



## **Appendix E- Capital and Construction Costs**

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## **E.1 Capital Cost Summary**

# Capital Cost Estimate



**Client** Strathmore Resources  
**Project Name** Roca Honda  
**Project Number** 10034  
**Project Manager** RCS  
**Date** 10/15/10  
**Location** McKinley County, NM  
**Project Type** Preliminary Design

## Proposed Cost Coding

Area of Activity (AOA)		Project Name: Roca Honda Project Number: 10034
Linked to Sheet	Area Number	Area Name
10	100	Water Treatment Plant

CSI Coding	
CSI	Full Discipline Name
01	01- Mechanical Equipment
02	02- Bulk Materials
03	03- Concrete & Rebar
04	04- Building and Steel
05	05- Earthwork and Materials
06	06- Construction and Labor
07	07- Electrical and Instruments
08	08- Equipment Spares
09	09- Other Costs
-	

# Component Prices

Project Name: Roca Honda  
Project Number: 10034

Component	Unit	Material \$	Labor \$	Subcontract \$
Equipment	ea.	\$2,269,497.00		
Ancillary Equipment	ea.	\$117,100.00		
Laboratory Equipment	ea.	\$154,500.00		
Piping Cost	ea.	\$112,491.00		
Piping Accessories Cost	ea.	\$15,723.00		
Hose	ea.	\$1,800.00		
Valves	ea.	\$167,079.00		
Tank Installation	ea.	-	\$14,740.00	
Pump Installation	ea.	-	\$16,500.00	
Equipment Installation	ea.	-	\$15,840.00	
Piping Installation	ea.	-	\$37,840.00	
Construction Supervision	ea.	-	\$21,000.00	
Equipment Rentals	ea.	-	\$46,375.00	
Clearing and Grubbing Site	ea.	-	\$22,239.00	
Top Soil Removal	ea.	-	\$8,698.00	
Excavation (blast and haul)	ea.	-	\$173,083.00	
Backfill	ea.	-	\$6,915.00	
Backfill (borrow material)	ea.	-	\$157,979.00	
Fencing	ea.	\$60,588.00		
Pond Lining	ea.	\$356,586.25	\$76,238.00	
Reaction Tank Area Concrete	ea.	\$111,390.40	\$27,847.60	
Pressure Leaf Clarifier Concrete	ea.	\$13,584.00	\$3,396.00	
Resin Area Concrete	ea.	\$15,533.60	\$3,883.00	
Building Concrete	ea.	\$158,911.20	\$39,728.00	
Electrical Costs	ea.	\$340,123.00	\$279,229.80	
Plant Instruments	ea.	\$106,729.28	\$402,375.00	
Plant Structural Steel	ea.	\$18,484.00		
Plant Platform Steel	ea.	\$42,678.00		
First Fills	ea.	\$769,403.00		
Coatings and Sealants	ea.	\$2,500.00	\$22,500.00	
Spares	ea.	\$127,055.00		
Building	ea.	\$489,000.00		



# Capital Cost Estimate Worksheet

Project Name: Roca Honda

Project Number: 10034

Client: Strathmore Resources

Updated: Nov 19th 2010

Area Number: 100

Area Name: **Water Treatment Plant**

By: Daniel Trump

Area Total

Line Number	CSI Code	Code or Equipment Number	Component	Equipment or Component Description	Item		Material Cost		Labor Costs									
					Item Unit	Item Quantity	Unit Price	Material Subtotal	Direct Labor				Subcontracted Labor					
									Labor Units	\$	Labor/ Item	Total Time	Labor Subtotal	Sub Units	\$	Sub/ Item	Sub Subtotal	
1	1		Equipment		ea.	1	\$2,269,497.00	\$2,269,497										
2	1		Ancillary Equipment		ea.	1	\$117,100.00	\$117,100	-									
3	1		Laboratory Equipment		ea.	1	\$154,500.00	\$154,500	-									
4	2		Piping Cost		ea.	1	\$112,491.00	\$112,491	-									
5	2		Piping Accessories Cost		ea.	1	\$15,723.00	\$15,723	-									
5	2		Hose		ea.	1	\$1,800.00	\$1,800	-									
6	2		Valves		ea.	1	\$167,079.00	\$167,079	-									
7	6		Tank Installation		ea.	1	-	-	-	\$14,740.00	1			\$14,740				
8	6		Pump Installation		ea.	1	-	-	-	\$16,500.00	1			\$16,500				
9	6		Equipment Installation		ea.	1	-	-	-	\$15,840.00	1			\$15,840				
10	6		Piping Installation		ea.	1	-	-	-	\$37,840.00	1			\$37,840				
11	6		Construction Supervision		ea.	1	-	-	-	\$21,000.00	1			\$21,000				
12	6		Equipment Rentals		ea.	1	-	-	-	\$46,375.00	1			\$46,375				
13	5		Clearing and Grubbing Site		ea.	1	-	-	-	\$22,239.00	1			\$22,239				
14	5		Top Soil Removal		ea.	1	-	-	-	\$8,698.00	1			\$8,698				
15	5		Excavation (blast and haul)		ea.	1	-	-	-	\$173,083.00	1			\$173,083				
16	5		Backfill		ea.	1	-	-	-	\$6,915.00	1			\$6,915				
17	5		Backfill (borrow material)		ea.	1	-	-	-	\$157,979.00	1			\$157,979				
18	6		Fencing		ea.	1	\$60,588.00	\$60,588	-									
19	5		Pond Lining		ea.	1	\$356,586.25	\$356,586	-	\$76,238.00	1			\$76,238				
20	3		Reaction Tank Area Concrete		ea.	1	\$111,390.40	\$111,390	-	\$27,847.60	1			\$27,848				
21	3		Pressure Leaf Clarifier Concrete		ea.	1	\$13,584.00	\$13,584	-	\$3,396.00	1			\$3,396				
22	3		Resin Area Concrete		ea.	1	\$15,533.60	\$15,534	-	\$3,883.00	1			\$3,883				
23	3		Building Concrete		ea.	1	\$158,911.20	\$158,911	-	\$39,728.00	1			\$39,728				
24	7		Electrical Costs		ea.	1	\$340,123.00	\$340,123	-	\$279,229.80	1			\$279,230				
25	7		Plant Instruments		ea.	1	\$106,729.28	\$106,729	-	\$402,375.00	1			\$402,375				
26	4		Plant Structural Steel		ea.	1	\$18,484.00	\$18,484	-									
27	4		Plant Platform Steel		ea.	1	\$42,678.00	\$42,678	-									
28	2		First Fills		ea.	1	\$769,403.00	\$769,403	-									
29	9		Coatings and Sealants		ea.	1	\$2,500.00	\$2,500	-	\$22,500.00	1			\$22,500				
30	8		Spares		ea.	1	\$127,055.00	\$127,055	-									
31	4		Building		ea.	1	\$489,000.00	\$489,000	-									
32					ea.	1			-									
33					ea.	1			-									
34					ea.	1			-									
<b>Area Totals</b>								\$5,450,756					\$1,376,406					

Category	Material	Labor
01- Mechanical Equipment	\$2,541,097	
02- Bulk Materials	\$1,066,496	
03- Concrete & Rebar	\$299,419	\$74,855
04- Building and Steel	\$550,162	
05- Earthwork and Materials	\$356,586	\$445,152
06- Construction and Labor	\$60,588	\$152,295
07- Electrical and Instruments	\$446,852	\$681,605
08- Equipment Spares	\$127,055	
09- Other Costs	\$2,500	\$22,500

**Internal Check, OK**

If the internal check returns with an error, it is likely because one or more of the line items with an associated price is not assigned to a particular Category (such as Concret, Equipment, Etc.) See column 'C' for this information.



# Total Capital Cost Estimate Summary

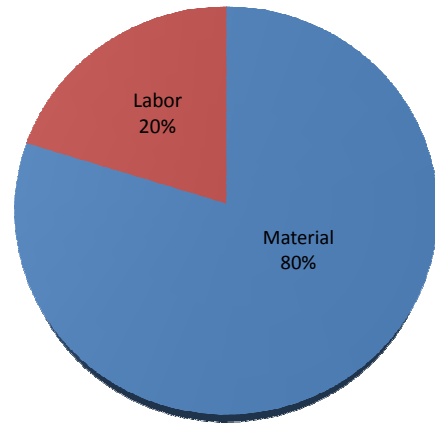
Updated: 11/19/2010      Project Name: Roca Honda  
By: Daniel Trump      Project Number: 10034

Direct Costs																			
Area Name	01- Mechanical Equipment		02- Bulk Materials		03- Concrete & Rebar		04- Building and Steel		05- Earthwork and Materials		06- Construction and Labor		07- Electrical and Instruments		08- Equipment Spares		09- Other Costs		Totals
	Mat'l	Labor	Mat'l	Labor	Mat'l	Labor	Mat'l	Labor	Mat'l	Labor	Mat'l	Labor	Mat'l	Labor	Mat'l	Labor	Mat'l	Labor	
Water Treatment Plant	\$2,541,097	\$0	\$1,066,496	\$0	\$299,419	\$74,855	\$550,162	\$0	\$356,586	\$445,152	\$60,588	\$152,295	\$446,852	\$681,605	\$127,055	\$0	\$2,500	\$22,500	\$6,827,162
<b>Direct Cost Sub-Total</b>	<b>\$2,541,097</b>	<b>\$0</b>	<b>\$1,066,496</b>	<b>\$0</b>	<b>\$299,419</b>	<b>\$74,855</b>	<b>\$550,162</b>	<b>\$0</b>	<b>\$356,586</b>	<b>\$445,152</b>	<b>\$60,588</b>	<b>\$152,295</b>	<b>\$446,852</b>	<b>\$681,605</b>	<b>\$127,055</b>	<b>\$0</b>	<b>\$2,500</b>	<b>\$22,500</b>	<b>\$6,827,162</b>

### Direct Cost - by Materials & Labor

	Total (\$US)	% SubTotal
Material	\$5,450,756	80%
Labor	\$1,376,406	20%

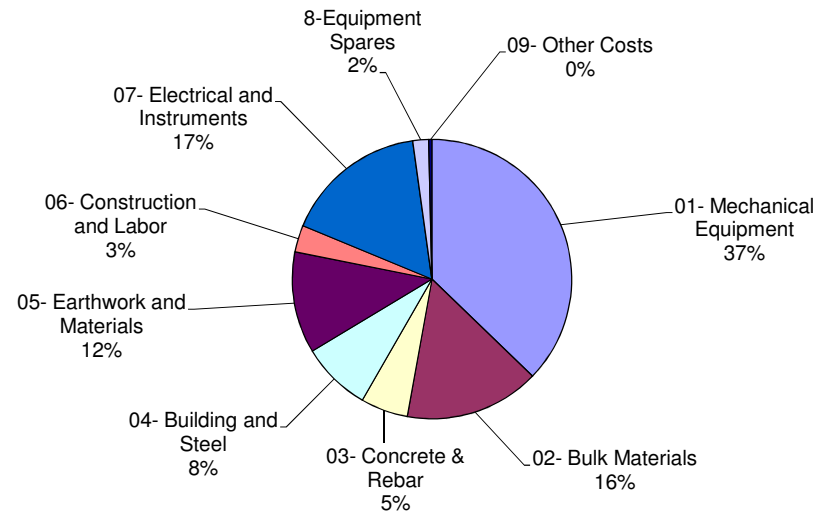
**Total Direct Cost Breakdown by Material & Labor**



### Category Totals

01- Mechanical Equipment	\$2,541,097
02- Bulk Materials	\$1,066,496
03- Concrete & Rebar	\$374,274
04- Building and Steel	\$550,162
05- Earthwork and Materials	\$801,738
06- Construction and Labor	\$212,883
07- Electrical and Instruments	\$1,128,457
08- Equipment Spares	\$127,055
09- Other Costs	\$25,000

**Direct Costs Breakdown**



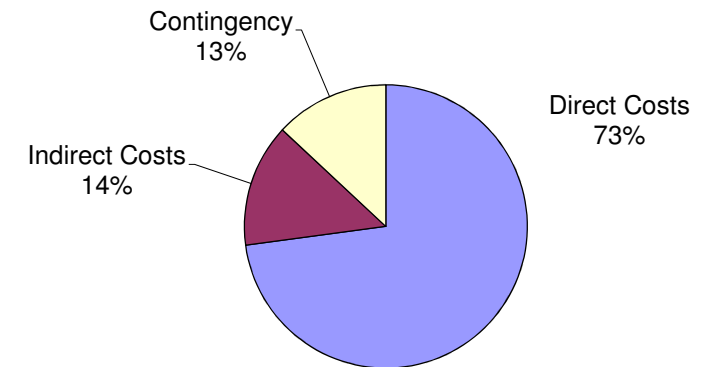
### Indirect Costs

Item	%	% of	Totals
Final Design Engineering			\$495,783
Construction Management			\$478,000
Start-up Assistance			\$12,800
Transportation & Logistics			\$330,343
<b>Indirect Cost Sub-Total</b>			<b>\$1,316,926</b>

### Grand Total

(Direct Costs + Indirect Costs) Subtotal		\$8,144,088
Contingency	15.00%	\$1,221,613
<b>Capital Cost Estimate Grand Total (+/- 15%)</b>		<b>\$9,365,701</b>

**Total Capital Cost Estimate Breakdown**





## **E.2 Equipment**





1550 Dover Street  
Lakewood, CO 80215  
Phone: 303-623-8365  
Fax: 303-623-0342

Made By: Daniel Trump  
Date: October 21st 2010  
Chckd By:  
Date:  
CLIENT: Roca Honda Resources; Strathmore  
LOCATION: Grants New Mexico  
Job Number: 10034

**Equipment List; Roca Honda WTP**

AREA	EQUIPMENT NUMBER	EQUIPMENT NAME	DESCRIPTION/CAPACITY	UNIT	VOLTAGE	Hp	kW	Total Connected kW	Total Operating kW	\$	Source / Vendor
Plant Feed and Settling Pond Area											
100	10-PP-30	IX Column Feed Pump		1 ea.		460	125.0	93.3	93.3	\$ 23,326	*Pumps Plus Quotation
	10-PP-40	IX Column Feed Pump		1 ea.		460	125.0	93.3	93.3	\$ 23,326	*Pumps Plus Quotation
100	<b>AREA SUBTOTAL</b>					250.0	186.5	186.5	186.5	\$ 46,652	
IX Column Area											
200	20-IX-10	IX Column	Tetra Solve; 316SS internals and carbon steel pressure vessel. No lining	1 ea.						\$ 102,082	Tetra Solve Quotation
	20-IX-20	IX Column	Tetra Solve; 316SS internals and carbon steel pressure vessel. No lining	1 ea.						\$ 102,082	Tetra Solve Quotation
	20-IX-30	IX Column	Tetra Solve; 316SS internals and carbon steel pressure vessel. No lining	1 ea.						\$ 102,082	Tetra Solve Quotation
	20-IX-40	IX Column	Tetra Solve; 316SS internals and carbon steel pressure vessel. No lining	1 ea.						\$ 102,082	Tetra Solve Quotation
	20-IX-50	IX Column	Tetra Solve; 316SS internals and carbon steel pressure vessel. No lining	1 ea.						\$ 102,082	Tetra Solve Quotation
	20-IX-60	IX Column	Tetra Solve; 316SS internals and carbon steel pressure vessel. No lining	1 ea.						\$ 102,082	Tetra Solve Quotation
	20-IX-70	IX Column	Tetra Solve; 316SS internals and carbon steel pressure vessel. No lining	1 ea.						\$ 102,082	Tetra Solve Quotation
	20-IX-80	IX Column	Tetra Solve; 316SS internals and carbon steel pressure vessel. No lining	1 ea.						\$ 102,082	Tetra Solve Quotation
	20-PP-10	Resin Transfer Pump	Peerless - 5AE8N Centrifugal 10HP clear water pump 500gpm 50ft head	1 ea.		460	10.0	7.5	7.5	\$ 5,860	Pumps Plus Quotation
	20-TK-10	Resin Transfer Water Tank	15'x17' Open Tank, pre-fabbed (Shipping included in cost; \$15,000)	1 ea.						\$ 57,800	Eaton Metals Quotation
	20-TK-20	Resin Transfer Pup Trailer	6000 gal Transfer Pup Trailer	1 ea.						\$ 100,000	*Lyntek Estimate
	20-TK-30	Washdown Water Tank	Washdown Water Tank 5ft x 6ft 734gal	1 ea.						\$ 2,500	*Lyntek Estimate
	20-PP-20	Washdown Water Pump	Washdown Water Pump 4gpm @ 50ft	1 ea.						\$ 1,000	*Lyntek Estimate
	20-PP-30	IX Column Area Sump Pump	Metso VS50 D75 Sump Pump 200gpm 50ft head	1 ea.		460	10.0	7.5	7.5	\$ 10,935	Pumps Plus Quotation
	20-PP-40	Resin Loading Area Sump Pump	Metso VS50 D75 Sump Pump 200gpm 50ft head	1 ea.		460	10.0	7.5	7.5	\$ 10,935	Pumps Plus Quotation
200	<b>AREA SUBTOTAL</b>					30.0	22.4	22.4	22.4	\$ 1,005,686	
Barium Chloride Reaction Tank Area											
300	30-TK-10	Reaction Tank #1	20'x25' open top tank, Pre-Fabbed Shipped in 2 halves (Shipping included; \$13,500)	1 ea.						\$ 95,300	Eaton Metals Quotation
	30-TK-20	Reaction Tank #2	20'x25' open top tank, Pre-Fabbed Shipped in 2 halves (Shipping included; \$13,500)	1 ea.						\$ 95,300	Eaton Metals Quotation
	30-AG-10	Reaction Tank #1 Agitator	23GTD-15HP @ 30 73.88 in W-4	1 ea.		460	15.0	11.2	11.2	\$ 47,956	PEC Boulder Quotation
	30-AG-20	Reaction Tank #2 Agitator	23GTD-15HP @ 30 73.88 in W-4	1 ea.		460	15.0	11.2	11.2	\$ 47,956	PEC Boulder Quotation
	30-TK-30	BaCl2 Mix Tank #1	6'x8' Open Top Tank Pre-fabbed (shipping included: \$800)	1 ea.						\$ 14,100	Eaton Metals Quotation
	30-TK-40	BaCl2 Mix Tank #2	6'x8' Open Top Tank Pre-fabbed (shipping included: \$800)	1 ea.						\$ 14,100	Eaton Metals Quotation
	30-AG-30	BaCl2 Mix Tank #1 Agitator	Netzch NM021BYO2S12B 2gpm 150ft	1 ea.		460	0.5	0.4	0.4	\$ 3,607	Pumps Plus Quotation
	30-AG-40	BaCl2 Mix Tank #2 Agitator	Netzch NM021BYO2S12B 2gpm 150ft	1 ea.		460	0.5	0.4	0.4	\$ 3,607	Pumps Plus Quotation
	30-PP-10	Leaf Filter Feed Pump #1	Peerless 8AE17Q 4000gpm 173ft head 250Hp	1 ea.		460	250.0	186.5	186.5	\$ 26,139	Pumps Plus Quotation
	30-PP-20	Leaf Filter Feed Pump #2	Peerless 8AE17Q 4000gpm 173ft head 250Hp	1 ea.		460	250.0	186.5	186.5	\$ 26,139	Pumps Plus Quotation
	30-PP-30	BaCl2 Dosing Pump #1	SG66-P-L-P LMI Dosing Pump 1.5gpm	1 ea.		230	1.0	0.7	0.7	\$ 5,310	Pumps Plus Quotation
	30-PP-40	BaCl2 Dosing Pump #2	SG66-P-L-P LMI Dosing Pump 1.5gpm	1 ea.		230	1.0	0.7	0.7	\$ 5,310	Pumps Plus Quotation
	30-TK-50	Overflow Tank	12'x20' Open Top, Pre-fabbed (shipping included; \$3,400)	1 ea.						\$ 30,600	Eaton Metals Quotation
	30-PP-50	Reaction Tank Area Sump Pump	Metso VS50 D75 Sump Pump 200gpm 50ft head	1 ea.		460	10.0	7.5	7.5	\$ 10,935	Pumps Plus Quotation
	30-EW-10	Eye Wash and Safety Shower	Grainger Eye wash and safety shower	1 ea.						\$ 1,400	*Estimated From Grainger
300	<b>AREA SUBTOTAL</b>					543.0	405.1	405.1	403.6	\$ 427,759	
Pressure Leaf Clarifier Area											
400	40-FT-10	Leaf Filter #1	Sparkler Filter Type 122 Series 78-3.5-58 Horizontal Chamber 2685 sqft	1 ea.		460	1.5	1.1	1.1	\$ 217,650	Industrial Filter Quotation
	40-FT-20	Leaf Filter #2	Sparkler Filter Type 122 Series 78-3.5-58 Horizontal Chamber 2685 sqft	1 ea.		460	1.5	1.1	1.1	\$ 217,650	Industrial Filter Quotation
	40-FT-30	Leaf Filter #3	Sparkler Filter Type 122 Series 78-3.5-58 Horizontal Chamber 2685 sqft	1 ea.		460	1.5	1.1	1.1	\$ 217,650	Industrial Filter Quotation
	40-PP-20	Pump; D.E. Body Feed	Netzch NM021BYO2S12B 2gpm 150ft	1 ea.		460	0.5	0.4	0.4	\$ 3,607	Pumps Plus Quotation
	40-PP-25	Pump; D.E. Body Feed	Netzch NM021BYO2S12B 2gpm 150ft	1 ea.		460	0.5	0.4	0.4	\$ 3,607	Pumps Plus Quotation
	40-PP-30	Pump; D.E. Precoat	Metso HM200 1500gpm 150ft head	1 ea.		460	125.0	93.3	93.3	\$ 29,427	Pumps Plus Quotation
	40-PP-40	Pump; Backwash	Peerless 2x3-13 LTP high pressure backwash pump 320gpm 320ft head	1 ea.		460	75.0	56.0	56.0	\$ 12,479	Pumps Plus Quotation
	40-PP-45	Pump; Backwash	Peerless 2x3-13 LTP high pressure backwash pump 320gpm 320ft head	1 ea.		460	75.0	56.0	56.0	\$ 12,479	Pumps Plus Quotation
	40-TK-10	D.E. Mix Tank	8'x10' Open Top Tank, Pre-fabricated (Shipping included; \$800)	1 ea.						\$ 18,400	Eaton Metals Quotation
	40-AG-10	D.E. Mix Tank Agitator	21GTD-2.00HP @ 84, 28.38 in W-4	1 ea.		230	2.0	1.5	1.5	\$ 6,871	PEC Boulder Quotation
	40-EW-10	Eye Wash and Safety Shower	Grainger Eye wash and safety shower	2 ea.						\$ 2,400	*Estimated From Grainger
400	<b>AREA SUBTOTAL</b>					282.5	210.7	210.7	152.2	\$ 742,220	
Discharge Pond and Evap Pond Area											
500	50-PP-10	Washdown Water Sump Pump	Tsurumi KTV sump pump 2HP	1 ea.		460	2.0	1.5	1.5	\$ 2,000	Pumps Plus Quotation
	50-PP-20	Evaporation Pond Sump Pump #1	Tsurumi KTV sump pump 2HP	1 ea.		460	2.0	1.5	1.5	\$ 2,000	Pumps Plus Quotation
	50-PP-30	Evaporation Pond Sump Pump #2	Tsurumi KTV sump pump 2HP	1 ea.		460	2.0	1.5	1.5	\$ 2,000	Pumps Plus Quotation
	50-PP-40	Evaporation Pond Sump Pump #3	Tsurumi KTV sump pump 2HP	1 ea.		460	2.0	1.5	1.5	\$ 2,000	Pumps Plus Quotation
	50-PP-50	Evaporation Pond Sump Pump #4	Tsurumi KTV sump pump 5HP	1 ea.		460	5.0	3.7	3.7	\$ 3,545	Pumps Plus Quotation
	50-PP-60	Evaporation Pond Sump Pump #5	Tsurumi KTV sump pump 5HP	1 ea.		460	5.0	3.7	3.7	\$ 3,545	Pumps Plus Quotation
	50-PP-70	Evaporation Pond Sump Pump #6	Tsurumi KTV sump pump 5HP	1 ea.		460	5.0	3.7	3.7	\$ 3,545	Pumps Plus Quotation
	50-PP-80	Evaporation Pond Sump Pump #7	Tsurumi KTV sump pump 5HP	1 ea.		460	5.0	3.7	3.7	\$ 3,545	Pumps Plus Quotation
	50-HT-10	CrossFlow Turbine	OGI Crossflow Hydro Turbine 50KW	1 ea.		460	-67.0	-50.0	-50.0	\$ 25,000	OGI Budgetary Quote
500	<b>AREA SUBTOTAL</b>					-39.0	-29.1	-29.1	-43.3	\$ 47,180	
Plant Laboratory Equipment											
600		Kinetic Phosphorescence Analyzer	Uranium Testing; Chemchek KPA -11M with Automatic configuration & 2 day Traini	1 ea.						\$ 59,000	ChemChek Quotation
		Radium Testing	Radium Testing, method TBD	1 ea.						\$ 32,500	*Estimated by Robert R.
		Water Treatment Plant Laboratory	Comprehensive Water Treatment Plant Laboratory (% solids, pH, ORP, Conductivity	1 ea.						\$ 63,000	*Lyntek Recent Projects
600	<b>AREA SUBTOTAL</b>					0.0	0.0	0.0	0.0	\$ 154,500	
Plant Ancillary Equipment											
700		Fork Lift	2 ton Outdoor forklift	1 ea.						\$ 25,000	*Lyntek Estimate
		Mono Rail Crane	2ton mono rail crane 35ft lift.	1 ea.						\$ 7,100	*Grainer Pricing
		Vacuum Truck	Vacuum truck for waste disposal	1 ea.						\$ 85,000	*Lyntek Estimate
700	<b>AREA SUBTOTAL</b>					0.0	0.0	0.0	0.0	\$ 117,100	
<b>GRAND TOTAL</b>						1066.5	795.6	795.6	721.4	\$ 2,541,097	



## **E.3a Piping and Valves**



1550 Dover Street  
Lakewood, CO 80215  
Phone: 303-623-8365

Made By: Daniel Trump  
Date: October 20th, 2010  
Chkd By: \_\_\_\_\_  
Date: \_\_\_\_\_  
CLIENT: Roca Honda Resources - Strathmore  
LOCATION: Grants, New Mexico  
Job Number: 10034

### **Piping and Valves Cost; Roca Honda WTP**

\*Note, costs shown do not include installation.

\*All Lyntek Estimates on this sheet are based on Lyntek P&IDs, Lyntek General Arrangements, and Lyntek Civil drawings

<b>Piping Costs</b>	<b>Length</b>	<b>Cost</b>
<b>Plant Area</b>	<b>1,501 ft</b>	<b>\$ 43,991</b>
<b>Pond Area(s)</b>	<b>2,800 ft</b>	<b>\$ 68,500</b>
		<b>\$ 112,491</b>

\*Does not include piping from mine shafts or mine evaporation ponds

\*Plant area is Carbon Steel, Pond area is HDPE SDR 17

<b>Piping Accessorie Costs</b>	<b>Cost</b>	
<b>Plant Area</b>	<b>\$ 11,723</b>	
<b>Pond Area(s)</b>	<b>\$ 4,000</b>	
		<b>\$ 15,723</b>

\*Does not include piping from mine shafts or mine evaporation ponds

\*Pond Area Accessories are estimated

<b>Hose and Hose Fittings</b>	<b>Length</b>	<b>Size</b>	<b>Quantity</b>	<b>Price</b>	<b>Cost</b>
Resin Transfer Area Hose	<b>300 ft</b>	<b>6"</b>	-	\$3.00 /ft	\$ 900
Resin Transfer Area Fittings	-	<b>6"</b>	15	\$60.00 /ea	\$ 900
					<b>\$ 1,800</b>

<b>Valves</b>	<b>Quantity</b>	<b>Cost</b>
<b>Valves (Manual Only)</b>	130	\$ 53,535
<b>Actuators</b>	58	\$ 113,544
		<b>\$ 167,079</b>

\*Actuators are shown for valves in hard-to-reach places and Valves 8" and larger

<b>Total</b>	<b>\$ 297,093</b>
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## **E.3b Piping Take off**

# Piping Take Off Calculations

## Roca Honda Water Treatment Plant

Created By Daniel Trump  
 Date October 4th 2010  
 Updated

**Notes:**

- \*All piping 3" and under based on Piping take off from P&IDs and GA
- \*All piping over 3" is based on model drawings of Piping.
- \*Piping Costs are taken from Rampart Budgetary Quotation
- \*Piping Accessories costs are taking from Mulatos 09037 Pricing
- \*Does not Include Piping Outside of WTP building
- \*Piping larger than 3" is based off of Lynteks Model

<b>Piping Cost</b>	<b>\$ 43,991</b>	
<b>Accessories Cost</b>	<b>\$ 11,723</b>	
<b>valves</b>	<b>\$ 173,801</b>	
<b>Hose and Hose Fittings</b>	<b>\$ 3,000</b>	*estimate
<b>Total Cost</b>	<b>\$ 229,515</b>	

**Piping**

	Size	Feed and Reaction Tank Area	Pressure Leaf Clarifier Area	Total (ft)	Cost (\$/ft)	Total Cost
*	0.25			140	0.75	\$ 105
*	1			20	1.5	\$ 30
*	1.25			80	2.5	\$ 200
	3	5		5	6	\$ 29
	4	346	6	353	8	\$ 2,823
	5		2	2	11	\$ 20
	6	36	290	326	15	\$ 4,891
	8	23	39	61	22	\$ 1,344
	10	6	8	14	31	\$ 431
	12	15		15	38	\$ 567
	16		122	122	48	\$ 5,860
	20	107		107	67	\$ 7,152
	24		257	257	80	\$ 20,540
		538	723	1,501		\$ 43,991

\*Piping less than 3" is estimated, see notes.

**Elbows (90)**

Size	Count 1	Count 2	Total	Cost	Total Cost
0.25			10	2	\$ 20
1			10	2	\$ 20
1.25			10	3	\$ 30
3	1		1	5	\$ 5
4	16		16	8	\$ 128
5		1	1	15	\$ 15
6	4	12	16	18	\$ 288
8		4	4	32	\$ 128
10			0	45	\$ -
12			0	60	\$ -
16	1	6	7	100	\$ 700
20	7		7	150	\$ 1,050
24		4	4	180	\$ 720
					\$ 3,104

\*Piping less than 3" is estimated, see notes.

**Elbows (45)**

Size	Count 1	Count 2	Total	Cost	Total Cost
0.25					\$ -
1					\$ -
1.25					\$ -
3			0		\$ -
4			0		\$ -
5			0		\$ -
6	3		3	17	\$ 51
8			0		\$ -
10			0		\$ -
12			0		\$ -
16			0		\$ -
20			0		\$ -
24	2		2	100	\$ 200
					\$ 251

\*Piping less than 3" is estimated, see notes.

Tees

Size	Count 1	Count 2	Total	Cost	Total Cost
0.25			2	2.04	\$ 4
1			2	3	\$ 6
1.25			2	11	\$ 22
3			0	12	\$ -
4		6	6	17	\$ 102
5			0		\$ -
6	16	2	18	29	\$ 522
8			0	50	\$ -
8x6 red		3	3	55	\$ 165
10			0		\$ -
12			0		\$ -
16			0		\$ -
20		1	1	140	\$ 140
24	2		2	180	\$ 360
24	2		2		\$ 1,321

\*Piping less than 3" is estimated, see notes.

Raised Face Flanges

Size	Count 1	Count 2	Total	Cost	Total Cost
0.25					\$ -
1				15	\$ -
1.25				15	\$ -
2	32	1	33	6.91	\$ -
3		7	7	8.66	\$ 61
4	24	25	49		\$ -
5	3		3	14.23	\$ 43
6	18	7	25	21.61	\$ 540
8	56	23	79	31	\$ 2,449
10	2	6	8	38	\$ 304
12		8	8	48	\$ 384
16	4		4	67	\$ 268
20			0	80	\$ -
24	14		14		\$ 4,049

\*Piping less than 3" is estimated, see notes.

Reducers

Size	Count 1	Count 2	Total	Cost	Total Cost
4x2		1	1	8	\$ 8
6x4	8		8	50	\$ 400
6x5	1		1	50	\$ 50
8x6	8		8	70	\$ 560
16x8	4		4	120	\$ 480
16x10	2		2	120	\$ 240
24x16	6		6	160	\$ 960
20x10		2	2	150	\$ 300
					\$ 2,998

\*Piping less than 3" is estimated, see notes.



## **E.3c Valves Pricing**



**Valve List and Specs**  
**Roca Honda Water Treatment Plant**

Created By Daniel Trump  
 Date 9/20/2010  
 Updated 9/29/2010  
 Vendor: Rampart Supply  
 Contact Jim Fry

Note: All Pricing provided as a budgetary quotation.

**Ball valve water**  
**Spec: DS-10034-BV-01**

<u>Size</u>	<u>Aquantity</u>	<u>Valve Type/Model*</u>	<u>Cost*</u>	<u>Total</u>
2"	32	SV1011TTE20	\$ 35.00 \$	1,120.00

**Ball valves abrasive material**  
**Spec DS-10034-BV-02**

<u>Size</u>	<u>Quantity</u>	<u>Valve Type/Model*</u>	<u>Cost*</u>	<u>Total</u>
0.5"	2	SV1011TTE004	\$ 5.00 \$	10.00
1"	4	SV1011TTE010	\$ 10.00 \$	40.00

**Butterfly valve water**  
**Spec: DS-10034-BF-01**

TYCO / KEYSTONE Figure 221-789 Butterfly Valve <input type="checkbox"/>				
--Cast Iron Wafer-Style body <input type="checkbox"/>				
--Stainless Steel Disc <input type="checkbox"/>				
--416 Stainless Steel Stem <input type="checkbox"/>				
--EPDM Seat <input type="checkbox"/>				
--Acetal Bushing				
or:				
TYCO / KEYSTONE Figure AR2-072 Butterfly Valve <input type="checkbox"/>				
--Cast Iron body <input type="checkbox"/>				
--316 Stainless Steel Disc <input type="checkbox"/>				
--18-8 Stainless Steel Stem <input type="checkbox"/>				
--EPDM Seat <input type="checkbox"/>				
--Acetal Bushing				
<u>Size</u>	<u>Aquantity</u>	<u>Valve Type/Model*</u>	<u>Cost*</u>	<u>Total</u>
2"	1	221-789	\$ 54.00 \$	54.00
3"	2	221-789	\$ 65.00 \$	130.00
4"	10	221-789	\$ 77.00 \$	770.00
5"	1	221-789	\$ 99.00 \$	99.00
6"	3	221-789	\$ 119.00 \$	357.00
8"	3	221-789	\$ 269.00 \$	807.00
12"	0	221-789	\$ 461.00 \$	-
16"	0	AR2-072	\$ 1,499.00 \$	-

**Butterfly valve with actuator****Spec: DS-10034-BF-02**

TYCO / KEYSTONE Figure 221-789 Butterfly Valve <input type="checkbox"/>				
--Cast Iron Wafer-Style body <input type="checkbox"/>				
--Stainless Steel Disc <input type="checkbox"/>				
--416 Stainless Steel Stem <input type="checkbox"/>				
--EPDM Seat <input type="checkbox"/>				
--Acetal Bushing <input type="checkbox"/>				
KEYSTONE EPI-2 ELECTRIC ACTUATOR <input type="checkbox"/>				
--24-240V-AC/DC, NEMA-4X <input type="checkbox"/>				
--OM1 for 4-20mA Output <input type="checkbox"/>				
--OM3 for Local/Remote Control				
<u>Size</u>	<u>Aquantity</u>	<u>Valve Type/Model*</u>	<u>Cost*</u>	<u>Total</u>
4"	8	E006A0W5P60	\$ 1,330.00	\$ 10,640.00
6"	12	E013A0W5P60	\$ 1,482.00	\$ 17,784.00
8"	22	E024A0W5P60	\$ 1,981.00	\$ 43,582.00
12"	2	E051A0W5P60	\$ 2,747.00	\$ 5,494.00

**Butterfly valve with outdoor actuator****Spec: DS-10034-BF-03**

TYCO / KEYSTONE Figure AR2-072 Butterfly Valve <input type="checkbox"/>				
--Cast Iron body <input type="checkbox"/>				
--316 Stainless Steel Disc <input type="checkbox"/>				
--18-8 Stainless Steel Stem <input type="checkbox"/>				
--EPDM Seat <input type="checkbox"/>				
--Acetal Bushing <input type="checkbox"/>				
KEYSTONE EPI-2 ELECTRIC ACTUATOR <input type="checkbox"/>				
--24-240V-AC/DC, NEMA-4X <input type="checkbox"/>				
--OM1 for 4-20mA Output <input type="checkbox"/>				
--OM3 for Local/Remote Control				
<u>Size</u>	<u>Aquantity</u>	<u>Valve Type/Model*</u>	<u>Cost*</u>	<u>Total</u>
16"	22	E091A0W5P60	\$ 3,942.00	\$ 86,724.00

**Check Valve****Spec: DS-10034-CV-01**

<u>Size</u>	<u>Aquantity</u>	<u>Valve Type/Model*</u>	<u>Cost*</u>	<u>Total</u>
3"	10	25114	\$ 132.00	\$ 1,320.00
10"	2	25114	\$ 680.00	\$ 1,360.00
16"	2	25114	\$ 1,755.00	\$ 3,510.00

<b>Total:</b>	<b>\$ 173,801.00</b>
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## **E.4 Installation Labor**



1550 Dover Street  
Lakewood, CO 80215  
Phone: 303-623-8365  
Fax: 303-623-0342

Made By: Daniel Trump  
Date: October 7th, 2010  
Chckd By:  
Date:  
CLIENT: Roca Honda Resources - Strathmore  
LOCATION: Grants, New Mexico  
Job Number: 10034

### Mechanical Installation: Roca Honda WTP

Foreman Rate	75 \$/hr
Labor Rate	55 \$/hr
Hours/Day	8.00

Task Equipment	# of Equip	Men	Days	Total Hours	Total Cost
<b>Tanks (prefabbed)</b>					
Reaction Tanks (in halves)	2	2	5.5	176	
Barium Chloride Mix tanks	2	3	0.5	24	
DE Mix Tank	1	2	0.5	8	
Resin Transfer Water Tank	1	3	2	48	
Overflow Tank	1	3	0.5	12	
			<b>Total</b>	<b>268</b>	<b>\$ 14,740</b>
<b>Pumps</b>					
Plant Feed Pumps	2	3	2	96	
Barium Chloride Metering Pumps	2	1	0.5	8	
Leaf Filter Pumps	2	3	2	96	
Backwash Pumps	2	2	1	32	
DE body Feed Pump	1	1	0.5	4	
DE Precoat Pump	1	2	1	16	
Sump Pumps	3	2	1	48	
			<b>Total</b>	<b>300</b>	<b>\$ 16,500</b>
<b>Equipment</b>					
Clarifying Leaf Filters	3	4	2	192	
Reaction Tank Agitators	2	3	1	48	
Barium Chloride Mix Tank Agitators	2	2	1	32	
DE Mix Tank Agitators	1	2	1	16	
			<b>Total</b>	<b>288</b>	<b>\$ 15,840</b>
<b>Structural Steel (included in Structural)</b>					
Reaction Tanks	1	3	2	48	
Barium Mix tanks	1	3	2	48	
DE Mix Tank	1	3	2	48	
Lab and Control room	1	3	2	48	
*Structural Steel Costs are incorporated with the Structural Steel section and Shown here for demonstration purposes only			<b>Total</b>	<b>192</b>	<b>\$ 10,560</b>
<b>Piping</b>					
IX Area 24" piping	1	4	8	256	
IX Area 6" and 8" piping	1	2	6	96	
Reaction Tank Piping	1	2	1	16	
Barium Chloride Piping	1	2	2	32	
Clarifying Filter Piping	1	4	3	96	
Piping to and from Ponds	1	4	6	192	
*Piping does not include Piping from Dewatering wells to WTP			<b>Total</b>	<b>688</b>	<b>\$ 37,840</b>
<b>Foreman/Supervision</b>					
Water Treatment Plant Mechanical Install	-	1	35	280	
			<b>Total</b>	<b>280</b>	<b>\$ 21,000</b>
<b>Equipment Rental and Others</b>					
Scissor Lift	1	75	35	\$ 2,625	
Crane	1	250	35	\$ 8,750	
Living Allowance	10	100	35	\$ 35,000	<b>\$ 46,375</b>

<b>Total</b>	<b>1,824</b>	<b>\$ 152,295</b>
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## **E.5 Civil and Earthworks**



1550 Dover Street  
Lakewood, CO 80215  
Phone: 303-623-8365  
Fax: 303-623-0342

Made By: Daniel Trump  
Date: October 20th, 2010  
Chckd By:  
Date:  
CLIENT: Roca Honda Resources - Strathmore  
LOCATION: Grants, New Mexico  
Job Number: 10034

### Civil Costs; Roca Honda WTP

**Notes:**

Area and Volume calculations have been performed off of Lyntek Civil (C), and General Arrangement (G) drawings  
Costs for civil works have been taken from RS Means construction costs 2010, and online Means catalog.  
No Earth works have been included for evaporation ponds

Area Information	Slope (X/Y)	Length (ft)	Width (ft)	Depth (ft)	Volume (CY)	Retention (hr)
Settling Ponds	3	125	125	8	2,645	2.0
Settling Ponds	3	125	125	8	2,645	2.0
Solids Holding Pond	3	100	100	8	1,497	-
Solids Holding Pond	3	100	100	8	1,497	-
Discharge Pond	3	100	100	8	1,497	1.2
Plant Area	0	280	80	-	-	-
*plant Flow Rate:	4000 gpm					

Clear and Grub Site	Area (acres)	Cost (\$/acre)	-	Total
Settling Ponds (2)	1.03	4125	-	\$ 4,261
Solids Holding Ponds (2)	1.03	4125	-	\$ 4,261
Discharge Pond	0.52	4125	-	\$ 2,131
Plant Area	0.69	4125	-	\$ 2,841
Plant Access Roads	0.32	4125	-	\$ 1,320
Plant Laydown Area	1.80	4125	-	\$ 7,425
				<b>\$ 22,239</b>

\*Cost From Means 2010 Building Construction Cost Data pg 563

Top Soil Removal	Volume (CY)	Cost (\$/CY)	-	Total
Settling Ponds (2)	833	2	-	\$ 1,667
Solids Holding Ponds (2)	833	2	-	\$ 1,667
Discharge Pond	417	2	-	\$ 833
Plant Area	556	2	-	\$ 1,111
Plant Access Roads	258	2	-	\$ 516
Plant Laydown Area	1,452	2	-	\$ 2,904
				<b>\$ 8,698</b>

\*Estimated top soil depth

.5 ft

\*Cost From Means 2010 Building Construction Cost Data and RS Means online resources

Excavation (Blast and Haul)	Volume (CY)	Blasting Costs (\$/CY)	Hauling Cost (\$/CY)	Total
Settling Ponds (2)	4,011	15	7.5	\$ 90,250
Solids Holding Ponds (2)	2,178	15	7.5	\$ 49,000
Discharge Pond	1,089	15	7.5	\$ 24,500
Plant Area	415	15	7.5	\$ 9,333
Plant Access Roads	0	15	7.5	\$ -
				<b>\$ 173,083</b>

\*Plant Road Excavation

.0 ft

\*Plant Area Excavation

.5 ft

\*Pond depth below grade

3.0 ft

\*Pond excavation below grade

6.0 ft

\*Cost From Means 2010 Building Construction Cost Data pg 56?

Backfill (Excavated Material)	Volume (CY)	Material Cost (\$/CY)	Install Cost (\$/CY)	Total
Settling Ponds (2)	1,594	-	2	\$ 3,189
Solids Holding Ponds (2)	1,104	-	2	\$ 2,207

Discharge Pond	552	-	2	\$	1,104
Plant Area	207	-	2	\$	415
Plant Access Roads	0	-	3	\$	-
% Material From Excavation	50%			\$	<b>6,915</b>
Pond Backfill Depth	2.0 ft				
Plant Backfill Depth	.5 ft				

\*Cost From Means 2010 Building Construction Cost Data pg 56?

Backfill (Burrow Material)	Volume (CY)	Material Cost (\$/CY)	Install Cost (\$/CY)	Total
Settling Ponds (2)	2,925	20	4	\$ 70,211
Solids Holding Ponds (2)	1,743	20	4	\$ 41,822
Discharge Pond	1,191	20	4	\$ 28,578
Plant Area	207	20	4	\$ 4,978
Plant Access Roads	516	20	4	\$ 12,390
% Material From Borrow	50%			\$ <b>157,979</b>
*Road Base Depth	1.0 ft			
*Pond Backfill Depth	1.5 ft			
*Plant Backfill Depth	.5 ft			
*Bank Width	10.0 ft			

\*Cost From Means 2010 Building Construction Cost Data pg 56?

Fencing	Linear Feet	Cost (\$/ft)	Total
Plant and Pond areas	2700	22.44	\$ 60,588
*6' high, 9 ga galvanized Chainlink Fence			\$ 60,588

\*Cost from RS means Online Catalog

<b>Civil Costs:</b>	<b>\$ 429,503</b>
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Pond Lining	Area (sqft)	Bentomat (\$/sqft)	80mil HDPE (\$/sqft)	Total
Settling Pond	35,938		2.35	\$ 168,906
Solids Holding Pond	23,000		2.35	\$ 108,100
Discharge Pond	11,500	1.12	-	\$ 12,880 2300.0
Evaporation Ponds (7)	75,000	1.12	-	\$ 84,000 15000.0
HDPE Installation	58,938		0.5	\$ 58,938 \$ 76,238
Bento Mat Installation				
*Evaporation Pond area is based on preliminary design shown on site layout provided by Roca Honda				\$ <b>432,824</b> 356586.3
*Bentomat includes an installation cost of 0.20\$/sqft				
*Settling and Holding Ponds include 2 HDPE liners for Leak protection				

<b>Total Civil Costs Including Lining:</b>	<b>\$ 862,327</b>
--	-------------------

Cost breakdown by Area	
Laydown area	\$ 30,525
Plant Area	\$ 53,100.61
Settling Ponds	\$ 374,685.03
Solids Ponds	\$ 243,258.41
Discharge Pond	\$ 76,757.50
Evaporation Ponds(7)	\$ 84,000
	<b>\$ 862,327</b>

\*Fencing Costs were split equally among fenced areas  
\*Evaporation Ponds are For Bentomat Liner only



## **E.6 Concrete**





1550 Dover Street  
Lakewood, CO 80215  
Phone: 303-623-8365

Made By: A.Dorn  
Date: September 27, 2010  
Chckd By: T. Hembree  
Date: 7-Oct-10  
CLIENT: Strathmore  
LOCATION: Roco Honda WTP  
Job Number: 10034

**Concrete Quantities; Roca Honda WTP**

**Concrete Cost = 540 \$/CY**

Note:

\*All Concrete Estimates are based on Lyntek General Arrangement (G) drawings and Lyntek Civil (C) Drawings  
\*CDOT 2009 Cost Data \$450/cy for concrete and \$0.60/lb rebar \*150lb/cy

Item	Ref Dwg	Description	No.	QTY	L	W	D	Concrete (CY)	Rebar (lb.)	Total Cost
1		<b>Reaction Area</b>								
1	Concrete.dwg	BaCl2	1	2				32.0	4,793	\$ 17,254
2	Concrete.dwg	Overflow tank	1	1				7.8	1,173	\$ 4,222
3	Concrete.dwg	IX Column	4	8				48.4	7,267	\$ 26,160
4	Concrete.dwg	Slab & containment curb (from AutoCAD)	1	1				134.1	20,110	\$ 72,395
5	Concrete.dwg	Sump & drains	1	1				24.2	3,635	\$ 13,086
6	Concrete.dwg	Piperack Fnd	1	8				11.3	1,700	\$ 6,120
7										
8										
		<b>Sub Total</b>						<b>258</b>	<b>38,677</b>	<b>\$ 139,238</b>
9		<b>Leaf Filter Area</b>								
10	Concrete.dwg	Drains	1	1				8.5	1,279	\$ 4,603
11	Concrete.dwg	Leaf Filters	6	3				18.3	2,738	\$ 9,855
12	Concrete.dwg	DE Mix Tank	1	1				4.7	701	\$ 2,522
13										
		<b>Sub Total</b>						<b>31</b>	<b>4,717</b>	<b>\$ 16,980</b>
14										
15		<b>Resin Area</b>								
16	Concrete.dwg	Transfer Water Tank	1	1				10.6	1,588	\$ 5,717
17	Concrete.dwg	Approach slabs	1	2				22.7	3,400	\$ 12,240
18	Concrete.dwg	sump	1	1				2.7	406	\$ 1,460
19										
		<b>Sub Total</b>						<b>36</b>	<b>5,394</b>	<b>\$ 19,417</b>
20										
21		<b>Building</b>								
22	Concrete.dwg	Slab & curb	1	1				287.3	43,089	\$ 155,119
23	Concrete.dwg	Foundations	1	34	6.0	6.0	1.5	68.0	10,200	\$ 36,720
24	Concrete.dwg	Piers	1	34	2.0	2.0	2.5	12.6	1,889	\$ 6,800
25										
		<b>Sub Total</b>						<b>368</b>	<b>55,177</b>	<b>\$ 198,639</b>
26										
27										
28										
29										
<b>TOTAL CUBIC YARDS</b>								<b>693.1</b>	<b>103,965</b>	<b>\$ 374,274</b>



## **E.7 Electrical**



1550 Dover Street  
 Lakewood, CO 80215  
 Phone: 303-623-8365  
 Fax: 303-623-0342

Made By: Russell Tjossem

Date: October 5th 2010

Chckd By:

Date:

CLIENT: Roca Honda Resources; Strathmore

LOCATION: Grants New Mexico

Job Number: 10034

### Electrical Costs; Roca Honda WTP

Notes:

\*Installation Costs are based on RS Means Construction Costs 2010, and Lynteks past experience with electrical Installations

Equipment	Capital Cost	Installation	Total	Notes
Medium Voltage Tran	\$ 31,400.00	\$ 22,000.00	\$ 53,400.00	Using RSMeans - Agrees with Cutler-Hammer Lumped Quote
Motor Control Center	\$ 104,000.00	\$ 28,954.00	\$ 132,954.00	Using Siemens Quote and 200 HP option
Cable	\$ 46,500.00	\$ 100,544.00	\$ 147,044.00	Anixter Quote
Cable Tray	\$ 13,000.00	\$ 19,070.00	\$ 32,070.00	Tray, Conduit & Strut from Anixter Quote
Conduit	\$ -	\$ 19,690.80	\$ 19,690.80	Included with Tray Pricing
Grounding	\$ 8,085.00	\$ 28,312.00	\$ 36,397.00	Anixter Quote
Lightning	\$ 10,000.00	\$ 16,350.00	\$ 26,350.00	Estimated from previous jobs
Remote Pump Panel	\$ 37,138.00	\$ 3,000.00	\$ 40,138.00	Siemens Quote
Lighting Panel Xform	\$ 15,000.00	\$ 3,400.00	\$ 18,400.00	Siemens Quote
Lighting	\$ 75,000.00	\$ 37,909.00	\$ 112,909.00	Holophane Quote adjusted for square footage
<b>Totals</b>	<b>\$ 340,123.00</b>	<b>\$ 279,229.80</b>	<b>\$619,352.80</b>	Total Major Equipment Labor per RSMeans 2010 SF NM adjusted

<b>Total</b>	<b>\$619,352.80</b>
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\*Labor Cost (Including O&P) Based On RSMeans 2010



## **E.8 Instrumentation**



1550 Dover Street  
Lakewood, CO 80215  
Phone: 303-623-8365

Made By: G. Schoengarth  
Date: October 5, 2010  
Chckd By:  
Date:  
CLIENT: Strathmore  
LOCATION: Roca Honda  
Job Number: 10034

### Instrumentation; Roca Honda WTP

Equipment	
Total	
System	Cost
HMI	\$3,657.24
PLC PANEL	\$16,847.66
RADIO COMMS	\$22,621.20
REMOTE I/O PANEL	\$12,880.16
HAND SWITCHES	\$4,415.01
LEVEL INSTRUMENTS	\$36,609.00
FLOW INSTRUMENTS	\$9,699.00
	<b>\$106,729.28</b>

Labor Breakdown							Labor
Engineering		Construction		Installation			Total
Design	Programming	Construction	Testing	Wiring	Mounting	Commissioning	
Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost
\$125.00	\$10,000.00	\$0.00	\$5,000.00	\$150.00	\$0.00	\$3,750.00	\$19,025.00
\$27,625.00	\$25,000.00	\$12,750.00	\$13,750.00	\$1,250.00	\$750.00	\$12,450.00	\$93,575.00
\$35,000.00	\$8,750.00	\$29,750.00	\$8,750.00	\$5,250.00	\$7,000.00	\$10,500.00	\$105,000.00
\$19,375.00	\$0.00	\$0.00	\$7,750.00	\$1,000.00	\$600.00	\$8,700.00	\$37,425.00
\$22,875.00	\$0.00	\$0.00	\$0.00	\$9,150.00	\$12,150.00	\$27,450.00	\$71,625.00
\$13,250.00	\$0.00	\$0.00	\$0.00	\$15,900.00	\$13,250.00	\$23,850.00	\$66,250.00
\$1,875.00	\$0.00	\$0.00	\$0.00	\$1,500.00	\$2,800.00	\$3,300.00	\$9,475.00
\$120,125.00	\$43,750.00	\$42,500.00	\$35,250.00	\$34,200.00	\$36,550.00	\$90,000.00	<b>\$402,375.00</b>

Equipment & Labor	
Total	
Cost	
	<b>\$22,682.24</b>
	<b>\$110,422.66</b>
	<b>\$127,621.20</b>
	<b>\$50,305.16</b>
	<b>\$76,040.01</b>
	<b>\$102,859.00</b>
	<b>\$19,174.00</b>
	<b>\$509,104.28</b>



## **E.9 Structural Steel**



1550 Dover Street  
Lakewood, CO 80215  
Phone: 303-623-8365  
Fax: 303-623-0342

Made By: T. Hembree  
Date: September 30, 2010  
Chckd By: A.Dorn  
Date: October 6, 2010  
CLIENT: Strathmore  
LOCATION: Roca Honda  
Job Number: 10034

**TABLE 4-2.2 BASIC ENGINEERING, STEEL AREAS**

Line	Ref Dwg	Description	Units	Quantity	Unit Price	Price
200	Leaf Fltr.dwg	DE Mix Tank Plaltform Grating	sf	100	\$20.04	\$2,004
201	Leaf Fltr.dwg	DE Mix Tank Plaltform Stair Treads	risers	16	\$322.67	\$5,163
202	Reaction TNKS.dwg	Grating	sf	282	\$20.04	\$5,651
203	Reaction TNKS.dwg	BaCl2 Platform Grating	sf	175	\$20.04	\$3,507
204	Reaction TNKS.dwg	BaCl2 Platform Stair Treads	risers	14	\$322.67	\$4,517
205	Lab Pltfrm.dwg	Stair treads	risers	15	\$322.67	\$4,840
206	Lab Pltfrm.dwg	Grating	sf	119	\$20.04	\$2,385
209		Cost (\$US)				\$28,067
210						
211			Units	Quantity	Unit Price	Price
212	Leaf Fltr.dwg	DE Mix Tank Plaltform Handrail	lf	76	\$42.62	\$3,239
213	GA	Laboratory landing handrail	lf	24	\$42.62	\$1,023
214	Reaction TNKS.dwg	Reaction Tank Ladder	lf	30	\$107.42	\$3,223
215	Reaction TNKS.dwg	BaCl2 Platform Handrail	lf	94	\$42.62	\$4,006
216	Lab Pltfrm.dwg	Hand rail	lf	73	\$42.62	\$3,120
217						\$14,611
218		Total Cost (\$US)				\$42,678
219						

Note: Stair costs are per riser and include steel stringers, treads, noses on treads, and handrail  
Grating is steel 1-1/2" by 3/16" with crossbars on 4" centers and painted



1550 Dover Street  
Lakewood, CO 80215  
Phone: 303-623-8365  
Fax: 303-623-0342

Made By: T. Hembree  
Date: September 30, 2010  
Chckd By: R. Smith  
Date: November 8, 2010  
CLIENT: Strathmore  
LOCATION: Grants, New Mexico  
Job Number: 10034

**TABLE 4-2.1 BASIC ENGINEERING, STEEL QUANTITIES**

AL(tons) = 3.84 TOTAL= \$18,484

Line	Ref Dwg	Description	No.	QTY	Size	lbs / ft	L (ft)	lb/ft	Sub Total (lbs)	Total (tons)	\$US / ton	Cost
100												
101	Piperacks.dwg	Pipe Rack Steel	2	7	W8x10		3	10	210	0.105	\$3,850.00	\$404
102	Piperacks.dwg	Pipe Rack Steel		14	W8x10		9	10	1190	0.595	\$3,850.00	\$2,291
103	Piperacks.dwg	Pipe Rack Steel		7	L3x3x1/4		4	5	146	0.07	\$3,850.00	\$281
104	Leaf Filtr.dwg	DE Mix Tank Plaltform		4	W6x15		10	15	600	0.30	\$3,850.00	\$1,155
105	Leaf Filtr.dwg	DE Mix Tank Plaltform		4	W8x20		10	20	800	0.40	\$3,850.00	\$1,540
106	Leaf Filtr.dwg	DE Mix Tank Plaltform		2	C12x20.7		17	21	714	0.36	\$8,695.00	\$3,104
107	Reaction TNKS.dwg	BaCl2 Platform Steel		2	W10x22		25	22	550	0.28	\$3,850.00	\$1,059
108	Reaction TNKS.dwg	BaCl2 Platform Steel		2	W10x22		7	22	154	0.08	\$3,850.00	\$296
109	Reaction TNKS.dwg	BaCl2 Platform Steel		8	W6x20		8	20	160	0.08	\$3,850.00	\$308
110	Reaction TNKS.dwg	BaCl2 Platform Steel		2	C12x20.7		15	21	315	0.16	\$8,695.00	\$1,369
111	Lab Pltfrm.dwg	Platform Steel in front of offices		2	C12x20.7		18	21	368	0.18	\$8,695.00	\$1,598
112	Lab Pltfrm.dwg	Platform Steel in front of offices		8	W6x15		3	15	45	0.02	\$3,850.00	\$87
	Lab Pltfrm.dwg	Platform Steel in front of offices		3	W6x15		9	15	135	0.07	\$3,850.00	\$260
113	Lab Pltfrm.dwg	Platform Steel in front of offices		1	W16x26		30	26	780	0.39	\$3,850.00	\$1,502
114	Reaction TNKS.dwg	Platform Steel	2	2	W21x44		24	44	1056	0.53	\$3,850.00	\$2,033
115	Reaction TNKS.dwg	Platform Steel	2	3	W21x44		5	44	220	0.11	\$3,850.00	\$424
116	Reaction TNKS.dwg	Platform Steel	2	2	C12x20.7		6	21	126	0.06	\$8,695.00	\$548
117	Reaction TNKS.dwg	Platform Steel	2	4	2-L3x3x1/4		7	10	69	0.03	\$3,850.00	\$132
118	Reaction TNKS.dwg	Platform Steel	2	2	2-L3x3x1/4		5	10	49	0.02	\$3,850.00	\$94
119												
120		<b>TOTAL:</b>								<b>3.8</b>		<b>\$18,484</b>
121												

Note: Costs are from Means 2010 - CSI 05 12 23.77 3880shop fabricated steel with 75% adder for small amount of steel. Channels are Means field fabricated without adder





## **E.10 First Fills**



1550 Dover Street  
 Lakewood, CO 80215  
 Phone: 303-623-8365  
 Fax: 303-623-0342

Made By: Daniel Trump  
 Date: October 20th, 2010  
 Chckd By:  
 Date:  
 CLIENT: Roca Honda Resources - Strathmore  
 LOCATION: Grants, New Mexico  
 Job Number: 10034

### **First Fills Cost; Roca Honda WTP**

**Notes:**

- \*Reagent Consumption is calculated based on 8,000gpm
- \*Resin First Fill is to Fill 8 columns, with 6ft of resin bed, at a 12ft diameter
- \*Resin First Fill includes 1 years worth of additional resin at 5% loss.
- \*First fills for Barium Chloride and Diatomaceous Earth are for roughly 30 days worth of supply.

1500

Reagents	Cost	Consumption (ton/day)	First Fill Quantity	First Fill Cost
Barium Chloride	\$2,500 /ton	0.72	21.6 tons	\$ 54,075
Diatomaceous Earth (DE)	\$1,500 /ton	0.065	1.9 tons	\$ 2,903
Resin Beads (Ion Exchange)	\$125.00 /cuft	0.74	5699 ft3	\$ 712,425
				<b>\$ 769,403</b>

**Total Costs \$ 769,403**



## **E.11 Detailed Engineering**



1550 Dover Street  
Lakewood, CO 80215  
Phone: 303-623-8365

Made By: Daniel Trump  
Date: October 26th, 2010  
Chckd By:  
Date:  
CLIENT: Roca Honda Resources - Strathmore  
LOCATION: Grants, New Mexico  
Job Number: 10034

### Detailed Engineering; Roca Honda WTP

Area	Drawing No.	No. of Drawings / Units	Drawing Title	Engineering Man-hours / Drawing	Discipline Engineer Cost \$	Designer Man-hours / Drawing	Designer Cost \$	Total Estimated Cost (\$)	Comments
					<b>\$130</b>		<b>\$100</b>		
General Drawings	XXXX-X-01	1		4	\$520	9	900	\$1,420	
	XXXX-X-02	1		4	\$520	9	900	\$1,420	
	XXXX-X-03	1		4	\$520	9	900	\$1,420	
		<b>3</b>	<b>Subtotal - General</b>	<b>12</b>	<b>\$1,560</b>	<b>27</b>	<b>2700</b>	<b>\$4,260</b>	
Process Flow Diagrams	XXXX-F-01	1	Simplified ProcessFlow Sheet	6	\$780	18	1,800	\$2,580	
	XXXX-F-02	1	Simplified ProcessFlow Sheet	6	\$780	18	1,800	\$2,580	
	XXXX-F-03	1	Mass Balance	12	\$1,560	9	900	\$2,580	
		<b>3</b>	<b>Subtotal - PFD's</b>	<b>24</b>	<b>\$3,120</b>	<b>45</b>	<b>3600</b>	<b>\$5,160</b>	
Piping & Instrument Diagrams	XXXX-D-01	1	Plant Feed and Settling Ponds	4	\$520	9	900	\$1,420	
	XXXX-D-02	1	Solids Pond and Discharge Ponds	4	\$520	9	900	\$1,420	
	XXXX-D-03	1	Barium Chloride and Diatomaceous Earth Mix Circuits	9	\$1,170	18	1,800	\$2,970	
	XXXX-D-04	1	Barium Chloride Reactor and Pressure Leaf Filter Circuits	9	\$1,170	18	1,800	\$2,970	
	XXXX-D-05	1	I-X Circuit & Resin Transfer Circuit	9	\$1,170	18	1,800	\$2,970	
	XXXX-D-06	1	Ancillary Circuits w/Washdown	9	\$1,170	18	1,800	\$2,970	
	XXXX-D-07	1	Power Generation	6	\$780	18	1,800	\$2,580	
		<b>7</b>	<b>Subtotal P&amp;ID's</b>	<b>50</b>	<b>\$6,500</b>	<b>108</b>	<b>\$10,800</b>	<b>\$17,300</b>	
Civil	XXXX-C-01	1	Overall Site Plan	9	\$1,170	9	900	\$2,070	
	XXXX-C-02	1	Plant Site Rough Grading Plan	9	\$1,170	9	900	\$2,070	
	XXXX-C-03	1	Miscellaneous Site Details	9	\$1,170	9	900	\$2,070	
	XXXX-C-04	1	Plant Site Grading Plan	9	\$1,170	9	900	\$2,070	
	XXXX-C-05	1	Construction Site Plan	9	\$1,170	9	900	\$2,070	
	XXXX-C-06	1	Discharge Pipe Line	9	\$1,170	9	900	\$2,070	
	XXXX-C-07	1	Discharge Ponds Plan Section & Details	9	\$1,170	18	1,800	\$2,970	
	XXXX-C-08	1	Solids and Settling Pond Plan Section & Details	9	\$1,170	18	1,800	\$2,970	
	XXXX-C-09	1	Septic System Plan	9	\$1,170	18	1,800	\$2,970	
	XXXX-C-10	1	Fire & Domestic Water Plan	9	\$1,170	9	900	\$2,070	
	XXXX-C-11	1	Fire & Domestic Water Details and Notes	9	\$1,170	9	900	\$2,070	
	XXXX-C-12	1	Spillway Plan & Sections	9	\$1,170	18	1,800	\$2,970	
		<b>12</b>	<b>Subtotal Civil</b>	<b>72</b>	<b>\$9,360</b>	<b>90</b>	<b>\$9,000</b>	<b>\$18,360</b>	
Architectural	XXXX-A-01	1	Water Treatment Plant Roof Plan and End Elevations	4	\$520	9	900	\$1,420	
	XXXX-A-02	1	Water Treatment Plant Front and Rear Elevations	4	\$520	9	900	\$1,420	
	XXXX-A-03	1	Water Treatment Plant Architectural Details	4	\$520	9	900	\$1,420	
	XXXX-A-04	1	Laboratoy Plan and Details	4	\$520	18	1,800	\$2,320	
	XXXX-A-05	1	Offices Plan and Details	4	\$520	18	1,800	\$2,320	
	XXXX-A-06	1	MCC Plan and Details	4	\$520	18	1,800	\$2,320	
	XXXX-A-07	1	Control Room Plan and Details	4	\$520	18	1,800	\$2,320	
	XXXX-A-08	1	Lean to and Outbuilding Plans and Details	4	\$520	18	1,800	\$2,320	
	XXXX-A-09	1	Power Generator Building	4	\$520	18	1,800	\$2,320	
		<b>5</b>	<b>Subtotal Architectural</b>	<b>20</b>	<b>\$2,600</b>	<b>63</b>	<b>\$6,300</b>	<b>\$8,900</b>	
Concrete	XXXX-R-01	1	Concrete Standard Details	9	\$1,170	5	500	\$1,670	
	XXXX-R-02	1	Water Treatment Plant Concrete Location Plan	9	\$1,170	5	500	\$1,670	
	XXXX-R-03	2	Water Treatment Plant Concrete Foundation Plans and Details	18	\$2,340	10	1,000	\$3,340	
	XXXX-R-04	1	Water Treatment Plant Concrete Pedestals and Supports	9	\$1,170	5	500	\$1,670	
	XXXX-R-05	1	Water Treatment Plant Concrete Stem Wall Details	9	\$1,170	5	500	\$1,670	
	XXXX-R-06	1	Containment, Sump and Floor Drain Details	9	\$1,170	5	500	\$1,670	
	XXXX-R-07	2	Water Treatment Plant Floor Slab Pland and Details	18	\$2,340	10	1,000	\$3,340	
	XXXX-R-08	1	Discharge Water Head Pond and Generator Raceway	9	\$1,170	5	500	\$1,670	
		<b>10</b>	<b>Subtotal Concrete</b>	<b>90</b>	<b>\$11,700</b>	<b>50</b>	<b>\$5,000</b>	<b>\$16,700</b>	
Structural	XXXX-S-01	1	Standard Steel Notes and Details	2	\$260	4	400	\$660	
	XXXX-S-02	1	Barium Chloride Structural Steel Assembly Drawing and Details	9	\$1,170	9	900	\$2,070	
	XXXX-S-03	1	Reactor Tank Structural Steel Assembly Drawing and Details	9	\$1,170	9	900	\$2,070	
	XXXX-S-04	1	Diatomaceous Earth Mixing Structural Steel Assembly Drawing and Details	9	\$1,170	9	900	\$2,070	
	XXXX-S-05	1	Laboratory Access Structural Steel Assembly Drawing and Details	9	\$1,170	9	900	\$2,070	
	XXXX-S-06	1	Pipe Support Rack Assembly and Details	9	\$1,170	9	900	\$2,070	
		<b>6</b>	<b>Subtotal Structural</b>	<b>47</b>	<b>\$6,110</b>	<b>49</b>	<b>\$4,900</b>	<b>\$11,010</b>	
General Arrangements	XXXX-G-01	1	Water Treatment Plant Plan	5	\$650	18	1,800	\$2,450	
	XXXX-G-02	2	Water Treatment Plant Sections	10	\$1,300	36	3,600	\$4,900	
	XXXX-G-03	2	Water Treatment Plant Elevations	10	\$1,300	36	3,600	\$4,900	
	XXXX-G-04	1	Water Treatment Plant Details	5	\$650	18	1,800	\$2,450	
	XXXX-G-05	1	Construction and Laydown Site	5	\$650	18	1,800	\$2,450	
	XXXX-G-06	1	Office Plan	5	\$650	18	1,800	\$2,450	
	XXXX-G-07	1	Laboratory Plan	5	\$650	18	1,800	\$2,450	
	XXXX-G-08	2	Power Generator Plant	18	\$2,340	36	3,600	\$5,940	
		<b>11</b>	<b>Subtotal General Arrangements</b>	<b>63</b>	<b>\$8,190</b>	<b>198</b>	<b>19800</b>	<b>\$27,990</b>	
Electrical	XXXX-E-01	1	Symbols and Abbreviations	5	\$650	5	500	\$1,150	
		1	Electrical Equipment List	27	\$3,510			\$3,510	
		1	Instrument List	27	\$3,510			\$3,510	
		10	Data Sheets for Major Electrical Equipment	36	\$4,680			\$4,680	
		10	Data Sheets for Major Instruments	20	\$2,600			\$2,600	
	XXXX-E-02	1	Main Distribution One-Line Diagram	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-03	1	MCC One-Line Diagram	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-04	1	Generator Plant One Line Diagram	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-05	1	Site Electrical Plan	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-06	1	Water Treatment Plant Electrical Plan	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-07	1	Plant Lighting Plan	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-08	1	Site Lighting Plan	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-09	1	Plant Grounding Plan	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-10	2	Site Grounding Plan	18	\$2,340	30	3,000	\$5,340	
	XXXX-E-11	1	Plant Lightning Protection Plan	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-12	1	Site Instrument Plan	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-13	1	Plant Instrument Plan	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-14	1	Security Plan	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-15	1	Site Communications Plan	9	\$1,170	15	1,500	\$2,670	
	XXXX-E-16	2	Panel Schedules	18	\$2,340	30	3,000	\$5,340	
		<b>40</b>	<b>Subtotal Electrical</b>	<b>268</b>	<b>\$34,840</b>	<b>260</b>	<b>26000</b>	<b>\$60,840</b>	
Mechanical		1	Equipment Sizing Calculations	40	\$5,200	0	0	\$5,200	
		1	Mechanical Equipment List	45	\$5,850	0	0	\$5,850	
		30	Data Sheets for All Mechanical Equipment	75	\$9,750	0	0	\$9,750	
		20	Bid Evaluations Equipment Quotations	80	\$10,400	0	0	\$10,400	

	1	I-X Column Plan Section and Detail	9	\$1,170	9	900	\$2,070	
	1	I-X Column Inlet & Outlet Header - Details	9	\$1,170	18	1,800	\$2,970	
	1	Tank Data Sheet Reactor Tanks	9	\$1,170	5	500	\$1,670	
	1	Tank Data Sheet Barium Chloride Mix Tanks	9	\$1,170	5	500	\$1,670	
	1	Tank Data Sheet Diatomaceous Earth Mix Tanks	9	\$1,170	5	500	\$1,670	
Piping	NL							
	1	Pressure Leaf Filter Feed Pump Plan and Details	6	\$780	18	1,800	\$2,580	
	2	Settling Pond Suction Pump and Piping Details	12	\$1,560	36	3,600	\$5,160	
	3	Feed Water Piping Isometric Drawings	18	\$2,340	54	5,400	\$7,740	
	4	Plant Piping Sections and Details	24	\$3,120	72	7,200	\$10,320	
	2	Generator Plant Piping Details	12	\$1,560	36	3,600	\$5,160	
	<b>69</b>	<b>Subtotal Mechanical and Piping</b>	<b>357</b>	<b>\$46,410</b>	<b>258</b>	<b>\$25,800</b>	<b>\$72,210</b>	
Major Specifications								
	1	Process Building	20	\$2,600			\$2,600	
	1	Metallurgical Laboratory (includes procurement)	80	\$10,400			\$10,400	
	1	Misc. Buildings	20	\$2,600			\$2,600	
	1	Design Criteria	40	\$5,200			\$5,200	
	<b>4</b>	<b>Major Specifications and Data Sheets</b>	<b>160</b>	<b>\$20,800</b>	<b>0</b>	<b>0</b>	<b>\$20,800</b>	
Permitting Assistance								
	1	Permitting Assistance	90	\$11,700			\$11,700	
		<b>Permitting Assistance</b>	<b>90</b>	<b>\$11,700</b>			<b>\$11,700</b>	
Geologic Model & Mine Planning	0	Mine Planing Assume that data is digitized	<b>0</b>				<b>\$0</b>	
Total Drawing	166							
Capital Cost Estimate	0	Develop CapEx for WTP	40	\$5,200			\$5,200	
		Develop RFQ for WTP	40	\$5,200			\$5,200	
Operating Cost Estimate	0	Man-power, reagents, consumables for all areas, maintenance materials	40	\$5,200			\$5,200	
Construction Schedule	1	Construction Schedule per RFP	40	\$5,200			\$5,200	
Procurement	1	Procurement of Equipment	120	\$15,600			\$15,600	
		<b>Reports, Cost Estimates and Construction Schedule</b>	<b>280</b>	<b>\$36,400</b>	<b>0</b>	<b>\$0</b>	<b>\$36,400</b>	
		<b>Subtotal Engineering and Design</b>	<b>1,431</b>	<b>\$186,030</b>	<b>1,121</b>	<b>111,200</b>	<b>\$295,670</b>	
Project Management								
	1	Project Manager	215	\$30,051			\$30,051	
	1	Project Engineer/Process	358	\$50,085			\$50,085	
	1	Accounting	50	\$3,250			\$3,250	
	1	Project Administration	160	\$8,800			\$8,800	
	1	Senior Management/Sponsor	80	\$12,800			\$12,800	
	2	Trips to site 4 days each	72	\$19,440	500	600	\$20,540	
		<b>Subtotal Project Management</b>	<b>934</b>	<b>\$124,426</b>			<b>\$125,526</b>	
		<b>Total Estimated Cost Engineering and Project Management</b>	<b>2,365</b>	<b>\$310,456</b>	<b>1,121</b>	<b>\$111,200</b>	<b>\$421,196</b>	<b>\$121</b>
		<b>Office Overhead at 7% of Labor</b>					<b>\$29,516</b>	<b>7.00%</b>
		<b>Subtotal Detailed Engineering Cost w/o Contingency</b>					<b>\$450,712</b>	
		<b>SUBTOTAL ESTIMATE FEASIBILITY STUDY COST</b>					<b>\$450,712</b>	
		<b>Contingency at 10%</b>					<b>\$45,071</b>	<b>10.00%</b>
		<b>TOTAL ESTIMATED DETAILED ENGINEERING COST w/ CONTINGENCY</b>					<b>\$495,783</b>	



## **E.12 Construction Management**



1550 Dover Street  
 Lakewood, CO 80215  
 Phone: 303-623-8365

Made By: Daniel Trump  
 Date: October 26th, 2010  
 Chckd By:  
 Date:  
 CLIENT: Roca Honda Resources - Strathmore  
 LOCATION: Grants, New Mexico  
 Job Number: 10034

**Construction Management; Roca Honda WTP**

**Construction Management**

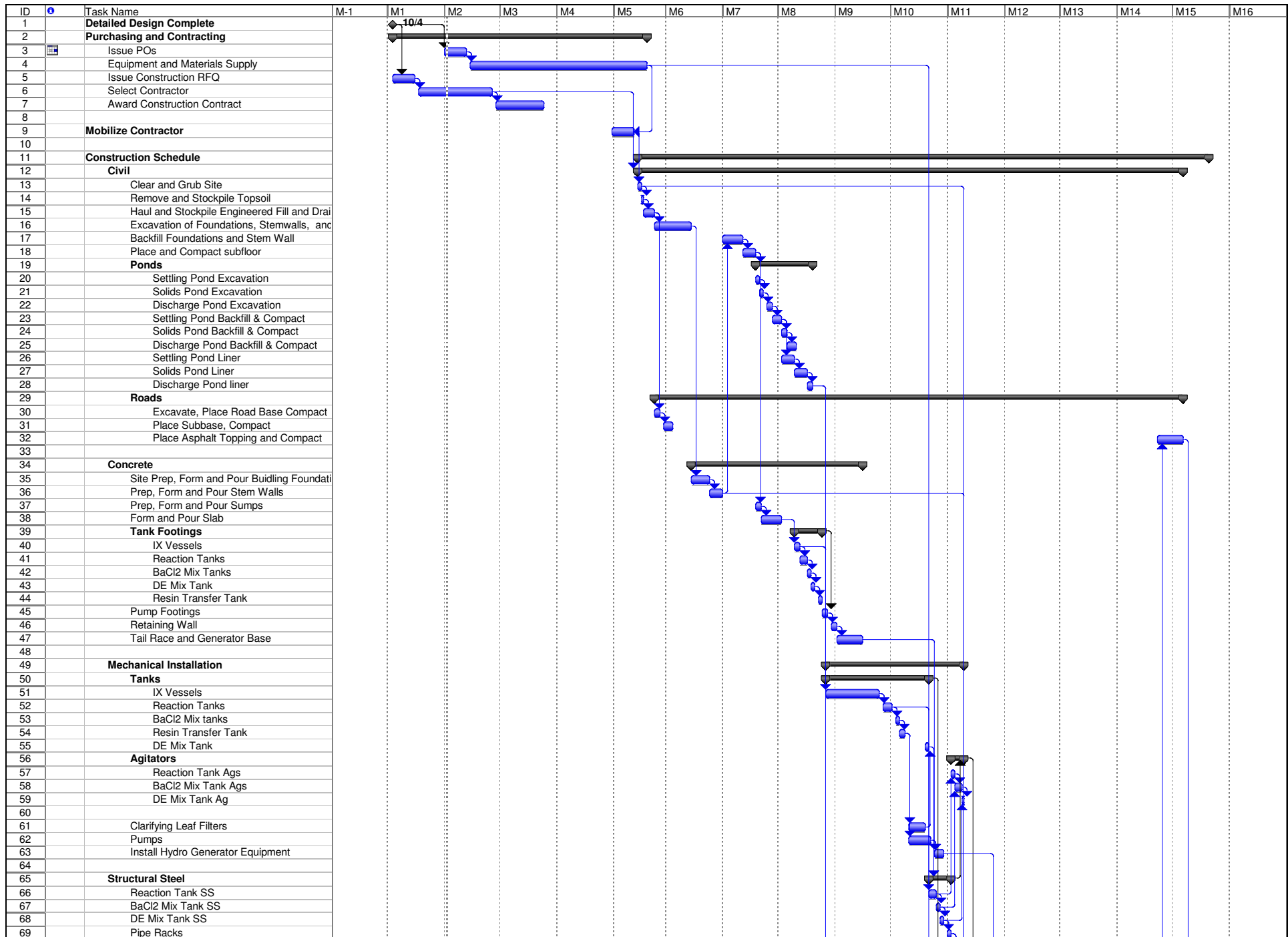
<u>Personell</u>	<u>Rate</u>	<u>Hours per Day</u>	<u>Days per Week</u>	<u>Weeks of Construction</u>	<u>First Fill Cost</u>
Construction Manager	\$ 140	10	5	35	\$ 245,000
Project Engineer	\$ 125	8	5	35	\$ 175,000
Project Manager	\$ 140	4	5	35	\$ 98,000
					<b>\$ 518,000</b>

**Total Costs \$ 518,000**



## **E.13 Construction Schedule**





ID	Task Name	M-1	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16
70																		
71	<b>Building &amp; Architectural</b>																	
72	Erect Building																	
73	Erect Inside Structures																	
74	Install Stairs																	
75	Install Plumbing																	
76	Install Ventilation																	
77	Install Furniture and Fixtures																	
78	Install Access Doors																	
79	Install Pipe Inlet Lean-to																	
80	Install Generator Building																	
81																		
82	<b>Piping</b>																	
83	2" and smaller Pipe																	
84	4" Pipe																	
85	6" Pipe																	
86	8" Pipe																	
87	10" Pipe & 16" Pipe																	
88	24" Pipe																	
89	Place and Anchor 20" Discharge Pipe																	
90																		
91	<b>Instrumentation Installation</b>																	
92	Level Elements																	
93	Flow Meters																	
94	Hand Switches																	
95	Pressure Gauges																	
96	Valve Actuators																	
97	PLC Programming																	
98																		
99	<b>Electrical Installation</b>																	
100	Substation installation																	
101	MCC Install																	
102	Control room Install																	
103	Lightning Protection																	
104	Plant Grounding Loop																	
105	Main Power Feed Installation																	
106	Plant Wiring																	
107	Control Wiring																	
108	Lighting																	
109																		
110	<b>Start-up</b>																	
111	Pre-Commissioning																	
112	Commissioning																	
113	Start-up																	
114																		
115	<b>Demobilize</b>																	
116	Site Clean-up																	
117	Demobilize																	