

**APPENDIX F – FLH BID-BASED COST DATA FOR CULVERT REPAIR
AND REPLACEMENT**

FLH Bid History Cost Estimates for Culvert Repair and Replacement Tasks

Sources: FLH Bid History from various departments, 1997 to present.

Notes: Average of low bids, up to four maximum, taken from the FLH Bid History from 1997-present for each line entry.

Average of all line entries for each item then taken. Note these are bid prices, not actual costs as-built. Expenses related to road closures and economic disruptions are not included in cost estimates presented here.

Average Cost	Units	Item Description
\$ 60.68	LNFT	12-INCH PIPE CULVERT
\$ 78.73	LNFT	15-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE
\$ 82.23	LNFT	18-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE
\$ 79.27	LNFT	18-INCH PIPE CULVERT
\$ 388.75	LNFT	18-INCH PIPE CULVERT (CORRUGATED METAL PIPE)
\$ 159.69	LNFT	21-INCH PIPE CULVERT
\$ 105.16	LNFT	24-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE
\$ 94.16	LNFT	24-INCH PIPE CULVERT
\$ 360.75	LNFT	24-INCH PIPE CULVERT (CORRUGATED METAL PIPE)
\$ 146.22	LNFT	24-INCH PIPE CULVERT (CONCRETE)
\$ 98.68	LNFT	30-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE
\$ 101.81	LNFT	30-INCH PIPE CULVERT
\$ 231.25	LNFT	30-INCH PIPE CULVERT (CORRUGATED METAL PIPE)
\$ 130.67	LNFT	30-INCH PIPE CULVERT (CONCRETE)
\$ 90.90	LNFT	36-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE
\$ 119.36	LNFT	36-INCH PIPE CULVERT
\$ 240.00	LNFT	36-INCH PIPE CULVERT (CORRUGATED METAL PIPE)
\$ 9,797.69	EACH	36-INCH PIPE CULVERT
\$ 101.28	LNFT	42-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE
\$ 135.90	LNFT	42-INCH PIPE CULVERT
\$ 7,700.00	EACH	42-INCH PIPE CULVERT
\$ 189.96	LNFT	48-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE
\$ 141.66	LNFT	48-INCH PIPE CULVERT
\$ 226.67	LNFT	48-INCH PIPE CULVERT (CONCRETE)
\$ 279.25	LNFT	48-INCH PIPE CULVERT (CORRUGATED METAL PIPE)
\$ 10,224.33	EACH	48-INCH PIPE CULVERT
\$ 121.92	LNFT	54-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE
\$ 209.95	LNFT	54-INCH PIPE CULVERT
\$ 158.56	LNFT	60-INCH PIPE CULVERT
\$ 12,398.00	EACH	60-INCH PIPE CULVERT
\$ 936.97	LNFT	66-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE
\$ 218.76	LNFT	66-INCH PIPE CULVERT
\$ 12,682.67	EACH	66-INCH PIPE CULVERT
\$ 326.71	LNFT	72-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE
\$ 206.06	LNFT	72-INCH PIPE CULVERT
\$ 13,365.17	EACH	72-INCH PIPE CULVERT
\$ 264.63	LNFT	78-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE
\$ 87.59	LNFT	78-INCH PIPE CULVERT
\$ 515.20	LNFT	84-INCH PIPE CULVERT
\$ 603.29	LNFT	144-INCH PIPE CULVERT
\$ 1,650.30	EACH	CLEANING CULVERT IN PLACE
\$ 4.01	SOYD	CLEARING AND GRUBBING
\$ 18,823.13	EACH	CONCRETE, HEADWALL (36-INCH PIPE CULVERT)
\$ 17,839.13	EACH	CONCRETE, HEADWALL (QUADRUPLE PIPE CULVERT)
\$ 4,825.00	EACH	CONCRETE, HEADWALL FOR 15-INCH PIPE CULVERT
\$ 7,286.05	EACH	CONCRETE, HEADWALL FOR 18-INCH PIPE CULVERT
\$ 4,127.22	EACH	CONCRETE, HEADWALL FOR 24-INCH PIPE CULVERT
\$ 3,686.03	EACH	CONCRETE, HEADWALL FOR 30-INCH PIPE CULVERT
\$ 5,044.18	EACH	CONCRETE, HEADWALL FOR 36-INCH PIPE CULVERT
\$ 3,800.00	EACH	CONCRETE, HEADWALL FOR 42-INCH PIPE CULVERT
\$ 7,922.81	EACH	CONCRETE, HEADWALL FOR 48-INCH PIPE CULVERT
\$ 11,298.33	EACH	CONCRETE, HEADWALL FOR 54-INCH PIPE CULVERT
\$ 8,881.04	EACH	CONCRETE, HEADWALL FOR 60-INCH PIPE CULVERT
\$ 45,991.50	EACH	CONCRETE, HEADWALL FOR 78-INCH PIPE CULVERT
\$ 31,700.00	EACH	CONCRETE, HEADWALL FOR 84-INCH
\$ 12,403.05	EACH	CONCRETE, HEADWALL FOR DOUBLE 30-INCH PIPE CULVERT
\$ 6,736.36	EACH	CONCRETE, HEADWALL FOR DOUBLE 24-INCH PIPE CULVERT
\$ 217.18	LNFT	CORING/PRESSURE GROUTING
\$ 6,452.87	EACH	DEBRIS RACK
\$ 13.21	LNFT	DITCH, EXCAVATION
\$ 14.71	CUYD	DITCH, EXCAVATION
\$ 3.54	LNFT	DITCH, EXCAVATION, FURROW
\$ 23.52	CUYD	EMBANKMENT CONSTRUCTION
\$ 396.66	EACH	END SECTION FOR 12-INCH PIPE CULVERT
\$ 437.72	EACH	END SECTION FOR 18-INCH PIPE CULVERT
\$ 684.99	EACH	END SECTION FOR 21-INCH PIPE CULVERT
\$ 636.26	EACH	END SECTION FOR 24-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE CULVERT
\$ 485.09	EACH	END SECTION FOR 24-INCH PIPE CULVERT
\$ 761.93	EACH	END SECTION FOR 24-INCH PIPE CULVERT
\$ 750.00	EACH	END SECTION FOR 24-INCH CULVERT , ASPHALT COATED
\$ 1,500.00	EACH	END SECTION FOR 24-INCH PIPE CULVERT (CORRUGATED METAL PIPE)
\$ 878.25	EACH	END SECTION FOR 24-INCH PIPE CULVERT (CONCRETE)
\$ 496.94	EACH	END SECTION FOR 30-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE CULVERT
\$ 658.54	EACH	END SECTION FOR 30-INCH PIPE CULVERT
\$ 524.92	EACH	END SECTION FOR 36-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE CULVERT
\$ 758.51	EACH	END SECTION FOR 36-INCH PIPE CULVERT
\$ 2,182.00	EACH	END SECTION FOR 42-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE CULVERT
\$ 1,404.17	EACH	END SECTION FOR 48-INCH EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE CULVERT
\$ 1,221.65	EACH	END SECTION FOR 48-INCH PIPE CULVERT
\$ 1,883.33	EACH	END SECTION FOR 48-INCH PIPE CULVERT (CONCRETE)
\$ 2,154.50	EACH	END SECTION FOR 54-INCH PIPE CULVERT
\$ 1,377.06	EACH	END SECTION FOR 60-INCH PIPE CULVERT
\$ 3,969.50	EACH	END SECTION FOR 72-INCH PIPE CULVERT
\$ 426.67	EACH	EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE CULVERT
\$ 444.30	EACH	EQUIVALENT DIAMETER ARCH OR ELLIPTICAL PIPE CULVERT
\$ 200.73	CUYD	GABIONS, GALVANIZED OR ALUMINIZED COATED
\$ 286.70	CUYD	GABIONS, POLYVINYL CHLORIDE COATED
\$ 326.02	CUYD	GROUT
\$ 132.68	LNFT	GROUT PIPE
\$ 152.92	CUYD	GROUTED RIPRAP, CLASS 1
\$ 294.42	CUYD	GROUTED RIPRAP, CLASS 2
\$ 508.98	CUYD	GROUTED RIPRAP, CLASS 3
\$ 176.37	CUYD	GROUTED RIPRAP, CLASS 4
\$ 146.88	CUYD	GROUTED RIPRAP, CLASS 5
\$ 700.00	CUYD	GROUTED RIPRAP, CLASS 6
\$ 4,602.88	EACH	INLET
\$ 1,293.96	EACH	INLET ADJUSTMENT
\$ 3,550.00	EACH	Inlet Caltrans type ODI
\$ 2,041.88	EACH	INLET MODIFICATION
\$ 736.34	EACH	INLET TOP, METAL FRAME AND GRATE TYPE A
\$ 1,166.32	EACH	INLET TOP, METAL FRAME AND GRATE TYPE B
\$ 2,483.56	EACH	INLET, CALTRANS
\$ 4,729.17	EACH	INLET, CALTRANS (TYPE G0)
\$ 4,141.50	EACH	INLET, CALTRANS (TYPE G1, W/GRANITE COPING STONE)
\$ 3,030.19	EACH	INLET, TYPE 1

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Notes: Average of low bids, up to four maximum, taken from the FLH Bid History from 1997-present for each line entry.

Average of all line entries for each item then taken. Note these are bid prices, not actual costs as-built. Expenses related to

Average Cost Estimate	Units	Item Description
\$ 3,459.00	EACH	INLET, TYPE 2
\$ 3,116.25	EACH	INLET, TYPE 2, DOUBLE GRATE
\$ 2,325.00	EACH	INLET, TYPE 2A
\$ 3,239.00	EACH	INLET, TYPE 6A MODIFIED
\$ 2,069.85	EACH	INLET, TYPE 6B
\$ 3,402.19	EACH	INLET, TYPE 6B
\$ 2,497.50	EACH	INLET, TYPE GOL-2.1
\$ 1,150.00	LNFT	JACKED CONCRETE 36-INCH PIPE CULVERT
\$ 408.75	LNFT	LINING 24-INCH PIPE CULVERT (CEMENT-MORTAR SPRAY-ON)
\$ 361.25	LNFT	LINING 18-INCH PIPE CULVERT (CEMENT-MORTAR SPRAY-ON)
\$ 460.00	LNFT	LINING 30-INCH PIPE CULVERT (CEMENT-MORTAR SPRAY-ON)
\$ 139.23	LNFT	LINING 18-INCH PIPE CULVERT
\$ 168.63	LNFT	LINING 24-INCH PIPE CULVERT
\$ 150.35	LNFT	LINING 30-INCH PIPE CULVERT
\$ 125.33	LNFT	LINING 36-INCH PIPE CULVERT
\$ 125.73	LNFT	LINING 48-INCH PIPE CULVERT
\$ 207.88	LNFT	LINING 60-INCH PIPE CULVERT
\$ 6,600.45	EACH	OUTLET STRUCTURE
\$ 4.98	SOYD	PAVING GEOTEXTILE
\$ 106.92	CUYD	PLACED RIPRAP, CLASS 1
\$ 123.27	CUYD	PLACED RIPRAP, CLASS 2
\$ 113.38	CUYD	PLACED RIPRAP, CLASS 3
\$ 92.35	CUYD	PLACED RIPRAP, CLASS 4
\$ 62.74	CUYD	PLACED RIPRAP, CLASS 5
\$ 58.97	TON	PLACED RIPRAP, CLASS 6
\$ 66.90	CUYD	PLACED RIPRAP, CLASS 6
\$ 117.81	CUYD	PLACED RIPRAP, CLASS 7
\$ 1,567.95	EACH	PLUG, EXISTING PIPE
\$ 19.58	LNFT/SQFT	PRECAST REINFORCED CONCRETE BOX CULVERT
\$ 53.33	LNFT/SQFT	REINFORCED CONCRETE BOX CULVERT, DOUBLE BARREL
\$ 50.79	LNFT/SQFT	REINFORCED CONCRETE BOX CULVERT, TRIPLE BARREL
\$ 172.53	SQFT	REINFORCED CONCRETE RETAINING WALL, 4 FEET
\$ 180.19	SQFT	REINFORCED CONCRETE RETAINING WALL, 6 FEET
\$ 140.58	SQFT	REINFORCED CONCRETE RETAINING WALL, 8 FEET
\$ 142.04	SQFT	REINFORCED CONCRETE RETAINING WALL, 10 FEET
\$ 149.42	SQFT	REINFORCED CONCRETE RETAINING WALL, 12 FEET
\$ 162.55	SQFT	REINFORCED CONCRETE RETAINING WALL, 14 FEET
\$ 110.90	SQFT	REINFORCED CONCRETE RETAINING WALL, 15 FEET
\$ 237.00	SQFT	REINFORCED CONCRETE RETAINING WALL
\$ 272.50	SQFT	REINFORCED CONCRETE RETAINING WALL (GRANITE VENEER)
\$ 220.17	SOYD	REINFORCED SHOTCRETE, 12-INCH DEPTH
\$ 1.28	LB	REINFORCING STEEL, EPOXY COATED
\$ 233.06	EACH	REMOVAL OF BOULDER
\$ 12,964.80	EACH	REMOVAL OF BOX CULVERT
\$ 1,666.16	EACH	REMOVAL OF HEADWALL
\$ 943.30	REMOVAL OF IN	REMOVAL OF INLET
\$ 1,161.80	EACH	REMOVAL OF PIPE CULVERT
\$ 285.43	EACH	REMOVAL OF PIPE END SECTION
\$ 83.61	SOYD	REMOVAL OF WALL
\$ 219.25	SOYD	REMOVAL OF WALL (MSE)
\$ 5,000.00	LPSM	REMOVAL OF WINGWALL CONCRETE
\$ 2,473.58	CUYD	REMOVE AND RESET STONE MASONRY HEADWALL
\$ 4,465.45	EACH	REMOVE AND RESET STONE MASONRY HEADWALL
\$ 2,743.33	EACH	REMOVE AND RESET, TERMINAL SECTION
\$ 154.24	LNFT	REMOVING, CLEANING, AND RELAYING CULVERT
\$ 857.03	SOYD	REPAIR CONCRETE
\$ 2,017.46	CUYD	REPAIR CONCRETE
\$ 53.88	SQFT	REPOINT STONE MASONRY
\$ 126.11	SOYD	REVEAT MATTRESS, GALVANIZED OR ALUMINIZED COATED
\$ 99.20	SOYD	REVEAT MATTRESS, POLYVINYL CHLORIDE COATED
\$ 9.82	LNFT	RIPRAP DITCH, CLASS 1
\$ 32.04	LNFT	RIPRAP DITCH, CLASS 2
\$ 26.44	LNFT	RIPRAP DITCH, CLASS 3
\$ 24.74	CUYD	ROADWAY EXCAVATION (CHANNEL EXCAVATION)
\$ 808.49	CUYD	RUBBLE MASONRY, COURSE POINTED FINISH
\$ 1,176.65	CUYD	RUBBLE MASONRY, ROCK FACE FINISH
\$ 89.97	SQFT	SHORING AND BRACING
\$ 282.90	CUYD	SHOTCRETE
\$ 250.00	SOYD	SHOTCRETE (SCULPTED FACE FINISH)
\$ 4.22	LNFT	SHOULDER, EXCAVATION
\$ 58.40	CUYD	SHOULDER, EXCAVATION
\$ 1,100.00	SOYD	SLOPE PAVING, STONE
\$ 3,763.35	EACH	STONE MASONRY HEADWALL FOR 18-INCH PIPE CULVERT (WITH CUTOFF WALL)
\$ 4,810.40	EACH	STONE MASONRY HEADWALL FOR 24-INCH PIPE CULVERT
\$ 8,950.00	EACH	STONE MASONRY HEADWALL FOR 30-INCH PIPE CULVERT (WITH CUTOFF WALL)
\$ 6,184.63	EACH	STONE MASONRY HEADWALL FOR 36-INCH PIPE CULVERT
\$ 1,587.27	LNFT	STRUCTURAL PLATE BOX
\$ 1,234.46	LNFT	STRUCTURAL PLATE PIPE-ARCH
\$ 19.69	CUYD	SUBEXCAVATION
\$ 3,885.55	EACH	TERMINAL END, TYPE FLARED END
\$ 842.14	EACH	TERMINAL END, TYPE ROUND END
\$ 2,888.25	EACH	TERMINAL SECTION TYPE TANGENT
\$ 3,246.83	EACH	TERMINAL SECTION, TYPE 1
\$ 27,500.00	EACH	TERMINAL SECTION, TYPE BAT
\$ 3,799.19	EACH	TERMINAL SECTION, TYPE BET
\$ 4,788.52	EACH	TERMINAL SECTION, TYPE FAT-30
\$ 2,461.78	EACH	TERMINAL SECTION, TYPE FLARED
\$ 3,000.74	EACH	TERMINAL SECTION, TYPE G4-BAT
\$ 2,016.25	EACH	TERMINAL SECTION, TYPE G4-CRT
\$ 9,825.00	EACH	TERMINAL SECTION, TYPE SBT-BAT
\$ 6,625.00	EACH	TERMINAL SECTION, TYPE SBT-FAT
\$ 33.01	LNFT	UTILITY TRENCH TYPE A (WATER)
\$ 58.91	LNFT	UTILITY TRENCH TYPE B (COMMON)
\$ 56.67	LNFT	UTILITY TRENCH TYPE C (POWER)
\$ 59.14	LNFT	UTILITY TRENCH TYPE D (SANITARY)
\$ 62.48	LNFT	UTILITY TRENCH TYPE E
\$ 58.09	LNFT	UTILITY TRENCH TYPE F