

1419

TRENCHING & BORING

CONTAINS

1419-10 BASE, SAND, AND BACKFILL

1419-11 BASE, SAND, AND BACKFILL - STREETLIGHT

1419-20 CONDUIT & DUCT BANK DETAIL FOR FEEDER (COMM. IN R.O.W.)

1419-25 NON-JOINT TRENCH: BASE, CONCR. HOT MIX & BACKFILL

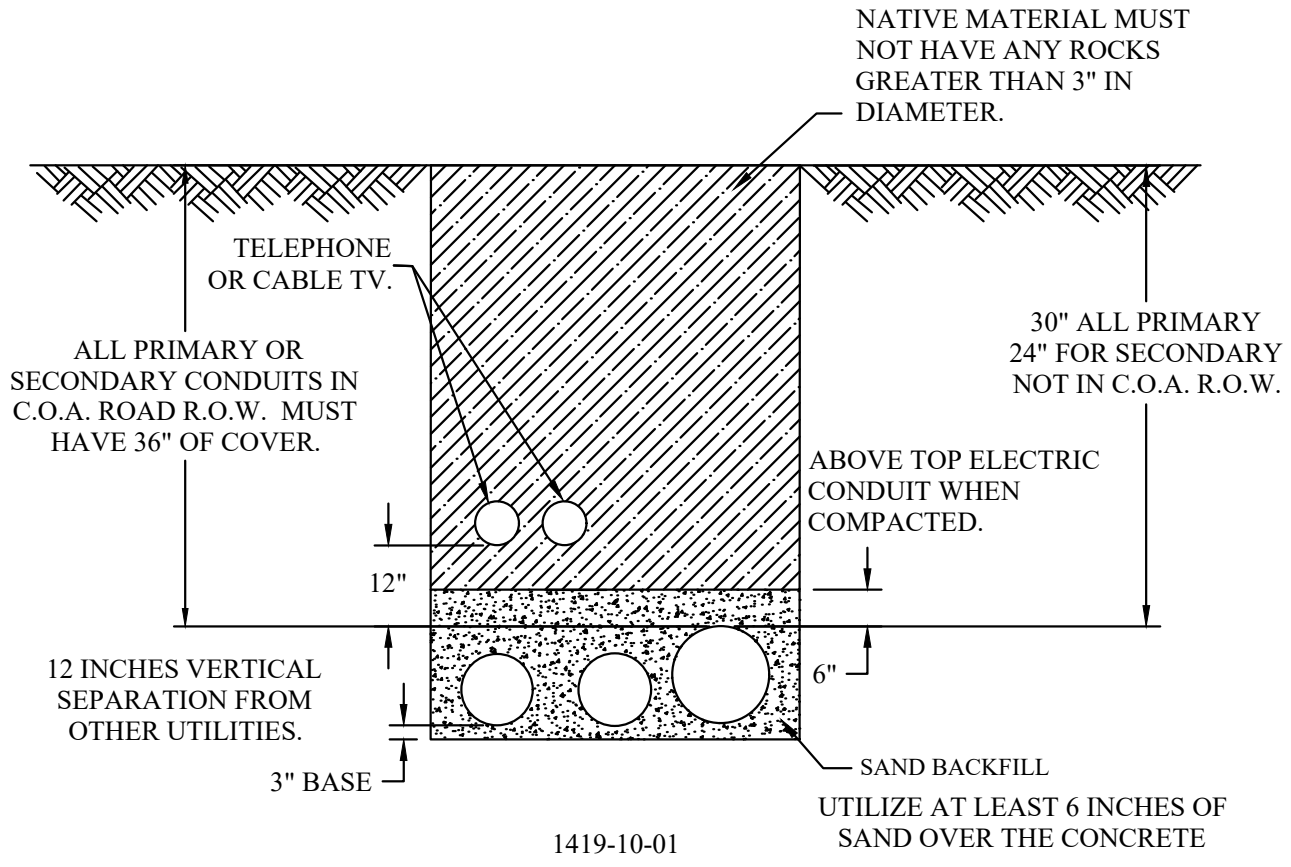
1419-25A NON-JOINT TRENCH: BASE, CONCR. HOT MIX & BACKFILL (12 - 5")

1419-26 NON-JOINT TRENCH: BASE, CONCR. HOT MIX & BACKFILL - STREETLIGHT

1419-30 DIRECTIONAL BORING

1419-31 HORIZONTAL STRAIGHT BORING (CONVENTIONAL)

TYPICAL URD TRENCH CROSS - SECTION



BEDDING SAND

AGGREGATE SHALL CONSIST OF CLEAN, HARD, DURABLE AND UNCOATED PARTICLES OF NATURAL OR MANUFACTURED SAND OR COMBINATION THEREOF, WITH OR WITHOUT MINERAL FILLER. IT SHALL BE FREE OF FROZEN MATERIAL OR INJURIOUS AMOUNT OF SALT, ALKALI, VEGETABLE MATTER OR OBJECTIONABLE MATERIAL AND SHALL NOT CONTAIN MORE THAN 0.5 PERCENT BY WEIGHT OF CLAY OR OTHER BINDING AGENTS. BEDDING SAND SHALL CONFORM TO THE FINE AGGREGATE REQUIREMENTS OF THE CITY OF AUSTIN, STANDARD SPECIFICATION, ITEM NO. 403, CONCRETE FOR STRUCTURES.

BACKFILL SHALL BE CLSM (CONTROLLED LOW STRENGTH MATERIAL) OR FLEXIBLE BASE MATERIAL. FLEXIBLE BASE MATERIAL SHALL CONSIST OF CRUSHED LIMESTONE PARTICLES AND DURABLE COURSE AGGREGATE PARTICLES MIXED WITH APPROVED BINDING MATERIALS AND SHALL CONFORM TO THE CITY OF AUSTIN, STANDARD SPECIFICATION, ITEM NO. 210, FLEXIBLE BASE.

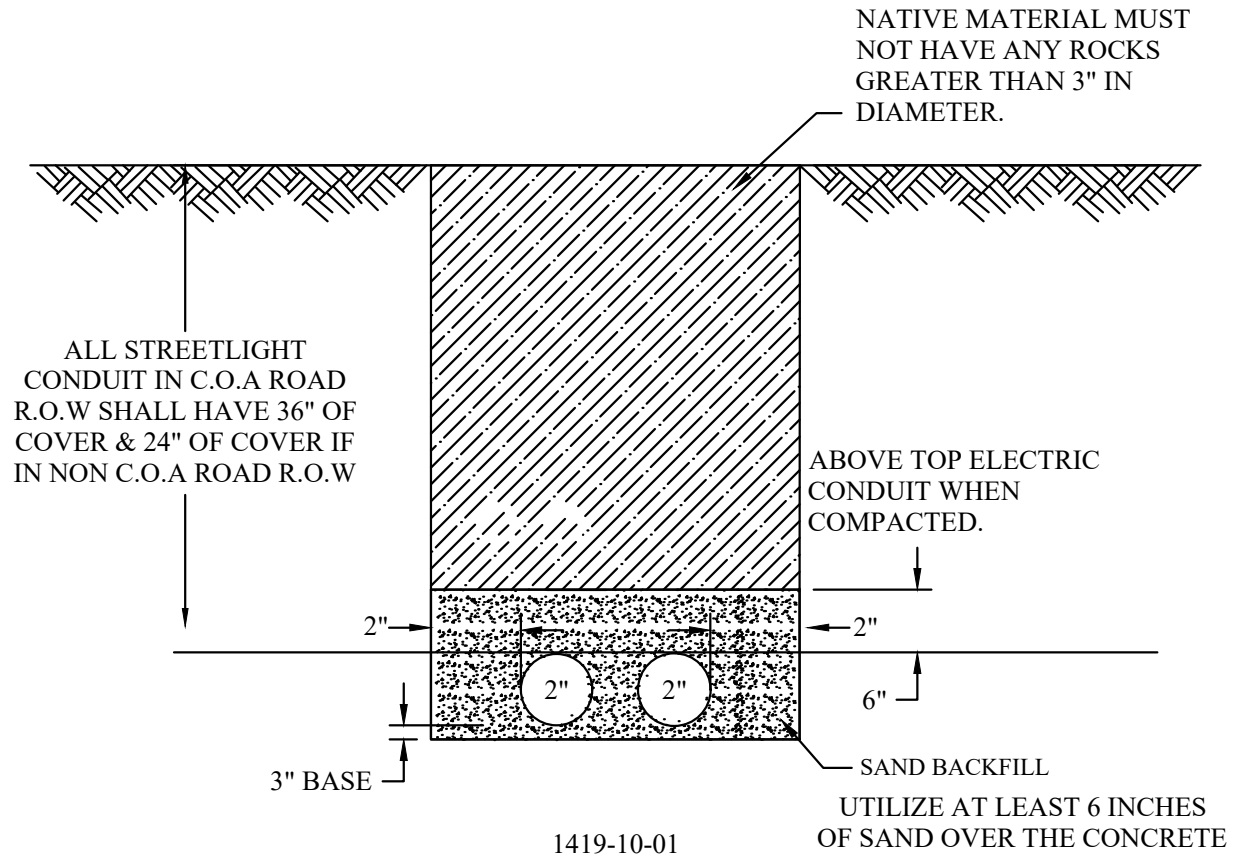
MINIMUM COVER OVER TOP OF PRIMARY AND SECONDARY CONDUITS SHALL BE 30-IN. AND 24-IN., RESPECTIVELY.

USE RED WARNING TAPE OR TRACER TAPES FOR ROADS OR R.O.W. IF APPLICABLE.

CU-REF	CU-ID	CU-DESCRIPTION
14191001	SAND1-CY	SAND - 1 CUBIC YARD

BASE, SAND, AND BACKFILL - STREETLIGHT

TYPICAL SILT TRENCH CROSS - SECTION



BEDDING SAND

AGGREGATE SHALL CONSIST OF CLEAN, HARD, DURABLE AND UNCOATED PARTICLES OF NATURAL OR MANUFACTURED SAND OR COMBINATION THEREOF, WITH OR WITHOUT MINERAL FILLER. IT SHALL BE FREE OF FROZEN MATERIAL OR INJURIOUS AMOUNT OF SALT, ALKALI, VEGETABLE MATTER OR OBJECTIONABLE MATERIAL AND SHALL NOT CONTAIN MORE THAN 0.5 PERCENT BY WEIGHT OF CLAY OR OTHER BINDING AGENTS. BEDDING SAND SHALL CONFORM TO THE FINE AGGREGATE REQUIREMENTS OF THE CITY OF AUSTIN, STANDARD SPECIFICATION, ITEM NO. 403, CONCRETE FOR STRUCTURES.

BACKFILL SHALL BE CLSM (CONTROLLED LOW STRENGTH MATERIAL) OR FLEXIBLE BASE MATERIAL. FLEXIBLE BASE MATERIAL SHALL CONSIST OF CRUSHED LIMESTONE PARTICLES AND DURABLE COURSE AGGREGATE PARTICLES MIXED WITH APPROVED BINDING MATERIALS AND SHALL CONFORM TO THE CITY OF AUSTIN, STANDARD SPECIFICATION, ITEM NO. 210, FLEXIBLE BASE.

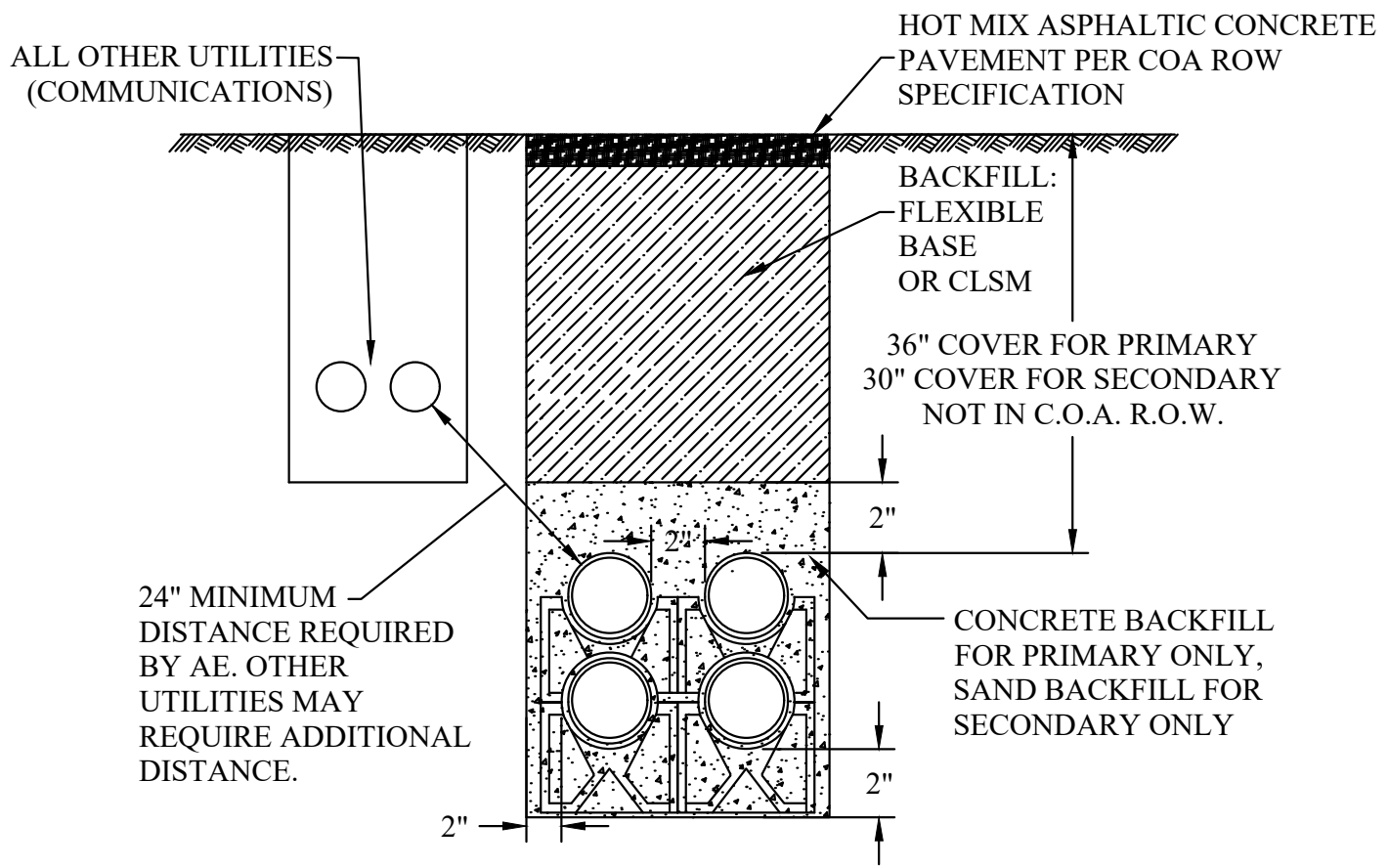
MINIMUM COVER OVER TOP OF PRIMARY AND SECONDARY CONDUITS SHALL BE 30-IN. AND 24-IN., RESPECTIVELY.

USE RED WARNING TAPE OR TRACER TAPES FOR ROADS OR R.O.W. IF APPLICABLE.

CU-REF	CU-ID	CU-DESCRIPTION
14191001	SAND1-CY	SAND - 1 CUBIC YARD

REV_DATE:
04/01/26

CONDUIT & DUCT BANK DETAIL FOR FEEDER (COMM. IN R.O.W)



24" MINIMUM DISTANCE REQUIRED BY AE. OTHER UTILITIES MAY REQUIRE ADDITIONAL DISTANCE.

- 1419-20-10 BASE FLEXABLE - 1 CUYD
- 1419-20-20 CONCRETE HOT MIX ASPHALT - 1 CUYD
- 1419-20-30 CONCRETE BACKFILL - 1 CUYD

BACKFILL SHALL BE CLSM (CONTROLLED LOW STRENGTH MATERIAL) OR FLEXIBLE BASE MATERIAL. FLEXIBLE BASE MATERIAL SHALL CONSIST OF CRUSHED LIMESTONE PARTICLES AND DURABLE COURSE AGGREGATE PARTICLES MIXED WITH APPROVED BINDING MATERIALS AND SHALL CONFORM TO THE CITY OF AUSTIN, STANDARD SPECIFICATION, ITEM NO. 210, FLEXIBLE BASE.

IN ENCASED CONCRETE INSTALLATIONS, THE CONCRETE MIXTURE SHALL DEVELOP A MINIMUM STRENGTH OF 2000 PSI AT 28 DAYS AND SHALL HAVE A MINIMUM OF FOUR SACKS OF CONCRETE PER CUBIC YARD. MAXIMUM SLUMP FOR THE MIXTURE SHALL BE 6-IN., AND THE AGGREGATE IN THE MIXTURE SHALL BE NO LARGER THAN 3/8-IN. (2" MIN. CONCRETE ENCASEMENT).

HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE THE TYPE NECESSARY TO REPLACE OR MATCH PAVEMENT REMOVED DURING THE PURSUANCE OF DUCTLINE CONSTRUCTION AND SHALL CONFORM TO THE CITY OF AUSTIN, STANDARD SPECIFICATION, ITEM NO. 340, HOT MIX ASPHALTIC CONCRETE.

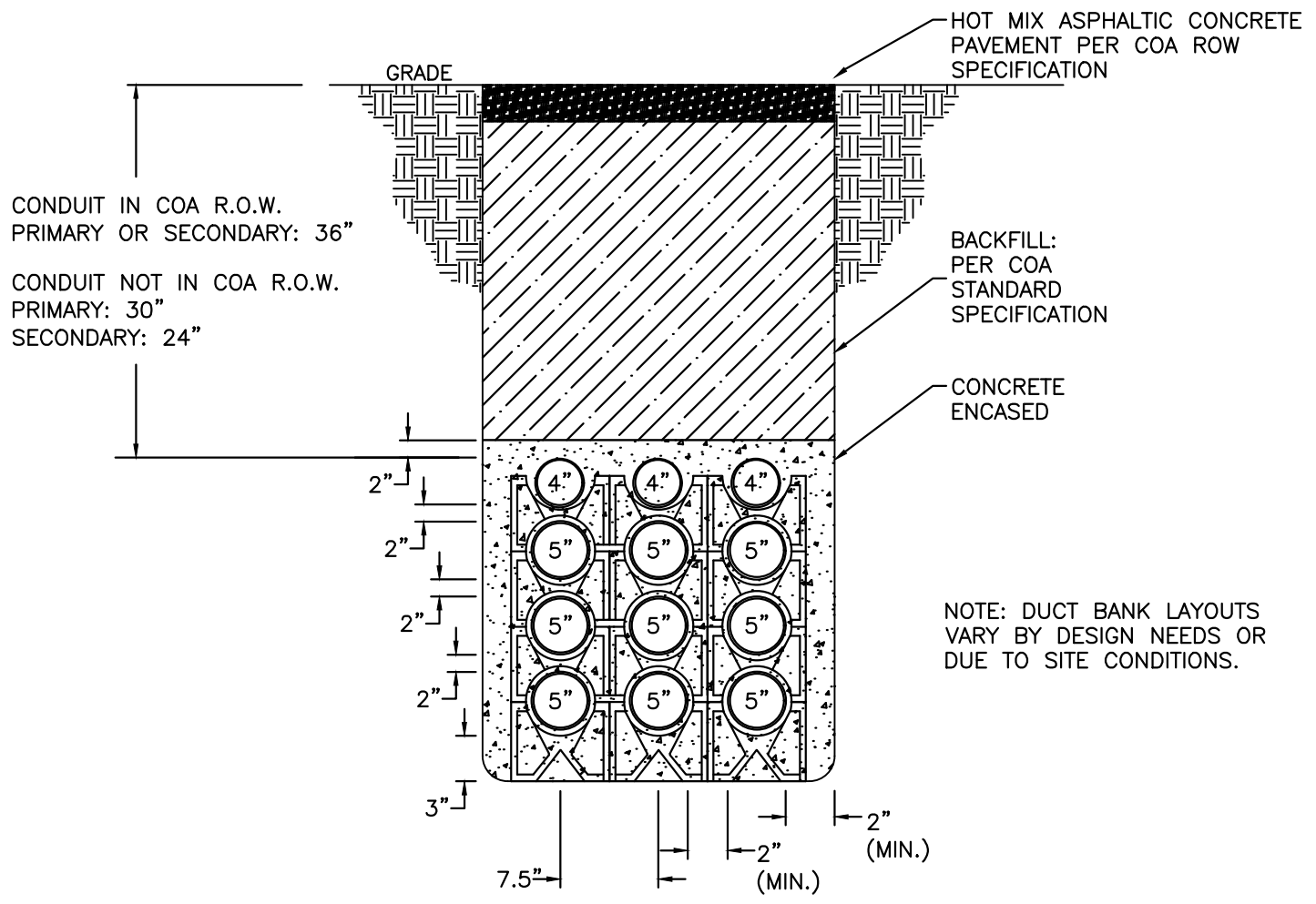
CONDUIT SPACERS SHALL BE REQUIRED FOR ALL STACKED CONDUIT CONFIGURATIONS.

BACKFILL IN PAVED STREETS WITHIN THE CITY LIMITS OF AUSTIN SHALL CONFORM TO THE CITY OF AUSTIN, PUBLIC WORKS AND TRANSPORTATION DEPARTMENT SPECIFICATION, CUTS IN PUBLIC RIGHT-OF-WAY. BACKFILL IN COUNTY OR STATE HIGHWAY RIGHT-OF-WAY SHALL CONFORM TO THE REQUIREMENT OF THE OFFICIAL AUTHORITY FOR THE CONSTRUCTION LOCATION.

USE RED WARNING TAPE OR TRACER TAPES FOR ROADS OR R.O.W. IF APPLICABLE.

CU-REF	CU-ID	CU-DESCRIPTION
14192010	BASEFLEX-1CY	FLEXIBLE BASE - 1 CUBIC YARD
14192020	HMASPCONPAV-1CY	HOT MIX ASPH CONCRETE - 1 CUBIC YARD
14192030	CON2000PSI	CONCRETE BACKFILL 1 CUBIC YARD

REV_DATE:
05/28/26



- 1419-25-10 BASE FLEXABLE - 1 CUYD
- 1419-25-20 CONCRETE HOT MIX ASPHALT - 1 CUYD
- 1419-25-30 CONCRETE BACKFILL - 1 CUYD

BACKFILL SHALL CONFORM TO THE CITY OF AUSTIN STANDARD SPECIFICATION.

IN ENCASED CONCRETE INSTALLATIONS, THE CONCRETE MIXTURE SHALL DEVELOP A MINIMUM STRENGTH OF 2000 PSI AT 28 DAYS AND SHALL HAVE A MINIMUM OF FOUR SACKS OF CONCRETE PER CUBIC YARD. MAXIMUM SLUMP FOR THE MIXTURE SHALL BE 6-IN., AND THE AGGREGATE IN THE MIXTURE SHALL BE NO LARGER THAN 3/8-IN. (2" MIN. CONCRETE ENCASEMENT)

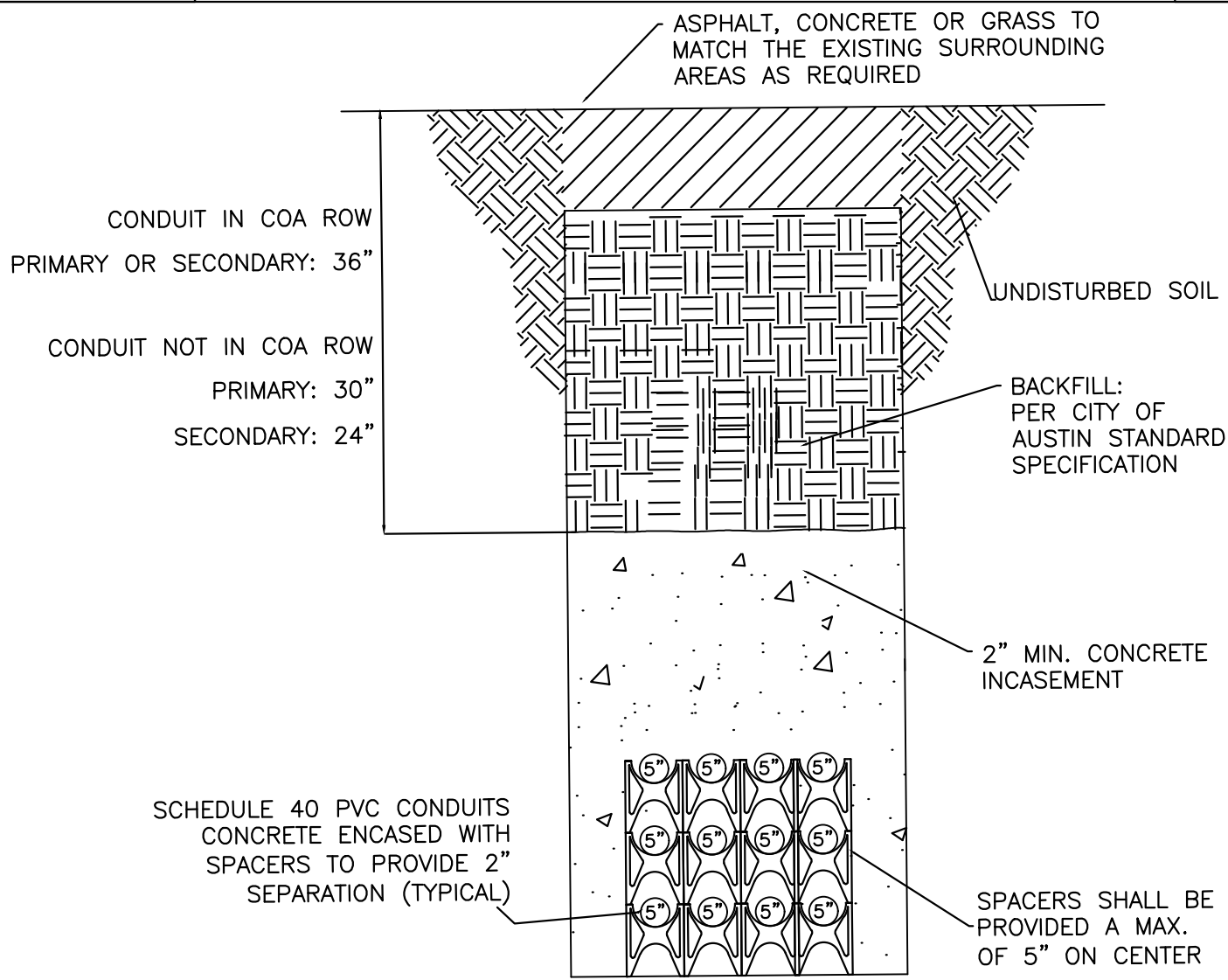
HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE THE TYPE NECESSARY TO REPLACE OR MATCH PAVEMENT REMOVED DURING THE PURSUANCE OF DUCTLINE CONSTRUCTION AND SHALL CONFORM TO THE CITY OF AUSTIN, STANDARD SPECIFICATION.

CONDUIT SPACERS SHALL BE REQUIRED FOR ALL STACKED CONDUIT CONFIGURATIONS.

BACKFILL IN PAVED STREETS WITHIN THE CITY LIMITS OF AUSTIN SHALL CONFORM TO THE CITY OF AUSTIN, PUBLIC WORKS AND TRANSPORTATION DEPARTMENT SPECIFICATION, CUTS IN PUBLIC RIGHT-OF-WAY. BACKFILL IN COUNTY OR STATE HIGHWAY RIGHT-OF-WAY SHALL CONFORM TO THE REQUIREMENT OF THE OFFICIAL AUTHORITY FOR THE CONSTRUCTION LOCATION.

CU-REF	CU-ID	CU-DESCRIPTION
14192510	BASEFLEX-1CY	FLEXIBLE BASE - 1 CUBIC YARD
14192520	HMASPCONPAV-1CY	HOT MIX ASPH CONCRETE - 1 CUBIC YARD
14192530	CON2000PSI-14192530	CONCRETE BACKFILL 1 CUBIC YARD

REV_DATE:
05/22/26



BACKFILL SHALL CONFORM TO THE CITY OF AUSTIN STANDARD SPECIFICATION.

IN ENCASED CONCRETE INSTALLATIONS, THE CONCRETE MIXTURE SHALL DEVELOP A MINIMUM STRENGTH OF 2000 PSI AT 28 DAYS AND SHALL HAVE A MINIMUM OF FOUR SACKS OF CONCRETE PER CUBIC YARD. MAXIMUM SLUMP FOR THE MIXTURE SHALL BE 6-IN., AND THE AGGREGATE IN THE MIXTURE SHALL BE NO LARGER THAN 3/8-IN. (2" MIN. CONCRETE ENCASEMENT)

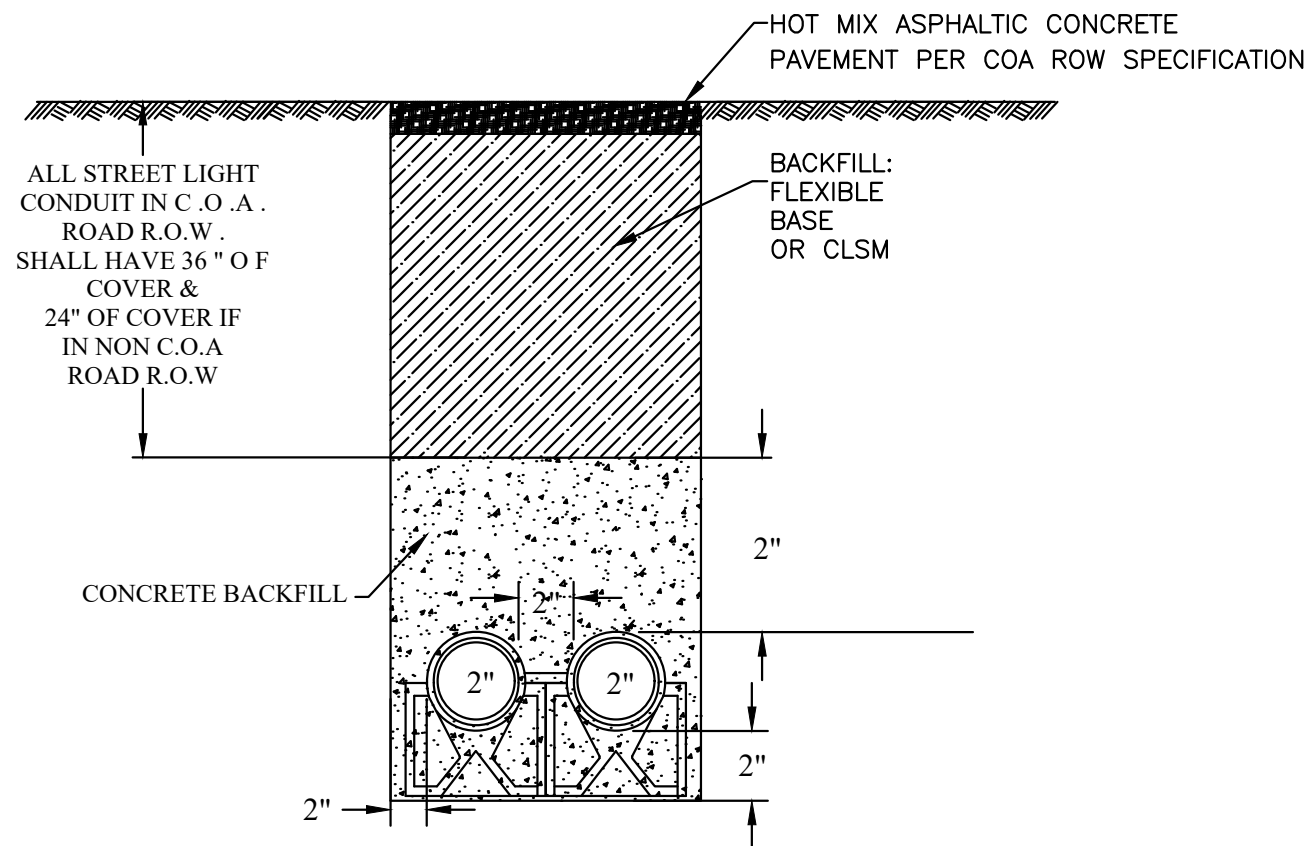
HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE THE TYPE NECESSARY TO REPLACE OR MATCH PAVEMENT REMOVED DURING THE PURSUANCE OF DUCTLINE CONSTRUCTION AND SHALL CONFORM TO THE CITY OF AUSTIN, STANDARD SPECIFICATION.

CONDUIT SPACERS SHALL BE REQUIRED FOR ALL STACKED CONDUIT CONFIGURATIONS.

BACKFILL IN PAVED STREETS WITHIN THE CITY LIMITS OF AUSTIN SHALL CONFORM TO THE CITY OF AUSTIN, PUBLIC WORKS AND TRANSPORTATION DEPARTMENT SPECIFICATION, CUTS IN PUBLIC RIGHT-OF-WAY. BACKFILL IN COUNTY OR STATE HIGHWAY RIGHT-OF-WAY SHALL CONFORM TO THE REQUIREMENT OF THE OFFICIAL AUTHORITY FOR THE CONSTRUCTION LOCATION.

CU-REF	CU-ID	CU-DESCRIPTION
14192510	BASEFLEX-1CY	FLEXIBLE BASE - 1 CUBIC YARD
14192520	HMASPCONPAV-1CY	HOT MIX ASPH CONCRETE - 1 CUBIC YARD
14192530	CON2000PSI-14192530	CONCRETE BACKFILL 1 CUBIC YARD

NON-JOINT TRENCH: BASE, CONCR. HOT MIX & BACKFILL - STREETLIGHT



- 1419-25-10 BASE FLEXABLE - 1 CUYD
- 1419-25-20 CONCRETE HOT MIX ASPHALT - 1 CUYD
- 1419-25-30 CONCRETE BACKFILL - 1 CUYD

BACKFILL SHALL BE CLSM (CONTROLLED LOW STRENGTH MATERIAL) OR FLEXIBLE BASE MATERIAL. FLEXIBLE BASE MATERIAL SHALL CONSIST OF CRUSHED LIMESTONE PARTICLES AND DURABLE COURSE AGGREGATE PARTICLES MIXED WITH APPROVED BINDING MATERIALS AND SHALL CONFORM TO THE CITY OF AUSTIN, STANDARD SPECIFICATION, ITEM NO. 210, FLEXIBLE BASE.

IN ENCASED CONCRETE INSTALLATIONS, THE CONCRETE MIXTURE SHALL DEVELOP A MINIMUM STRENGTH OF 2000 PSI AT 28 DAYS AND SHALL HAVE A MINIMUM OF FOUR SACKS OF CONCRETE PER CUBIC YARD. MAXIMUM SLUMP FOR THE MIXTURE SHALL BE 6-IN., AND THE AGGREGATE IN THE MIXTURE SHALL BE NO LARGER THAN 3/8-IN. (2" MIN. CONCRETE ENCASEMENT)

CONCRETE ENCASEMENT AROUND THE CONDUIT IS STILL TO BE USED EVEN IF THE CONDUIT IS BEHIND OF CURTAIN CURB

HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE THE TYPE NECESSARY TO REPLACE OR MATCH PAVEMENT REMOVED DURING THE PURSUANCE OF DUCTLINE CONSTRUCTION AND SHALL CONFORM TO THE CITY OF AUSTIN, STANDARD SPECIFICATION, ITEM NO. 340, HOT MIX ASPHALTIC CONCRETE.

CONDUIT SPACERS SHALL BE REQUIRED FOR ALL STACKED CONDUIT CONFIGURATIONS.

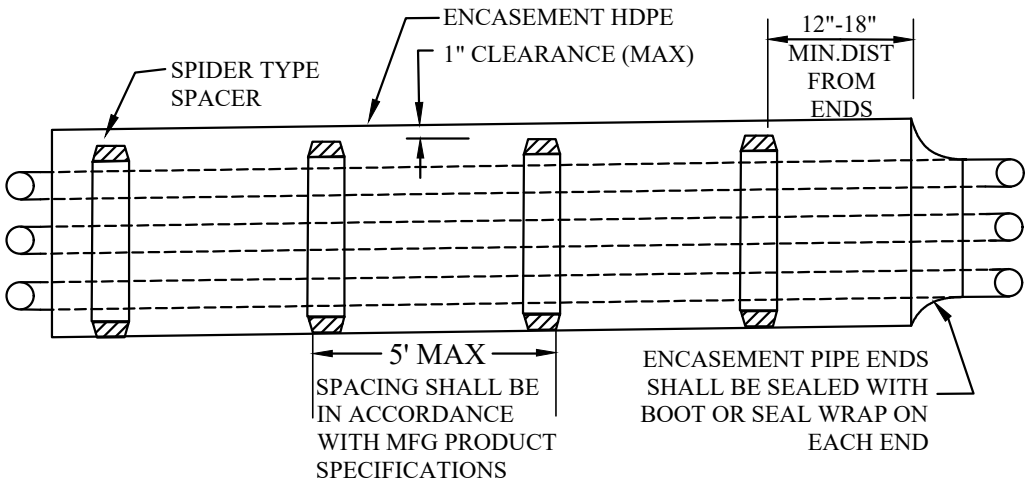
USE 2-2" CONDUITS WHEN INSTALLING STREETLIGHT-ONLY CIRCUITS

BACKFILL IN PAVED STREETS WITHIN THE CITY LIMITS OF AUSTIN SHALL CONFORM TO THE CITY OF AUSTIN, PUBLIC WORKS AND TRANSPORTATION DEPARTMENT SPECIFICATION, CUTS IN PUBLIC RIGHT-OF-WAY. BACKFILL IN COUNTY OR STATE HIGHWAY RIGHT-OF-WAY SHALL CONFORM TO THE REQUIREMENT OF THE OFFICIAL AUTHORITY FOR THE CONSTRUCTION LOCATION.

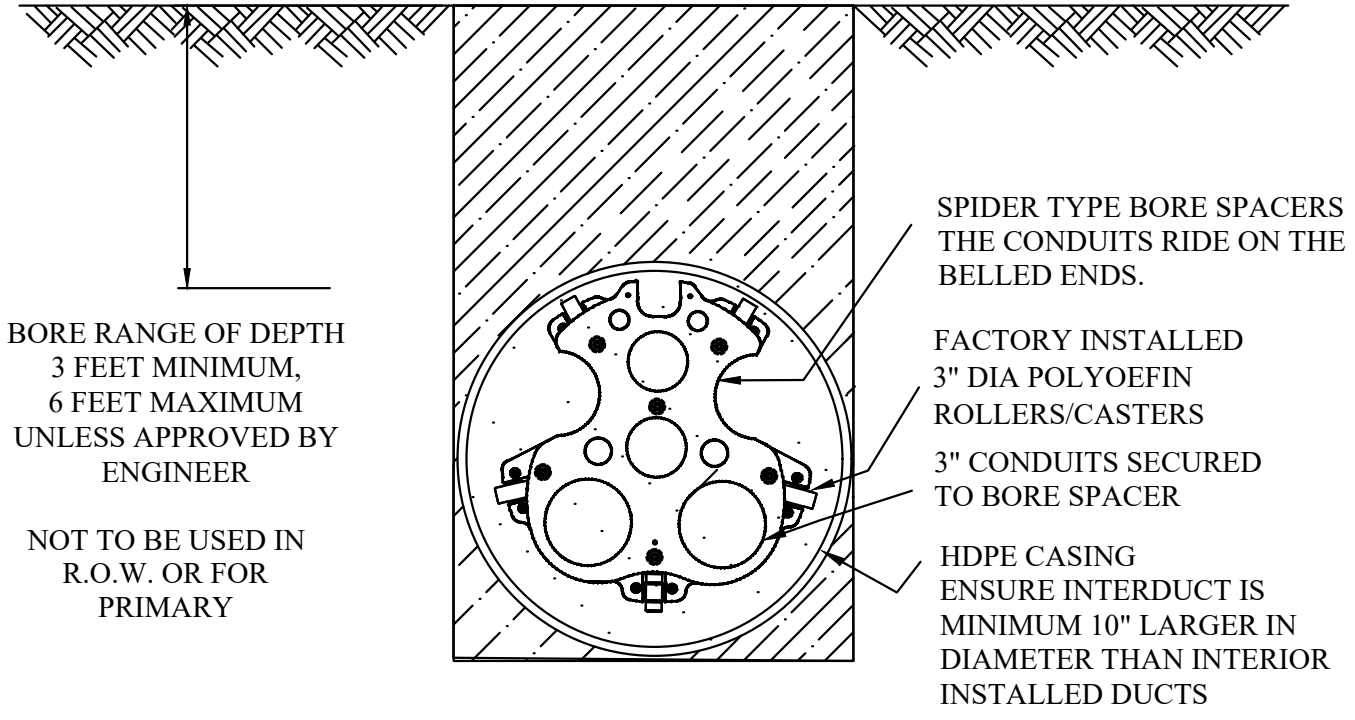
USE RED WARNING TAPE OR TRACER TAPES FOR ROADS OR R.O.W. WHEN APPLICABLE.

CU-REF	CU-ID	CU-DESCRIPTION
14192510	BASEFLEX-1CY	FLEXIBLE BASE - 1 CUBIC YARD
14192520	HMASPCONPAV-1CY	HOT MIX ASPH CONCRETE - 1 CUBIC YARD
14192530	CON2000PSI	CONCRETE BACKFILL 1 CUBIC YARD

DIRECTIONAL BORING - SIDE SECTION



DIRECTIONAL BORING - CROSS SECTION



1419-30-01 DIRECTIONAL BORING NOTES

STANDARD REQUIREMENTS

RESPONSIBILITY

*THE CONTRACTOR SHALL PROVIDE ALL MATERIAL, EQUIPMENT, AND FACILITIES REQUIRED FOR DIRECTIONAL BORING. THE METHOD USED TO COMPLETE THE DIRECTIONAL BORING SHALL CONFORM TO THE REQUIREMENTS OF ALL APPLICABLE PERMITS. DIRECTIONAL BORING IN THE DOWNTOWN NETWORK AND RIGHT OF WAY WILL UPON INSPECTION & ACCEPTANCE OF DUCT BANKS/BORES BEFORE OWNERSHIP BY AUSTIN ENERGY.

*THE CONTRACTOR WILL BE FINANCIALLY RESPONSIBLE FOR ALL MAINTENANCE INCLUDING RELOCATION OF CONDUIT (OR SIMILAR PIPING) THAT DOESN'T MEET EVERY UTILITY CLEARANCES, RESPONSIBLE FOR DAMAGES TO OTHER UTILITIES THAT MAY OR MAY NOT SHOW UP IN THE FUTURE, AND RESPONSIBLE FOR EXTRA POLY CONDUIT OR REPAIR PIECES.

*THE CONTRACTOR SHALL PROVIDE A PLOT OF DRILL PATH READINGS. ALL READINGS SHALL BE RECORDED AND PLOTTED ON A SCALED DRAWING WITH PLAN AND PROFILE INFORMATION THAT SHALL BE MADE AVAILABLE TO AUSTIN ENERGY REPRESENTATIVE. CONTRACTOR SHALL HAVE ALL CONDUITS CHECKED BY RUNNING A MANDREL TO CLEAR BLOCKAGE.

BORE CONSTRUCTION

* DIRECTIONAL BORING CONSTRUCTION SHALL CONSIST OF HIGH DENSITY POLYETHYLENE (HDPE) CASING (PER ASTM F 2160 STANDARD). LATERAL BORE DESIGN (INCLUDING NUMBER OF CONDUITS RUNS & CASING SIZING) WILL BE DETERMINED BY AUSTIN ENERGY'S DISTRIBUTION DESIGNER. FOR A LONGER BORE (WHERE PULLING TENSION WOULD BE TOO GREAT TO PULL 3 PHASE) PHASES WILL BE PULLED INDIVIDUALLY. ALL SPACERS SHALL INCLUDE AN EXTRA CONDUIT (2" MIN.) FOR PLACING GROUT ENCASEMENT.

*GROUT ENCASEMENT SHOULD BE TWELVE SACK ENCASEMENT AND ALL CONDUIT TO BE FILLED WITH WATER BEFORE PUMPING GROUT.

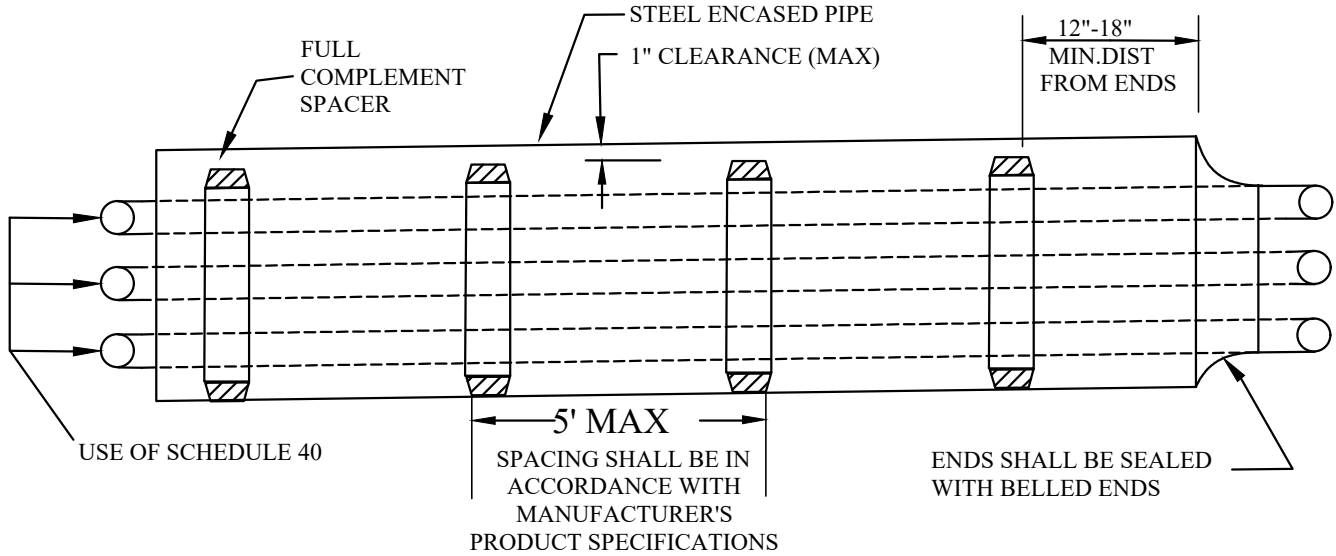
*THE CASING COLOR MUST BE RED AND LABELED WITH INSCRIBED WORD "ELECTRIC" IN BLACK. INSTALLATION OF JOINT PVC SHALL BE IN SCHEDULE 40 FOR SEPARATE BORE WHEN POSSIBLE. IF CONDUIT IS NOT USED, A POLY SDR9 RATED INTERDUCT MUST BE USED. MAXIMUM BORE DEPTH SHALL BE 6 FEET UNLESS APPROVED BY ENGINEER WITH A MINIMUM BORE DEPTH OF 3 FEET.

*DO NOT CONSTRUCT IN R.O.W.

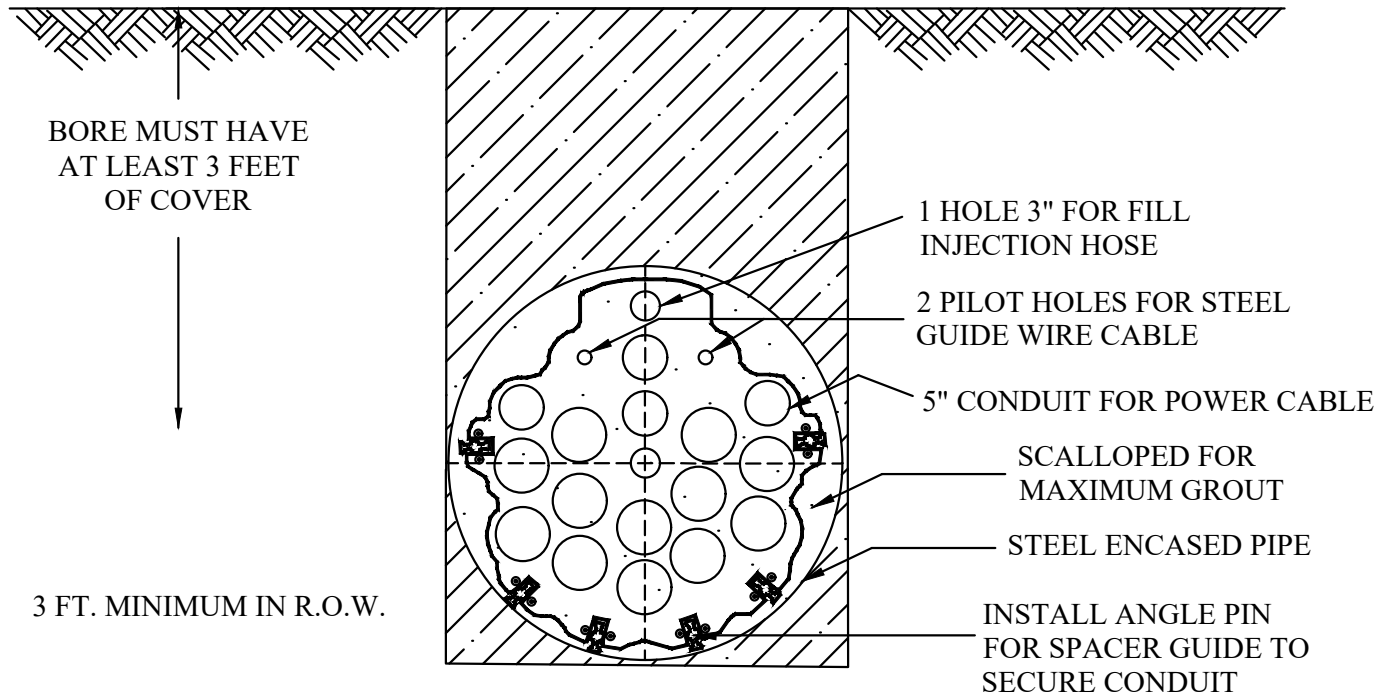
*BORING MUST MEET TX-DOT OR RAILROAD STANDARDS FOR DEPTHS AND CLEARANCES

*DO NOT USE FOR PRIMARY, ONLY UTILIZE FOR SECONDARY.

HORIZONTAL STRAIGHT BORING - SIDE SECTION



HORIZONTAL STRAIGHT BORING - CROSS SECTION



1419-31-01 DIRECTIONAL BORING NOTES

STANDARD REQUIREMENTS

RESPONSIBILITY

*THE CONTRACTOR SHALL PROVIDE ALL MATERIAL, EQUIPMENT, AND FACILITIES REQUIRED FOR HORIZONTAL STRAIGHT BORING. THE METHOD USED TO COMPLETE THE HORIZONTAL STRAIGHT (CONVENTIONAL) BORE SHALL CONFORM TO THE REQUIREMENTS OF ALL APPLICABLE PERMITS. STRAIGHT (CONVENTIONAL) BORING IN THE DOWNTOWN NETWORK AND RIGHT OF WAY WILL NOT BE OWNED BY AUSTIN ENERGY.

*THE CONTRACTOR WILL BE FINANCIALLY RESPONSIBLE FOR ALL MAINTENANCE INCLUDING RELOCATION OF CONDUIT (OR SIMILAR PIPING) THAT DOESN'T MEET EVERY UTILITY CLEARANCES, RESPONSIBLE FOR DAMAGES TO OTHER UTILITIES THAT MAY OR MAY NOT SHOW UP IN THE FUTURE, AND RESPONSIBLE FOR EXTRA POLY CONDUIT OR REP AIR PIECES.

*THE CONTRACTOR SHALL PROVIDE A PLOT OF DRILL PATH READINGS. ALL READINGS SHALL BE RECORDED AND PLOTTED ON A SCALED DRAWING WITH PLAN AND PROFILE INFORMATION THAT SHALL BE MADE AVAILABLE TO AUSTIN ENERGY REPRESENTATIVE. CONTRACTOR SHALL RUN MANDREL THROUGH THE CONDUITS TO INSURE ITS NOT BLOCKED.

BORE CONSTRUCTION

*CONVENTIONAL HORIZONTAL STRAIGHT BORING CONSTRUCTION SHALL CONSIST OF STEEL CASING FOR BORE FILLED WITH GROUT. NUMBER OF RUNS AND CONFIGURATION SHALL COMPLY WITH MANUFACTURER'S APPROVED SHOP SUBMITTAL. THE GUIDE PIPE SECTION SHOULD BE FIELD WELDED TOGETHER AND GROUND SMOOTH FORMING A CONTINUOUS, STRAIGHT GUIDE (2" NOM.) PIPE TO CASING EVERY 5 FEET.

*THE CASING PIPE DIAMETER SHALL COINCIDE WITH WITH THE NUMBER OF RUNS OF CONDUIT REQUIRED FOR THE JOB. TWELVE SACK GROUT ENCASEMENT ALL CONDUIT TO BE FILLED WITH WATER BEFORE PUMPING GROUT. THE CASING COLOR MUST BE RED AND LABELED WITH INSCRIBED WORD "ELECTRIC" IN BLACK. INSTALLATION OF PIPE SHALL BE IN SCHEDULE 40 FOR SEPARATE BORE WHEN POSSIBLE.

*BORING MUST MEET TX-DOT OR RAILROAD STANDARDS FOR DEPTHS AND CLEARANCES