

Appendix B8

Engineer's Cost Estimate for Public Improvements 1-Q24-063-Cost Est

Canyon Peak Power Arapahoe County 1041/USR Application Q24-063

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Checked by: H. Strubhart 12/20/2024

Approved by:

PURPOSE:

To calculate the cost estimate of public improvements for the Canyon Peak Power site.

REFERENCES:

1. Arapahoe County, User's Guide for the Engineering Unit Cost List.
2. Canyon Peak Power Plan Set.

NOTES:

12" RCP and 12" RCP FES unit costs are not included in Reference 1. For the calculation 18" RCP and 18" RCP FES unit costs are used instead as a conservative estimate.

ANALYSIS:

1. Quantities and Unit Price Estimate

Item	Unit	Unit Cost	Quantity	Cost
12" RCP	LF	\$85.00	465.13	\$39,535.80
18" RCP	LF	\$85.00	23.29	\$1,979.65
24" RCP	LF	\$113.40	110.97	\$12,584.00
12" RCP FES	EA	\$1,012.50	2	\$2,025.00
18" RCP FES	EA	\$1,012.50	1	\$1,012.50
24" RCP FES	EA	\$1,147.50	4	\$4,590.00
Slab Base (5')	EA	\$4,050.00	2	\$8,100.00
Type C (5')	EA	\$2,862.00	1	\$2,862.00
Detention (CIP)	AC-FT	\$61,560.00	1.87	\$115,363.44
			Total:	\$188,052.38

2. Contingency Cost Escalation

Escalation Percent	Final Cost
15%	\$216,260.24
20%	\$225,662.86

The Department of Public Works and Development uses a percentage of the total cost of public improvements, 15% to 20%, to account for contingency and non-itemized costs.. Including contingency, the total cost estimate is \$216,260.24 to \$225,662.86 for the drainage infrastructure.

REFERENCE 1



ARAPAHOE COUNTY

User's Guide for the Engineering Unit Cost List

The unit costs listed on the Engineering Services Division (ESD) Unit Costs for Development Projects List are for use only in conjunction with development projects having public improvements within unincorporated Arapahoe County and for the sole purpose of establishing security collateral for Public Improvements with Arapahoe County. These unit costs are not intended for bidding purposes.

The bid items included in the unit cost list should not be considered “all-inclusive” and should be used when the bid items specifically contained in the list are encountered. For bid items not included in the list, the engineer should use recent bid tab cost information to provide a comprehensive estimate of the public and private improvements for which security collateral is required. In cases where bid tab information is unavailable, Colorado Department of Transportation (CDOT) cost items may be used as determined acceptable by the County. Bid item unit costs used to estimate Public Improvements should generally be assumed to be “complete in place” bid items where applicable.

Engineering estimates shall include a total cost escalation to account for contingency and non-itemized costs. This escalation is to account for unanticipated changes, uncertainties, and for indirect cost bid items such as mobilization, surveying, traffic control, etc. related to the public improvements. The Department of Public Works and Development uses a percentage of the total cost of public improvements, 15% to 20%, determined by the County case engineer based on the scope of the project.

The engineering unit costs listed here are based on the 2012 ESD Unit Cost list and has been adjusted between Q4 2012 and Q4 2021 based on Colorado Department of Transportation (CDOT) Construction Cost Index (CCI). Traffic Signal costs are based on signal project bid information from Q2 2020. The County is currently in the process of updating the Infrastructure Design and Construction Standards (IDCS) and will be updating the processes and procedures for preparing Engineering Cost Estimates. Until the IDCS update has been adopted, the engineering unit costs listed herein are considered interim costs.

Public Works & Development- Engineering Services Division (ESD)
Unit Costs for Development Improvement Projects-Year 2022

Per section 12.5.3 of the County's infrastructure Design & Construction Standards, at a minimum, the following unit costs shall be utilized for the Engineer's Cost Estimate

ITEM	UNIT	UNIT COST
STORM SEWER		
18" RCP	LF	\$ 85.00
24" RCP	LF	\$ 113.40
30" RCP	LF	\$ 141.75
36" RCP	LF	\$ 170.10
42" RCP	LF	\$ 198.45
48" RCP	LF	\$ 226.80
54" RCP	LF	\$ 255.15
60" RCP	LF	\$ 283.50
18" CMP	LF	\$ 75.60
24" CMP	LF	\$ 108.00
30" CMP	LF	\$ 114.75
36" CMP	LF	\$ 117.45
18" RCP FES	EA	\$ 1,012.50
24" RCP FES	EA	\$ 1,147.50
30" RCP FES	EA	\$ 1,417.50
36" RCP FES	EA	\$ 2,025.00
42" RCP FES	EA	\$ 2,632.50
48" RCP FES	EA	\$ 2,700.00
54" RCP FES	EA	\$ 2,750.00
60" RCP FES	EA	\$ 2,781.00
18" CMP FES	EA	\$ 511.15
24" CMP FES	EA	\$ 529.20
30" CMP FES	EA	\$ 540.00
36" CMP FES	EA	\$ 573.75
Removal of Pipe (D < 48")	LF	\$ 40.49
Removal of Pipe (D > 48")	LF	\$ 67.50
Removal of Inlet	EA	\$ 479.12
Removal of Headwall	EA	\$ 827.55
Removal of End Section	EA	\$ 226.80
MANHOLES		
Slab Base (5 Foot)	EA	\$ 4,050.00
Slab Base (10 Foot)	EA	\$ 6,075.00
Slab Base (15 Foot)	EA	\$ 7,087.50
Box Base (5 foot)	EA	\$ 4,153.95
Box Base (10 foot)	EA	\$ 11,176.65
Box Base (15 foot)	EA	\$ 12,150.00
Box Base (20 foot)	EA	\$ 12,772.35
Type P	EA	\$ 20,250.00
Adjust Manholes	EA	\$ 708.75
Modify Manhole	EA	\$ 2,725.65
INLETS		
Type 13 Combo: Single (5')	EA	\$ 4,804.65
Type 13 Combo: Double (5')	EA	\$
Type 13 Combo: Triple (5')	EA	\$ 7,068.60
Type 16: Single (5')	EA	\$ 3,805.65
Type 16: Double (5')	EA	\$ 5,751.00
Type 16: Triple (5')	EA	\$ 7,524.00
Type R: L5 (5')	EA	\$ 5,503.95
Type R: L10 (5')	EA	\$ 6,313.95
Type R: L15 (5')	EA	\$ 6,771.60
Type C: 5'	EA	\$ 2,862.00
Type C: 10'	EA	\$ 3,712.50
Type C: 15'	EA	\$ 5,670.00
Type D: 5'	EA	\$ 4,328.10
Type D: 10'	EA	\$ 11,591.10
Type D: 15'	EA	\$ 8,532.00

CHANNEL IMPROVEMENTS		
Type VL (6")	CY	\$ 60.75
Type L (9")	CY	\$ 67.50
Type M (12")	CY	\$ 81.00
Type H (18")	CY	\$ 87.75
Type VH (24")	CY	\$ 108.00
Grouted Riprap	CY	\$ 337.50
Excavation	CY	\$ 20.25
DETENTION/WATER QUALITY FACILITY		
Detention (CIP)	AC-FT	\$ 61,560.00
ROADWAY		
Curb and Gutter, Type 2 (Section IIM)	LF	\$ 21.60
Vertical Curb and Gutter	LF	\$ 21.60
Concrete Sidewalk (6" thickness)	SY	\$ 44.55
Crossspan	CY	\$ 259.20
Concrete Curb Ramp	SY	\$ 99.90
Truncated Domes	SF	\$ 47.25
Sidewalk Drain	EA	\$ 2,922.75
Removal of curb and gutter	LF	\$ 4.32
Removal of sidewalk	SY	\$ 10.80
ASPHALT		
Grade S (75)	TON	\$ 98.55
Grade SX (75)	TON	\$ 60.75
Grade S (100) (PG64-22)	TON	\$ 67.50
Grade SX (100) (PG64-22)	TON	\$ 79.65
Aggregate Base Course (Class 6)	TON	\$ 21.60
Subgrade Prep	SY	\$ 3.51
HMP Patching	TON	\$ 132.30
Concrete Pavement (6")	SY	\$ 47.25
Removal of Asphalt Mat	SY	\$ 6.08
Removal of Concrete Pavement	SY	\$ 8.10
EARTHWORK		
Unclassified excavation	CY	\$ 10.80
Structural Backfill (Flow Fill/CDF)	CY	\$ 91.80
SIGNING AND STRIPING		
30" Stop (R1-1)	EA	\$175.00
No Parking (R7-x/R8-x)	EA	\$175.00
Keep Right (R4-7)	EA	\$175.00
Street Names Only	EA	\$182.25
Warning Sign (Wx-x)	EA	\$175.5
Preformed Thermoplastic Pavement Marking (Xwalk/stop line)	SF	\$3.85
Epoxy Pavement Marking	GAL	\$102.60
Remove and Reset Sign	EA	\$113.40
Median Improvements		
Patterned concrete	SF	\$8.10
Concrete	SF	\$8.78
Decorative Material	SF	\$8.10
Median Curb and Gutter	LF	\$18.90
Removal of Median Curb and Gutter	LF	\$4.73
Removal of median cover	SF	\$6.75
Traffic Signals		
4 leg intersection (matl's/construction)	EA	\$500,000.00