

Date: June 26, 1992 (Costs revised Dec 2000) E.M.  
To: Rich Perske, Dist. 3 Pre-Construction Engineer  
From: Ed Miller, Hwy 82 Design Coordinator  
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Subject: Feasibility Study - Construction Bike/Recreation path  
in West Glenwood Canyon (Canyon Creek to West Glenwood)

#### General Information

Length of study area (Canyon Creek to West Glenwood interchange) 5.3 miles.

Maximum length of path required (utilize some frontage road on ends) 4.9 miles.

Minimum length of path required (by using 2 bikepath over passes to maximize use of existing frontage road) 3.2 miles.

Estimated cost (various options cost approximately the same, +-\$100,000) 1.6+million includes 15% item contingency and 10% engineering. (rev. 2000 to 2.5 million)

#### Proposed Location

Generally the best location appears to be just outside the guard rail on the south side, in the center section of the Canyon. The existing access road to South Canyon, 3,000 ft. in length, could be utilized for path in that area. On the ends, the alternates would be: continue the path on the south side, or cross over with overhead structures (2) to maximize the use of existing North frontage roads. The significant reduction in construction length using bridges (1.7 miles) appears likely to balance the cost of the bridges, depending on accurate bridge costs (\$60/sq. ft. was used for an estimate). The west end bridge combined with north frontage road, actually appears to be cheaper by \$120,000 than building path along the south side because of many retaining walls and other structures needed. An additional plus for the bridge/north frontage road combination is getting the user away from the mainline traffic for 1.7 miles which would contribute to a more pleasant experience and add some variety in terrain and scenery.

#### Other Locations Studied

Due to the steep slopes to the river generally starting from 2 to 10 ft. outside the guard rail on the south side, a path low along the river would not be possible without building a platform with large amounts of fill and riprap. This would also require a 404 permit with its attendant problems.

A path along the north side is also not feasible due to narrow ditches and steep slopes, both natural and those due to the highway cuts.

#### Construction Problems

The south side only or the south side/north side frontage road option will not be easy to build due to the narrow and sometimes non-existent platform immediately outside the south guard rail. A retaining wall system will be needed from ~~400~~ <sup>8400</sup> to 5,100 ft. depending on the alternate and ranging between 4 to 8 ft. in height. In addition, a mini-wall or concrete grade beam will be needed for approximately 9,800 ft. ranging between 1 and 3 ft. in height. A type 4 concrete barrier (type CE - variable height roadway) would help alleviate the structure requirements above, but at an estimated ~~\$700,000~~ <sup>1,461,000</sup> it would not be cost effective when compared to the estimated ~~\$535,000~~ <sup>1,111,000</sup> for retaining walls and mini-walls. A total length of 17,100 ft. of type 4 would be needed to partially replace the structural solution and bridge short gaps between needed sections. A very desirable feature of using the variable height roadway type 4 would be to help isolate the user from the nearby high speed traffic (allows 5'-8" of elevation difference top of barrier to path elevation).

Any construction scheme that involved excavation over 1 to 2 ft would run the risk of getting into the shot rock fill that this job was mostly built with. Boulders up to 6-8 ft. in diameter were noted along the fill slope, with the entire slope generally rock.

#### Miscellaneous

NA. — An additional variable may be a salt water conduit to be built the length of this area. The possibility exists for this construction to leave a platform for a bike/recreation path. Very specific guidelines should be set for this construction to avoid over-steepened slopes and large rock in the path roadbed which would make grading for a path very difficult.

Some type of railing will be needed where retaining wall would be installed or where a very steep or hazardous condition occurs.

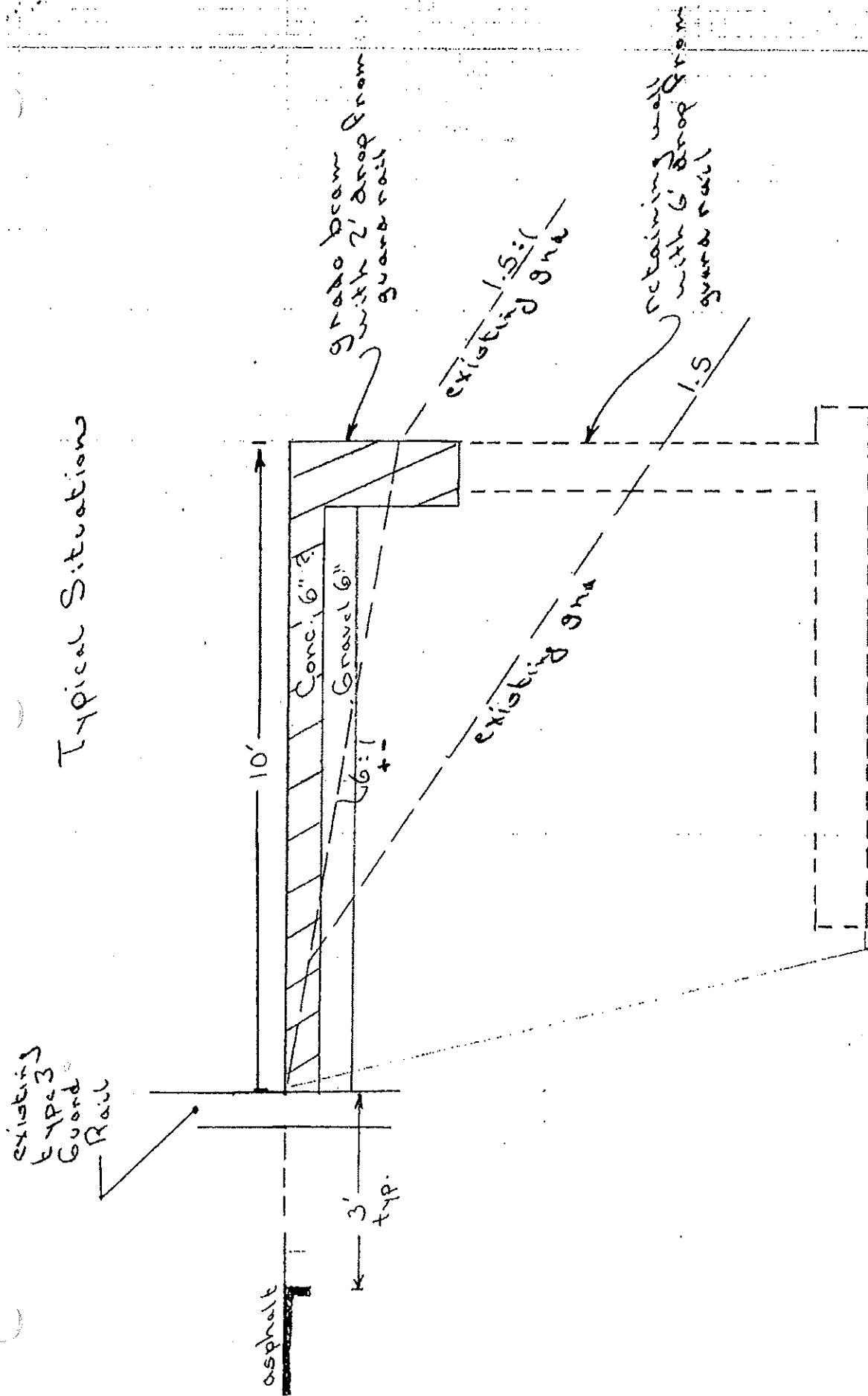
One lane could be closed for a mile in length for construction truck traffic (concrete, forms, excavated material) during working hours.

The path could be built under 2 projects, such as Canyon Creek to South Canyon or South Canyon to West Glenwood and opened to use.

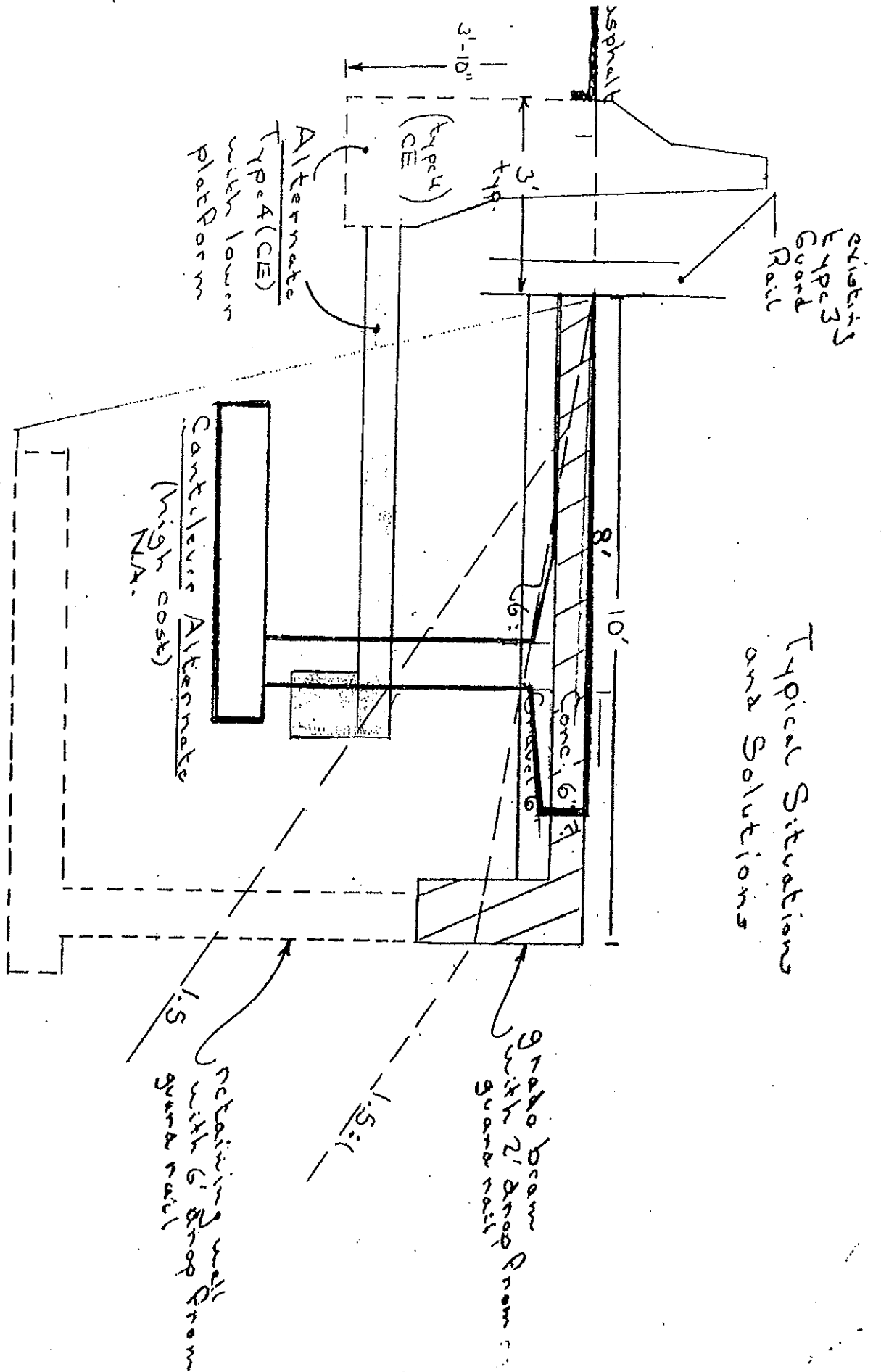
		<u>revised</u>
Unit Costs Used (90' cost data)		98' <u>cost data</u>
Concrete Bikeway	\$24 sq. yd. (assumed 10' path)	30.00 sq yd
Gravel (6")	\$3 sq. yd. (\$10 a ton)	10.00 ton
Retaining Wall (Fabric MSE)	\$15 sq. ft.	22.00 sq ft
Concrete Wall	\$220 cu. yd.	360.00 cu yd
Type 4 (CE)	\$37 lin. ft.	80.00 lin ft
Bridge	\$60 sq. ft. (average cost of all bridge types)	100.00 sq ft

cc: File

Typical Situations



Scale 1" = 20'



Typical Situations and Solutions

Right Hand Guard Rail

Grade beam with 2' drop from guard rail

Retaining wall with 6' drop from guard rail