

# T.RAD *Plus*

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REV	DATE	REVISED SHEET(S)	INT

**TRISTAN ASSOCIATES**

(T.RAD-PLUS RM. #1 - CMDR/1W)  
 4518 UNION DEPOSIT RD.  
 HARRISBURG, PA 17111

THESE TOSHIBA PLANS ARE FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN THAT AGREED UPON BETWEEN TOSHIBA AND THE CUSTOMER. THESE SITE PLANS ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES.

DATE: 11-08-13

SCALE: NOT TO SCALE

PLANNER: V. H.

QUOTE: 14517

PROJECT NO.  
**130013979XRF**

**C1**

**TOSHIBA**  
 Leading Innovation >>>

**FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.**

### MINIMUM SITE REQUIREMENTS CHECKLIST

PROJECT:		SITE INSPECTION DATE:
EQUIPMENT DELIVERY DATE:		INSPECTED BY:
IN ORDER TO ENSURE A TIMELY AND SUCCESSFUL INSTALLATION, IT IS NECESSARY TO COMPLETE THIS FORM PRIOR TO INSTALLATION. PLEASE ASSIST TOSHIBA BY HAVING THE CONTRACTOR OR YOUR REPRESENTATIVE COMPLETE THE FOLLOWING:		
1.	ALL WALLS, FLOORS, AND CEILINGS FINISHED. WALLS PAINTED, FLOORS TILED, AND CEILING GRID WORK AND FIXTURES INSTALLED.	
2.	MONOLITHIC OR LAY-IN CEILING? PLEASE CIRCLE ONE.	
3.	DOORS AND WINDOWS (INCLUDING ALL LEADED DOORS AND GLASS) INSTALLED AND LOCKABLE. DOORS TO BE REMOVED PRIOR TO DELIVERY BY CUSTOMER OR CONTRACTOR AND REINSTALLED AFTER EQUIPMENT MOVE-IN. RESERVE SECURE ROOM FOR STORAGE DURING INSTALLATION.	
4.	AREA SET ASIDE FOR EQUIPMENT RIGGING AND MOVE-IN. ENVIRONMENTAL ISSUES ADDRESSED AND RESOLVED PRIOR TO EQUIPMENT DELIVERY (I.E. SURGICAL SUITE).	
5.	EQUIPMENT (INGRESS) ROUTES ARE CLEAR AND OBSTACLE FREE.	
6.	ALL CONDUIT, TROUGHING (WITH COVERS), AND BOXES INSTALLED (CLEAN AND DUST FREE). GROMMETED OPENINGS, CHASE NIPPLES, RACEWAY DIVIDERS, ETC. COMPLETE.	
7.	CIRCUIT BREAKER INSTALLED AND INCOMING POWER (PER POWER QUALITY REQUIREMENTS) OPERATIONAL AND CONNECTED TO ROOM BREAKER(S).	
8.	LOCATION OF ALL ELECTRICAL BREAKERS IN POWER CHAIN NOTED.	
9.	ALL CONTRACTOR-INSTALLED STRUCTURAL SUPPORT DEVICES INSTALLED AND LEVELED ACCORDING TO T.A.M.S. SPECIFICATIONS ON SITE PLANS.	
10.	ROOM LIGHTING INSTALLED AND OPERATIONAL.	
11.	ENSURE THAT LIGHTING/SPRINKLER HEADS PRESENT NO CONFLICT WITH UNITS MOUNTED TO THE CEILING.	
12.	ENSURE THAT NON-TOSHIBA SUPPLIED EQUIPMENT PRESENT NO CONFLICT WITH UNITS MOUNTED TO THE CEILING.	
13.	110V ROOM OUTLETS OPERATIONAL.	
14.	ALL CONTRACTOR-SUPPLIED CABLES PULLED AND TERMINATED, INCLUDING GROUND WIRE AND GROUND BUS BAR IN TROUGHING AS SPECIFIED IN THE TOSHIBA SITE PLANS.	
15.	INTERFACE FOR DIMMING OF ROOM LIGHTS (IF APPLICABLE), WARNING LIGHTS AND DOOR SWITCHES INSTALLED AND INTERFACE AVAILABLE AND CONNECTED (RELAYS, ETC.).	
16.	DUST-FREE ENVIRONMENT IN ALL RELATED ROOMS.	
17.	HEATING AND AIR-CONDITIONING INSTALLED, OPERATIONAL, AND STABILIZED PER TOSHIBA SITE PLANS. FILTERS TO BE CHANGED 24 HOURS BEFORE DELIVERY.	
18.	ALL MILLWORK COMPLETE AND INSTALLED.	
19.	PLUMBING COMPLETED (INCLUDING GASES, IF APPLICABLE) ACCORDING TO TOSHIBA SPECIFICATIONS ON SITE PLANS.	
20.	OPTIONAL COMPUTER FLOORING INSTALLED, IF APPLICABLE.	
21.	THIRD PARTY VENDED ITEMS SUCH AS PROCESSORS, FILM CHANGERS, INJECTORS, GAS PEDESTALS, PHYSIOLOGICAL MONITORING EQUIPMENT, ETC., INSTALLED AND OPERATIONAL.	
22.	TELEPHONE LINES (VOICE AND OPTIONAL MODEM) INSTALLED AND OPERATIONAL. A DEDICATED PHONE LINE IS REQUIRED FOR SITES THAT ARE RECEIVING INNERVISION.	
23.	ALL UNFINISHED AREAS SEALED OFF TO PREVENT DUST CONTAMINATION.	
24.	RECEPTACLE FOR TRASH AVAILABLE (LARGE ENOUGH FOR SHIPPING CRATES IF REQUIRED).	
25.	SUB BASE PLATE(S) INSTALLED (IF REQUIRED).	
26.	"PCDU" INSTALLED AND OPERATIONAL (IF APPLICABLE).	
27.	SEISMIC REQUIREMENTS, AND REQUIRED SEISMIC ANCHORING DEVICES INSTALLED (IF APPLICABLE).	
28.	NETWORK CONNECTIONS INSTALLED AND OPERATIONAL.	
29.	ALL APPLICABLE PERMITS OBTAINED.	

**NOTICE:**  
**CUSTOMER MUST COMPLETE ALL ITEMS ON THIS CHECKLIST BEFORE SCHEDULED DELIVERY DATE FOR THE EQUIPMENT. IF CUSTOMER FAILS TO DO SO, DELIVERY MAY BE DELAYED. FURTHERMORE, THE EQUIPMENT WARRANTY MAY BE VOIDED.**

COMMENTS:	
SIGNED TOSHIBA:	
CONTRACTOR:	
CUSTOMER:	

05-29-13

### GENERAL NOTES

**CUSTOMER / CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING UNLESS OTHERWISE NOTED.**

- GENERAL**
- TOSHIBA RESERVES THE RIGHT TO CHANGE THESE DESIGNS AND SPECIFICATIONS WITHOUT NOTICE.
  - THE CUSTOMER/CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES ARE COMPLIED WITH.
  - PRIOR TO EQUIPMENT DELIVERY AND INSTALLATION, THE SITE MUST BE 100% COMPLETE, CLEAN AND FREE OF DUST. CUSTOMER/CONTRACTOR AND TOSHIBA INSTALLATION PROJECT MANAGER MUST COMPLETE A SITE WALK THROUGH 1 WEEK PRIOR TO DELIVERY AND DETERMINE ACCEPTABILITY FOR DELIVERY.
  - ANY CABINETRY THAT MAY BE REQUIRED TO HOUSE VIDEO RECORDERS, MONITORS, KEYBOARDS, OR OTHER ANCILLARY EQUIPMENT SHALL BE SUPPLIED AND INSTALLED BY CUSTOMER/CONTRACTOR.
  - PROVIDE ADEQUATE VENTILATION WITHIN CABINETRY AND INSTALL AXIAL FANS ON THE TOP, SIDE, OR BACK OF CABINETS, IF REQUIRED.
  - THESE TOSHIBA SITE PLANS DO NOT INDICATE EQUIPMENT REQUIREMENTS FOR ITEMS NOT SOLD BY TOSHIBA SUCH AS, PHYSIOLOGICAL MONITORS, LASER CAMERAS, INJECTORS, ETC. SPECIFICATIONS FOR THOSE ITEMS MUST BE OBTAINED FROM THE VENDOR AND INCLUDED IN THE DESIGN TOTALS.
  - DESIGN, FABRICATE, AND INSTALL MEDICAL GAS PEDESTAL, IF REQUIRED. CONSULT WITH TOSHIBA INSTALLATION PROJECT MANAGER FOR SUITABLE LOCATIONS.
  - CUSTOMER/CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN OPERATING PHONE IN THE CONTROL ROOM AT THE TIME TOSHIBA EQUIPMENT INSTALLATION BEGINS.
  - CUSTOMER/CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE LIGHTING FOR SERVICING OF EQUIPMENT IN ALL AREAS OF THE INSTALLATION.
  - THE CUSTOMER/CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL COSTS REQUIRED FOR THE ENGINEERING AND/OR REMOVAL OF ANY HAZARDOUS MATERIALS SUCH AS ASBESTOS.
  - CUSTOMER/CONTRACTOR SHALL SUPPLY AND INSTALL MATERIALS AND OTHER FEATURES SPECIFIED IN THE TOSHIBA SITE PLANS. CUSTOMER/CONTRACTOR SHALL SUPPLY AND INSTALL ALL COUNTERTOPS, SINKS, CASE WORK AND CABINETS SPECIFIED IN THE TOSHIBA SITE PLANS.
- PLUMBING**
- PLUMBING IS NOT REQUIRED FOR THIS TOSHIBA EQUIPMENT.
- M.** IT IS RECOMMENDED THAT A SINK BE PROVIDED FOR USE BY PERSONNEL.
- SITE CONDITIONS**
- DIMENSIONS TO WALLS AND OR OTHER ROOM FEATURES, EXCEPT FOR NOTED COLUMN AND BEAM CENTER LINES SHALL BE FROM FINISHED SURFACES.
- O.** IT IS RECOMMENDED THAT XR EQUIPMENT REMAIN OUTSIDE 1 MAGNETIC GAUSS FIELD.
- TRANSPORT REQUIREMENTS**
- EQUIPMENT INGRESS ROUTE MUST BE CHECKED PRIOR TO EQUIPMENT DELIVERY TO ENSURE THE LARGEST AND HEAVIEST ITEMS OF EQUIPMENT CAN BE ACCOMMODATED, PRIOR TO EQUIPMENT DELIVERY. DIMENSIONS OF DOORWAYS SHOULD BE NO LESS THAN 4'-0" CLEAR IN WIDTH. CONTACT THE TOSHIBA INSTALLATION PROJECT MANAGER FOR DETAILS PERTAINING TO THE LARGEST AND HEAVIEST COMPONENTS FOR THIS INSTALLATION.
- NETWORKING REQUIREMENTS**
- NETWORK REQUIREMENTS WILL VARY BY SITE. TOSHIBA REPRESENTATIVE WILL REQUIRE DICOM DEVICE INFORMATION, ADDITIONAL I.P. ADDRESSES, AND I.T. DEPARTMENT CONTACT INFORMATION PRIOR TO INSTALLATION.

05-29-13

### CEILING HEIGHT

RECOMMENDED CEILING HEIGHT: 9'-0"  
 MINIMUM CEILING HEIGHT: 8'-9 1/8"  
 MAXIMUM CEILING HEIGHT: 9'-10 7/8"

05-29-13

**CUSTOMER TO PROVIDE THE NECESSARY HVAC REQUIREMENTS FOR THE TOSHIBA EQUIPMENT TO OPERATE PROPERLY.**

AMBIENT TEMPERATURE SHOULD BE 68°-74° F  
 WITH EQUIPMENT HEAT LOADS (SEE EQUIPMENT LEGEND SHEET A1)  
 HUMIDITY RANGE OF 40-70% NON-CONDENSING

- STATED AMBIENT TEMPERATURE IS TO BE PROVIDED AND MAINTAINED AS SPECIFIED. ALL CALCULATIONS ARE TO UTILIZE TOSHIBA PROVIDED HEAT OUTPUT SPECIFICATIONS OF EQUIPMENT.
- A MINIMUM OF 10 AIR CHANGES PER HOUR IS SUGGESTED, CONSULT LOCAL CODE.
- AIR SUPPLY DUCTS SHOULD NOT BE PLACED DIRECTLY OVER EXAMINATION TABLES FOR PATIENT COMFORT.
- EQUIPMENT IN ENCLOSED SPACES SUCH AS EQUIPMENT ROOMS, TRANSFORMER CLOSETS AND COMPUTER ROOMS MUST BE PROVIDED WITH ADEQUATE VENTILATION.
- THE AIRFLOW THROUGH TOSHIBA EQUIPMENT CABINETS IS FROM BOTTOM TO TOP.
- WHERE POSSIBLE, AIR CONDITIONING SUPPLY OUTLETS SHOULD BE LOCATED AT FLOOR LEVEL.
- RETURN GRILLES ARE TO BE INSTALLED IN THE CEILING.
- A/C SUPPLY OUTLET TO BE PROVIDED BY CUSTOMER AT FLOOR LEVEL AT CONTROL ROOM DESK.

05-29-13

### STRUCTURAL NOTES

**CUSTOMER / CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING UNLESS OTHERWISE NOTED.**

- THESE SITE PLANS ARE INTENDED TO DEPICT ONLY A CONCEPT OF THE STRUCTURE REQUIRED FOR THE TOSHIBA EQUIPMENT. THE DESIGN OF ALL STRUCTURAL ELEMENTS MUST BE SPECIFIED BY A LICENSED STRUCTURAL ENGINEER IN ACCORDANCE WITH TOSHIBA SPECIFICATIONS AND ALL APPLICABLE CODES.
  - THE CUSTOMER/CONTRACTOR SHALL FIELD VERIFY ALL EXISTING AND PROPOSED DIMENSIONS AND SITE CONDITIONS PRIOR TO COMMENCING CONSTRUCTION.
  - THE TOSHIBA INSTALLATION PROJECT MANAGER SHALL BE NOTIFIED IN WRITING OF ANY FIELD CONDITIONS ENCOUNTERED THAT ARE CONTRADICTORY TO THOSE SHOWN IN THE TOSHIBA SITE PLANS.
  - THE DEMOLITION, FABRICATION, AND ERECTION OF SUPPORT STRUCTURES FOR TOSHIBA EQUIPMENT SHALL BE PERFORMED BY THE CUSTOMER/CONTRACTOR IN ACCORDANCE WITH THE DESIGN AND SPECIFICATIONS SET FORTH BY THE STRUCTURAL ENGINEER OF RECORD.
  - DUE TO THE DYNAMIC NATURE OF THE LOAD, BOTH HORIZONTAL AND VERTICAL ACCELERATION SHOULD BE INCLUDED IN THE DESIGN CALCULATIONS FOR THE SUPPORT STRUCTURE AS WELL AS ANCHORING AND THRU-BOLTING FOR THE TOSHIBA EQUIPMENT.
  - IN THE INTEREST OF SAFETY, TOSHIBA RESERVES THE RIGHT TO DELAY INSTALLATION COMMENCEMENT UNTIL STRUCTURAL DESIGN DRAWINGS STAMPED BY THE STRUCTURAL ENGINEER OF RECORD HAVE BEEN PROVIDED.
  - UNDER NO CIRCUMSTANCE SHOULD THE TOSHIBA EQUIPMENT BE INSTALLED ON A WOOD FLOOR.
- CEILING STRUCTURAL SYSTEMS**
- IN ORDER TO AVOID COLLISION WITH MOVEABLE TOSHIBA CEILING MOUNTED EQUIPMENT, ALL CEILING FIXTURES SUCH AS LAMPS, SMOKE DETECTORS, SPRINKLERS, ETC. MUST BE FLUSH MOUNTED.
- UNISTRUT NOTES**
- CEILING UNISTRUT SUPPORT STRUCTURES TO BE DESIGNED BY OTHERS BASED ON SPECIFICATIONS SHOWN ON TOSHIBA SITE PLANS (IF APPLICABLE).
  - UNISTRUT OR EQUIVALENT CHANNEL SUPPORT SYSTEM TO BE SUPPLIED AND INSTALLED BY CUSTOMER/CONTRACTOR (IF APPLICABLE).
  - UNISTRUT ARE TO BE P1001 OR P5001 OR EQUIVALENT, MOUNTED FLUSH WITH FINISHED CEILING. ALL UNISTRUT ARE TO BE MOUNTED PARALLEL AND LEVEL WITH A MAXIMUM DEVIATION OF 1/16". UNISTRUT IS TO BE CAPABLE OF SUPPORTING LOAD REQUIREMENTS OF TOSHIBA EQUIPMENT. UNISTRUT LOAD REQUIREMENTS AND DESIGN ARE THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER OF RECORD.
  - CUSTOMER/CONTRACTOR TO SUPPLY AND INSTALL UNISTRUT P2751 TROLLEYS OR EQUIVALENT. CONTACT THE TOSHIBA INSTALLATION PROJECT MANAGER FOR APPLICABILITY AND QUANTITY OF TROLLEYS. UNISTRUT TROLLEYS SHOULD HAVE VINYL WHEELS.
  - CONTRACTOR TO SUPPLY M10 UNISTRUT NUTS.
  - UNISTRUT CHANNEL COVERS TO BE SUPPLIED AND INSTALLED BY CONTRACTOR AFTER EQUIPMENT HAS BEEN MOUNTED TO CEILING.

05-29-13

### ELECTRICAL NOTES

**CUSTOMER / CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING UNLESS OTHERWISE NOTED.**

- THESE SITE PLANS ARE INTENDED TO DEPICT ONLY A CONCEPT OF THE ELECTRICAL REQUIREMENTS FOR THE TOSHIBA EQUIPMENT. THE DESIGN OF ALL ELECTRICAL ELEMENTS MUST BE SPECIFIED BY A LICENSED ELECTRICAL ENGINEER IN ACCORDANCE WITH TOSHIBA SPECIFICATION AND ALL APPLICABLE CODES.
- IN ACCORDANCE WITH NEC ARTICLE 517-72(B), THE EQUIPMENT CIRCUIT BREAKER(S) MUST BE LOCATED SO THAT THEY SHALL BE OPERABLE FROM A LOCATION READILY ACCESSIBLE FROM THE CONTROL AREA. IF THIS IS IMPOSSIBLE OR IMPRACTICAL, THE USE OF A SHUNT TRIP TYPE BREAKER WILL BE NECESSARY TO SATISFY THIS REQUIREMENT. THE EMERGENCY OFF BUTTON FOR THE SHUNT TRIP SHOULD BE LOCATED IN THE CONTROL AREA.
- THE CUSTOMER/CONTRACTOR SHALL SUPPLY AND INSTALL ALL CIRCUIT BREAKERS, CONDUITS, JUNCTION BOXES, DUCTS, ETC. SPECIFIED HEREIN.
- THE TOSHIBA SITE PLANS DO NOT SPECIFY ELECTRICAL REQUIREMENTS FOR EQUIPMENT NOT SOLD BY TOSHIBA. THESE REQUIREMENTS MUST BE OBTAINED BY THE VENDOR.
- TOSHIBA WILL SUPPLY INTERCONNECTING CABLES FOR THE TOSHIBA EQUIPMENT. TOSHIBA WILL INSTALL IF LOCAL TRADE LABOR PERMITS.
- EXCEPT FOR THEIR USE IN POWER LINE CONNECTIONS TO EQUIPMENT CABINETS, FLEXIBLE CONDUIT SHALL NOT BE USED IN THIS INSTALLATION. ONLY FACTORY CONDUIT ELBOWS SHALL BE USED.
- DUCT WORK SHALL BE PROVIDED WITH SWEEP ELBOWS.
- ALL JUNCTION BOXES AND DUCTS THAT PENETRATE THE FLOOR SHALL BE WATERPROOF TYPE AND PROVIDED WITH GASKETED WATERPROOF COVERS. ALL FLOOR JUNCTION BOXES AND DUCT COVERS SHALL BE CAPABLE OF SUPPORTING A CONCENTRATED LOAD OF 200 LBS.
- GROMMETED OPENINGS ARE SHOWN FOR REFERENCE PURPOSES ONLY. VERIFY SIZE AND LOCATION WITH TOSHIBA REPRESENTATIVE. ALL GROMMETED OPENINGS SHALL HAVE NO SHARP EDGES.
- ALL CHASE & GROMMETED OPENINGS SHALL HAVE PLASTIC/NYLON BUSHINGS.
- ALL WALL DUCT WORK SHALL HAVE A MINIMUM OF THREE COMPARTMENTS. TRANSITIONS SUCH AS HORIZONTAL TO VERTICAL WALL DUCT OR WALL DUCT TO JUNCTION BOXES MUST BE REVIEWED ON AN INDIVIDUAL BASIS WITH THE INSTALLATION PROJECT MANAGER. LOCAL CODES MAY REQUIRE THE USE OF CROSS-OVER TUNNELS OR OTHER SUCH DEVICES TO MAINTAIN CABLE SEPARATION.
- ALL DUCT AND CONDUITS SHALL BE ELECTRICALLY BONDED AS A GROUNDING PATH IN ACCORDANCE WITH NEC ARTICLE 517-13(B).
- CUSTOMER/CONTRACTOR SHALL SUPPLY AND INSTALL GREENLEE NYLON MEASURING PULL STRING OR EQUIVALENT IN ALL CONDUITS AND CLOSED DUCT WORK.
- CONDUIT RUNS SHOWN ARE FOR REFERENCE ONLY. ALL CONDUIT RUNS MUST TAKE THE SHORTEST MOST DIRECT ROUTE POSSIBLE.
- CONDUIT RUNS MAY HAVE A MAXIMUM OF (3) 90° BENDS.
- 110VAC GROUNDED OUTLETS SHALL BE PROVIDED ON WALLS NEAR THE TOSHIBA EQUIPMENT FOR USE DURING EQUIPMENT SERVICE.
- CUSTOMER/CONTRACTOR MUST SUPPLY AND INSTALL ALL INCOMING POWER CABLES FROM CIRCUIT BREAKER(S) TO TOSHIBA EQUIPMENT CONNECTION POINT. CABLE TYPE MUST BE MTW MULTI-STRAND COPPER - NO ALUMINUM IS PERMITTED. CABLE SIZE MUST BE IN ACCORDANCE WITH TOSHIBA POWER QUALITY REQUIREMENTS. (SEE SHEET E2).
- CUSTOMER/CONTRACTOR IS TO SUPPLY AND INSTALL ALL NECESSARY HARDWARE TO ENCLOSE INCOMING POWER CABLES IN FLEXIBLE WATER TIGHT CONDUIT FROM CIRCUIT BREAKER(S) TO TOSHIBA EQUIPMENT CABINET(S).
- ANY CHANGES IN THE LOCATION OR TYPE OF CONDUIT, DUCT WORK, JUNCTION BOXES, ETC. MUST BE SUBMITTED IN WRITING TO THE TOSHIBA INSTALLATION PROJECT MANAGER FOR APPROVAL.
- A SEPARATE CIRCUIT, FED FROM THE FACILITY RADIOLOGY PANEL OR A MAIN SERVICE PANEL IS REQUIRED. USE OF A SUB PANEL WITH LOADS SUCH AS ELEVATORS, HVAC, MOTORS, ETC. IS NOT PERMITTED.
- ALL DUCT WORK MAKING A 90° ANGLE MUST BE CHAMFERED FOR CABLE ACCESS.
- JUNCTION BOX SIZES MAY BE INCREASED AS NEEDED (WITH THE EXCEPTION OF THE "PCDU" JUNCTION BOX IF APPLICABLE).

05-29-13

### ELECTRICAL REQUIREMENTS FOR T.RAD

**TG-8000-HS 80kW GENERATOR**

SUPPLY CONFIGURATION: 3 PHASE WYE

SUPPLY VOLTAGE: 480V, 100 AMP, 50/60 Hz

DISTRIBUTION CAPACITY: 100 kVA

**SYSTEM COMPONENTS**

SUPPLY CONFIGURATION: SINGLE PHASE

SUPPLY VOLTAGE: 115 VAC, 20 AMP, 50/60 Hz

05-29-13

INT	DESCRIPTION	DATE	REV

TRISTAN ASSOCIATES

(T.RAD-PLUS RM. #1 - CMDR/1W)

4518 UNION DEPOSIT RD.  
 HARRISBURG, PA 17111

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DATE: 11-08-13

SCALE: NOT TO SCALE

PLANNER: V. H.

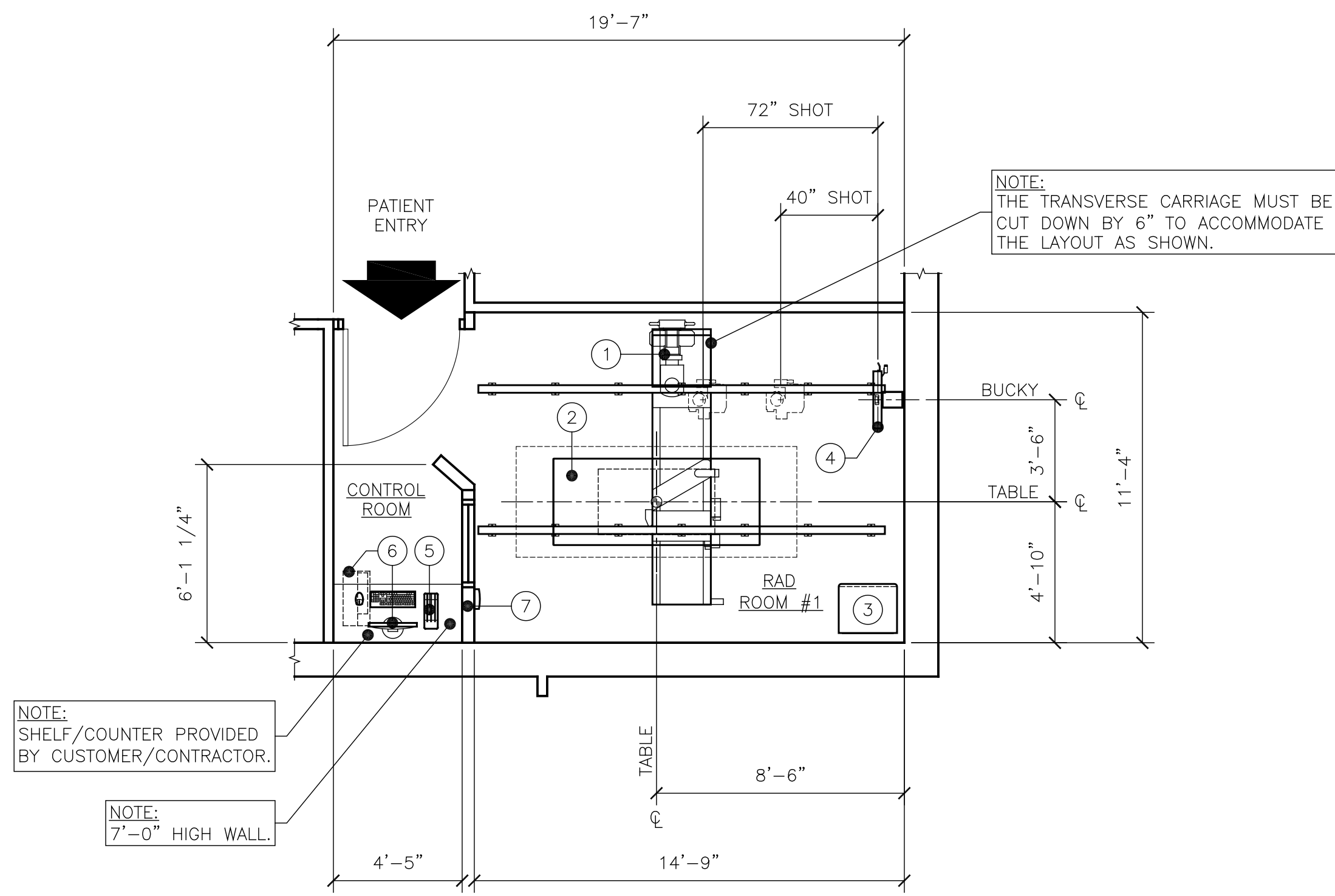
QUOTE: 14517

PROJECT NO. **130013979XRF**

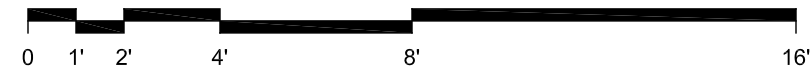
**GN**

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**EQUIPMENT LAYOUT**



**EQUIPMENT LEGEND**

ITEM	ELEC. SYM.	ITEM DESCRIPTION SUPPLIED AND INSTALLED BY TOSHIBA	BTU/HR	WEIGHT	REF.
①	OTC	CEILING SUSPENDED TUBE SUPPORT	400	779	① A2
②	TBL	FLOAT-TOP ELEVATING TABLE	-	500	② A2
③	CAB	GENERATOR CABINET	3,600	431	③ A2
④	VBS	VERTICAL BUCKY STAND (LEFT LOAD)	-	225	④ A2
ITEM	ELEC. SYM.	OPTIONAL ITEM DESCRIPTION - SUPPLIED & INSTALLED BY TOSHIBA	BTU/HR	WEIGHT	REF.
⑤	PBC	DRX PANEL BATTERY CHARGER	-	8	⑤ A2
⑥	DRX	DRX WORKSTATION (WITH MONITOR, KEYBOARD, MOUSE)	81	102	⑥ A2
⑦	WAP	DRX WIRELESS ACCESS POINT	-	4	-

**SITE PLAN APPROVAL**

IN ORDER TO USE THIS SET OF FINAL SITE PLANS, A CUSTOMER SIGNATURE IS REQUIRED BELOW. THE CUSTOMER'S SIGNATURE DEMONSTRATES ACCEPTANCE OF THE LAYOUT SHOWN AND ALL STATED SPECIFICATIONS.

CUSTOMER:	DATE:
SALES:	DATE:
I.P.M.:	DATE:

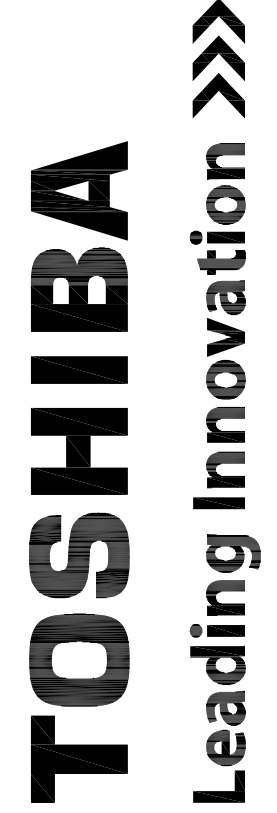
REV	DATE	DESCRIPTION

**TRISTAN ASSOCIATES**

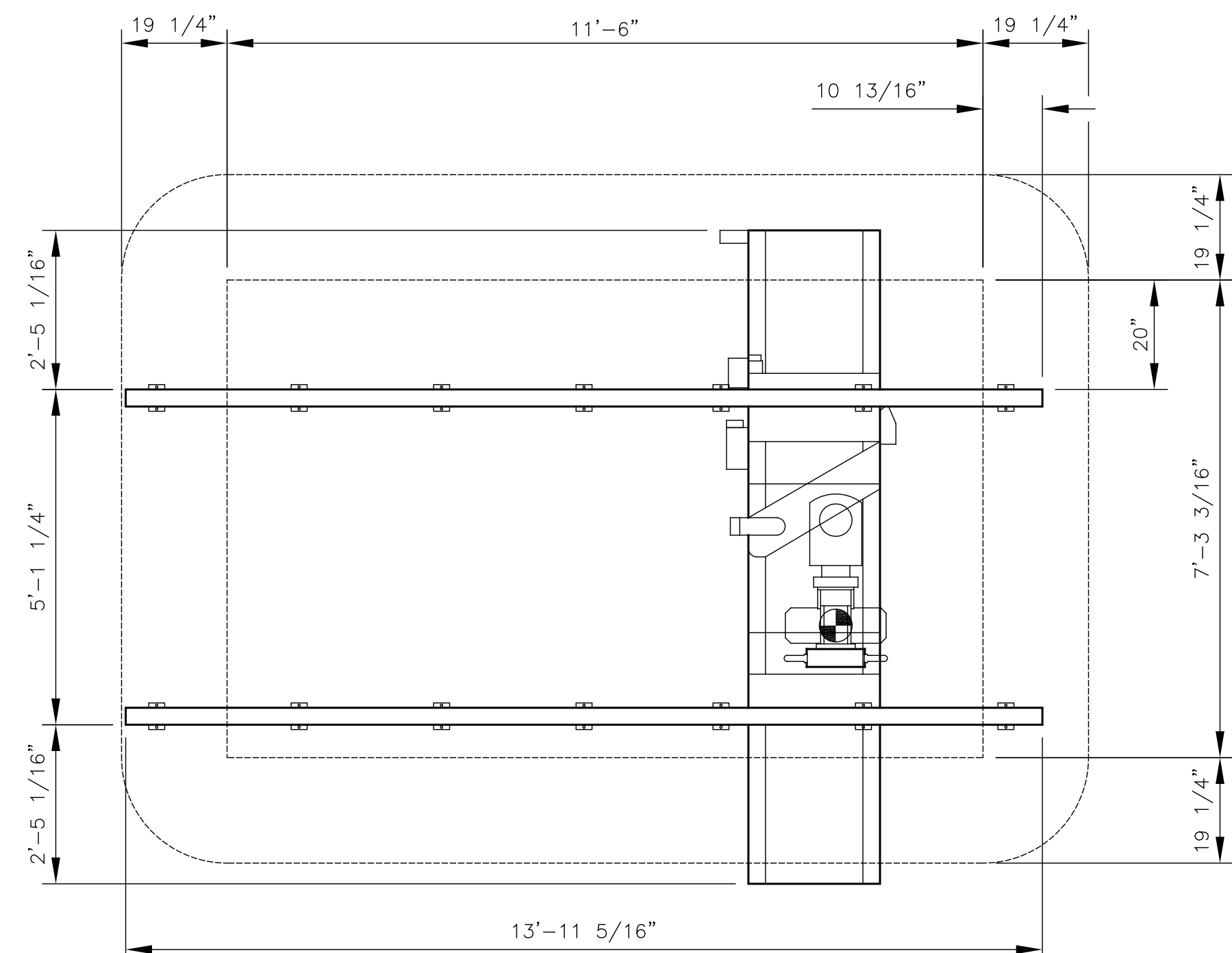
(T.RAD-PLUS RM. #1 - CMDR/1W)  
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DATE: 11-08-13  
SCALE: 1/4" = 1'-0"  
PLANNER: V. H.  
QUOTE: 14517  
PROJECT NO. **130013979XRF**

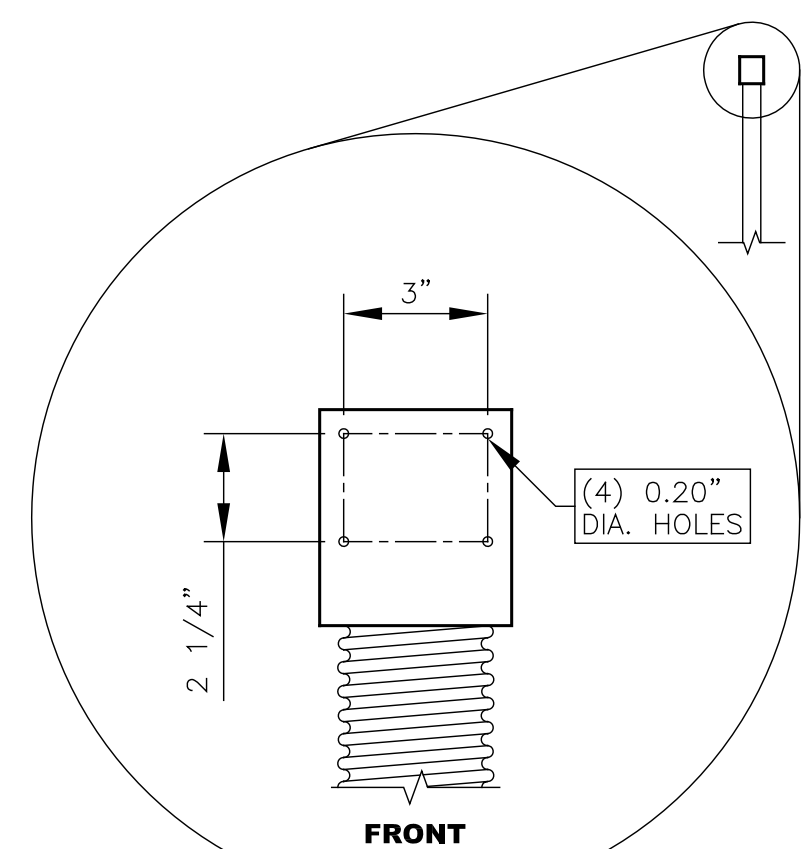


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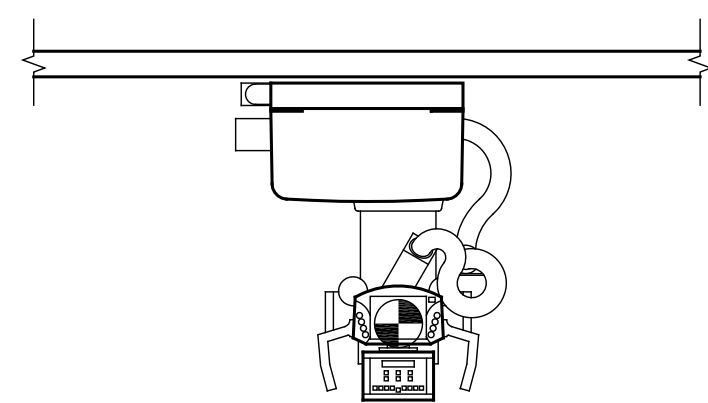
PLAN

OTC	
HEAT OUTPUT (BTU'S)	400
WEIGHT (LBS)	779

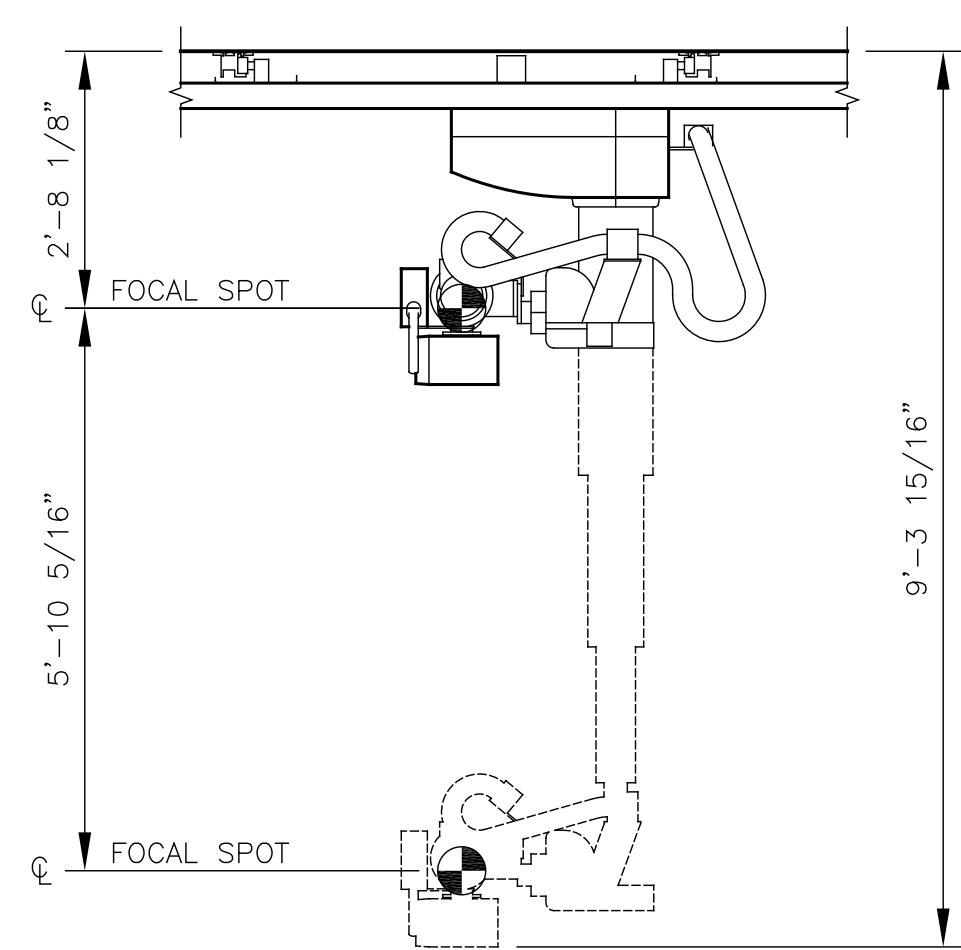


FRONT

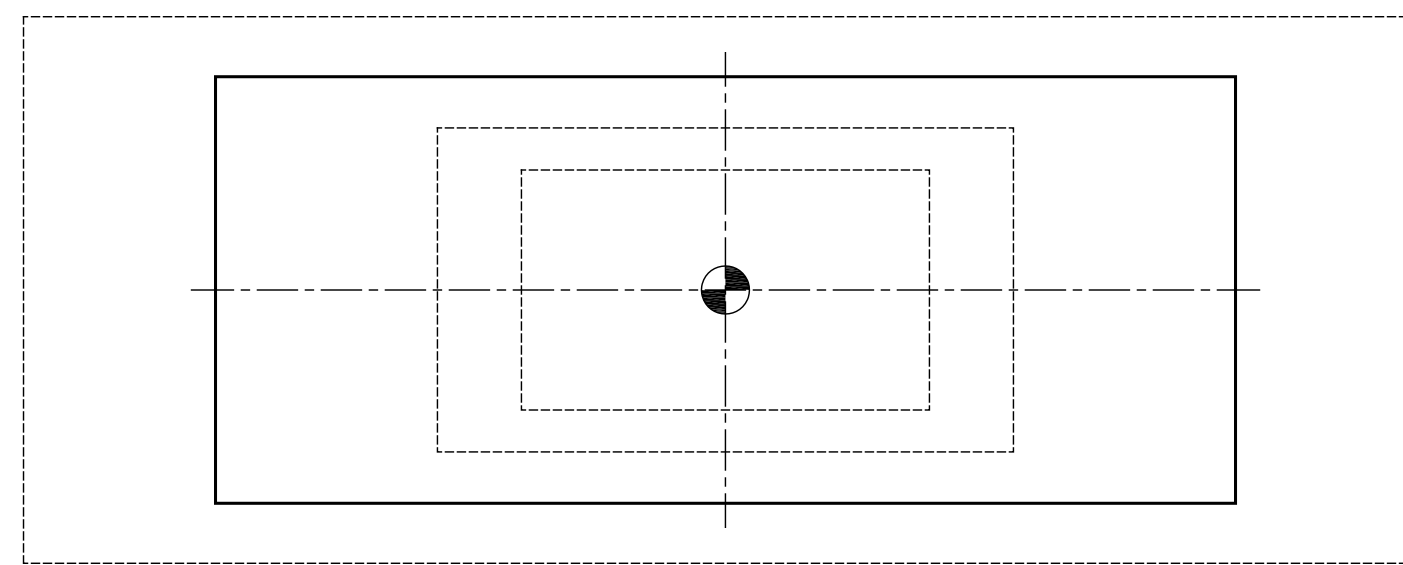
CABLE INTERFACE BOX  
SCALE: 3" = 1'-0"



FRONT

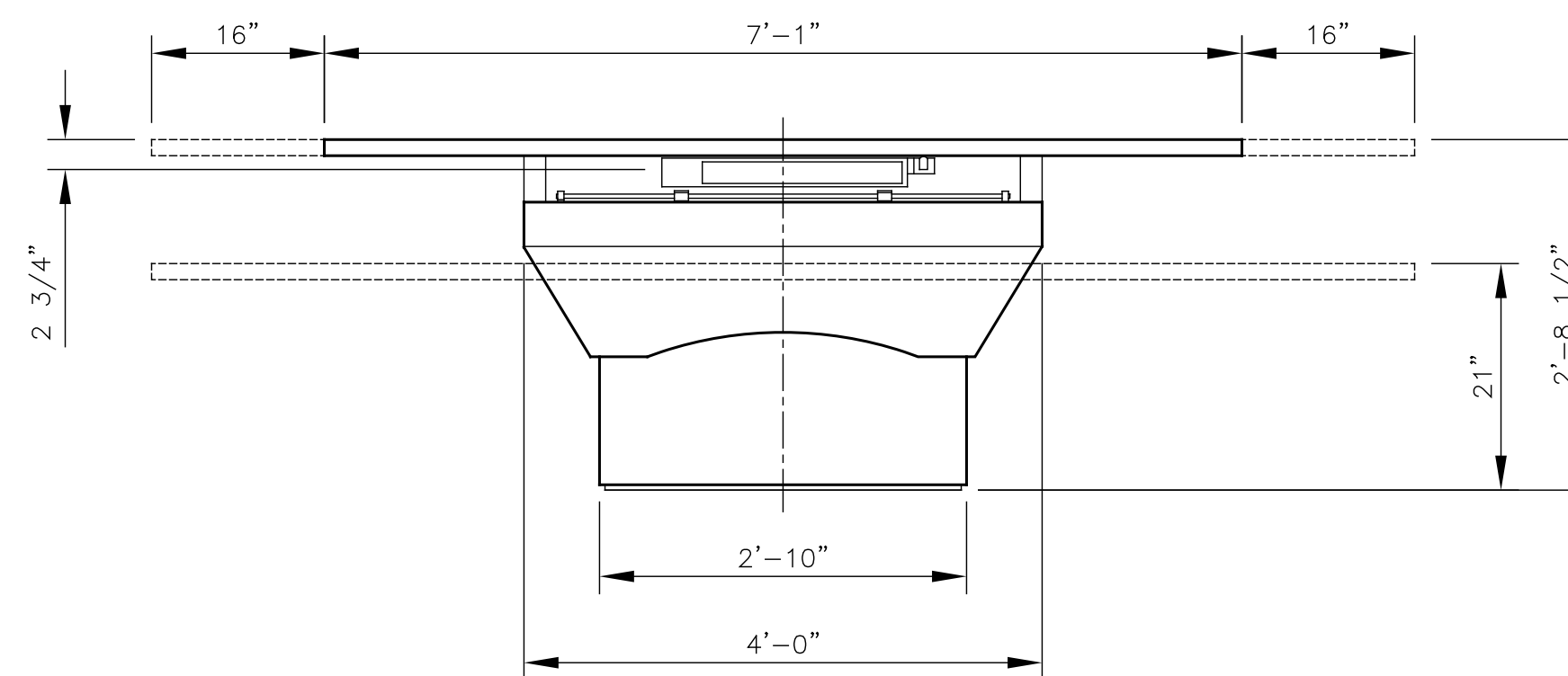


SIDE

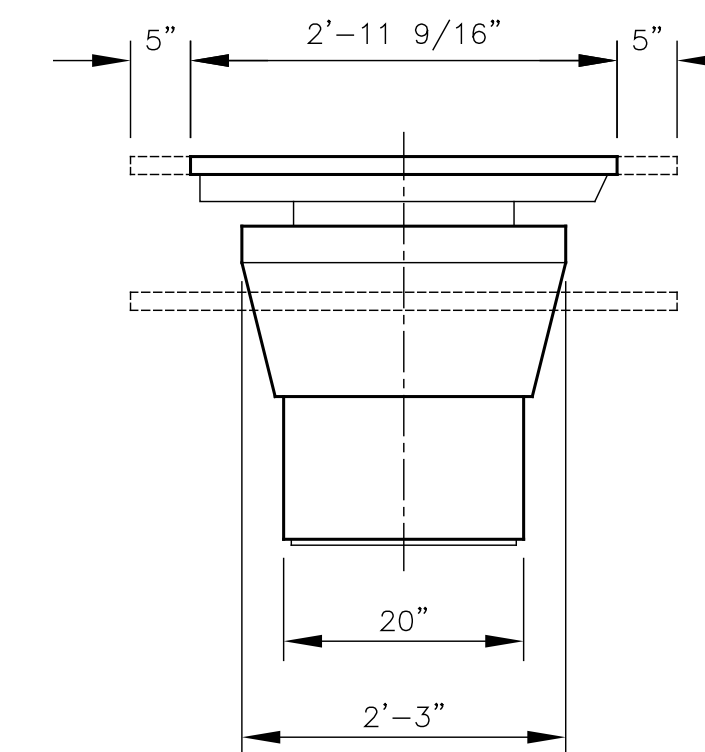


PLAN

TBL	
HEAT OUTPUT (BTU'S)	-
WEIGHT (LBS)	500



FRONT



SIDE

**1 CEILING SUSPENDED X-RAY TUBE SUPPORT**

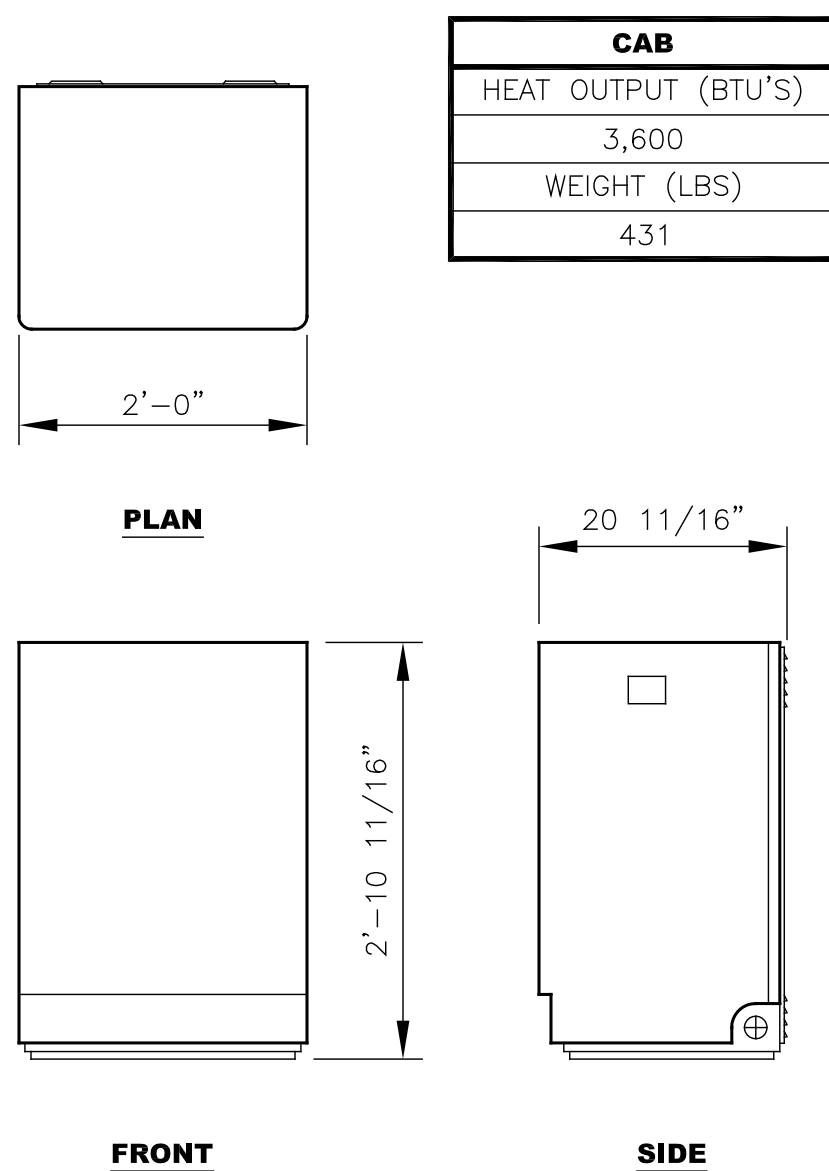
SCALE: 1/2" = 1'-0"

05-29-13

**2 FLOAT-TOP ELEVATING TABLE**

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

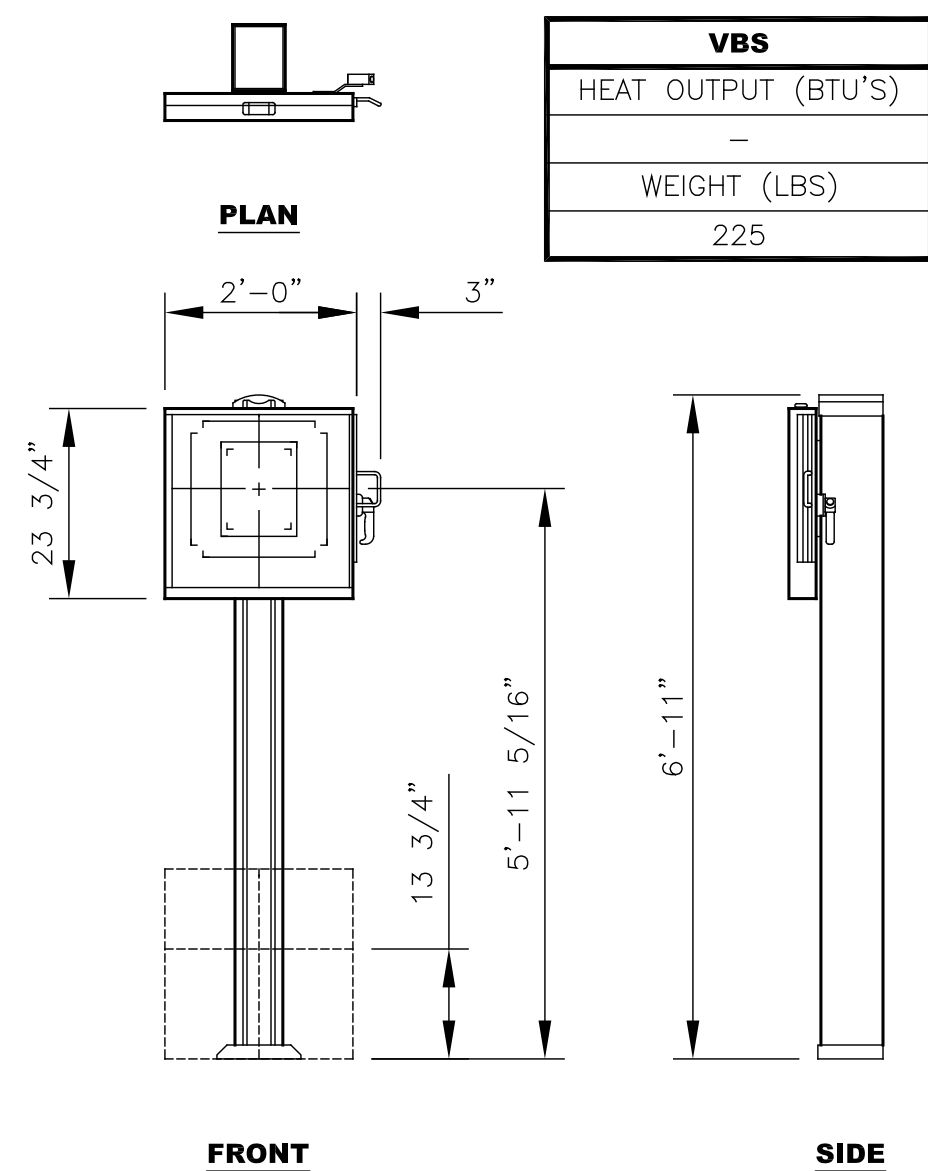
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FRONT

SIDE

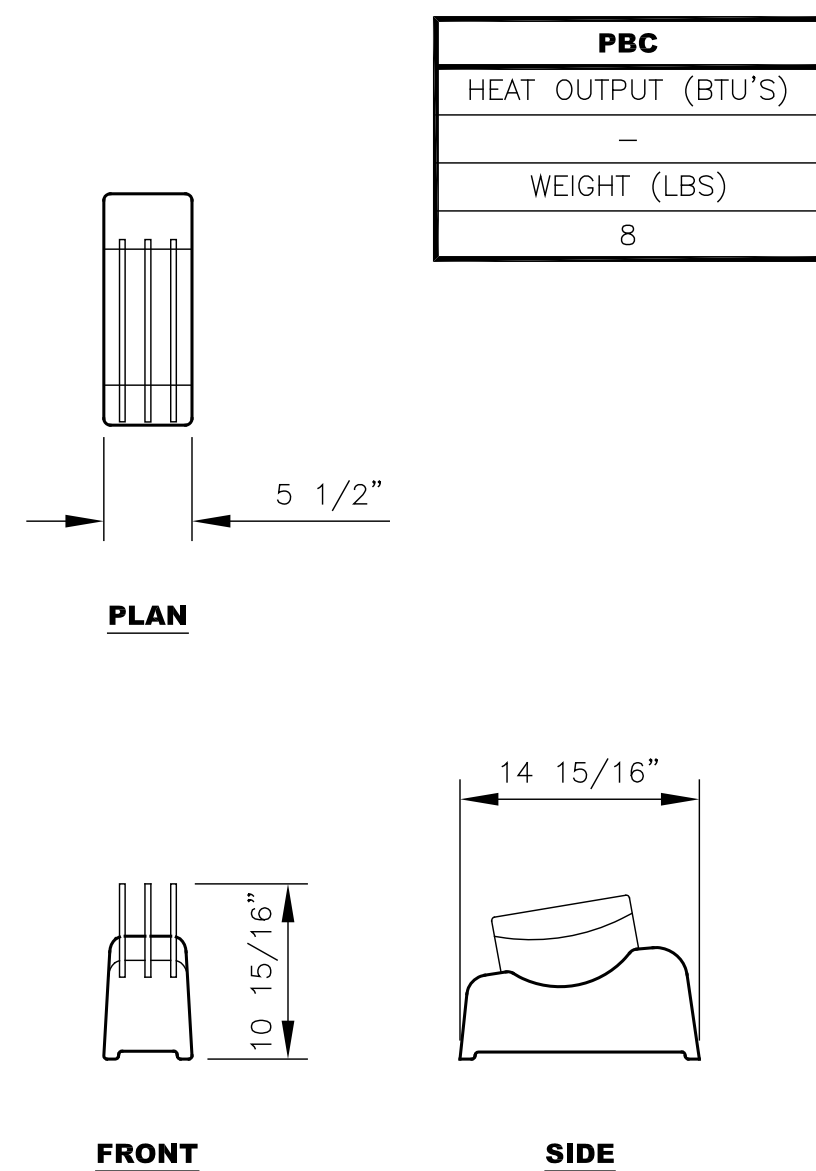
CAB	
HEAT OUTPUT (BTU'S)	3,600
WEIGHT (LBS)	431



FRONT

SIDE

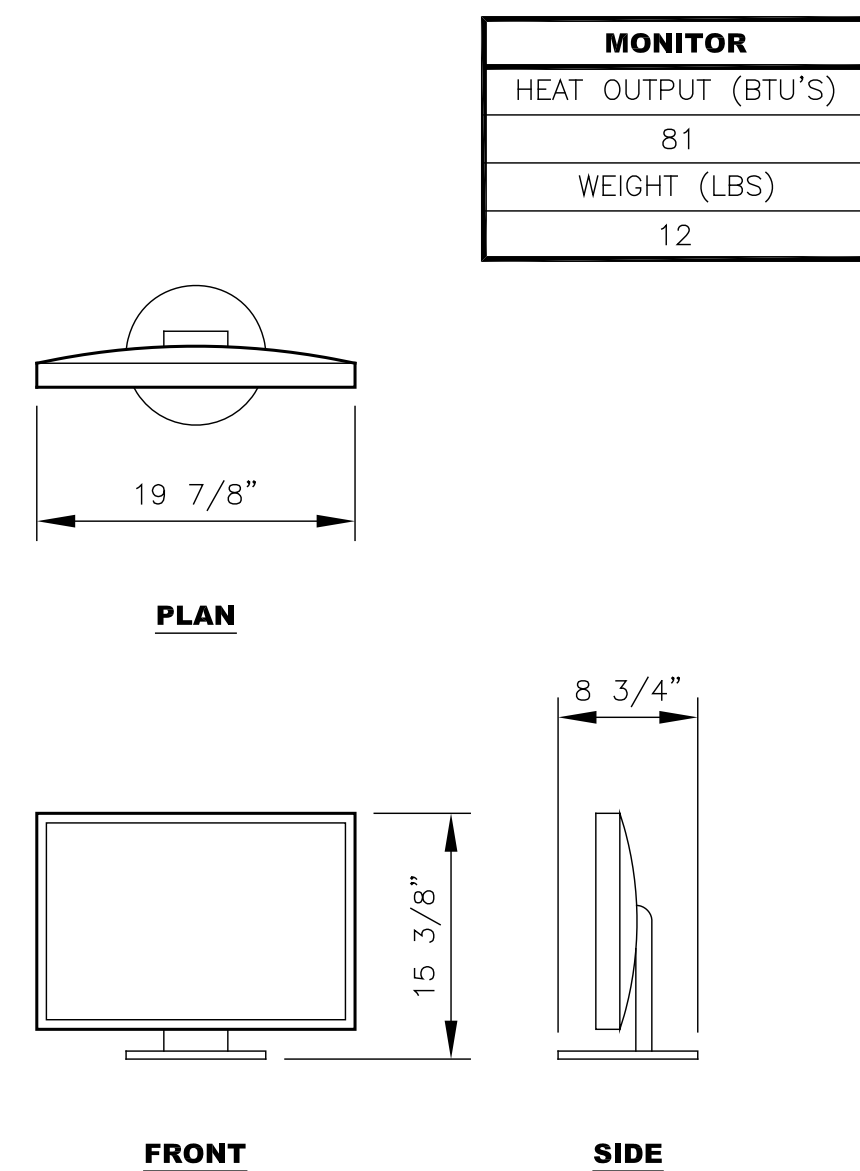
VBS	
HEAT OUTPUT (BTU'S)	-
WEIGHT (LBS)	225



FRONT

SIDE

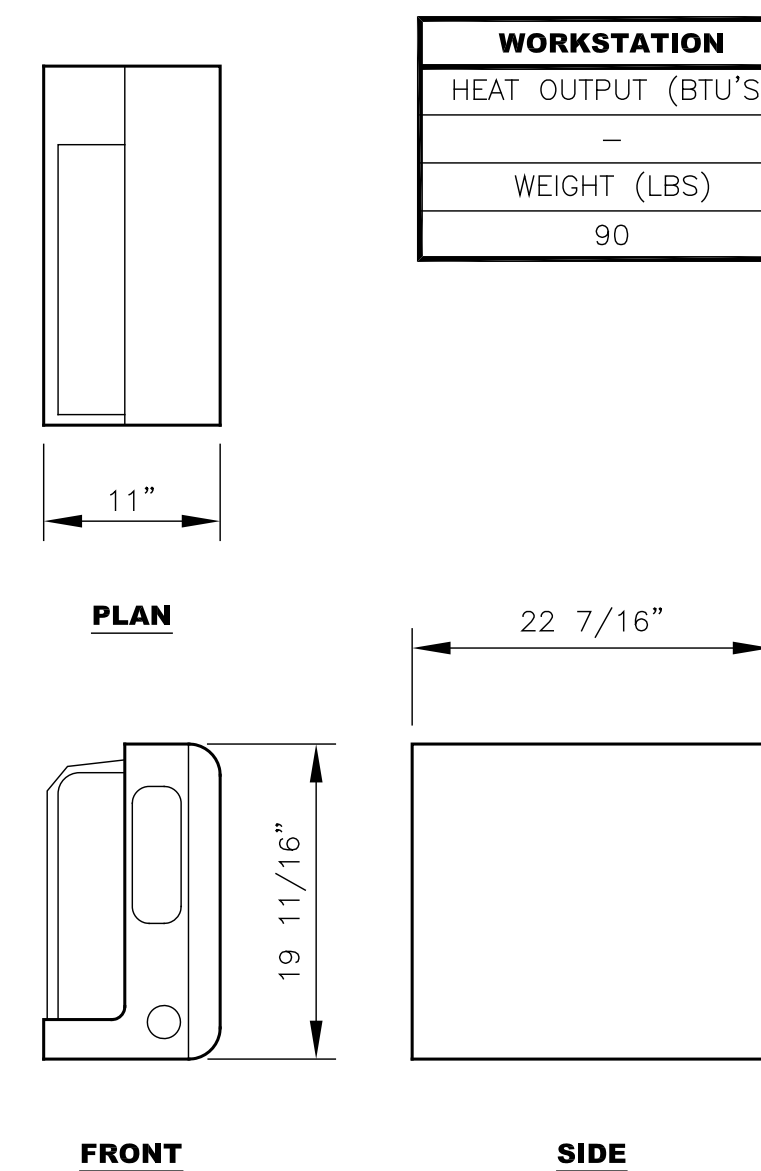
PBC	
HEAT OUTPUT (BTU'S)	-
WEIGHT (LBS)	8



FRONT

SIDE

MONITOR	
HEAT OUTPUT (BTU'S)	81
WEIGHT (LBS)	12



FRONT

SIDE

WORKSTATION	
HEAT OUTPUT (BTU'S)	-
WEIGHT (LBS)	90

**3 GENERATOR CABINET**

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

05-29-13

**4 VERTICAL BUCKY STAND**

SCALE: 1/2" = 1'-0"

05-29-13

**5 PANEL BATTERY CHARGER**

SCALE: 1" = 1'-0"

05-29-13

**6 DRX WORKSTATION**

SCALE: 1" = 1'-0"

05-29-13

TRISTAN ASSOCIATES

(T.RAD-PLUS RM. #1 - CMDR/1W)  
4518 UNION DEPOSIT RD.  
HARRISBURG, PA 17111

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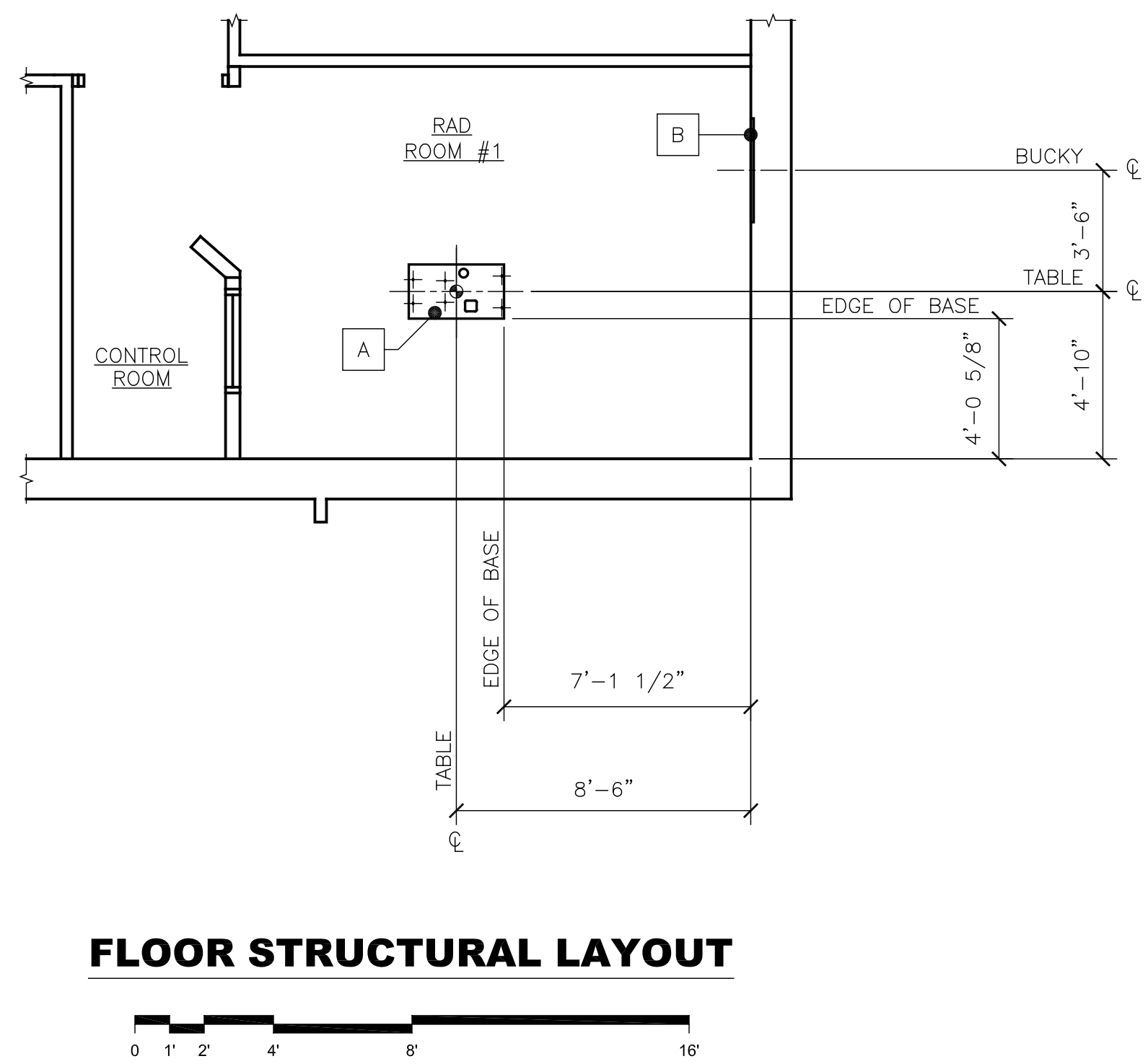
DATE: 11-08-13

SCALE: AS NOTED

PLANNER: V. H.

QUOTE: 14517

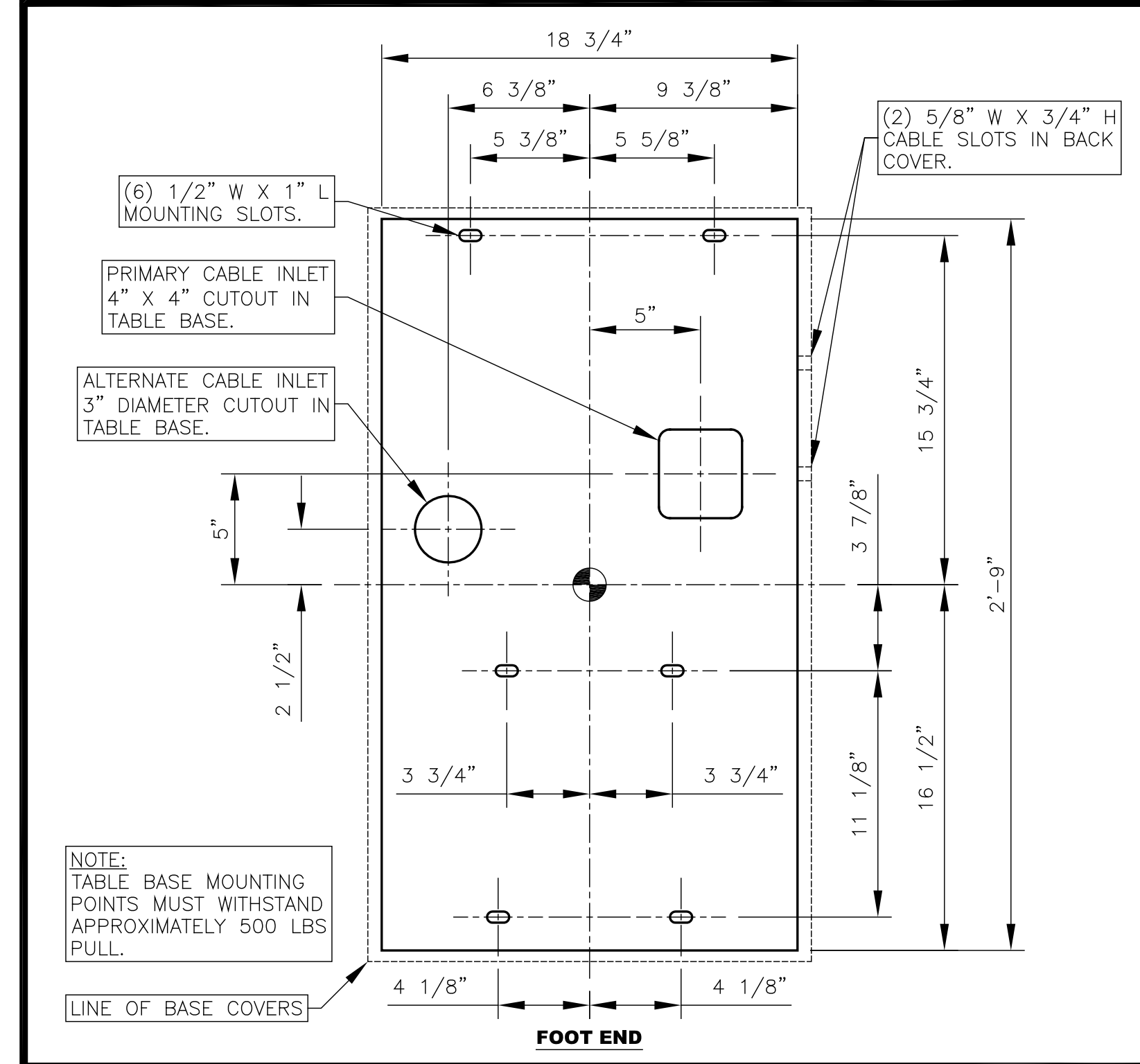
PROJECT NO.  
**130013979XRF**



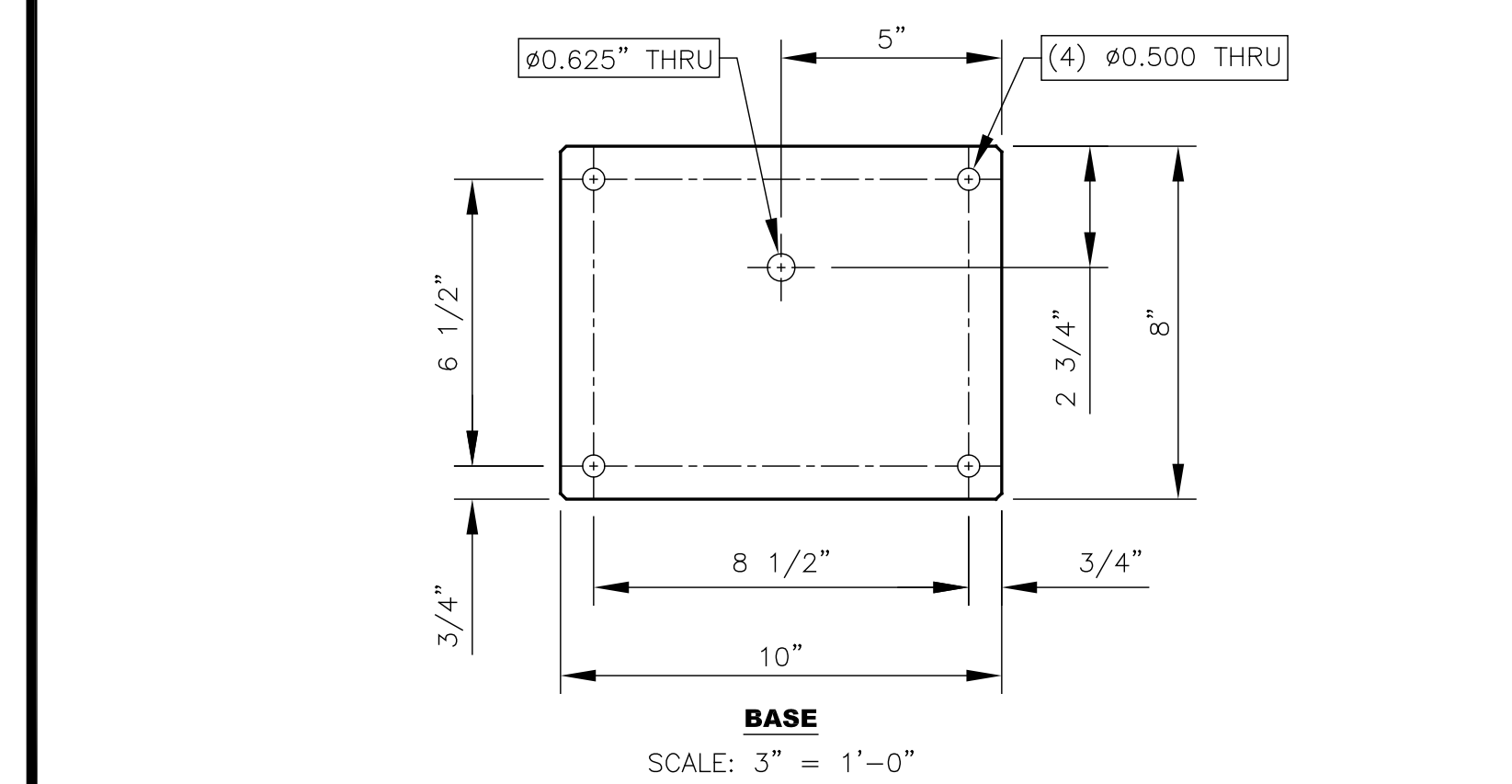
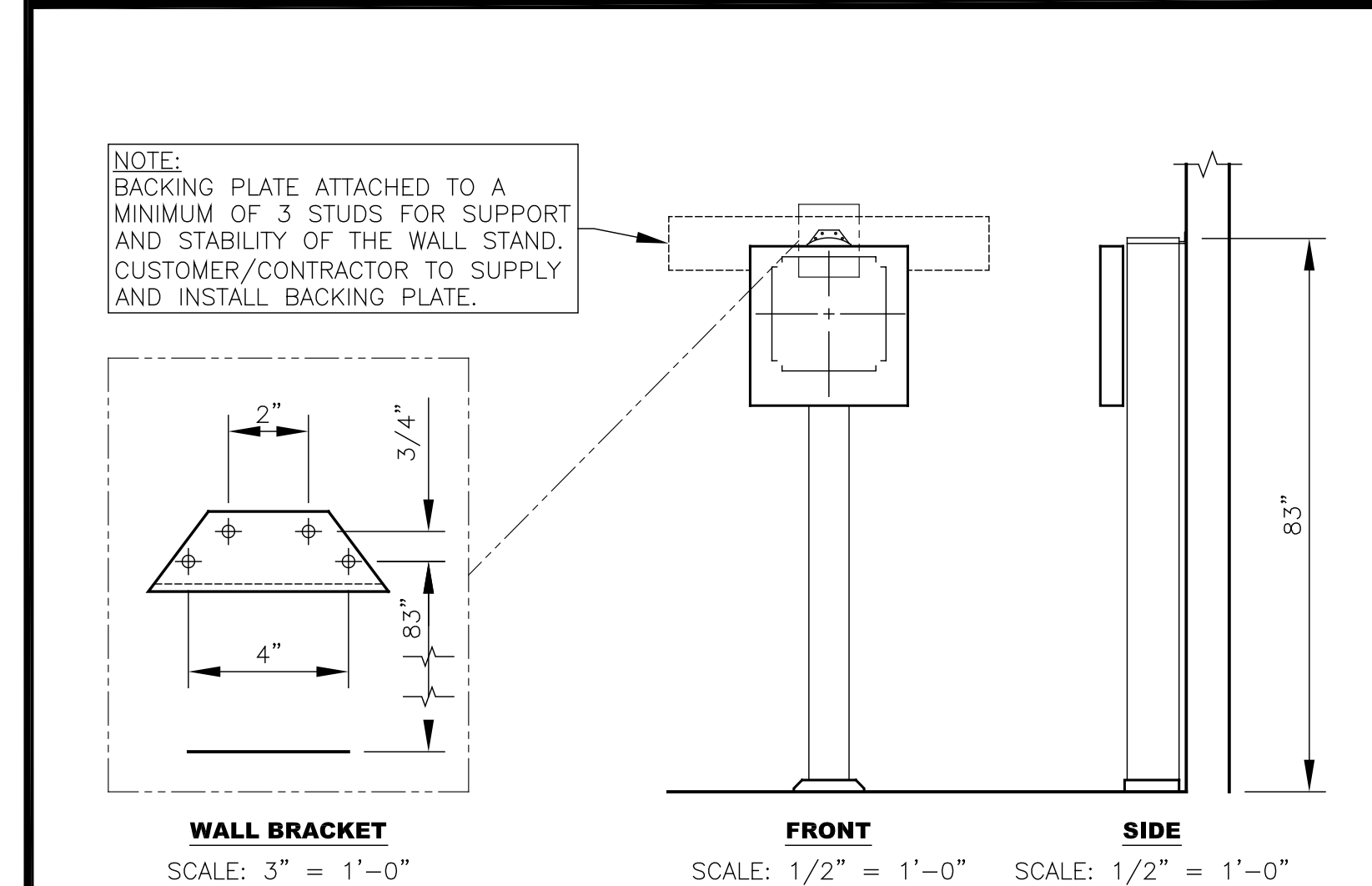
**FLOOR STRUCTURAL LAYOUT**

**FLOOR STRUCTURAL LEGEND**

ITEM	ITEM DESCRIPTION SUPPLIED AND INSTALLED BY TOSHIBA	REF.
A	TABLE BASE	① S1
ITEM	ITEM DESCRIPTION SUPPLIED AND INSTALLED BY CUSTOMER / CONTRACTOR	REF.
B	BACKING PLATE FOR VERTICAL BUCKY STAND	② S1



**1 TABLE BASE**  
SCALE: 2" = 1'-0" 05-29-13



**2 VERTICAL BUCKY STAND**  
SCALE: AS NOTED 05-29-13

TOSHIBA

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REV	DATE	DESCRIPTION

TRISTAN ASSOCIATES

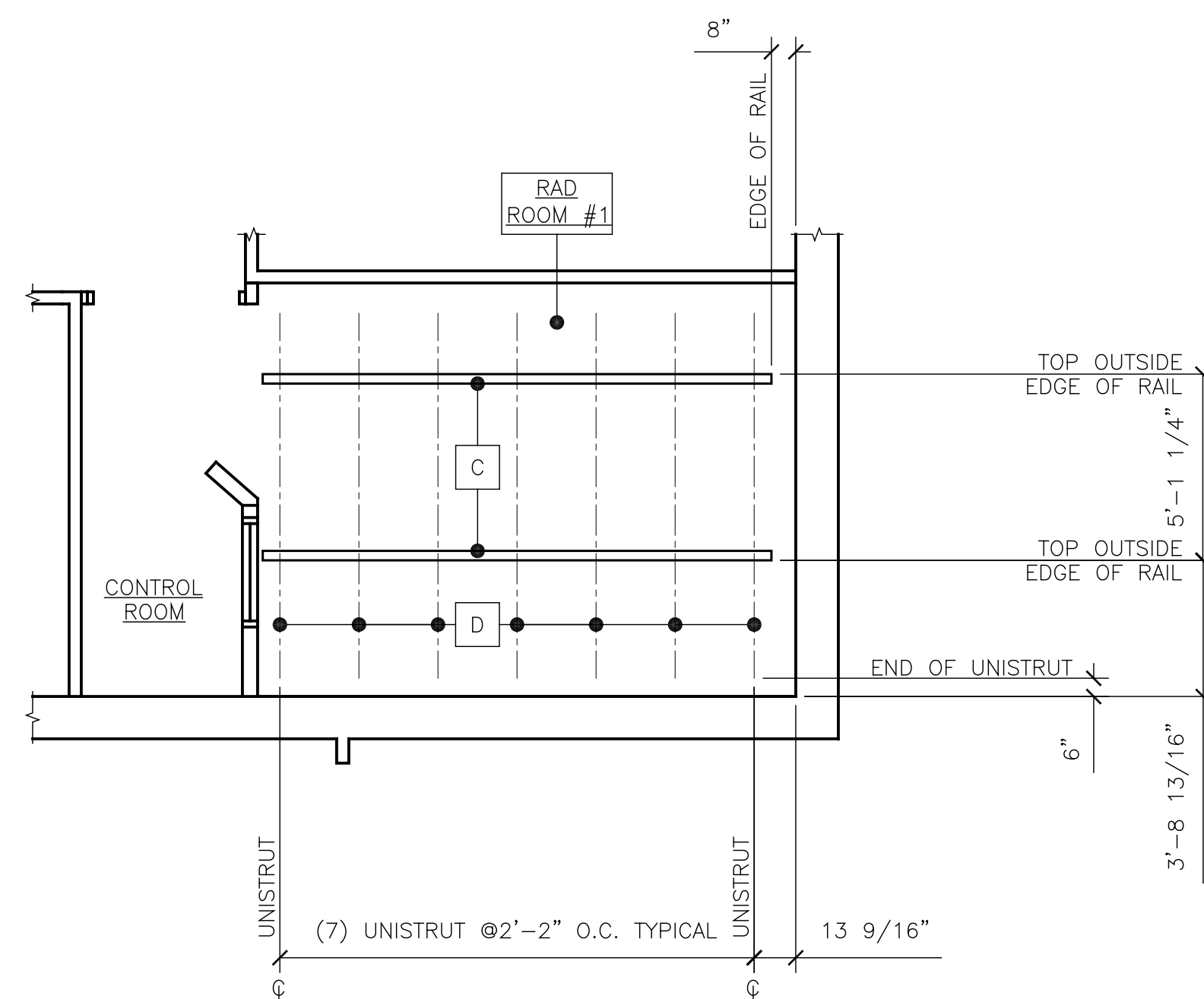
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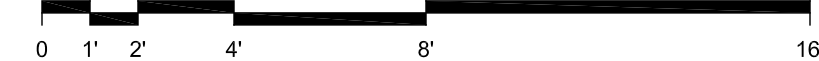
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SCALE: 1/4" = 1'-0"  
PLANNER: V. H.  
QUOTE: 14517  
PROJECT NO. **130013979XRF**

S1

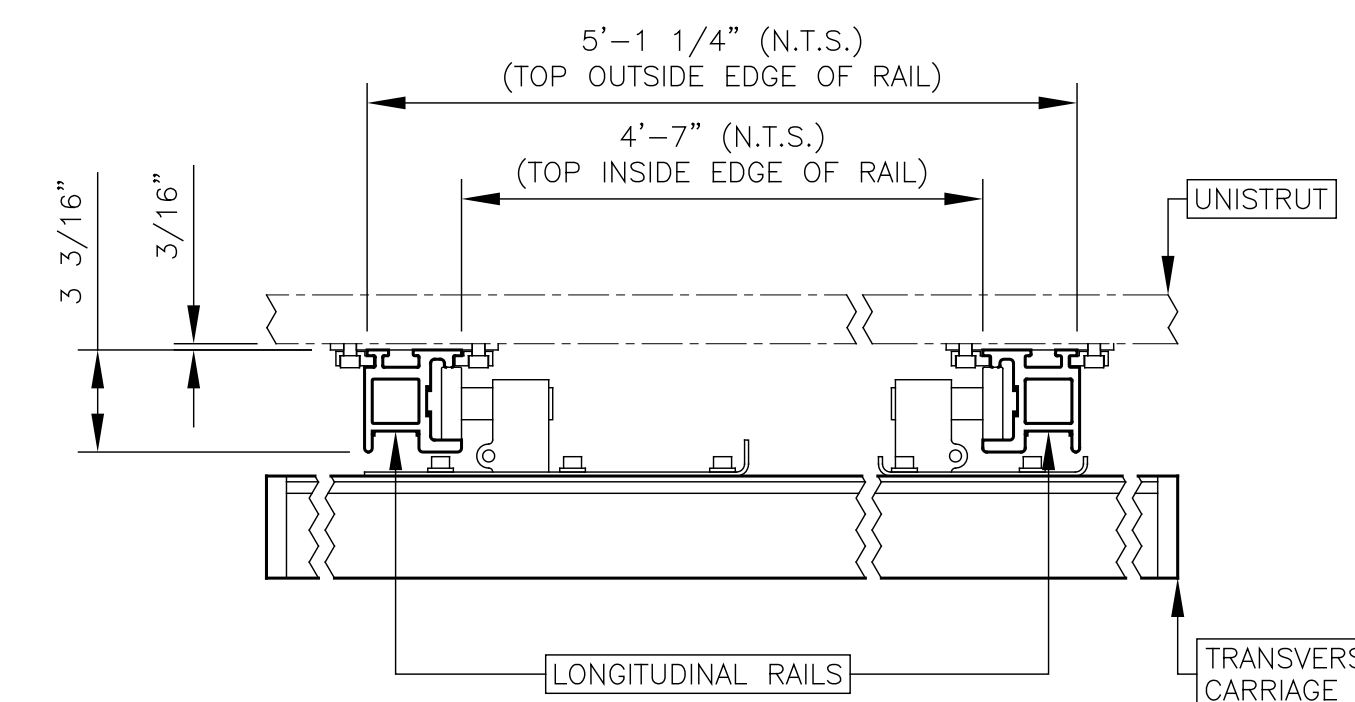
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**CEILING STRUCTURAL LAYOUT**

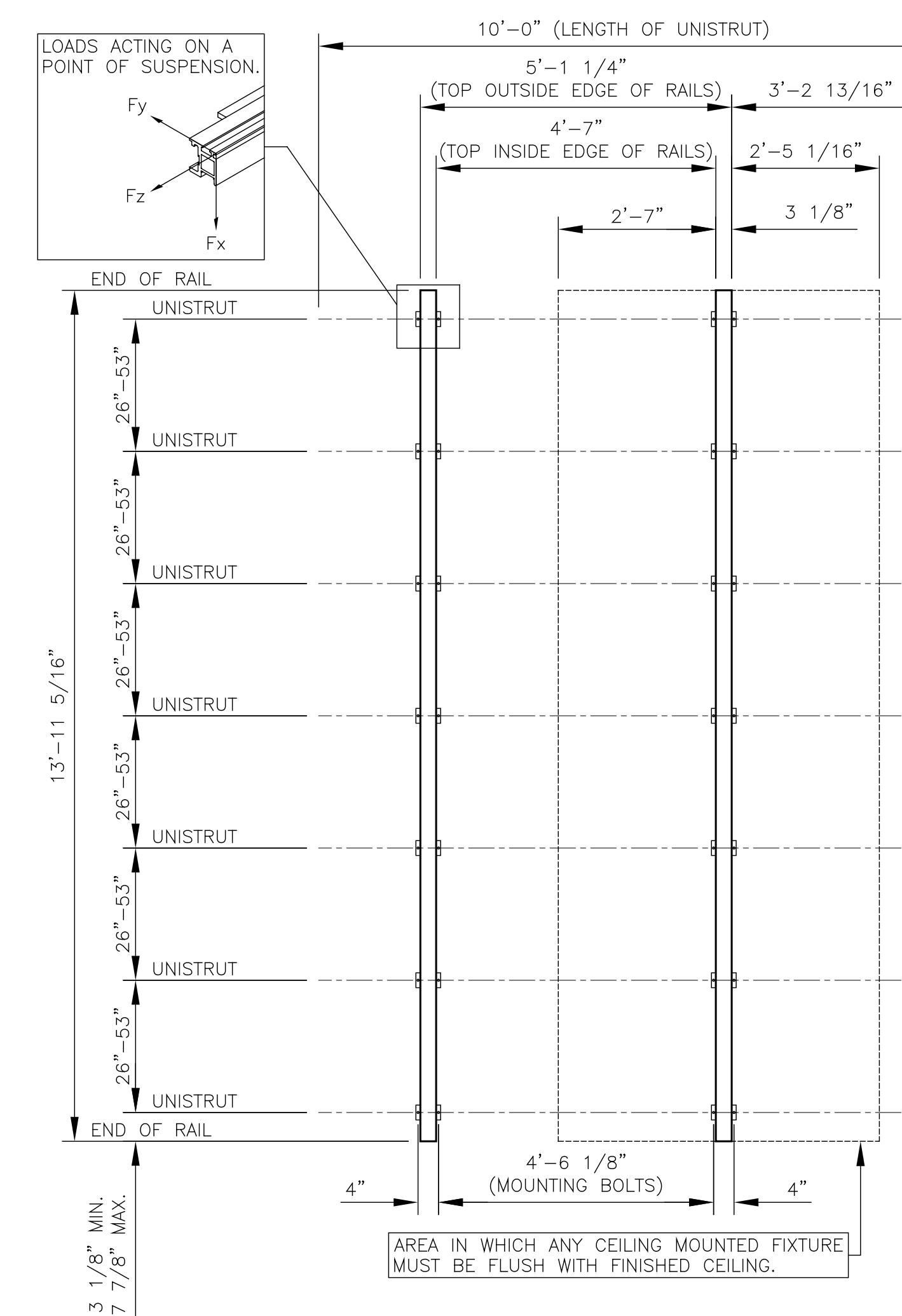


STRUCTURAL LEGEND		
ITEM	ITEM DESCRIPTION SUPPLIED AND INSTALLED BY TOSHIBA	REF.
C	LONGITUDINAL RAILS	1 S2
ITEM	ITEM DESCRIPTION SUPPLIED AND INSTALLED BY CUSTOMER / CONTRACTOR	REF.
D	P1001 UNISTRUT OR EQUIVALENT	1 S2



**RAIL/TRANSVERSE CARRIAGE PROFILE**

SCALE: 2" = 1'-0"



**CEILING STRUCTURAL LAYOUT**

MOUNTING POINT - TYPICAL AT ALL INTERSECTIONS OF UNISTRUT AND LONGITUDINAL RAILS.

MAXIMUM LOADS DURING OPERATION	F MAX
Fx = LOAD AT THE CEILING FASTENING, VERTICAL	1,574 LBS.
Fy = TRANSVERSE FORCE ACTING ON THE LONGITUDINAL RAIL	607 LBS.
Fz = LONGITUDINAL FORCE ACTING ON THE LONGITUDINAL RAIL	472 LBS.

**NOTES:**

1. THE SPECIFIED LOAD VALUES INCLUDE THE STATIC AND DYNAMIC STRESS VALUES UP TO A SHIFT SPEED OF 2 FT/SEC. (DURING MOVEMENT OF THE END STOPS).
2. THE LOAD Fx IS A MOVING POINT LOAD. THE BENDING OF THE UNISTRUT DUE TO THIS LOAD MUST BE LESS THAN 1/16" OVER 13'-1 1/2" RUN.
3. THE BOTTOM OF THE UNISTRUT MUST BE HORIZONTAL WITH A MAX. DEVIATION OF ±1/16" OVER 13'-1 1/2" RUN.
4. THE LONGITUDINAL FORCE Fz MUST BE DISTRIBUTED ON THE LONGITUDINAL RAIL AND ITS HOLDING POINTS AND MUST BE ABSORBED BY DIAGONAL BRACING.
5. THE TRANSVERSE FORCE Fy ACTING ON THE LONGITUDINAL RAIL CAN BE DISTRIBUTED ONTO A MINIMUM OF 4 BOLTS PER RAIL.

**1 CEILING MOUNTED TUBE SUPPORT AND UNISTRUT DETAILS**

SCALE: 1/2" = 1'-0"

05-29-13

REV	DATE	DESCRIPTION

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 4518 UNION DEPOSIT RD.  
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DATE: 11-08-13

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PLANNER: V. H.

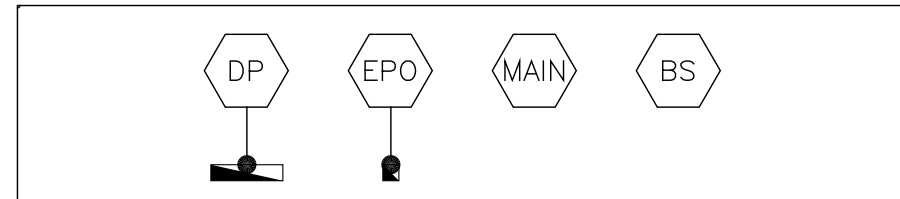
QUOTE: 14517

PROJECT NO.  
**130013979XRF**

**S2**

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NOTE:  
TO BE LOCATED BY CUSTOMER / CONTRACTOR.

ADDITIONAL "EPO" SWITCHES TO BE LOCATED IN ADJACENT ROOMS WITH TOSHIBA EQUIPMENT IF MAIN "EPO" IS NOT ACCESSIBLE (VERIFY WITH LOCAL CODE). ALL "EPO" SWITCHES PROVIDED BY CUSTOMER/CONTRACTOR.

NOTE:  
J-BOX SIZES MAY BE INCREASED AS NEEDED.

NOTE:  
GROMMETED OPENINGS ARE SHOWN FOR REFERENCE PURPOSES ONLY. VERIFY SIZE AND LOCATION W/TOSHIBA REPRESENTATIVE.

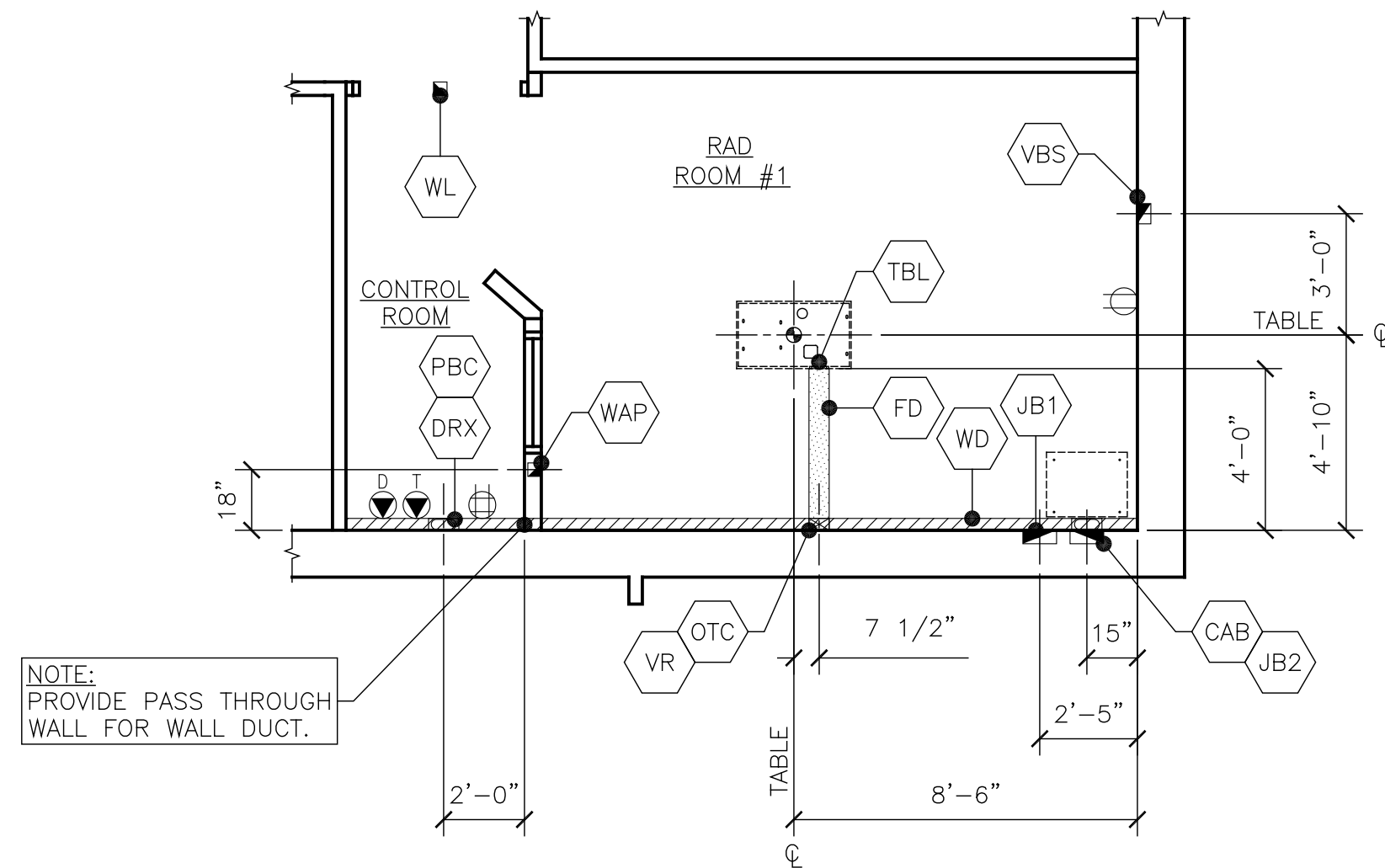
### CONDUIT SCHEDULE

RUN NO.	CONTRACTOR CONDUIT REFERENCE				CABLE REFERENCE		
	CONDUIT (POINT TO POINT)	CONDUIT (ROUTING)	CONDUIT (DIAMETER)	CONDUIT (MAX LENGTH)	CABLE (POINT TO POINT)	CABLE LENGTH	CABLES (SUPPLIED BY)
1	MAIN	DP	CONTRACTOR DETERMINED	SEE DETAIL (2/E2)	CONTRACTOR DETERMINED	CONTRACTOR	CONTRACTOR
2	DP	EPO	CONTRACTOR DETERMINED	SEE DETAIL (2/E2)	CONTRACTOR DETERMINED	CONTRACTOR	CONTRACTOR
3	DP	JB1	CONTRACTOR DETERMINED	PER CODE	CONTRACTOR DETERMINED	CONTRACTOR	CONTRACTOR
4	DP	BS	CONTRACTOR DETERMINED	PER CODE	CONTRACTOR DETERMINED	CONTRACTOR	CONTRACTOR
5	DP	JB2	CONTRACTOR DETERMINED	SEE DETAIL (2/E2)	CONTRACTOR DETERMINED	CONTRACTOR	CONTRACTOR
6	JB2	WL	OVER CEILING	PER MANUFACTURER	CONTRACTOR DETERMINED	CONTRACTOR	CONTRACTOR
9	JB2	VBS	OVER CEILING	1 1/2"	40'-0"	TOSHIBA	TOSHIBA
12	DRX	WAP	OVER CEILING	1 1/2"	40'-0"	TOSHIBA	TOSHIBA

NOTE:  
**A. CONDUITS SUPPLIED/INSTALLED BY CUSTOMER/CONTRACTOR.**  
**B. ALL CONDUIT RUNS MUST TAKE THE SHORTEST MOST DIRECT ROUTE POSSIBLE.**  
**C. CONDUIT IS NOT TO BE RUN IN SUCH A MANNER THAT WILL EXCEED CONDUIT MAXIMUM LENGTH AS SHOWN IN THE SCHEDULES.**  
**D. CONDUIT SCHEDULE SHOWS ACTUAL CABLE LENGTH. PART OF THE CABLE LENGTH WILL BE TAKEN UP WITHIN CONNECTING SYSTEM COMPONENTS.**

### ELECTRICAL LEGEND

ITEM	ITEM DESCRIPTION SUPPLIED AND INSTALLED BY CUSTOMER / CONTRACTOR	REF.
MAIN	MAIN SERVICE ENTRANCE PANEL.	2/E2
DP	DISTRIBUTION PANEL CIRCUIT BREAKERS PER TOSHIBA POWER SPECIFICATIONS (SEE DETAIL). DISTRIBUTION PANEL LOCATION PER CODE REQUIREMENTS BY ELECTRICAL CONTRACTOR.	2/E2
EPO	4" STD. J-BOX FOR REMOTE OFF SWITCH. LOCATED BY CUSTOMER/CONTRACTOR. DPDT, NORMALLY OPEN MUSHROOM HEAD PUSH BUTTON.	2/E2
WL	4" STD. J-BOX FOR "X-RAY ON" OR WARNING LIGHT MOUNTED ABOVE PATIENT ENTRY DOOR.	2/E2
BS	BUILDING STEEL.	2/E2
CAB	GROMMETED OPENING IN "WD".	5/E2
TBL	GROMMETED OPENING AT THE END OF "FD". 4'-0" PIGTAIL IN "JB2" FOR TABLE. SEE DETAIL FOR POWER SPECIFICATIONS. PIGTAIL LENGTH MAY VARY, VERIFY WITH TOSHIBA REPRESENTATIVE.	5/E2
VBS	6" W X 6" H X 4" D J-BOX, FLUSH MOUNTED IN WALL 42" A.F.F. TO BOTTOM OF BOX.	5/E2
OTC	GROMMETED OPENING IN "VR", 14" BELOW FINISHED CEILING. CUT OPENING TO FIT INCLUDED CABLE INTERFACE BOX FOR CORRUGATED HOSE.	5/E2
DRX	10" W X 10" H X 4" D, J-BOX FLUSH MOUNTED IN FINISHED WALL, 12" A.F.F. TO BOTTOM OF BOX. NETWORK AND DEDICATED OUTLET.	5/E2
WAP	4" W X 4" H X 4" D, J-BOX FLUSH MOUNTED IN FINISHED WALL, 7'-0" A.F.F. OR MORE TO BOTTOM OF BOX.	5/E2
PBC	DRX WIRELESS PANEL BATTERY CHARGER.	5/E2
JB1	10" W X 10" H X 4" D J-BOX, FLUSH MOUNTED 1" A.F.F. TO BOTTOM OF BOX. CONTRACTOR SUPPLIED SEAL TIGHT FLEX CONDUIT WITH 90° ELBOW TO GENERATOR CABINET.	6/E2
JB2	10" W X 10" H X 4" D J-BOX, FLUSH MOUNTED 12" A.F.F. TO BOTTOM OF BOX. OPEN TO "WD".	5/E2
□	110V ELECTRICAL OUTLETS FOR SYSTEM EQUIPMENT AND/OR SERVICE EQUIPMENT. OUTLETS TO BE LOCATED IN EACH ROOM WHERE SYSTEM EQUIPMENT IS LOCATED.	5/E2
▲	DEDICATED PHONE LINE SUPPLIED/INSTALLED BY CUSTOMER/CONTRACTOR.	5/E2
▲	RJ45 CONNECTOR, CAT5 CABLE TO BE USED FOR DATA CONNECTION FOR NETWORKING.	5/E2
□	DEDICATED QUAD ELECTRICAL OUTLET INSTALLED BELOW COUNTERTOP.	5/E2



NOTE:  
PROVIDE PASS THROUGH WALL FOR WALL DUCT.

### ELECTRICAL LAYOUT



### ELECTRICAL DUCT LEGEND

ITEM	ITEM DESCRIPTION SUPPLIED AND INSTALLED BY CUSTOMER / CONTRACTOR	REF.
WD	10" W X 3 1/2" D FLUSH/SURFACE MOUNTED WALL DUCT, W/(3) EQUALLY PARTITIONED COMPARTMENTS THROUGHOUT & REMOVABLE ACCESS COVERS. MOUNTED 12" A.F.F. TO BOTTOM OF DUCT.	5/E2
VR	6" W X 3 1/2" D FLUSH/SURFACE MOUNTED RISER DUCT, W/(3) EQUALLY PARTITIONED COMPARTMENTS THROUGHOUT & REMOVABLE ACCESS COVERS. CONNECTING "WD" TO "FD".	5/E2
FD	6" W X 3 1/2" D SURFACE MOUNTED FLOOR DUCT, W/(3) EQUALLY PARTITIONED COMPARTMENTS THROUGHOUT & REMOVABLE ACCESS COVERS (THICKNESS SHOULD BE ABLE TO SUPPORT MIN. OF 200 LBS.) ARE REQUIRED.	5/E2

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REV	DATE	DESCRIPTION

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 PLANNER: V. H.  
 QUOTE: 14517  
 PROJECT NO. **130013979XRF**

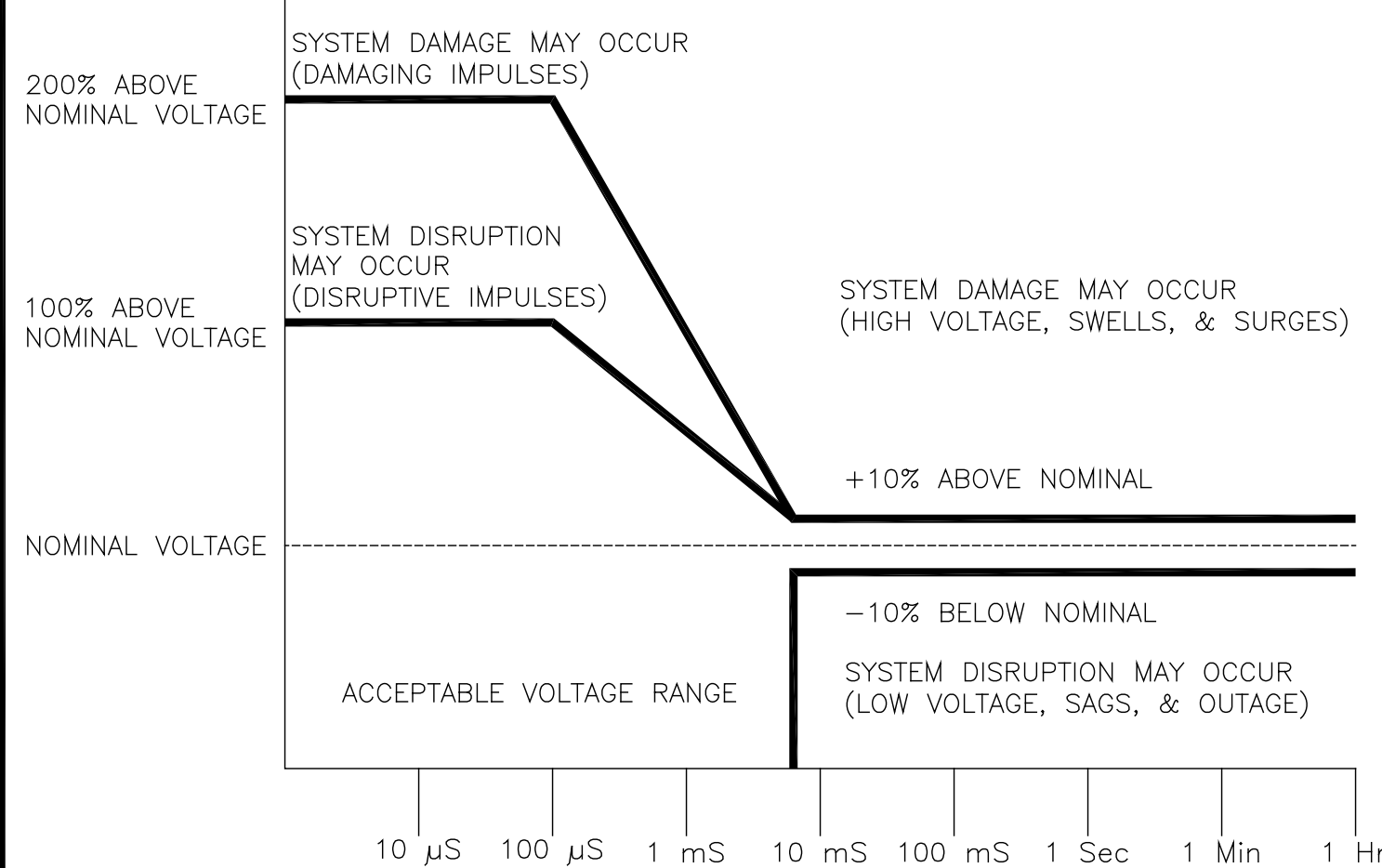
**E1**

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<b>POWER QUALITY REQUIREMENTS</b> <b>T.RAD-PLUS WITH 80KW GENERATOR</b>			
SUPPLY CONFIGURATION:	3 PHASE, 3 WIRE POWER, NEUTRAL & GROUND, WYE (SEE NOTE A)		
NOMINAL LINE VOLTAGE:	480 VAC (PREFERRED), 440 VAC, OR 380 VAC, 50/60 HZ (SEE NOTE B)		
LINE VOLTAGE VARIATION:	±10% STEADY-STATE INCLUDING SAGS AND SURGES		
LINE VOLTAGE BALANCE:	2% MAXIMUM OF NOMINAL VOLTAGE BETWEEN PHASES.		
FREQUENCY VARIATION:	±1 HZ		
HARMONIC DISTORTION:	3% STEADY-STATE, 5% FOR SHORT PERIODS (1 MINUTE OR LESS)		
LINE IMPULSES:	200% ABOVE PHASE-NEUTRAL RMS VOLTAGE ABSOLUTE MAXIMUM NO MORE THAN 4 PER DAY TO EXCEED 100% VPK		
VOLTAGE NOTCHES:	10.0 VOLTS PEAK-PEAK (440/480 VAC)		
GROUND CONDUCTOR IMPEDANCE:	0.1 OHMS @ 60 HZ, TO NEUTRAL-GROUND BONDING POINT (SEE NOTE D)		
STANDARD TRANSFORMER CAPACITY:	100 KVA		
MAXIMUM SYSTEM DEMAND:	80 KVA (IMAGING)		
MOMENTARY CURRENT:	200 AMPS		
CONDUCTOR SIZES (SEE NOTE E) FOR 1.0% IMPEDANCE OF BRANCH CONDUCTORS (20°C)			
CONDUCTOR SIZE	480 VAC (SEE NOTE B)	440 VAC (SEE NOTE B)	380 VAC (SEE NOTE B)
1 AWG	50 FT.	50 FT.	-
1/0 AWG	-	-	50 FT.
2/0 AWG	100 FT.	100 FT.	-
3/0 AWG	-	-	100 FT.
4/0 AWG	150 FT.	150 FT.	150 FT.
250 MCM	200 FT.	200 FT.	200 FT.
CIRCUIT BREAKER SIZE: (SEE NOTE F)	100 A	100 A	100 A
MAXIMUM PH-PH IMPEDANCE:	0.160 Ohms	0.140 Ohms	0.100 Ohms
DISCONNECT TO GENERATOR: (15 FT. MAX.)	4 AWG	4 AWG	4 AWG

### STANDARD POWER QUALITY NOTES

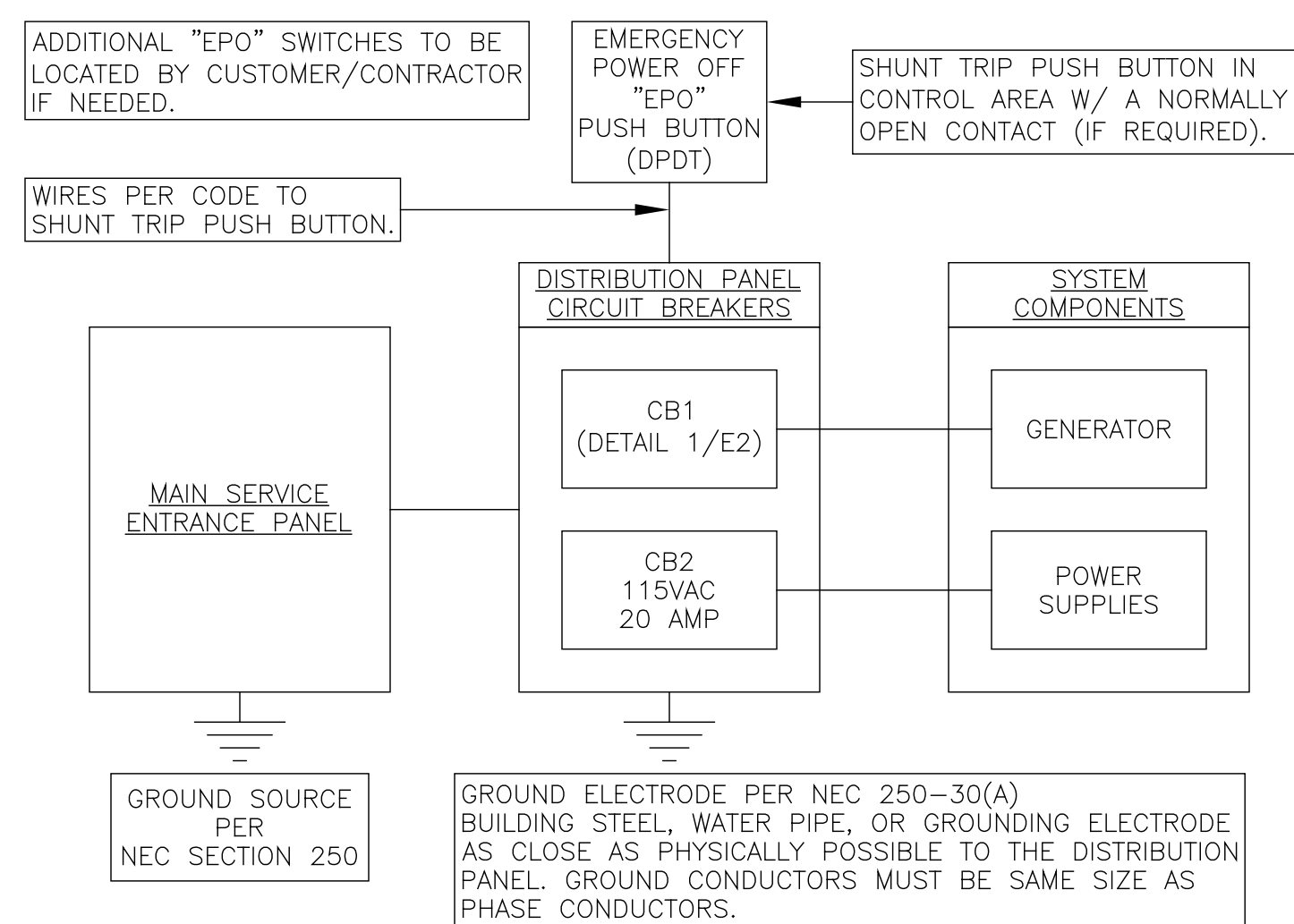
- A GROUNDED NEUTRAL POWER SOURCE IS REQUIRED TO ASSURE RELIABLE EQUIPMENT OPERATION. THE NEUTRAL CONDUCTOR MAY NOT BE USED FOR A PARTICULAR SYSTEM.
- IN CASES WHERE MULTIPLE VOLTAGES ARE PERMITTED, THE PREFERRED SYSTEM VOLTAGE IS SPECIFIED.
- DUE TO THE HIGH INSTANTANEOUS POWER OF MEDICAL IMAGING SYSTEMS, USE THE HIGHEST AVAILABLE VOLTAGE SOURCE. ENSURE THAT LOWER VOLTAGE SOURCES ARE DERIVED DIRECTLY FROM THE SERVICE ENTRANCE OF THE FACILITY.
- GROUND CONDUCTORS ARE REQUIRED TO BE THE SAME SIZE AS THE PHASE CONDUCTORS UNLESS A LARGER SIZE IS REQUIRED BY CODE.
- ALL FEEDER AND BRANCH CIRCUIT CONDUCTORS MUST BE COPPER - ALUMINUM IS NOT PERMITTED.
- IF THE EQUIPMENT CIRCUIT BREAKER IS NOT LOCATED IN THE CONTROL AREA, A SHUNT TRIP BREAKER MUST BE USED IN ORDER TO COMPLY WITH N.E.C. 517-72(B). A PUSH-BUTTON TO OPERATE THE SHUNT TRIP MUST BE LOCATED IN THE CONTROL AREA.
- A SEPARATE CIRCUIT, FED FROM THE FACILITY RADIOLOGY PANEL OR A MAIN SERVICE PANEL IS REQUIRED. USE OF A SUB PANEL WITH LOADS SUCH AS ELEVATORS, HVAC, MOTORS, ETC., IS NOT PERMITTED.
- DEVICES SUCH AS UNINTERRUPTIBLE POWER SUPPLIES, POWER CONDITIONERS, VOLTAGE REGULATORS, AND FILTERS MAY BE INCOMPATIBLE WITH THIS IMAGING EQUIPMENT. CONSULT YOUR TOSHIBA SERVICE REPRESENTATIVE PRIOR TO PURCHASING OR INSTALLING THESE DEVICES.
- THE MAINS POWER GROUND CONDUCTOR IS TO BE RUN WITH THE POWER PHASE CONDUCTORS. THE GROUNDS TO BUILDING STEEL OR EARTH GROUND ARE NOT TO BE RUN WITH THE PHASE CONDUCTORS.



## 1 POWER REQUIREMENTS

SCALE: NOT TO SCALE

05-29-13



### POWER SPECIFICATIONS

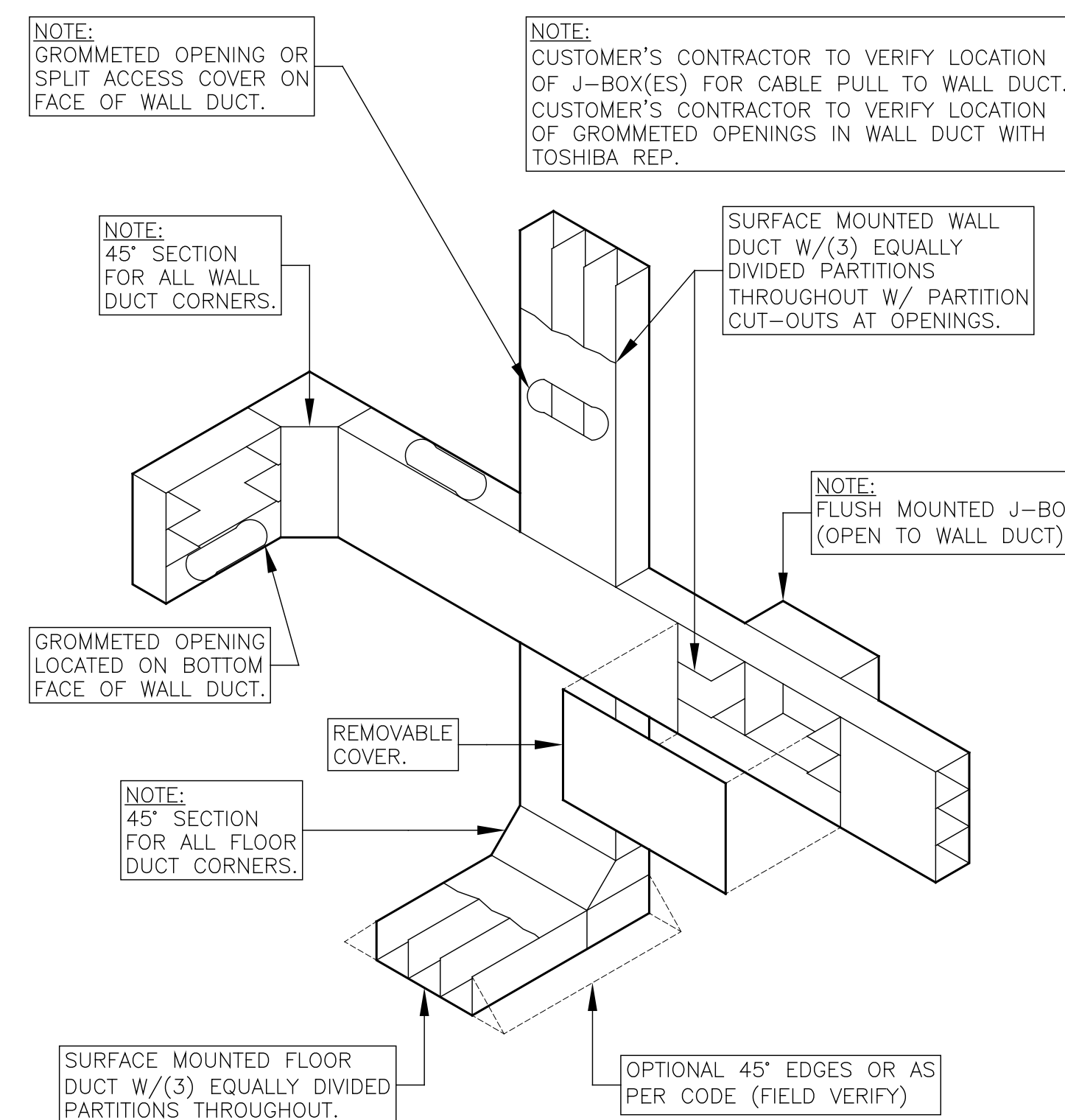
CIRCUIT BREAKER	PRODUCT DESCRIPTION	PHASE	VOLTAGE	AMPERAGE
CB1	GENERATOR	DETAIL 1/E2	DETAIL 1/E2	DETAIL 1/E2
CB2	TABLE	1 PHASE	115 VAC	20 AMP COMBINED
	O.T.C.			
	PS-1 (OPTIONAL TILTING VBS)			

- NOTE:
- REFER TO WIRE CHART FOR ELECTRICAL REQUIREMENTS AND PROPER WIRE SIZES FOR THE GENERATOR (DETAIL 1/E2).
  - IN ACCORDANCE WITH N.E.C. ARTICLE 517-72(B), THE EQUIPMENT CIRCUIT BREAKER(S) MUST BE LOCATED SO THAT THEY SHALL BE OPERABLE FROM A LOCATION READILY ACCESSIBLE FROM THE CONTROL AREA. IF THIS IS IMPOSSIBLE OR IMPRACTICAL, THE USE OF A SHUNT TRIP TYPE BREAKER WILL BE NECESSARY TO SATISFY THE REQUIREMENT. THE EMERGENCY OFF BUTTON FOR THE SHUNT TRIP SHOULD BE LOCATED IN THE CONTROL AREA. ADDITIONAL EMERGENCY OFF BUTTONS TO BE LOCATED BY CUSTOMER/CONTRACTOR IF NEEDED. WIRES TO SHUNT TRIP PER CODE.
  - THE CUSTOMER/CONTRACTOR SHALL SUPPLY AND INSTALL ALL CIRCUIT BREAKERS, CONDUITS, JUNCTION BOXES, DUCT, ETC. PER CODE.

## 2 TYPICAL POWER REQUIREMENTS

SCALE: NOT TO SCALE

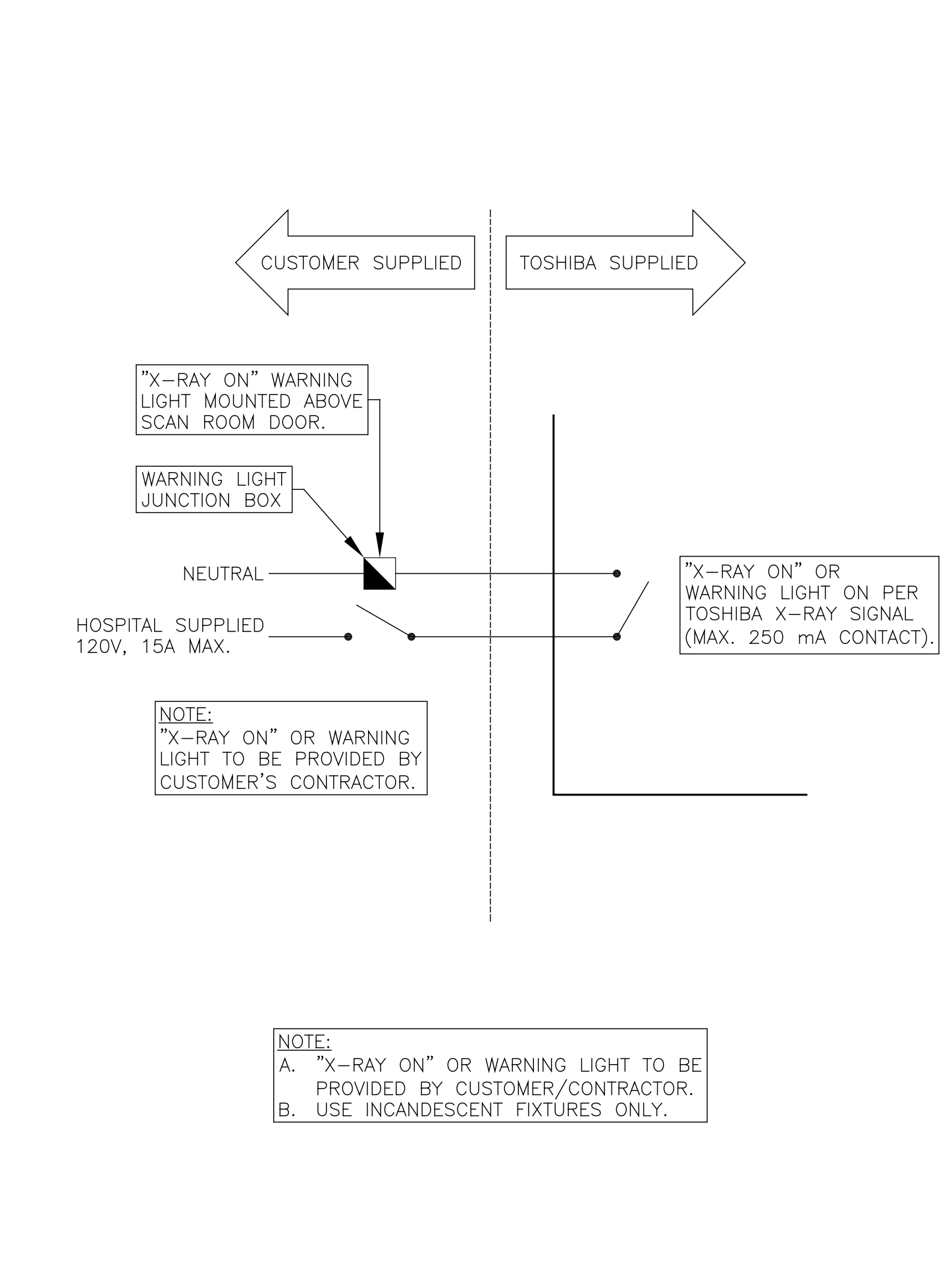
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## 5 TYPICAL DUCT DETAIL WITH WALL DUCT FLOOR DUCT / J-BOX / VERTICAL RISER

SCALE: NOT TO SCALE

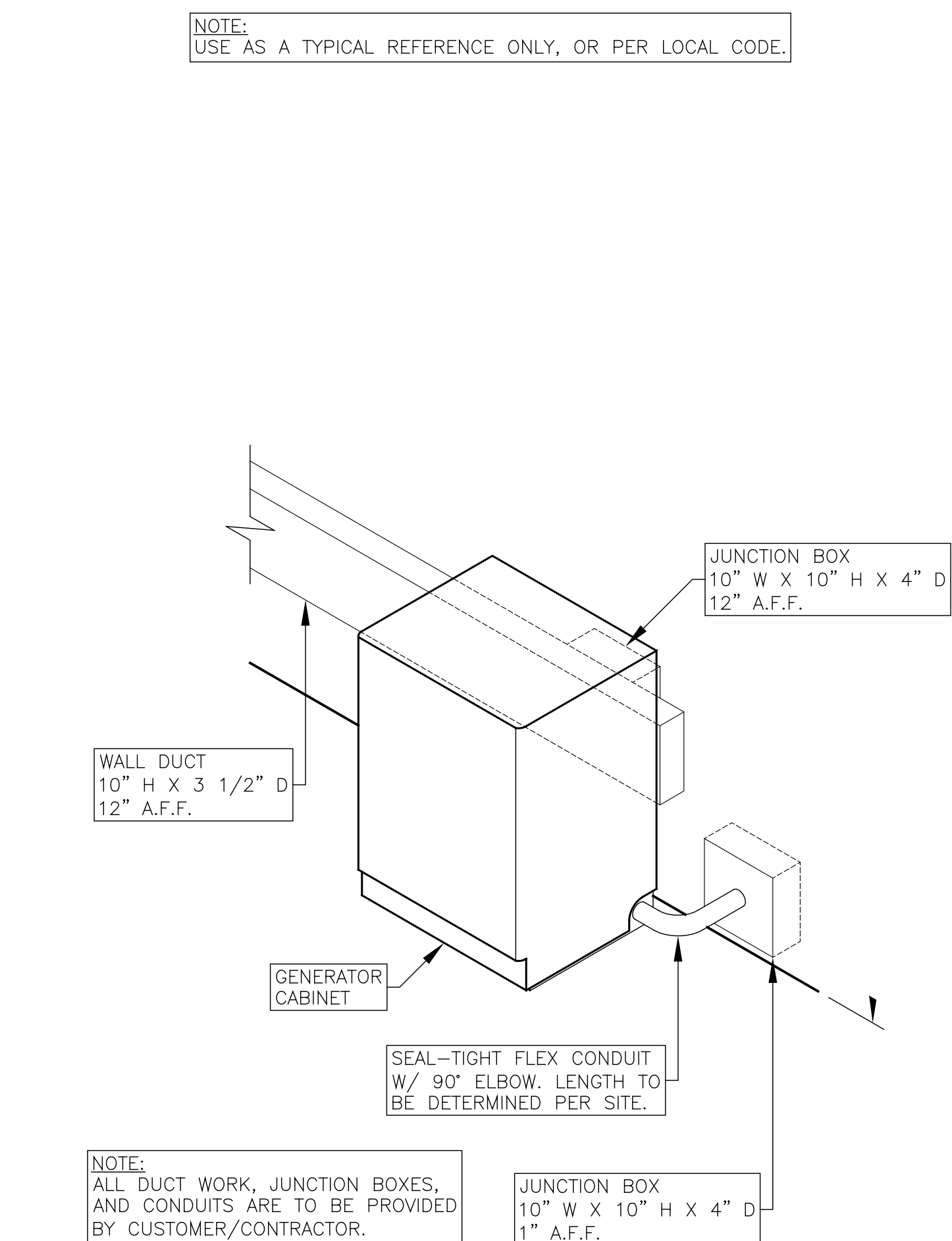
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## 3 WARNING LIGHT DETAIL

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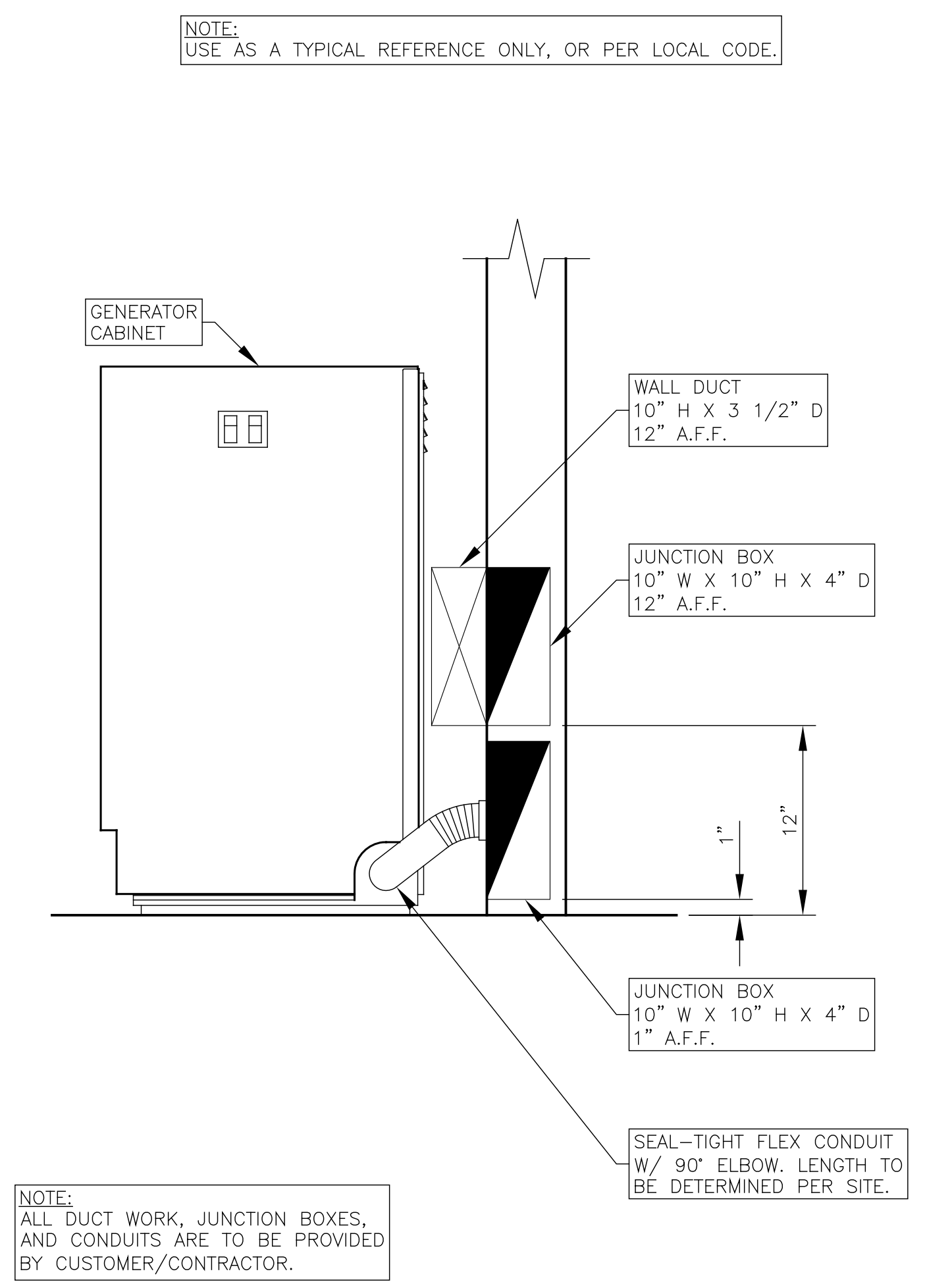
05-29-13



## 6 TYPICAL DUCT ISOMETRIC FOR GENERATOR

3/4" = 1'-0"

05-29-13



## 4 TYPICAL "CAB" J-BOX MOUNTING

1 1/2" = 1'-0"

05-29-13

# TOSHIBA

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REV	DATE	DESCRIPTION

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QUOTE: 14517

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