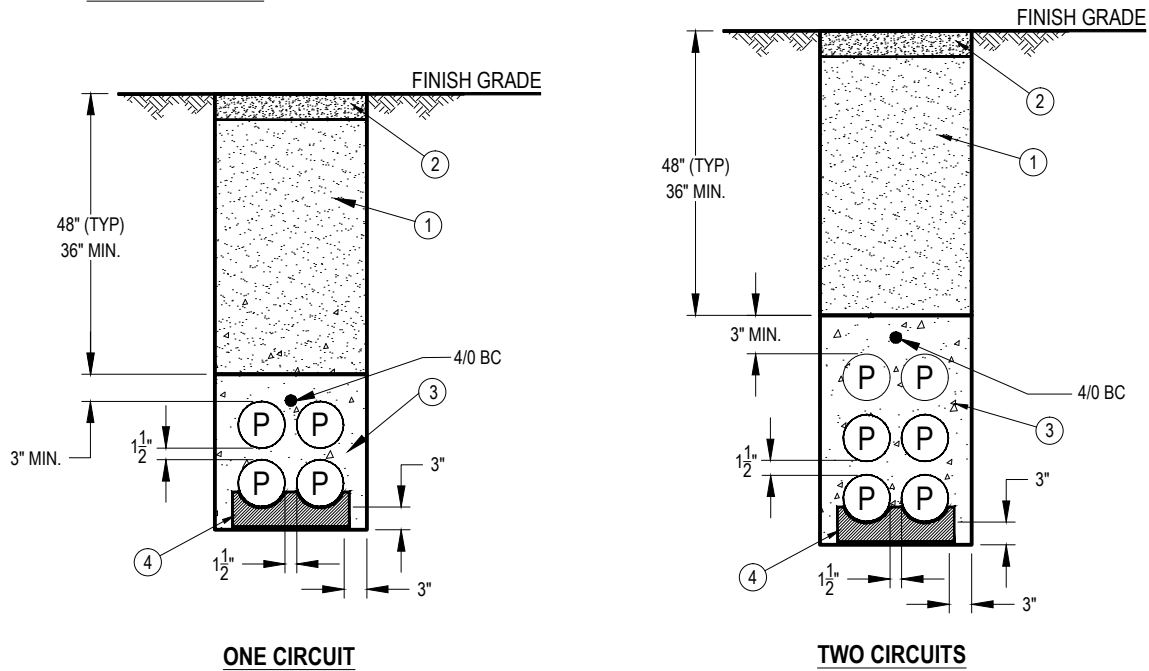


SCOPE: THIS STANDARD SHOWS UNDERGROUND CONDUIT INSTALLATION REQUIREMENTS GUIDELINE INCLUDING TRENCHING, BACK FILLING, CONDUIT ARRANGEMENT AND REPAVING. FOR THE NUMBER OF CONDUITS, SIZE AND TYPE OF CONDUITS, REFER TO WORK ORDER DRAWING.

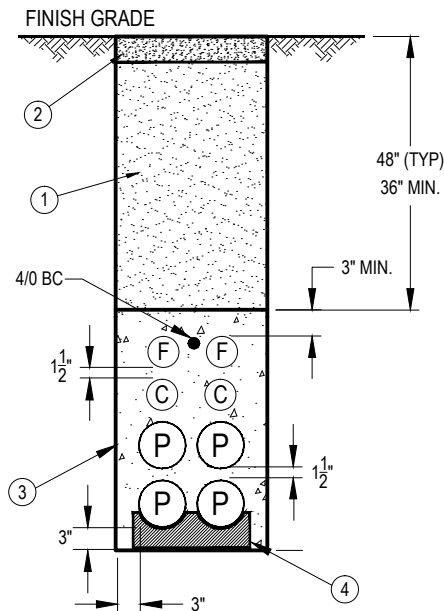
CONDUIT INSTALLATION

1. 69KV DUCT BANK



2. 12KV DUCT BANK

BACKBONE WITH CITY OF ANAHEIM AUTOMATION AND COMMUNICATIONS.



FILENAME: CU1600-4 REV9

CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
ELECTRICAL DIVISION
T&D CONSTRUCTION STANDARDS

APPROVALS				
PREP BY	T&D MGR	SYS PLN MGR	OPS MGR	SUB MAINT
MH	EB	--	AA	--

REVISION KEYS:



ADDED / REVISED TEXT



ADDED / REVISED MATERIAL

NEW SHEET

NEW SHEET

**UNDERGROUND CONDUIT
INSTALLATION REQUIREMENTS GUIDELINE**

REVISION NO. **9**

ISSUE DATE : **01-16**

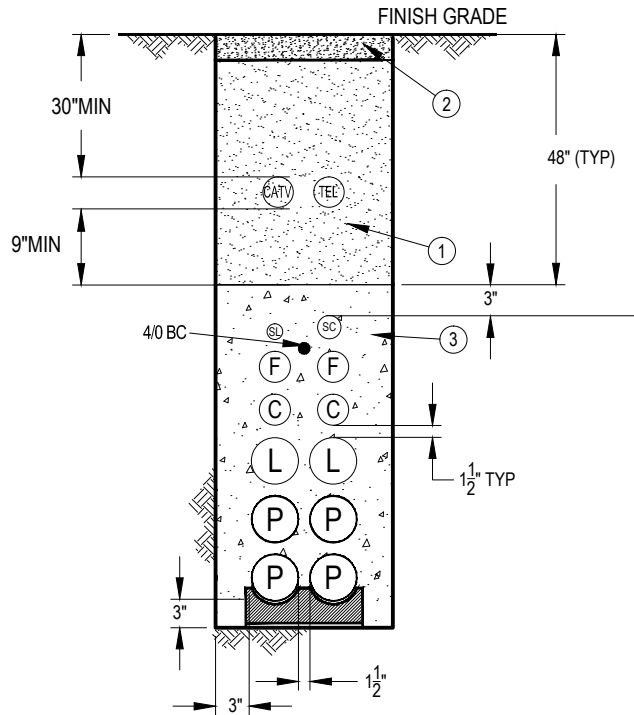
SHEET **1** OF **4**

CONSTRUCTION STANDARD:

CU 1600-4

3. **12KV UTILITIES JOINT TRENCH / DUCT BANK**

PRIMARY, LATERAL, SERVICES, STREET LIGHT, CITY OF ANAHEIM COMMUNICATION, CITY OF ANAHEIM CONTROL, CABLE TV AND TELECOMM COMPANIES.



LEGEND

- ① - 90% COMPACTION BACKFILL MATERIAL
- ② - RESURFACE PER PUBLIC WORKS
- ③ - CONCRETE ENCASEMENT
- ④ - SPACER
- P - POWER - BACKBONE
- L - LATERAL DUCT
- SL - STREET LIGHT DUCT
- F - UTILITY COMMUNICATION DUCT
- SC - SECONDARY DUCT
- C - UTILITY CONTROL DUCT
- CATV - CABLE TV
- TEL - TELEPHONE COMPANY

FILENAME: CU1600-4 REV9

CITY OF ANAHEIM PUBLIC UTILITIES DEPARTMENT ELECTRICAL DIVISION T&D CONSTRUCTION STANDARDS	REVISION KEYS:	ADDED / REVISED TEXT	ADDED / REVISED MATERIAL	NEW SHEET	NEW SHEET
	UNDERGROUND CONDUIT INSTALLATION REQUIREMENTS GUIDELINE				REVISION NO. 9
APPROVALS PREP BY T&D MGR SYS PLN MGR OPS MGR SUB MAINT <i>MH</i> <i>EB</i> -- <i>AA</i> --				SHEET 2 OF 4	CONSTRUCTION STANDARD: CU 1600-4

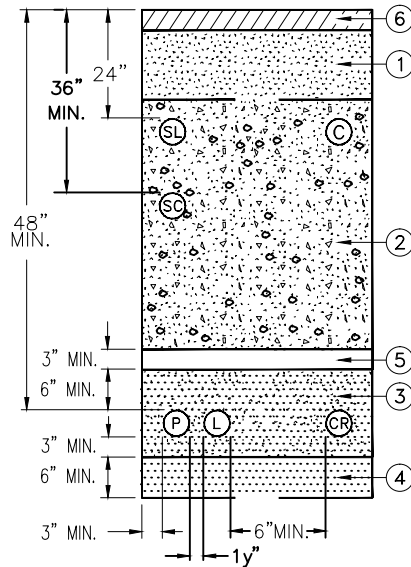
NOTES

1. ALL CONDUIT TRENCHING, EXCAVATION, REMOVING SPILL SOIL, BACK FILLING, COMPACTION, GRINDING AND PAVEMENT SHALL BE COMPLETED PER **CITY OF ANAHEIM PUBLIC WORK DEPARTMENT STREET IMPROVEMENT SECTION**, LINK; <http://www.anaheim.net/article.asp?id=524>
2. ALL CONDUITS IN A CONCRETE ENCASED DUCT BANKS SHALL BE GRAY PVC TYPE DB-100 MINIMUM, PER ASTM F-512. SEE CONSTRUCTION STANDARD CU 1600-4A AND **WORK ORDER DRAWINGS** FOR CONDUIT SIZES, TYPES AND APPLICATIONS.
3. BASE SPACERS ARE REQUIRED FOR ALL PRIMARY DUCT BANKS WITH MORE THAN FOUR CONDUITS, PER CONSTRUCTION STANDARD CU 1600-96F.
4. SPACERS, AS RECOMMENDED BY CONDUIT MANUFACTURER AND APPROVED BY THE CITY OF ANAHEIM UTILITIES INSPECTOR SHALL BE PLACED AT 6 FEET INTERVALS FOR ALL CONDUIT SIZES. BASE SPACERS AND INTERMEDIATE SPACERS SHALL BE MANUFACTURED FROM RIGID NON COMPRESSIBLE TYPE MATERIALS.
5. INSTALL NEUTRAL WIRE, 4/0 BARE, 19 STRAND, SOFT DRAWN COPPER CONDUCTOR, AS SHOWN AND PER **WORK ORDER DRAWINGS**. ALL PRIMARY TRENCH GROUND CONNECTIONS SHALL BE EXOTHERMAL CONNECTIONS
6. CONCRETE ENCASEMENT SHALL BE KEPT UNIFORM; EXCESSIVE AMOUNT OF CONCRETE SHALL BE AVOIDED.
7. WHEN APPROACHING AND ENTERING SUBSTRUCTURE ALL THE MINIMUM CONDUIT SEPARATIONS SHALL BE FOLLOWED AND ARE REQUIRED.
8. TO OCCUPY MINIMUM VERTICAL SPACE, 4-6" CONDUITS IN A HORIZONTAL CONDUIT ARRANGEMENT IS ALLOWABLE AND CAN BE USED, WHEN APPROVED AND/OR SPECIFIED. ALL OTHER SPACING STAYS THE SAME.
9. CONCRETE ENCASEMENT OF ELECTRICAL CONDUITS REQUIRED.
10. CONCRETE CLASS OF CONDUIT ENCASEMENT SHALL BE 450-C-2000 PER GREENBOOK SECTION 201, TABLE 201-1.1.2.(A).
11. THE CONTRACTOR SHALL INSTALL APPROVED, 3M TYPE LOCATOR BALL IN ALL CONDUIT STUB-OUTS.
12. THE MINIMUM SEPARATION BETWEEN THE 12KV AND 69KV DUCT BANK SHALL BE AS FOLLOWS. ANY FIELD SITUATION THAT REQUIRE DEVIATION FROM THIS REQUIREMENT SHALL BE DISCUSSED AND APPROVED BY ELECTRICAL ENGINEERING AND PUBLIC UTILITIES INSPECTOR.
 - 12.A. TWO 69KV DUCT BANKS - 10 FEET
 - 12.B. TWO 12KV DUCT BANKS - 5 FEET
 - 12.C. ONE 69KV DUCT BANK AND ONE 12KV DUCT BANK - 10 FEET
13. THE MINIMUM SEPARATION BETWEEN CITY OF ANAHEIM ELECTRICAL DUCT BANK AND MAIN WATER LINES WHEN PARALLEL SHALL BE MIN. 3 FEET, AND WHEN CROSSING SHALL BE 12 INCHES. ANY FIELD DEVIATION FROM THIS REQUIREMENT SHALL BE DISCUSSED AND APPROVED BY ELECTRICAL ENGINEERING AND PUBLIC UTILITIES INSPECTOR.
14. THE MINIMUM SEPARATION BETWEEN CITY OF ANAHEIM ELECTRICAL DUCT BANK AND GAS, OIL, OTHER PIPE SYSTEM AND/OR OTHER SUBSTRUCTURES OTHER THAN WATER AND SEWERLINE SHALL BE PER G0128. ANY FIELD DEVIATION FROM THIS REQUIREMENT SHALL BE DISCUSSED AND APPROVED BY ELECTRICAL ENGINEERING AND PUBLIC UTILITIES INSPECTOR.M

FILENAME: CU1600-4 REV9

CITY OF ANAHEIM PUBLIC UTILITIES DEPARTMENT ELECTRICAL DIVISION T&D CONSTRUCTION STANDARDS		REVISION KEYS:	ADDED / REVISED TEXT	ADDED / REVISED MATERIAL	NEW SHEET	NEW SHEET
		UNDERGROUND CONDUIT INSTALLATION REQUIREMENTS GUIDELINE				REVISION NO. 9
APPROVALS				SHEET 3 OF 4		CONSTRUCTION STANDARD:
PREP BY	T&D MGR	SYS PLN MGR	OPS MGR	SUB MAINT	CU 1600-4	
MH	EB	--	AA	--		

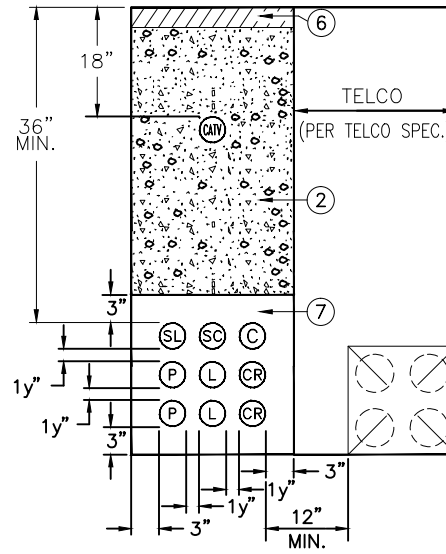
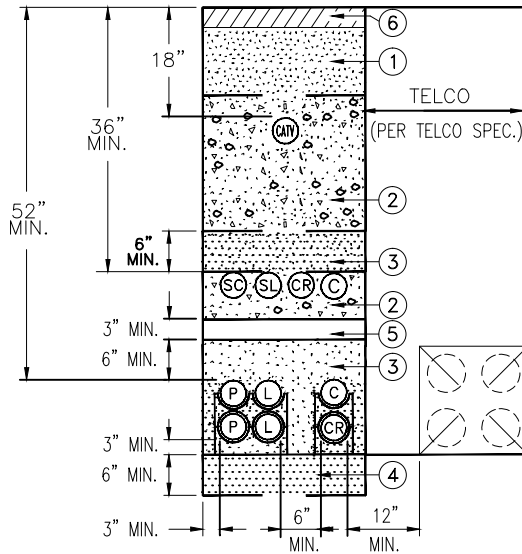
SCOPE: THIS STANDARD SHOWS TRENCH BACKFILL, COMPACTION AND CONDUIT ARRANGEMENTS.



ELECTRICAL UTILITY TRENCH—ONLY

LEGEND

- ① — 95% COMPACTION BASE MATERIAL
- ② — 90% COMPACTION BACKFILL MATERIAL
- ③ — 90% COMPACTION BACKFILL, SELECTED MATERIAL
- ④ — 90% COMPACTION OR UNDISTURBED EARTH (NO ROCKS)
- ⑤ — CONCRETE CAP AS REQUIRED
- ⑥ — RESURFACE PER PUBLIC WORKS STD. DETAIL NO. 146
- ⑦ — CONCRETE ENCASEMENT
- P — PRIMARY DUCT
- L — LATERAL DUCT
- SL — STREET LIGHT DUCT
- C — UTILITY COMMUNICATION DUCT
- SC — SECONDARY DUCT
- CR — UTILITY CONTROL DUCT
- CATV — CABLE TV



MAINTENANCE ONLY

JOINT TRENCH—ELECTRICAL UTILITY & TELCO

NOT FOR NEW CONSTRUCTION

NOTE: REFER TO WORK ORDER DRAWING FOR REQUIRED CONDUITS AND CONFIGURATION.

FILENAME: CU1600-4 REV9

CITY OF ANAHEIM PUBLIC UTILITIES DEPARTMENT ELECTRICAL DIVISION T&D CONSTRUCTION STANDARDS		REVISION KEYS:	ADDED / REVISED TEXT	ADDED / REVISED MATERIAL	NEW SHEET	NEW SHEET	
		UNDERGROUND CONDUIT INSTALLATION REQUIREMENTS GUIDELINE				REVISION NO. 9	ISSUE DATE: 01-16
APPROVALS PREP BY: MH T&D MGR: EB MGR: --- OPS MGR: --- SUB MAINT: ---						SHEET 4 OF 4	CONSTRUCTION STANDARD: CU 1600-4