

SCOPE: THIS STANDARD SHOWS THE METHODS AND REQUIREMENTS FOR INSTALLATION OF UNDERGROUND AND OVERHEAD SERVICES IN COMMERCIAL/INDUSTRIAL, AS WELL AS MULTI-UNIT RESIDENTIAL BUILDINGS, UNLESS OTHERWISE SPECIFIED ON THE WORK ORDER DRAWINGS.

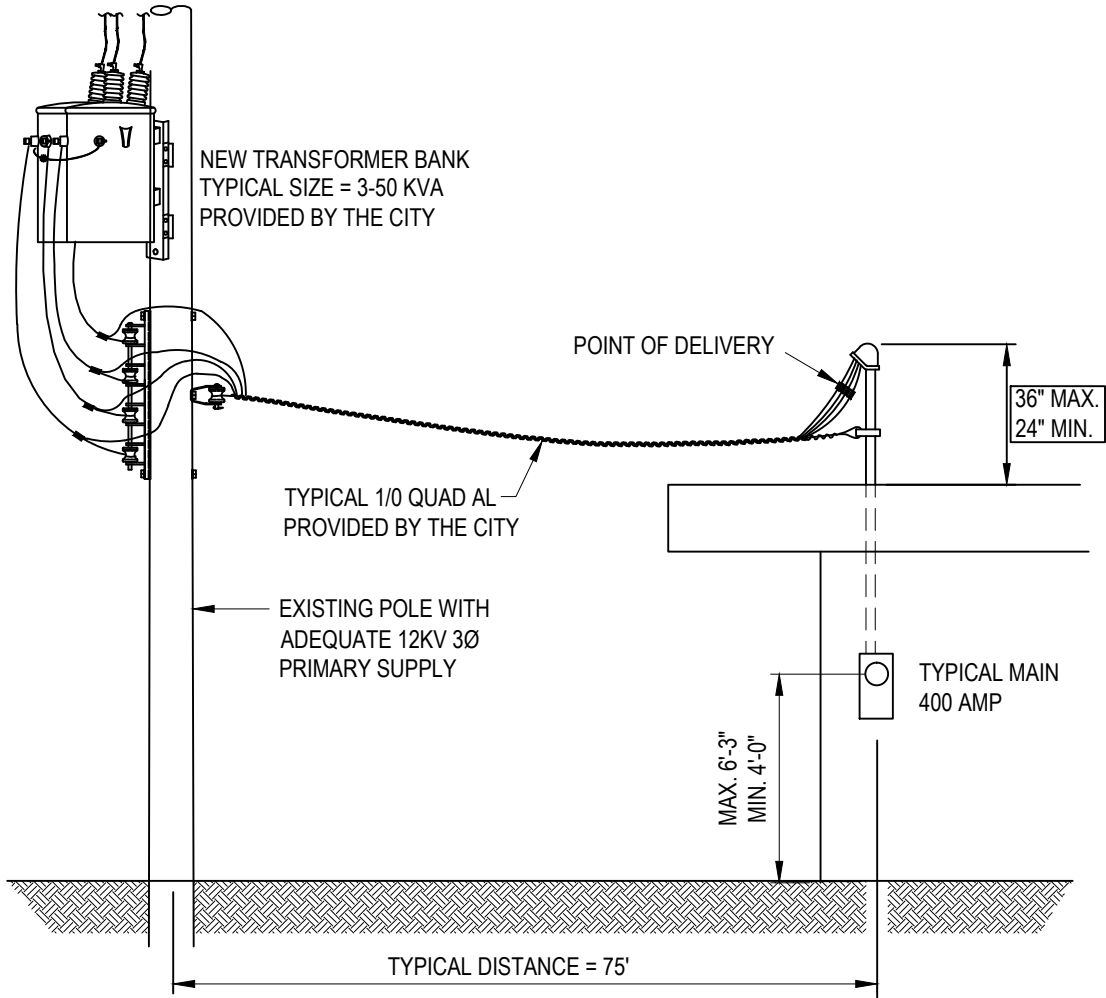
GENERAL NOTES:

- A. THIS CONSTRUCTION STANDARD COVERS THE INSTALLATION, CABLE AND CONDUIT REQUIREMENTS FOR COMMERCIAL/INDUSTRIAL, AS WELL AS MULTI-UNIT RESIDENTIAL BUILDINGS, REQUIRING SINGLE PHASE 120/240 VOLTS SERVICE UP TO 600 AMP AND THREE PHASE COMMERCIAL/INDUSTRIAL SERVICES, 120/240, 120/208 & 277/480 FROM 400 AMP TO 4000 AMP.
- B. FOR ALL UNDERGROUND SERVICES:
 - B.1. CONTRACTOR SHALL FURNISH AND INSTALL ALL TRENCHING, BACKFILL, COMPACTING, CONDUIT AND CABLES FROM ELECTRICAL SERVICE PANEL UP TO THE SECONDARY LEVEL. THE SECONDARY LEVEL COULD BE EITHER TO THE SECONDARY PULL BOX, PAD MOUNTED TRANSFORMER AND/OR SECONDARY RISER POLE.
 - B.2. FOR RISER POLE INSTALLATION THE CITY WILL PROVIDE THE CABLE GRIP, THE STAND OFF BRACKET AND ASSOCIATED HARDWARE.
 - B.3. THE RISER SHALL BE AFFIXED TO STAND OFF BRACKETS ON THE POWER POLE AWAY FROM TRAFFIC. ELECTRICAL ENGINEERING OR ELECTRICAL UTILITIES INSPECTOR WILL DESIGNATE THE EXACT QUADRANT AT THE TIME OF INSTALLATION.
 - B.4. ALL CONDUITS AND CABLES SHALL BE PER TABLES I AND II, AND **WORK ORDER DRAWINGS**, AND SHALL BE APPROVED BY ELECTRIC UTILITIES INSPECTORS.
 - B.5. ALL CONDUIT RUNS PASSING BENEATH ANY BUILDING SLAB WILL BE OF THE MATERIAL SHOWN IN TABLE I. A MINIMUM OF ONE (1) SPARE CONDUIT WILL BE REQUIRED.
 - B.6. ANY CONDUIT ANGLE IN THE HORIZONTAL RUN GREATER THAN 22.5°, INCLUDING A 10 FOOT SECTION ON BOTH SIDES, SHALL BE IN THE CONDUIT MATERIAL TYPE ① OR ⑤.
 - B.7. THE SWEEPS ARE TO BE ANCHORED AND SECURED TO WITHSTAND THE PULLING TENSIONS REQUIRED FOR INSTALLATION OF CONDUCTORS.
 - B.8. BORING AND INSTALLATION OF GALVANIZED STEEL CONDUIT OR PVC SCHEDULE 80 IS ACCEPTABLE FOR LOCATIONS UNDER CONCRETE SLABS OR LANDSCAPE AREAS. (CHECK WORK ORDER DRAWINGS FOR DIRECTION).
- C. FOR ALL OVERHEAD SERVICES:
 - C.1. CONTRACTOR SHALL PROVIDE AND INSTALL ALL WIRES, CABLES, AND MATERIAL REQUIRED FROM SERVICE PANEL TO THE POINT OF DELIVERY, DESIGNATED BY THE ELECTRICAL ENGINEERING AND WORK ORDER DRAWING.
- D. ELECTRICAL DIVISION FIELD CREWS:
 - D.1. ON OVERHEAD SERVICES: WILL SUPPLY AND PULL SERVICE CONDUCTOR FROM SECONDARY POWER POLE TO THE POINT OF DELIVERY AND CONNECTION.
 - D.2. ON UNDERGROUND SERVICES: WILL COORDINATE AND MAY ASSIST THE CONTRACTOR IN PULLING CONDUCTOR FROM THE TRANSFORMER OR SECONDARY PULL BOX TO SERVICE PANEL AND CONNECTION.
- E. CONTRACTOR SHALL FURNISH ALL GROUNDING MATERIAL FOR THE UNDERGROUND AND OVERHEAD SERVICE, PER CONSTRUCTION STANDARDS CO 782 AND CO 784.
- F. **FOR ALL CONSTRUCTION DETAILS AND INSTRUCTIONS SEE WORK ORDER DRAWINGS AND CONSULT WITH PUBLIC UTILITIES INSPECTOR.**

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CITY OF ANAHEIM PUBLIC UTILITIES DEPARTMENT ELECTRICAL DIVISION T&D CONSTRUCTION STANDARDS		REVISION KEYS:	ADDED / REVISED TEXT	ADDED / REVISED MATERIAL	NEW SHEET
		COMMERCIAL SERVICES METHODS AND REQUIREMENTS			
APPROVALS					
PREP BY	T&D MGR	SYS PLN MGR	OPS MGR	SUB MAINT	
<i>MH</i>	<i>EB</i>	-	<i>CMK</i>	-	

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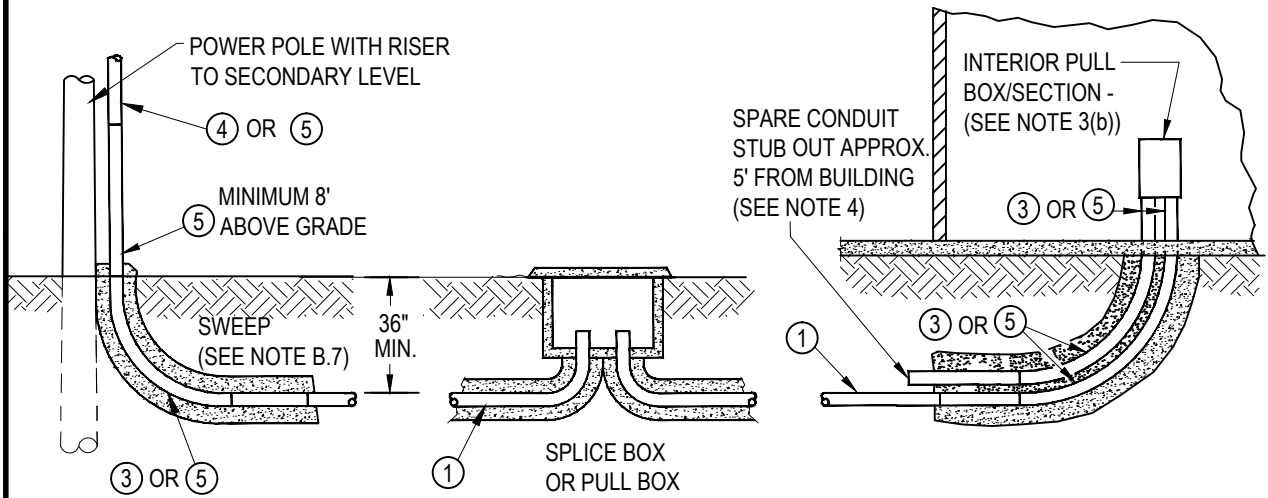
OVERHEAD SERVICE

NOTES:

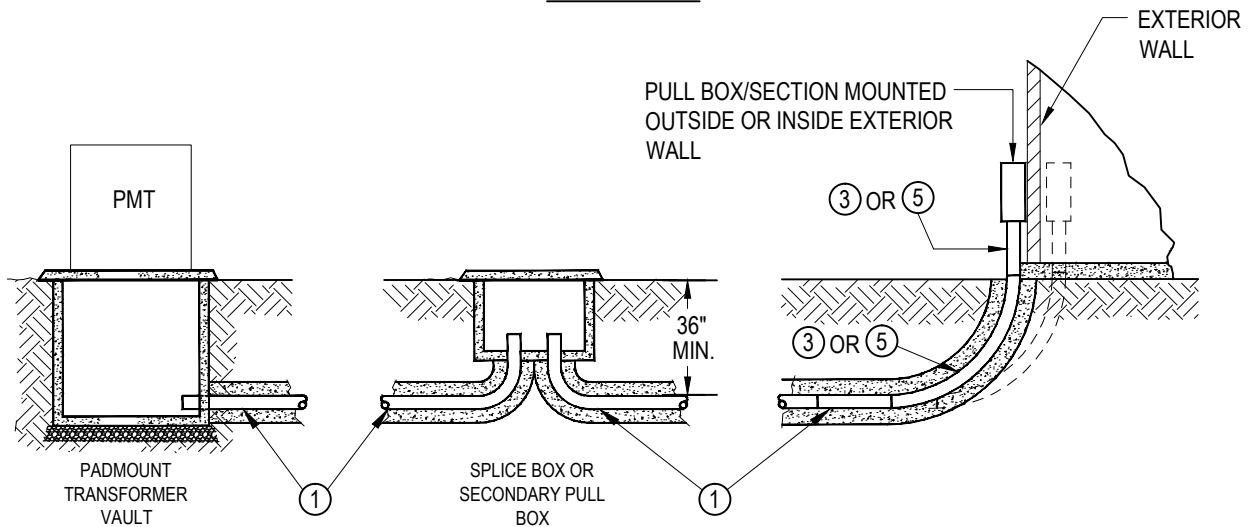
1. CITY ELECTRICAL CREW WILL PROVIDE AND CONNECT SERVICE WIRES/CABLES AT CUSTOMER OVERHEAD TO THE POINT OF DELIVERY.
2. CUSTOMER IS RESPONSIBLE FOR ALL CONNECTION AND MAINTENANCE BEYOND POINT OF DELIVERY.
3. ELECTRICAL SYSTEMS DESIGNER IS RESPONSIBLE FOR METER LOCATION. CUSTOMER TO SUPPLY AND INSTALL APPROVED PANELS, SERVICE RISER, GROUNDING MATERIAL, ETC.
4. MAXIMUM OVERHEAD 3 PHASE SERVICE IS 400 AMP, 120/240V, 120/208 AND 277/480.
5. FOR 480V, 120/240V & 277/480V, CONSULT T&D ENGINEERING.

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COMMERCIAL SERVICES METHODS AND REQUIREMENTS													
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FROM RISER



FROM TRANSFORMER

NOTE:
 IN SOME CASES, THE SERVICE MAY RUN DIRECTLY FROM THE PANEL TO THE RISER POLE OR DIRECTLY TO THE TRANSFORMER PULL BOX.

UNDERGROUND SERVICES

CITY OF ANAHEIM PUBLIC UTILITIES DEPARTMENT ELECTRICAL DIVISION T&D CONSTRUCTION STANDARDS		REVISION KEYS: ADDED / REVISED TEXT ADDED / REVISED MATERIAL NEW SHEET	REVISION NO. 2 ISSUE DATE: 01-14 SHEET 3 OF 4 CONSTRUCTION STANDARD: CU 1500-5										
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MH	EB	-	CMK	-									

TABLE I
MINIMUM SERVICE CONDUITS TYPES AND APPLICATIONS

NO.	TYPE	SPECIFICATION	APPLICATION
1	PVC (CONCRETE ENCASED)	ASTM F12 DB 100	FROM TRANSFORMER VAULT TO SECONDARY PULL BOX & FROM SECONDARY PULL BOX TO SERVICE PULL BOX
2	PVC (CONCRETE ENCASED)	ASTM F12 DB 100	FROM SERVICE PULL BOX TO METER PANEL
3	HOT DIPPED GALVANIZED	ANSI SPEC C80.1	8' ABOVE GRADE FROM GRADE TO PULL BOX OR METER PANEL, UNDER SLABS AND LANDSCAPE AREAS.
4	PVC SCHEDULE 40	UL APPROVED 90C	POWER POLE WITH RISERS FROM 8' ABOVE GROUND
5	PVC SCHEDULE 80	UL APPROVED 90C	8' ABOVE GRADE FROM GRADE TO PULL BOX OR METER PANEL, UNDER SLABS AND LANDSCAPE AREAS.

TABLE II
CABLES AND CONDUITS REQUIRED FOR COMMERCIAL SERVICES

MAIN SERVICE PANEL RATING	CONDUIT SIZE	CABLE SIZES (ALL ALUMINUM) UNLESS NOTED WITH XHHW-2 INSULATION	
		PHASE	NEUTRAL
100-125	3"	1/0	1/0
200	3"	4/0	4/0
400	4"	750	750
600	4"	750	750
1000	4"	750	750
1200	4"	750	750
1600	4"	750	750
2000	4"	750	750
3000	CONSULT T&D ENGINEERING		
4000	CONSULT T&D ENGINEERING		

NOTES:

1. NUMBER OF RUNS FOR CONDUIT AND CABLES SHALL BE AS SHOWN IN **WORK ORDER DRAWINGS**.
2. FOR SERVICE PULL BOX REQUIREMENTS SEE CITY OF ANAHEIM CONSTRUCTION STANDARD CU1500-1B AND **WORK ORDER DRAWINGS**.
3. FOR INSTALLATION OF COPPER CABLE AND/OR ANY CABLE LARGER THAN 750 ALUMINUM CABLE, CONSULT T&D ENGINEERING.
4. INSTALL APPROVED CONDUIT LOCATOR BALL IN CONDUIT STUBOUTS AND CAP. MARK WHEN POSSIBLE.

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