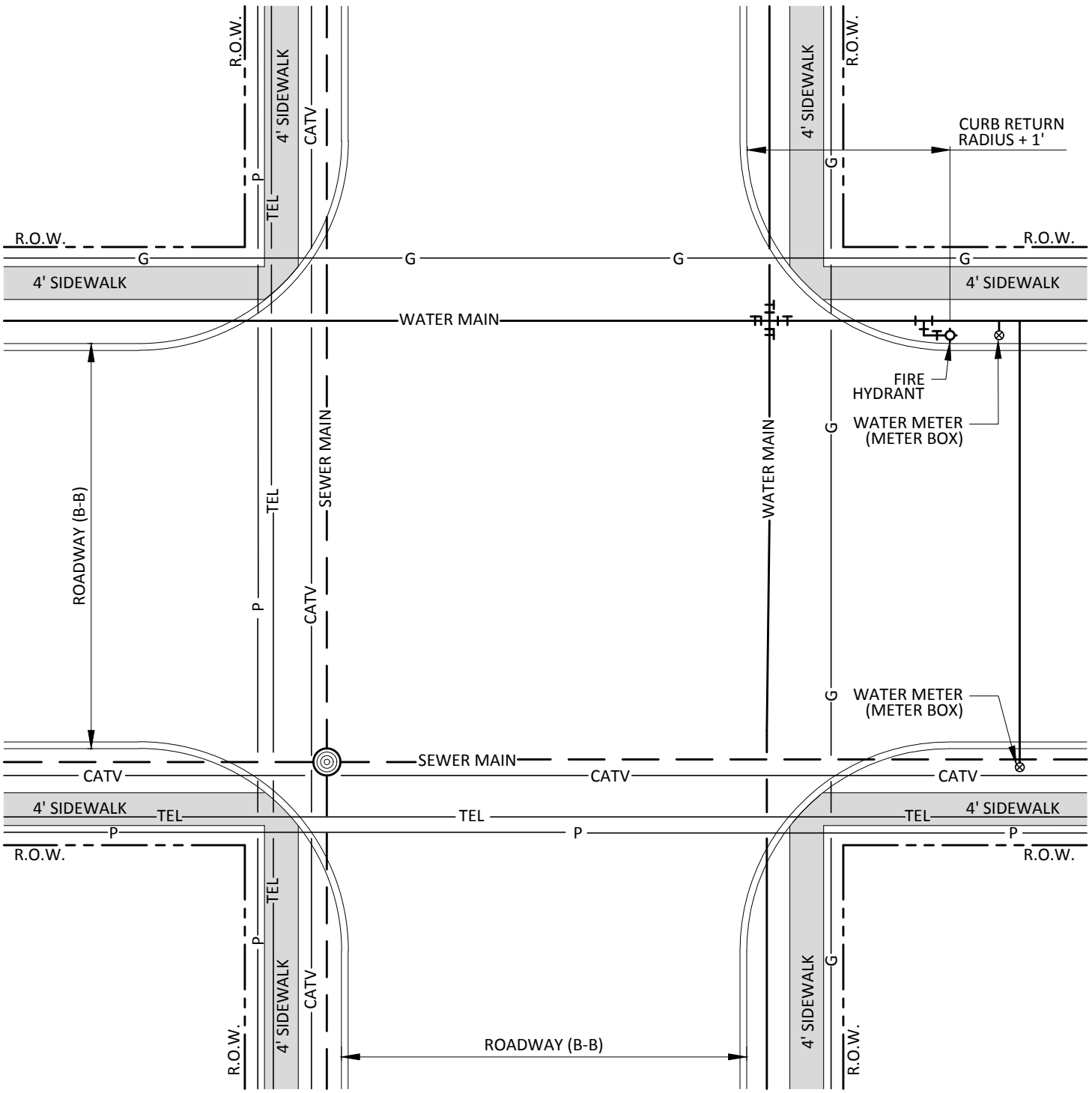
STANDARD DETAIL INDEX



GENERAL DESIGN STANDARDS
UTILITY LOCATION DETAILS

SCALE: NTS DATE: 01/2004
SHEET 1 OF 4

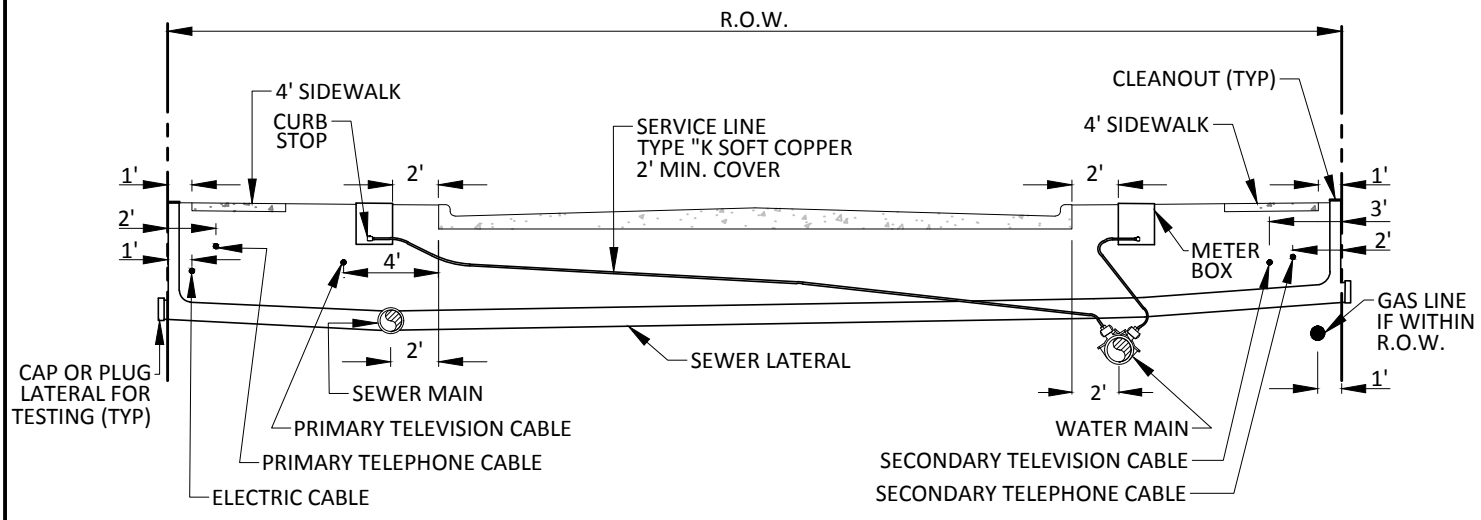
CARROLLTON
TEXAS

UTILITY LOCATION PLAN

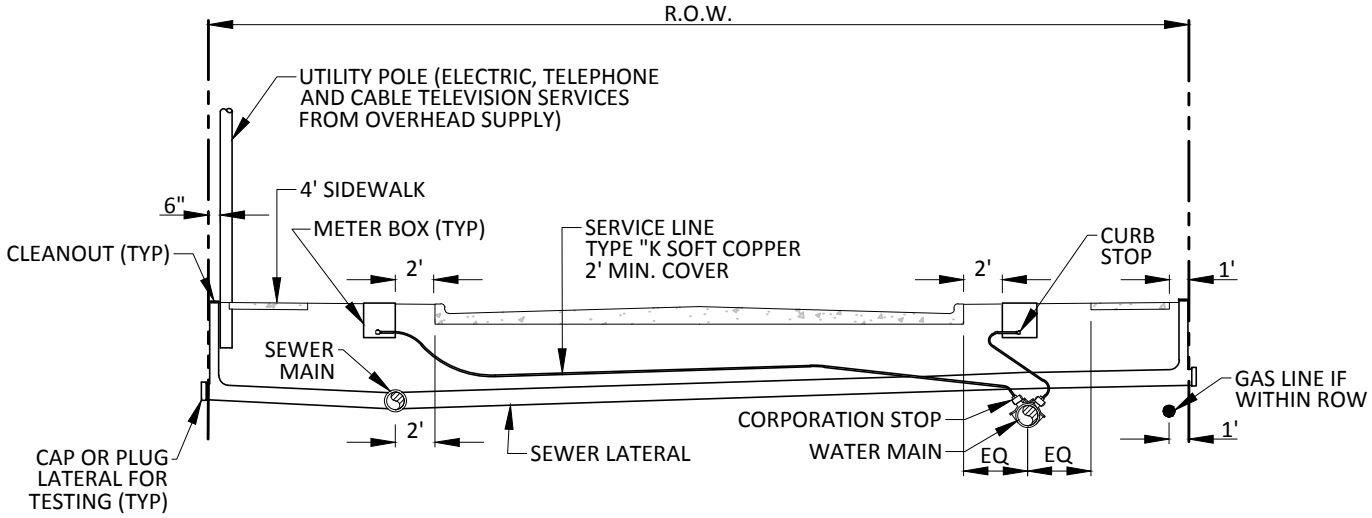
U-1

ENGINEERING
DEPARTMENT

FILENAME: U-1_1-4.DWG



TYPICAL UTILITY SERVICE LOCATIONS FROM STREET



UTILITY SERVICE LOCATIONS FROM STREET AND OVERHEAD

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
UTILITY LOCATION DETAILS

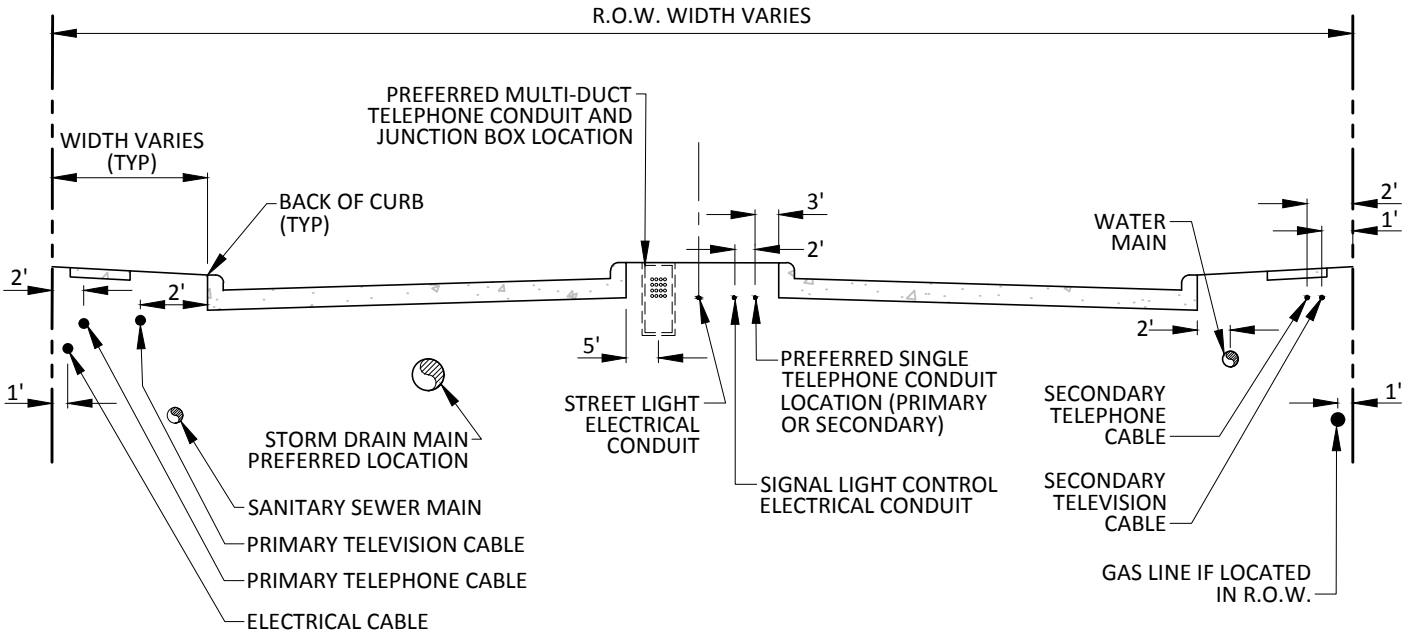
SCALE: NTS DATE: 01/2004
SHEET 2 OF 4

UTILITY LOCATION PROFILE

U-1

ENGINEERING DEPARTMENT

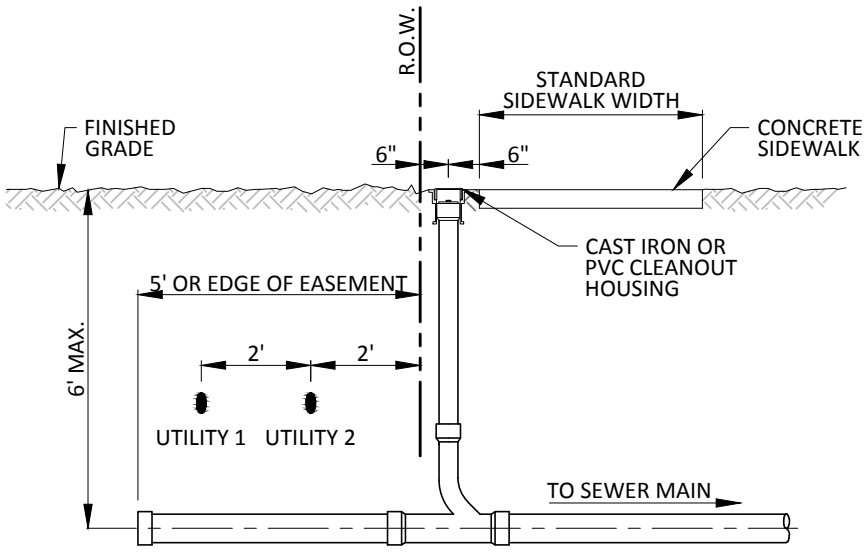
FILENAME: U-1_2-4.DWG



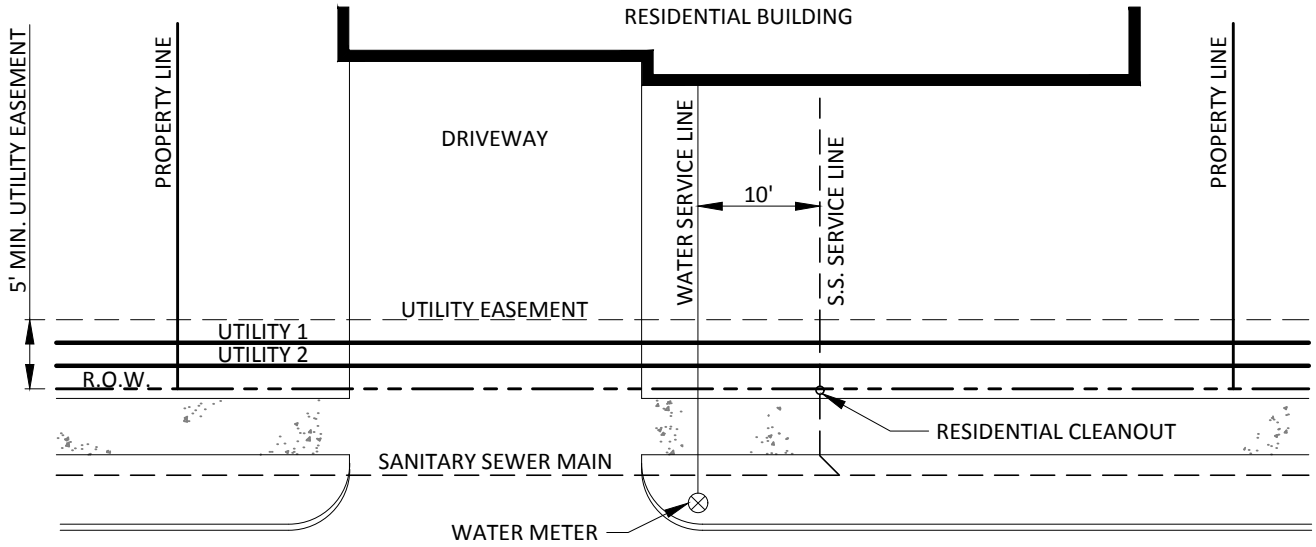
TYPICAL UTILITY LOCATIONS
MAJOR ARTERIAL OR COLLECTOR STREET WITH MEDIAN DIVIDERS

NOTE:

UNDERGROUND UTILITIES SHALL NOT BE INSTALLED PARALLEL TO AND ABOVE A STORM DRAIN, WATER MAIN, OR SANITARY SEWER MAIN.



ELEVATION



PLAN

NOTE:

GAS AND ELECTRIC SHALL BE LOCATED ON NORTH OR EAST SIDE OF THE STREET AND CABLE TV AND TELEPHONE SHALL BE ON SOUTH OR WEST SIDE.

CARROLLTON
TEXAS

GENERAL DESIGN STANDARDS
UTILITY LOCATION DETAILS

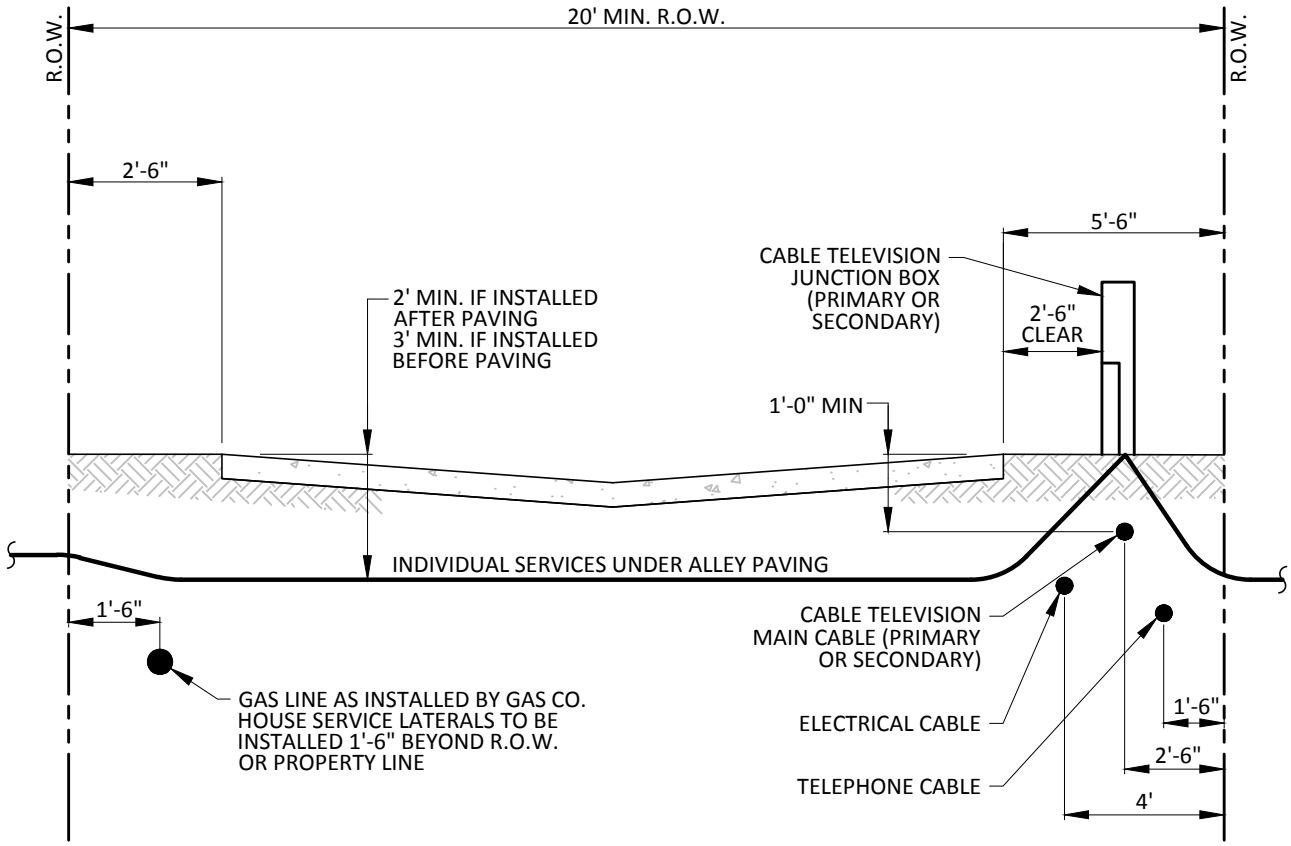
SCALE: NTS DATE: 01/2004
SHEET 4 OF 4

TYPICAL UTILITY LOCATIONS FOR
RESIDENTIAL STREETS WITHOUT ALLEY

U-1

ENGINEERING
DEPARTMENT

FILENAME: U-1_4-4.DWG



UTILITY LOCATIONS - ALLEY PLAN

NOTES:

1. GAS LINES SHALL BE BURIED AT A DEPTH SHOWN ON DRAWINGS AS APPROVED BY THE ENGINEERING DEPARTMENT. LATERALS TO INDIVIDUAL RESIDENCES SHALL EXTEND A MINIMUM OF 1'-6" BEYOND THE R.O.W. OR PROPERTY LINE.

2. CABLE TELEVISION LINES PARALLEL TO PAVING SHALL BE BURIED AT A MINIMUM DEPTH OF 12" BELOW FINISHED GRADE. WHERE CABLE LINES ARE BURIED UNDER PAVING, THEY SHALL MAINTAIN A MINIMUM DEPTH OF 2'. INDIVIDUAL SERVICES SHALL BE INSTALLED AS DETAILED ON THIS DRAWING. JUNCTION BOXES ARE TO BE INSTALLED AS REQUIRED AND SHALL PROVIDE A MINIMUM CLEARANCE OF 2'-6" FROM EDGE OF PAVEMENT. WHERE OVERHEAD JUNCTION BOXES OR OTHER ELECTRICAL APPURTENANCES ARE REQUIRED, A MINIMUM CLEARANCE OF 3' FROM EDGE OF PAVEMENT OR FIRE LANE SHALL BE MAINTAINED.

3. UNDERGROUND ELECTRICAL SUPPLY AND SERVICES SHALL HAVE A MINIMUM BURY DEPTH OF 2' AND BE INSTALLED 2'-6" FROM EDGE OF PAVEMENT. OVERHEAD METERS AND JUNCTION TYPE EQUIPMENT MUST MAINTAIN A MINIMUM OF 3' FROM EDGE OF PAVEMENT OR FIRE LANES.

4. UNDERGROUND TELEPHONE SUPPLY AND SERVICES SHALL HAVE A MINIMUM BURY DEPTH OF 2'. ABOVE GROUND APPURTENANCES SHALL HAVE A MINIMUM CLEARANCE OF 2'-6" FROM EDGE OF PAVEMENT OR FIRE LANES.

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
UTILITY LOCATION DETAILS

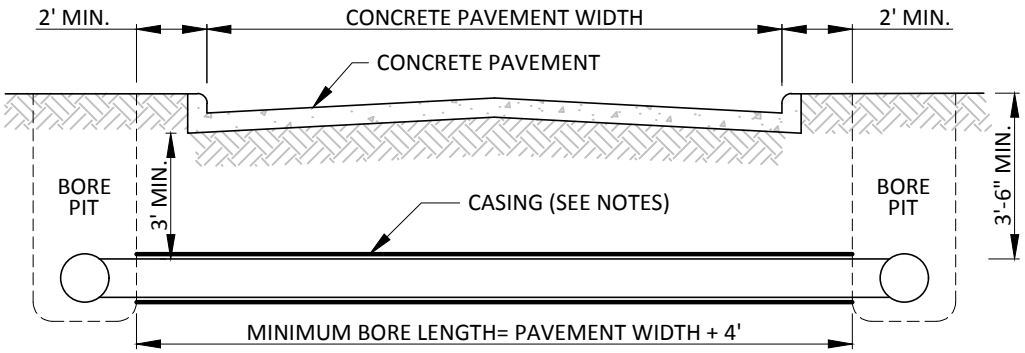
SCALE: NTS DATE: 01/2013
SHEET 1 OF 1

UTILITY LOCATIONS IN ALLEY

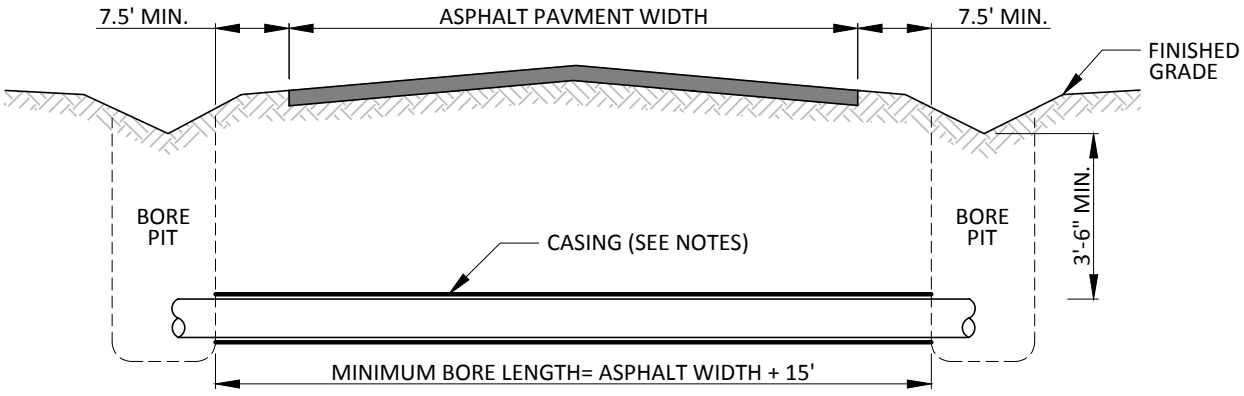
U-2

ENGINEERING DEPARTMENT

FILENAME: U-2_1-1.DWG



EXISTING CONCRETE PAVEMENT UTILITY INSTALLATION BORE



EXISTING ASPHALT PAVEMENT UTILITY INSTALLATION BORE

NOTES:

1. THE USE OF A CASING PIPE WILL BE BASED UPON THE SPECIFIC PROJECT AND SOIL CONDITIONS. THE APPROVED PLANS WILL SHOW THE CASING PIPE WHERE REQUIRED AND THE REQUIRED MATERIALS AS SHOWN IN THE CITY OF CARROLLTON STANDARD DETAILS. IN ALL CASES THE INSTALLATION SHALL CONFORM WITH THE GOVERNING AUTHORITY'S STANDARDS.

2. WHERE A BORE PIT EXCEEDS 5' IN DEPTH THE CONTRACTOR SHALL INSTALL SHORING OF THE PIT WALLS AS REQUIRED BY TEXAS STATE LAW (HB 662 AND HB 665) REGARDING THE SAFETY SYSTEMS TO BE USED DURING TRENCH EXCAVATION (AS STATED IN THE OCCUPATION SAFETY AND HEALTH ADMINISTRATION STANDARDS).

3. ALL BORE PITS SHALL BE BACKFILLED WITHIN 48 HOURS OF UTILITY INSTALLATION. NO BORE PIT SHALL REMAIN OPEN IN EXCESS OF 72 HOURS WITHOUT SHORING TO PREVENT CAVING OF PIT WALLS.

4. WHERE A BORE IS TO BE PARTIALLY OR COMPLETELY ABANDONED, SAID BORE SHALL BE COMPLETELY FILLED WITH HYDRAULICALLY PLACED CEMENT GROUT.

5. CORRUGATED METAL PIPE SHALL NOT BE ACCEPTED AS AN ENCASEMENT PIPE. ONLY DUCTILE IRON PIPE, REINFORCED CONCRETE PIPE, OR HIGH DENSITY STEEL PIPE DESIGNED TO SUIT THE EXISTING SOIL CONDITIONS SHALL BE USED.

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
UTILITY LOCATION DETAILS

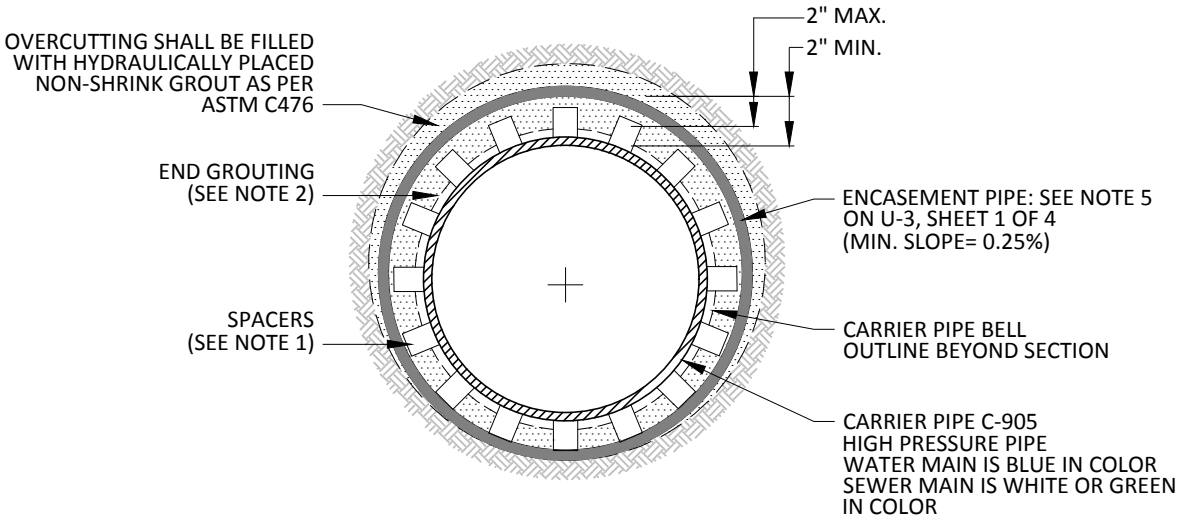
SCALE: NTS DATE: 01/2005
SHEET 1 OF 4

UTILITY INSTALLATION BORE DETAILS

U-3

ENGINEERING DEPARTMENT

FILENAME: U-3_1-4.DWG

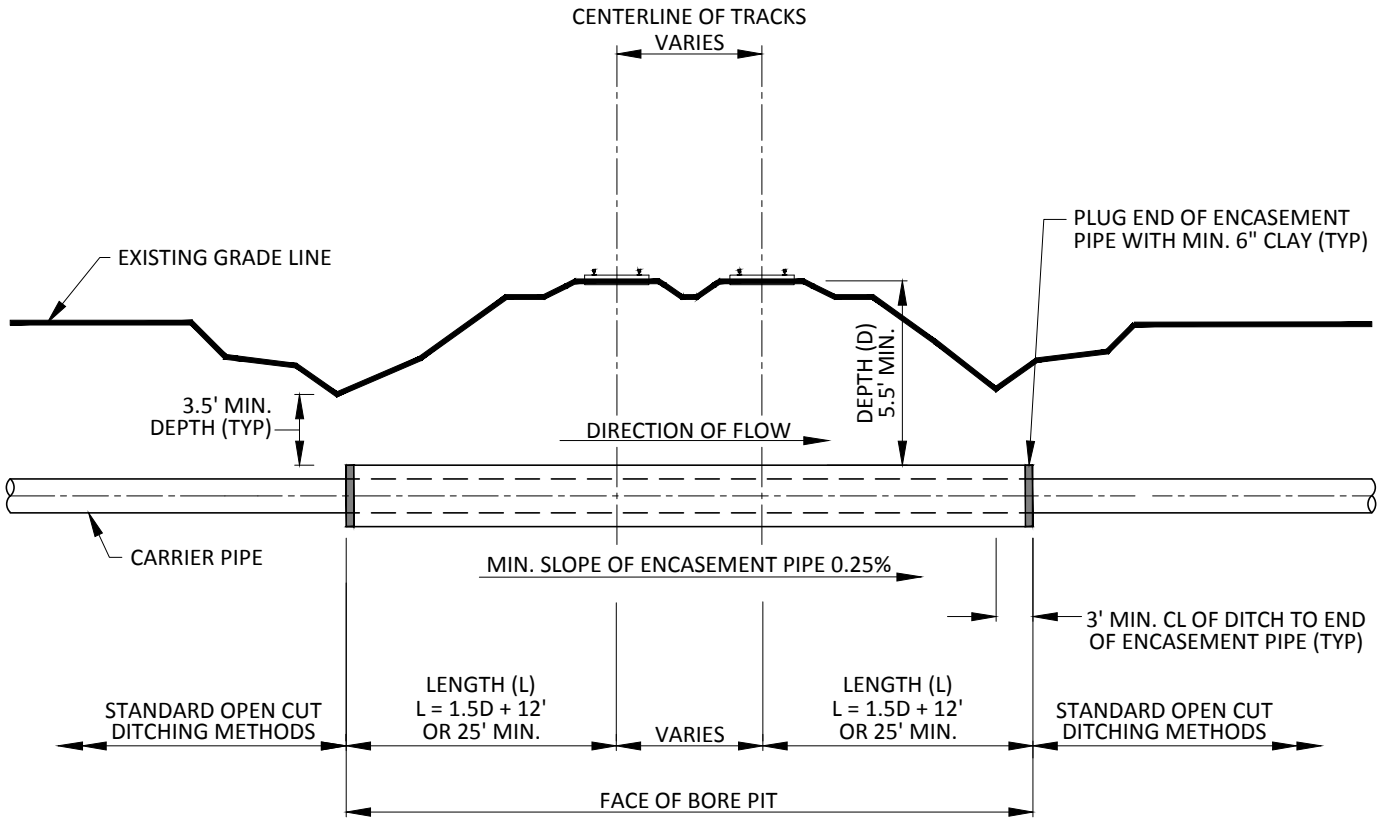


WATER AND SEWER MAIN ENCASEMENT

NOTES:

1. HIGH DENSITY POLYETHYLENE SPACERS, RACI OR EQUAL, SHALL BE USED. WHERE NO CASING PIPE IS REQUIRED OVER CUTTING AROUND UTILITY SHALL BE FILLED WITH HYDRAULICALLY PLACED NON-SHRINK GROUT AS PER ASTM C476.

2. END GROUTING FOR ALL ENCASEMENTS SHALL BE PER ASTM STANDARD C476 (1:7 GROUT WITH 5% TO 40% AIR ENTRAINMENT). GROUT SHALL BE PLACED BY HYDRAULIC PUMP FROM THE LOWER END OF THE ENCASEMENT PIPE, THEREBY INSURING COMPLETE FILLING OF ENCASEMENT PIPE.



NOTES:

1. ENCASEMENT PIPE MATERIAL: USE STEEL PIPE FOR WATER MAINS AND REINFORCED CONCRETE CYLINDER OR CORRUGATED METAL PIPE FOR SANITARY SEWER MAINS.

2. IN ALL CASES, THE REQUIRED DESIGN OF THE ENCASEMENT PIPE SHALL BE IN ACCORDANCE WITH THE OWNING RAILROAD'S STANDARDS FOR UTILITY CROSSING CONSTRUCTION.

3. SEE U-3, SHEET 2 OF 4 FOR ENCASEMENT DETAILS.

CARROLLTON
TEXAS

GENERAL DESIGN STANDARDS
UTILITY LOCATION DETAILS

SCALE: NTS DATE: 01/2004
SHEET 3 OF 4

UTILITY INSTALLATION BORE DETAIL
RAILROAD CROSSING

U-3

ENGINEERING
DEPARTMENT

FILENAME: U-3_3-4.DWG

NOTES:

1. ALL RAILROAD CROSSINGS SHALL CONFORM TO ITEM 509.4 OF THE NORTH CENTRAL TEXAS STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND THE APPLICABLE RAILROAD COMPANY STANDARDS.

2. RAILROAD CROSSINGS FOR ALL SANITARY SEWER LINES AND FOR WATER MAINS 12" AND UNDER SHALL REQUIRE AN ENCASEMENT PIPE AT LEAST 2" GREATER IN DIAMETER THAN THE LARGEST OUTSIDE DIAMETER OF THE CARRIER PIPE. THE ENCASEMENT PIPE FOR WATER MAINS OVER 12" IN DIAMETER SHALL BE STEEL PIPE OR REINFORCED CONCRETE PIPE (RCP) TO SUIT THE LOAD CONDITIONS AT THE CROSSING SITE OR AS REQUIRED BY THE OWNING RAILROAD COMPANY. THE ENCASEMENT PIPE SHALL BE LAID AT A MINIMUM 0.25 PERCENT SLOPE FOR DRAINAGE OF THE ENCASEMENT PIPE. IN ALL CASES THE ENCASEMENT PIPE SHALL BE PLUGGED AT EACH END WITH A CLAY PLUG TO PREVENT THE ENTRANCE OF EXCESSIVE GROUND WATER, BUT WHICH SHALL ALLOW WATER TO LEAK OUT OF THE ENCASEMENT PIPE IN THE EVENT OF A PRESSURE LEAK IN THE CARRIER PIPE. FOR ALL SEWER LINES AND MAINS, THE VOID BETWEEN THE CARRIER PIPE AND THE ENCASEMENT PIPE SHALL BE PRESSURE GROUTED AS PER ASTM C476 (1:7 RATIO GROUT MIX WITH 5 TO 40 PERCENT AIR ENTRAINMENT).

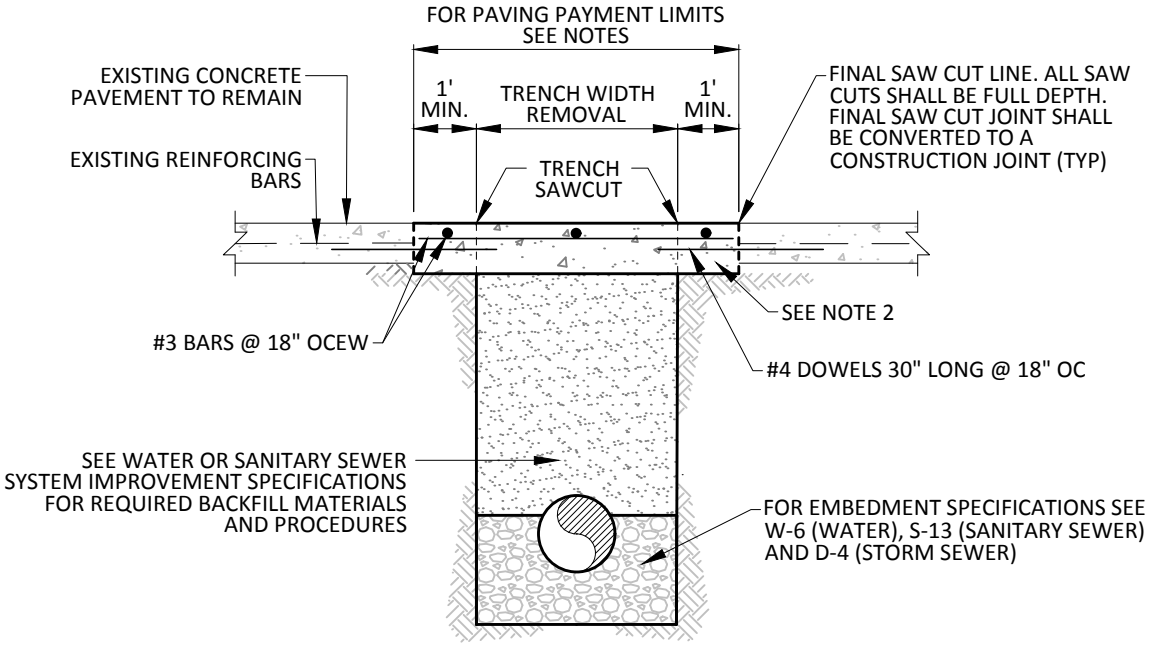
3. THE TOP OF ENCASEMENT PIPE SHALL BE A MINIMUM OF 5.5' BELOW THE BASE OF THE RAILS AND MUST BE A MINIMUM OF 42" BELOW THE FLOW LINE OF ANY DITCH WITHIN THE RAILROAD RIGHT-OF-WAY.

4. THE LENGTH OF THE ENCASEMENT PIPE SHALL EXTEND AT LEAST 25' (EACH SIDE) FROM THE CENTERLINE OF THE RAILROAD TRACK(S), MEASURED AT RIGHT ANGLES, OR A DISTANCE OF THE DEPTH "D" (WHERE "D" IS THE DEPTH OF THE TOP OF THE ENCASEMENT PIPE BELOW SUB-GRADE) TIMES 1.5 PLUS 12'. THE ENCASEMENT PIPE SHALL BE TIGHTLY JOINTED TO PREVENT THE INGRESS OF GROUNDWATER.

5. THE ENCASEMENT PIPE MAY BE INSTALLED BY JACKING, BORING OR TUNNELING. REGARDLESS OF THE METHOD USED, THE ENCASEMENT PIPE SHALL BE INSTALLED WITH AN EVEN BEARING THROUGHOUT ITS LENGTH. ALL VOIDS BETWEEN THE ENCASEMENT PIPE AND THE EARTH OR ROCK SHALL BE PRESSURE GROUTED AS PER ASTM C 476 (1:7 RATIO GROUT WITH 5 TO 40 PERCENT AIR ENTRAINMENT). TIMBER SUPPORTS SHALL NOT BE PERMITTED. WHERE THE RAILROAD RIGHT-OF-WAY CARRIES A MINOR VOLUME OF TRAFFIC AND PERMISSION IS GRANTED BY THE RAILROAD, OPEN CUTTING MAY BE USED TO INSTALL THE ENCASEMENT PIPE TO WITHIN 10' OF THE CENTERLINE OF THE OUTSIDE RAILS OR TOE OF SLOPE, WHICHEVER IS GREATER.

6. THE CARRIER PIPE SHALL BE OF THE KIND AND CLASS SHOWN ON THE PLANS WITH JOINTS MADE UP OUTSIDE AND PUSHED THROUGH THE END OF THE ENCASEMENT PIPE.

7. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED INSURANCE COVERAGE AND PROVIDE FOR ANY REQUIRED FEES AND PERMITS REQUIRED BY THE OWNING RAILROAD COMPANY PRIOR TO THE BEGINNING OF ANY WORK WITHIN THE RAILROAD RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE NOTIFICATION OF THE OWNING RAILROAD COMPANY'S INSPECTION DEPARTMENT FOR ALL INSPECTIONS THAT ARE REQUIRED OTHER THAN THOSE PRESCRIBED BY THE CITY OF CARROLLTON ENGINEERING DEPARTMENT.



REINFORCED CONCRETE PAVEMENT

FOR CAPITAL IMPROVEMENT PROJECTS PAVEMENT REMOVALS ARE CALCULATED AS FOLLOWS.
ANY ADDITIONAL REMOVAL/REPLACEMENT IS AT CONTRACTOR'S EXPENSE.

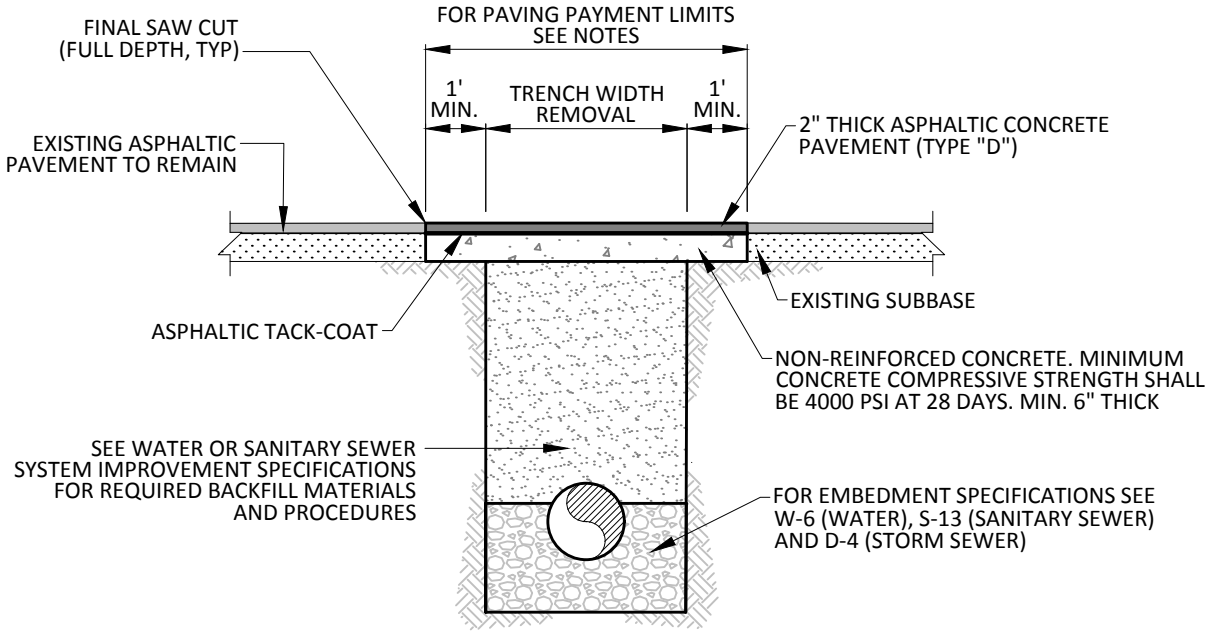
PAVEMENT REMOVAL	
PIPE SIZE (IN)	WIDTH (FT)
4	4
6	4
8	5
12	6
15	7

NOTES:

1. PAVEMENT REPLACEMENT WIDTH SHALL BE A MAXIMUM OF TRENCH WIDTH + 2' (WITH A MINIMUM TRENCH WIDTH OF 39"). IF THE TRENCH WIDTH IS GREATER THAN THE OUTSIDE DIAMETER OF THE PIPE + 16", THE EXCESS REPLACEMENT WIDTH WILL BE AT THE CONTRACTOR'S EXPENSE. BEFORE A CONTRACTOR IS ALLOWED TO BEGIN WORK IN ANY RIGHT-OF-WAY, STREET, OR EASEMENT WITHIN THE CITY OF CARROLLTON, HE MUST OBTAIN A CONSTRUCTION PERMIT FROM THE CITY OF CARROLLTON ENGINEERING DEPARTMENT.

2. REPLACEMENT CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS WITH A MINIMUM THICKNESS OF 6" OR 2" MORE THAN THE EXISTING CONCRETE PAVING, WHICHEVER IS GREATER. IF THE EXISTING CONCRETE IS OVERLAID WITH ASPHALT, THE CONCRETE REPAIR SHALL BE OVERLAID WITH ASPHALT OF THE SAME THICKNESS AS THE EXISTING OVERLAY.

3. ONLY NEW REINFORCING BARS SHALL BE USED FOR REPLACEMENT IN STREET CUT REPAIRS. #4 DOWELS 30" LONG SHALL BE EPOXY GROUTED INTO 5/8" DIAMETER DRILLED HOLES 15" DEEP ON 18" CENTERS IN THE EXISTING CONCRETE. DOWELS SHALL BE LAPPED WITH #3 BARS AT 18" OCEW. ALL REINFORCING SHALL HAVE WIRE TIES AT EVERY INTERSECTION (100% TIE).



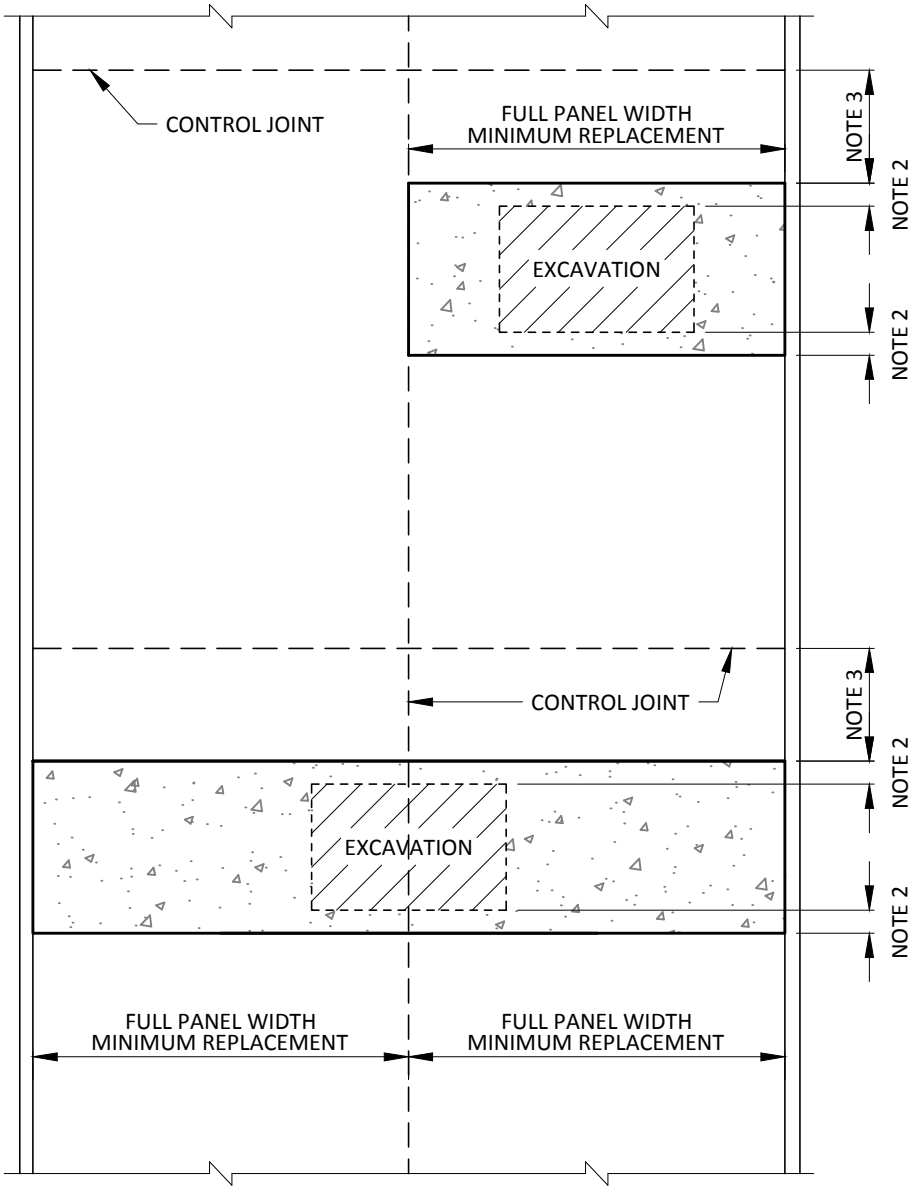
FLEXIBLE BASE AND ASPHALTIC CONCRETE PAVEMENT

FOR CAPITAL IMPROVEMENT PROJECTS PAVEMENT REMOVALS ARE CALCULATED AS FOLLOWS.
ANY ADDITIONAL REMOVAL/REPLACEMENT IS AT CONTRACTOR'S EXPENSE.

PAVEMENT REMOVAL	
PIPE SIZE (IN)	WIDTH (FT)
4	4
6	4
8	5
12	6
15	7

NOTE:

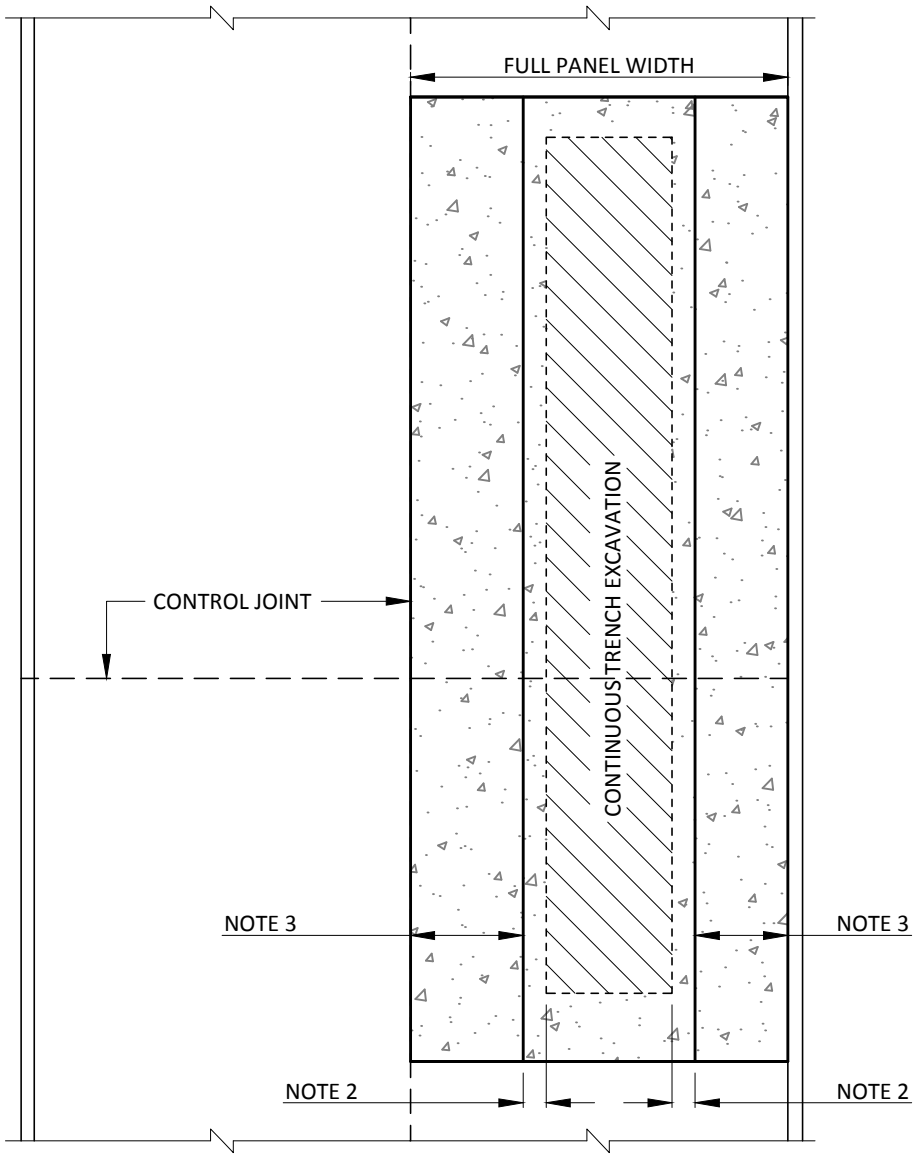
PAVEMENT REPLACEMENT WIDTH SHALL BE A MAXIMUM OF TRENCH WIDTH + 2' (WITH A MINIMUM TRENCH WIDTH OF 39"). IF THE TRENCH WIDTH IS GREATER THAN THE OUTSIDE DIAMETER OF THE PIPE + 16", THE EXCESS REPLACEMENT WIDTH WILL BE AT THE CONTRACTOR'S EXPENSE. BEFORE A CONTRACTOR IS ALLOWED TO BEGIN WORK IN ANY RIGHT-OF-WAY, STREET, OR EASEMENT WITHIN THE CITY OF CARROLLTON, HE MUST OBTAIN A CONSTRUCTION PERMIT FROM THE CITY OF CARROLLTON ENGINEERING DEPARTMENT.



TYPICAL CONCRETE STREET REMOVAL/REPLACEMENT
CASE 1

NOTES:

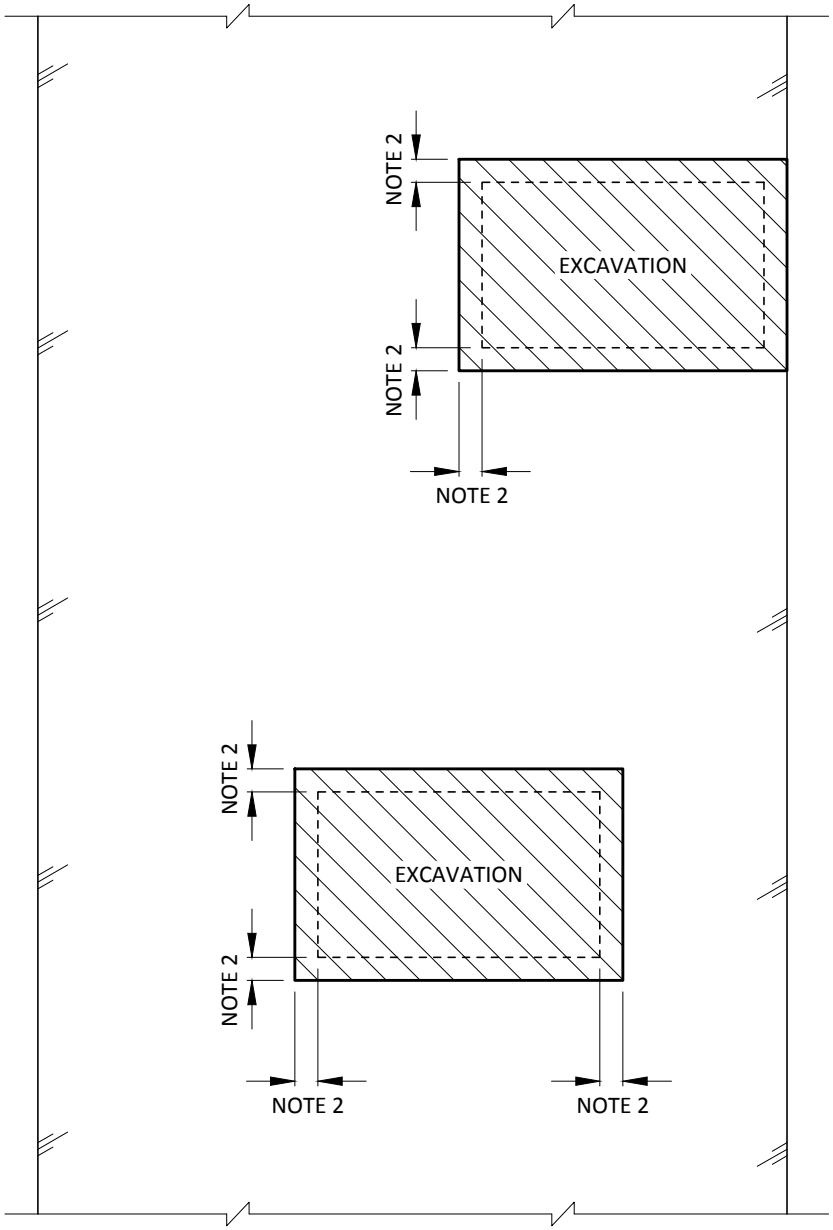
1. CITY'S INSPECTOR WILL DETERMINE FINAL PAVEMENT REMOVAL LIMITS. ACTUAL LIMITS OF REMOVAL MAY VARY BASED ON SITE CONDITIONS.
2. 1' MIN. BEYOND EDGE OF EXCAVATION OR UP TO A MAX. OF 3' TO REACH "GOOD" CONCRETE.
3. IF LESS THAN 5', THEN REMOVE TO EDGE OF PAVEMENT OR CONTROL JOINT.



TYPICAL CONCRETE STREET REMOVAL/REPLACEMENT CASE 2

NOTES:

1. CITY'S INSPECTOR WILL DETERMINE FINAL PAVEMENT REMOVAL LIMITS. ACTUAL LIMITS OF REMOVAL MAY VARY BASED ON SITE CONDITIONS.
2. 1' MINIMUM BEYOND EDGE OF EXCAVATION.
3. IF LESS THAN 5', THEN REMOVE TO EDGE OF PAVEMENT OR CONTROL JOINT.
4. MINIMUM CONCRETE REMOVAL SHALL BE HALF OF A TYPICAL PANEL WIDTH.

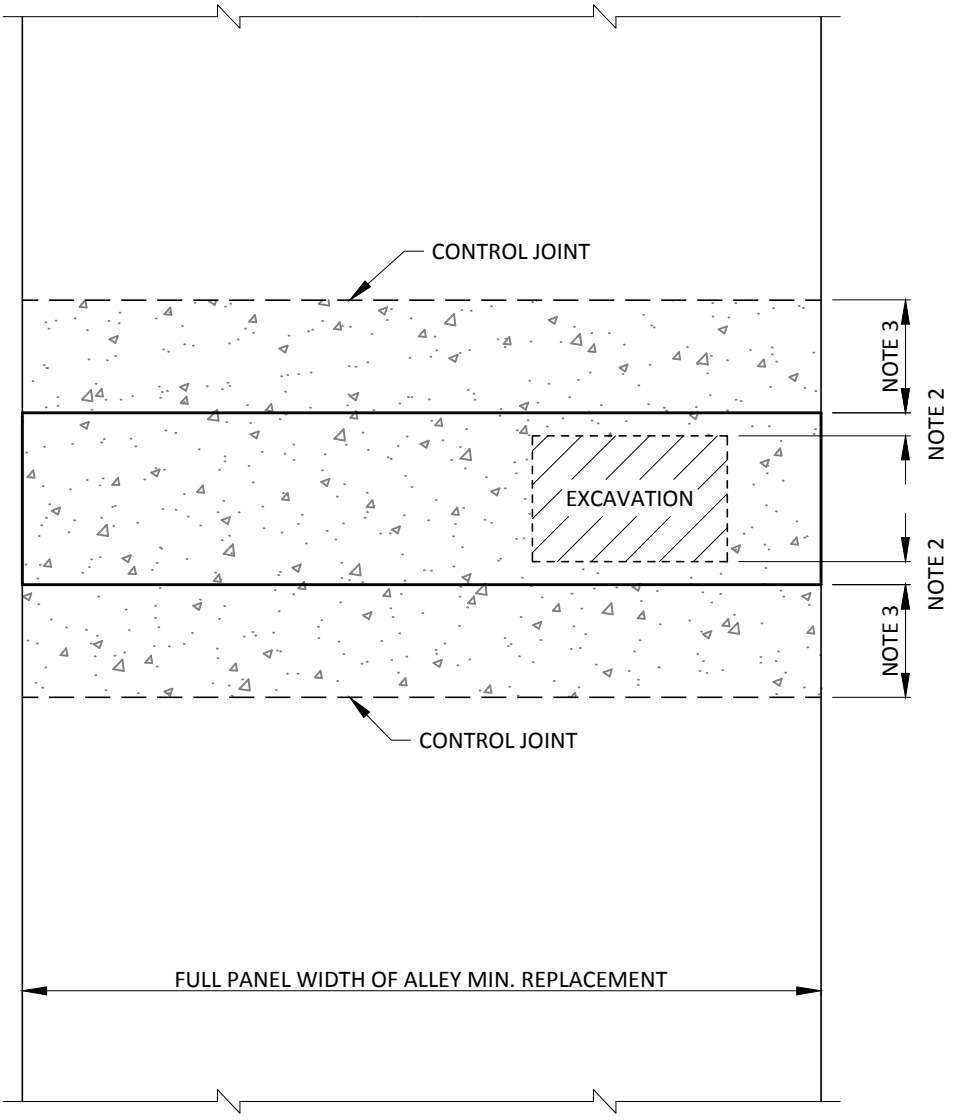


TYPICAL ASPHALT STREET REMOVAL/REPLACEMENT

NOTES:

1. CITY'S INSPECTOR WILL DETERMINE FINAL PAVEMENT REMOVAL LIMITS. ACTUAL LIMITS OF REMOVAL MAY VARY BASED ON SITE CONDITIONS.

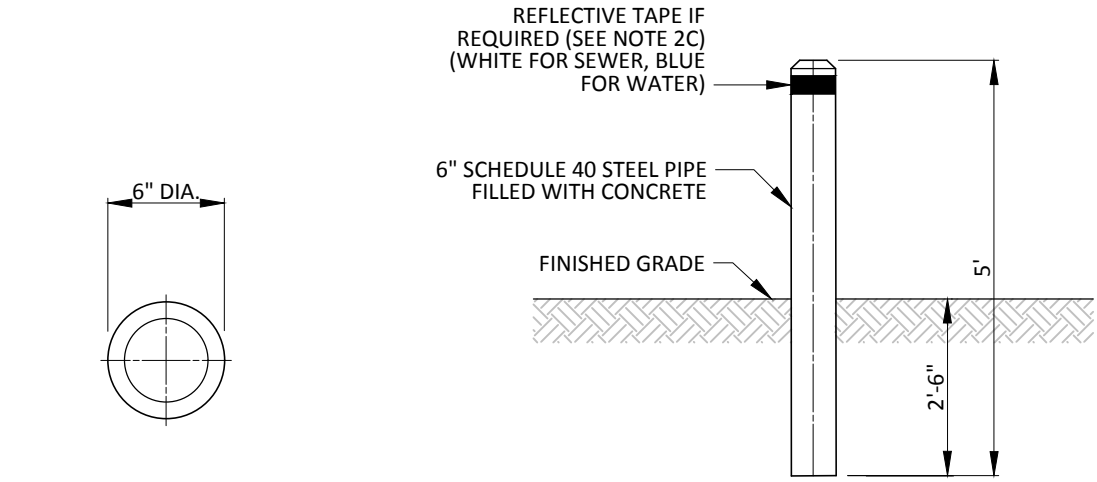
2. 3' MIN. BEYOND EDGE OF EXCAVATION

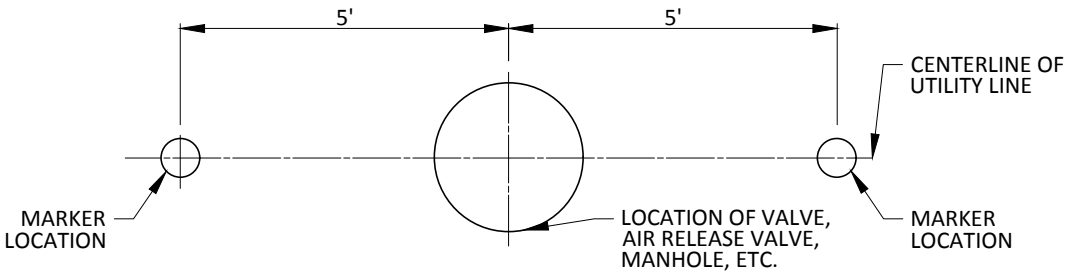


TYPICAL CONCRETE ALLEY REMOVAL/REPLACEMENT

NOTES:

1. CITY'S INSPECTOR WILL DETERMINE FINAL PAVEMENT REMOVAL LIMITS. ACTUAL LIMITS OF REMOVAL MAY VARY BASED ON SITE CONDITIONS.
2. 1' MIN. BEYOND EDGE OF EXCAVATION OR UP TO A MAX. OF 3' TO REACH "GOOD" CONCRETE.
3. IF LESS THAN 5', THEN REMOVE TO EDGE OF PAVEMENT OR CONTROL JOINT.





FIELD INSTALLATION DETAIL

NOTES:

1. ALL OFFSITE UTILITIES WITH BURIED CONTROL VALVES, CLEANOUTS, AND MANHOLES SHALL BE MARKED AS DETAILED ON THIS SHEET.

2. PAINTING (MINIMUM 2 COATS REQUIRED):

   A. WATER UTILITY MARKERS TO BE PAINTED WITH GLIDDEN "GLID-GUARD" INDUSTRIAL ENAMEL No.4564 IMPERIAL BLUE OR EQUAL.

   B. SEWER UTILITY MARKERS TO BE PAINTED WITH GLIDDEN "GLID-GUARD" INDUSTRIAL ENAMEL No.4520 SAFETY RED OR EQUAL.

   C. ALTERNATIVE COLORS (INCLUDING FOREST GREEN AND BROWN) MAY BE SELECTED ON A CASE-BY-CASE BASIS TO BLEND INTO SURROUNDING AREAS SUCH AS GREENBELTS. A 1" WIDE REFLECTIVE TAPE (3M TYPE 9 OR EQUAL) SHALL BE INSTALLED AROUND THE TOP OF THE MARKER IN THESE CASES.

CARROLLTON TEXAS

GENERAL DESIGN STANDARDS
UTILITY LOCATION DETAILS

SCALE: NTS DATE: 01/2005
SHEET 1 OF 1

OFFSITE UTILITIES CONTROL MARKER

U-5

ENGINEERING DEPARTMENT

FILENAME: U-5_1-1.DWG