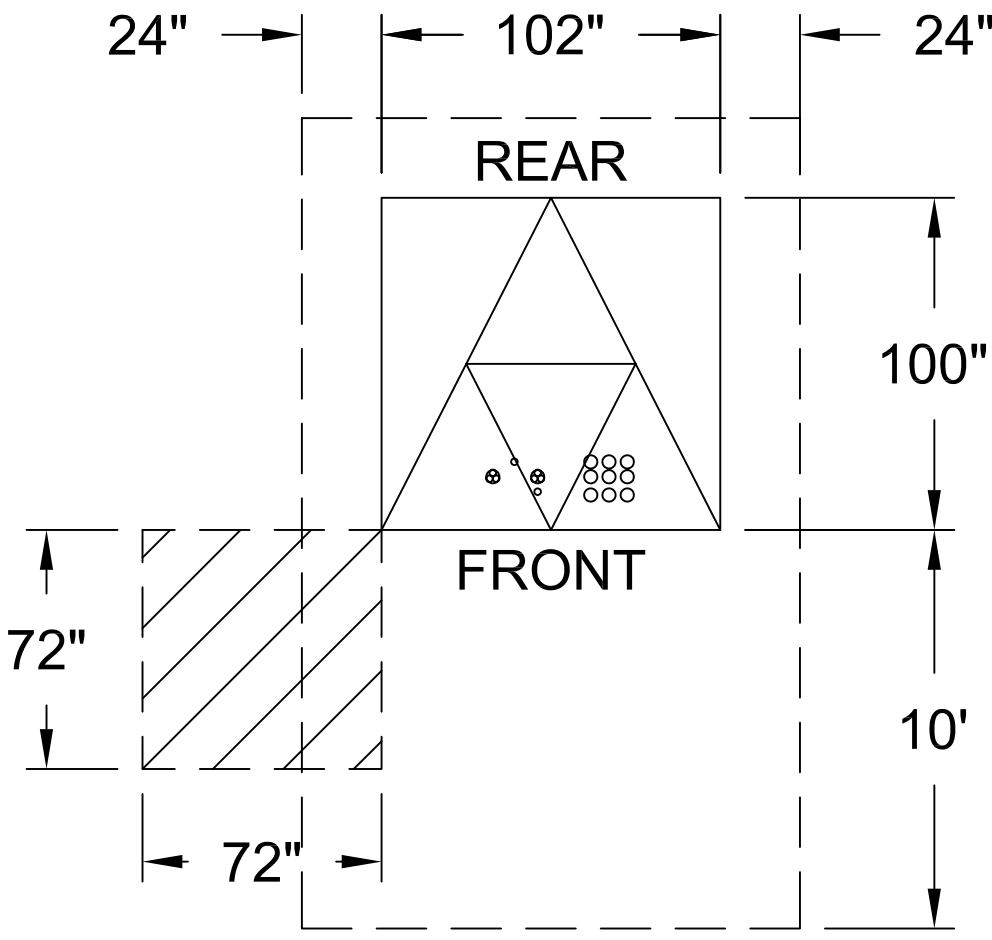


DIMENSIONS & MINIMUM SAFETY WORKING CLEARANCES

APS TRANSFORMERS - THREE PHASE 1000 KVA - 2500 KVA



Clearance areas shall be free of obstructions such as shrubs, trees and cactus.
Final grade within the 10-foot and 72-inch working areas shall be smooth and free of tripping hazards such as curbs and river rock.

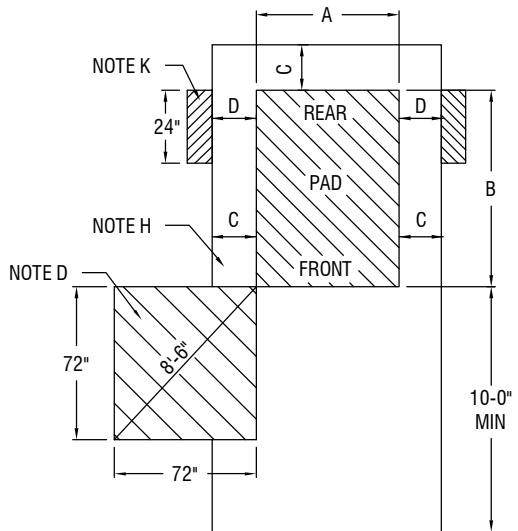


FIGURE 1 - CLEARANCE DIMENSIONS

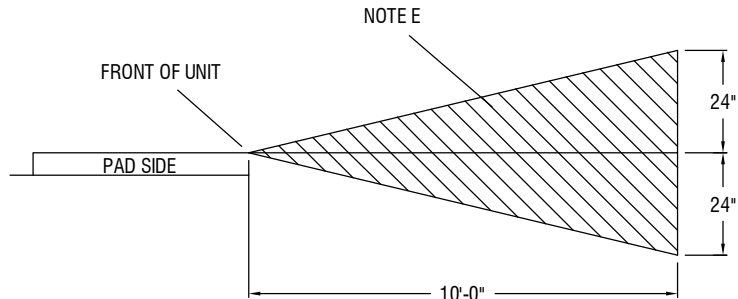


FIGURE 2 - SLOPE CRITERIA

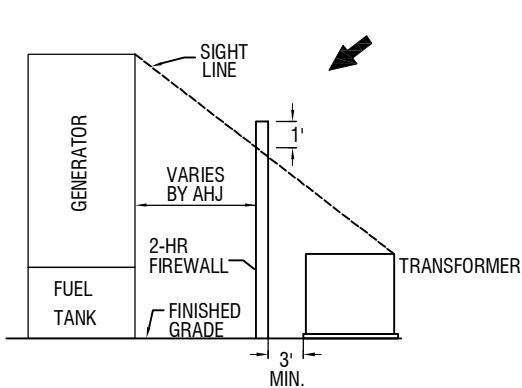


FIGURE 3 - FIRE WALL HEIGHT

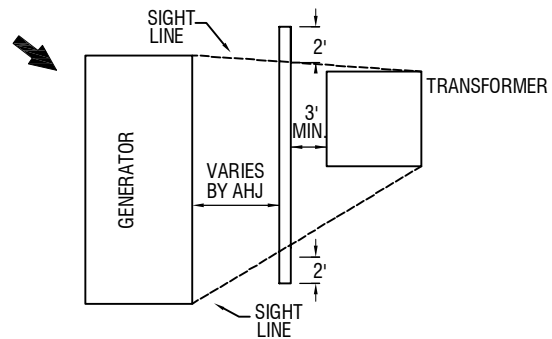


FIGURE 4 - FIRE WALL LENGTH

CONSTRUCTION STANDARD	PAD USAGE	MINIMUM CLEARANCES				
		PAD DIMENSION		TO BUILDINGS	TO FENCES	TO COMM. PED
		A	B	C	C	D
7620 7621	1Ø DUMMY CABINET	42"	42"	24"	12"	24"
7620 7628	1Ø LOW PROFILE TRANSFORMER 25-50KVA 1Ø LOW PROFILE TRANSFORMER 75-167KVA	42"	42"			
7630	1Ø BOX PAD INSTALLATION	57"	57"			
7640-1 7648-53	3Ø TWO TRANSFORMER BANK	90"	48"	24"	24"	24"
7661-7	3Ø 75-750KVA TRANSFORMER	88"	75"			
	3Ø 1000-250KVA TRANSFORMER	102"	100"			

CONSTRUCTION NOTES:

1. THE FINAL GRADE AT THE PAD POSITION SHALL BE COMPACT AND LEVEL TO ENSURE A MAXIMUM 2-DEGREE TILT OF THE PAD, FOR EXAMPLE, A 42-INCH SQUARE PAD SHALL BE LEVEL WITHIN 1-1/2 INCHES FROM SIDE-TO-SIDE AND FRONT-TO-BACK.
2. THE FINAL GRADE WITHIN THE 10-FOOT OPERATING AREA SHALL BE SMOOTH AND STABLE ENOUGH TO PROVIDE A SUITABLE WALKING AND WORKING SURFACE. TRIPPING HAZARDS SUCH AS CURBS OR RIVER ROCK ARE NOT ACCEPTABLE IN THIS LOCATION.
3. WHEN AN ENCLOSURE IS INSTALLED NEAR A SIDEWALK OR CURB, SET THE BOTTOM OF THE PAD AT THE SAME GRADE AS THE TOP OF THE SIDEWALK OR CURB FOR BETTER APPEARANCE AND DRAINAGE. FRONT OF PAD SHOULD BE 12" TO 18" MINIMUM FROM BACK OF SIDEWALK.
4. SLOPE CRITERIA AS SHOWN GIVES RECOMMENDED NORMAL FRONTAL SLOPE LIMITS. CONSIDERATION FOR EXCEPTIONS BY TURNING TRANSFORMERS AWAY FROM FACING THE STREET AND/OR EXCEEDING THESE SLOPE LIMITS REQUIRES SPECIAL DIVISION ENGINEERING AND OPERATIONS APPROVAL, PRIOR TO CONSTRUCTION.

ENGINEERING NOTES:

- A. ALL DIMENSIONS ARE MEASURED FROM THE EQUIPMENT PAD EDGE.
- B. A MINIMUM 30-FOOT VERTICAL CLEARANCE IS REQUIRED FROM FINISHED GRADE IN APS EQUIPMENT AREAS TO ABOVE SURROUNDING UNOBSTRUCTED STAGING AREAS. THE 30-FOOT VERTICAL CLEARANCE SHALL ALSO APPLY TO CUSTOMER'S OVERHEAD STRUCTURES ABOVE BURIED APS ELECTRICAL FACILITIES / RIGHT-OF-WAY. REMOVABLE OVERHEAD STRUCTURES SUCH AS SHADE CANOPIES ARE EXEMPTED.
- C. SIDE-BY-SIDE TRANSFORMERS REQUIRE A MINIMUM 24-INCH HORIZONTAL CLEARANCE. DUPLEX TRANSFORMERS SET ON A SINGLE PAD ARE AN EXCEPTION
- D. A MINIMUM 72-INCH X 72-INCH X 72-INCH CLEAR WORKING SPACE SHALL BE PROVIDED FOR HOTSTICK TOOL OPERATION. SEE FIGURE 1. PREFERABLY STREETLIGHT POLES SHOULD BE INSTALLED OUTSIDE OF THIS WORKING SPACE, BUT IF FIELD CONDITIONS PRELUDE THIS, THEN STREET LIGHT POLES MAY BE INSTALLED IN THIS SPACE.
- E. AN ELEVATION CHANGE WITHIN THE 10-FOOT FRONTAL OPERATING AREA SHALL NOT EXCEED 24-INCHES IN ANY DIRECTION. GRADE PROFILE CHANGES MUST REMAIN WITHIN THE SHADED AREA SHOWN. SEE FIGURE 2.
- F. A MINIMUM 36-INCHES HORIZONTAL PAD CLEARANCE IS REQUIRED FROM GAS REGULATORS, GAS METERS AND ELECTRIC METERS.
- G. A MINIMUM 60-INCHES HORIZONTAL PAD CLEARANCE IS REQUIRED FROM FIRE HYDRANTS EXCEPTION THE CITY OF PHOENIX REQUIRES A 72-INCH CLEARANCE.
- H. A MINIMUM 60-INCH WIDE, OPEN AND CONTINUOUSLY UNOBSTRUCTED ACCESS AND EXIT PATH SHALL BE PROVIDED TO AND FROM ALL OPERATING AREAS OF ANY UNIT(S) TO FACILITATE EASE OF ENTRY AND DEPARTURE.

ENGINEERING NOTES:

- I. A MINIMUM 20-FOOT SEPARATION / CLEARANCE IS REQUIRED BETWEEN APS ELECTRICAL FACILITIES IN OUTDOOR LOCATIONS WHERE FIRE OR EXPLOSION HAZARDS MAY EXIST.

THE ABOVE SEPARATIONS ALSO APPLY BETWEEN APS PAD MOUNTED EQUIPMENT AND CUSTOMER'S INSTALLED GENERATORS UTILIZING ANY OF THE FOLLOWING FUELS:

- GASOLINE
- DIESEL FUEL
- COMPRESSED NATURAL GAS (CNG)
- LIQUEFIED NATURAL GAS (LNG)
- LIQUEFIED PETROLEUM GAS (LPG)
- HYDROGEN IN A GASEOUS FORM (GH2)
- HYDROGEN IN A LIQUID FORM (LH2)

IF THE MINIMUM 20-FOOT SEPARATION CAN NOT BE MAINTAINED, A FIRE BARRIER / FIRE WALL SHALL BE INSTALLED BETWEEN THE EQUIPMENT AND THE GENERATOR.

THE FIRE BARRIER / FIRE WALL SHALL HAVE A MINIMUM 2-HOUR FIRE RATING. THE FIRE WALL HEIGHT SHALL EXTEND AT LEAST 1-FOOT ABOVE THE LINE OF SIGHT BETWEEN ANY POINT ON THE TOP OF THE EQUIPMENT AND ANY POINT ON THE TOP OF THE GENERATOR. THE FIRE WALL SHALL ALSO EXTEND AT LEAST 2-FEET HORIZONTALLY BEYOND THE LINE OF SIGHT BETWEEN ANY POINT OF THE EQUIPMENT AND ANY POINT OF THE GENERATOR. A MINIMUM OF 3-FEET SEPARATION SHALL BE MAINTAINED BETWEEN THE FIRE WALL AND SIDE OF APS PAD MOUNTED EQUIPMENT EXCEPT FROM THE SIDE OF AN AUTOMATIC TRANSFER SWITCH CONTAINING THE CONTROL BOX WHERE A 6-FOOT SEPARATION SHALL BE MAINTAINED. SEE FIGURES 3 AND 4 FOR ILLUSTRATION.

WHERE THE DEGREE OF HAZARD IS UNKNOWN, CONTACT RISK MANAGEMENT / PUBLIC SAFETY FOR PROPER CLASSIFICATION OF THE HAZARDOUS LOCATIONS.

- J. A COMMUNICATIONS PEDESTAL MAY ONLY BE PLACED WITHIN THE REAR 24-INCHES OF THE TRANSFORMER PAD AS SHOWN. THE DETAIL ADDRESSES RESIDENTIAL USE ONLY.
- K. WHEREVER PRACTICAL, TRANSFORMER DOORS SHALL BE ORIENTED SO AS NOT TO OPEN TOWARDS THE STREET.

REFERENCES:

1. NESC 2007, RULE 127.

APS ARIZONA PUBLIC SERVICE COMPANY T&D CONSTRUCTION STANDARDS				
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METHODS
MINIMUM CLEARANCE REQUIREMENTS
FOR PAD - MOUNTED TRANSFORMERS