

ADDENDUM NO. 1

to **CONTRACT DOCUMENTS** for

Redwood Avenue Street Improvements Phase 2
Project No. TR4934
Grants Pass, Oregon

To All Plan Holders:

The following changes, additions, and/or deletions are hereby made a part of the Contract Documents for the construction of the Redwood Avenue Street Improvements Phase 2, Project No. TR4934, as fully and completely as if the same were fully set forth therein:

1. **ON THE CONSTRUCTION PLANS...**

- **Fence Height From 3' to 4':**
 - Per recent city code update, all reference to 3' tall fence on the construction plans shall be replaced with 4' tall fence. This is already reflected on the current Bid Schedule.
- **2015 State of Oregon APWA / ODOT Standard Specifications for Construction:**
 - All reference on the construction plans to the 2008 APWA / OSSC shall be replaced with 2015 APWA / OSSC.
- **Storm Drain Manholes:**
 - Storm drain manhole #435 shall be labeled Flat Top (FT)
 - Storm drain manhole #437 shall be labeled Flat Top (FT)
 - Storm drain manhole #520 shall be labeled Flat Top (FT)
 - Storm drain manhole #550 shall be labeled Flat Top (FT)
- **12" PVC C900 Pipe:**
 - On Sheet C1.5 for the construction note #7 replace pipe size 12" C900 PVC with 24" C900 PVC

2. **IN THE CONTRACT DOCUMENTS...**

- **Bid Schedule:** Replace entire Bid Schedule with the attached Bid Schedule.
- **Special Provisions Section 01070.90 – Payment -** Delete special provision in its entirety and replace with the following:

Section 01070.90 Payment – Add the following pay items:

Pay Item	Unit of Measurement
(d) Shared Mailboxes	Lump Sum

- **Special Provisions Section 00620.43 – Maintenance Under Traffic** – Replace this special provision with the following:
 - If the cold plane pavement surface will be exposed to traffic, sweep and clean prior to allowing traffic to use the roadway. Traffic to be allowed on exposed cold planed surfaces for a maximum duration of 10 days.
- **Special Provisions Section 00225.90** – Replace the first sentence in this section with the following:
 - 00225.90 Payment – work covered under this section will be paid for by the following methods as listed in the bid schedule: Traffic Control Supervisor, Flaggers, and Portable Changeable Message Signs will be paid for per method “A” – unit price basis. Traffic Control will be paid for per method “B” – lump sum basis and will incorporate all items and incidentals outside of the unit price categories listed above (traffic control supervisor; flaggers; portable changeable message signs).

3. GENERAL CLARIFICATIONS...

- **Shared Mailboxes:**
 - Shared Mailboxes are to be *supplied* and *installed* by the contractor. See attached product installation details, plan locations, and revised bid item #103. All shared mailbox units shall be gray in color and include reinforced concrete pad.
 - Station: 9+54.05 = 8 unit box (Type I)
 - Station: 14+52.90 = 12 unit box (Type II)
 - Station: 20+41.94 = 12 unit box (Type II)
 - Station: 26+03.05 = 16 unit box (Type III)
 - Station: 30+25.19 = 12 unit box (Type II)
 - Station: 34+54.62 = 8 unit box (Type I)
 - Station: 39+02.35 = 12 unit box (Type II)
 - Station: 46+86.73 = 16 unit box (Type III)
 - Station: 50+10.40 = 16 unit box (Type III)
 - Station: 51+67.82 = 12 unit box (Type II)
- **Construction Speed Reduction:**
 - A construction speed 35 MPH shall be provided on both ends of Redwood Avenue for the duration of the project.
- **Storm Drain Manholes:**
 - Bid Item #47 quantity *increased by 2*
 - Bid Item #46 *deleted*
- **Bid Item #30:**
 - Replace *Bid Item #30* description with the following: **12” PVC Sch. 40 Pipe, 0’-5’ Depth**, per approved plans and APWA/ODOT Sec. 00445. Installed, complete.

- **Bid Item #31:**
 - Replace Bid Item #31 description with the following: **24" PVC C900 Pipe, 5'-10' Depth**, per approved plans and APWA/ODOT Sec. 00445. Installed, complete.
- **Bid Item #29:**
 - Removed bid Item #29 and added the 11 FT (of 24" PVC C900, 0'-5' depth) to the quantity for bid item #15.
- **Trench Resurfacing:**
 - Permanent asphalt trench patching shall be level 3, ½" dense ACP and match existing asphalt thickness. Bid Item #62A was added for payment of this work and assumes an average 6" depth.
 - Temporary asphalt trench patching may be cold patch asphalt mix and is incidental – no additional payment will be made for this work.
- **6" Inserta Tee and HDPE Pipe:**
 - All 6" inserta tee and 6" HDPE pipe quantities for bid items #25 & #26 on the bid schedule have been removed/deleted and added to the appropriate 8" bid items.
- **Geotechnical Report:** The project geotechnical report is included for reference.
- **Traffic Control:** See addition bid items and special provision revisions.
- **Signs:** City of Grants Pass crews will purchase install all new signs. Contractor to coordinate with City of Grants Pass crews for installation timing / details. Contractor will remove existing signs and deliver to the city yard any signs noted on the plans to be removed / saved and re-installed. Contractor is also responsible for maintaining any temporary signs. See bid item #4A for removal of existing signs.
- **Gravel Surfacing:** Roadway gravel surfacing will be allowed during local traffic roadway closures only. Local traffic roadway closures will be allowed from Monday morning through 3pm the following Friday. At which time the roadway must have acceptable asphalt surfacing and be open to through traffic.
- **Existing Storm Drain:** The existing storm drain at the west end of the project is PVC. Connection grades will vary and bends will have to be used as necessary to make the inserta tee connections.
- **Swale Compaction:** Avoid disturbance and minimize compaction in the landscape swale areas to the full extent possible to maintain infiltration capacity after construction.

All Bidders shall acknowledge receipt and acceptance of this Addendum No. 1 by signing in the space provided and submitting the signed Addendum with the bid. Bids submitted without this Addendum will be considered irregular and may not be accepted.

RECEIPT OF THIS ADDENDUM IS ACKNOWLEDGED AND CONDITIONS ARE HEREBY AGREED TO
THIS ____ DAY OF _____ 2015.

Bidder's Name (Company)

BY: _____
(Signature)

END OF ADDENDUM NO. 1

BID SCHEDULE – ADDENDUM NO. 1

Redwood Avenue Street Improvements Phase 2 - TR4934

PART 00200 – TEMPORARY FEATURES AND APPURTENANCES				
Item	Quantity	Unit	Unit Price (Fig.)	Extended Amount
1	Mobilization , move in of equipment and materials per APWA/ODOT Sec. 00210, installed, complete.			
	1	LS	\$	\$
2	Erosion Control , including but not limited to, inlet protection, sediment control, straw wattles, and seeding. Also includes, procurement of NPDES 1200C Permit. Per approved plans and APWA/ODOT Sec. 00280. Installed, complete.			
	1	LS	\$	\$
3	Temporary Work Zone Traffic Control , Complete (excluding bid items 3A – 3C) Includes materials, labor, and all incidentals for all temporary traffic control measures necessary for the construction of this project (contractor to provide a formal traffic control plan for Agency approval) per approved plans and APWA/ODOT Sec. 00225			
	1	LS	\$	\$
3A	Traffic Control Supervisor , TCS will oversee ALL traffic control operations on a daily basis and will be the direct contact for discussion and implementation of any traffic control issues and/or concerns for the duration of the project, per approved plans and APWA/ODOT Sec. 00225			
	1	EA	\$	\$
3B	Flaggers , per approved traffic control plans and APWA/ODOT Sec. 00225			
	3600	HR	\$	\$
3C	Portable Changeable Message Signs , per approved traffic control plans and APWA/ODOT Sec. 00225			
	5	EA	\$	\$
PART 00300 – ROADWORK				
4	Removal of Structures and Obstructions , per approved plans and APWA/ODOT Sec. 00310. Installed, complete.			
	1	LS	\$	\$
4A	Removal of Existing Signs , per approved plans and APWA/ODOT Sec. 00310. Installed, complete.			
	1	LS	\$	\$
5	Clearing and Grubbing , per approved plans and APWA/ODOT Sec. 00320, including but not limited to, all trees marked for removal, stump grinding where necessary, and removal all loose softened/organic material.			
	1	LS	\$	\$
6	General Excavation , includes but not limited to removing existing road surfacing/base at dig-out areas, road widening, handling & disposing of material, removing organic material and scraping/cleaning existing roadside ditches per approved plans and APWA/ODOT Sec. 00330.			
	1	LS	\$	\$

7	Subgrade Geotextile , per approved plans and APWA/ODOT Sec. 00350. Installed, complete.			
	27,352	SY	\$	\$
PART 00400 – DRAINAGE AND SEWERS				
8	Subsurface Drain Cleanout , per ZCS detail 4/C5.2 & 1/C5.3, approved plans, and APWA/ODOT Sec. 00430. Installed, complete.			
	41	EA	\$	\$
9	4" Drain Pipe, Perforated PVC , includes 2" clean drain rock section & fabric shown on detail 3/C0.1. per approved plans and APWA/ODOT Sec. 00430. Installed, complete.			
	1,570	FT	\$	\$
10	36" HDPE Pipe, 5'-10' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	537	FT	\$	\$
11	36" HDPE Pipe, 10'-20' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	604	FT	\$	\$
12	30" HDPE Pipe, 0'-5' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	18	FT	\$	\$
13	30" HDPE Pipe, 5'-10' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	290	FT	\$	\$
14	30" HDPE Pipe, 10'-20' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	674	FT	\$	\$
15	24" HDPE Pipe, 0'-5' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	98	FT	\$	\$
16	24" HDPE Pipe, 5'-10' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	756	FT	\$	\$
17	18" HDPE Pipe, 0'-5' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	216	FT	\$	\$
18	18" HDPE Pipe, 5'-10' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	673	FT	\$	\$
19	15" HDPE Pipe, 0'-5' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	282	FT	\$	\$
20	15" HDPE Pipe, 5'-10' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	444	FT	\$	\$

21	12" HDPE Pipe, 0'-5' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	375	FT	\$	\$
22	12" HDPE Pipe, 5'-10' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	167	FT	\$	\$
23	8" HDPE Pipe, 0'-5' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	1,768	FT	\$	\$
24	8" HDPE Pipe, 5'-10' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	35	FT	\$	\$
27	4" HDPE Pipe, 0'-5' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	55	FT	\$	\$
28	2" PVC Electrical Conduit Pipe, 0'-5' Depth , conduit to be schedule 40 gray electrical grade PVC material and include pull rope rated for a minimum of 500 pounds. Per current Pacific Power standards, approved plans and APWA/ODOT Sec. 00445. Includes 24" sweeps to existing poles. Installed, complete.			
	60	FT	\$	\$
30	12" PVC Sch. 40 Pipe, 0'-5' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	139	FT	\$	\$
31	24" PVC C900 Pipe, 5'-10' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	106	FT	\$	\$
32	12" PVC C900 Pipe, 10'-20' Depth , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	62	FT	\$	\$
33	4" PVC Sewer Pipe , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	71	FT	\$	\$
34	4" Sewer Cleanout , per GPSD #303 approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	1	EA	\$	\$
35	6" Storm Drain Cleanout , per ZCS detail 3/C5.2, approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	1	EA	\$	\$
36	Pipe Tees, Inserta Tees 12" , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	1	EA	\$	\$
37	Pipe Tees, Inserta Tees 8" , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	48	EA	\$	\$
39	Pipe Tees, Inserta Tees 4" , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	6	EA	\$	\$

40	Pipe Wyes, Inserta wyes 8" , per approved plans and APWA/ODOT Sec. 00445. Installed, complete.			
	1	EA	\$	\$
41	84" Concrete Storm Sewer Manhole (Eccentric Cone) , per GPSD #301, approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	1	EA	\$	\$
42	72" Concrete Storm Sewer Manhole (Eccentric Cone) , per GPSD #301, approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	3	EA	\$	\$
43	72" Concrete Storm Sewer Manhole (Flat Top) , per GPSD #309, approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	3	EA	\$	\$
44	60" Concrete Storm Sewer Manhole (Eccentric Cone) , per GPSD #301, approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	6	EA	\$	\$
45	60" Concrete Storm Sewer Manhole (Flat Top) , per GPSD #309, approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	5	EA	\$	\$
47	48" Concrete Storm Sewer Manhole (Flat Top) , per GPSD #309, approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	8	EA	\$	\$
48	48" Concrete Irrigation Manhole (Eccentric Cone) , per OSD RD336, approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	2	EA	\$	\$
49	Precast Concrete Junction Box (Storm Vault) , per approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	2	EA	\$	\$
50	Concrete Inlets, Type 'B' , per GPSD #103, approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	9	EA	\$	\$
51	Concrete Inlets, Type 'D' , per GPSD #112, approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	9	EA	\$	\$
52	Catch Basins, 24" Nyloplast Storm , per approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	1	EA	\$	\$
53	Catch Basins, 24" Nyloplast Irrigation , per approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	1	EA	\$	\$
54	Catch Basins, Nyloplast 24" Swale Inlet , per approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	2	EA	\$	\$
55	Catch Basins, Nyloplast 18" Swale Inlet , per approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	25	EA	\$	\$

56	Catch Basins, Yard Drain , per ZCS Detail 5/C5.0, approved plans, and APWA/ODOT Sec. 00470. Installed, complete.			
	34	EA	\$	\$
57	Concrete Junction Box, 24" Storm , per approved plans and APWA/ODOT Sec. 00470. Installed, complete.			
	2	EA	\$	\$
58	Concrete Irrigation Box , per ZCS detail 5/C5.2, approved plans, and APWA/ODOT Sec. 00470. Installed, complete.			
	1	EA	\$	\$
59	Major Adjustment of Manholes , per GPSD # 312, approved plans and APWA/ODOT Sec. 00490. Installed, complete.			
	11	EA	\$	\$
60	Minor Adjustment of Manholes (Sewer, Storm, Fiber Optic) , per GPSD # 312, approved plans and APWA/ODOT Sec. 00490. Installed, complete.			
	29	EA	\$	\$
61	Adjusting Boxes, Water Meter , per approved plans and APWA/ODOT Sec. 00490. Installed, complete.			
	24	EA	\$	\$
62	Adjusting Valve Boxes , per approved plans and APWA/ODOT Sec. 00490. Installed, complete.			
	42	EA	\$	\$
62A	Trench Resurfacing , per approved plans and APWA/ODOT Sec. 00495. Installed, complete.			
	638	TN	\$	\$
PART 00500 – BRIDGES				
63	Retaining Wall, Prefabricated Modular , per ZCS details on C5.1, approved plans and APWA/ODOT Sec. 00B596. Installed, complete.			
	157	SF	\$	\$
64	Retaining Wall, Cast-In-Place Concrete Semi-Gravity Cantilever , per ZCS detail 2/C5.3, approved plans and APWA/ODOT Sec. 00C596. Installed, complete.			
	277	SF	\$	\$
PART 00600 – BASES				
65	Cold Plane Pavement Removal, 2" Deep , (average 2" depth) per approved plans and APWA/ODOT Sec. 00620.			
	8,468	SY	\$	\$
66	Cold Plane Pavement Removal, 4" Deep , (average 4" depth) per approved plans and APWA/ODOT Sec. 00620.			
	5,527	SY	\$	\$
67	4"-0" Aggregate Subbase , structural fill for road widening, per approved plans and APWA/ODOT Sec. 00641. Installed, complete.			
	4,400	TN	\$	\$
68	3/4"-0" Aggregate Base , per approved plans and APWA/ODOT Sec. 00641. Installed, complete.			
	4,420	TN	\$	\$

PART 00700 – WEARING SURFACES				
69	Level 3, 1/2" Dense ACP Mixture , compacted in place per approved plans and APWA/ODOT Sec. 00744. Installed, complete.			
	5,858	TN	\$	\$
70	Level 3, 1/2" Dense ACP Mixture, "In Leveling" , compacted in place per approved plans and APWA/ODOT Sec. 00744. Installed, complete.			
	362	TN	\$	\$
71	Asphalt Approaches, Method 'B' , including but not limited to additional crushed rock for driveway transitions. Per approved plans and APWA/ODOT Sec. 00749. Installed, complete.			
	49	EA	\$	\$
72	Concrete Walks , (Includes, but not limited to a minimum leveling base course of 4" of ¾"-0" crushed rock) per GPSD #106 & 106-A, approved plans, and APWA/ODOT Sec. 00759. Installed, complete.			
	42,211	SF	\$	\$
73	Concrete Curb, Type 'A' , (concrete curb and gutter) per GPSD #102, approved plans, and APWA/ODOT Sec. 00759. Installed, complete.			
	9,102	FT	\$	\$
74	Concrete Curb, Type 'B' , per GPSD #102, approved plans, and APWA/ODOT Sec. 00759. Installed, complete.			
	15	FT	\$	\$
75	Concrete Sidewalk Ramps , per GPSD #101-A, approved plans, and APWA/ODOT Sec. 00759. Installed, complete.			
	12	EA	\$	\$
76	Concrete Sidewalk Ramps , per GPSD #101, approved plans, and APWA/ODOT Sec. 00759. Installed, complete.			
	13	EA	\$	\$
77	Concrete Driveways , (residential) per GPSD #104 & 104-A, approved plans and APWA/ODOT Sec. 00759. This bid item includes the installation of all concrete driveway transitions behind the sidewalk and concrete fire hydrant rings as shown. Installed, complete.			
	10,764	SF	\$	\$
78	Concrete Driveways Reinforced , (commercial) per GPSD #105 & 105-A, approved plans, and APWA/ODOT Sec. 00759. Installed, complete.			
	2,291	SF	\$	\$
PART 00800 – PERMANENT TRAFFIC SAFETY AND GUIDANCE SYSTEMS				
79	Pavement Line Removal , per approved plans, and APWA/ODOT Sec. 00851. Installed, complete.			
	1,199	FT	\$	\$
80	Pavement Bar Removal , per approved plans, and APWA/ODOT Sec. 00851. Installed, complete.			
	325	SF	\$	\$
81	Pavement Legend Removal , per approved plans, and APWA/ODOT Sec. 00851. Installed, complete.			
	8	EA	\$	\$

82	Mono-Directional White Type 1 Markers , per approved plans, and APWA/ODOT Sec. 00855. Installed, complete.			
	17	EA	\$	\$
83	Bi-Directional Yellow Type 1 Markers , per approved plans, and APWA/ODOT Sec. 00855. Installed, complete.			
	130	EA	\$	\$
84	4" White Striping (Durable) , (white line & bike lane transverse markings) Thermoplastic, sprayed, surface, non-profiled. Per TM500 (W), approved plans, and APWA/ODOT Sec. 00865. Installed, complete.			
	10,325	FT	\$	\$
85	8" White Striping (Durable) , Thermoplastic, sprayed, surface, non-profiled. Per TM500 (W-2), approved plans, and APWA/ODOT Sec. 00865. Installed, complete.			
	20,290	FT	\$	\$
86	Narrow Double Yellow Striping (Durable) , Thermoplastic, sprayed, surface, non-profiled. Per TM500 (ND/R-40), approved plans, and APWA/ODOT Sec. 00865. Installed, complete.			
	3,090	FT	\$	\$
87	8" White Dotted Striping (Durable) , Thermoplastic, sprayed, surface, non-profiled. Per TM500 (WD-2), approved plans, and APWA/ODOT Sec. 00865. Installed, complete.			
	476	FT	\$	\$
88	Two-Way Left Turn Lane Positioning Guide (Durable) , Thermoplastic, sprayed, surface, non-profiled. Per TM500 (TWL/R-40), approved plans, and APWA/ODOT Sec. 00865. Installed, complete.			
	9,063	FT	\$	\$
89	8" White Turn Lane Positioning Guide with Reflectors (Durable) , Thermoplastic, sprayed, surface, non-profiled. Per TM500 (W-2/R-15), approved plans, and APWA/ODOT Sec. 00865. Installed, complete.			
	1,364	FT	\$	\$
90	Pavement Legend, Type 'B-HS': Bicycle Lane Symbols , Fused thermoplastic film high skid material per approved plans and APWA/ODOT Sec. 00867. Installed, complete.			
	40	EA	\$	\$
91	Pavement Legend, Type 'B-HS': Directional Arrows , Fused thermoplastic film high skid material per approved plans and APWA/ODOT Sec. 00867. Installed, complete.			
	41	EA	\$	\$
92	Pavement Legend, Type 'B-HS': Bike Chevron Arrows , Fused thermoplastic film high skid material per approved plans and APWA/ODOT Sec. 00867. Installed, complete.			
	48	EA	\$	\$
93	Pavement Legend, Type 'B-HS': Only , Fused thermoplastic film high skid material per approved plans and APWA/ODOT Sec. 00867. Installed, complete.			
	3	EA	\$	\$
94	Pavement Bar, Type 'B-HS' , Fused thermoplastic film high skid material per approved plans and APWA/ODOT Sec. 00867. Installed, complete.			
	1728	SF	\$	\$
95	Pavement Bar, Type 'B-HS': Bike Greenfield , Fused thermoplastic film high skid material per approved plans and APWA/ODOT Sec. 00867. Installed, complete.			
	6,050	SF	\$	\$

PART 00900 – PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS				
96	Loop Detector Installation , (approximately 14 loop detectors) per approved plans and APWA/ODOT Sec. 00990. Installed, complete.			
	1	LS	\$	\$
PART 01000 – RIGHT-OF-WAY DEVELOPMENT AND CONTROL				
97	4' Vinyl Clad (Green) Chain Link Fence , per approved plans, and APWA/ODOT Sec. 01050. Installed, complete.			
	511	FT	\$	\$
98	4' Chain Link Fence (Galvanized) , per approved plans, and APWA/ODOT Sec. 01050.. Installed, complete.			
	105	FT	\$	\$
99	4' Cedar Wood Fence , per approved plans, and APWA/ODOT Sec. 01050. Installed, complete.			
	340	FT	\$	\$
100	6' Cedar Wood Fence , per approved plans, and APWA/ODOT Sec. 01050. Installed, complete.			
	6	FT	\$	\$
101	Multiple Mailbox Support , per GPSD #115 approved plans, and APWA/ODOT Sec. 01070. Installed, complete.			
	1	EA	\$	\$
102	Single Mailbox Support , per GPSD #115 approved plans, and APWA/ODOT Sec. 01070. Installed, complete.			
	1	EA	\$	\$
103	Shared Mailboxes , (Gray in color) per approved plans, product installation details, and APWA/ODOT Sec. 01070. Installed, complete.			
	1	LS	\$	\$
104	Soil Testing , including but not limited to required sampling, testing, analyses, and reports for soil particle size range, soil fertility test and soil amendment report, soil ecology analysis and soil bio-amendment report. Per approved plans, and APWA/ODOT Sec. 01040. Complete.			
	3	EA	\$	\$
105	2.5" Caliper Deciduous Tree , per approved plans, and APWA/ODOT Sec. 01040. Installed, complete.			
	54	EA	\$	\$
106	3" Caliper Deciduous Tree , per approved plans, and APWA/ODOT Sec. 01040. Installed, complete.			
	38	EA	\$	\$
107	Shrubs/Ground Covers, 1 Gallon Container , per approved plans, and APWA/ODOT Sec. 01040. Installed, complete.			
	709	EA	\$	\$
108	Shrubs/Ground Covers, 2 Gallon Container , per approved plans, and APWA/ODOT Sec. 01040. Installed, complete.			
	656	EA	\$	\$

109	Shrubs, 3 Gallon Container , per approved plans, and APWA/ODOT Sec. 01040. Installed, complete.			
	145	EA	\$	\$
110	Topsoil , per approved plans, and APWA/ODOT Sec. 01040. Installed, complete.			
	1	LS	\$	\$
111	Soil Conditioners , per approved plans, and APWA/ODOT Sec. 01040. Complete.			
	1	LS	\$	\$
112	Bark Mulch , per approved plans, and APWA/ODOT Sec. 01040. Complete.			
	1	LS	\$	\$
113	Rock Mulch (Swales) , per approved plans, and APWA/ODOT Sec. 01040. Complete.			
	1	LS	\$	\$
114	Root Barrier , per approved plans, and APWA/ODOT Sec. 01040. Complete.			
	1,840	FT	\$	\$
PART 01100 – WATER SUPPLY SYSTEMS				
115	8" Potable Water Pipe (Class 52, Ductile Iron Pipe), Fittings, and Couplings with Class 'B' Backfill , per approved plans, and APWA/ODOT Sec. 01140. Installed, complete.			
	30	FT	\$	\$
116	16" Water Line Crankshaft, (East of Kellenbeck Avenue) per approved plans, and APWA/ODOT Sec. 01140. Including but not limited to all pipe, fittings, straddle blocks, valves, materials and labor for cleaning/testing/sampling. Installed, complete.			
	1	EA	\$	\$
117	8" Water Line Crankshaft (Wheeler) , per approved plans, and APWA/ODOT Sec. 01140. Including but not limited to all pipe, fittings, straddle blocks, materials and labor for cleaning/testing/sampling. Installed, complete.			
	1	EA	\$	\$
118	8" Water Line Crankshaft (Medart) , per approved plans, and APWA/ODOT Sec. 01140. Including but not limited to all pipe, fittings, straddle blocks, materials and labor for cleaning/testing/sampling. Installed, complete.			
	1	EA	\$	\$
119	8" Water Line Crankshaft (Kellenbeck) , per approved plans, and APWA/ODOT Sec. 01140. Including but not limited to all pipe, fittings, straddle blocks, materials and labor for cleaning/testing/sampling. Installed, complete.			
	1	EA	\$	\$
120	8" Water Line Crankshaft (George Tweed) , per approved plans, and APWA/ODOT Sec. 01140. Including but not limited to all pipe, fittings, straddle blocks, materials and labor for cleaning/testing/sampling. Installed, complete.			
	1	EA	\$	\$
121	Blow-Off Assembly, 4" , per GPSD #205-B, approved plans, and APWA/ODOT Sec. 01140. Relocation of existing blow-off after 16" crankshaft installation. Installed, complete.			
	1	EA	\$	\$
122	Blow-Off Assembly, 2" , per GPSD #205, approved plans, and APWA/ODOT Sec. 01140. Installed, complete.			
	1	EA	\$	\$

123	Hydrant Assemblies , per GPSD #202, approved plans, and APWA/ODOT Sec. 01160. Installed, complete.		
	1	EA	\$
124	Irrigation System , including all conduit/sleeving, per approved plans, and APWA/ODOT Sec. 01120. Installed, complete.		
	1	LS	\$
PART 00200 – TEMPORARY FEATURES AND APPURTENANCES			
\$			
PART 00300 – ROADWORK			
\$			
PART 00400 – DRAINAGE AND SEWERS			
\$			
PART 00500 – BRIDGES			
\$			
PART 00600 – BASES			
\$			
PART 00700 – WEARING SURFACES			
\$			
PART 00800 – PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES			
\$			
PART 00900 – PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS			
\$			
PART 01000 – RIGHT-OF-WAY DEVELOPMENT AND CONTROL			
\$			
PART 01100 – WATER SUPPLY SYSTEMS			
\$			
SUM OF EXTENDED TOTALS			\$
CONTRACTOR SIGNATURE:			
DATE:			

June 16, 2011
AAI Project No. Z313-06.01

Justin Gerlitz, P.E.
ZCS Engineering, Inc.
550 SW 6th Street, Suite C
Grants Pass, OR 97526



Re: Pavement Design Recommendations
Redwood Avenue, Dowell Road to Darneille Lane
Josephine County, Oregon

Dear Justin:

This letter presents the results of our site investigation and pavement design recommendations for the proposed Roadway improvement and overlay of Redwood Avenue from Dowell Road to Darneille Lane in Josephine County, Oregon. We understand the project consists widening and improving the roadway alignment, and overlaying the existing pavement section.

SUBSURFACE CONDITIONS

The site conditions were evaluated on April 13, 2011. The subsurface conditions were determined by the drilling five, test holes along Redwood Avenue in order to observe soil material types and consistency and collect samples for laboratory testing. The surface and subsurface conditions are described below. The locations of the test holes are indicated on the Site and Exploration Plan, Figure 1. A description of the test hole drilling and detailed interpretive logs are provided in Appendix A. The laboratory testing results are provided in Appendix B.

The subsurface conditions encountered in our test holes generally asphalt concrete, and asphalt chip seal in some holes, over mostly medium dense to dense, tan, silty, fine to medium sand. The existing asphalt thickness ranged from 5.5 to 8.5 inches. The thickness of the asphalt, and underlying chip seal if present, in each test hole is shown on Figure 1. Underlying the asphalt concrete, no base rock was observed as the asphalt concrete lay directly on the silty, sand soil. The silt content of the subgrade soil ranged from 28.0 to 38.7 percent and the gradation of the samples was very consistent along the length of the project alignment. The grain size analysis results are presented Appendix B.

Two laboratory tests were conducted on selected samples to determine California Bearing Ratios (CBR) values for pavement design. The laboratory tests determined CBR values of 5.5 and 12.1. The two samples had very similar grain size distributions and the varied CBR test results appeared to be somewhat inconsistent. Therefore, we elected to average the two, test results for an average CBR value of 8.8 for pavement design along the entire project length. The CBR test results were determined based upon a compaction of 95 percent of the standard Proctor (ASTM:D 698). The CBR test results are provided in Appendix B.

TRAFFIC DESIGN PARAMETERS

Josephine County conducted a traffic count on Redwood Avenue, approximately 25 feet west of Allen Creek Road intersection. This is outside the project area and, based upon our and the City's observations, is busier and likely has a higher traffic count than the project area. The current average daily traffic (ADT) for Redwood Avenue averaged 6,550 vehicles per lane, per day. Using a projected traffic growth rate of 2.5 percent, per year, an average ADT over a 20-year life would be 8,366, as shown on Table 1.

The traffic study estimated bus and truck traffic by pressure tubes, and no visual, truck traffic counts were done. The traffic study indicated the major, truck traffic included 4.9 percent buses and 2.8 percent 5-axle trucks. Taking this high level of truck traffic and using the Asphalt Pavement Association of Oregon (APAO) conversion factors, a total equivalent axle loading (EAL) was calculated to be 14.5 million EALs over 20 years as summarized on Table 2. Using the City of Medford equation as an alternative, a total EAL of 1.7 million EALs was calculated for a truck volume of 8 percent. In either case, the level of EALs would be much higher than a heavily-used, major, urban arterial (up to 1 million EALs) as defined by the APAO.

The traffic study indicated that 4.9 percent was bus traffic. This percentage applied to the ADT would result in 320 buses per day. Redwood Avenue is a major, school bus route, so we contacted the school bus companies regarding how many buses are run each morning and afternoon. They indicated that about 16 buses run each morning and afternoon, this would result in 32 bus trips per day, per lane; far fewer buses than the traffic study would indicate.

The road is classified the Grants Pass Traffic Master Plan as a minor arterial. The APAO classifies a minor arterial as a Traffic Level IV road with a design EAL ranging from 100,000 to 250,000 EALs and up to 35 trucks or buses per day over a 20 year life. However, considering Redwood Avenue is a school bus route plus the higher truck traffic counts indicated by the Josephine County study, the next higher APAO traffic classification would be Traffic Level V which includes bus routes in its description. Level V provides for a range of 250,000 to 500,000 EALs and up to 70 trucks or buses per day over a 20 year life. In our opinion, and with the City's concurrence, we recommend the road project be design with a traffic classification of Traffic Level V in accordance with the APAO design guidelines.

PAVEMENT DESIGN RECOMMENDATIONS

For our pavement design recommendations, we used the pavement design method presented in the APAO's Asphalt Pavement Design Guide. The APAO method is widely used throughout Oregon and results in what many engineers consider typical pavement sections. The Asphalt Institute and the City of Medford have developed a set of thickness equivalencies comparing various types of rock base course and asphalt that provide flexibility in developing different pavement section options. The recommended pavement sections have been developed using the APAO method along with the City of Medford material type equivalencies.

The APAO groups road subgrades into design classifications based upon CBR values. A CBR of 8.8, the average determined by laboratory testing, is classified as a "good" subgrade. Using a Traffic Level V with a good subgrade, the APAO recommends a full depth pavement section of 6.5 inches for a road with curbs and gutters.

The existing pavement thickness ranges from 5.5 to 8.5 inches, although some of the pavement thickness may be a result of early, chip sealing layers. Discounting the possible chip sealing layers, the age and cracking of the existing pavement, and some grinding that will likely be necessary, we recommend not more than 3.5 inches (the thinness AC section observed, neglecting the chip seal layers) of the existing asphalt concrete (AC) be used as part of the design section above. Therefore, we recommend an AC overlay thickness of 3.0 inches over the existing, asphalt concrete.

For new road sections, such as shoulders or areas excavated to subgrade, the full depth AC of 6.5 inches may be used over a compacted, soil subgrade. As an alternative, and if utility depth allows, some of the AC may be replaced with base rock. We recommend the same 3 inch AC thickness as the overlay thickness be used for the shoulders area and the remaining AC depth be replaced with ¾"-minus crushed rock. The remaining 3.5 inches of AC should be replaced with 7 inches of ¾"-minus crushed rock. We recommend a woven, geotextile be placed over the subgrade prior to the placement of the base course rock.

In summary, the recommended overlay and pavement sections are:

For overlay where at least 3.5 inches of AC remain:

3 inches of asphalt concrete overlay

For new road sections and shoulders:

**6.5 inches of full depth asphalt concrete
over
A prepared soil subgrade**

Or

**3 inches of Asphalt Concrete
over
7 inches of ¾"-minus Crushed Rock
over
A woven, geotextile
(e.g. Propex Geotex 200ST, or equal,
with a grab tensile strength of at least 200 lbs.)
over
A prepared soil subgrade**

SUBGRADE PREPARATION

The design assumes a “good” subgrade as described above for the new, shoulder areas of the street. For construction purposes, we recommend the soil subgrade for the new pavement sections consist of firm and non-yielding soil. The acceptability of the subgrade can be determined by proof-rolling the subgrade, where a loaded dump truck, or other heavy wheel vehicle, is observed slowly rolling over the subgrade. The subgrade should not rut or have non-elastic deflections under the wheels of the loaded vehicle. If soft or wet soil spots are observed, we recommend they be over-excavated to firm and non-yielding soil and backfilled with compacted, ¾”-minus crushed rock.

If structural fill is required to achieve the desired grades, it should be placed in loose lifts not exceeding 12 inches in thickness. Individual lifts should be compacted such that a density of at least 95 percent of the standard Proctor maximum dry density (ASTM:D 698 or AASHTO T 99) is achieved. We recommend that a representative of the geotechnical engineer be present during placement of structural fill to observe the work and perform a representative number of in-place density tests. In this way, the adequacy of the earthwork may be evaluated as grading progresses. However, if large crushed rock is used (e.g. 4-inch minus) the density of the fill will be difficult, if not impossible, to measure by means of a nuclear moisture/density gauge. Therefore, we recommend that the rock fill be spread, watered to an appropriate moisture content, and compacted with at least 3 passes of a heavy, vibratory compaction roller. The compacted fill should be a firm and non-yielding surface able to withstand proof-rolling with a loaded dump truck without significant deflection.

We recommend that a representative of the geotechnical engineer be present during placement of structural fill to observe the work and, if possible, perform a representative number of in-place density tests. In this way, the adequacy of the earthwork may be evaluated as grading progresses.

In all cases, site soils or soil imported to the site to be used for structural fill should have a maximum particle size on the order of 8 inches and be free of organics and other deleterious material.

If inclement weather occurs during grading, the upper wetted portion of the subgrade may need to be scarified and dried prior to further earthwork. If it is not practical to dry the wet, silty soils, it may be more expedient to remove the wet materials and replace them with dry soil.

CONSTRUCTION CONSIDERATIONS

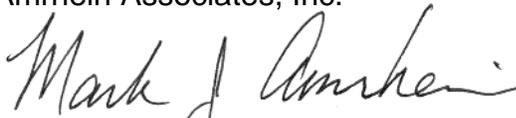
Before work is started, we recommend a surface examination be made to determine if and where repairs are necessary to the existing pavement. Individual or isolated cracks should be blown clean with compressed air and sealed with liquid asphalt. Localized weak areas that are extensively cracked (alligator cracking) or potholes should be cut out, the soft subgrade excavated and replaced with crushed rock, and patched prior the overlay work. We recommended a tack coat be sprayed on the existing asphalt before the first lift of the overlay or leveling course is applied.

If the new street grade requires additional material be placed to fill low spots in order create proper grades and cross slopes for the subsequent overlay lifts, we recommend a leveling course be laid down. The leveling course is typically uses a smaller aggregate size, such as a sand mix or 3/8" aggregate mix, to allow for tapering back on to the existing pavement surface.

CLOSURE

The recommendations provided in this letter have been prepared in conformance with generally accepted geotechnical engineering principles and practices. No other warranty, either expressed or implied, is made or intended. This letter has been prepared for the exclusive use of the ZCS Engineering, Inc., the City of Grants Pass, and their agents, for specific application to subject property.

Sincerely,
Amrhein Associates, Inc.



Mark J. Amrhein, P.E, GE
President / Senior Engineer



RENEWAL DATE: 12/31/11

Figures

Figure 1 – Site and Exploration Plan

Tables

Table 1 – Traffic Count Estimates

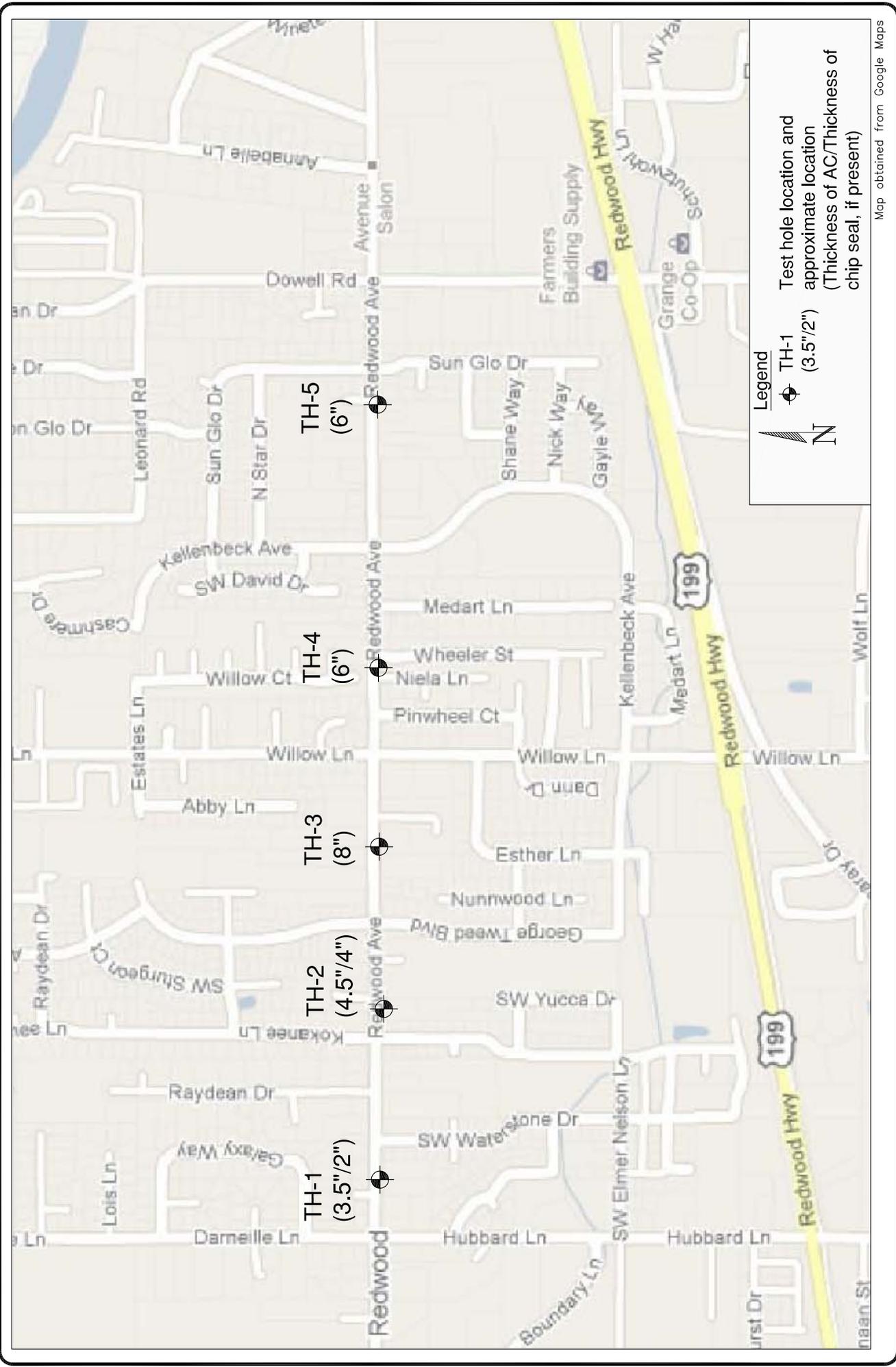
Table 2 – Truck Traffic Estimates

Appendices

Appendix A – Subsurface Exploration Procedures and Logs

Appendix B – Laboratory Test Results

FIGURES AND TABLES



Map obtained from Google Maps

Legend

-  N
-  TH-1 (3.5"/2")
-  Test hole location and approximate location (Thickness of AC/Thickness of chip seal, if present)

FIGURE 1

ZCS Engineering, Inc.
 Redwood Avenue
 Dowell Road to Darnelle Lane
 Josephine County, Oregon

SITE AND EXPLORATION PLAN

DATE	06/16/11
DWN	MJA
DES	
Project No.	Z313-06.01



AMRHEIN ASSOCIATES, Inc.

TABLE 1
TRAFFIC COUNT ESTIMATES
(JOSEPHINE COUNTY DATA)

YEARS	County ADT/Lane (2.5% growth)
1	6,550
2	6,714
3	6,882
4	7,054
5	7,230
6	7,411
7	7,596
8	7,786
9	7,981
10	8,180
11	8,385
12	8,594
13	8,809
14	9,029
15	9,255
16	9,486
17	9,724
18	9,967
19	10,216
20	10,471
Total over 20 years	167,318
Average ADT over 20 years	8,366

TABLE 2
 TRUCK TRAFFIC ESTIMATES
 (JOSEPHINE COUNTY DATA)

Truck Types	2 Axle Long	Buses	2 Axle - 6 Tire	3 Axle	4 Axle	5 Axle	6 Axle
Truck Percentages	18.4%	4.9%	11.0%	0.1%	0.0%	2.9%	0.5%
ADTT	1,539	410	920	8	0	243	42
EAL per truck type (per APAO)	0.274	1.980	0.274	0.603	0.877	1.781	1.781
EALs	422	812	252	5	0	432	74
Total ADTT EAL	1,997						
Total EAL over 20 years	14,579,637						

APPENDIX A

**SUBSURFACE EXPLORATION PROCEDURES
AND LOGS**

APPENDIX A SUBSURFACE EXPLORATION PROCEDURES AND LOGS

SUBSURFACE EXPLORATION

The field exploration program conducted for this study consisted of five, augered test holes. The approximate exploration locations are shown on Figure 1, Site and Exploration Plan. The locations of the explorations were obtained in the field by sighting on existing site features shown on the aerial photo.

TEST HOLES

The test holes were drilled with a truck-mounted auger on April 13, 2011, by Gage It Construction. The test holes were observed and logged by Mark Amrhein, Geotechnical Engineer. Drilling the test holes consisting of advancing a 12-inch diameter, highway auger with a truck-mounted rig. During the drilling process, disturbed samples were obtained from auger. The soil samples obtained were classified in the field and representative portions placed in plastic bags. The samples were then transported to our office for further visual inspection, classification, and laboratory testing.

The test hole logs are based upon the field logs of the test holes, inspection of the secured sample, and laboratory testing. The relative soil densities indicated on the test hole logs are interpretive descriptions based on the conditions observed during the drilling. Visual classification of the soils was done in general accordance with the Unified Soil Classification System (USCS). A legend of the terms used for the soil descriptions is provided at the end of exploration logs.

Test Hole B-1

DEPTH	SOILS DESCRIPTION
0.0 – 3.5"	ASPHALT CONCRETE
3.5" – 5.5"	ASPHALT/CRUSHED ROCK CHIP SEAL
5.5" – 8.5"	Medium dense, moist, brown, silty SAND (SM) with some sub-rounded gravel – <i>Base rock?</i>
8.5" – 3.5'	Dense, moist, tan, silty, fine to medium SAND (SM) with trace fine gravel – <i>Native soil</i>
	No seepage No caving

Test Hole B-2

DEPTH	SOILS DESCRIPTION
0.0 – 4.5"	ASPHALT CONCRETE
4.5" – 8.5"	ASPHALT/CRUSHED ROCK CHIP SEAL
8.5" – 2.0'	Medium dense, moist, tan, silty SAND (SM) with some gravel – <i>Fill</i>
2.0' – 5.0'	Loose to medium dense, moist, tan, silty, fine to medium SAND (SM) – <i>Native alluvial soil</i>
	No seepage No caving

Test Hole B-3

DEPTH	SOILS DESCRIPTION
0.0 – 8"	ASPHALT CONCRETE
8" – 3.6'	Dense, moist, tan, silty, fine to medium SAND (SM) with trace fine gravel – <i>Native soil</i>
	No seepage No caving

Test Hole B-4

DEPTH	SOILS DESCRIPTION
0.0 – 6"	ASPHALT CONCRETE
6" – 3.8'	Dense, moist, tan, silty, fine to medium SAND (SM) with trace fine gravel – <i>Native soil</i>
	No seepage No caving

Test Hole B-5

DEPTH	SOILS DESCRIPTION
0.0 – 6”	ASPHALT CONCRETE
6” – 14”	Medium dense, moist, tan, silty SAND (SM) with some gravel – <i>Fill</i>
14” – 3.8’	Loose to medium dense, moist, tan, silty, fine to medium SAND (SM) – <i>Native alluvial soil</i>
	No seepage No caving

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) LEGEND

PRIMARY DIVISIONS	USCS SYMBOL	GENERAL SOIL DESCRIPTIONS
GRAVEL fine #4 - 3/4" coarse 3/4" - 3"	GW	Well graded GRAVEL or sandy GRAVEL mixtures with less than 5% silt or clay
	GP	Poorly graded GRAVEL or sandy GRAVEL mixtures with less than 5% silt or clay
	GW-GM	Well graded GRAVEL or sandy GRAVEL mixtures with 5% to 15% silt
	GW-GC	Well graded GRAVEL or sandy GRAVEL mixtures with 5% to 15% clay
	GP-GM	Poorly graded GRAVEL or sandy GRAVEL mixtures with 5% to 15% silt
	GP-GC	Poorly graded GRAVEL or sandy GRAVEL mixtures with 5% to 15% clay
	GM	Silty GRAVEL or silty, sandy GRAVEL mixtures with greater than 15% silt
	GC	Clayey GRAVEL or clayey, sandy GRAVEL with greater than 15% clay
SAND fine #200 - #40 medium #40 - #10 coarse #10 - #4	SW	Well graded SAND or gravelly SAND mixtures with less than 5% silt or clay
	SP	Poorly graded SAND or gravelly SAND mixtures with less than 5% silt or clay
	SW-SM	Well graded SAND or gravelly SAND mixtures with 5% to 15% silt
	SW-SC	Well graded SAND or gravelly SAND mixtures with 5% to 15% clay
	SP-SM	Poorly graded SAND or gravelly SAND mixtures with 5% to 15% silt
	SP-SC	Poorly graded SAND or gravelly SAND mixtures with 5% to 15% clay
	SM	Silty SAND or silty, gravelly SAND mixtures with greater than 15% silt
SILT	SC	Clayey SAND or clayey, gravelly SAND mixtures with greater than 15% clay
	ML	Silt with no to low plasticity
CLAY	MH	Silt with medium to high plasticity
	CL	Clay with low plasticity
ORGANIC	CH	Clay with medium to high plasticity
	OL	Organic silt with low plasticity
	OH	Organic clay with high plasticity
	PT	Peat or predominantly organic material

Oversize Material: Cobbles are 3" to 12" diameter, Boulders are +12" diameter

Description Modifiers: Major modifiers: clayey, silty, sandy, gravelly – greater than 15% listed lower to higher percentages
 Minor modifiers: with some clay, silt, sand, or gravel – 5% to 15%
 with trace clay, silt, sand, or gravel – less than 5%

SAND & GRAVEL DENSITY		SILT & CLAY CONSISTENCY		
Term	SPT N-value blows/foot	Term	SPT N-value blows/foot	Pocket Penetrometer (tons/sq. ft.)
Very loose	0 - 4	Very soft	<2	0 - 0.25
Loose	4 - 10	Soft	2 - 4	0.25 - 0.5
Medium dense	10 - 30	Medium stiff	4 - 8	0.5 - 1
Dense	30 - 50	Stiff	8 - 15	1 - 2
Very dense	>50	Very Stiff	15 - 30	2 - 4
		Hard	>30	>4

MOISTURE CONTENT		PLASITICITY	
Dry:	No discernable water present, dusty, dry to the touch	Non-Plastic	A thread cannot be rolled at any moisture content
Damp:	Enough moisture to darken appearance, no moisture adheres to hand	Low	A thread can be barely rolled
Moist:	"Optimum" water content, sample squeezes tight and maintains shape	Medium	The easily rolled thread cannot be re-rolled after reaching the plastic limit
Wet:	Visible free water, could not be recompacted as structural fill	High	Much time is needed to reach the plastic limit and the thread can be re-rolled several times

APPENDIX B

LABORATORY TEST RESULTS

APPENDIX B

LABORATORY TESTING PROCEDURES

Laboratory tests were performed during the course of this study to evaluate the index and geotechnical engineering properties of the subsurface soils. A description of the tests performed is given below.

Visual Classification

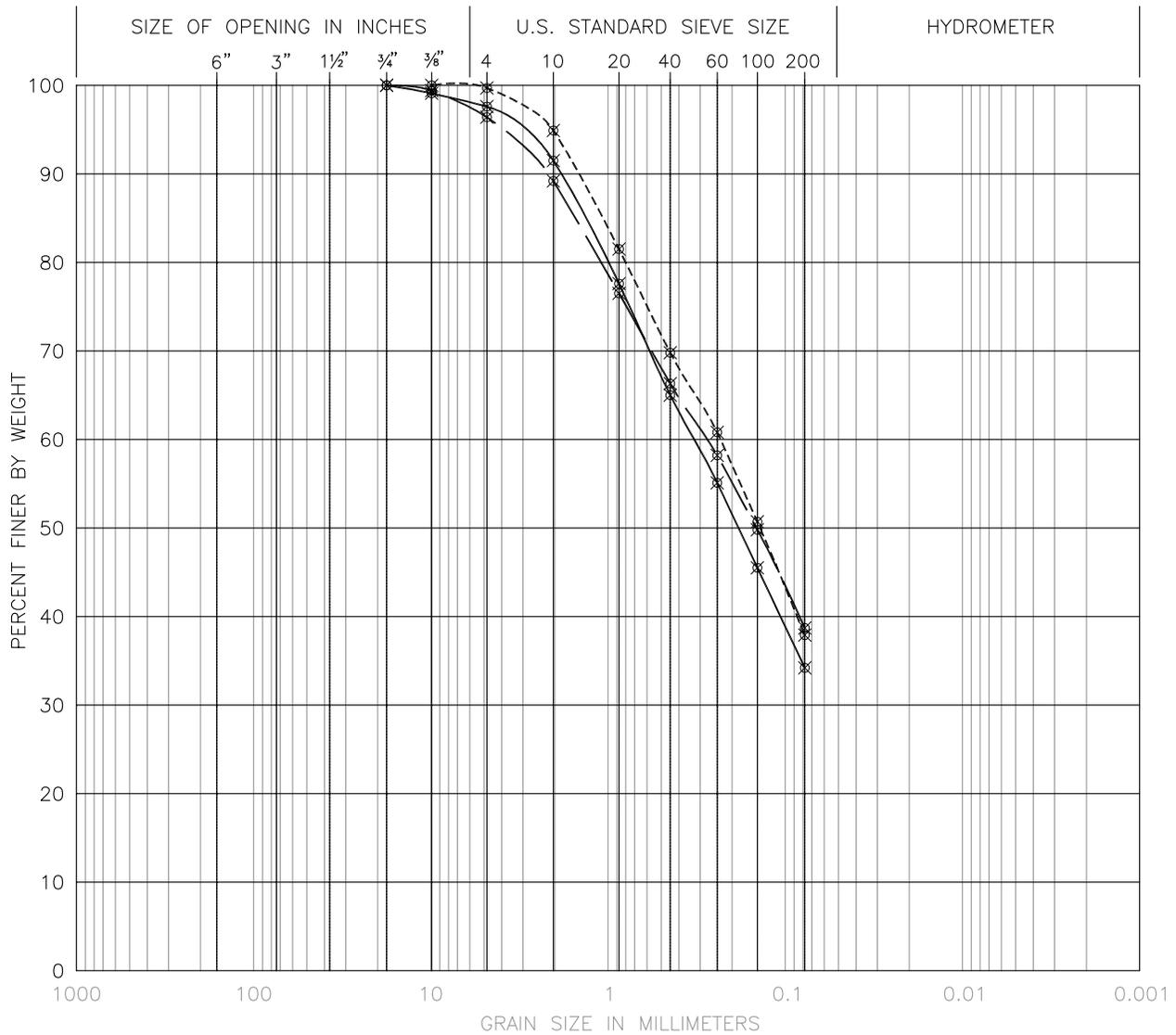
Samples recovered from the exploration locations were visually classified in the field during the exploration program. Representative portions of the samples were carefully packaged in watertight containers and transported to our laboratory where the field classifications were verified or modified, as required.

Grain Size Analysis

A grain size analysis indicates the range in diameter of soil particles included in a particular sample. Grain size analysis were performed on representative samples in general accordance with ASTM:D 422. The results of the grain size determinations for the samples were used in classifications of the soils, and are presented in this appendix.

California Bearing Ratio Tests

A series of California Bearing Ratio tests were performed on selected samples of the site soils, in general conformance with ASTM:D 1883-73, to provide an evaluation of the relative quality and support characteristics of subgrade soils. Representative portions from each sample were compacted in a mold, in general accordance with ASTM:D 698, the standard Proctor, to provide a moisture-density relationship curve. Additional samples are then compacted to various relative densities and each sample loaded with a 15 pound surcharge load and immersed in water and allowed to soak for a period of 72 to 96 hours, during which time it was monitored for swell. At the end of the period, the sample was removed, drained, and a vertical load applied to the surcharged soil with a penetration piston at a constant rate of strain. Measurements of the applied vertical load were obtained at selected penetration depths. The CBR value is a comparison of the load on the piston at 0.1 inches of penetration as compared to a theoretical sample of crushed rock. The CBR values are plotted versus the different relative densities so that a CBR value for a given relative density can be determined.



COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
	GRAVEL		SAND			FINE GRAINED	

	<u>Exploration</u>	<u>Sample</u>	<u>Depth</u>	<u>% Moisture</u>	<u>% Passing 200</u>
—————	B-1	S-1	3-5'	-	34.2%
- - - - -	B-2	S-1	3-5'	-	38.7%
- · - · - ·	B-3	S-1	3-5'	-	37.9%



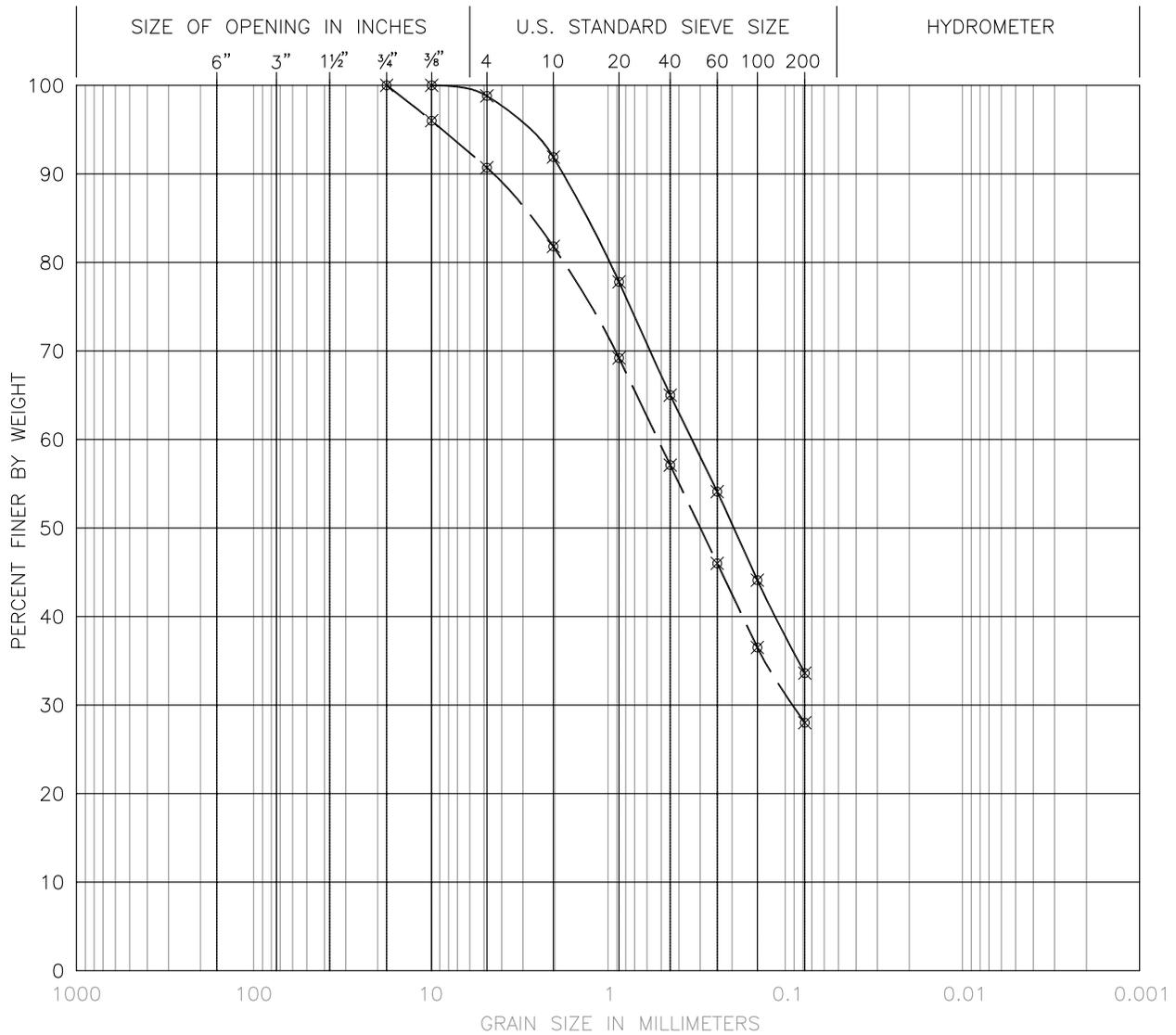
AMRHEIN
ASSOCIATES, Inc.

DATE 06/16/11
DWN MJA
DES
Project No.
Z313-06.01

City of Grants Pass
Redwood Avenue
Josephine County, Oregon

GRAIN SIZE ANALYSIS

FIGURE
B-1



COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
	GRAVEL		SAND			FINE GRAINED	

	<u>Exploration</u>	<u>Sample</u>	<u>Depth</u>	<u>% Moisture</u>	<u>% Passing 200</u>
—————	B-4	S-1	3-5'	—	33.6%
- - - - -	B-5	S-1	3-5'	—	28.0%



AMRHEIN ASSOCIATES, Inc.

DATE 06/16/11
 DWN MJA
 DES
 Project No. Z313-06.01

City of Grants Pass
 Redwood Avenue
 Josephine County, Oregon

GRAIN SIZE ANALYSIS

FIGURE
 B-2

MOISTURE - DENSITY RELATIONSHIP TEST



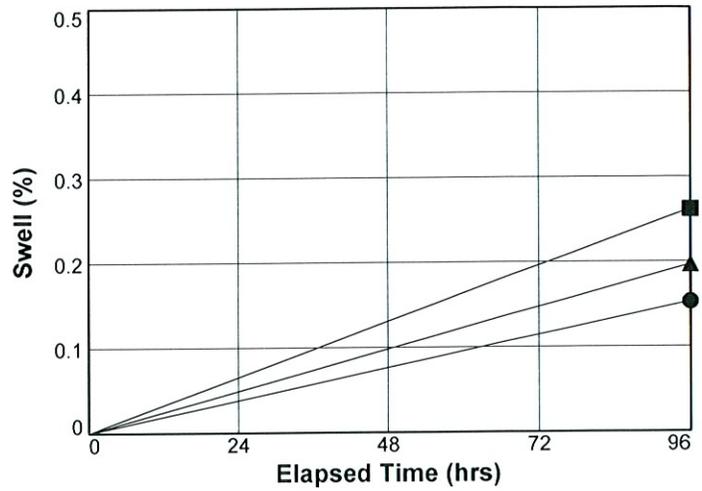
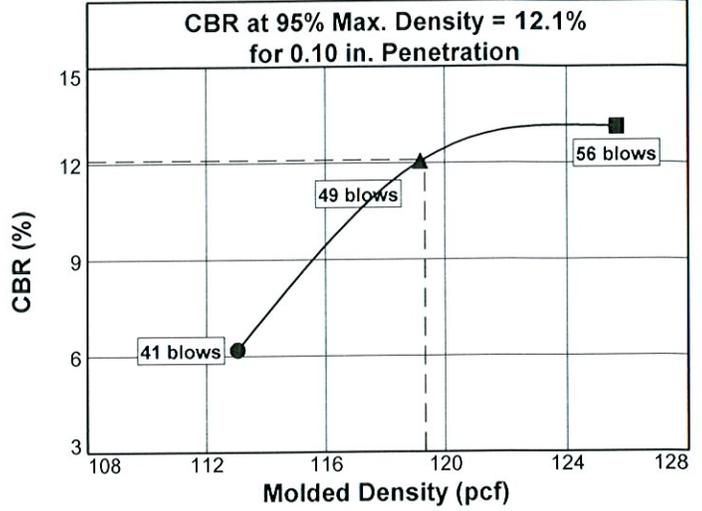
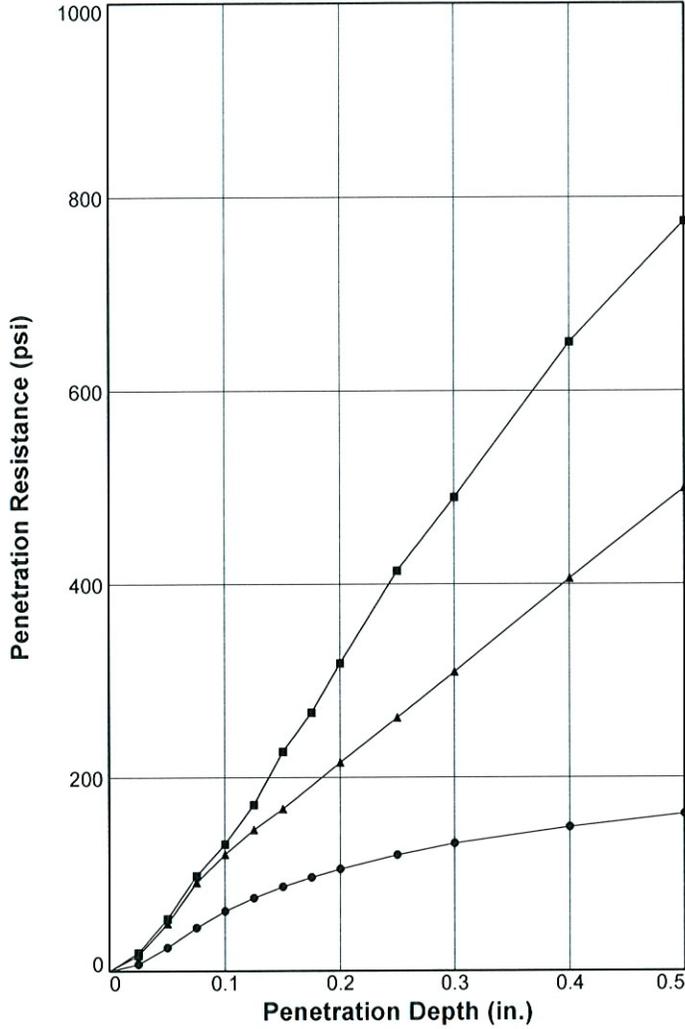
Test specification: ASTM D 698-00a Method C Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
n/a								

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 125.6 pcf Optimum moisture = 9.1 %	Brown SILT
Project No. 2116070 Client: Amrhein Associates, Inc. Project: Redwood Avenue Source: 4694 Sample No.: B-1 Elev./Depth: n/a	Remarks: Date: April 25, 2011
MOISTURE - DENSITY RELATIONSHIP TEST FEI Testing & Inspection, Inc. Corvallis, OR	Figure

BEARING RATIO TEST REPORT

ASTM D 1883-05



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	113.0	90	9.0	112.9	89.9	14.4	6.2	7.0	0.000	32	0.2
2 △	119.2	94.9	8.9	118.9	94.7	14.0	12.1	14.4	0.000	32	0.2
3 □	125.7	100.1	9.1	125.3	99.8	11.8	13.1	21.2	0.000	32	0.3
Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Brown SILT											
								125.6	9.1		

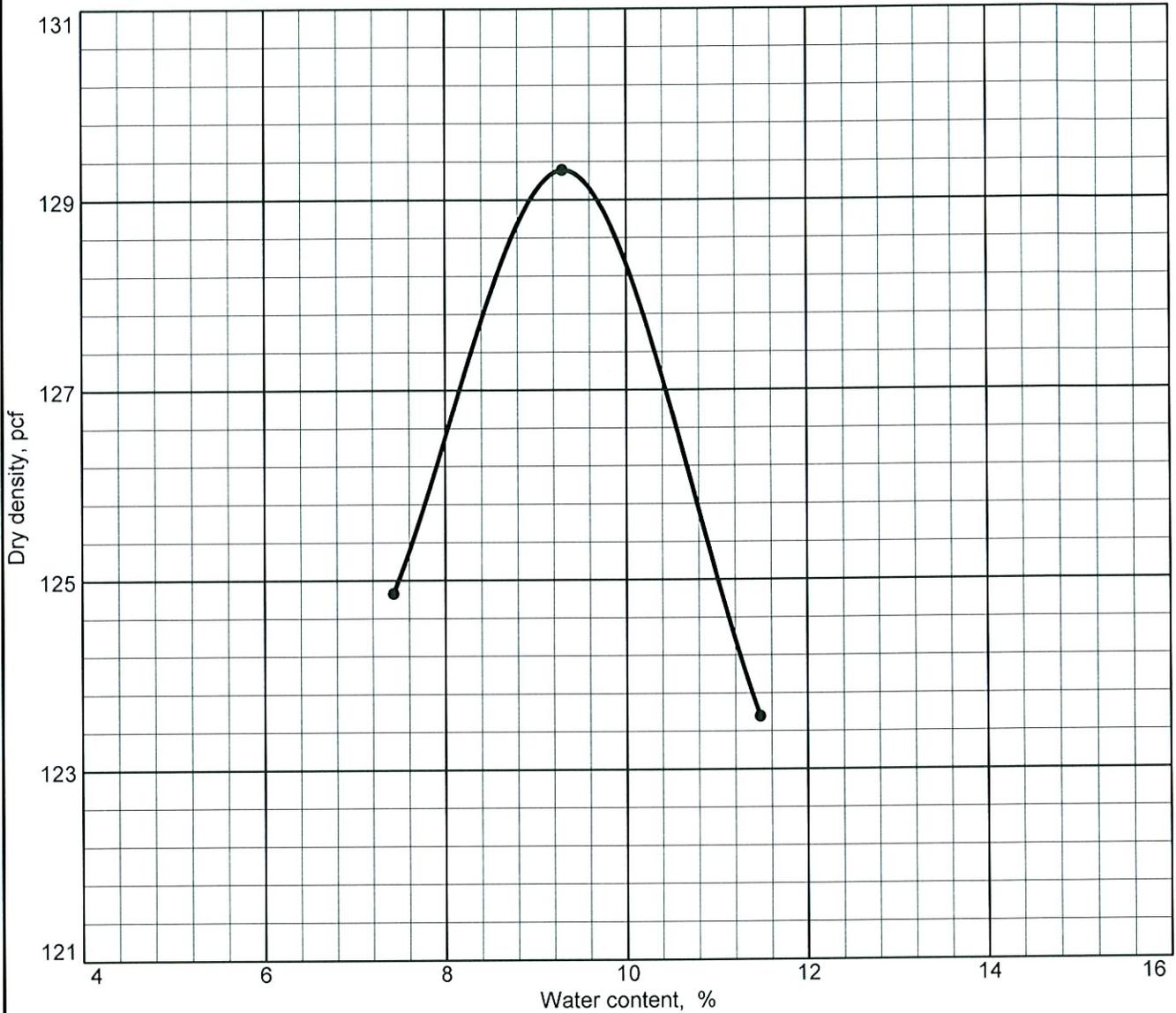
Project No: 2116070
Project: Redwood Avenue
Source of Sample: 4694 **Depth:** n/a
Sample Number: B-1
Date:

BEARING RATIO TEST REPORT
 FEI Testing & Inspection, Inc.
 Corvallis, OR

Test Description/Remarks:

Figure _____

MOISTURE - DENSITY RELATIONSHIP TEST



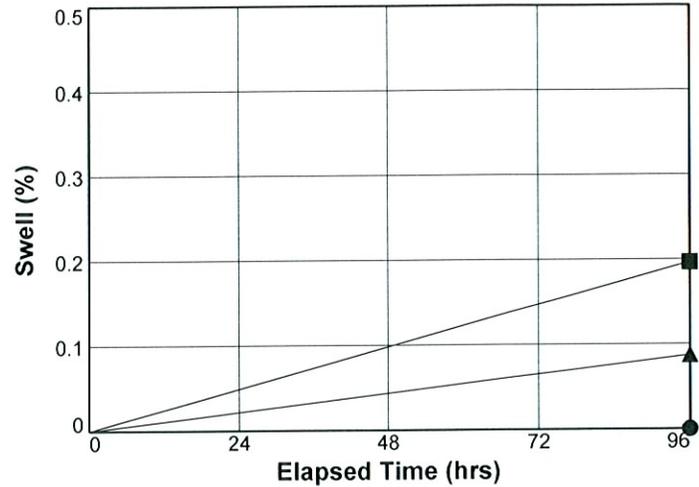
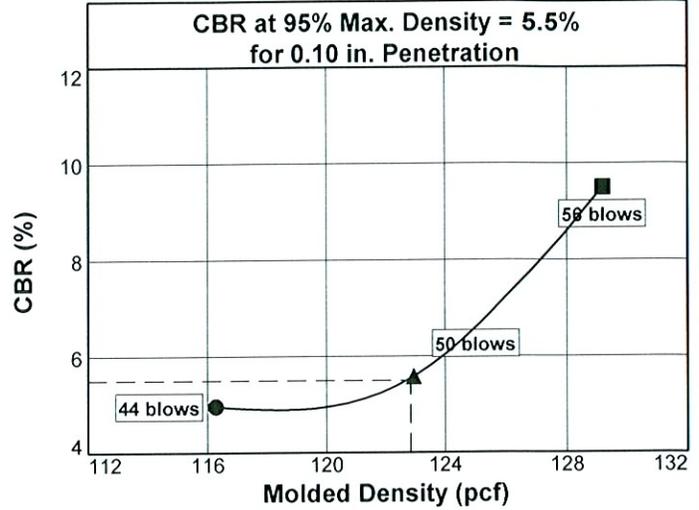
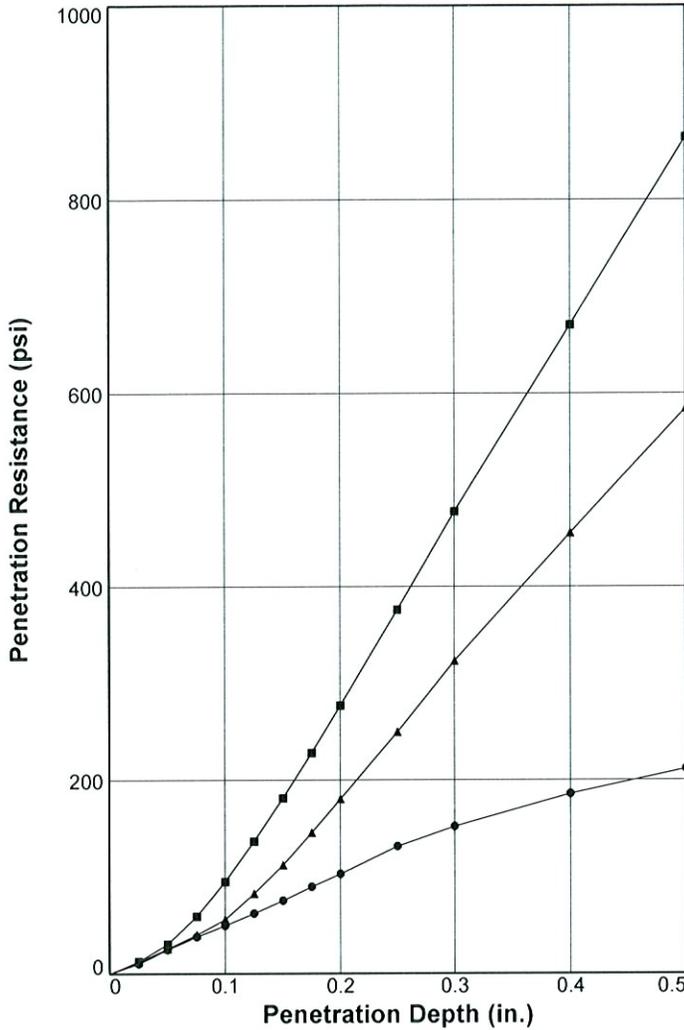
Test specification: ASTM D 698-00a Method C Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
n/a								

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 129.3 pcf Optimum moisture = 9.3 %	Brown SILT
Project No. 2116070 Client: Amrhein Associates, Inc. Project: Redwood Avenue ● Source: 4694 Sample No.: B-4 Elev./Depth: n/a	Remarks: Date: April 22, 2011
MOISTURE - DENSITY RELATIONSHIP TEST FEI Testing & Inspection, Inc. Corvallis, OR	Figure

BEARING RATIO TEST REPORT

ASTM D 1883-05



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	116.3	89.9	9.1	116.3	89.9	13.0	5.0	6.9	0.000	32	0
2 △	122.9	95.1	9.2	122.8	95	13.0	5.6	12.0	0.000	32	0.1
3 □	129.2	99.9	9.4	128.9	99.7	11.6	9.5	18.5	0.000	32	0.2

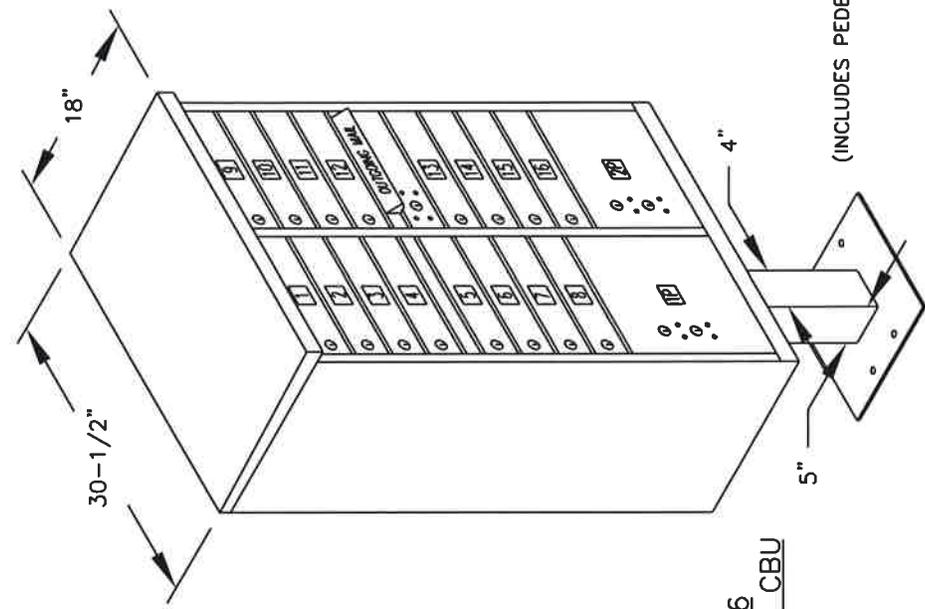
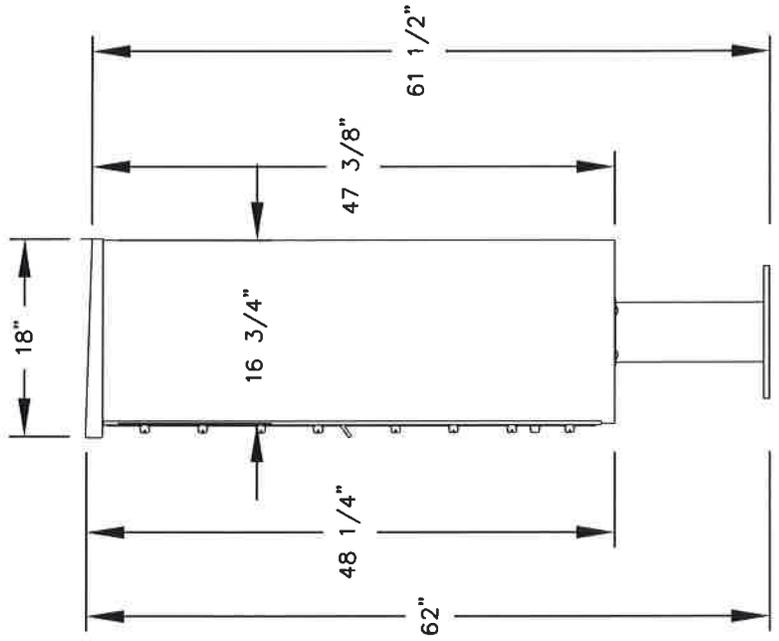
Material Description	USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Brown SILT		129.3	9.3		

Project No: 2116070
Project: Redwood Avenue
Source of Sample: 4694 **Depth:** n/a
Sample Number: B-4
Date: _____

 BEARING RATIO TEST REPORT
 FEI Testing & Inspection, Inc.
 Corvallis, OR

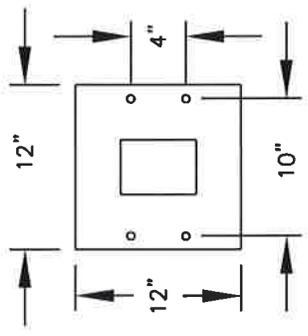
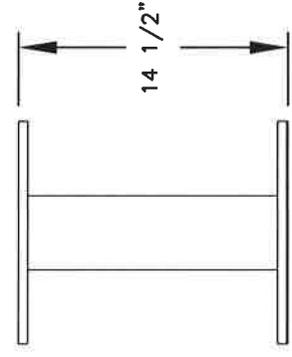
Test Description/Remarks:

 Figure _____



3316
TYPE III CBU

(INCLUDES PEDESTAL)



PEDESTAL BASE
BOLT PATTERN

MODEL #3316
CLUSTER BOX UNIT
(F SERIES)

AVAILABLE COLORS:
SANDSTONE, BRONZE, GREEN, BLACK, WHITE
OR GRAY (FOR REPLACEMENT UNITS)

DRAWN: 10/10



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PHONE: (800) 624-5269
FAX: (800) 624-5299
email: engineering@mailboxes.com

Established in 1936, Salsbury Industries is the industry leader in manufacturing and distributing quality mailboxes.

CLUSTER BOX UNITS (CBU's) INSTALLATION MANUAL "F" SPECIFICATIONS

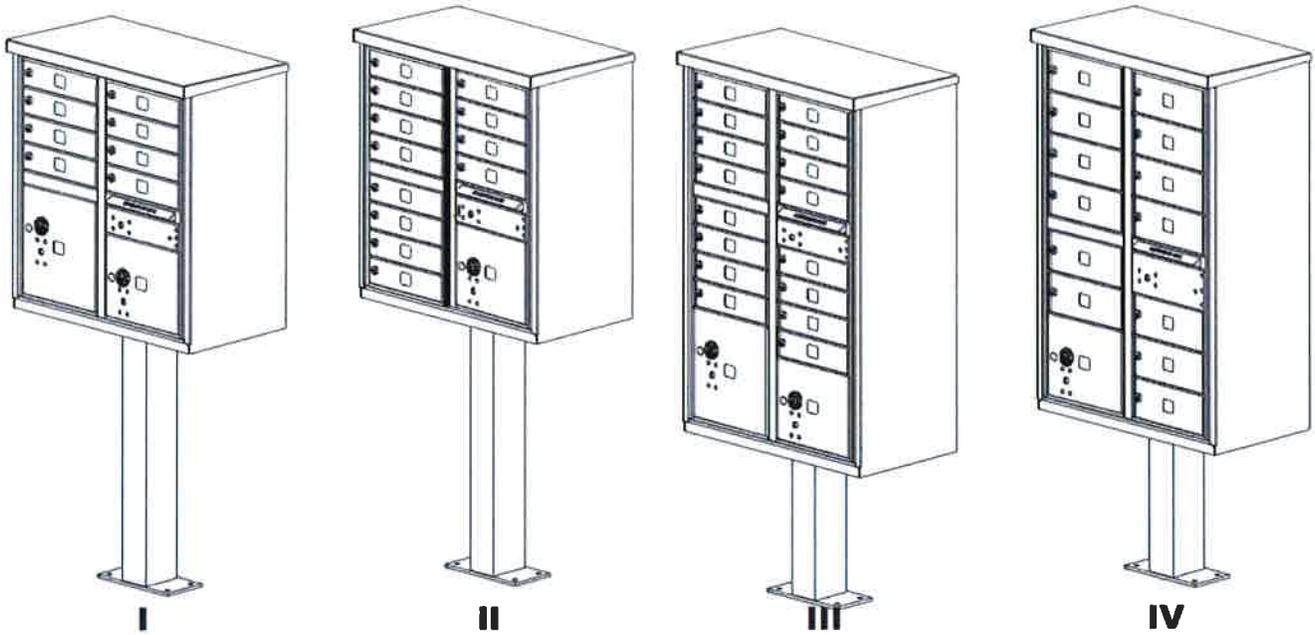
TYPE	I	II	III	IV
MODEL	3308	3312	3316	3313

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SITE PREPARATION AND PEDESTAL INSTALLATION	3
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PARCEL ARROW LOCK INSTALLATION	7
PEDESTAL TO CBU INSTALLATION	9

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www.mailboxes.com engineering@mailboxes.com

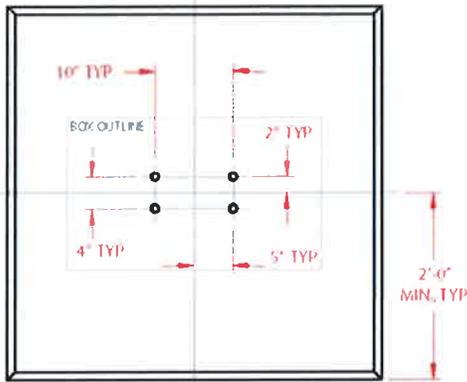


	TYPE I	TYPE II	TYPE III	TYPE IV
QTY OF STANDARD COMPARTMENTS	8	12	16	13
QTY OF PARCEL COMPARTMENTS	2	1	2	1
PARCEL COMPARTMENT HEIGHT	10", 13"	10"	10", 13"	10"

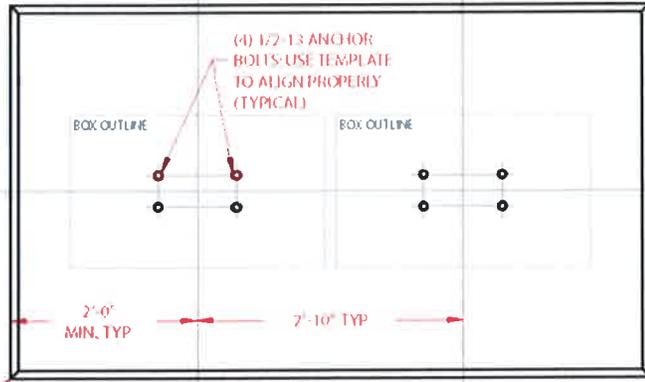
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SINGLE UNIT



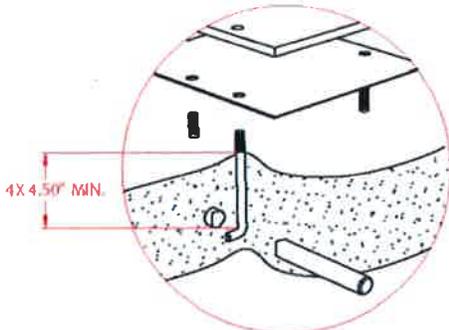
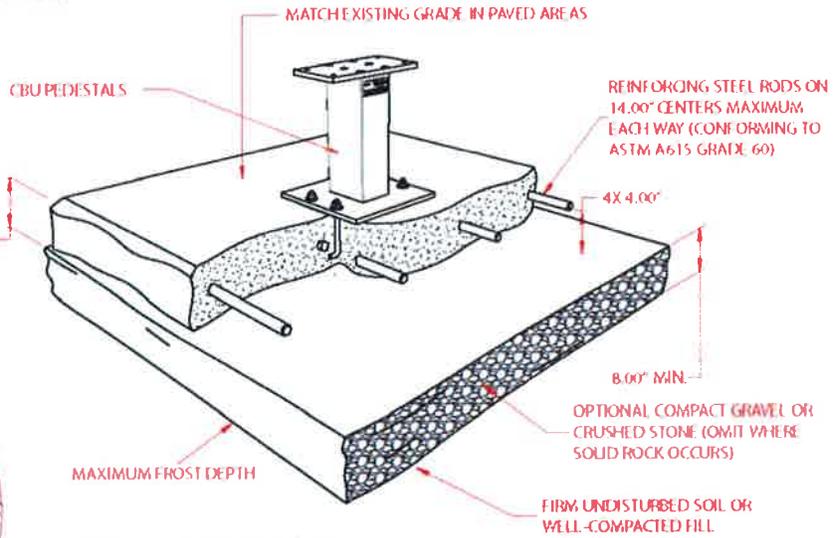
MULTI-UNITS



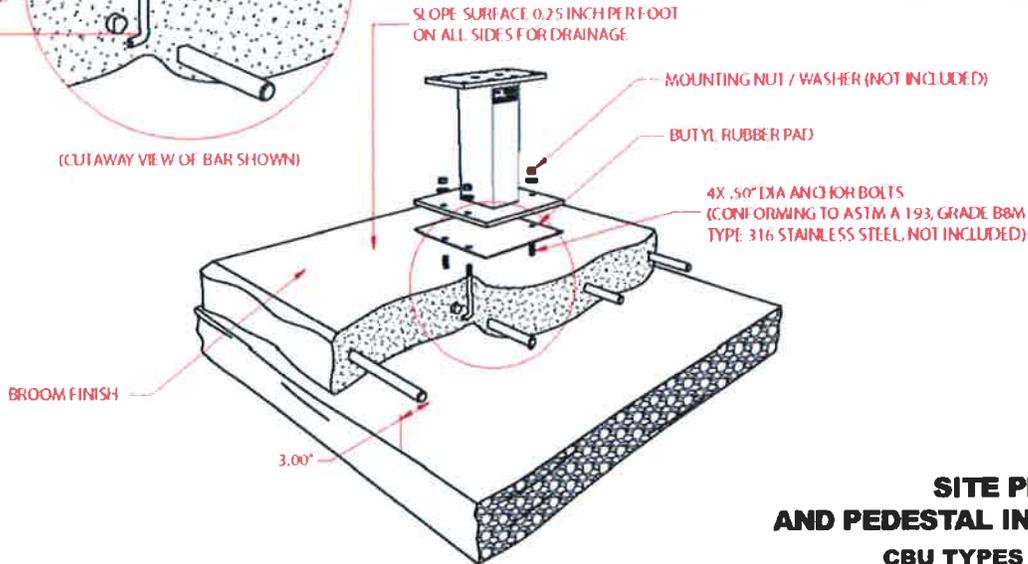
CHAMFER ALL EDGES IN LANDSCAPE AREAS, TOOL FLUSH WITH ADJOINING SURFACES IN PAVED AREAS.

ARRANGE MULTIPLE ANCHOR BOLT SETS AS REQUIRED, BASE NOT TO EXCEED 16'-0"

NOTE: CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS, CONTAIN 4% MIN. - 6% MAX AIR ENTRAPMENT AND BE PLACED WITH A 3.50 - 4.50 SLUMP IN ACCORDANCE TO 301.



(CUTAWAY VIEW OF BAR SHOWN)



SITE PREPARATION AND PEDESTAL INSTALLATION
CBU TYPES I, II, III, AND IV

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