ATTACHMENT A

Table 3(a): Large Waste Pile - Total Metals Data Summary
Atlas Metals, Los Angeles, California

Metal	Range (mg/kg)	Mean (mg/kg)	Confidence Interval	RESULTS* (mg/kg)	Action Levels (mg/kg)		
					TTLC†	Industrial PRG‡	Residential PRG
Antimony	2,310 - 24.1	203.5	± 148	351.3	500	410	31
Arsenic	243 - 23.3	79.2	± 14.7	93.9	500	1.6	0.39
Barium	4,130 - 563	1,528.9	± 304.3	1,833.2	10,000	67,000	5,400
Beryllium	3.2 - ND	1.9	± 0.2	2.1	75	1,900	150
Cadmium	91.8 - 20.1	53.4	± 5.8	59.2	100	450	37
Chromium	3,720 - 224	1,110.6	± 262.9	1,373.5	2,500	450	210
Cobalt	67.6 - 18	36.2	± 3.7	39.9	8,000	1,900	900
Copper	11,200 - 1,590	3,348.0	± 701.8	**4,049.8**	2,500	-	-
Lead	56,200 - 3,890	12,838.5	± 3218.8	**16,057.3**	1,000	800	400
Mercury	20.7 - 5.9	14.3	± 1.2	15.5	20	310	23
Molybdenum	460 - 30.6	101.0	± 27.5	128.5	3,500	5,100	390
Nickel	2,450 - 141	812.9	± 184.1	997	2,000	20,000	1,600
Selenium	18.1 - ND	7.9	± 1.1	9	1,000	5,100	390
Silver	7.4 - 1.7	4.6	± 0.4	5.0	500	5,100	390
Thallium	7.4 - ND	5.6	± 0.4	6.0	700	67	5.2
Vanadium	46.2 - 19	31.0	± 2.9	33.0	2,400	1,000	78
Zinc	15,500 - 4,470	10,261.5	± 771.1	**11,032.6**	5,000	100,000	23,000

Notes:
- mg/kg - milligrams per kilogram
- ND - non-detect
- **BOLD** values over TTLC limits
*Results = Mean + Upper Confidence Interval

Action Levels:
† California Total Threshold Limit Concentration Hazardous Waste Limits
‡ USEPA Region 9 Preliminary Remediation Goals for Soil, 2004
- DTSC Lead in Schools - 255 mg/kg

Table 3(b): Small Waste Pile - Total Metals Data Summary
Atlas Metals, Los Angeles, California

Metal	Range (mg/kg)	Mean (mg/kg)	Confidence Interval	RESULTS* (mg/kg)	Action Levels (mg/kg)		
					TTLC†	Industrial PRG‡	Residential PRG
Antimony	182 - ND	44.8	± 15.6	60.4	500	410	31
Arsenic	57.3 - 6.3	58.1	± 26.9	85.0	500	1.6	0.39
Barium	3,400 - 300	1,254.0	± 202.9	1,456.9	10,000	67,000	5,400
Beryllium	1.8 - ND	1.7	± 0	1.7	75	1,900	150
Cadmium	77.7 - 24.5	46.8	± 4.3	51.1	100	450	37
Chromium	1,180 - 174	434.3	± 78	512.3	2,500	450	210
Cobalt	44.8 - 11.9	27.1	± 2.5	29.6	8,000	1,900	900
Copper	7,200 - 1,190	3,398.5	± 509	**3,907.5**	2,500	-	-
Lead	31,800 - 4,730	11,408.5	± 1,909.7	**13,318.2**	1,000	800	400
Mercury	11.8 - 3.6	8.6	± 0.8	9.4	20	310	23
Molybdenum	78.6 - 18	51.3	± 5.1	56.4	3,500	5,100	390
Nickel	1,220 - 223	420.7	± 79.1	499.8	2,000	20,000	1,600
Selenium	8.4 - ND	4.0	± 0.6	4.6	1,000	5,100	390
Silver	8.3 - 2.2	4.8	± 0.5	5.3	500	5,100	390
Thallium	5.3 - ND	3.8	± 0.2	4.0	700	67	5.2
Vanadium	177 - 22.4	36.9	± 9.9	46.8	2,400	1,000	78
Zinc	16,800 - 2,920	10,735.5	± 1,080.4	**11,815.9**	5,000	100,000	23,000

Notes:
- mg/kg - milligrams per kilogram
- ND - non-detect
- **BOLD** values over TTLC limits
- *Results = Mean + Upper Confidence Interval

Action Levels:
† California Total Threshold Limit Concentration Hazardous Waste Limits
‡ USEPA Region 9 Preliminary Remediation Goals for Soil, 2004
- DTSC Lead in Schools - 255 mg/kg

Table 4: TCLP Metals Data Summary
Atlas Metals, Los Angeles, California

Metal	Pile	Range (mg/L)	Mean (mg/L)	Confidence Interval	RESULTS* (mg/kg)	RCRA TCLP† (mg/L)
Arsenic	Large	0.012 - ND	0	± 0	0	5
Barium		3.6 - 1.1	1.8	± 0.2	2.0	100
Cadmium		1.1 - 0.15	0.6	± 0.1	0.7	1
Chromium		0.0064 - ND	0	± 0	0	5
Lead		70.5 - 1.9	23.9	± 5.7	**29.6**	5
Mercury		0.00036 - ND	0	± 0	0	0.2
Selenium		0.0066 - ND	0	± 0	0	1
Silver		ND	ND	± 0	ND	5
Arsenic	Small	0.0077 - ND	0	± 0	0	5
Barium		2.4 - 0.78	1.4	± 0.1	1.5	100
Cadmium		1.1 - 0.19	0.6	± 0.1	0.7	1
Chromium		0.0013 - ND	0	± 0	0	5
Lead		68.7 - 0.65	21.0	± 4.5	**25.5**	5
Mercury		ND	ND	± 0	ND	0.2
Selenium		0.0096 - ND	0	± 0	0	1
Silver		ND	ND	± 0	ND	5

Notes:
- mg/L - milligrams per liter
- ND - non-detect
- **BOLD** values over TCLP limit
*Results = Mean + Upper Confidence Interval

Action Levels:
† Resource Conservation & Recovery Act
Toxicity Characteristic Leaching Procedure

Table 5: Polychlorinated Biphenyls Data Summary
Atlas Metals, Los Angeles, California

Aroclor	Pile	Range (mg/kg)	Mean (mg/kg)	Confidence Interval	RESULTS* (mg/kg)	Action Levels (mg/kg)	
						TSCA PCB Rule†	TTLC‡
1016	Large	0.350 - ND	0	± 0	0	1	50
1221		ND	ND	± 0	ND	1	50
1232		ND	ND	± 0	ND	1	50
1242		ND	ND	± 0	ND	1	50
1248		ND	ND	± 0	ND	1	50
1254		28.0 - ND	1.3	± 12.9	**14.2**	1	50
1260		0.380 - ND	0	± 0	0	1	50
1016	Small	ND	ND	± 0	ND	1	50
1221		ND	ND	± 0	ND	1	50
1232		ND	ND	± 0	ND	1	50
1242		ND	ND	± 0	ND	1	50
1248		ND	ND	± 0	ND	1	50
1254		120 - 4.4	19.8	± 7.1	**26.9**	1	50
1260		ND	ND	± 0	ND	1	50

Notes:
- mg/kg - milligrams per kilogram
- ND - non-detect
- **BOLD** values over TSCA limit
*Results = Mean + Upper Confidence Interval

Action Levels:
† Toxic Substance Control Act PCB Rule
‡ California Total Threshold Limit Concentration Hazardous Waste Limits

Table 6(a): Large Waste Pile - Polynuclear Aromatic Hydrocarbons Data Summary
Atlas Metals, Los Angeles, California

PAH	Range (mg/kg)	Mean (mg/kg)	Confidence Interval	RESULTS* (mg/kg)	Action Levels (mg/kg)	
					Residential PRG†	Industrial PRG
Acenaphthene	0.870 - ND	0.614	± 0.017	0.631	3,700	29,000
Acenaphthylene	ND	ND	± 0	ND	-	-
Anthracene	1.5 - ND	0.514	± 0.95	0.609	22,000	100,000
Benzo(g,h,i)perylene	2.0 - ND	1.2	± 0.1	1.3	-	-
Fluoranthene	8.5 - ND	1.8	± 0.6	2.4	2,300	22,000
Fluorene	0.940 - ND	0.560	± 0.027	0.587	2,700	26,000
Napthalene	0.660 - ND	0.546	± 0.008	0.554	56 *(1.7)*	190 *(4.2)*
Phenathrene	5.7 - ND	1.0	± 0.4	1.4	-	-
Pyrene	7.4 - ND	1.7	± 0.5	2.2	2,300	29,000
Benzo(a)anthracene	2.9 - ND	0.920	± 0.18	**1.1**	0.62	2.1
Benzo(a)pyrene	2.9 - ND	0.887	± 0.213	**1.1**	0.062	0.21
Benzo(b)fluoranthene	3.0 - ND	1.0	± 0.3	**1.3**	0.62	2.1
Benzo(k)fluoranthene	2.7 - ND	0.896	± 0.204	**1.1**	6.2 *(0.38)*	21 *(1.3)*
Chrysene	3.2 - ND	0.998	± 0.202	1.2	62 *(3.8)*	210 *(13)*
Dibenzo(a,h)anthracene	0.810 - ND	0.611	± .013	**0.624**	0.062	0.21
Indeno(1,2,3-cd)pyrene	1.8 - ND	0.764	± 0.1	**0.864**	0.62	2.1

Note:
- mg/kg - milligrams per kilogram
- ND - non-detect
- **BOLD** values over PRG
- *Results = Mean + Upper Confidence Interval

Action Levels:
† USEPA Region 9 Preliminary Remediation Goals for Soil, 2004
- *ITALICS*: California Modified PRGs

Table 6(b): Small Waste Pile - Polynuclear Aromatic Hydrocarbons Data Summary
Atlas Metals, Los Angeles, California

PAH	Range (mg/kg)	Mean (mg/kg)	Confidence Interval	RESULTS* (mg/kg)	Action Levels (mg/kg)	
					Residential PRG†	Industrial PRG
Acenaphthene	ND	ND	± 0	ND	3,700	29,000
Acenaphthylene	ND	ND	± 0	ND	-	-
Anthracene	1.3 - ND	0.529	± 0.055	0.584	22,000	100,000
Benzo(g,h,i)perylene	1.2 - ND	1.0	± 0.1	1.1	-	-
Fluoranthene	10.0 - ND	1.5	± 0.7	2.2	2,300	22,000
Fluorene	ND	ND	± 0	ND	2,700	26,000
Napthalene	ND	ND	± 0	ND	56 *(1.7)*	190 *(4.2)*
Phenathrene	6.4 - ND	0.885	± 0.415	1.3	-	-
Pyrene	7.8 - ND	1.6	± 0.4	2.0	2,300	29,000
Benzo(a)anthracene	3.1 - ND	0.782	± 0.172	**0.954**	0.62	2.1
Benzo(a)pyrene	2.5 - ND	0.827	± 0.138	**0.965**	0.062	0.21
Benzo(b)fluoranthene	3.2 - ND	1.0	± 0.2	**1.2**	0.62	2.1
Benzo(k)fluoranthene	2.3 - ND	0.799	± 0.122	0.921	6.2 *(0.38)*	21 *(1.3)*
Chrysene	3.3 - ND	0.849	± 0.151	1.0	62 *(3.8)*	210 *(13)*
Dibenzo(a,h)anthracene	ND	ND	± 0	ND	0.062	0.21
Indeno(1,2,3-cd)pyrene	1.3 - ND	0.661	± 0.5	**0.711**	0.62	2.1

Note:
- mg/kg - milligrams per kilogram
- ND - non-detect
- **BOLD** values over PRG
- *Results = Mean + Upper Confidence Interval

Action Levels:
† USEPA Region 9 Preliminary Remediation Goals for Soil, 2004
- *ITALICS:* California Modified PRGs

The laboratory data for particle-size distribution was reported in percent by weight and is provided in Table 7. No statistical analysis was performed for this data by the START.

Table 7: Particle-Size Data Summary
Atlas Metals Assessment
Watts, Los Angeles, California

Sample ID	USCS Description	Median Grain Size (mm)	Particle Size Distribution (wt. %)				
			Gravel	Sand			Silt/Clay
				Coarse	Medium	Fine	
Comp 1 (LWP 1-6)	medium sand	0.741	16.15	18.57	26.11	26.19	12.99
Comp 2 (LWP 7-12)	gravel	2.239	39.29	12.65	19.52	19.52	9.03
Comp 3 (LWP 13-18)	coarse sand	0.943	22.30	16.48	23.47	23.64	14.11
Comp 4 (SWP 1-6)	medium sand	0.744	16.66	16.31	27.82	25.82	13.39
Comp 5 (SWP 7-12)	coarse sand	1.340	22.15	20.48	24.72	21.18	11.47
Comp 6 (SWP 13-18)	coarse sand	0.972	24.38	13.94	25.84	23.98	11.86

NOTES
USCS: Unified Soil Classification System; mm: millimeter; wt. %: percent by weight

ATTACHMENT B

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Backfilling	01-1 Stabilize backfill material when not actively handling; and 01-2 Stabilize backfill material during handling; and 01-3 Stabilize soil at completion of activity.	✓ Mix backfill soil with water prior to moving ✓ Dedicate water truck or high capacity hose to backfilling equipment ✓ Empty loader bucket slowly so that no dust plumes are generated ✓ Minimize drop height from loader bucket
Clearing and grubbing	02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and 02-2 Stabilize soil during clearing and grubbing activities; and 02-3 Stabilize soil immediately after clearing and grubbing activities.	✓ Maintain live perennial vegetation where possible ✓ Apply water in sufficient quantity to prevent generation of dust plumes
Clearing forms	03-1 Use water spray to clear forms; or 03-2 Use sweeping and water spray to clear forms; or 03-3 Use vacuum system to clear forms.	✓ Use of high pressure air to clear forms may cause exceedance of Rule requirements
Crushing	04-1 Stabilize surface soils prior to operation of support equipment; and 04-2 Stabilize material after crushing.	✓ Follow permit conditions for crushing equipment ✓ Pre-water material prior to loading into crusher ✓ Monitor crusher emissions opacity ✓ Apply water to crushed material to prevent dust plumes

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Cut and fill	05-1 Pre-water soils prior to cut and fill activities; and 05-2 Stabilize soil during and after cut and fill activities.	✓ For large sites, pre-water with sprinklers or water trucks and allow time for penetration ✓ Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts
Demolition – mechanical/manual	06-1 Stabilize wind erodible surfaces to reduce dust; and 06-2 Stabilize surface soil where support equipment and vehicles will operate; and 06-3 Stabilize loose soil and demolition debris; and 06-4 Comply with AQMD Rule 1403.	✓ Apply water in sufficient quantities to prevent the generation of visible dust plumes
Disturbed soil	07-1 Stabilize disturbed soil throughout the construction site; and 07-2 Stabilize disturbed soil between structures	✓ Limit vehicular traffic and disturbances on soils where possible ✓ If interior block walls are planned, install as early as possible ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes
Earth-moving activities	08-1 Pre-apply water to depth of proposed cuts; and 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and 08-3 Stabilize soils once earth-moving activities are complete.	✓ Grade each project phase separately, timed to coincide with construction phase ✓ Upwind fencing can prevent material movement on site ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Importing/exporting of bulk materials	09-1 Stabilize material while loading to reduce fugitive dust emissions; and 09-2 Maintain at least six inches of freeboard on haul vehicles; and 09-3 Stabilize material while transporting to reduce fugitive dust emissions; and 09-4 Stabilize material while unloading to reduce fugitive dust emissions; and 09-5 Comply with Vehicle Code Section 23114.	✓ Use tarps or other suitable enclosures on haul trucks ✓ Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage ✓ Comply with track-out prevention/mitigation requirements ✓ Provide water while loading and unloading to reduce visible dust plumes
Landscaping	10-1 Stabilize soils, materials, slopes	✓ Apply water to materials to stabilize ✓ Maintain materials in a crusted condition ✓ Maintain effective cover over materials ✓ Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes ✓ Hydroseed prior to rain season
Road shoulder maintenance	11-1 Apply water to unpaved shoulders prior to clearing; and 11-2 Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	✓ Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs ✓ Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Screening	12-1 Pre-water material prior to screening; and 12-2 Limit fugitive dust emissions to opacity and plume length standards; and 12-3 Stabilize material immediately after screening.	✓ Dedicate water truck or high capacity hose to screening operation ✓ Drop material through the screen slowly and minimize drop height ✓ Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point
Staging areas	13-1 Stabilize staging areas during use; and 13-2 Stabilize staging area soils at project completion.	✓ Limit size of staging area ✓ Limit vehicle speeds to 15 miles per hour ✓ Limit number and size of staging area entrances/exists
Stockpiles/ Bulk Material Handling	14-1 Stabilize stockpiled materials. 14-2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	✓ Add or remove material from the downwind portion of the storage pile ✓ Maintain storage piles to avoid steep sides or faces

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Traffic areas for construction activities	15-1 Stabilize all off-road traffic and parking areas; and 15-2 Stabilize all haul routes; and 15-3 Direct construction traffic over established haul routes.	✓ Apply gravel/paving to all haul routes as soon as possible to all future roadway areas ✓ Barriers can be used to ensure vehicles are only used on established parking areas/haul routes
Trenching	16-1 Stabilize surface soils where trencher or excavator and support equipment will operate; and 16-2 Stabilize soils at the completion of trenching activities.	✓ Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches soak soils via the pre-trench and resuming trenching ✓ Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment
Truck loading	17-1 Pre-water material prior to loading; and 17-2 Ensure that freeboard exceeds six inches (CVC 23114)	✓ Empty loader bucket such that no visible dust plumes are created ✓ Ensure that the loader bucket is close to the truck to minimize drop height while loading
Turf Overseeding	18-1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and 18-2 Cover haul vehicles prior to exiting the site.	✓ Haul waste material immediately off-site

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure		Guidance
Unpaved roads/parking lots	19-1	Stabilize soils to meet the applicable performance standards; and	✓ Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements
	19-2	Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	
Vacant land	20-1	In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures.	

ATTACHMENT C

MORRIS ENGINEERING & ASSOCIATES, INC.
CONSULTING ENGINEERS

October 4th, 2006 M.E. Proj. No. 07035

City of Los Angeles
Department of Toxic Substance Control
Plan Check Division

c/o Plan Review Consultants

RE: Atlas Iron and Metal Co.
Los Angeles, California

The following list is in response to your letter dated September 26, 2007. The itemized list below directly corresponds with your plan check comments.

Structural Comments:

1)

b)

ii) The Seismic loads have been changed and are reflected by the new set of calculations. Seismic load do indeed govern in all cases since the Los Angeles wind load is 70 mph.

iii) The posts have been redesigned using 0.26*W, see new calculations. The notched column is taken into account already. Currently the column is designed using the shortest width experienced due to the notch.

iv) According to correspondence with Stan Schweitzer of Converse Consultants, we are allowed to use 150 pcf for the first 5 feet of loose soil. Therefore, instead of using 150 pcf for the first 5 feet of depth and 300 pcf for 5 feet and deeper, we used 150 pcf for the entire depth of the stitched pier, which is more conservative. Reinforcement of the caissons have been added to the calculations.

Please call if you have any further questions.

Sincerely,

MORRIS ENGINEERING & ASSOCIATES, Inc.

//original signed by//

Ronald G. Morris, C.E.
CE 039237 exp. 12-31-07

MORRIS ENGINEERING & ASSOCIATES, INC.
CONSULTING ENGINEERS

STRUCTURAL CALCULATIONS

FOR

10' FENCE WALL

LOCATED AT:

10019 ALAMEDA STREET

LOS ANGELES, CALIFORNIA

07035, 08/23/2007

1300 INDUSTRIAL ROAD, SUITE 14, SAN CARLOS, CA 94070, (650) 595-2973 FAX (650) 595-2980
Email: lee@morriseng.com

MORRIS ENGINEERING
&
ASSOCIATES, INC.
CONSULTING ENGINEERS
1300 INDUSTRIAL ROAD, SUITE 14 (650) 595-2973
SAN CARLOS, CA 94070 FAX (650) 595-2980

Project				Job Ref.	
Atlas Iron & Metals, Inc.				07035	
Client				Sheet no./rev.	
Dr. Larry Russell				ii	
Calc. by	Date	Chck'd by	Date	App'd by	Date
AK	10/02/2007	RB	10/02/2007		

TABLE OF CONTENTS

FOR SHEETS LISTED ABOVE:

MORRIS ENGINEERING
CONSULTING ENGINEERS
1300 INDUSTRIAL ROAD, SUITE 14 (650) 595-2973
SAN CARLOS, CA 94070 FAX (650) 595-2980

Project				Job Ref.	
Atlas Iron & Metals, Inc.				07035	
Client				Sheet no./rev.	
Dr. Larry Russell				1	
Calc. by	Date	Chck'd by	Date	Revision	Date
AK	10/02/2007	RB	10/02/2007		

ATLAS SLAB

10019 Alameda Street,
Los Angeles, California

DESIGN CRITERIA

2001 California Building Code (1997 UBC w/ California Inserts)
1991 NDS for Wood Construction
AISC Manual of Steel Construction
ACI 318-95 Concrete Manual

SOILS INFORMATION

Geotechnical Report:

Conversse Consultants
222 East Huntington Drive, Suite 211
Monrovia, California
626-930-1200, Fax 626-930-1212

MATERIALS

Concrete unit weight	γ_{conc} = 150 pcf	
Concrete design factor	f = 0.70	
Unit weight of soil	γ_{soil} = 110 pcf	assumed unit weight
Unit weight of water	γ_{water} = 62.4 pcf	
Concrete compressive strength	f'_c = 2500 psi	
Yield strength of reinforcing steel	f_y = 60 ksi	
Yield strength of A36 steel	f_{yA36} = 36 ksi	
Allowable Bending Stress of Steel	$F_B = 0.6^* f_y$ = **36000** psi	
Allowable Bending Stress of Steel	$F_{BA36} = 0.6^* f_{yA36}$ = **21600** psi	

MORRIS ENGINEERING
CONSULTING ENGINEERS
1300 INDUSTRIAL ROAD, SUITE 14 (650) 595-2973
SAN CARLOS, CA 94070 FAX (650) 595-2980

Project				Job Ref.	
Atlas Iron & Metals, Inc.				07035	
Client				Sheet no./rev.	
Dr. Larry Russell				2	
Calc. by	Date	Chck'd by	Date	Revision	Date
AK	10/02/2007	RB	10/02/2007		

REINFORCED CONCRETE PIER DESIGN 24" DIAMETER:

Pier Diameter	24 in
Equiv Square Section	**19.20** in
"b" width of beam	**19.20** in
"d" distance for conc design	**16.20** in (assume 3.0" max. clear cover)
Rebar Clearance	3 in

Case 1

Max Moment in Beam	M_{14} = 21000 lb_ft	(From Column, See "Concrete Column" Below)
Factored Moment in Pier	**35.70** kip_ft	
Req'd area of steel	**0.50** in^2	

Quantity of rebar req'd

#4	#5	#6	#7	#8	#9	#10
3.0	**2.0**	**2.0**	**1.0**	**1.0**	**1.0**	**1.0**

Try:	qty = 2 $A_{\#7}$ = **0.60** in^2	
Actual area of steel	**1.20** in^2	
FS	**2.40**	**"Okay"**
Check for max allow steel	**3.17** in^2	**"Okay"**
Pier Vert Reinf	"(2) #7 ea face"	

SEISMIC DESIGN / WIND DESIGN

$WT_{WALL} = 150\ \#/FT^3 \times 12'_{W} \times 10'_{H} \times 5''_{T} = 7500\ \#$

$WT_{COLUMN} = 150\ \#/FT^3 \times \frac{\left(\frac{20''}{12}\right)^2 \pi}{4} \times 10' = 3275\ \#$

WALL PANEL

SEISMIC

$$F_P = \frac{a_p C_a I_P}{R_p}\left(1+3\frac{h_x}{h_r}\right)W_p$$

$a_p = N_a = I_P = 1.0$

$R_p = 3.0 \quad C_a = 0.44 N_a$

$F_P = 0.59\ W_P$

$V = \frac{0.59(7500\#)}{12'/10'} = 37\ PSF$

WIND — EXPOSURE C

$$P = C_e C_q q_s I_w$$

$q_s = 12.6\ PSF$ (70 MPH IN LA, CA)

$I_w = 1.0$

$C_e = 1.06$

$C_q = 1.3$

$P = 18\ PSF$

SEISMIC GOVERNS

MORRIS ENGINEERING
CONSULTING ENGINEERS
1300 INDUSTRIAL ROAD, SUITE 14
SAN CARLOS, CA 94070
(650) 595-2973
FAX (650) 595-2980

ATLAS SLAB
10019 ALAMEDA ST, LA CA

DATE: 9/27/07
JOB #: 07035

SEISMIC DESIGN / WIND DESIGN

COLUMN/POST

SEISMIC

$$V = \frac{1.6 Z N_v I_s}{R} W_p$$

$Z = 0.4$ $R = 3.0$

$N_v = 1.2$

$I_s = 1.0$

$V = 0.26 W_p$

$V = 0.26(7500 + 3275)$

$V = 2802\#$

$V_w = 25$ PSF

WIND EXP C

$P = C_e C_q q_s I_w$

$q_s = 12.6$ PSF (70 MPH IN LA, CA)

$I_w = 1.0$

$C_e = 1.06$

$C_q = 1.3$

$P = 18$ PSF

SEISMIC GOVERNS

MORRIS ENGINEERING
CONSULTING ENGINEERS
1300 INDUSTRIAL ROAD, SUITE 14
SAN CARLOS, CA 94070
(650) 595-2973
FAX (650) 595-2980

ATLAS SLAB
1019 ALAMEDA ST, LA CA

DATE: 9/27/07

JOB #: 07035

Tilt-Up Wall Panel Design

Description Wall panel design

General Information

Code Ref: ACI 318-02, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Clear Height	10.000 ft	f'c	2,500.0 psi	Seismic Zone	4
Parapet Height	0.000 ft	Fy	60,000.0 psi	Min Vert Steel %	0.0020
Thickness	5.000 in	Phi	0.900	Min Horiz Steel %	0.0012
Bar Size	5	Width	12.000 in	Base Fixity	0 %
Bar Spacing	12.000 in			Wall Seismic Factor	0.3000
Bar Depth	2.500 in			Parapet Seismic Factor	0.3000
Min Defl. Ratio	150.0			LL & ST Together	
Concrete Weight	150.00 pcf	Using: Empirical Method Using Icr and Iterating Deflections			
		Parapet Does Not Reduce Moments			

Loads

Lateral Loads		Vertical Loads	
Wind Load	psf	Uniform DL	625.00 #/ft
Point Load	lbs	Uniform LL	#/ft
...height	ft	...eccentricity	in
...load type	Seismic	Concentric DL	lbs
Lateral Load	37.00 #/ft	Concentric LL	lbs
...distance to top	10.000 ft		
...distance to bot	ft	Seismic "I" Magnifier	1.000
...load type	Seismic	Wind "I" Magnifier	1.000

Note: Load factoring supports 2003 IBC and 2003 NFPA 5000 by virtue of their references to ACI 318-02 for concrete design. Factoring of entered loads to ultimate loads within this program is according to ACI 318-02 C.2

Wall Analysis

	For Factored Load Stresses		For Service Load Deflections	
	Seismic	Wind	Seismic	Wind
Basic Defl w/o P-Delta	0.533	0.000 in	0.381	0.000 in
Basic M w/o P-Delta	11,707.5	0.0 in-#	8,362.5	0.0 in-#
Moment Excess of Mcr	0.0	0.0 in-#	0.0	0.0 in-#
Max. P-Delta Deflection	0.550	0.000 in	**0.389**	**0.000** in
Max P-Delta Moment	**12,068.5**	**0.0** in-#	8,545.1	0.0 in-#

Maximum Allow Vertical Bar Spacing	15.000 in	Parapet Bar Spacing Req'd : SEISMIC	15.000 in
Maximum Allow Horizontal Bar Spacing	15.000 in	Parapet Bar Spacing Req'd : WIND	15.000 in

Summary

Wall Design OK

10.00ft clear height, 0.00ft parapet, 5.00in thick with #5 bars at 12.00in on center, d= 2.50in, f'c = 2,500.0psi, Using: Empirical Method Using Icr and Iterating Deflections

Factored Load Bending : Seismic Load Governs

Maximum Iterated Moment : Mu	12,068.47 in-#
Moment Capacity	37,805.93 in-#

Service Load Deflection : Seismic Load Governs

Maximum Iterated Deflection	0.389 in
Deflection Limit	0.800 in

	Seismic	Wind
Mn * Phi : Moment Capacity	37,805.93 in-#	37,296.35 in-#
Applied: Mu @ Mid-Span	12,068.47 in-#	0.00 in-#
Applied: Mu @ Top of Wall	0.00 in-#	0.00 in-#
Max Iterated Service Load Deflection	0.39 in	0.00 in
Actual Deflection Ratio	308 : 1	0 : 1
Actual Reinforcing Percentage	0.0103	0.0103
UBC Allow. As % = 0.6 * RhoBal	0.0107	0.0107
Actual Axial Stress : (Pw + Po) / Ag	15.62 psi	15.62 psi
Allowable Axial Stress = 0.04 * f'c	100.00 psi	100.00 psi

Description Wall panel design

Analysis Data

E	2,850,000.0 psi	Sgross	50.000 in3
n = Es / Ec	10.18	Mcr = S * Fr	12,500.0 in-#
Fr Multiplier for sqrt(f'c)	5.000	Fr =	250.00 psi
Ht / Thk Ratio	24.00	Rho: Bar Reinf Pct	0.0178

Values for Mn Calculation...	Seismic	Wind
As:eff= [Pu:tot + AsFy]/Fy	0.332 in	0.326 in
a : (AsFy + Pu)/(.85 f'c b)	0.781 in	0.768 in
c = a / .85	0.919 in	0.904 in
Igross	125.000 in4	125.00 in4
Icracked	11.55 in4	11.42 in4
I-eff (ACI methods only)	11.55 in4	11.42 in4
Phi: Capacity Reduction	0.900	0.900
Mn = As:eff Fy (d - a/2)	**42,006.59** in-#	**41,440.39** in-#

Additional Values

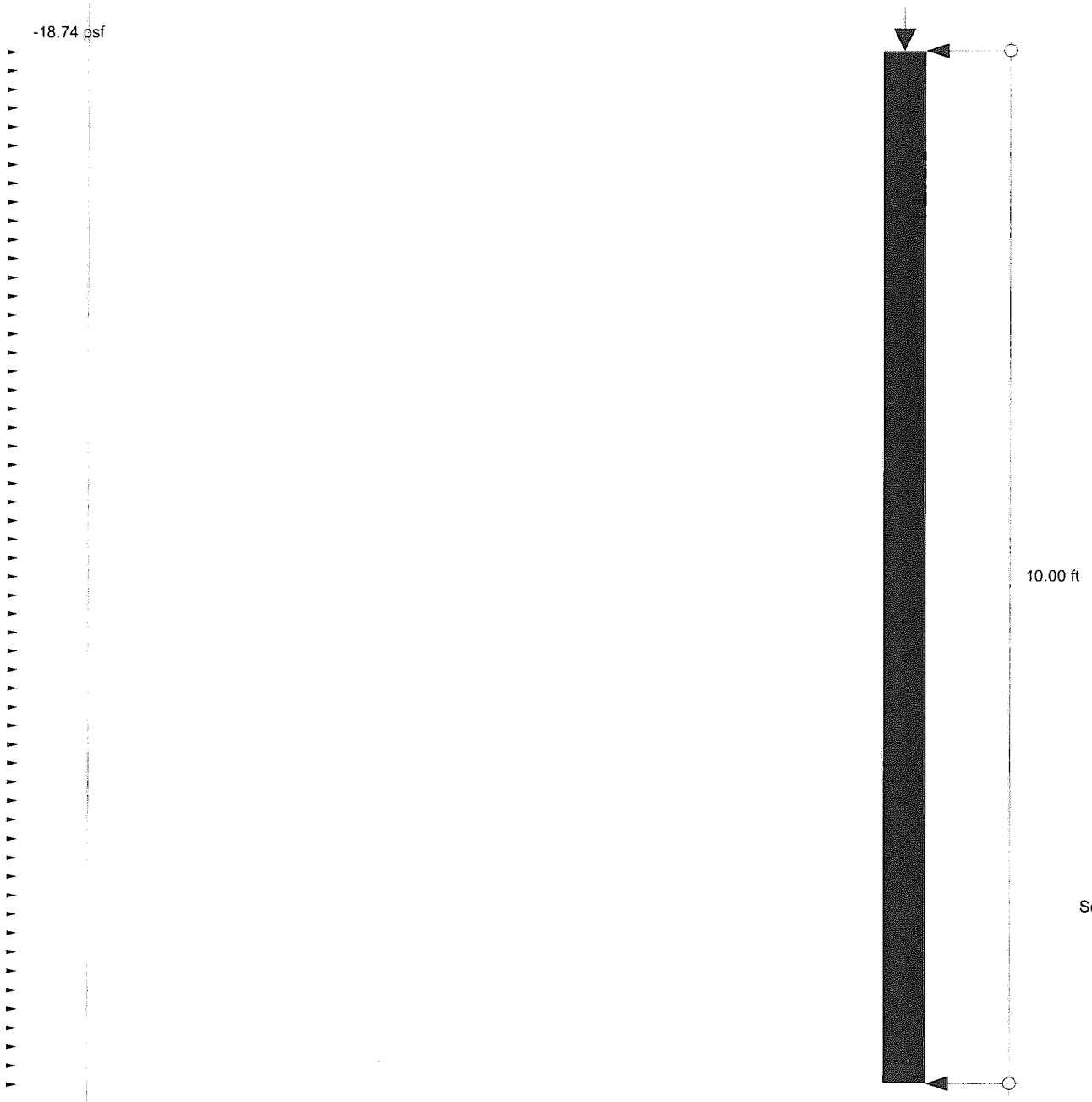
Loads used for analysis	
Wall Weight	62.500 psf
Wall Wt * Wall Seismic Factor	18.750 psf
Wall Wt * Parapet Seismic Factor	18.750 psf
Service Applied Axial Load	625.00 #/ft
Service Wt @ Max Mom	312.50 #/ft
Total Service Axial Loads	937.50 #/ft

Factored Loads	Seismic	Wind
Applied Axial Load	875.00	656.25 #/ft
Lateral Wall Weight	437.50	328.12 #/ft
Total Lateral Loads	1,312.50	984.37 #/ft

ACI Factors (per ACI 318-02, applied internally to entered loads)

ACI C-1 & C-2 DL	1.400	ACI C-2 Group Factor	0.750	Add"l "1.4" Factor for Seismic	1.400
ACI C-1 & C-2 LL	1.700	ACI C-3 Dead Load Factor	0.900	Add"l "0.9" Factor for Seismic	0.900
ACI C-1 & C-2 ST	1.700	ACI C-3 Short Term Factor	1.300		
....seismic = ST * :	1.100				

Design Method : Using I-Cracked & Iterating Deflections



Rev: 580010
User: KW-0607634, Ver 5.8.0, 1-Dec-2003
(c)1983-2003 ENERCALC Engineering Software

Concrete Rectangular & Tee Beam Design

Description Wall Design

General Information

Code Ref: ACI 318-02, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Span	12.00 ft	f'c	2,500 psi
Depth	5.000 in	Fy	60,000 psi
Width	12.000 in	Concrete Wt.	150.0 pcf
		Seismic Zone	4
		End Fixity	Pinned-Pinned
Beam Weight Added Internally		Live Load acts with Short Term	

Reinforcing

Rebar @ Center of Beam...				Rebar @ Left End of Beam...				Rebar @ Right End of Beam...			
	Count	Size	'd' from Top		Count	Size	'd' from Top		Count	Size	'd' from Top
#1	1	5	2.50in	#1	1	5	2.50 in	#1	1	5	2.50 in

Load Factoring

Note: Load factoring supports 2003 IBC and 2003 NFPA 5000 by virtue of their references to ACI 318-02 for concrete design. Factoring of entered loads to ultimate loads within this program is according to ACI 318-02 C.2

Uniform Loads

	Dead Load	Live Load	Short Term	Start	End
#1	k	k	0.037 k	0.000 ft	12.000 ft

Summary

Beam Design OK

Span = 12.00ft, Width= 12.00in Depth = 5.00in

Maximum Moment : Mu	2.51 k-ft	Maximum Deflection	-0.1879 in
Allowable Moment : Mn*phi	2.97 k-ft		
Maximum Shear : Vu	0.81 k	Max Reaction @ Left	0.60 k
Allowable Shear : Vn*phi	2.55 k	Max Reaction @ Right	0.60 k

Shear Stirrups...
Stirrup Area @ Section 0.440 in2

Region	0.000	2.000	4.000	6.000	8.000	10.000	12.000 ft
Max. Spacing	Not Req'd	Not Req'd	Not Req'd	Not Req'd	Not Req'd	Not Req'd	Not Req'd in
Max Vu	0.809	0.562	0.281	0.274	0.274	0.555	0.802 k

Bending & Shear Force Summary

Bending...	Mn*Phi	Mu, Eq. C-1	Mu, Eq. C-2	Mu, Eq. C-3
@ Center	2.97 k-ft	1.57 k-ft	2.51 k-ft	1.94 k-ft
@ Left End	2.97 k-ft	0.00 k-ft	0.00 k-ft	0.00 k-ft
@ Right End	2.97 k-ft	0.00 k-ft	0.00 k-ft	0.00 k-ft
Shear...	**Vn*Phi**	**Vu, Eq. C-**	**Vu, Eq. C-**	**Vu, Eq. C-**
@ Left End	2.55 k	0.51 k	0.81 k	0.63 k
@ Right End	2.55 k	0.50 k	0.80 k	0.62 k

Deflection

Deflections...	Upward			Downward		
DL + [Bm Wt]	0.0000 in	at	12.0000 ft	-0.0819 in	at	6.0000 ft
DL + LL + [Bm Wt]	0.0000 in	at	12.0000 ft	-0.0819 in	at	6.0000 ft
DL + LL + ST + [Bm Wt]	0.0000 in	at	12.0000 ft	-0.1879 in	at	6.0000 ft

Reactions...	@ Left	@ Right
DL + [Bm Wt]]	0.375 k	0.375 k
DL + LL + [Bm Wt]	0.375 k	0.375 k
DL + LL + ST + [Bm Wt]	0.597 k	0.597 k

Concrete Rectangular & Tee Beam Design

Description Wall Design

Section Analysis

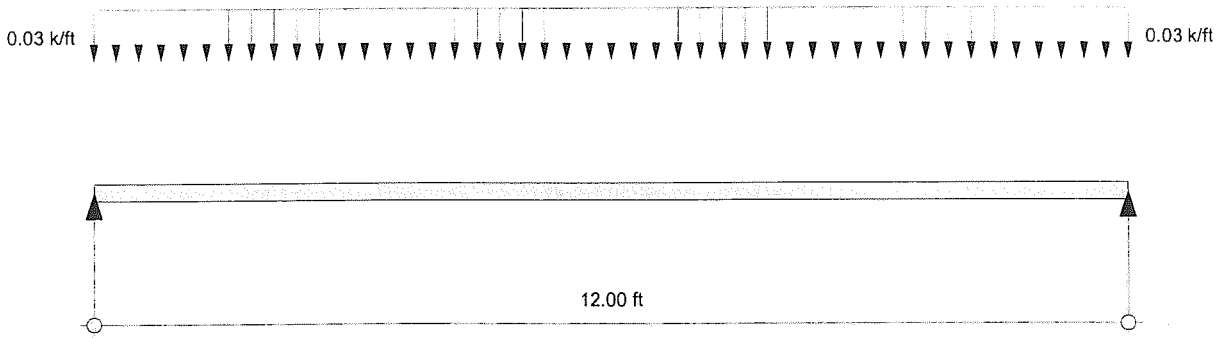
Evaluate Moment Capacity...	Center	Left End	Right End
X : Neutral Axis	0.855 in	0.855 in	0.855 in
a = beta * Xneutral	0.727 in	0.727 in	0.727 in
Compression in Concrete	18.532 k	18.532 k	18.532 k
Sum [Steel comp. forces]	0.000 k	0.000 k	0.000 k
Tension in Reinforcing	-18.600 k	-18.600 k	-18.600 k
Find Max As for Ductile Failure...			
X-Balanced	1.480 in	1.480 in	1.4796 in
Xmax = Xbal * 0.75	1.110 in	1.110 in	1.110 in
a-max = beta * Xbal	1.258 in	1.258 in	1.258 in
Compression in Concrete	24.053 k	24.053 k	24.053 k
Sum [Steel Comp Forces]	0.000 k	0.000 k	0.000 k
Total Compressive Force	24.053 k	24.053 k	24.053 k
AS Max = Tot Force / Fy	0.401 in2	0.401 in2	0.401 in2
Actual Tension As	0.310 **OK**	0.000 **OK**	0.000 **OK**

Additional Deflection Calcs

Neutral Axis	0.915 in	Mcr	1.56 k-ft
Igross	125.00 in4	Ms:Max DL + LL	1.79 k-ft
Icracked	10.99 in4	R1 = (Ms:DL+LL)/Mcr	0.872
Elastic Modulus	2,850.0 ksi	Ms:Max DL+LL+ST	1.79 k-ft
Fr = 7.5 * f'c^.5	375.000 psi	R2 = (Ms:DL+LL+ST)/Mcr	0.872
Z:Cracking	0.000 k/in	I:eff... Ms(DL+LL)	86.693 in4
Z:cracking > 175 : No Good!		I:eff... Ms(DL+LL+ST)	86.693 in4
Eff. Flange Width	12.00 in		

ACI Factors (per ACI 318-02, applied internally to entered loads)

ACI C-1 & C-2 DL	1.400	ACI C-2 Group Factor	0.750	Add"l "1.4" Factor for Seismic	1.400
ACI C-1 & C-2 LL	1.700	ACI C-3 Dead Load Factor	0.900	Add"l "0.9" Factor for Seismic	0.900
ACI C-1 & C-2 ST	1.700	ACI C-3 Short Term Factor	1.300		
....seismic = ST * :	1.100				



Mu:Max = 2.50 k-ft

Dmax = 0.1878 in

Rmax = 0.596 k

Vu-Max = 0.809 k

Rmax = 0.596 k

Vu Max = 0.802 k

USE #5 @12"oc EW or EQUAL WWF

Rev: 580010
User: KW-0607634, Ver 5.8.0, 1-Dec-2003
(c)1983-2003 ENERCALC Engineering Software

Concrete Rectangular & Tee Beam Design

Description Concrete Column

General Information

Code Ref: ACI 318-02, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Span	10.00 ft	f'c	2,500 psi
Depth	20.000 in	Fy	60,000 psi
Width	17.000 in	Concrete Wt.	150.0 pcf
		Seismic Zone	4
		End Fixity	Fixed-Free
Beam Weight Not Added		Live Load acts with Short Term	

Reinforcing

Rebar @ Center of Beam...				Rebar @ Left End of Beam...				Rebar @ Right End of Beam...			
	Count	Size	'd' from Top		Count	Size	'd' from Top		Count	Size	'd' from Top
#1	2	7	13.55in	#1	2	7	13.55 in	#1	2	7	13.55 in

Load Factoring

Note: Load factoring supports 2003 IBC and 2003 NFPA 5000 by virtue of their references to ACI 318-02 for concrete design. Factoring of entered loads to ultimate loads within this program is according to ACI 318-02 C.2

Uniform Loads

	Dead Load	Live Load	Short Term	Start	End
#1	k	k	0.300 k	0.000 ft	10.000 ft

Summary

Beam Design OK

Span = 10.00ft, Width= 17.00in Depth = 20.00in

Maximum Moment : Mu	-21.00 k-ft	Maximum Deflection	-0.0201 in
Allowable Moment : Mn*phi	29.36 k-ft		
Maximum Shear : Vu	3.98 k	Max Reaction @ Left	3.00 k
Allowable Shear : Vn*phi	19.58 k	Max Reaction @ Right	0.00 k

Shear Stirrups...

Stirrup Area @ Section 0.440 in2

Region	0.000	1.667	3.333	5.000	6.667	8.333	10.000 ft
Max. Spacing	Not Req'd	Not Req'd	Not Req'd	Not Req'd	Not Req'd	Not Req'd	Not Req'd in
Max Vu	3.982	3.511	2.806	1.411	1.411	0.706	0.235 k

Bending & Shear Force Summary

Bending...	Mn*Phi	Mu, Eq. C-1	Mu, Eq. C-2	Mu, Eq. C-3
@ Left End	29.36 k-ft	0.00 k-ft	-21.00 k-ft	-21.00 k-ft
@ Right End	29.36 k-ft	0.00 k-ft	0.00 k-ft	0.00 k-ft
Shear...	**Vn*Phi**	**Vu, Eq. C-1**	**Vu, Eq. C-2**	**Vu, Eq. C-3**
@ Left End	19.58 k	0.00 k	3.98 k	3.98 k
@ Right End	19.58 k	0.00 k	0.00 k	0.00 k

Deflection

Deflections...	Upward			Downward		
DL + [Bm Wt]	0.0000 in	at	10.0000 ft	0.0000 in	at	10.0000 ft
DL + LL + [Bm Wt]	0.0000 in	at	10.0000 ft	0.0000 in	at	10.0000 ft
DL + LL + ST + [Bm Wt]	0.0000 in	at	0.0000 ft	-0.0201 in	at	10.0000 ft

Reactions...	@ Left	@ Right
DL + [Bm Wt]]	0.000 k	0.000 k
DL + LL + [Bm Wt]	0.000 k	0.000 k
DL + LL + ST + [Bm Wt]	3.000 k	0.000 k

Description Concrete Column

Section Analysis

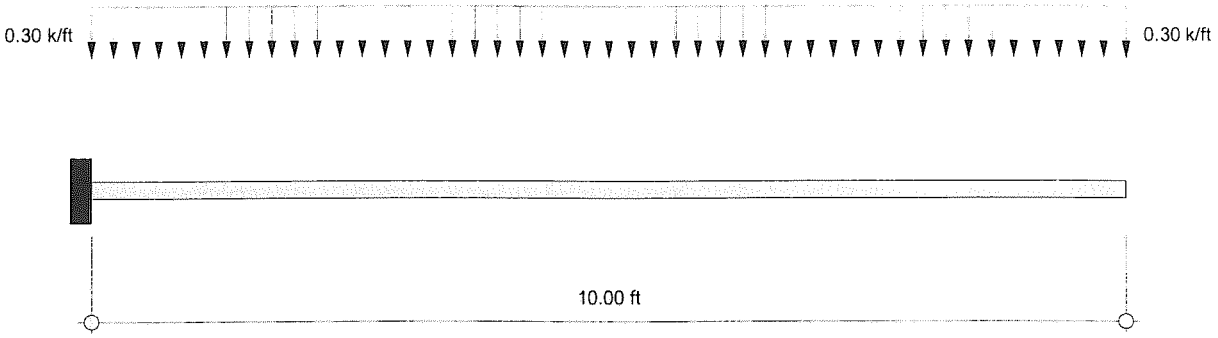
Evaluate Moment Capacity...	Center	Left End	Right End
X : Neutral Axis	2.340 in	2.340 in	2.340 in
a = beta * Xneutral	1.989 in	1.989 in	1.989 in
Compression in Concrete	71.853 k	71.853 k	71.853 k
Sum [Steel comp. forces]	0.000 k	0.000 k	0.000 k
Tension in Reinforcing	-72.000 k	-72.000 k	-72.000 k
Find Max As for Ductile Failure...			
X-Balanced	8.019 in	3.817 in	3.8173 in
Xmax = Xbal * 0.75	6.015 in	2.863 in	2.863 in
a-max = beta * Xbal	6.816 in	3.245 in	3.245 in
Compression in Concrete	184.684 k	87.912 k	87.912 k
Sum [Steel Comp Forces]	0.000 k	0.000 k	0.000 k
Total Compressive Force	184.684 k	87.912 k	87.912 k
AS Max = Tot Force / Fy	3.078 in2	1.465 in2	1.465 in2
Actual Tension As	1.200 **OK**	1.200 **OK**	0.000 **OK**

Additional Deflection Calcs

Neutral Axis	3.755 in	Mcr	35.42 k-ft
Igross	11,333.33 in4	Ms:Max DL + LL	15.00 k-ft
Icracked	1,471.53 in4	R1 = (Ms:DL+LL)/Mcr	2.361
Elastic Modulus	2,850.0 ksi	Ms:Max DL+LL+ST	15.00 k-ft
Fr = 7.5 * f'c^.5	375.000 psi	R2 = (Ms:DL+LL+ST)/Mcr	2.361
Z:Cracking	136.440 k/in	I:eff... Ms(DL+LL)	11,333.333 in4
		I:eff... Ms(DL+LL+ST)	11,333.333 in4
Eff. Flange Width	17.00 in		

ACI Factors (per ACI 318-02, applied internally to entered loads)

ACI C-1 & C-2 DL	1.400	ACI C-2 Group Factor	0.750	Add"l "1.4" Factor for Seismic	1.400
ACI C-1 & C-2 LL	1.700	ACI C-3 Dead Load Factor	0.900	Add"l "0.9" Factor for Seismic	0.900
ACI C-1 & C-2 ST	1.700	ACI C-3 Short Term Factor	1.300		
....seismic = ST * :	1.100				



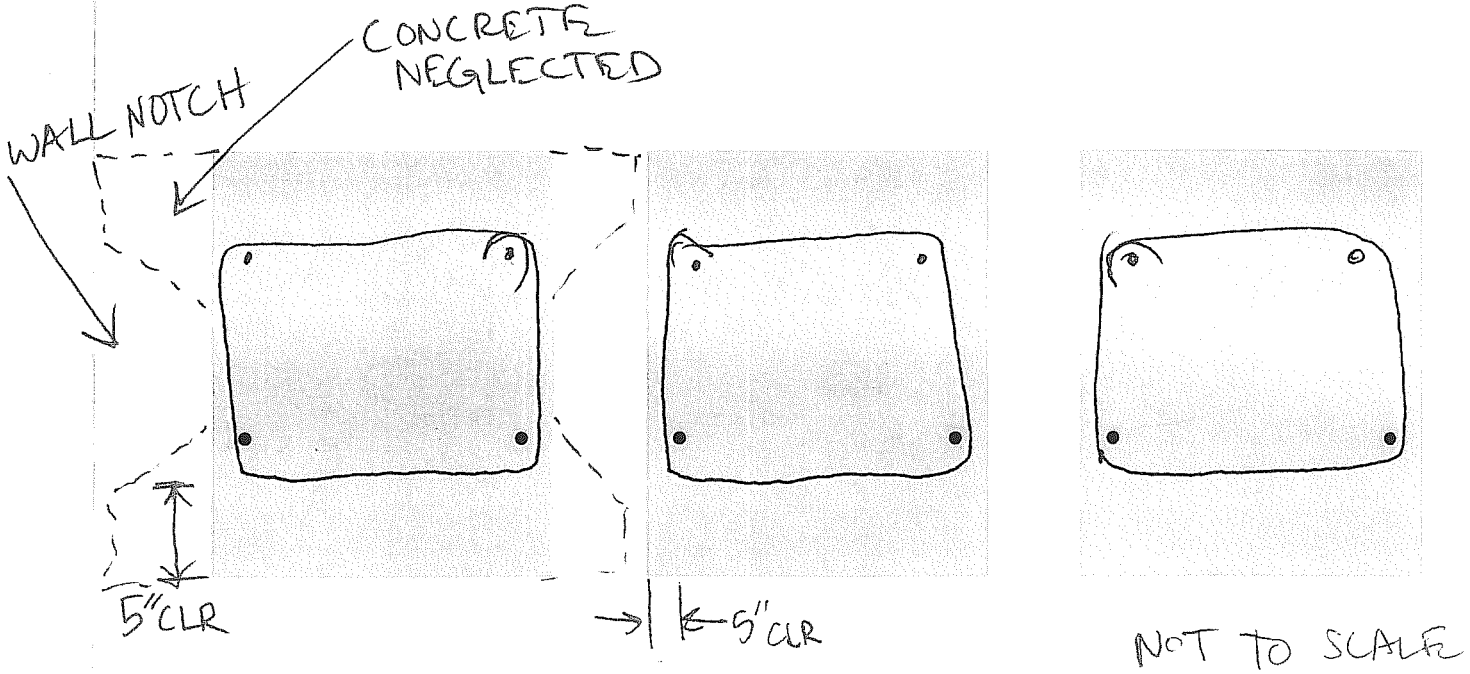
Mu:Max = 5.24 k-ft

Dmax = 0.0200 in

Mu:Max @ left = 20.99 k-ft

Rmax = 2.999 k

Vu-Max = 3.981 k



Rev: 580002
User: KW-0607634, Ver 5.8.0, 1-Dec-2003
(c)1983-2003 ENERCALC Engineering Software

Pole Embedment in Soil

Description Column embedment

General Information

Code Ref: 1997 UBC 1806.8.2.1, 2003 IBC 1805.7.2, 2003 NFPA 5000 36.4.3

Allow Passive	150.00 pcf	Applied Loads...	
Max Passive	3,500.00 psf	Point Load	0.00 lbs
Load duration factor	1.000	distance from base	0.000 ft
Pole is Circular			
Diameter	24.000 in	Distributed Load	300.00 #/ft
No Surface Restraint		distance to top	10.000 ft
		distance to bottom	0.000 ft

Summary

Moments @ Surface...

Point load	0.00 ft-#	Total Moment	15,000.00 ft-#
Distributed load	15,000.00	Total Lateral	3,000.00 lbs

Without Surface Restraint...

Required Depth	**10.375 ft**
Press @ 1/3 Embed...	
Actual	517.45 psf
Allowable	517.69 psf

USE 15 FT REQ DEPTH
IN ACCORDANCE W/ GEOTECH.
150 PCF FOR ENTIRE SOIL
PROFILE, (CONSERVATIVE
ASSUMPTION)
IN ACCORDANCE W/
STAN SCHWEITZER
OF CONVERSE CONSULTANTS.