GARY R. HERBERT
Governor
GREG BELL
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Oil, Gas and Mining
JOHN R. BAZA
Division Director

Technical Analysis and Findings

Utah Coal Regulatory Program

PID: C0410002
TaskID: 4785
Mine Name: SUFCO MINE
Title: ADD ASPHALT, BELT SUMP & DRAINAGE CONTROL

Operation Plan

Road System Plans and Drawings

Analysis:

The Permittee submitted an application to update the text section 5.3.4.1 to reflect proposed second phase changes at the mine site. The second phase changes included a regarding and paving of the site shown on Appendix 5-11-2 for a total surface area of 1662 square yards. The site drainage will also include the installation of two junction boxes (type 2 and type 3) and 246.6 linear feet of corrugate metal pipe. A sump will also be constructed below the belt line with detailed drawing shown in C501, C502, C201. The Permittee has met the minimum requirements of R645-301-521.

cparker

Hydrologic Sediment Control Measures

Analysis:

The Permittee submitted an amendment to their currently approved MRP to add a sump at the West Lease #1 Belts and to pave existing areas of the surface facilities.
The paving should not change the surface drainage and everything should continue to drain to the sediment control ponds.
The Belt sump will collect drainage from the belts during operation and cleaning, and the sump will eventually drain into the existing collection systems and end up in the sediment pond.

adaniels

Reclamation Plan

Bonding Determination of Amount

Analysis:

The West Lease Tunnels page was updated to include the addition of the asphalt removal as well at the belt sump. The asphalt paving will include 12,400 square feet of new asphalt along with replace the existing 2,560 square feet. The site will be regarded for drainage which will result in approximately 750 CY of waste, which will be stored at the waste rock site. The site drainage will also include the installation of two junction boxes (type 2 and type 3) and 246.6 linear feet of corrugate metal pipe.

Deficiencies Details:

Per R645-301-830.140 the application does not meet the minimum requirements of the state code and is deficient:

1. The wrong RS Means Heavy Construction Unit cost was applied to the Steel Building Large (02 41 16.13 0020)
   a. According to Division standard and OSM Handbook for Calculation of Reclamation Bond Amounts, Bare Units costs will be utilized. The Permittee's application utilized Total- Including Overhead & Profit.
   b. 2014 RS Means Heavy Construction bare unit cost for 02 41 16.13 0020= $0.27
2. The Permittee must apply the ceiling function to total trips, as a truck rental unit is defined as a day.
   a. The transportation cost of a steel truck for 4.3 Days is 5 days multiplied by the cost per day.
3. The wrong RS Means Heavy Construction Unit cost was applied to the Truck Driver, Heavy.
   a. According to Division standard and OSM Handbook for Calculation of Reclamation Bond Amounts, Bare Units costs will be utilized. The Permittee's application utilized Total- Including Overhead & Profit.
   b. 2014 RS Means Heavy Construction bare unit cost for a heavy equipment truck driver is = $37.55.
4. The asphalt demolition must include the swell factor of 1.3 and be converted from square yards to cubic yards to determine the volume for disposal in a 16 ton dump truck.
   a. The wrong surface area was applied to the unit cost of the asphalt. According to the text submitted with the application in the Engineering chapter, the surface area to be repaved is 14,960 square feet which is equivalent to 1662.22 SY.
   b. 2014 RS Means Heavy Construction bare unit cost for asphalt demo four to eight inches thick (02 41 13.17 5050) is = $7.01/SY.
   c. 1662 SY of asphalt demoed creates a volume of 480 CY (1662 SY * pavement thickness in yards8 swell of 1.3 during demo= volume of 480 CY
   d. 2014 RS Means Heavy Construction bare unit cost for a 12 CY dump truck traveling up to ½ mile round trip (31 23 23.20 1014) =$2.95/CY
   e. 2014 RS Means Heavy Construction bare unit cost for onsite disposal is = $8.65/CY.
   f. Assumes no base layer is removed under the asphalt
5. The junction boxes need to be a separate new line item. Clarification is requested on the new line item of the junction boxes in order to determine the appropriate unit cost for reclamation.
   a. Define the type of junction box as either cast in place or pre-cast. RS Means Heavy Construction(02 41 13.42 ????)
   b. Include the Type 2 and Type 3 dimensions.
6. The Belt Sump is improperly costed as 6" concrete, when the details C501 show that the concrete is 1'-6".
   a. The walls should be detailed out as RS Means Heavy Construction 12" thick walls (02 41 16.17 2100) with 02 41 16.17 2220 to account for the vertical reinforcement. The estimated volume of walls was calculated by estimating the slab volume based of details C501, 502 and 19.34 CY or 522 SF
   b. The slab should utilize unit cost RS Means Heavy Construction 12" concrete on grade with reinforcing (02 41 16.17 2500, 16.17 2600)
7. A line item needs to be added to account for the removal of the CMP drainage pipe connecting the junction boxes.
   a. 2014 RS Means Heavy Construction bare unit cost for cmp aluminum pipe demo 6-10" diameter demo (02 41 13.40 0020) is = $1.66/L.F..

A pdf of the Division estimate will be included in the report.

cparker

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	West Lease Tunnels & Belt																			
	Structure's Demolition Cost	Steel Bld large	02 41 16 13 0020	0.27	/CF	183	14	12								FT		30744	CF	8301
	Structure's Vol. Demolished	Total steel vol for all buildings															0.1	201.09	CY	
	Structure's Demolition Cost	Steel Bld large	02 41 16 13 0020	0.27	/CF	139	8.3	9								FT		10383	CF	2803
	Structure's Demolition Cost	Steel Bld large	02 41 16 13 0020	0.27	/CF	352	8.3	3.5								FT		10226	CF	2761
	Structure's Demolition Cost	Steel Bld large	02 41 16 13 0020	0.27	/CF	30	24.5	4								FT		2940	CF	794
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity										16					CY		13	Trips	
	Haulage													3		Trip/Day				3461
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day													4.3	DAY	1292
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	Trhv	$37.55	HR													34.4	HR	
	Disposal Cost Steel																			
	Subtotal																			19412
	Asphalt Removal - Phase 2 Yard																			
	Asphalt 6-8 " Dismantling Cost	Pavement Removal 4-6"	02 41 13 17 5050	7.01	SY					1662.22						SY		1662	SY	11651
	Equipment 's Vol. Demolished																1.3	480	CY	
	Loading Costs	Front end loader 3 CY	31 23 16 42 1300	1.67	/CY													480	CY	802
	Transport Costs	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	2.95	/CY													480	CY	1416
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													480	CY	4152
	Subtotal																			18021
	Equipment 's Disposal Cost																			
	Dismantling Cost	Slabe 6" thick plain	02 41 16.17 0400	4.57	SF						20					CY		1080	SF	4936
	Equipment 's Vol. Demolished																1.3	26	CY	
	Loading Costs	Front end loader 3 CY	31 23 16 42 1300	1.67	/CY													26	CY	43
	Transport Costs	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	2.95	/CY													26	CY	77
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													26	CY	225
	Subtotal																			5281
	Concrete Demolition																			
	Demolition Cost	Slabe 6" thick plain	02 41 16.17 0400	4.57	SF						2153					CY		116262	SF	531317
	Concrete's Vol. Demolished																1.3	2799	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.67	/CY													2799	CY	4674
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	2.95	/CY													2799	CY	8257
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													2799	CY	24211
	Subtotal																			568459
	Belt #1 Sump																			
	Concrete Demolition																			
	Demolition Cost	12" concrete w/ average reinforcing	02 41 16.17 2500, 2	18.854	SF						7.06					CY		191	SF	3601
	Concrete's Vol. Demolished	wall 12" thick w/ vertical reinforcing	02 41 16.17 2100,22	2.145	SF						19.34						1.3	522	SF	1120
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.67	/CY													34	CY	57
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	2.95	/CY													34	CY	100
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													34	CY	294
	Subtotal																			5172
	Junction Boxes																			
	Concrete Demolition																			
	Demolition Cost				SF						3.5					CY		189	SF	0
	Concrete's Vol. Demolished																1.3	5	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.67	/CY													5	CY	8
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	2.95	/CY													5	CY	15
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													5	CY	43
	Subtotal																			66
	CMP Pipe Removal																			
	Pipe Removal																			
	Demolition Cost	CMP Aluminum 6-10" pipe	02 41 13.40 0020	1.66	LF	246.6										LF		247	LF	410
	Concrete's Vol. Demolished																1.3	5	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	1.67	/CY													5	CY	8
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	2.95	/CY													5	CY	15
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													5	CY	43
	Subtotal																			476
	Total																			**616887**

Assumptions
Buildings with no internal walls
6 inch thick concrete slab with no rebar
Smallest increment of truck rental is 1 day
* Give total Concrete volume = 26.4, estimated volume of slab and difference was assumed to be wall volume