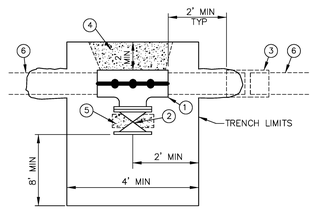


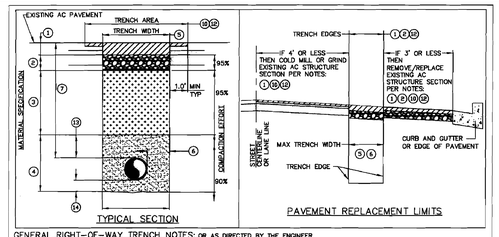
ITEM	DESCRIPTION
1	TAPPING SLEEVE OR FULL WRAP WELD ON NOZZLE
2	TAPPING VALVE, SEE STANDARD DRAWING W3.1
3	EXISTING COUPLING, COLLAR OR PIPE JOINT
4	CONCRETE THRUST BLOCK, IF REQUIRED. SEE STANDARD DRAWING W6.4 A
5	SUPPORT VALVE AS REQUIRED, SEE STANDARD DRAWING W3.1
6	EXISTING PIPE, VERIFY MATERIAL TYPE, OUTSIDE DIAMETER, AND POTENTIAL CONFLICTS

NOTES:

1. CLEARANCE FROM A COLLAR OR PIPE JOINT SHALL BE A MINIMUM OF 2 FEET FROM THE EDGE OF TAPPING SLEEVE TO COLLAR OR PIPE JOINT. THE EXISTING PIPE SHALL BE EXPOSED SUFFICIENTLY TO ENSURE THAT SUCH MINIMUM CLEARANCE IS PROVIDED.
2. TRENCH SHALL MEET ALL CAL OSHA REQUIREMENTS.
3. GATE VALVE TO BE TEMPORARILY SUPPORTED DURING THE HOT TAP PROCESS.

EXCAVATION FOR HOT TAPS

SCALE: N.T.S. STD DETAIL (W3.7) — 9 CD2 C1



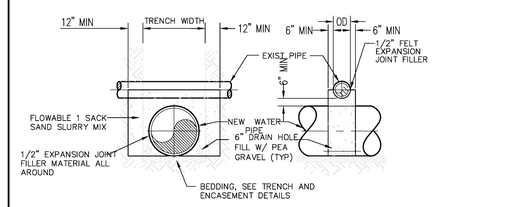
GENERAL RIGHT-OF-WAY TRENCH NOTES: OR AS DIRECTED BY THE ENGINEER

1. ASPHALT PATCH THICKNESS SHALL BE 3 INCHES MINIMUM OR 1" GREATER THAN EXISTING AC, WHICHEVER IS GREATER. TRENCH WIDTH SHALL BE BY SAW CUT ONLY. ASPHALT PATCH MAY BE ELIMINATED OUTSIDE THE ROADWAY PRISM. COLD MILL OR GRIND EXISTING ASPHALT CONCRETE PAVEMENT TO A DEPTH OF 0.15' WITHIN THE TRENCH AREA AND TO AT LEAST 1.0' BEYOND THE EDGES OF THE TRENCH, OR REMOVE FULL DEPTH OF ASPHALT CONCRETE SECTION WITHIN THE SAME LIMITS. MORATORIUM STREETS: WHEN TRENCH CUTS HAVE BEEN AUTHORIZED FOR NEW STREETS OR FULL REHABILITATED STREETS WITHIN THE LAST 5 YEARS, GRINDING SHALL BE EXTENDED TO THE FULL TRAFFIC LANE, FOR STREETS THAT HAVE BEEN SEAL COATED WITHIN THE LAST 3 YEARS, THE TRENCH AREA SURFACE SHALL BE SEAL COATED WITH SIMILAR MATERIAL TO THE REST OF THE STREET. ANY TRENCH CUTS WITHIN THE SAME AREA LESS THAN ONE (1) YEAR OLD ARE CONSIDERED MULTIPLE CUTS. MULTIPLE CUTS WITHIN 100' OF EACH OTHER MADE BY THE SAME ENTITY SHALL BE REQUIRED TO GRIND AND OVERLAY 0.15' FOR THE FULL LANE WIDTH BETWEEN CUTS AND INCLUDING THE CUTS. EXISTING CONCRETE ROADWAYS SHALL BE REPLACED WITH CLASS 520-C-2500 CONCRETE OF EQUAL THICKNESS COLD JOINT TO COLD JOINT IN ACCORDANCE WITH GREENBOOK SECTION 201-1.12 AND INSTALLED IN ACCORDANCE WITH STANDARD PLAN 132-1 OF THE AMERICAN PUBLIC WORKS ASSOCIATION STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.
2. ROAD BASE: CRUSHED AGGREGATE BASE (GREENBOOK SECTION 200-2.2) 4 INCHES OR MATCH EXISTING SECTION, WHICHEVER IS GREATER, 95% DENSITY, PLACED IN MAXIMUM 4 INCH LIFTS. EXISTING CONCRETE ENCOUNTERED BENEATH THE ASPHALT PAVEMENT ROADWAY SHALL BE COMPLETELY REMOVED AND REPLACED WITH CRUSHED AGGREGATE BASE (GREEN BOOK SECTION 200-2.2) TO A THICKNESS EQUAL TO THAT OF THE CONCRETE REMOVED.
3. TRENCH BACKFILL: SELECT BACKFILL, 95% DENSITY, PLACED IN 8 INCH LIFTS. IF TRENCH IS LOCATED OUTSIDE THE ROADWAY PRISM, SELECT BACKFILL MAY BE PLACED TO FINISH GRADE AT 90% DENSITY.
4. PIPE ZONE: SAND (SE 30) OR GREATER, JETTED, PER SECTION 306-1.3 (GREENBOOK), OR PLACED MECHANICALLY TO 90% DENSITY. LOCATIONS SHALL BE CLEARLY SHOWN ON THE PLANS.
5. MINIMUM TRENCH WIDTH SHALL BE THE PIPE DIAMETER PLUS 2 FEET FOR ALL PIPE DIAMETERS. PIPE SHALL BE CENTERED IN THE TRENCH. TRENCH WIDTHS SHALL ALLOW PLACEMENT AND COMPACTION OF BACKFILL MATERIAL.
6. MAXIMUM DISTANCE BETWEEN PIPE WALL AND TRENCH WALL SHALL BE 18".
7. MINIMUM COVER IS REFERENCED TO FUTURE FINISHED FINAL GRADES UNLESS OTHERWISE SHOWN ON PROFILE DRAWINGS (36" MIN).
8. SUPPORT PIPE WITH SANDBAGS AND SPOT LOAD PIPE AS REQUIRED DURING INSTALLATION OF CLSM IN PIPE ZONE AND PIPE BEDDING AREAS.
9. DIAGONAL PAVEMENT REPLACEMENT IS NOT PERMITTED.
10. ANY TRENCH CUTS WITHIN 4' FROM THE EDGE OF PAVEMENT, LANE LINE, CURB OR GUTTER SHALL HAVE THE PAVEMENT PATCH EXTENDED TO THE EDGE OF PAVEMENT, LANE LINE, CURB OR GUTTER.
11. NO FLOATER LESS THAN 3'-0" ALLOWED.
12. PATCH MATERIAL SHALL BE LIKE IN KIND.
13. 12 INCHES MINIMUM.
14. FOUNDATION FILL: THE FILL MATERIAL SHALL BE THE SAME AS THE PIPE ZONE MATERIAL AROUND THE PIPE. A MINIMUM OF 6 INCHES OF FOUNDATION FILL IS REQUIRED, 90% DENSITY, JETTED PER SECTION 306-1.3 (GREENBOOK) OR PLACED MECHANICALLY.

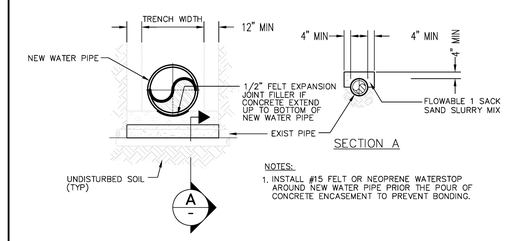
Approved for: City Engineer — Date 10/29/08

TRENCH BACKFILL AND PAVEMENT REPLACEMENT DETAIL

SCALE: N.T.S. STD DETAIL (W5.1) — 10 CD2 C1



EXISTING PIPE OVER NEW WATER MAIN



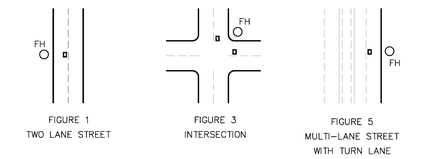
NOTES:

1. INSTALL #15 FELT OR NEOPRENE WATERSTOP AROUND NEW WATER PIPE PRIOR THE POUR OF CONCRETE ENCASEMENT TO PREVENT BONDING.

EXISTING PIPE UNDER NEW WATER MAIN

STRUCTURAL SUPPORT AT CROSSING

SCALE: N.T.S. STD DETAIL (W5.2) — 11 CD2 C1



NOTES:

1. TWO-WAY STREETS AND ROADS: MARKERS SHOULD BE PLACED SIX INCHES FROM EDGE OF PAINTED CENTERLINE ON THE SIDE NEAREST THE FIRE HYDRANT. IF THE STREET HAS NO CENTERLINE, THE MARKER SHOULD BE PLACED SIX INCHES FROM THE APPROXIMATE CENTER OF THE ROADWAY ON THE SIDE NEAREST THE HYDRANT (SEE FIGURE 1 THROUGH 3).
2. STREETS WITH LEFT TURN LANE AT THE INTERSECTION: MARKERS SHOULD BE PLACED SIX INCHES FROM EDGE OF PAINTED WHITE LINE ON THE SIDE NEAREST THE HYDRANT (SEE FIGURE 4)
3. STREETS WITH CONTINUOUS TWO-WAY LEFT TURN LANE: MARKERS SHOULD BE PLACED SIX INCHES FROM THE EDGE OF THE PAINTED YELLOW BARRIER LINE ON THE SIDE NEAREST THE FIRE HYDRANT (SEE FIGURE 5).
4. CUL-DE-SAC: MARKER SHOULD BE 6" FROM THE CENTER OF THE CUL-DE-SAC CURB RADIUS ON THE SIDE NEAREST THE FIRE HYDRANT.

BLUE DOT PAVEMENT MARKERS AND FIRE HYDRANT MARKING (1 OF 2)

SCALE: N.T.S. STD DETAIL (W6.3) — 12 CD2 C1

COLOR CODING HYDRANTS

CLASSIFICATION OF HYDRANTS: HYDRANTS SHALL BE CLASSIFIED IN ACCORDANCE WITH THEIR RATED CAPACITIES (AT 20 PSI RESIDUAL PRESSURE) PER NFPA 291 AS FOLLOWS:

CLASS AA – BLUE – RATED CAPACITY OF GREATER THAN 1,500 GPM
CLASS A – GREEN – RATED CAPACITY OF 1,000 GPM TO 1,499 GPM
CLASS B – ORANGE – RATED CAPACITY OF 500-999 GPM
CLASS C – RED – RATED CAPACITY OF LESS THAN 500 GPM

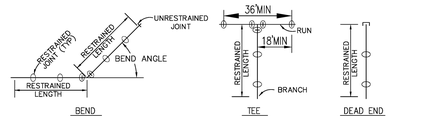
CLASS AA – BLUE
CLASS A – GREEN CLASS B – ORANGE CLASS C – RED

REFLECTIVE TAPE: ALL FIRE HYDRANT BARRELS SHALL HAVE A 3" WIDE REFLECTIVE TAPE INSTALLED AS SHOWN ON STD. DWG. W2.2 WITH THE APPROPRIATE COLOR CLASSIFICATION

CLASS AA – BLUE – USA BLUE BOOK STOCK NO. 49226
CLASS A – GREEN – USA BLUE BOOK STOCK NO. 49245
CLASS B – ORANGE – USA BLUE BOOK STOCK NO. 49247
CLASS C – RED – USA BLUE BOOK STOCK NO. 49252

BLUE DOT PAVEMENT MARKERS AND FIRE HYDRANT MARKING (2 OF 2)

SCALE: N.T.S. STD DETAIL (W6.3) — 13 CD2 C1



PIPE SIZE	11 1/4" BEND	22 1/2" BEND	45° BEND	90° BEND	TEE*	DEAD END
4"	2'	5'	10'	24'	11'	50'
6"	3'	7'	14'	34'	31'	70'
8"	4'	9'	18'	43'	51'	90'
10"	5'	10'	21'	52'	69'	109'
12"	6'	12'	25'	60'	86'	127'
16"	7'	15'	31'	75'	120'	161'

* BRANCH LENGTH

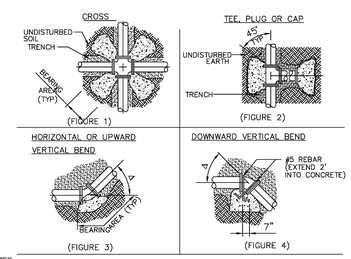
NOTES:

1. USE THE FOLLOWING GUIDELINES WHEN OTHER PIPE JOINTS ARE WITHIN 10 FEET OF THE JOINT BEING RESTRAINED:

   A) USE THE "DEAD END" LENGTH FOR CONNECTIONS TO ANY MATERIAL EXCEPT DUCTILE IRON AND CAST IRON.
   B) USE THE "DEAD END" LENGTH WHEN ANOTHER PIPE JOINT IS WITHIN 10 FEET OF A BEND BEING RESTRAINED.
   C) USE THE "90 BEND" LENGTH WHEN ANOTHER PIPE JOINT IS WITHIN 10 FEET OF A TEE BEING RESTRAINED.
2. DIVIDE RESTRAINED LENGTH BY 0.85 FOR SILTY SOIL.
3. THIS TABLE IS BASED ON THE ASSUMPTION THAT THE TRENCH IS BACKFILLED TO A MINIMUM DEPTH OF 2.5 FEET WITH A SILTY SAND WHICH HAS BEEN LIGHTLY COMPACTED.
4. FOR PIPE DIAMETERS LARGER THAN 16", OR FOR CONDITIONS OTHER THAN THOSE DESCRIBED ABOVE, PLEASE REFER TO DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA) GUIDELINES FOR CALCULATING RESTRAINED LENGTH. CALCULATIONS MUST BE SUBMITTED FOR APPROVAL.
5. RESTRAINED LENGTH ON TEES ASSUMES THE SAME SIZE BRANCH AND RUN. TEES WHICH HAVE BRANCH DIAMETERS LESS THAN THE DIAMETER OF THE RUN MAY REQUIRE A SHORTER RESTRAINED LENGTH. CALCULATIONS MUST BE SUBMITTED JUSTIFYING A SHORTER RESTRAINED LENGTH.
6. ALL PIPELINES LARGER THAN 16" DIAMETER REQUIRE RESTRAINED LENGTH CALCULATIONS INCLUDING SOILS REPORT.

RESTRAINED JOINT DETAIL

SCALE: N.T.S. STD DETAIL (W6.4) — 14 CD2 C1



NOTES:

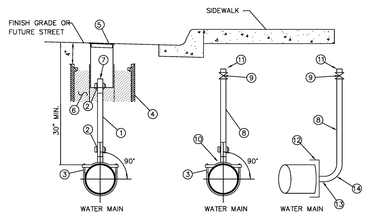
1. ALL CONCRETE SHALL BE 3000 PSI MINIMUM, 28 DAYS COMPRESSIVE STRENGTH. CONCRETE IS TO BE UNDISTURBED EARTH. TABLE BELOW DENOTES MINIMUM BEARING AREA OR VOLUME OF THRUST BLOCK. SPECIAL DESIGN CALCULATIONS ARE TO BE SUBMITTED TO SBMWD FOR APPROVAL IF ALLOWABLE SOIL BEARING CAPACITY IS LESS THAN 3000 PSF. ALL VERTICAL SURFACES NOT BEARING AGAINST UNDISTURBED EARTH SHALL BE FORMED. ALL THRUST BLOCKS SHALL BE PLACED IN THE PRESENCE OF AN SBMWD INSPECTOR.

	BEARING AREA IN SQ FT						CONC/CU YDS		
PIPE ID	FIGURE 1	FIGURE 2	FIGURE 3, Δ 90°	45°	22-1/2°	11-1/4°	FIGURE 4, Δ 45°	22-1/2°	11-1/4°
4"	2	2	2	2	1	1	1.0	0.5	0.5
6"	2	3	4	2	1	1	1.5	1.0	0.5
8"	3	5	7	4	2	1	3.0	1.5	1.0
10"	4	8	11	6	3	2	4.0	2.5	1.5
12"	6	11	15	8	4	2	6.0	3.0	1.5
16"	10	20	28	15	8	4	10.5	6.0	3.0
18"	13	25	35	19	10	5	13.5	7.5	3.5
20"	16	31	44	24	12	6	16.0	9.0	4.5
24"	22	44	63	34	17	9	23.5	12.5	6.5

2. USE OF THRUST BLOCKS REQUIRES PRIOR DEPARTMENT APPROVAL AND WILL BE EVALUATED ON A CASE BY CASE BASIS.

RESTRAINED JOINT DETAIL

SCALE: N.T.S. STD DETAIL (W6.4) — 15 CD2 C1



ITEM	QTY	DESCRIPTION
1	___ L.F.	2" TYPE L HARD COPPER TUBING (SBMWD APPROVED U.S. MANUFACTURE)
2	1 EA.	2" BRONZE CORPORATION STOP MUELLER H15023 OR EQUAL
3	1 EA.	____" x 2" SERVICE SADDLE OR 2" WELD-ON THREAD-O-LET
4	1 EA.	12"x18"x12" METER BOX ARMORCAST 6001425A OR EQUAL
5	1 EA.	VALVE CAN INSTALLATION PER STD. DWG. W3.3
6	1.5 CF	CLEAN FINE SAND
7	1 EA.	THREADED PVC CAP
8	___ L.F.	2" GALVANIZED PIPE
9	1 EA.	2" WHEEL VALVE
10	1 EA.	PLUG SADDLE WITH 2" BRASS PLUG WHEN TEMPORARY RISOR IS REMOVED
11	1 EA.	2" GALVANIZED PLUG USED TO PREVENT TAMPERING
12	1 EA.	____" MJ CAP (RESTRAIN WITH MEGALUG). REMOVE TO MAKE TIE-IN.
13	1 EA.	2" GALVANIZED NIPPLE
14	1 EA.	2" GALVANIZED 90° EL.

2" CHLORINATION AND FLUSHING PORT

SCALE: N.T.S. STD DETAIL (W6.7) — 16 CD3 C1

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REGISTERED PROFESSIONAL ENGINEER — MARIA L. FRASER — No. 56005 — EXP. DATE 12/31/12 — CIVIL — STATE OF CALIFORNIA

Fraco Enterprises Inc — Engineering and Construction Services
12139 MOUNT VERNON AVE.
SUITE 210
GRAND TERRACE, CA 92313
PHONE: (909) 824-7230
FAX: (909) 824-7385

APPROVED BY:_____ DATE:_____
REGISTERED CIVIL ENGINEER No. 56005

MARK	REVISIONS	APPROVED	DATE	APPROVED	DATE

DESIGNED BY: MIF DRAWN BY: JRN CHECKED BY: MIF — DESIGN ENGINEER — SBMWD ENGINEER

BENCHMARK:
CITY OF SAN BERNARDINO BM# G1-41, ELEVATION 1158.763 FT., BRASS DISK CSB G1-41, 41.25 FT. EAST & 30.0 FT SOUTH OF THE CENTERLINE P.I. OF MT. VERNON & 14TH ST. ;9.75 FT. SOUTH OF THE SOUTH CURB LINE OF 14TH ST. ; 9.25 FT. EAST OF THE EAST CURB LINE OF MT. VERNON AVE. ' 2.0 FT EAST OF THE NORTH/SOUTH SIDEWALK ABOUT 0.2 FEET LOWER THEN THE PAVEMENT.
ELEVATION: 1158.763 FEET/ 353.1916 METERS

CITY OF SAN BERNARDINO
MUNICIPAL WATER DEPARTMENT
WATER IMPROVEMENT PLANS
DR. MILDRED D. HENRY ELEMENTARY SCHOOL
STANDARD DETAILS

DRAWING SCALES: HORIZ: N/A VERT: N/A
C.O. NO.:
DWG CD2
SHEET 5 OF 6

100% SUBMITTAL

C-DR. MILDRED HENRY D. ELEMENTARY SCHOOL-5-CD-CD2.DWG

RE-BID #F09-02 ROOSEVELT II (HENRY) E.S. NEW CONSTRUCTION BID ISSUANCE SET 12/09/11