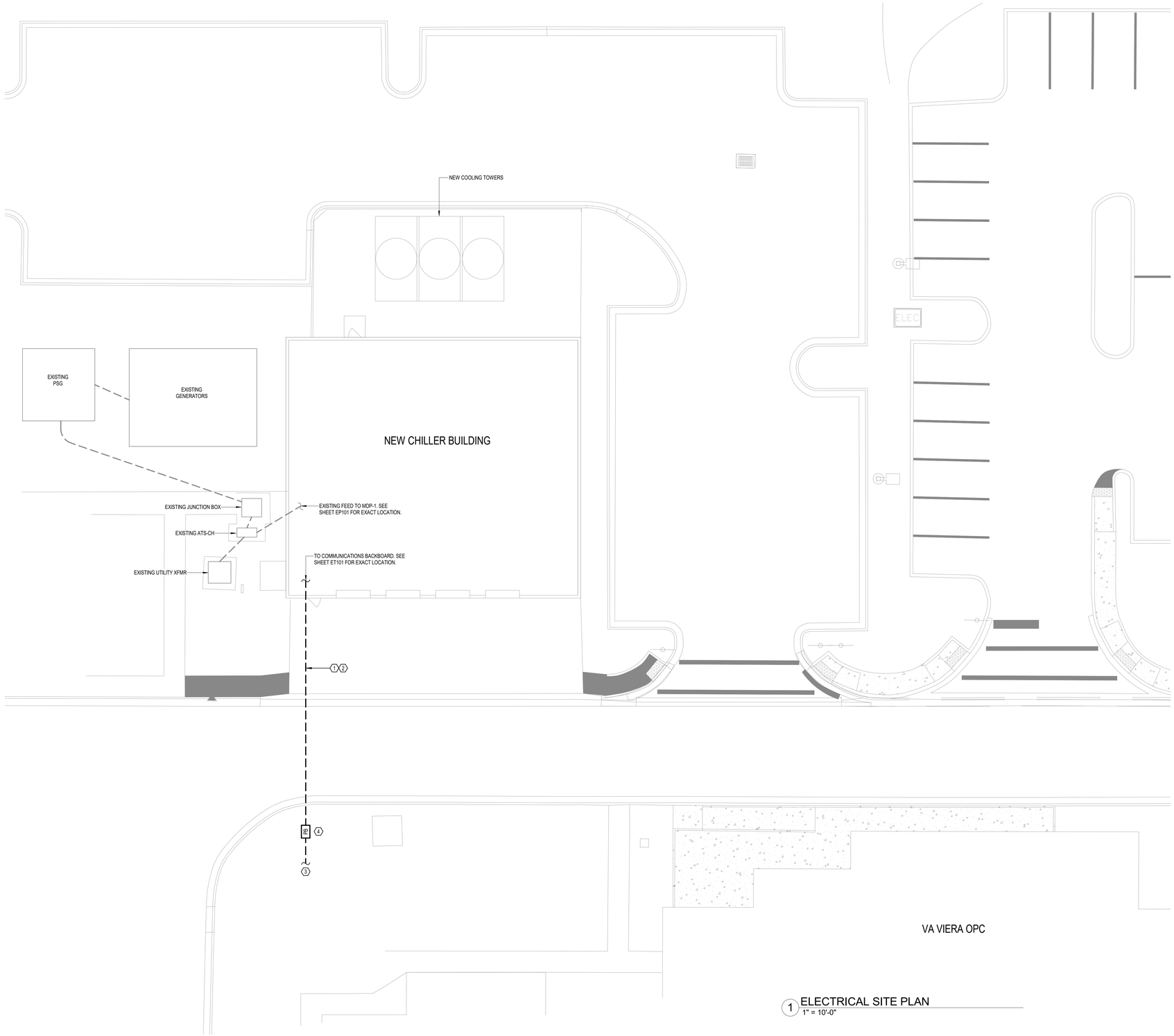
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: ELECTRICAL PANEL SCHEDULES
Approved:
Phase: 100% CONSTRUCTION DOCUMENTS
FULLY SPRINKLERED
Project Title: DESIGN BUILD REPLACE CHILLERS VIERA
Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Project Number: 675-18-151
Building Number: -
Issue Date: 12-20-2019
Checked: MMH
Drawn: AMH
Drawing Number: EP701
63 OF 68

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VA



1 ELECTRICAL SITE PLAN
1" = 10'-0"

GENERAL NOTES

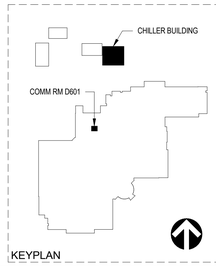
A. ALL DEMOLITION AND NEW CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH PROJECT SEQUENCE OF CONSTRUCTION AND BE COORDINATED WITH ALL OTHER TRADES.

B. COORDINATE ROUTE OF UNDERGROUND CONDUITS WITH EXISTING CONDITIONS AND UTILITIES. LOCATE ALL UTILITIES PRIOR TO BEGINNING WORK AND ADJUST EXACT CONDUIT ROUTE ACCORDINGLY.

C. EXISTING CONDUITS MADE AVAILABLE DURING DEMOLITION MAY BE REUSED AT THE CONTRACTOR'S DISCRETION.

SHEET KEYNOTES

1. PROVIDE (2) 2"C WITH COMMUNICATIONS CABLING FROM VA VIERA OPC MAIN IT ROOM TO CHILLER PLANT FOR VOICE AND DATA SERVICE. SEE SHEET ET501 FOR ADDITIONAL INFORMATION.
2. PROVIDE (1) 1"C WITH FIRE ALARM CABLING FROM VA VIERA OPC FACP TO CHILLER PLANT NAC PANEL. SEE SHEET ET501 FOR ADDITIONAL INFORMATION. PROVIDE SURGE PROTECTION ON COPPER WIRING ROUTED BETWEEN BUILDINGS.
3. ROUTE (2) 2"C WITH COMMUNICATIONS CABLING TO COMM RM D601 AND TERMINATE IN EXISTING PUNCHDOWN BLOCKS AND FIBER PATCH PANELS. ROUTE (1) 1"C WITH FIRE ALARM CABLING TO FACP. COORDINATE CONDUIT PATH WITHIN VA VIERA OPC TO MINIMIZE OPERATION INTERRUPTIONS.
4. TIER 22 TRAFFIC-RATED PULL BOX, MINIMUM SIZE 18" X 24".



Revisions:	Date:

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TLC ENGINEERING SOLUTIONS THINK. LISTEN. CREATE.

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	ELECTRICAL SITE PLAN
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	MMH
Drawn	AMH
Project Number	675-18-151
Building Number	-
Drawing Number	ES101
	64 OF 68

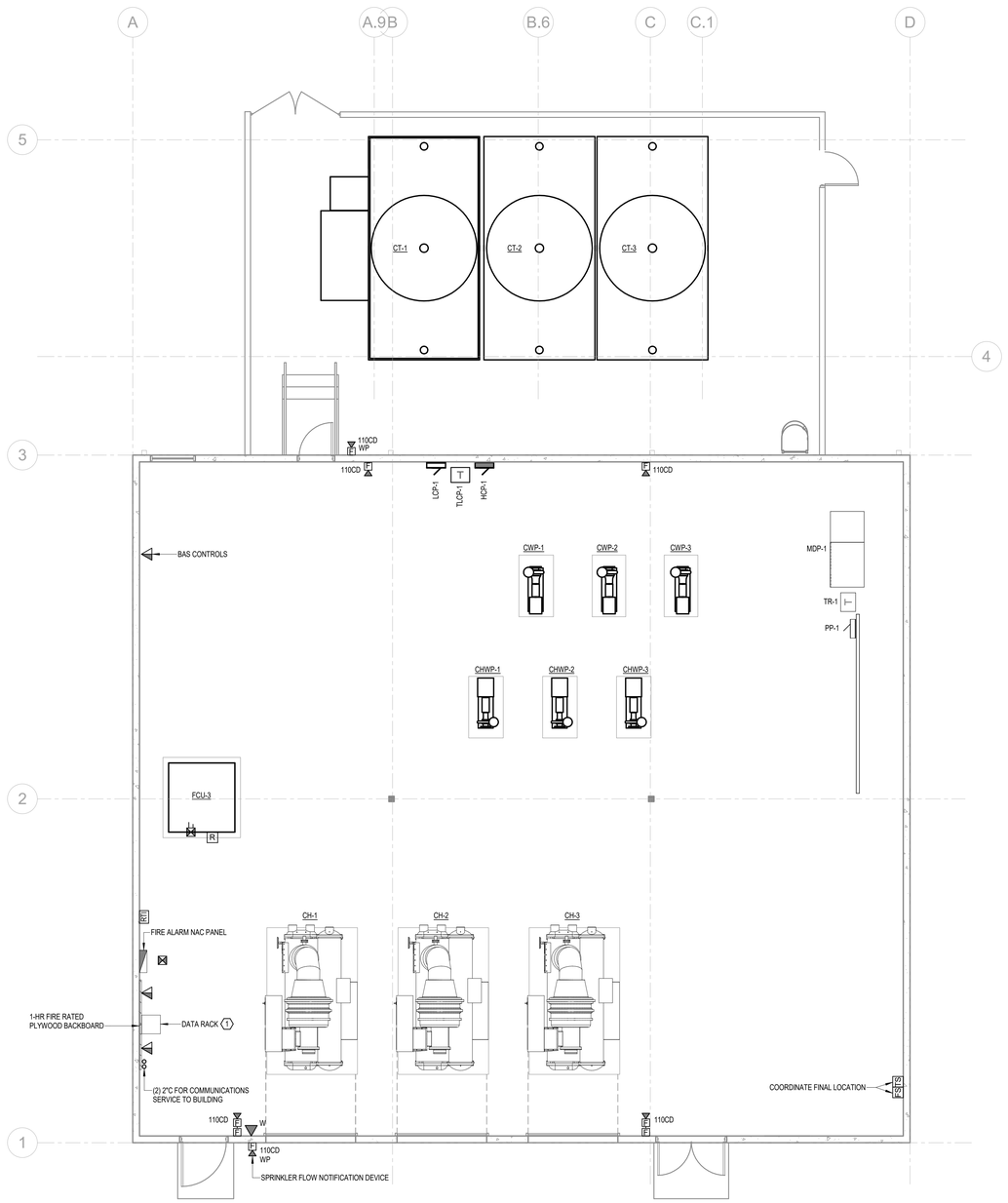
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VA

GENERAL NOTES

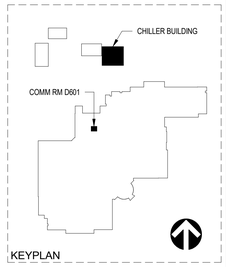
A. FIRE ALARM SHOWN IS TO BE AN EXTENSION OF THE EXISTING FIRE ALARM SYSTEM WITHIN THE VA VIERA OPC FACILITY. CONTRACTOR SHALL COORDINATE ALL NEW WORK WITH THE EXISTING FIRE ALARM SYSTEM VENDOR.

SHEET KEYNOTES

1. PROVIDE NEW CHATSWORTH 'CUBE-IT' 12U IT RACK. PROVIDE A 6-PORT FIBER-OPTIC PATCH PANEL AND 24-PORT CAT6 PATCH PANEL WITHIN THE RACK. PROVIDE A SPACE FOR A FUTURE NETWORK SWITCH PROVIDED BY THE VA.



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



Revisions:	Date:

CONTRACTOR

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TLC ENGINEERING SOLUTIONS
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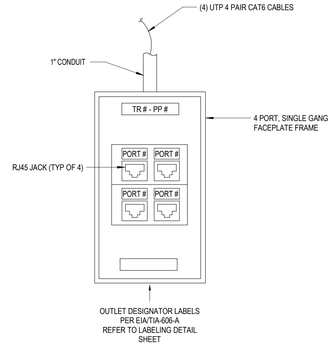
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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

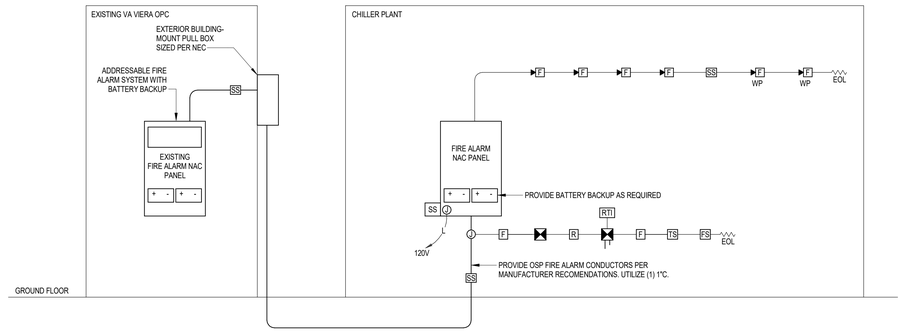
Drawing Title	ELECTRICAL PLAN - SYSTEMS
Phase	100% CONSTRUCTION DOCUMENTS
Approved:	
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
Checked	MMH
Drawn	AMH
Project Number	675-18-151
Building Number	-
Drawing Number	ET101
	65 OF 68

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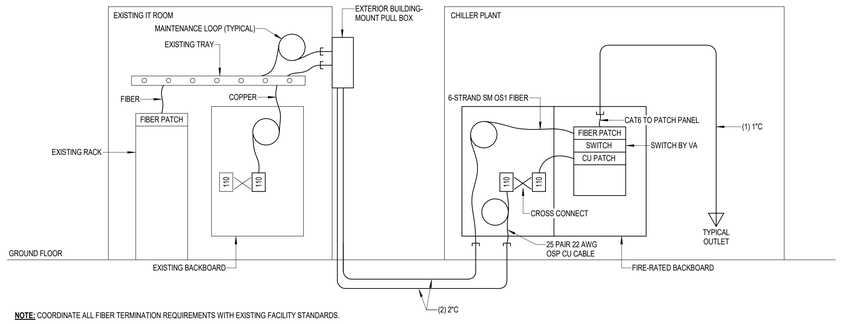
TYPICAL VOICE/DATA OUTLET
N.T.S.

1



FIRE ALARM RISER
N.T.S.

2



NOTE: COORDINATE ALL FIBER TERMINATION REQUIREMENTS WITH EXISTING FACILITY STANDARDS.

TELECOMMUNICATIONS RISER
N.T.S.

3

SYSTEM INPUTS		CTRL. UNIT ANNUNCIATION: ACTUATE COMMON ALARM SIGNAL INDICATOR	ACTUATE AUDIBLE ALARM SIGNAL	ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTUATE AUDIBLE SUPERVISORY SIGNAL	ACTUATE COMMON TROUBLE SIGNAL INDICATOR	ACTUATE AUDIBLE TROUBLE SIGNAL	ACTUATE APPROPRIATE LOCATION INDICATOR	ACTUATE ALL AUDIBLE EVACUATION SIGNALS	DISPLAY CHANGE OF STATUS	NOTIFICATION: TRANSMIT ALARM SIGNAL TO SUPERVISING STATION	TRANSMIT SUPV. SIGNAL TO SUPERVISING STATION	TRANSMIT TROUBLE SIGNAL TO SUPERVISING STATION	FSC: ACTUATE SPRINKLER FLOW NOTIFICATION DEVICE	FAN SHUT DOWN	DAMPER SHUT DOWN
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	MANUAL PULL STATION	●	●					●	●	●	●	●			●		
2	SMOKE DETECTOR	●	●					●	●	●	●	●			●	●	●
3	DUCT SMOKE DETECTOR			●	●			●			●		●			●	●
4	WATERFLOW SWITCH			●	●			●			●		●		●		
5	TAMPER SWITCH			●	●			●			●		●				
6	FIRE ALARM TROUBLE CONDITION (OPENS, SHORTS OR GROUNDS)					●	●				●			●			
7	FIRE ALARM AC POWER FAILURE					●	●				●			●			
8	FIRE ALARM LOW BATTERY					●	●				●			●			
9	CLASS B NOTIFICATION SHORT					●	●				●			●			

FIRE ALARM SEQUENCE OF OPERATIONS
N.T.S.

4

Revisions:	Date:

CONTRACTOR
MORAN CONSTRUCTION, INC
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(321) 639-5970

ENGINEER OF RECORD
STRUCTURAL/MEP:
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COA 15

TLC ENGINEERING SOLUTIONS THINK. LISTEN. CREATE.

STAMP

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	ELECTRICAL SYSTEMS DETAILS
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	DESIGN BUILD REPLACE CHILLERS VIERA
Location	VIERA OUTPATIENT CLINIC, VIERA, FL 32940
Issue Date	12-20-2019
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Drawn	AMH
Project Number	675-18-151
Building Number	-
Drawing Number	ET501
	66 OF 68

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VA

GENERAL NOTES

A. PROVIDE A COMPLETE UL LISTED LIGHTNING PROTECTION SYSTEM PER NFPA 780 AND UL 96A.

B. METAL BODIES OF INDUCTANCE LOCATED ABOUT THE ROOF SUCH AS METAL FLASHING, GRAVEL STOPS, ROOF DRAINS, SOIL PIPE VENTS, INSULATION VENTS, LOUVERS, AND DOOR FRAMES SITUATED WITHIN 6' OF A LIGHTNING CONDUCTOR OR BONDED METAL BODY SHALL BE INTERCONNECTED TO THE LIGHTNING PROTECTION SYSTEM.

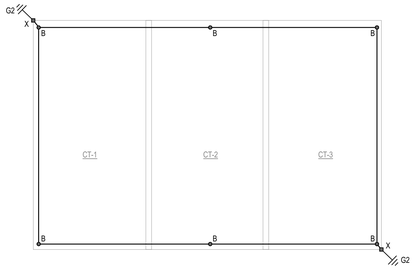
C. NO BEND OF A CONDUCTOR SHALL FORM A FINAL INCLUDED ANGLE OF LESS THAN 90 DEGREES NOR SHALL HAVE A RADIUS OF BEND OF LESS THAN 8".

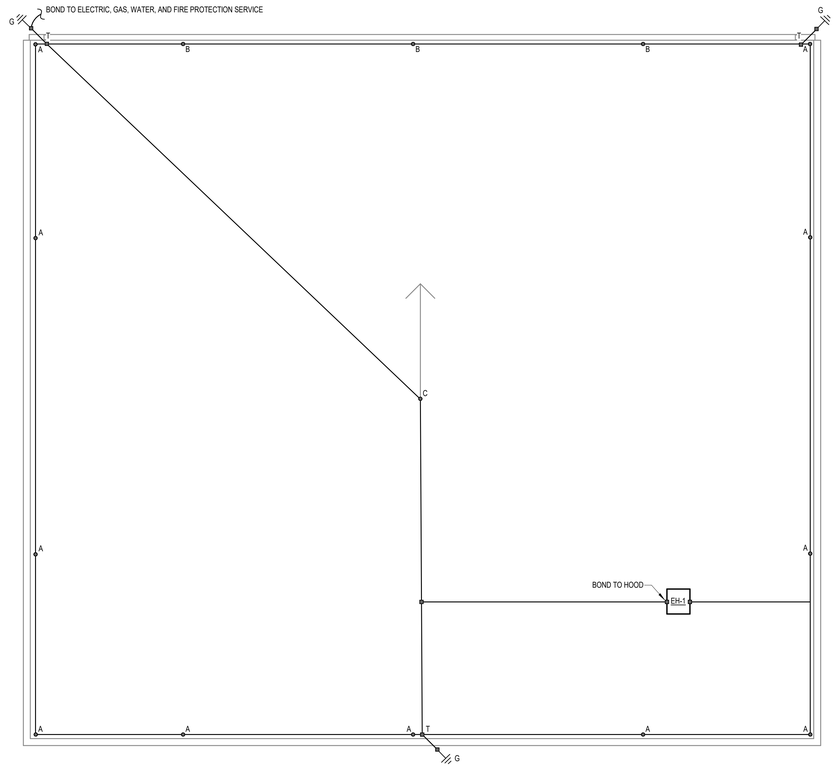
D. CONDUCTORS SHALL INTERCONNECT ALL AIR TERMINALS AND SHALL FORM A TWO-WAY PATH TO FROM EACH AIR TERMINAL HORIZONTALLY OR DOWNWARD TO CONNECTIONS WITH GROUND TERMINALS.

E. GROUND RODS SHALL BE DRIVEN TO A MINIMUM DEPTH OF 10' BELOW GRADE AND 2' AWAY FROM FOUNDATION WALL.

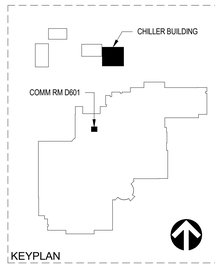
F. SHOP DRAWINGS FOR REVIEW AND APPROVAL SHALL BE PROVIDED TO ENGINEER OF RECORD.

G. SEE DETAILS ON SHEET EY501 FOR AIR TERMINAL, DOWNLEAD, AND GROUNDING TYPES.





1 ELECTRICAL PLAN - LIGHTNING PROTECTION
3/16" = 1'-0"



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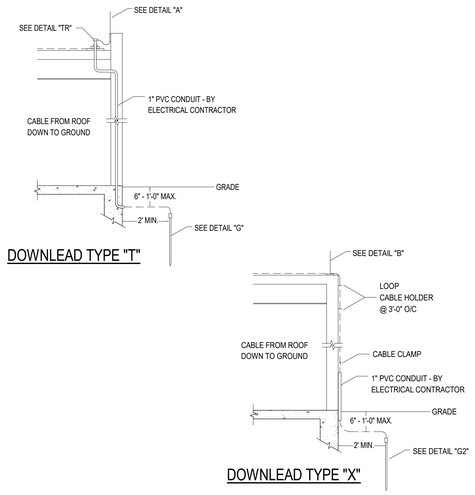
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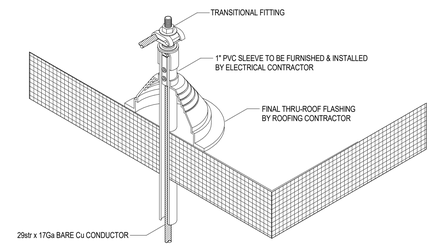
VA U.S. Department of Veterans Affairs

Drawing Title: ELECTRICAL PLAN - LIGHTNING PROTECTION	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: DESIGN BUILD REPLACE CHILLERS VIERA	Project Number: 675-18-151
Approved:	FULLY SPRINKLERED	Location: VIERA OUTPATIENT CLINIC, VIERA, FL 32940	Building Number: -
		Issue Date: 12-20-2019 / Checked: MMH / Drawn: AMH	Drawing Number: EY101 67 OF 68

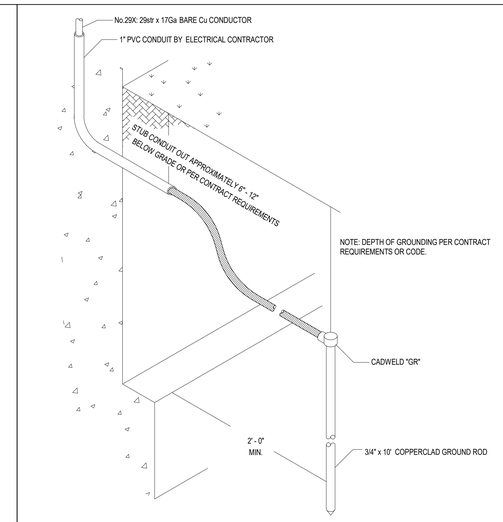
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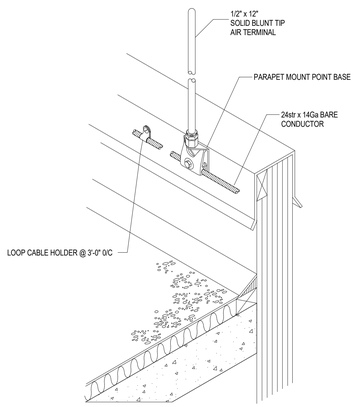
LIGHTNING PROTECTION - DOWNLEAD ROUTING
N.T.S. | 1



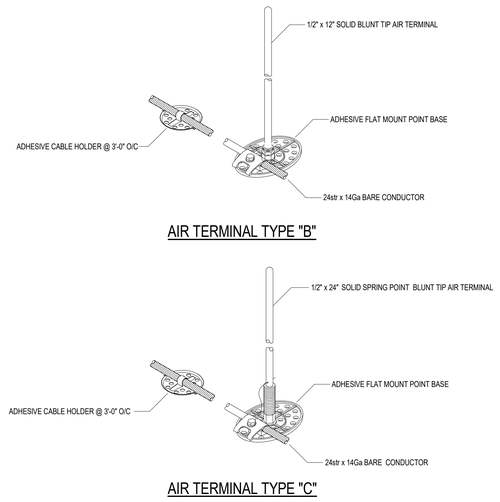
LIGHTNING PROTECTION - ROOF PENETRATION
N.T.S. | 2



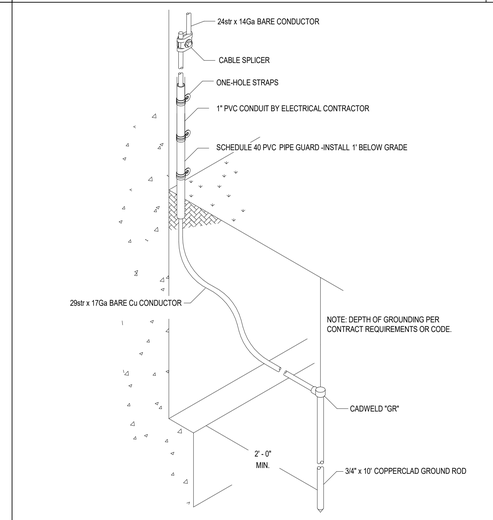
LIGHTNING PROTECTION - GROUNDING TYPE "G"
N.T.S. | 3



LIGHTNING PROTECTION - AIR TERMINAL TYPE "A"
N.T.S. | 4



LIGHTNING PROTECTION - AIR TERMINAL TYPES "B" & "C"
N.T.S. | 5



LIGHTNING PROTECTION - GROUNDING TYPE "G2"
N.T.S. | 6

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