

**Mini-DCR for SEAGO  
Davis Rd – Central Hwy to US-191  
For Construction**

**Submitted by Cochise County**



**August 11, 2023**

Davis Road is a heavily used trucking route which travels to I-10 and points beyond from the Agua Prieta and Douglas area. This traffic is expected to increase with the planned construction of a new International Port of Entry in Douglas, that is scheduled to open in 2028. Unfortunately, Davis Road is subject to frequent closures due to the flooding during heavy weather conditions. The roadway within this segment of Davis Road, from Central Highway to US-191, is in need of reconstruction, including the base as well as hard surfacing. In addition, the safety of this site would be improved with a re-alignment of the roadway and reconstruction to the proposed design speed of 65 miles per hour.



## **Introduction**

This proposed project is located in Cochise County, on Davis Road between Central Highway and US-191. Davis Road is federally classified as a Rural Major Collector and eligible for federal aid funds. This segment is approximately 2.3 miles and connects the area of McNeal to other parts of the County. Davis Road is the main route to I-10 and Tucson from the Agua Prieta and Douglas area and serves international, regional, and local traffic. It is also used by trucks and oversized loads that are avoiding the steep grades of SR 80 in the Bisbee area and other constraints along US-191 and Interstate 10.

Cochise County was awarded Coordinated Board Infrastructure (CBI) Funds in 2011 to conduct a Design Concept Report (DCR) and Design Plans for Davis Rd. between Central Hwy and US-191. The DCR was awarded to EEC, Inc and work was completed June 2017. The completed work includes Stage IV (95%) Plans, Special Provisions, Utility Report, Pavement Design Report, Geotechnical Engineering Report, Earthworks Report, Drainage Report, Traffic Impact Analysis, and a Cost Estimate. Geotechnical, Environmental, and Biological Clearances were obtained. The County is in the process of acquiring Right-of-Way which will be obtained before project initiation. The Scope of Work is to obtain funding to initiate the construction phase of this segment of road.

## **Background Data**

There are no as-built plans available for Davis Road. The earliest records are from 1984 when Cochise County prepared an alignment study and right-of-way plat for the corridor as well as improvement plans for the west 14 miles of Davis Rd. The improvements consisted of horizontal and vertical alignment changes and constructed a chip seal surface treatment over a 6" base. A later County project in 1987, called "West Davis Rd" built a 24 ft roadway consisting of 3-1/2" AC over the existing chip seal and base pavement section. Also in 1987, the "East Davis Rd" County project constructed a 24 ft roadway (2" AC over 6" cement treated base) from the "West Davis Road" project to US 191. This was a surfacing project which followed the existing profile.

The terrain is gently sloping from east to west at 0.6% to 0.8%. It has sparse vegetative cover characteristic of retired farmland or irrigated fields. The high desert elevation varies between 4000' to 5000'. The as-built cross slope is 2%.

Daily Traffic volumes range from 1,578 (Sunday) up to 1,880 (Friday). According to the Oversized Load Study by ADOT 2013, an average of 34 oversized loads per month traverse this segment of Davis Rd. There are no collision trends for this segment of roadway. During the period of January 2018 through December 2022 a total of one accident (non-injury, single vehicle, animal) was reported.

Land ownership along this segment of Davis Road is privately owned. The existing roadway is predominantly fenced along a 66-foot width generally centered along the roadway centerline. The fence varies at access locations and several drainage locations. Land use is primarily ranching and agricultural along the south side and residential along the north side. The McNeal Elementary School is also located along the north side but takes primary access from W. McNeal Street (it does not abut against either Davis Rd. or US-191).

The drainage and transportation improvement study area are impacted by a rural watershed of varying size. Existing roadside swales are roughly one foot in depth and parallel the roadway on both sides. These swales are undersized for serious storm events and existing corrugated metal pipes (CMP's) for driveways. Those CMP's under Central Hwy have also been determined to be undersized. Construction phase, of the project, will address



drainage both for driveways and carrying storm water southwest towards Whitewater Draw.

Utilities in the area include overhead electric and underground fiber optic, telephone, gas and water. The underground fiber optic and gas run parallel to the existing roadway on the south side. There are about 35 existing power poles with most being impacted by the construction project and potentially needing relocation. Telephone pedestals may also need relocation prior to construction.

The posted speed limit is 55 mph with a four-way stop control at Central Highway. The speed limit drops to 45 mph at the approach to US-191. There is also a school crossing sign with an advisory 25 mph plaque, however there are no school pavement marking signs (access for the school being taken off another roadway). The design speed is 65 mph.

**Project Scope**

This segment of Davis Road has been under consideration and development for over 10 years. In the Cochise County 2040 Long-Range Transportation Plan this segment is recommended for reconstruction. Acquiring these funds for construction will finally get this project moving and begin the construction process that the County has been eager to start. The scope of this project is to enter this project into the construction bid process and ADOT Project Initiation.

**Environmental Project Development Considerations**

Cochise County, with EEC, Inc, has completed Environmental Clearance and Design. Pavement marking plans, signing plans, and traffic control plans are completed to 95% design plan set. Cochise County will partner with EEC to bring design up to 100%.

Acquisition, and possibly relocation, of a large irrigation well will be necessary as part of this project. This well has not been actively used in many years; however, this will be a significant consideration during negotiations with the property owners. The well was constructed on May 14, 1975 and was drilled to a depth of 1,000 feet (ADWR Well Registration # 800414). Although the preferred alternative cannot avoid the location of this well the purchase cost of the well may prove to be a financial obstacle in completing this project. Acquisition costs are uncertain at this time.

**Estimated Cost**

<b>Central Hwy to US-191</b>	
Project Phase/Type of Work	Estimated Cost
Preliminary Engineering-Design (Include ADOT Review Fees)	\$ 100,000
Right-of-Way	\$ 0
Utility Relocation	\$ 405,000
Construction	\$ 5,674,614
Construction Engineering (15%)	\$ 851,192
Post Design (1%)	\$ 56,746
Contingencies (10%)	\$ 567,461
Total Project Cost	\$ 7,655,013



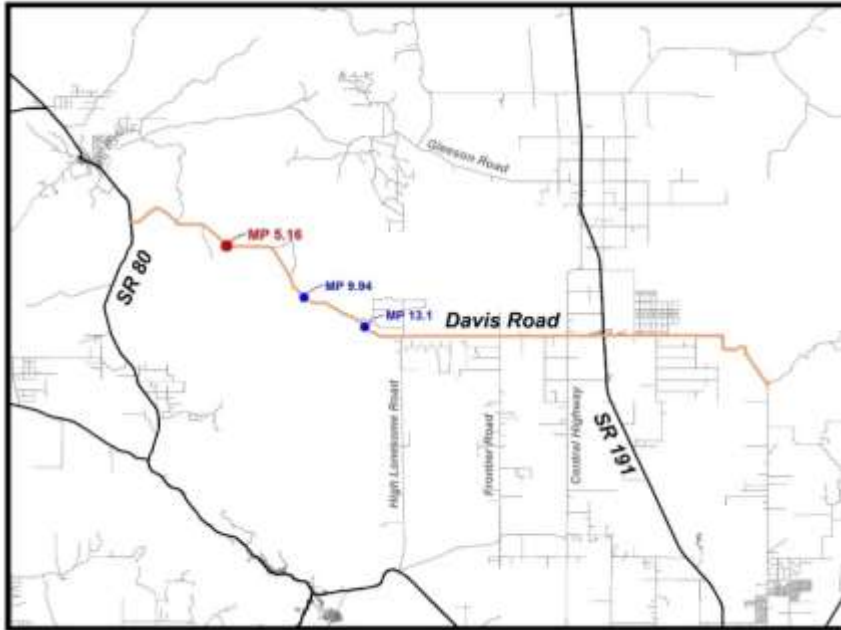
## Itemized Estimate

Please see cost estimate spreadsheet at the end of this report for details.

## Local Match

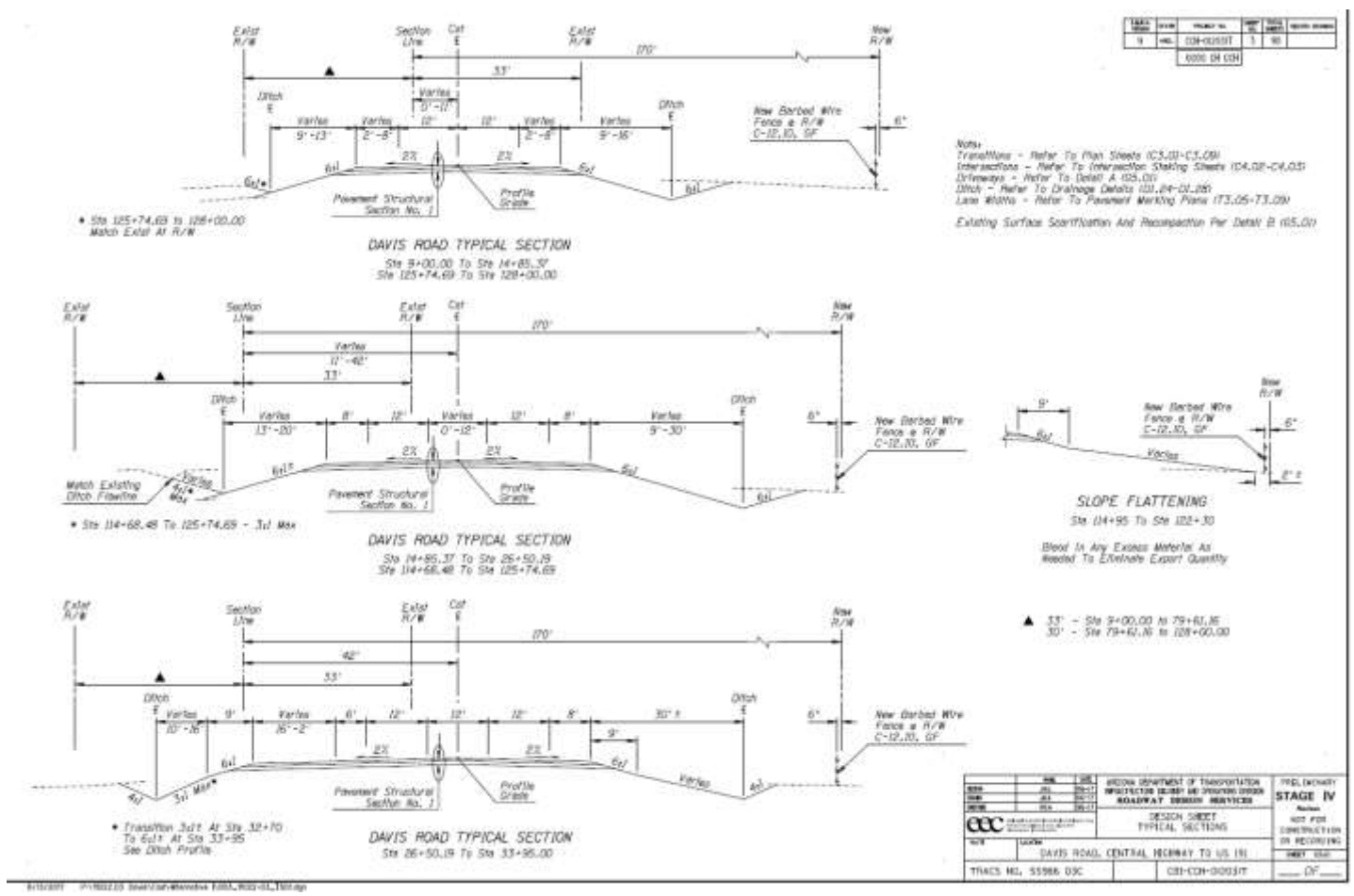
Cochise County match for this project is 5.7% or \$ 407,550.78 from County Fund.

## Vicinity Map





## Typical Section Sketch



## Safety

There are no collision trends for this segment of roadway. The intersection of Central Hwy and Davis Rd will be expanded and improve the turning movements and sight distances. Construction will include 8' shoulders on each side which will greatly increase the capacity of the road. The drainage improvements proposed in the design will assist with access through this section of road. Construction of a new pavement and base will improve the overall traffic flow i.e. objects intruding into the roadway, safe shoulders to exit off the roadway for emergencies and oversized loads, and continuous traffic flow no matter the weather conditions.

## Freight Movement/Economic Vitality

Davis Rd in this segment, Central Hwy to US-191, sees an average of 34 oversized load freight traffic each month. In addition, this segment has at least 80 trucks (FHWA Vehicle Classification 6 through 13) per day pass through this segment. The roadway improvements will improve the structural strength of the roadway to properly endure the stress of all the freight traffic passing over as well reduce the cost to the County for maintaining this segment of road. The expansion of shoulders will also relieve law enforcement from needing to shut down this segment to local traffic to allow the oversized loads to pass through. The biggest concern is the unknown traffic volume increase and load increase from the International Port of Entry Expansion in Douglas,



scheduled to open in 2028. Considering the studies and projections from IPOE expansion, this segment of Davis Road will be at the center of the growing freight movement that will pass through Cochise County in the coming years.

### **System Preservation and Improvement**

Reconstruction of this segment will improve the facility and bring it up to standard for the loads that constantly pass over this segment of road. Davis Road has multiple projects over multiple phases that aim to increase safety, drainage, and overall improvement to the roadway throughout Davis Road beyond this project. These upgrades will also put Cochise County in a great position to be ahead on future projects, with the amount of Right-of-Way acquired and Douglas IPOE opening 2028, the road will eventually (20-30 years) be improved into a 4-lane divided highway.



Combined Cost Estimate					
Davis Road Reconstruction - Central Highway to US-191					
Item No.	Item Description	Unit	Quantity	Unit Price	Amount
2010011	CLEARING AND GRUBBING	ACRE	24	\$4,000.00	\$96,000.00
2020001	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.SUM	1	\$25,000.00	\$25,000.00
2020034	REMOVAL OF SIGNS	L.SUM	1	\$1,500.00	\$1,500.00
2020037	REMOVE AND SALVAGE CATTLE GUARDS	EACH	1	\$5,000.00	\$5,000.00
2020041	REMOVAL OF PIPE	L.FT.	397	\$30.00	\$11,910.00
2020052	REMOVE CONCRETE DITCH	L.FT.	2,668	\$5.00	\$13,340.00
2020061	REMOVE AND RELOCATE MAIL BOXES	EACH	3	\$300.00	\$900.00
2020087	REMOVE BITUMINOUS PAVEMENT (MILLING) (4")	SQ.YD.	31,512	\$4.00	\$126,048.00
2020101	REMOVE FENCE	L.FT.	11,994	\$1.50	\$17,991.00
2030301	ROADWAY EXCAVATION	CU.YD.	29,890	\$10.00	\$298,900.00
2030451	CHANNEL EXCAVATION	CU.YD.	129	\$16.00	\$2,064.00
2080001	SEPARATION GEOTEXTILE FABRIC	SQ.YD.	39,474	\$2.50	\$98,685.00
3030022	AGGREGATE BASE, CLASS 2	CU.YD.	19,870	\$50.00	\$993,500.00
3060001	GEOGRID BASE REINFORCEMENT	SQ.YD.	39,474	\$3.50	\$138,159.00
4040111	BITUMINOUS TACK COAT	TON	15	\$600.00	\$9,000.00
4040116	APPLY BITUMINOUS TACK COAT	TON	30	\$200.00	\$6,000.00
4040264	ASPHALT BINDER (PG 64-22)	TON	696	\$750.00	\$522,000.00
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)	TON	13,917	\$90.00	\$1,252,530.00
4160031	MINERAL ADMIXTURE	TON	139	\$90.00	\$12,510.00
5011022	PIPE, REINFORCED CONCRETE, CLASS II, 24"	L.FT.	80	\$150.00	\$12,000.00
5011023	PIPE, REINFORCED CONCRETE, CLASS III, 24"	L.FT.	3,251	\$250.00	\$812,750.00
5011251	PIPE, REINFORCED CONCRETE, CLASS HE III, 27" X 42"	L.FT.	628	\$350.00	\$219,800.00
5014024	FLARED END SECTION (24") (C-13.25)	EACH	83	\$700.00	\$58,100.00
6016088	HEADWALL (DETAIL A)	EACH	2	\$24,000	\$48,000.00
6070035	SIGN POST (PERFORATED) (SINGLE)	L.FT.	250	\$20.00	\$5,000.00
6070044	SIGN POST U-CHANNEL (GALVANIZED STEEL)	EACH	6	\$200.00	\$1,200.00
6070060	FOUNDATION FOR SIGN POST (CONCRETE)	EACH	27	\$250.00	\$6,750.00
6080005	WARNING, MARKER, OR REGULATORY SIGN PANEL	SQ.FT.	225	\$15.00	\$3,375.00
6080105	RELOCATE SIGNS	L.SUM	1	\$750.00	\$750.00
7016030	BARRICADE (TYPE II, VERT PANEL, TUBULAR MARKER)	EACH-DAY	74,655	\$0.40	\$29,862.00
7016032	PORTABLE SIGN STANDS (RIGID)	EACH-DAY	1,175	\$0.65	\$763.75
7016035	WARNING LIGHTS (TYPE A)	EACH-DAY	5,628	\$0.35	\$1,969.80
7016037	WARNING LIGHTS (TYPE C)	EACH-DAY	74,655	\$0.35	\$26,129.25
7016039	EMBEDDED SIGN POST	EACH-DAY	15,008	\$0.40	\$6,003.20
7016052	TEMPORARY SIGN (10 S.F. OR MORE)	EACH-DAY	7,504	\$0.80	\$6,003.20
7016075	FLAGGING SERVICES (CIVILIAN)	TON	320	\$40.00	\$12,800.00
7060015	PAVEMENT MARKER, RAISED, TYPE D	EACH	556	\$3.00	\$1,668.00
7080001	PERMANENT PAVEMENT MARKING (PAINTED) (WHITE)	L.FT.	49,838	\$0.75	\$37,378.50
7080011	PERMANENT PAVEMENT MARKING (PAINTED) (YELLOW)	L.FT.	25,128	\$0.75	\$18,846.00
7080121	PERMANENT PAVEMENT MARKING (PAINTED SYMBOL) (ARROW)	EACH	17	\$150.00	\$2,550.00
7080221	PERMANENT PAVEMENT MARKING (PAINTED LEGEND) (ONLY)	EACH	6	\$150.00	\$900.00
8050003	SEEDING (CLASS II)	ACRE	14	\$4,000.00	\$56,000.00
8086805	CAP WELL AND ABANDON	EACH	2	\$40,000.00	\$80,000.00
8101013	EROSION CONTROL	L.SUM	1	\$40,000	\$40,000.00
9010001	MOBILIZATION	L.SUM	1	\$287,500.00	\$287,500.00
9030021	GAME FENCE, TYPE 1	L.FT.	12,516	\$5.00	\$62,580.00
9060083	CATTLE GUARD (9 UNIT)	EACH	1	\$18,000.00	\$18,000.00
9130051	RIPRAP (DUMPED) (6 IN)	CU.YD.	153	\$100.00	\$15,300.00
9130052	RIPRAP (DUMPED) (10 IN)	CU.YD.	48	\$100.00	\$4,800.00
9240139	MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS) (MANUAL METHOD)	SQ.YD.	69,974	\$0.65	\$45,483.10
9240182	MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS) (HERBICIDE)	SQ.YD.	85,524	\$0.60	\$51,314.40
9250001	CONSTRUCTION SURVEYING AND LAYOUT	L.SUM	1	\$70,000.00	\$70,000.00
SUBTOTAL OF ABOVE ITEMS					\$5,674,613.20
CONSTRUCTION SUBTOTAL:					\$5,674,614.00
CONSTRUCTION ENGINEERING (15%)					\$851,192.10
POST DESIGN (1%)					\$56,746.14
CONTINGENCIES (10%)					\$567,461.40
TOTAL PROJECT CONSTRUCTION					\$7,150,013.64

Combined Cost Estimate

**Davis Road Reconstruction - Central Highway to US-191**

Item No.	Item Description
2010011	CLEARING AND GRUBBING
2020001	REMOVAL OF STRUCTURES AND OBSTRUCTIONS
2020034	REMOVAL OF SIGNS
2020037	REMOVE AND SALVAGE CATTLE GUARDS
2020041	REMOVAL OF PIPE
2020052	REMOVE CONCRETE DITCH
2020061	REMOVE AND RELOCATE MAIL BOXES
2020087	REMOVE BITUMINOUS PAVEMENT (MILLING) (4")
2020101	REMOVE FENCE
2030301	ROADWAY EXCAVATION
2030451	CHANNEL EXCAVATION
2080001	SEPARATION GEOTEXTILE FABRIC
3030022	AGGREGATE BASE, CLASS 2
3060001	GEOGRID BASE REINFORCEMENT
4040111	BITUMINOUS TACK COAT
4040116	APPLY BITUMINOUS TACK COAT
4040264	ASPHALT BINDER (PG 64-22)
4090003	ASPHALTIC CONCRETE (MISCELLANEOUS STRUCTURAL)
4160031	MINERAL ADMIXTURE
5011022	PIPE, REINFORCED CONCRETE, CLASS II, 24"



5011023 PIPE, REINFORCED CONCRETE, CLASS III, 24"

5011251 PIPE, REINFORCED CONCRETE, CLASS HE III, 27" X 42"

5014024 FLARED END SECTION (24") (C-13.25)

6016088 HEADWALL (DETAIL A)

6070035 SIGN POST (PERFORATED) (SINGLE)

6070044 SIGN POST U-CHANNEL (GALVANIZED STEEL)

6070060 FOUNDATION FOR SIGN POST (CONCRETE)

6080005 WARNING, MARKER, OR REGULATORY SIGN PANEL

6080105 RELOCATE SIGNS

7016030 BARRICADE (TYPE II, VERT PANEL, TUBULAR MARKER)

7016032 PORTABLE SIGN STANDS (RIGID)

7016035 WARNING LIGHTS (TYPE A)

7016037 WARNING LIGHTS (TYPE C)

7016039 EMBEDDED SIGN POST

7016052 TEMPORARY SIGN (10 S.F. OR MORE)

7016075 FLAGGING SERVICES (CIVILIAN)

7060015 PAVEMENT MARKER, RAISED, TYPE D

7080001 PERMANENT PAVEMENT MARKING (PAINTED) (WHITE)

7080011 PERMANENT PAVEMENT MARKING (PAINTED) (YELLOW)

7080121 PERMANENT PAVEMENT MARKING (PAINTED SYMBOL) (ARROW)

7080221 PERMANENT PAVEMENT MARKING (PAINTED LEGEND) (ONLY)

8050003 SEEDING (CLASS II)

8086805 CAP WELL AND ABANDON

8101013 EROSION CONTROL  
9010001 MOBILIZATION  
9030021 GAME FENCE, TYPE 1  
9060083 CATTLE GUARD (9 UNIT)  
9130051 RIPRAP (DUMPED) (6 IN)  
9130052 RIPRAP (DUMPED) (10 IN)  
9240139 MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS) (MANUAL METHC  
9240182 MISCELLANEOUS WORK (CONTROL OF NOXIOUS PLANTS) (HERBICIDE)  
9250001 CONSTRUCTION SURVEYING AND LAYOUT

SUBTOTAL OF ABOVE ITEMS

Unit	Quantity	Unit Price	Amount
ACRE	24	\$4,000.00	\$96,000.00
L.SUM	1	\$25,000.00	\$25,000.00
L.SUM	1	\$1,500.00	\$1,500.00
EACH	1	\$5,000.00	\$5,000.00
L.FT.	397	\$30.00	\$11,910.00
L.FT.	2,668	\$5.00	\$13,340.00
EACH	3	\$300.00	\$900.00
SQ.YD.	31,512	\$4.00	\$126,048.00
L.FT.	11,994	\$1.50	\$17,991.00
CU.YD.	29,890	\$10.00	\$298,900.00
CU.YD.	129	\$16.00	\$2,064.00
SQ.YD.	39,474	\$2.50	\$98,685.00
CU.YD.	19,870	\$50.00	\$993,500.00
SQ.YD.	39,474	\$3.50	\$138,159.00
TON	15	\$600.00	\$9,000.00
HOUR	30	\$200.00	\$6,000.00
TON	696	\$750.00	\$522,000.00
TON	13,917	\$90.00	\$1,252,530.00
TON	139	\$90.00	\$12,510.00
L.FT.	80	\$150.00	\$12,000.00

L.FT.	3,251	\$250.00	\$812,750.00
L.FT.	628	\$350.00	\$219,800.00
EACH	83	\$700.00	\$58,100.00
EACH	2	\$24,000	\$48,000.00
L.FT.	250	\$20.00	\$5,000.00
EACH	6	\$200.00	\$1,200.00
EACH	27	\$250.00	\$6,750.00
SQ.FT.	225	\$15.00	\$3,375.00
L.SUM	1	\$750.00	\$750.00
EACH-DAY	74,655	\$0.40	\$29,862.00
EACH-DAY	1,175	\$0.65	\$763.75
EACH-DAY	5,628	\$0.35	\$1,969.80
EACH-DAY	74,655	\$0.35	\$26,129.25
EACH-DAY	15,008	\$0.40	\$6,003.20
EACH-DAY	7,504	\$0.80	\$6,003.20
HOUR	320	\$40.00	\$12,800.00
EACH	556	\$3.00	\$1,668.00
L.FT.	49,838	\$0.75	\$37,378.50
L.FT.	25,128	\$0.75	\$18,846.00
EACH	17	\$150.00	\$2,550.00
EACH	6	\$150.00	\$900.00
ACRE	14	\$4,000.00	\$56,000.00
EACH	2	\$40,000.00	\$80,000.00

	L.SUM	1	\$40,000	\$40,000.00
	L.SUM	1	\$287,500.00	\$287,500.00
	L.FT.	12,516	\$5.00	\$62,580.00
	EACH	1	\$18,000.00	\$18,000.00
	CU.YD.	153	\$100.00	\$15,300.00
	CU.YD.	48	\$100.00	\$4,800.00
DD)	SQ.YD.	69,974	\$0.65	\$45,483.10
	SQ.YD.	85,524	\$0.60	\$51,314.40
	L.SUM	1	\$70,000.00	\$70,000.00

\$5,674,613.20

CONSTRUCTION SUBTOTAL: \$5,674,614.00

CONSTRUCTION ENGINEERING (15%) \$851,192.10

POST DESIGN (1%) \$56,746.14

CONTINGENCIES (10%) \$567,461.40

TOTAL PROJECT CONSTRUCTION \$7,150,013.64