INFORMATION HANDOUT

For Contract No. 02-4G8404
At 02-Sha-5, 44, 299-VAR

Identified by
Project ID 0214000064

MATERIALS INFORMATION

Automatic Transfer Switch (ATS) Termination Instructions

Department Furnished Fiber Distribution Unit (FDU) and Connector Pigtail Information

Fiber Optic Cable Grooming Procedure

GENSET Generator Details

Cable Verification Worksheet

Aerially Deposited Lead Site Investigation Report

Automatic Transfer Switch (ATS) termination instructions Onan model OTPC 225

LCN represents long barrel 2-hole mount copper lugs. ATL represents 2-hole aluminum lugs.

TABLE 7. COMPRESSION LUGS FROM BURNDY

750 MCM	600 MCM	500 MCM
YA39-2LN	YA36-2LN	YA34-2LN
YA39-2N	YA36-2N	YA34-2N
YA44L-2NTC-FX	-	YA38L-2NTC-FX
YAG44L-2NTC-LD	-	YAG38L-2NTC-LD
YA44-2N-FXB	-	YA38-2N-FXB
YA39A5 and YA39AM2	YA36A3	YA34A3
YAxx-2LN represents standard length barrel copper compression terminal. YAxx-2N represents long barrel uninsulated copper compression terminal. YAxxL-2NTC-FX represents standard length barrel copper compression terminal for flexible and extra flexible copper cables. YAGxxL-2NTC-LD represents standard length barrel lead plated copper compression terminal. YAGxx-2N-FXB represents long barrel copper compression terminal belled entry for flexible and extra flexible copper cables. YAxxAx and YAxxAMx represent 2-hole and 4-hole uninsulated aluminum compression terminal.		

3.5 AC Connections

Perform wiring in the following sequence:

1. Test the operation of the generator set from its own controls.
2. Stop the generator set and remove the negative lead from the cranking battery to prevent starting.

> **⚠ WARNING**
>
> ***Failure to prevent the generator set from starting before wiring procedures are performed presents a shock hazard that can cause severe personal injury or death. Disconnect generator set battery (negative (-) terminal first) before proceeding.***

3. Connect conductors of sufficient size (see contract drawings) to carry rated current from the line, load, and generator set directly to the transfer switch terminals, which are marked A, B, and C (A, B, C, and N on 4-pole switches). A neutral bar with lugs is standard on 3-pole switches.

   On transfer switches with a bar graph display, in order to measure the current, the load cables must each pass through a current transformer (Figure 8). Transfer switches are shipped with current transformer (CT) wires (white wire = X1, black wire = X2) connected to the terminal block (TB4) with the polarity mark facing the transfer switch. When wiring the power cables to the transfer switch, be sure the cables pass thru the CTs, and **make sure all CTs are facing the same direction with the polarity marks facing the transfer switch**.

   Table 9 gives the type and maximum conductor size the transfer switch accepts. Figure 10 through Figure 13 show transfer switch source and load connections.

TABLE 8.

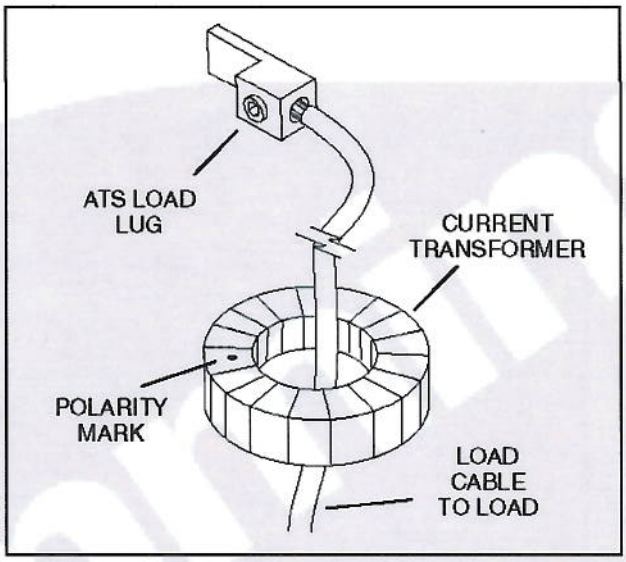


FIGURE 8. CURRENT TRANSFORMER WIRING

TABLE 9. TERMINAL LUG CAPACITY FOR COPPER OR ALUMINUM CONDUCTORS

Switch Current Rating	Wires per Phase	Size Range of Wires
40/70/125 Source	1	12 AWG-2/0 Cu-Al
40/70/125 Load & Neutral	1	14 AWG-2/0 Cu-Al
150/225	1	6 AWG-300 MCM Cu-Al
260	1	6 AWG-400 MCM Cu-Al
300/400	2 1	3/0 AWG-250 MCM Cu-Al 3/0 AWG-600 MCM Cu-Al
600	2	250-500 MCM Cu-Al
800 (Open and Programmed Transition)/1000 (Open and Programmed Transition) - Spec A	4	250-500 MCM Cu-Al
1000 (Closed Transition)/1200 Spec C	4	2 AWG-600 MCM Cu-Al
1000 (Closed Transition)/1200 (Closed Transition) Spec D	4	2 AWG-600 MCM Cu-Al
1200 (Open and Programmed Transition) - Spec D	4	2 AWG-600 MCM Cu-Al (standard - mechanical lugs) 4-1/0-750 MCM Cu-Al (optional - mechanical lugs) 500 MCM Cu-Al (optional - mechanical lugs) 600 MCM Cu-Al (optional - compression lugs) 750 MCM Cu-Al (optional - compression lugs)

Switch Current Rating	Wires per Phase	Size Range of Wires
1600/2000	8	2 AWG-600 MCM Cu-Al (lugs optional)
1600/2000	8	2 AWG-750 MCM Cu-Al (lugs optional)
3000	8	2 AWG-600 MCM Cu-Al (lugs optional)
3000	8	2 AWG-750 MCM Cu-Al (lugs optional)
4000	12	2 AWG-600 MCM Cu-Al (lugs optional)
4000	12	2 AWG-750 MCM Cu-Al (lugs optional)

4. On 120-volt switches, connect the hot side to the (A) lug and the neutral side to the Neutral lug. On 240-volt single phase switches, connect the two hot lines to the A- and C-lugs and the Neutral line to the Neutral lug.
5. Connect power cables to the load terminals. Tighten the lugs as indicated in Table 10.

TABLE 10. LUG TORQUES

Set Screw Socket Size (Across Flats)	Minimum Torque For Proper Operation
3/16 In	80 In-lbs (9 N•m)
1/4 In	200 In-lbs (23 N•m)
5/16 In	275 In-lbs (31 N•m)
3/8 In	375 In-lbs (43 N•m)
1/2 In	500 In-lbs (57 N•m)
9/16 In	600 In-lbs (68 N•m)

6. Make sure that both AC power sources are disconnected.

⚠ WARNING

AC voltages and currents present an electrical shock hazard that can cause severe personal injury or death. Make sure that both AC power sources are disconnected.

7. For 800-1000 amp transfer switches used on a circuit capable of delivering 50,000 amps @ 600 volts, wrap the line cables together with nominal 1/2-inch nylon rope, or rope having a minimum tensile strength of 4200 pounds, at five inches from the line terminals with four wraps (see Figure 9). This is not required for 1000 amp Closed Transition switches.

FIGURE 9. SECURING THE POWER CABLES

3.5.1 Converting Transfer Switch Phase Setting

Converting a transfer switch from single-phase to three-phase operation or from three-phase to single-phase operation is a three-step procedure:

⚠ CAUTION

Incorrect placement of transformer jumper wires can cause damage to the control when power is applied. To perform this conversion procedure correctly, refer to and comply with the schematics and wiring diagrams that were shipped with the transfer switch.

1. Disconnect both AC power sources.

⚠ WARNING

AC voltages and currents present an electrical shock hazard that can cause severe personal injury or death. Make sure that both AC power sources are disconnected.

2. Stop the generator set and remove the negative lead from the cranking battery to prevent starting.

⚠ WARNING

Failure to prevent the generator set from starting before wiring procedures are performed presents a shock hazard that can cause severe personal injury or death. Disconnect generator set battery (negative (-) terminal first) before proceeding.

3. Place the transformer jumper wires (on the Power Module board) in the appropriate configuration. See Figure 10 through Figure 13. Refer to the service manual and to the schematic and wiring diagram package.
4. Set the appropriate Phase parameter with the digital menu system (see Section Chapter 4) when it is available or the PC service tool.

3.6 Control Connections

Connections of standard and optional control wiring are made at terminal blocks TB1, TB2, TB3, and Relay Module; and directly at the (optional) auxiliary relays (Figure 14).

TB1 is located near the top left side on the front of the transfer switch. TB2 is located below TB1, near the bottom left side of the transfer switch. TB3 and auxiliary relays are located inside the cabinet on the DIN rail (see Table 11).

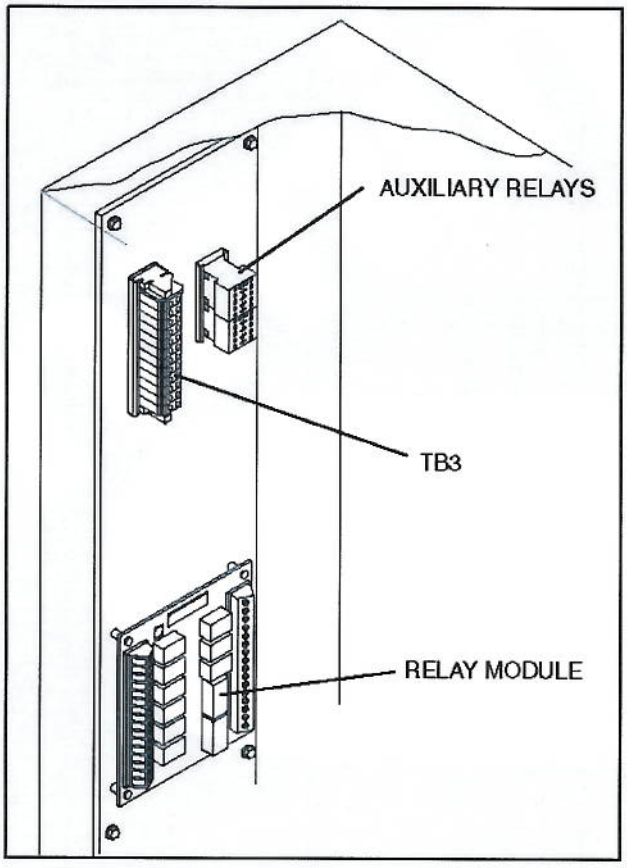


FIGURE 14. CONTROL WIRING CONNECTIONS

TABLE 11. DIN RAIL LOCATIONS

Model (Amps)	Cabinet Type	Location
OTPC 40-1000 A	All Types	Inside, upper left wall
OTPC 1200 Amps	All Types	Upper left side
OTPC 1600-4000 A	Type 1	Left side of cabinet
OTPC 1600-4000 A	Type 3R, 4, 12	Right side of cabinet

3.6.1 Connecting the Transfer Switch to a Genset

⚠ WARNING

AC voltages and currents present an electrical shock hazard that can cause severe personal injury or death. Disconnect the AC power source.

Wire size depends on the distance and the type of battery charger installed. Refer to Table 12 to determine the wire size required.

- All leads to TB2 use Column A.
- If the transfer switch is not equipped with a battery charger, use Column A for all wires.
- If the transfer switch is equipped with a 2-Amp charger, use Column B for B+ and GND. Use Column A for all other wires.
- If the transfer switch is equipped with a 10-Amp charger, use Column C for B+ and GND. Use Column A for all other wires.
- If the genset is equipped with an annunciator, use Column A for wires to the annunciator.

TABLE 12. WIRE SPECIFICATIONS

Wire Size (AWG)	Distance in Feet, One Way (Multiply by 0.3 for Meters)		
	Column A	Column B	Column C
16	1000	125	25
14	1600	200	40
12	2400	300	60
10	4000	500	100

Wire resistance must not exceed 0.5 ohm per line. Use stranded wire only. For connection to the screw terminal, strip the insulation back 3/8 inch (10 mm).

Remote starting (for Cummins Power Generation water-cooled generator sets only) uses terminals B+, GND (ground), and RMT of terminal block TB2 (Figure 16). Connect these terminals to like terminals on the generator set. Refer to Interconnect Wiring diagram shipped with the switch. A jumper is shipped with the transfer switch and is in a small envelope attached to TB2.

- For PCC 3100 and PCC 2100 genset controls, install a jumper between TB2-1 and TB2-2 for ground-to-start connection.
- For Detector 12 genset controls, install a jumper between TB2-2 and TB2-3 for B+ start.
- For PCC 3200 and PCC 1301 genset controls requiring a dry contact start, do not install a jumper.

Be sure to check the Interconnect Wiring diagram shipped with the transfer switch.

For network wiring instructions, refer to the *PowerCommand Network and Operator's Manual* (PN 900-0366 for TP-78 networks or 900-0529 for FT-10 networks).

3.6.2 Auxiliary Contacts

Auxiliary contacts, used for external alarm or control circuitry, are available for the Source 1 (Normal) and Source 2 (Emergency) sides of the transfer switch. Connections for the auxiliary contacts can be made on terminal block TB1 (Figure 15). The contacts have ratings of 10 amperes at 250 VAC. Figure 15 shows the normally open and normally closed positions of the auxiliary contacts with the transfer switch in the neutral position. Moving the transfer switch to Normal or Emergency actuates the corresponding auxiliary contacts.

Use number 22 to number 12 AWG stranded wire. For connection to the screw terminal, strip the insulation back 3/8 inch (10 mm).

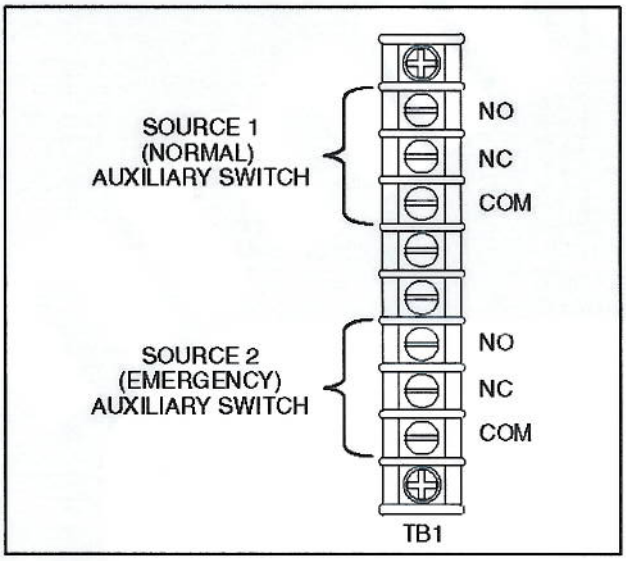


FIGURE 15. TERMINAL BLOCK TB1

3.6.3 Remote Start-Stop Connections

Use number 18 to number 12 AWG stranded wire. Resistance must not exceed 0.5 ohm per line. Stranded wire is recommended. For connection to the screw terminal, strip the insulation back 3/8 inch (10 mm).

Remote starting (for Onan water-cooled generator sets only) uses terminals B+, GND (ground), and RMT of terminal block TB2 (Figure 16). Connect these terminals to like terminals on the generator set. Refer to your generator set wiring diagrams.

Connect the supplied jumper between terminals 1 and 2 for PowerCommand control systems. Connect the jumper between terminals 2 and 3 for Detector Control systems. Do not use the jumper for all other systems.

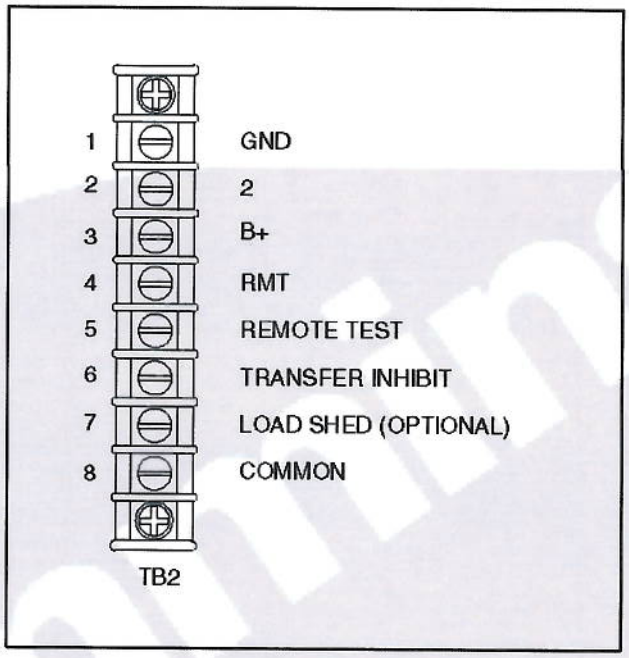


FIGURE 16. TB2: START CONNECTIONS, REMOTE TEST, AND TRANSFER INHIBIT

3.6.4 Remote Test Feature

The transfer switch can be remotely activated by using an external switch. Closure of a set of contacts (switch) across the remote test transfer input and common causes the transfer switch to sense a (simulated) utility power failure and send a start/run signal to the generator set. The load is transferred to the generator set when generator set power becomes available. (Refer to the Service manual.)

To a remote test switch, connect normally open contacts (from a test switch) to terminals 5 and 8 of TB2 (Figure 16).

Use number 22 to number 12 AWG stranded wire (maximum resistance of 4 ohms per line). For connection to the screw terminal, strip the insulation back 3/8 inch (10 mm).

3.6.5 Transfer Inhibit

To add transfer inhibit, connect normally open contacts to terminals 6 and 8 of TB2 (Figure 16).

In systems that have multiple closed transition transfer switches the transfer inhibit function should be used to make sure that multiple switches don't transfer at the same time. Refer to the section on closed transition ATS considerations.

In systems that have multiple closed transition transfer switches the retransfer inhibit function should be used to make sure that multiple switches don't transfer at the same time. Refer to the section on closed transition ATS considerations.

Use number 22 to number 12 AWG stranded wire. For connection to the screw terminal, strip the insulation back 3/8 inch (10 mm).

3.6.6 Load Shed Option

To add a load shed control, connect normally open contacts across terminals 7 and 8 of TB2.

Load shed is initiated by the closing of contacts across terminals 7 and 8 of TB2. When the load shed function is initiated, the switch is moved from the Source 2 position to the neutral position. When load shedding is in effect, a return of Source 1 utility power causes immediate retransfer to Source 1. If the load shed signal is removed before Source 1 returns, the switch transfers back to Source 2 if the Source 2 is available.

NOTICE
TB1 and TB2 will accept 22 AWG - 12 AWG wire with 3/8 inch (10 mm) strip. Torque to 9 in-lbs.

3.6.7 Auxiliary Relays Option

Connections to the auxiliary relays are made directly to the relay terminals. Figure 14shows the location of the Auxiliary Relays on the options panel. The terminals accept wire sizes from one number 18 AWG stranded wire to two number 12 AWG stranded wires. For connection to the screw terminal, strip the insulation back 3/8 inch (10 mm).

There are two types of auxiliary relay coils (12 VDC and 24 VDC).

Table 13lists several auxiliary relay options.

All relays have two normally open and two normally closed contacts that are rated for 6 amperes at 600 VAC (Figure 17).

TABLE 13. AUXILIARY RELAY

24 Vdc Coil	Installed, Not Wired
24 Vdc Coil	Emergency Relay
24 Vdc Coil	Normal Relay
24 Vdc Coil	Genset Run Relay
12 Vdc Coil	Installed, Not Wired
12 Vdc Coil	Emergency Relay
12 Vdc Coil	Normal Relay
12 Vdc Coil	Genset Run Relay

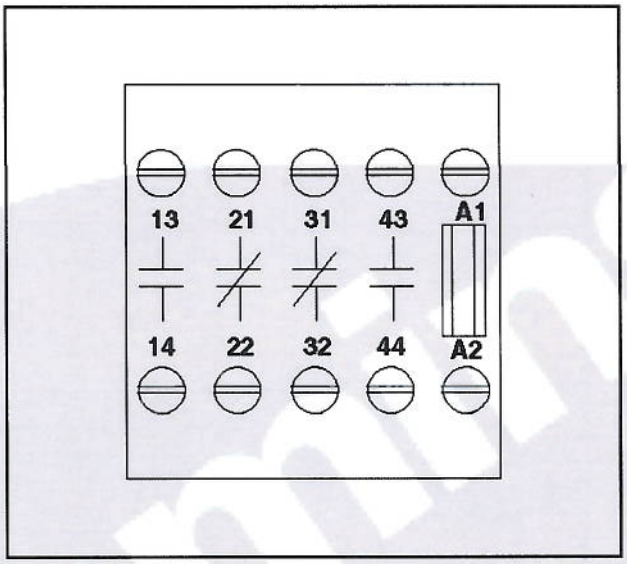


FIGURE 17. AUXILIARY RELAY TERMINALS

3.6.8 Relay Module Option

The Relay Module provides nine sets of form C contacts and two sets of normally open contacts that are rated for 2 Amps at 30 VDC or 0.60 Amps at 120 VAC. Two sets of form C contacts and one set of normally open contacts is reserved for future use. Connections to these relays are made at J14 and J15 on the Relay Module. The Relay Module is located on the left inside wall of the transfer switch enclosure.

The Source 1 and Source 2 Connected relays are energized when their respective power sources are available, ready to produce power, and connected to the load.

NOTICE
The following image shows all relay contacts as de-energized.

The Source 1 and Source 2 Available relays are energized when their respective power sources are producing power.

The Test/Exercise relay is energized when the system is in test or exercise mode.

The Elevator Pre-Transfer relay is energized during the elevator signal time delay. The relay contacts are used to provide a warning that a transfer or retransfer is about to occur.

The ATS Not-In-Auto relay is energized when any one of the following is active:

- Motor Disconnect Switch in OFF position
- Transfer Inhibit
- Retransfer Inhibit
- Load Shed
- P12 is disconnected from Power Module

The Load Shed relay is active when a load shed signal is given between TB2-7 and TB2-8.

The Fail to Disconnect relay is active when the transfer switch remains connected to both sources for more than 100 msec during a closed transition transfer. It should be wired to the shunt trip of the breaker feeding the ATS on either the normal or the emergency side. Refer to the section on closed transition ATS wiring considerations.

NOTICE
TB1 and TB2 will accept 22 AWG - 12 AWG wire with 3/8 inch (10 mm) strip. Torque to 9 in-lbs.

TABLE 14. RELAY MODULE CONTACTS (ALL SHOWN AS DE-ENERGIZED)

Relay	NO	COM	NC
Source 1 Connected	J14-1	J14-2	J14-3
Source 2 Connected	J14-4	J14-5	J14-6
Source 1 Available	J14-7	J14-8	J14-9
Source 2 Available	J14-10	J14-11	J14-12
Test/Exercise Active	J14-13	J14-14	J14-15
ATS Not-In-Auto	J15-1	J15-2	J15-3
Elevator Pre-Transfer	J15-4	J15-5	J15-6
Not Used	J15-7	J15-8	J15-9
Not Used	J15-10	J15-11	J15-12
Not Used	J15-13	J15-14	X
Load Shed	J15-15	J15-16	X

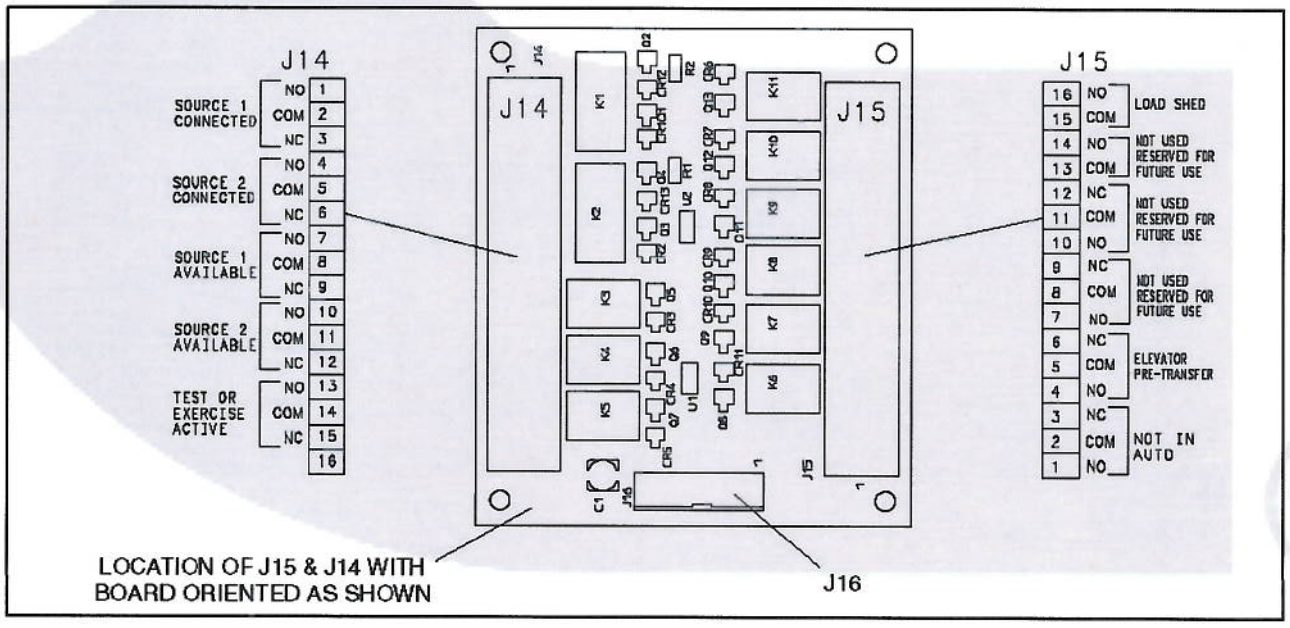


FIGURE 18. OPTIONAL RELAY MODULE

3.6.9 Battery Charger Options

Battery chargers are used with utility-to-genset and genset-to-genset applications. When so equipped, a battery charger can be used for charging genset starting and control batteries. These chargers are current limiting and supply automatic constant voltages.

When the battery approaches the full charge preset voltage, the charging current automatically tapers to zero amperes or to a steady-state load on the battery.

A float-charge battery charger regulates its charge voltage to continuously charge without damage to the battery. As the battery approaches full charge, the charging current automatically tapers to zero amperes or to steady-state load on the battery.

Two battery chargers are available (see Figure 19). One battery charger is rated for 2 amperes at 12 or 24 VDC. The other battery charger is rated for 15 amperes at 12 VDC or 12 amperes at 24 VDC.

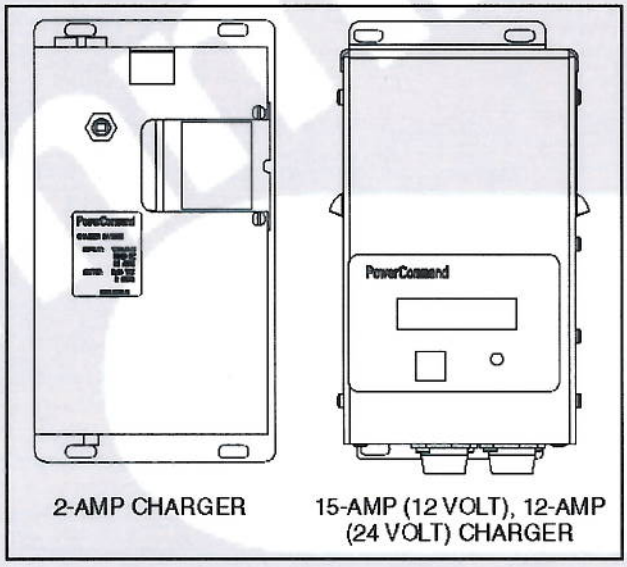


FIGURE 19. CURRENT BATTERY CHARGERS

3.6.9.1 2-Amp Battery Charger

The 2-ampere battery charger (see Figure 20) has a 5 amp DC output circuit breaker switch on the front of the battery charger. The charger also includes a 5 amp AC fuse to protect the battery charger circuit.

Under normal operating conditions, the Low Bat and AC Fail relays are energized and the High Bat relay is de-energized. In response to a Low Bat or AC Fail condition, the appropriate normally energized relay (Low Bat or AC Fail) drops out. In response to a High Bat condition, the normally de-energized High Bat relay is energized.

Control Panel - The 2-amp charger control panel includes a digital display, a RESET button, and an LED status indicator (see Figure 21).

- The 2-line x 16-character digital display displays menus and faults.
- The RESET button is used to select menu options and to clear fault messages.
- The status LED displays the appropriate color for the following conditions.
  - **Green** - Onsolid indicates unit is charging

- **Red** - On solid indicates a fault condition. The fault number is shown on the digital display.

Battery Charger Configuration - The **RESET** button on the control panel (see Figure 21) is used to configure the battery charger for the correct battery voltage. (More information on Setup menus is included in the Battery Charger Operator's Manual.)

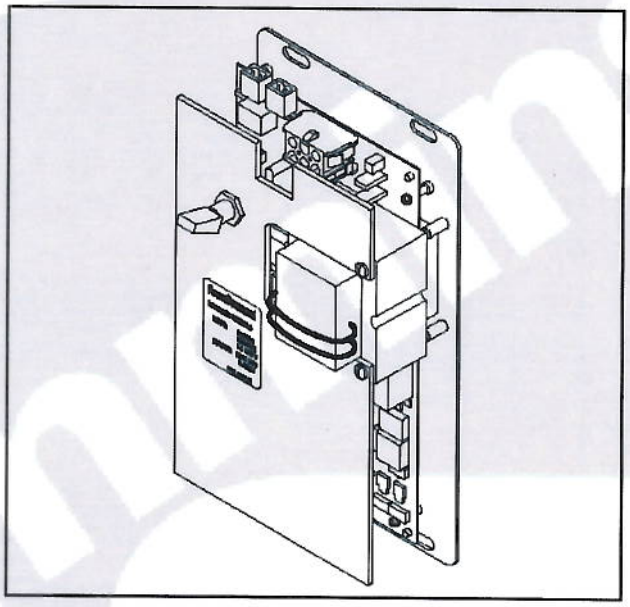


FIGURE 20. 2-AMP POWERCOMMAND BATTERY CHARGER

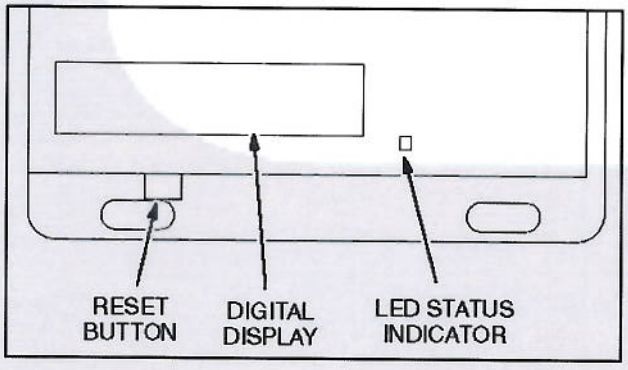


FIGURE 21. 2-AMP CHARGER CONTROL PANEL

3.6.9.2 15/12-Amp Battery Charger

There are two types of 15/12-amp PowerCommand battery chargers (see Figure 22). All 15/12-amp battery chargers have a 20 amp DC circuit breaker switch on the front of the battery charger. The 120, 208, and 240 VAC battery chargers include two 10 amp AC circuit breaker switches and a circuit breaker guard, while the 277, 380, 416, and 600 VAC battery chargers include two AC fuse holders.

Control Panel - The 15/12-amp charger control panel includes a digital display, a Reset button, and an LED status indicator (see Figure 23).

- The 2-line x 16-character digital display displays menus and faults.

- The Reset button is used to select menu options and to clear fault messages.
- The status LED is displays the appropriate color for the following conditions.
  - **Green** - Onsolid indicates unit is charging
  - **Amber** - Onsolid indicates Equalizing
  - **Red** - On solid indicates a fault condition. The fault number is shown on the digital display.

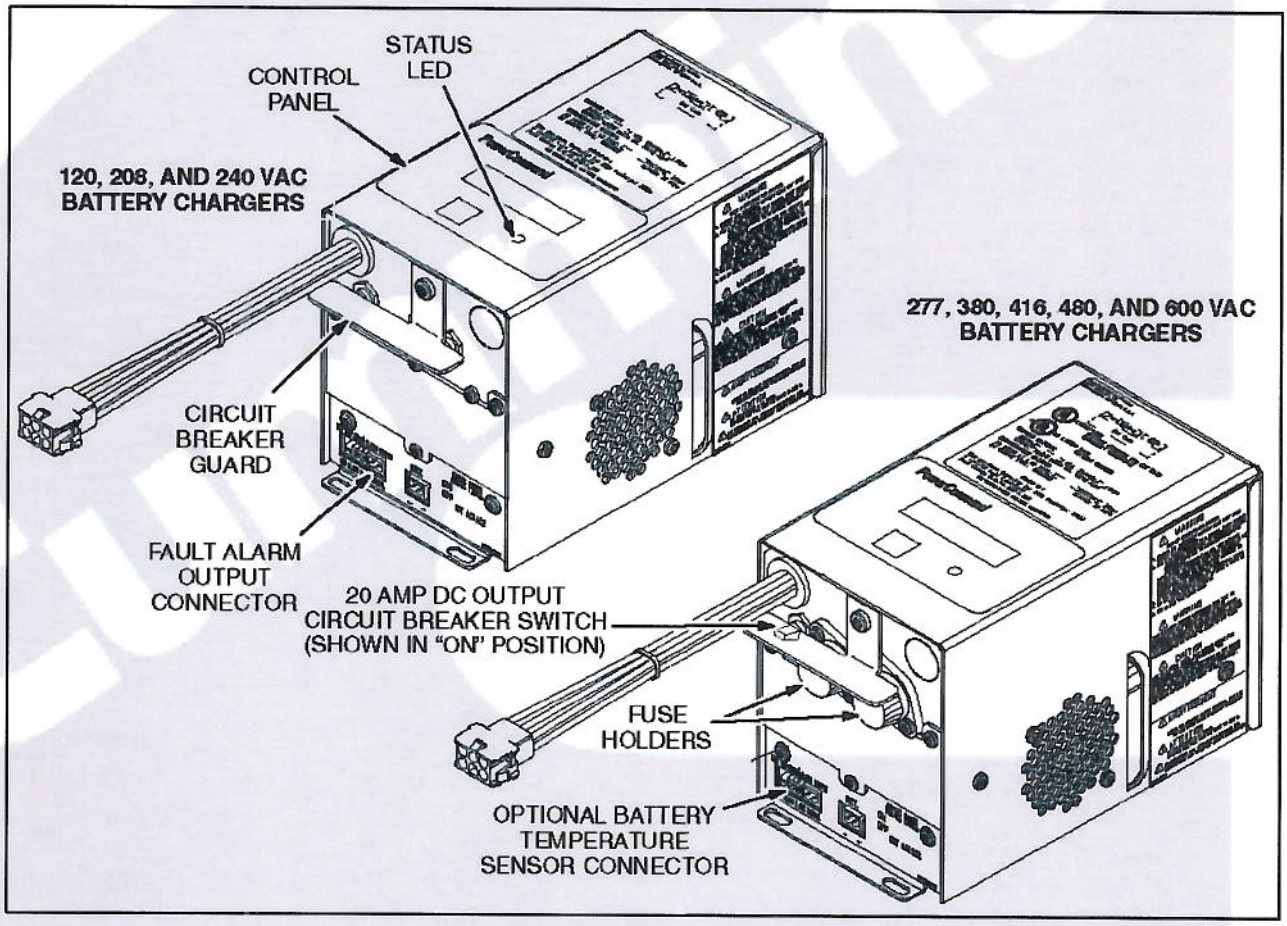


FIGURE 22. 15/12-AMP POWERCOMMAND BATTERY CHARGERS

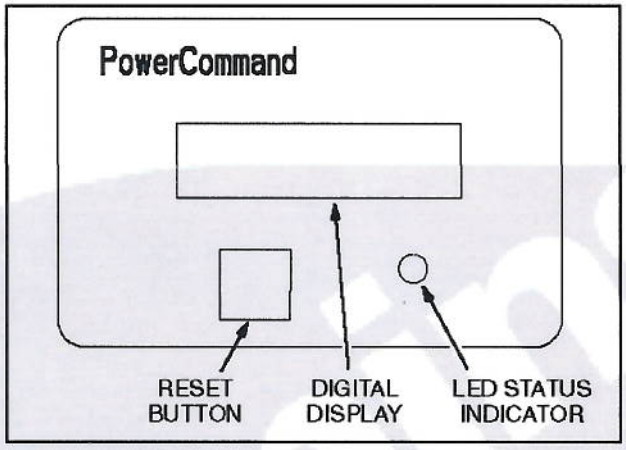


FIGURE 23. 15/12-AMP CHARGER CONTROL PANEL

3.6.9.2.1 Optional Battery Temperature Sensor

Optional Battery Charger Sensor - A connector for an optional battery temperature sensor is located on the front of the battery charger. When used to monitor battery temperature, the optional battery temperature sensor is connected from the battery charger to the positive terminal of the battery. A fault message (fault code 2263) is displayed if the battery temperature is too high (reaches 131 degrees F (55 degrees C)).

Battery Charger Configuration - The **RESET** button on the control panel (see Figure 23) is used to configure the battery charger. (More information on Setup menus is included in the Battery Charger Operator's Manual.)

- **Battery Voltage and Type** - The battery charger must be correctly configured, using the Setup menus, for the correct battery voltage and type before it is connected to the battery. The battery voltage can be set for 12 or 24 VDC (default = 12 VDC). The battery type can be set for Lead-Acid, Gel, or AGM batteries (default = Lead-Acid).

NOTICE
A factory installed battery charger is set up for the proper DC battery voltage requested on the production order, with the Lead-Acid battery type selected as the default.

- **Battery Equalization** - Battery equalization is available for lead-acid batteries that are completely charged, using the Equalize Battery screen in the Setup menus. When battery equalization is in process, the LED status indicator turns amber.

3.6.10 Battery Charger Alarm Contacts Option

The optional 10-ampere battery charger can include three sets of form C relay contacts, as an additional option.

Under normal operating conditions, the Low Bat and AC Fail relays are energized and the High Bat relay is de-energized. In response to a Low Bat or AC Fail condition, the appropriate normally energized relay (Low Bat or AC Fail) drops out. In response to a High Bat condition, the normally de-energized High Bat relay is energized.

The contacts are rated for 4 amperes at 120 VAC or 30 VDC. Connections to these contacts are made at terminals 41-42-43 (AC failure), 44-45-46 (high battery voltage), and 47-48-49 (low battery voltage) of TB3 (Figure 24). See Figure 14 for the location of TB3 on the option panel.

Use number 22 to number 12 AWG stranded wire. For connection to the screw terminal, strip the insulation back 3/8 inch (10 mm).

The Level 1 and Level 2 Digital Modules have an input dedicated to monitor the AC Line failure on the battery charger. This input is located at J27-23 and activated when grounded. (As of this printing, this input is only available at J27-23.)

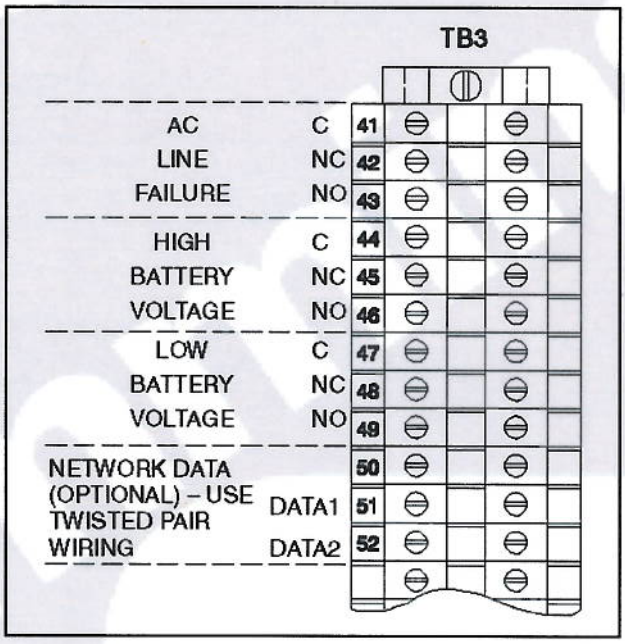


FIGURE 24. BATTERY CHARGER ALARM CONTACTS AND NETWORK CONNECTIONS

3.6.11 Network Connections

For installations that include a PowerCommand network module, connect stranded twisted pair network cable to the left side of terminals 51 and 52 on TB3. The network module is located on the left side of the digital module.

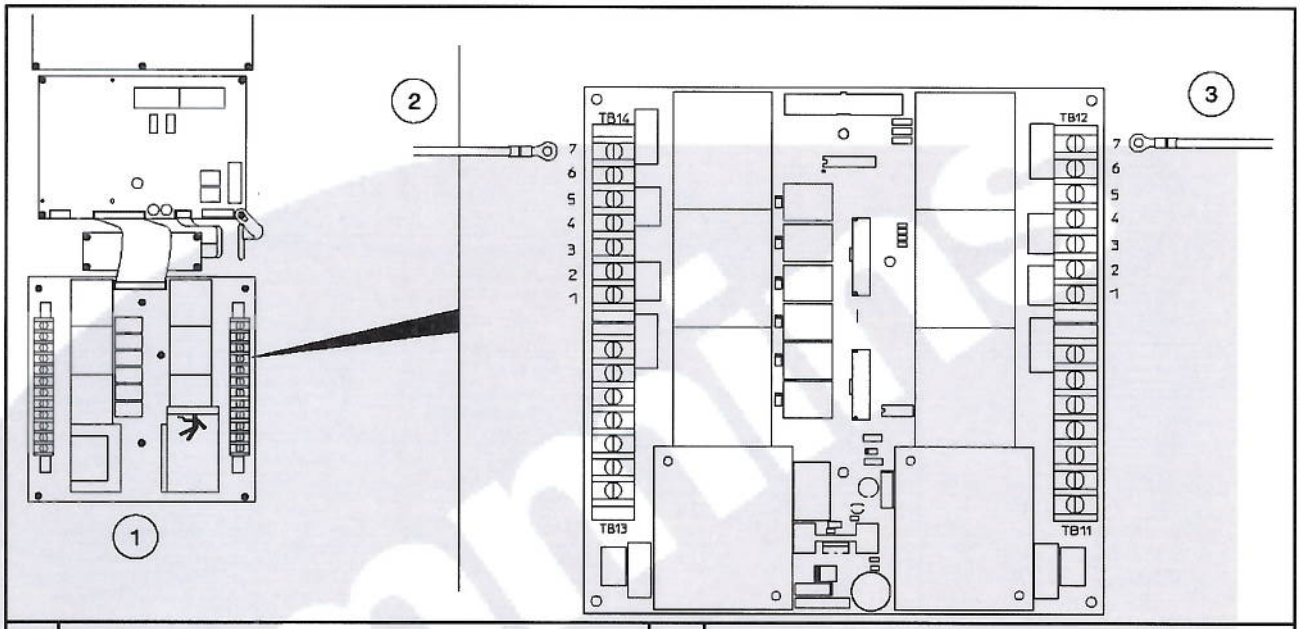
3.7 Voltage Sensing Wiring (Level 2 Control Only)

The transfer switch is wired at the factory for a 4-wire, 3-phase Wye configuration with grounded neutral. If this transfer switch is being connected to a Delta power system or a Wye *without* a grounded neutral, modify the wiring as follows:

1. Disconnect the neutral sensing wires marked TB12-7 and TB14-7.

NOTICE
Leave the short jumpers as they are.

2. Insulate the terminals and secure them to the harness with a wire tie.



No.	Description	No.	Description
1	Power module	3	Remove wire from TB 12-7
2	Remove wire from TB 14-7		

FIGURE 25. OPTIONAL DELTA CONFIGURATION JUMPER

3.8 Transfer Switches in Fire Pump Circuit Applications

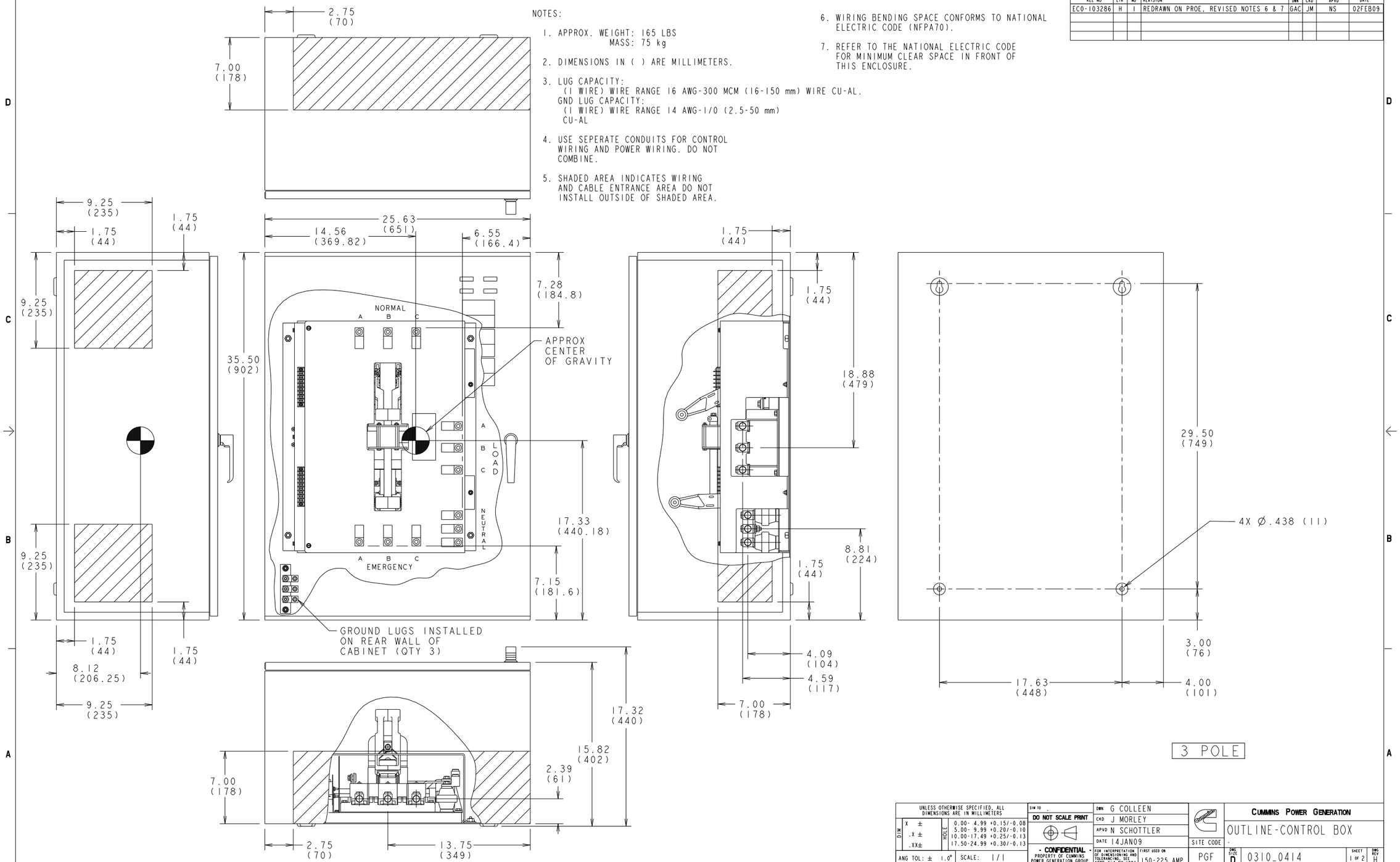
The following image shows the typical fire pump controller/transfer switch arrangement for transfer switches in the range of 40 to 1000 Amp.

Pro/ENGINEER

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
EC0-103286	H	1	REDRAWN ON PROE, REVISED NOTES 6 & 7	GAC	JM	NS	02FEB09

NOTES:

1. APPROX. WEIGHT: 165 LBS
   MASS: 75 kg
2. DIMENSIONS IN ( ) ARE MILLIMETERS.
3. LUG CAPACITY:
   (1 WIRE) WIRE RANGE 16 AWG-300 MCM (16-150 mm) WIRE CU-AL.
   GND LUG CAPACITY:
   (1 WIRE) WIRE RANGE 14 AWG-1/0 (2.5-50 mm)
   CU-AL
4. USE SEPERATE CONDUITS FOR CONTROL WIRING AND POWER WIRING. DO NOT COMBINE.
5. SHADED AREA INDICATES WIRING AND CABLE ENTRANCE AREA DO NOT INSTALL OUTSIDE OF SHADED AREA.
6. WIRING BENDING SPACE CONFORMS TO NATIONAL ELECTRIC CODE (NFPA70).
7. REFER TO THE NATIONAL ELECTRIC CODE FOR MINIMUM CLEAR SPACE IN FRONT OF THIS ENCLOSURE.



3 POLE

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS			SIM TO .	DWN G COLLEEN	CUMMINS POWER GENERATION
DIM: X ±, .X ±, .XX±	HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13		DO NOT SCALE PRINT	CKD J MORLEY	OUTLINE-CONTROL BOX
ANG TOL: ± 1.0°	SCALE: 1/1		- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP	APVD N SCHOTTLER	
			FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994	DATE 14JAN09	SITE CODE ·
			FIRST USED ON 150-225 AMP		PGF
				DWG SIZE D	0310_0414
				SHEET 1 of 2	DWG REV H

Department-Furnished FDU and Connector Pitgtail

ITS Node sites
FDU: CCH-01U
Connector Pigtail: CCH-CS06-A9-P00RE

Hub site
FDU: CCH-04U
Connector Pigtail: CCH-CS12-A9-P00RE

Closet Connector Housings (CCH)

A LANscape® Pretium® Solutions Product

Designed based on thousands of hours of customer feedback, Corning closet connector housings (CCHs) offer more than two dozen innovative features that make installation and troubleshooting of fiber optic connectivity faster, easier and more cost-effective. From fiber and cable routing and strain-relief to port labeling and termination, these housings reduce the risk of error that can disrupt networks.

LANscape® Solutions
| Photo MM003

CORNING

Closet Connector Housings (CCH)

A LANscape® Pretium®
Solutions Product

Features and Benefits

Interconnect and cross-connect capability
Ideal for field connectorization

Removable, translucent top covers (1U, 2U, 3U), removable rear cover (4U)
Visibility and ease of access for installation, testing, and troubleshooting

Internal and external strain-relief options
Flexibility for installation and moves, adds, and changes (MACs)

Accepts panels, modules, and cassettes
Variety of field-termination options

Adaptable to use as a modular splice housing
Splices are stored and protected in same footprint

Closet Connector Housings (CCH)

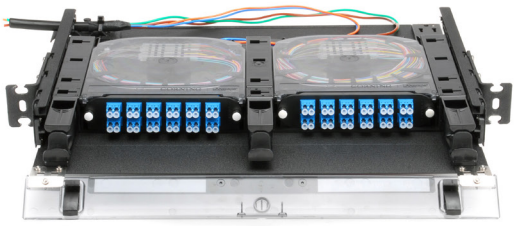
Corning closet connector housings (CCHs) provide interconnect or cross-connect capabilities between outside plant, riser or distribution cables and opto-electronics. Like all LANscape® solutions hardware, the housings accept CCH connector panels. In addition, the housings accept CCH cassettes and CCH modules.

Specifications

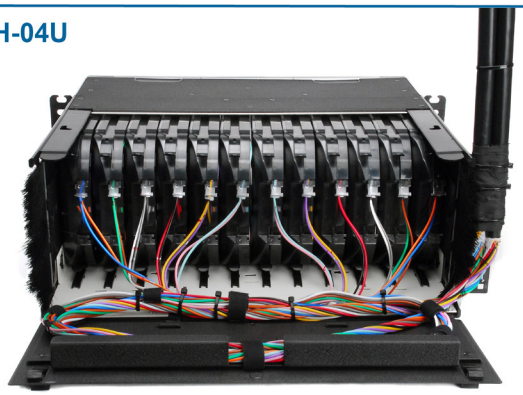
CCH-01U

CCH-04U

CCH-01U



CCH-04U



CCH-01U and CCH-04U Closest Connector Housings pictured open and closed
| Photo (top left to bottom right) LAN2455, LAN2621, LAN2363, LAN2555

CORNING

Closet Connector Housings (CCH)

A LANscape® Pretium®
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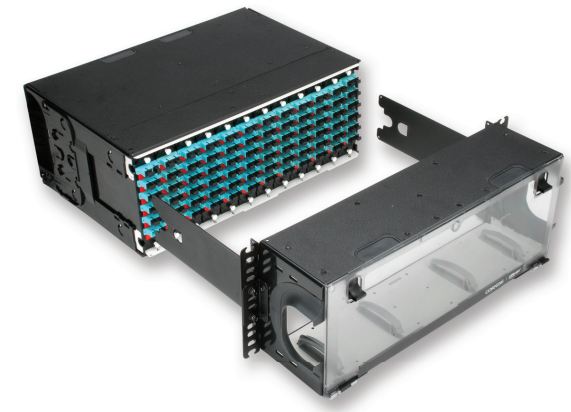
The units are designed for rack mounting in 19-in (48 cm) racks or optional 23-in (58 cm) equipment racks (1.75-in EIA hole spacing). They are available in rack space options of 1U (two panels, cassettes or modules), 2U (four panels, cassettes or modules), 3U (six panels, cassettes or modules) and 4U (12 panels, cassettes or modules). The 1U, 2U and 3U options feature a slide-out tray and see-through, removable top covers. The CCH-04U features a clear door, removable front and rear enclosures and a platinum-colored interior for maximum visibility and access.

Documentation labels are provided, and components can be added as needed to construct a fiber distribution frame for any application. All housings include a removable tinted polycarbonate front door. All housings have field-installable lock kits available for both front and rear doors.

Every CCH housing is shipped complete with strain-relief brackets, routing clips and guides and mounting brackets for proper installation.

CCH-01U with Translucent Top (covers partially open) | Photo LAN2337



Ordering Information

Part Number	Dimensions (HxWxD)	Shipping Weight
CCH-01U	4.4 cm x 48.3 cm x 43 cm (1.75 in x 19 in x 17 in)	4.5 kg (10 lb)
CCH-02U	8.9 cm x 48.3 cm x 43 cm (3.5 in x 19 in x 17 in)	5.4 kg (12 lb)
CCH-03U	13.3 cm x 48.3 cm x 43 cm (5.25 in x 19 in x 17 in)	6.4 kg (14 lb)
CCH-04U	17.8 cm x 48.3 cm x 43 cm (7 in x 19 in x 17 in)	7.5 kg (17 lb)

CORNING

Closet Connector Housings (CCH)

Closet Connector Housings (CCH)		
Part Number	Description	Units per Delivery
CCH-01U	Closet Connector Housing; accepts up to two CCH panels, cassettes or modules; comes with blank panels and hardware to strain-relieve cables internally or externally	1/1
CCH-02U	Closet Connector Housing; accepts up to four CCH panels, cassettes or modules; comes with blank panels and hardware to strain-relieve cables internally or externally	1/1
CCH-03U	Closet Connector Housing; accepts up to six CCH panels, cassettes or modules; comes with blank panels and hardware to strain-relieve cables internally or externally	1/1
CCH-04U	Closet Connector Housing; accepts up to 12 CCH panels, cassettes or modules; comes with blank panels and hardware to strain-relieve cables internally or externally	1/1

Note: If you need the previous CCH housing (pre-January 2012), see LAN-1392-EN.

Closet Connector Housings (CCH)

A LANscape® Pretium® Solutions Product

CCH Splice Cassettes

CCH splice cassettes enable fast field termination and easy modular management of connectorization within the housing.

The CCH splice cassette supports fusion splicing of individual or ribbon fibers, with heat-shrinks, pigtail slack and cable slack managed within a single space-saving footprint. This eliminates the need for individual splice trays or separate splice housings as well as allowing splicing to be done away from the rack housing in a suitable workspace as needed. The modular design makes it easy to access the fiber in an individual cassette without disturbing other fibers in the housing. A CCH panel with the desired adapter configuration can be ordered separately and fits easily into the cassette.

Each cassette is shipped with one rail for use with CCH–01U/2U/3U housings, and two rails used with CCH–04U and the WCH-02P/4P/6P housings. Grommets and cable ties for strain relief, and protective braided tubing for incoming cable are also included. Splicing cassettes ship with 12 single fiber heat–shrink splice protectors.

CCH Splice Cassette
| Photo LAN2452

Part Number	Dimensions (L x W x D)	Shipping Weight
CCH-CS	162.0 mm x 35.0 mm x 200.0 mm (6.4 in x 1.4 in x 7.9 in)	0.5 kg (1.0 lb)

Part Number	Description	Units per Delivery
CCH-CS	CCH splicing cassette; accepts one CCH panel and up to 24 single-fiber or six ribbon heat-shrink splice protectors, comes with 12 single-fiber heat-shrink splice protectors, grommets and cable ties for strain-relief, protective braided tubing, one rail for use with CCH-01U/2U/3U housings and two rails used with CCH-04U housings and the WCH-02P/4P/6P	1/1

Closet Connector Housings (CCH)

A LANscape® Pretium®
Solutions Product

CCH Termination Cassettes

A CCH termination cassette option with no splice tray, suitable for use with field-installable connectors, is also available. The termination cassette is an economical way to provide modularity, segregation and added protection and security to your direct-terminated fibers inside any of the four CCH housing options.

Each cassette is shipped with one rail for use with CCH-01U/2U/3U housings and two rails used with CCH-04U and the WCH-02P/4P/6P housings. Grommets and cable ties for additional strain-relief and protective tubing for incoming cable are also included.

CCH Termination Cassette
| Photo LAN2984

Part Number	Dimensions (L x W x D)	Shipping Weight
CCH-CF	162.0 mm x 35.0 mm x 200.0 mm (6.4 in x 1.4 in x 7.9 in)	0.5 kg (1.0 lb)

Part Number	Description	Units per Delivery
CCH-CF	CCH termination cassette; accepts one CCH panel and provides modular termination cassette for direct factory or field termination of incoming (e.g. distribution) cables, comes with grommets and cable ties for strain-relief, protective braided tubing, one rail for use with CCH-01U/2U/3U housings and two rails used with CCH-04U and the WCH-02P/4P/6P housings	1/1

CORNING

CCH Pigtailed Cassettes

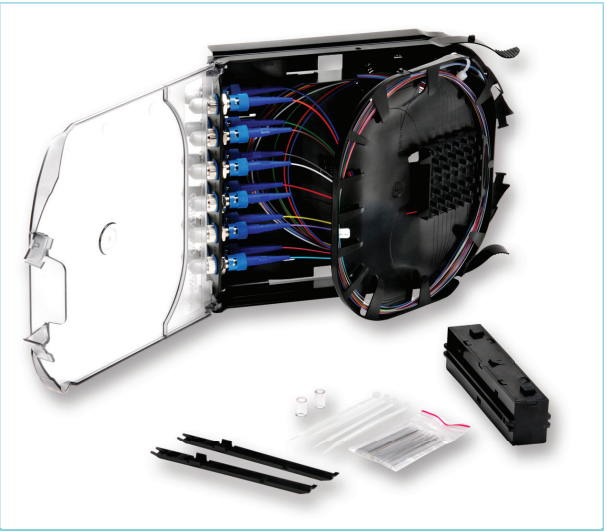
CCH pigtailed splice cassettes enable faster field splicing and easy modular management of connectorization within the housing.

The CCH pigtailed splice cassettes are preloaded and pre-routed for quick fusion splicing of either individual or ribbon fiber pigtails, using the same space-saving platform as the standard CCH splice cassette.

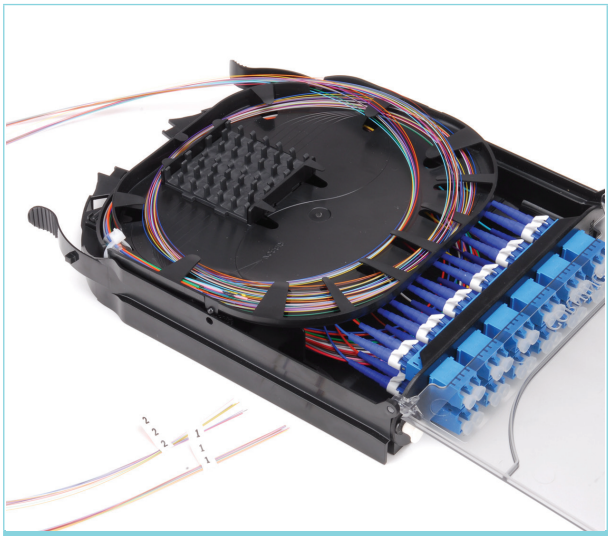
Pre-routed pigtailed cassettes reduce field labor by streamlining the features and components of the pigtail cassette to allow for efficiencies in the field. They are loaded with a pigtail assembly and a CCH connector panel. The pigtails, with 900 µm protection at the connector panel for added durability, are routed into the splice tray layer where they transition to either 250 µm fiber or bare ribbon (depending on the splicing method desired) for ease of splicing.

The pigtailed cassette eliminates the need for individual splice trays or separate splice housings as well as allowing splicing to be done away from the rack housing in a suitable workspace as needed. The modular design makes it easy to access the fiber in an individual cassette without disturbing other fibers in the housing.

Each cassette is shipped with the CCH connector panel and choice of pigtails, single-fiber or ribbon, one rail for use with CCH-01U/2U/3U housings, and two rails used with CCH-4U and the WCH-02P/4P/6P housings. Grommets and cable ties for additional strain-relief and protective tubing for incoming cable are also included. Splicing cassettes ship with the appropriate number and type of fiber heat-shrink splice protectors.



CCH Pigtailed Cassette
| Photo LAN2741



CCH Pigtailed Cassette
| Photo LAN2593

CCH Pigtailed Cassettes (continued)

Optical Characteristics

Part Number	Module Insertion Loss, Typical (by 1300 nm)	Module Insertion Loss, Maximum (by 1300 nm)
Pigtailed Splice Cassettes, Multimode	0.35 dB	0.5 dB
Pigtailed Splice Cassettes, Single-mode	0.15 dB	0.4 dB

Shipping Information

Part Number	Dimensions (L x W x D)	Shipping Weight
CCH-CS Dimensions	162 mm x 35 mm x 200 mm (6.4 in x 1.4 in x 7.9 in)	0.75 kg (1.5 lb)

Part Number	Description	Units per Delivery	Product Type
CCH-CS12-59-P00RE	12 F, SC, UPC, duplex, Single-mode (OS2), rack-mountable single-fiber (250 µm)	1/1	Rack-Mountable Hardware
CCH-CS12-6T-P00RE	12 F, ST® Compatible, UPC, simplex, Single-mode (OS2), single-fiber (250 µm)	1/1	Rack-Mountable Hardware
CCH-CS12-A9-P00RE	12 F, LC, UPC, duplex, Single-mode (OS2), single-fiber (250 µm)	1/1	Rack-Mountable Hardware
CCH-CS24-A9-P00RE	24 F, LC, UPC, duplex, Single-mode (OS2), single-fiber (250 µm)	1/1	Rack-Mountable Hardware
CCH-CS12-E4-P00TE	12 F, LC, PC, duplex, 50 µm multimode (OM3), single-fiber (250 µm)	1/1	Rack-Mountable Hardware
CCH-CS24-E4-P00TE	24 F, LC, PC, duplex, 50 µm multimode (OM3), single-fiber (250 µm)	1/1	Rack-Mountable Hardware

Note: Core products stocked at distributor for immediate availability.

CCH Pigtailed Cassettes (continued)

The CCH splice cassette (CCH-CS) is loaded with a CCH panel and factory-terminated pigtails. Available with ribbon or single-fiber splicing configurations, the cassette includes appropriate number and type of heat-shrinks and protective tubing depending on fiber count and cable type.

Ordering Information

C C H - C S □□ - □□ - P 0 0 □ □

1 2 3 4

1 Select fiber count.
- 06 = 6 fibers
- 08 = 8 fibers
- 12 = 12 fibers
- 16 = 16 fibers
- 24 = 24 fibers

See Note 1.

2 Select adapter code (see Adapter/Connector Code Options table).

See Note 2.

3 Select fiber type.
- K = 62.5 µm multimode (OM1)
- B = 50 µm multimode (OM2)
- T = 50 µm multimode (OM3)
- Q = 50 µm multimode (OM4)
- R = Single-mode (OS2)

4 Select splicing type.
- E = Single-fiber splicing
- J = Ribbon splicing (only for fiber counts of 12 or 24)

Notes:
1) Available fiber count for desired adapter is available in table on following page.
2) Shuttered LC only available in OS2/OM3/OM4.

Part Number Example

Part Number	Product Description	Units per Delivery	
CCH-CS12-AE-P00RE	CCH Splice Cassette, 12 F, shuttered LC UPC duplex, Single-mode (OS2), single-fiber (250 µm)	1/1	
CCH-CS12-59-P00RE	CCH Pigtailed Splice Cassette, 12 F, SC UPC duplex, Single-mode (OS2), single-fiber (250 µm)	1/1	
CCH-CS24-E4-P00TE	CCH Pigtailed Splice Cassette, 24 F, LC PC duplex, 50 µm multimode (OM3), single-fiber (250 µm)	1/1	

Closet Connector Housings (CCH)

A LANscape® Pretium® Solutions Product

Adapter/Connector Code Options

Adapter Code	Fiber Type	Alignment	Housing	Fiber per Adapter	Available Fiber/Panel Counts 6	8	12	16*	24
Shuttered LC Duplex									
AE	Single-mode, UPC (OS2)	Ceramic	Composite	2			X		X
AD	50 µm multimode (OM3/OM4)	Ceramic	Composite	2			X		X
LC Duplex									
A8	62.5 µm multimode (OM1)	Ceramic	Composite	2	X	X	X	X	X
D3	50 µm multimode (OM2)	Ceramic	Composite	2	X	X	X	X	X
E4	50 µm multimode (OM3/OM4)	Ceramic	Composite	2	X	X	X	X	X
A9	Single-mode, UPC (OS2)	Ceramic	Composite	2	X	X	X	X	X
B3	Single-mode, APC (OS2)	Ceramic	Composite	2	X	X	X	X	X
SC Duplex									
91	62.5 µm multimode (OM1)	Metal	Composite	2	X	X	X		
G7	50 µm multimode (OM2)	Ceramic	Composite	2	X	X	X		
E7	50 µm multimode (OM3/OM4)	Ceramic	Composite	2	X	X	X		
59	Single-mode, UPC (OS2)	Ceramic	Composite	2	X	X	X		
D9	Single-mode, APC (OS2)	Ceramic	Composite	2	X	X	X		
SC									
56	62.5 µm multimode (OM1)	Metal	Composite	1	X	X	X		
G6	50 µm multimode (OM2)	Ceramic	Composite	1	X	X	X		
E6	50 µm multimode (OM3/OM4)	Ceramic	Composite	1	X	X	X		
3C	Single-mode, UPC (OS2)	Ceramic	Composite	1	X	X	X		
6C	Single-mode, APC (OS2)	Ceramic	Composite	1	X	X	X		
ST® Compatible Connector									
5T	62.5 µm multimode (OM1)	Ceramic	Metal	1	X	X	X		
G5	50 µm multimode (OM2)	Ceramic	Metal	1	X	X	X		
H3	50 µm multimode (OM3/OM4)	Ceramic	Metal	1	X	X	X		
6T	Single-mode, UPC (OS2)	Ceramic	Metal	1	X	X	X		
FC									
11	Single-mode, UPC (OS2)	Metal	Metal	1	X	X	X		
21	Single-mode, APC (OS2)	Metal	Metal	1	X	X	X		
MT-RJ (pinned)									
97	62.5 µm multimode (OM1)	N/A	Composite	2		X	X	X	X
G1	50 µm multimode (OM2)	N/A	Composite	2		X	X	X	X
E1	50 µm multimode (OM3/OM4)	N/A	Composite	2		X	X	X	X
98	Single-mode, UPC (OS2)	N/A	Composite	2		X	X	X	X

Fiber Type	Housing Color
62.5 µm multimode (OM1)	Beige
50 µm multimode (OM2)	Black
50 µm multimode (OM3/OM4)	Aqua
Single-mode, UPC (OS2)	Blue
Single-mode, APC (OS2)	Green

Note: For keyed LC ordering information, please refer to LAN-701-EN.

CORNING

Closet Connector Housings (CCH)

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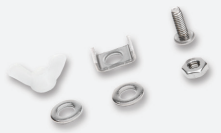
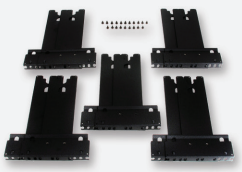
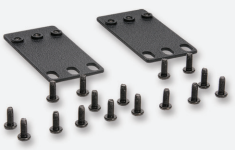
Strain-Relief Accessories

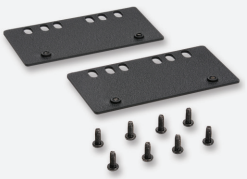
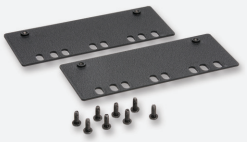
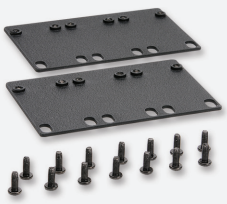
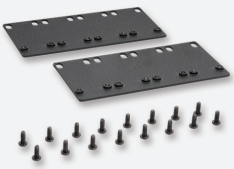
Part Number	Product Description	Units per Delivery	
UCC-001	Universal Cable Clamp, strain-relief kit, includes one cable clamp	1/1	
CPP-SSR-KIT	Central Member Strain-Relief Kit; includes one clamp, washer and screw to attach to internal strain-relief bracket	1/1	

Mounting Accessories

Part Number	Product Description	Units per Delivery	
CCH1-RECESS-KIT-5	Recess Kit; includes five pairs of brackets to recess mount/ flush mount five 01U housings	1/1	
CCH2-RECESS-KIT-5	Recess Kit; includes 5 pairs of brackets to recess mount/ flush mount five 02U housings	1/1	
CCH3-RECESS-KIT-5	Recess Kit; includes five pairs of brackets to recess mount/ flush mount five 03U housings	1/1	
CCH4-RECESS-KIT-5	Recess Kit; includes five pairs of brackets to recess mount/ flush mount five 04U housings	1/1	
CCH4-3INCH-KIT-5	CCH-04U Mounting Kit, includes five pairs of brackets to mount five CCH-04U housings with 3-in frontal projection (standard CCH-04U projection is 5 in)	1/1	
CDF-01U-23-BKT	Mounting Brackets for CCH-01U and CLSSC-01U, 23-in	1/1	

CORNING

Mounting Accessories

Part Number	Product Description	Units per Delivery	
CDF-02U-23-BKT	Mounting Brackets for CCH-02U and CLSSC-02U, 23-in	1/1	
CDF-03U-23-BKT	Mounting Brackets for CCH-03U and CLSSC-03U, 23-in	1/1	
CDF-04U-23-BKT	Mounting Brackets for CCH-04U and CLSSC-04U, 23-in	1/1	
CDF-01U-24-BKT	Mounting Brackets for CCH-01U and CLSSC-01U, 24-in	1/1	
CDF-02U-24-BKT	Mounting Brackets for CCH-02U and CLSSC-02U, 24-in	1/1	
CDF-03U-24-BKT	Mounting Brackets for CCH-03U and CLSSC-03U, 24-in	1/1	
CDF-04U-24-BKT	Mounting Brackets for CCH-04U and CLSSC-04U, 24-in	1/1	

Closet Connector Housings (CCH)

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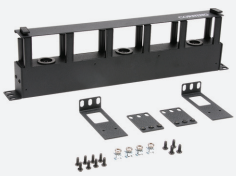
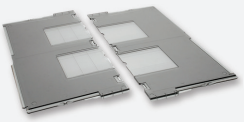
Miscellaneous Accessories

Part Number	Product Description	Units per Delivery	
CCH-CDF-RJ08-BKT	High capacity strain-relief bracket for rack mount hardware	1/1	
FDC-CABLE-GRND	Armored Cable Grounding Kit; contains armored grounding clip and ground strap	1/1	
CCHA-LOCK-KIT	CCH and WCH Hardware Lock Kit, CCHA lock kit, compatible with CCH front and rear doors and WCH cable entry doors and jumper doors	1/1	
CJP-01U	Closet Jumper Management Panel; provides jumper management in a 1.75-in rack space	1/1	
CJP-02U	Closet Jumper Management Panel; provides jumper management in a 3.5-in rack space	1/1	
CJP-03U	Closet Jumper Management Panel; provides jumper management in a 5.25-in rack space	1/1	

Covers and Doors Replacement Parts

Part Number	Product Description	Units per Delivery	
CCH1-TOP-COVER-2	CCH Covers and Doors; CCH1 top cover two, top covers for CCH-01U, CCH-02U and CCH-03U, with two label cards	1/1	
CCH1-DOOR-FRONT	CCH Covers and Doors; CCH1 door front for CCH-01U, includes hinges and latches	1/1	

* 7-ft unequipped frame, with standard floor mounting hardware

CORNING

Covers and Doors Replacement Parts

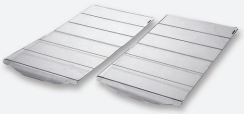
Part Number	Product Description	Units per Delivery	
CCH2-DOOR-FRONT	CCH Covers and Doors; CCH2 door front for CCH-02U, includes hinges and latches	1/1	
CCH3-DOOR-FRONT	CCH Covers and Doors; CCH3 door front for CCH-03U, includes hinges and latches	1/1	
CCH4-DOOR-FRONT	CCH Covers and Doors; CCH4 door front for CCH-04U, includes hinges and latches	1/1	
CCH1-DOOR-REAR	CCH Covers and Doors; CCH1 door rear for CCH-01U, includes hinges and latches	1/1	
CCH2-DOOR-REAR	CCH Covers and Doors; CCH2 door rear for CCH-02U, includes hinges and latches	1/1	
CCH3-DOOR-REAR	CCH Covers and Doors; CCH3 door rear for CCH-03U, includes hinges and latches	1/1	
CCH4-DOOR-REAR	CCH Covers and Doors; CCH4 door rear for CCH-04U, includes hinges and latches	1/1	

* 7-ft unequipped frame, with standard floor mounting hardware

Closet Connector Housings (CCH)

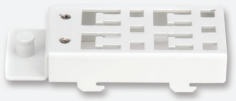
A LANscape® Pretium® Solutions Product

Labeling Replacement Parts

Part Number	Product Description	Units per Delivery	
CCH1-LABEL-CARD-20	CCH Label Cards; CCH1 label card 20, plastic label cards for CCH-01U, CCH-02U, CCH-03U; 20 per pack	1/1	
CCH4-LABEL-CARD-20	CCH Label Cards; CCH4 label card 20, plastic label cards for CCH-04U (20 per pack)	1/1	
CCHA-LABEL-PNL-50	CCH Label Cards, additional label kit for CCH and WCH housing families (contains 50 labels)	1/1	

* 5 in, White Fused Alumina, bulk pack, 16 µm, natural

Strain-Relief Replacement Parts

Part Number	Product Description	Units per Delivery	
CCH1-STRN-INT	CCH Strain-Relief Bracket, internal strain-relief bracket for CCH and WCH housing families	1/1	
CCH1-STRN-EXT	CCH Strain-Relief Bracket; external strain-relief bracket for the CCH-01U, CCH-02U, CCH-03U	1/1	
CCH4-STRN-INT	CCH Strain-Relief Bracket; internal strain-relief bracket for the CCH-04U	1/1	

* A-DQ(ZN)(SR)H 1x4G62.5/125 InfiniCor 300

CORNING

Closet Connector Housings (CCH)

A LANscape® Pretium®
Solutions Product

Strain-Relief Replacement Parts

Part Number	Product Description	Units per Delivery	
CCH4-STRN-EXT	CCH Strain-Relief Bracket; external strain-relief bracket for the CCH-04U	1/1	
CCHA-CLIP-BTF-2	CCH Strain-Relief Bracket, intermediate strain-relief bracket for CCH and WCH housing families, 2 per pack	1/1	

* A-DQ(ZN)(SR)H 1x4G62.5/125 InfiniCor 300

Fiber and Cable Management Replacement Parts

Part Number	Product Description	Units per Delivery	
CCH1-CASS-RAIL	CCH Fiber and Cable Management; one stacker rail for CCH-01U, CCH-02U, CCH-03U (to use with CCH-CS and CCH-CF)	1/1	
CCH4-CASS-RAIL-24	CCH Fiber and Cable Management, stacker rails for CCH-04U and WCH housing family to use with CCH-CS and CCH-CF, 24 per pack	1/1	
CCHA-CLIP-SLCK-8	CCH Fiber and Cable Management, segregated fiber routing clips for CCH/CCHE panels to be used with CCH and WCH housing families, 8 per pack	1/1	
CCH1-GUIDE-JMPR-3	CCH Fiber and Cable Management; front jumper routing guide for the CCH-01U, CCH-02U, CCH-03U, 3 per pack	1/1	

* EMF Component, front-mounting workshelf

CORNING

Fiber and Cable Management Replacement Parts

Part Number	Product Description	Units per Delivery	
CCH4-CLIP-JMPR-8	CCH Fiber and Cable Management; front jumper routing guide for the CCH-04U, 8 per pack	1/1	
CCHA-CLIP-PNL-24	CCH Fiber and Cable Management; panel clips for the CCH and WCH housing families, 24 per pack	1/1	

* EMF Component, front-mounting workshelf

Corning Optical Communications LLC • PO Box 489 • Hickory, NC 28603-0489 USA
800-743-2675 • FAX: 828-325-5060 • International: +1-828-901-5000 • www.corning.com/opcomm

FO Cable Grooming Procedure

Terminate Fiber in ITS Node Cabinet

- Pull fiber into ITS Node cabinet.
- Establish a protected environment for the cable, splice tent or truck cab.
- Score FO outside jacket at 126” and pull ripcord, or remove outer jacket per FO cable manufacturer's instructions. Cut flush and remove filler rods and Super Absorbent Material. Leave ½”of fiber glass strength member, and 126" of buffer tube, see figure 1.

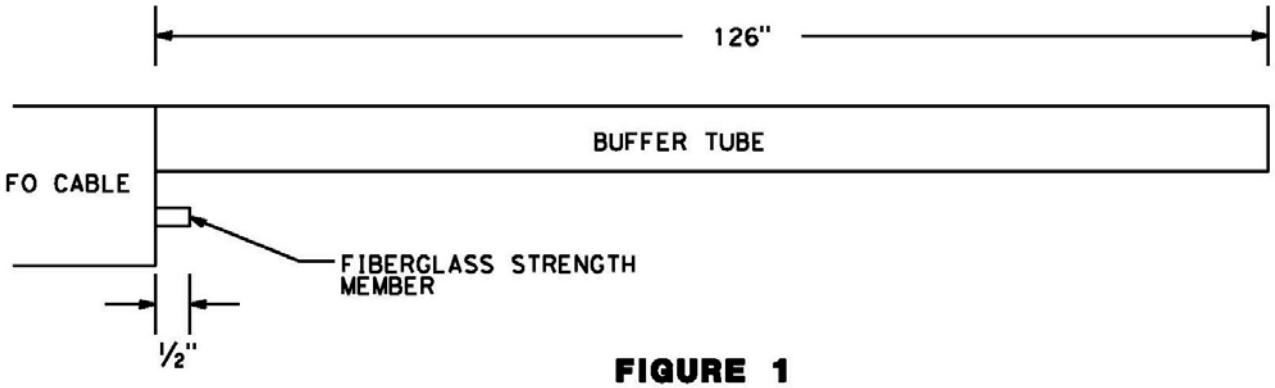


FIGURE 1
NOT DRAWN TO SCALE

- Add 16" Department Furnished Yellow tube over buffer tube.
- Create strain relief using layers of shrink tubing, see Figure 2.
  - Layer 1 - Cover strength member with 5/8" of 3/16" black shrink tube.
  - Layer 2 - Cover Department Furnished Yellow Tube and strength member with 2 1/4" of 1/4" black shrink tube
  - Layer 3 - 1 7/8" of 1/4" black shrink tube
  - Layer 4 - 1 1/2" of 3/8" black shrink tube
  - Layer 5 - 1 1/8" of 3/8 black shrink tube
  - Layer 6 - 1 1/2" of 3/4" black shrink tube

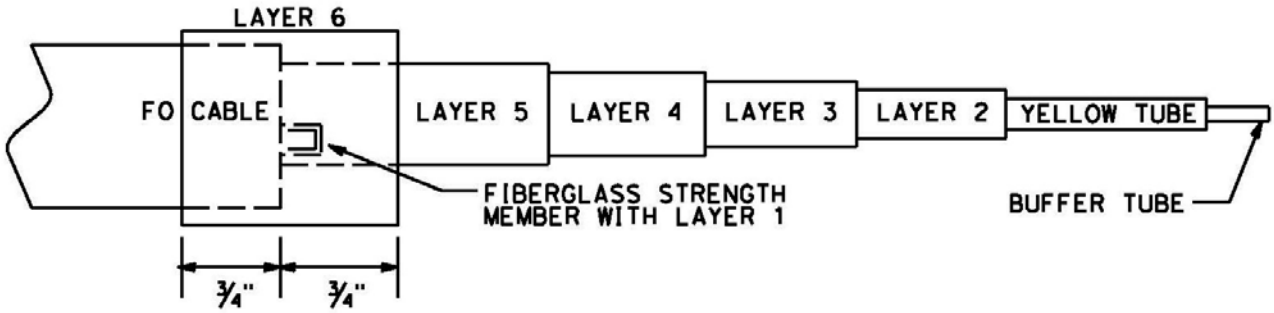


FIGURE 2
NOT DRAWN TO SCALE

- Score and remove 48" of buffer tube to expose fiber strands, see figure 3. Bring end of buffer tube and fiber into splice cassette. Route fibers and fusion splice to pigtail per manufacturer's instructions.

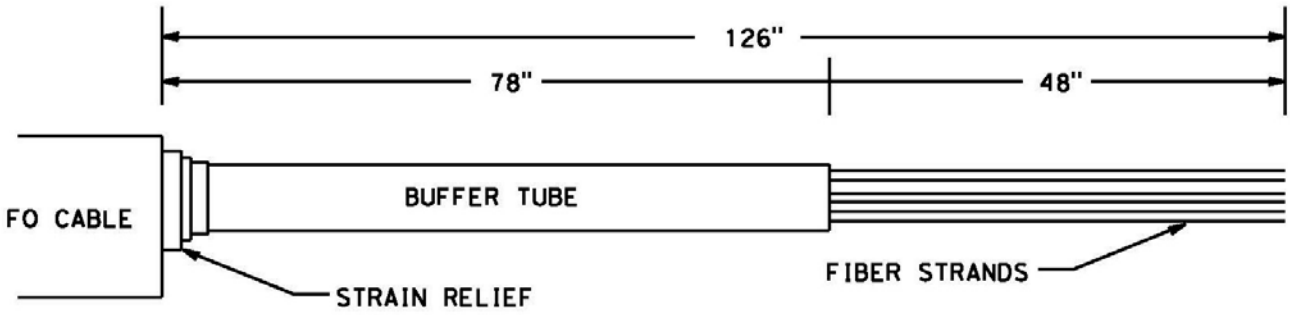


FIGURE 3
NOT DRAWN TO SCALE

- Install splice cassette in the left slot of the FDU as facing the front of the FDU. Route FO cable in cabinet after splicing and installing the cassette as shown in figure 4.

Department furnished Genset Installation and Termination Information Onan model C40 D6

Laying the Foundation

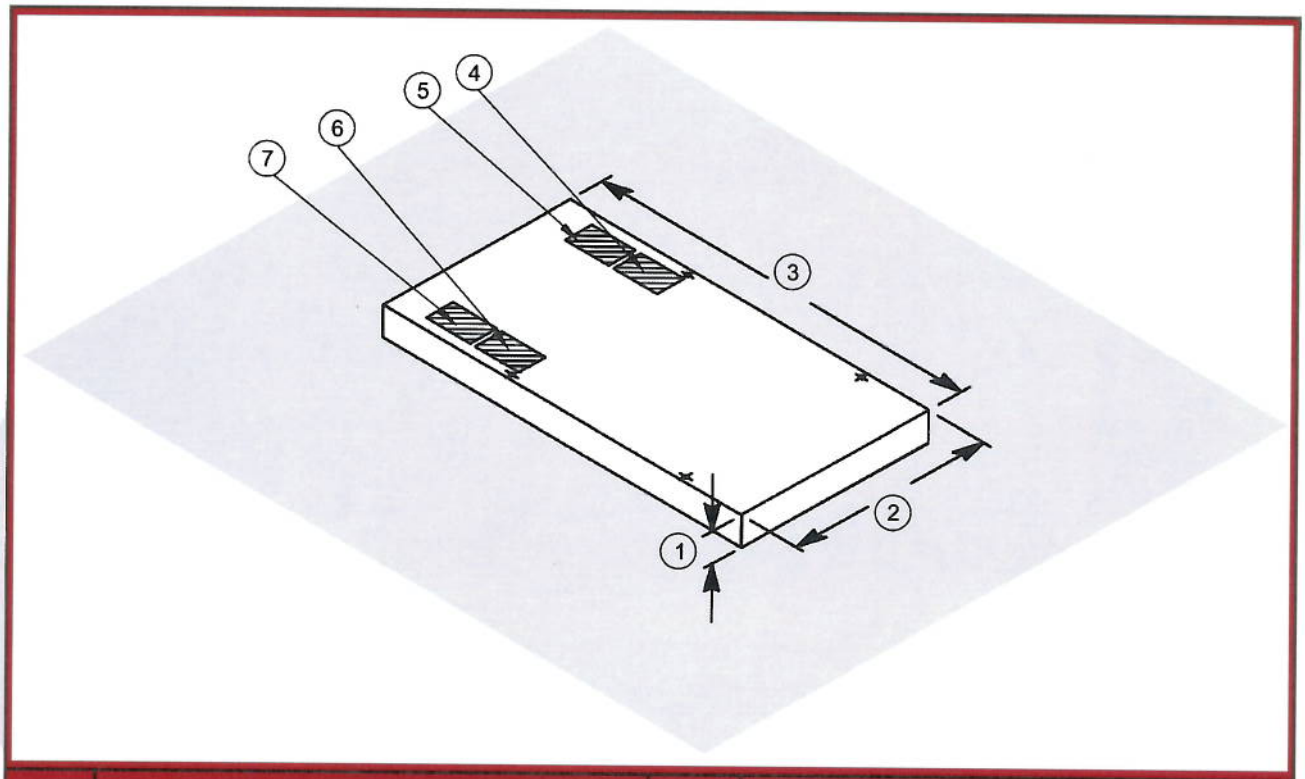
When laying the foundation:

1. Clear obstructions, and make sure that there is adequate clearance for access.
2. Level the ground, and make sure that the ground is compact and settled. Ensure that it is stable ground, not subject to flooding.
3. Prepare the concrete pad.
   - The pad should be constructed of reinforced concrete with a 28-day compressive strength of at least 2500-psi (17,237 kPa).
   - The pad should be at least 6 inches (150 mm) deep and extend at least 6 inches (150 mm) beyond the skid on all sides.

NOTICE
Seismic installation may require a different pad and securing devices.

NOTICE
Local codes and standards may have different requirements.

4. Lift the generator set onto the pad, and secure it.



No.	Description	No.	Description
1	Pad Thickness (at least 6 inches deep)	5	Accessory 120 V AC, 20 A Max Wire Stub-Up
2	Width (pad should extend at least 6 inches beyond skid)	6	Circuit Breaker 2 Stub-Up (dual circuit breaker)
3	Length (pad should extend at least 6 inches beyond skid)	7	Circuit Breaker 1 Stub-Up (standard)
4	Generator Set Control Wire Stub-Up (DC)		

FIGURE 4. CONCRETE PAD PREPARATION

Lifting and Moving the Generator Set

⚠ WARNING

The generator set is heavy. Dropping the generator set can cause severe personal injury or death. Keep feet and hands clear when lifting the generator set.

⚠ CAUTION

The generator is shipped with oil in the crankcase. Keep the generator set upright.

⚠ CAUTION

- The generator set is heavy. Handle with care.
- Use appropriate lifting techniques to move the generator set. Do not use the lifting eyes on the engine and alternator to lift the entire generator set.

NOTICE

Only a certified and trained person should lift from above the generator set.

Mounting the Generator Set

Positioning of cast-in bolts can be problematic since even small errors in location can cause time consuming redrilling of the skid base. Some generator set designs allow use of concrete anchor bolts.

Mount the generator set on a substantial and level base such as a concrete pad. A non-combustible material must be used for the pad. Verify that the mounting pad is level lengthwise, widthwise, and diagonally.

NOTICE

Seismic installation may require specific anchorage.

4.2 Fuel System

NOTICE

The factory-installed sub-base fuel tanks meet the fuel system requirements. Please verify that they also meet local codes and standards.

Cummins engines normally use a diesel fuel specified to ASTM D975 grade 2. Refer to the Engine Operator Manual for additional information.

In all fuel system installations, cleanliness is of the utmost importance. Make every effort to prevent entrance of moisture, dirt, or contaminants of any kind into the fuel system. Clean all fuel system components before installing.

NOTICE

A fuel filter/strainer/water separator of 100-120 mesh or equivalent (approximately 150 microns nominal) must be fitted between the main tank and day tank if a factory sub-base tank is used as a day tank.

Use only compatible metal fuel lines to avoid electrolysis when fuel lines must be buried. Buried fuel lines must be protected from corroding.

⚠ WARNING

Automatic startup of the generator set during installation can cause severe personal injury or death. Assure the generator set operation switch is in the OFF position. Disconnect the negative cable from the battery and secure it to prevent contact of the cable to the battery terminal and from starting the generator set.

NOTICE

Refer to regional codes and the National Electrical Code (NFPA 70) for all electrical installation requirements.

NOTICE

Class 1 wiring methods must be used for connecting the generator set.

AC Connections

⚠ WARNING

Automatic startup of the generator set during installation can cause severe personal injury or death. Push the control switch OFF and disconnect the negative (–) cable from the battery and prevent the cable (any electrical connection) from contacting the battery B-terminal to keep the generator set from starting.

NOTICE

If a 100% rated breaker is used, 90 °C wire must be used for L1, L2, and L3 with the wire size determined by the 75 °C ampacity tables.

NOTICE

When using a circuit breaker with an adjustable, electronic trip unit, the amperage and trip curve settings may need adjustment to match the generator set load wiring, or downstream loads and circuit breakers. An accessory seal kit (part number A026M166 is available to tamper-proof the adjustable settings.

For grounding and neutral connections, look for the following symbols on the generator set circuit breaker cabinets.

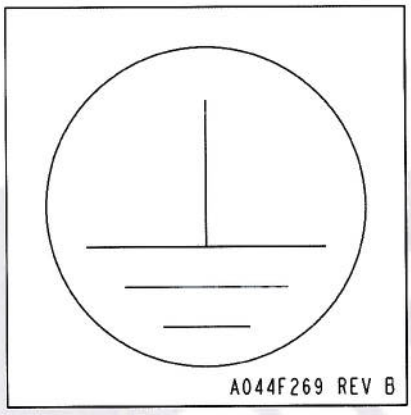


FIGURE 6. EQUIPMENT GROUNDING CONDUCTOR SYMBOL

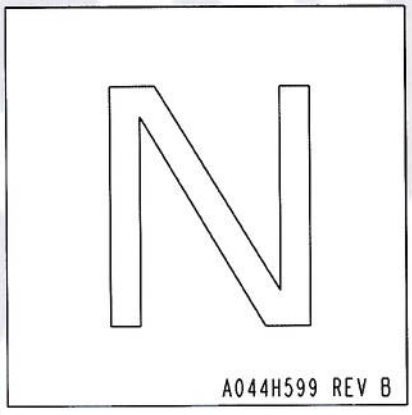


FIGURE 7. EQUIPMENT NEUTRAL CONNECTION SYMBOL

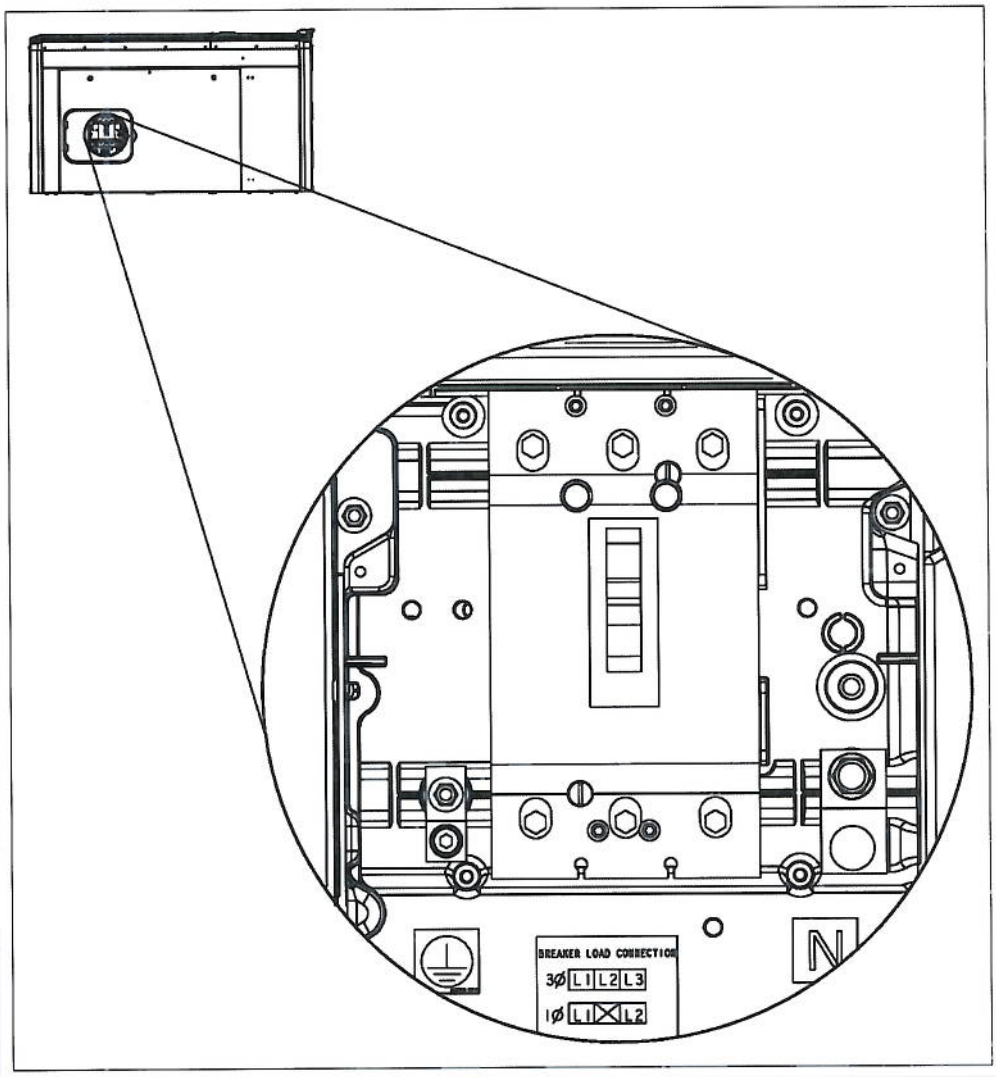


FIGURE 8. CIRCUIT BREAKER AC LOAD CONNECTIONS LOCATION

For connection to the generator set, AC load connections are made in the circuit breaker box. To access:

1. Remove the enclosure side panel to gain access to main circuit breaker box.
2. Place the circuit breaker handle in the OFF position.
3. Remove the four bolts holding the circuit breaker cover.
4. Install the conductors to the circuit breaker load-side terminals, neutral lug, and equipment grounding lug.
5. Torque the circuit breaker terminals per specifications on the circuit breaker label.
6. Torque the neutral lug to 275 inch-pounds (31.1 Nm).
7. Torque the equipment grounding lug to 120 inch-pounds (13.8 Nm).

8. Fill in the stub-up openings with an approved duct seal or mastic tape to keep out insects and rodents.
9. Install the circuit breaker cover.

Automatic Transfer Switch AC Connections

⚠ WARNING

Failure to use an approved transfer switch can lead to the electrocution of personnel working on the utility lines, damage to equipment, fire, or personal injury. An approved switching device must be used to prevent interconnection to the public utility.

Install the transfer switch in accordance with the RA Series Transfer Switch Owner Manual.

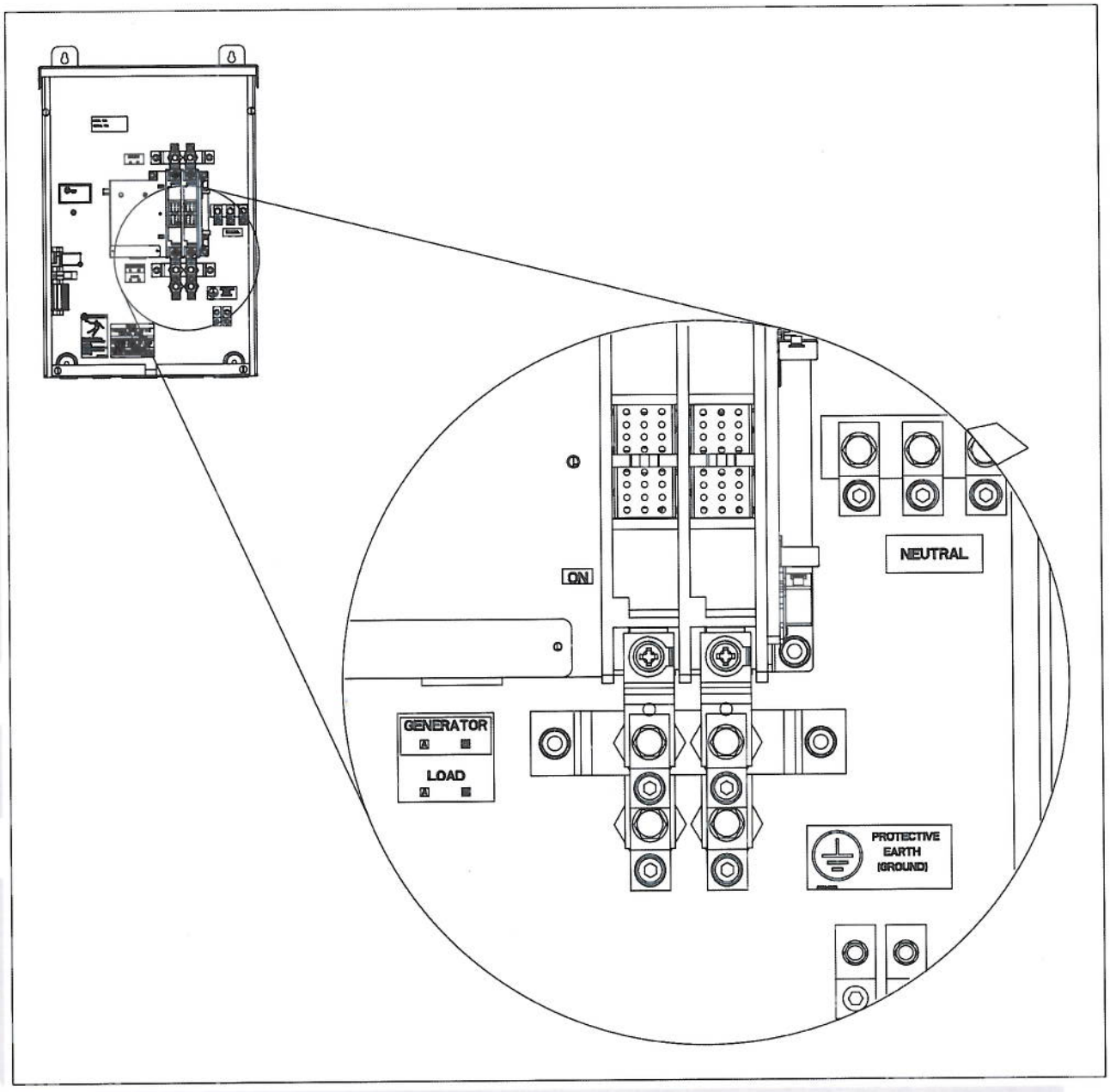


FIGURE 9. RA SERIES TRANSFER SWITCH AC CONNECTIONS LOCATION

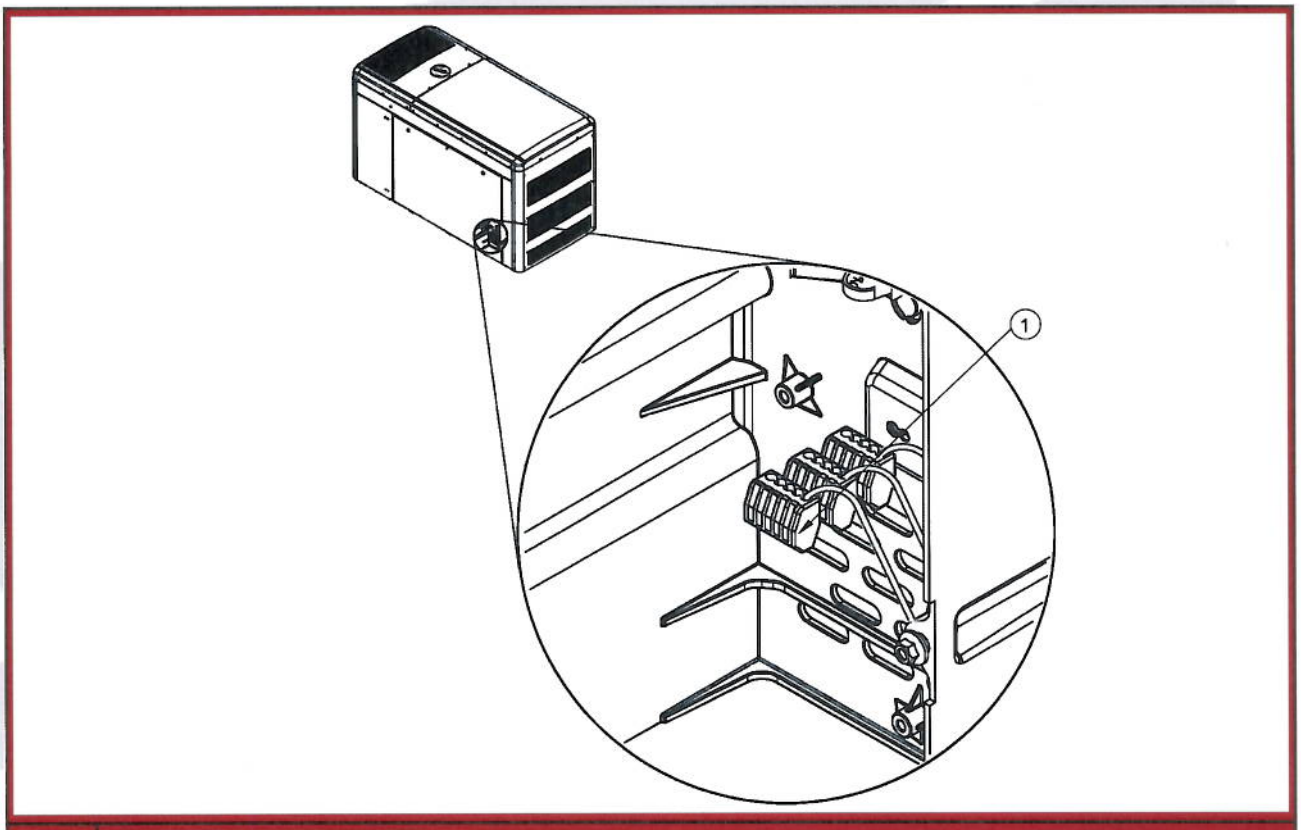
Factory Option and Accessory Connections

NOTICE
Use copper conductors only.

AC powered options or accessories available:

- Battery charger
- Engine coolant heater

- Alternator heater
- Battery warmer
- CCV heater



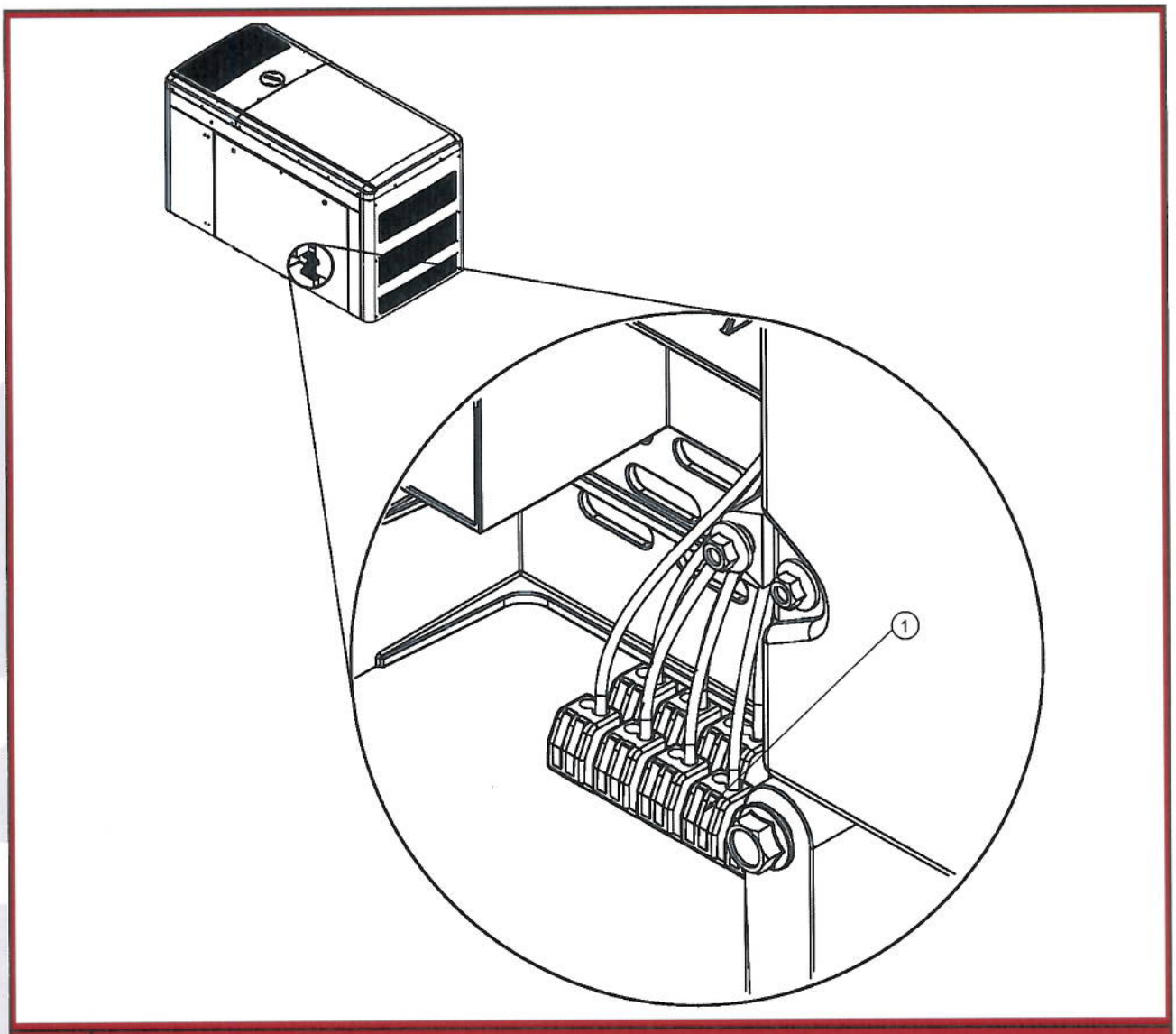
No.	Description
1	AC Distribution Connector(s)

The battery charger, engine coolant heater, alternator heater, CCV heater, and battery warmer require power from a 120 VAC, 20 amp protected circuit from the Main Distribution Panel. Use 12 AWG 167 °F (75 °C) conductors to make connection to the generator set AC distribution connector.

FIGURE 10. AC ACCESSORY CONNECTIONS

DC Connections

NOTICE
When selecting and installing conduit to the generator set, account for any needed accessories, such as a remote display, etc.



No.	Description
1	DC Circuit Connector(s)

FIGURE 11. DC CUSTOMER CONNECTIONS

Automatic Transfer Switch DC Connections

⚠ WARNING

Failure to use an approved transfer switch can lead to the electrocution of personnel working on the utility lines, damage to equipment, fire, or personal injury. An approved switching device must be used to prevent interconnection to the public utility.

Install the transfer switch in accordance with the RA Series Transfer Switch Owner Manual. The following image shows the location of the Cummins RA Series Transfer Switch customer connections.

NOTICE
Class 1 wiring methods should be used for connecting the generator set and transfer switch signal wiring.

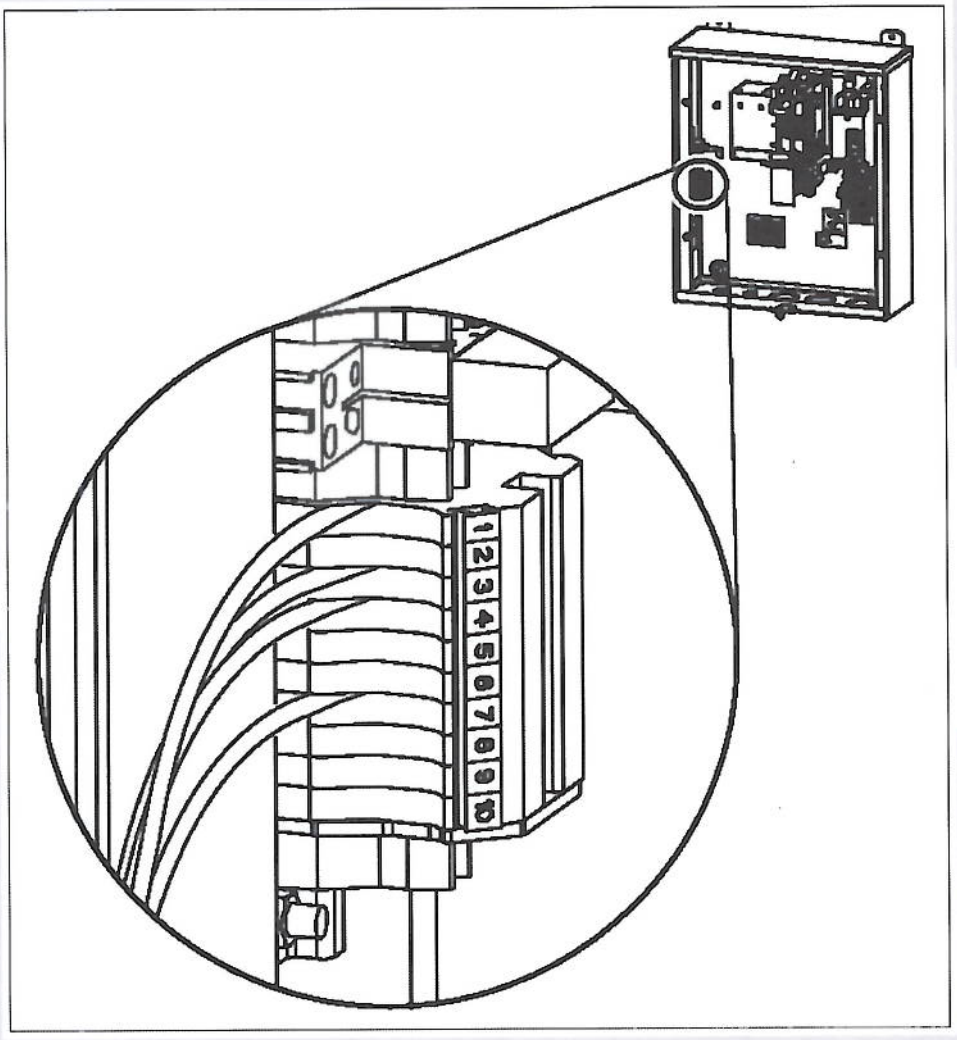
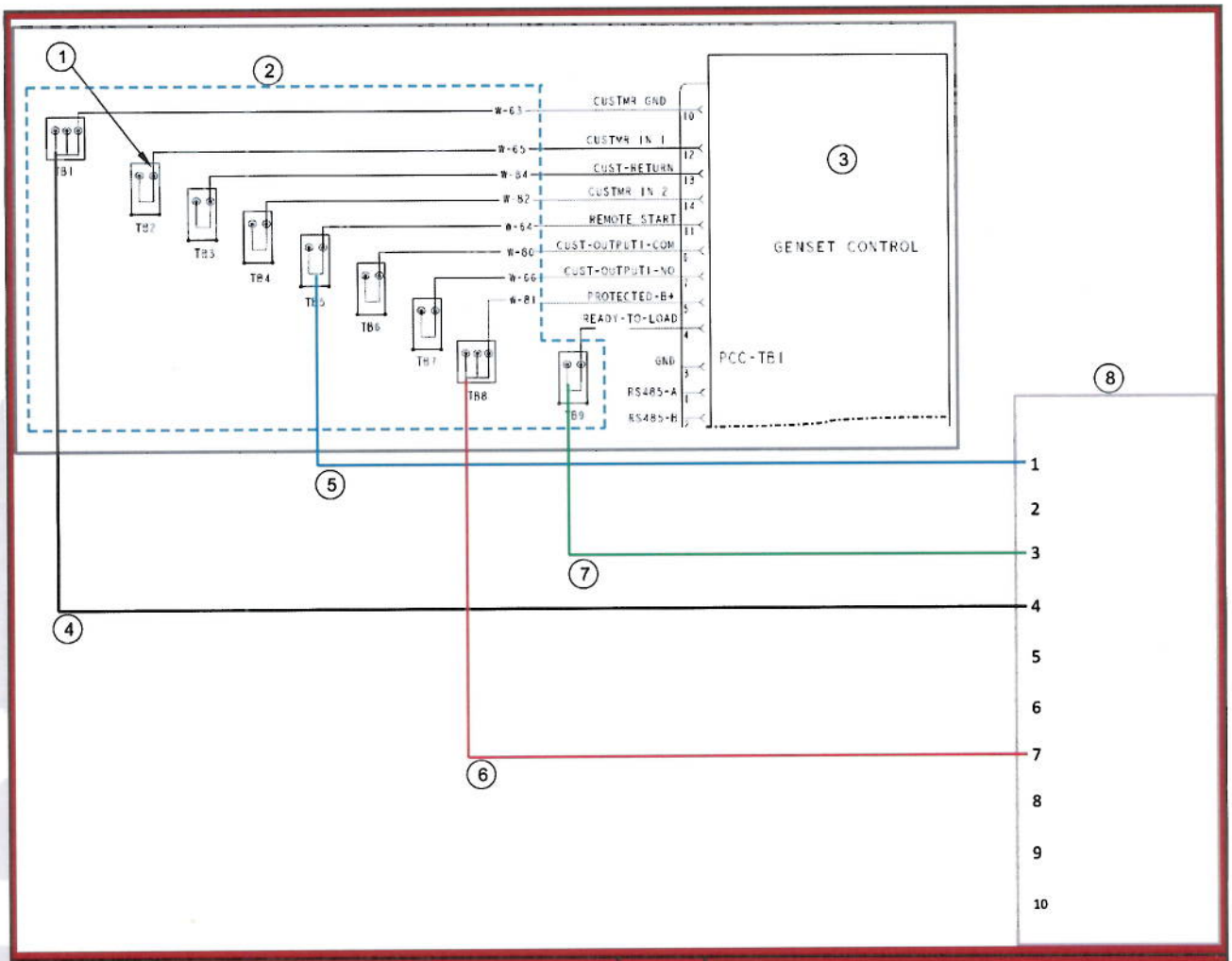


FIGURE 12. RA SERIES TRANSFER SWITCH DC CONNECTIONS LOCATION



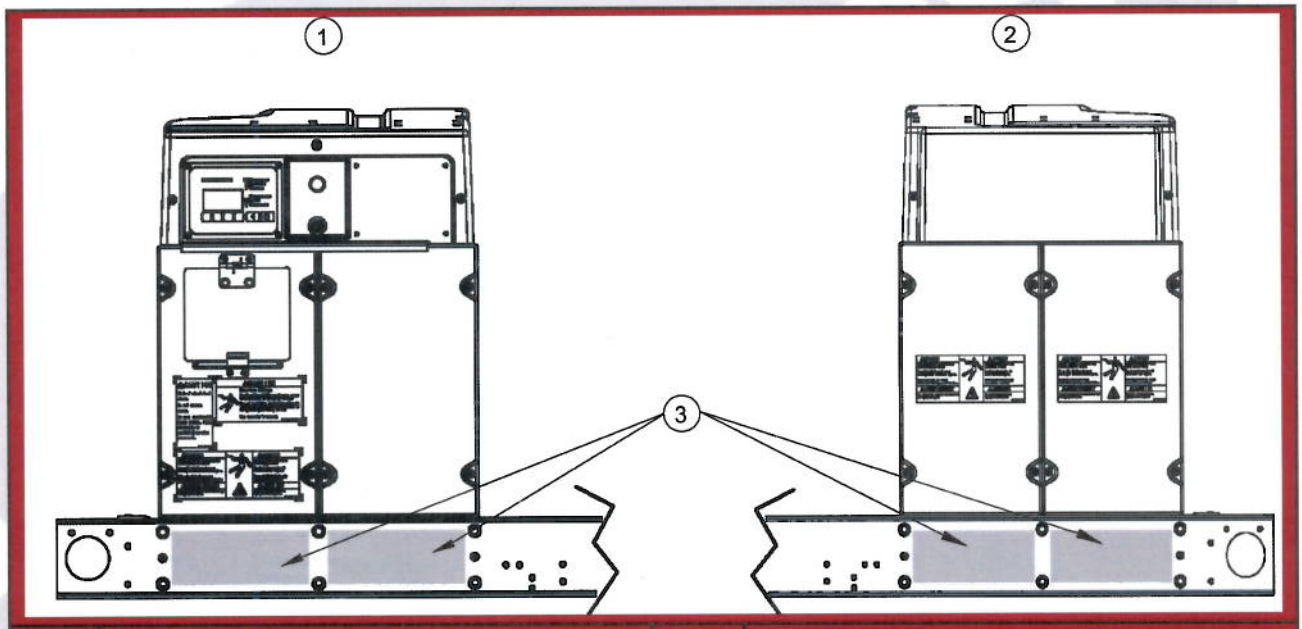
No.	Description	No.	Description
1	DC Circuit Connectors	5	Remote Start
2	DC Customer Connections (within Dotted Line Box)	6	Fuse B+ (5A)
3	1302 Control	7	Ready to Load
4	Ground (B-)	8	RA Transfer Switch Terminal Block

FIGURE 13. GENERATOR SET TO RA TRANSFER SWITCH DC CUSTOMER CONNECTIONS

Drilling Locations for Electrical Connections

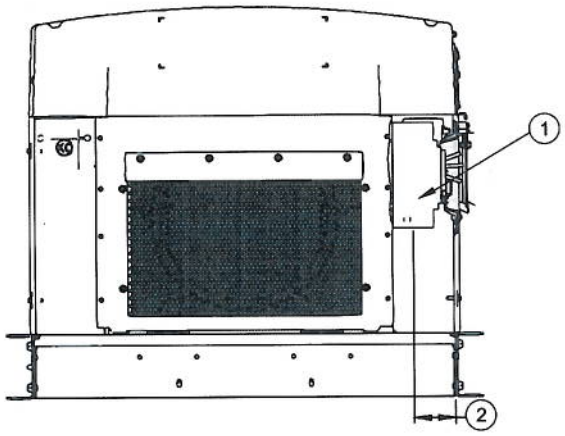
Preferred routing of electrical leads is vertically through conduit that is installed in the mounting pad that terminates in the electrical connection areas. Refer to the generator set Foundation Outline drawing in the Appendix for location of electrical connection areas. In some cases, it may be necessary to route electrical leads horizontally in conduits that pass through the generator set chassis. Refer to the

figure below for available drilling space for conduit holes in the side of the chassis. Holes up to 3 (7.6 cm) inches in diameter can be made in the chassis in the areas shown. Exceeding 3 (7.6 cm) inches in diameter may cause failure of the chassis. Comply with NEC and local codes and standards for installation of wires for electrical circuits. Refer to NEC standards for required wire bend radius and ampacity of load leads.



No.	Description	No.	Description
1	Circuit Breaker Side (shaded areas)	3	Drilling Allowed (shaded sections)
2	DC (left) and AC (right) Connection Area (shaded areas)		

FIGURE 14. DRILLING LOCATIONS FOR SIDE ELECTRICAL CONNECTIONS



No.	Description	No.	Description
1	Circuit Breaker	2	Maximum 3 in. Bend Radius Gap

FIGURE 15. CABLING ROOM FOR CIRCUIT BREAKER

Grounding

NOTICE
The generator set is shipped from the factory with the neutral and equipment ground not bonded together.

Refer to local codes and standards for grounding procedures.

Battery

The generator set requires a 12V battery (negatively grounded) for engine cranking and powering the electronic control system. When the generator set is running, the battery is charged from the engine-driven battery alternator. When the set is not running, an AC powered battery charger is needed to keep the battery charged.

As part of the installation, make sure that the battery is secured to the battery tray with the strap provided.

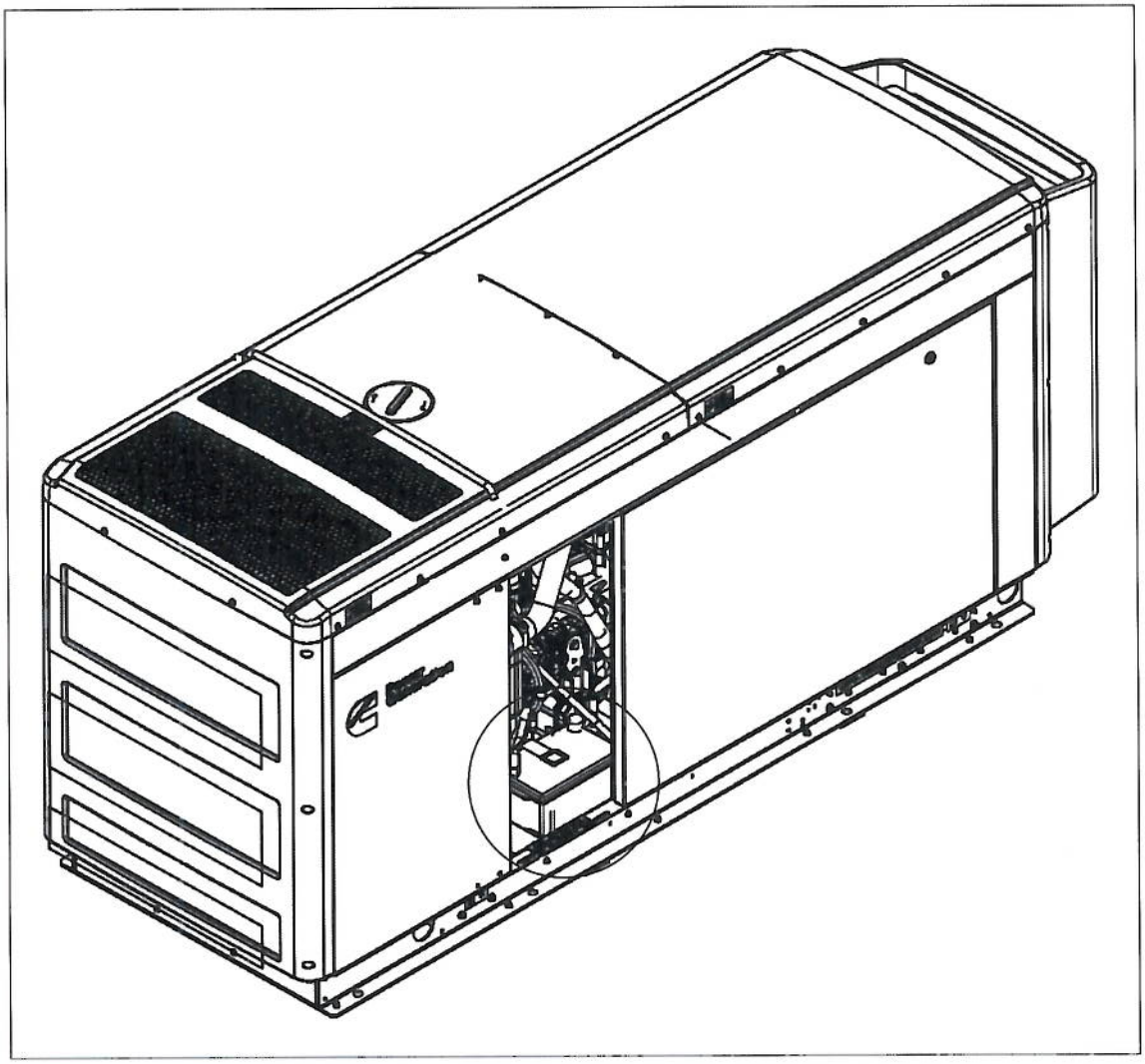


FIGURE 16. BATTERY LOCATION

To connect the battery:

1. Connect the positive battery terminal.
2. Connect the negative battery terminal.
3. Make sure that the black and red battery cable boots are in place.

Refer to the Model Specifications section for battery specifications.

An optional thermostatically controlled battery heater is available for more reliable starting in ambient temperatures down to 0 °F (-18 °C).

To prevent injury due to accidental startup, do not connect the battery cables to the battery until the installation has been completed; tools, rags, and body parts are away from any rotating parts or electrically live parts; and it is time to start the set.

PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-142491	F	1	UPDATED DRAWING-SEE ECO	PT	NK	D.GILLETT	27MAR14
		2	ADD SHEET 6	PT	NK	D.GILLETT	27MAR14
		3	ADD SHEET 7	PT	NK	D.GILLETT	27MAR14

SEISMIC INSTALLATIONS NOTES:

1. THE DESIGN OF POST-INSTALLED ANCHORS IN CONCRETE USED FOR THE COMPONENT ANCHORAGE IS PRE-QUALIFIED FOR SEISMIC APPLICATIONS IN ACCORDANCE WITH "ACI 355.2-07" AND DOCUMENTED IN A REPORT BY A REPUTABLE TESTING AGENCY. (EX. THE EVALUATION SERVICE REPORT ISSUED BY THE INTERNATIONAL CODE COUNCIL)

2. ANCHORS MUST BE INSTALLED TO AN EMBEDMENT DEPTH AS RECOMMENDED IN THE PRE-QUALIFICATION TEST REPORT AS DEFINED IN NOTE 1. FOR "CBC 2013" APPLICATIONS.

3. ANCHORS MUST BE INSTALLED IN MINIMUM 3000 PSI COMPRESSIVE STRENGTH NORMAL WEIGHT STRUCTURAL CONCRETE. CONCRETE AGGREGATE MUST COMPLY WITH "ASTM C33".

4. ANCHORS MUST BE INSTALLED TO THE TORQUE SPECIFICATION AS RECOMMENDED BY THE ANCHOR MANUFACTURER.

5. ANCHORS MUST BE INSTALLED IN LOCATIONS SPECIFIED ON THIS INSTALLATION DRAWING.

6. WASHERS MUST BE INSTALLED AT EACH ANCHOR LOCATION BETWEEN THE ANCHOR HEAD AND EQUIPMENT FOR TENSION LOAD DISTRIBUTION. WASHERS MUST BE TYPE A OR B PLAIN WASHERS MEETING ASME B18.21.1-2009. WASHER SIZE TO MATCH ANCHOR DIAMETER.

7. CONCRETE FLOOR SLAB AND CONCRETE HOUSEKEEPING PADS MUST BE DESIGNED AND REBAR REINFORCED FOR SEISMIC APPLICATIONS IN ACCORDANCE WITH "ACI 318-11".

8. ALL HOUSEKEEPING PAD THICKNESSES MUST BE DESIGNED IN ACCORDANCE WITH THE PRE-QUALIFICATION TEST REPORT AS DEFINED IN NOTE 1 OR A MINIMUM OF 1.5X THE ANCHOR EMBEDMENT DEPTH, WHICHEVER IS LARGEST (UNLESS NOTED OTHERWISE).

9. ALL HOUSEKEEPING PADS MUST BE DOWELLED OR CAST INTO THE BUILDING STRUCTURAL FLOOR SLAB AND DESIGNED FOR SEISMIC APPLICATION PER "ACI 318-11" AND AS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.

10. (NOTE REMOVED)

11. FLOOR MOUNTED EQUIPMENT (WITH OR WITHOUT A HOUSEKEEPING PAD) MUST BE INSTALLED TO A STEEL REINFORCED STRUCTURAL CONCRETE FLOOR THAT IS SEISMICALLY DESIGNED AND APPROVED BY THE ENGINEER OF RECORD TO RESIST ALL LOADS FROM EQUIPMENT BEING ANCHORED TO THE FLOOR.

12. COORDINATE REINFORCEMENT OF SUPPORT STRUCTURE WITH EQUIPMENT ANCHOR LOCATIONS.

13. ATTACHING SEISMIC CERTIFIED EQUIPMENT TO FLOOR OTHER THAN THOSE DESIGNED TO ACCEPT THE SEISMIC LOADS FROM CERTIFIED EQUIPMENT BY THE STRUCTURAL ENGINEER OF RECORD IS PROHIBITED.

14. (NOTE REMOVED)

15. (NOTE REMOVED)

16. INSTALLATION ONTO A STEEL ROOF STRUCTURE OR MANUFACTURED STEEL CURB SHALL BE COORDINATED WITH THE STRUCTURAL ENGINEER OF RECORD.

17. (NOTE REMOVED)

18. CONNECTIONS TO THE EQUIPMENT, INCLUDING BUT NOT LIMITED TO CONDUIT, WIRING FROM CABLE TRAYS, OTHER ELECTRICAL SERVICES OR OTHER CONNECTIONS, ARE THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR AND BEYOND THE SCOPE OF THIS DOCUMENT. FLEXIBLE ATTACHMENTS MUST BE USED FOR SEISMIC CONNECTIONS TO ISOLATED COMPONENTS OR ISOLATED EQUIPMENT. THE FLEXIBLE ATTACHMENT MUST PROVIDE FOR ENOUGH RELATIVE DISPLACEMENT TO REMAIN CONNECTED TO THE EQUIPMENT AND FUNCTIONAL DURING AND AFTER A SEISMIC EVENT.

-THIS IS A CONTROLLED ITEM-
PER CPG PROCEDURE FRE-1002
TO MAINTAIN COMPLIANCE WITH REQUIREMENTS OF THE CODES, STANDARDS, OR AGENCIES LISTED BELOW
☐ CSA ☐ UL ☐ CE ☐ RVIA ☐ ABYC
☒ IBC ☒ OTHER OSHPD ☐ OTHER
CHANGES, DEVIATIONS, OR SUBSTITUTIONS OF MATERIAL, PROCESS, OR PERFORMANCE FOR THIS ITEM MUST BE APPROVED BY THE FOLLOWING CONTROLLED ITEM APPROVER
RESPONSIBLE C/A ROLE SEISMIC
RESPONSIBLE C/A ROLE
RESPONSIBLE C/A ROLE

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DIM: X ± 1; .X ± 0.8; .XX ± 0.38
HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13
ANG TOL: ± 1.0°
SCALE: 1/1
SIM TO NONE
DO NOT SCALE PRINT
- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP
DRN T_ABEL
CKD T_SORENSON
APVD D_GILLETT
DATE 18JAN13
FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994
FIRST USED ON ALL
SITE CODE PGF
CUMMINS POWER GENERATION
INSTALLATION, GENSET
SEISMIC REQUIREMENTS
DWG SIZE D
A044H911
SHEET 1 OF 7
DWG REV F

Drawing Name: A044H912 Revision: F
Part Name: A044H911 Revision: F
Sheet 1 of 8

PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-142491	F	1	UPDATED DRAWING-SEE ECO	PT	NK	D.GILLETT	27MAR14

GRADE MOUNTED GENERATOR SETS

CUMMINS GENSET MODEL	CONFIGURATION	ATTACHMENT TO STEEL		ATTACHMENT TO CONCRETE					
		EVALUATION PARAMETERS	STEEL BOLTS	EVALUATION PARAMETERS	CONCRETE ANCHORS	ANCHOR EMBEDMENT	ANCHOR SPACING	DISTANCE TO NEAREST EDGE	CONCRETE SLAB THICKNESS
C20 N6 C22 N6 C25 N6 C30 N6 C36 N6 C40 N6 C30 N6H C36 N6H C40 N6H C45 N6H C50 N6H C60 N6H	GENERATOR SET WITH OR WITHOUT ENCLOSURE	CBC 2013/IBC 2012 Sds <= 2.5 Ip <= 1.5 ap/Rp <= 2.5/2.0 z/h = 0	(QTY 4) 5/8" DIAMETER ASTM 307 BOLTS WITH WASHER THROUGH THE BASE RAIL MOUNTING HOLES.	CBC 2013/IBC 2012 Sds <= 2.5 Ip <= 1.5 ap/Rp <= 2.5/2.0 z/h = 0 Ω = 2.5	(QTY 4) 5/8" DIAMETER HILTI KB-TZ EXPANSION ANCHORS (ICC-ESR-1917) WITH WASHERS THROUGH BASE RAIL MOUNTING HOLES.	3-1/8" MINIMUM	4-3/4" MINIMUM	6" MINIMUM	5" MINIMUM

ROOF MOUNTED GENERATOR SETS

CUMMINS GENSET MODEL	CONFIGURATION	ATTACHMENT TO STEEL	
		EVALUATION PARAMETERS	STEEL BOLTS
C20 N6 C22 N6 C25 N6 C30 N6 C36 N6 C40 N6 C30 N6H C36 N6H C40 N6H C45 N6H C50 N6H C60 N6H	GENERATOR SET WITH OR WITHOUT ENCLOSURE	CBC 2013/IBC 2012 Sds <= 2.5 Ip <= 1.5 ap/Rp <= 2.5/2.0 z/h <= 1	(QTY 4) 5/8" DIAMETER ASTM 307 BOLTS WITH WASHERS THROUGH THE BASE RAIL MOUNTING HOLES.

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DIM: X ± 1; .X ± 0.8; .XX± 0.38
HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13
ANG TOL: ± 1.0° SCALE: 1/1
SIM TO NONE
DO NOT SCALE PRINT
- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP
DRN T_ABEL
CKD T_SORENSON
APVD D_GILLETT
DATE 18JAN13
FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994
FIRST USED ON ALL
SITE CODE PGF
CUMMINS POWER GENERATION
INSTALLATION, GENSET
SEISMIC REQUIREMENTS
DWG SIZE D | A044H911 | SHEET 2 of 7 | DWG REV F

PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	DRW	CKD	APVD	DATE
ECO-142491	F	1	UPDATED DRAWING-SEE ECO	PT	NK	D.GILLETT	27MAR14

GRADE MOUNTED GENERATOR SETS

CUMMINS GENSET MODEL	CONFIGURATION	ATTACHMENT TO STEEL		ATTACHMENT TO CONCRETE					
		EVALUATION PARAMETERS	STEEL BOLTS	EVALUATION PARAMETERS	CONCRETE ANCHORS	ANCHOR EMBEDMENT	ANCHOR SPACING	DISTANCE TO NEAREST EDGE	CONCRETE SLAB THICKNESS
C10 D6 C15 D6 C20 D6 C25 D6 C30 D6 C35 D6 C40 D6 C50 D6 C60 D6	GENERATOR SET WITH OR WITHOUT ENCLOSURE NO FUEL TANK	CBC 2013/IBC 2012 Sds <= 2.5 Ip <= 1.5 ap/Rp <= 2.5/2.0 z/h = 0	(QTY 4) 5/8" DIAMETER ASTM A490 BOLTS WITH WASHERS THROUGH BASE RAIL MOUNTING HOLES.	CBC 2013/IBC 2012 Sds <= 2.5 Ip <= 1.5 ap/Rp <= 2.5/2.0 z/h = 0 Ω = 2.5	(QTY 4) 5/8" DIAMETER HILTI KB-TZ EXPANSION ANCHORS (ICC-ESR-1917) WITH WASHERS THROUGH BASE RAIL MOUNTING HOLES.	4" MINIMUM	4.25" MINIMUM	6" MINIMUM	6" MINIMUM

ROOF MOUNTED GENERATOR SETS

CUMMINS GENSET MODEL	CONFIGURATION	ATTACHMENT TO STEEL		
		EVALUATION PARAMETERS		STEEL BOLTS
C10 D6 C15 D6 C20 D6 C25 D6 C30 D6 C35 D6 C40 D6 C50 D6 C60 D6	GENERATOR SET WITH OR WITHOUT ENCLOSURE, WITH FUEL TANK. FUEL TANKS: A045T328, A045T334, A045T336, A045T330, A045T332, A045D209	GRADE MOUNTED CBC 2013/IBC 2012 Sds <= 2.5 Ip <= 1.5 ap/Rp <= 2.5/2.0 z/h = 0	ROOF MOUNTED CBC 2013/IBC 2012 Sds <= 2.0 Ip <= 1.5 ap/Rp <= 2.5/2.0 z/h <= 1	(QTY 4) 5/8" DIAMETER ASTM A490 BOLTS WITH WASHERS THROUGH BASE RAIL MOUNTING HOLES OR FUEL TANK MOUNTING HOLES
C25 D6 C30 D6 C35 D6 C40 D6 C50 D6 C60 D6	GENERATOR SET WITH OR WITHOUT ENCLOSURE, WITH FUEL TANK. FUEL TANKS: A045T340, A045T342, A045T344, A046U786, A046U828	GRADE MOUNTED CBC 2013/IBC 2012 Sds <= 2.5 Ip <= 1.5 ap/Rp <= 2.5/2.0 z/h = 0	ROOF MOUNTED CBC 2013/IBC 2012 Sds <= 2.0 Ip <= 1.5 ap/Rp <= 2.5/2.0 z/h <= 1	(QTY 6) 5/8" DIAMETER ASTM A490 BOLTS WITH WASHERS THROUGH BASE RAIL MOUNTING HOLES OR FUEL TANK MOUNTING HOLES

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DIM: X ±1 | .X ±0.8 | .XX± 0.38
HOLE: 0.00- 4.99 +0.15/-0.08 | 5.00- 9.99 +0.20/-0.10 | 10.00-17.49 +0.25/-0.13 | 17.50-24.99 +0.30/-0.13
ANG TOL: ± 1.0° SCALE: 1/1
SIM TO NONE
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DRN T_ABEL
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APVD D_GILLETT
DATE 18JAN13
FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994
FIRST USED ON ALL
SITE CODE PGF
CUMMINS POWER GENERATION
INSTALLATION, GENSET
SEISMIC REQUIREMENTS
DWG SIZE D | A044H911 | SHEET 3 of 7 | DWG REV F

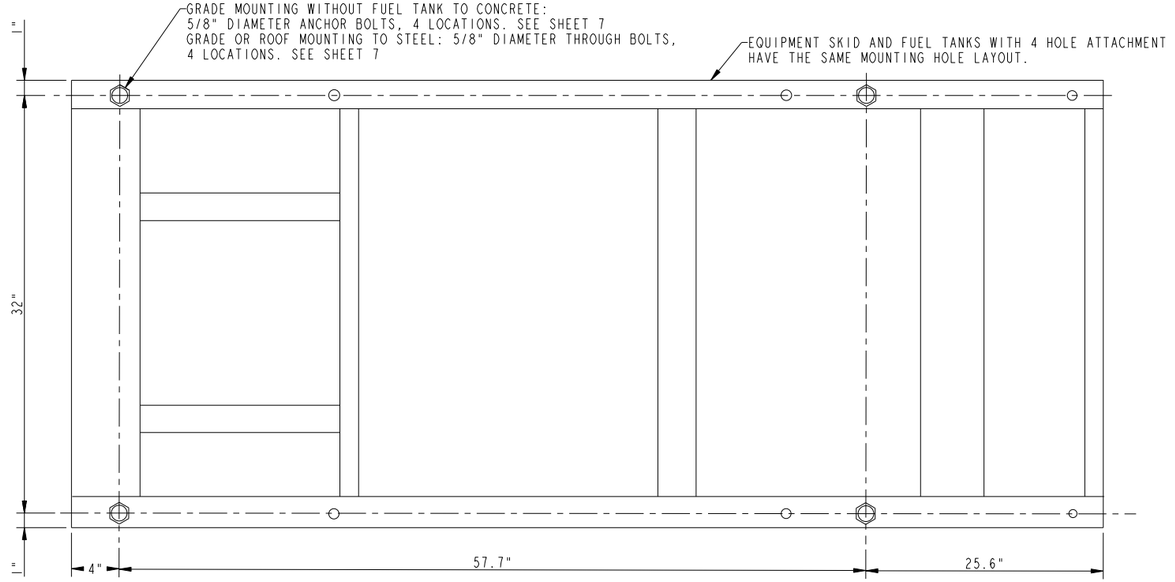
Drawing Name: A044H912 Revision: F
Part Name: A044H911 Revision: F
Sheet 3 of 8

PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-142491	F	1	UPDATED DRAWING-SEE ECO	PT	NK	D.GILLETT	27MAR14

MOUNTING HOLE LOCATIONS

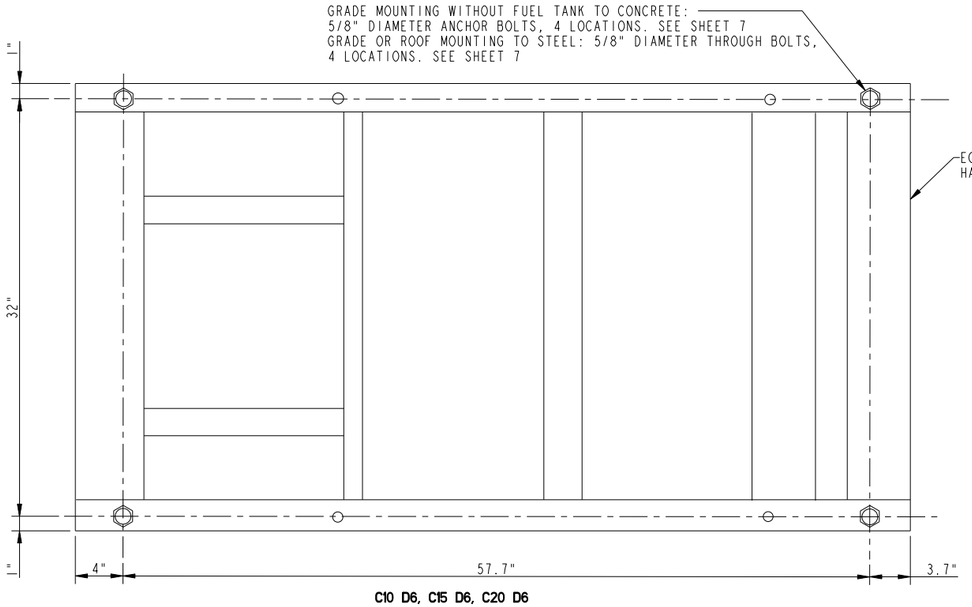
CONTROL END



C25 D6, C30 D6, C35 D6, C40 D6, C50 D6, C60 D6

MOUNTING HOLE LOCATIONS

CONTROL END



C10 D6, C15 D6, C20 D6

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM		HOLE	
	X ± 1		0.00- 4.99 +0.15/-0.08
	.X ± 0.8		5.00- 9.99 +0.20/-0.10
	.XX± 0.38		10.00-17.49 +0.25/-0.13
			17.50-24.99 +0.30/-0.13

ANG TOL: ± 1.0° | SCALE: 1/1

SIM TO NONE | DO NOT SCALE PRINT

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DRN T_ABEL | CKD T_SORENSON | APVD D_GILLETT | DATE 18JAN13

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994 | FIRST USED ON ALL

SITE CODE PGF

CUMMINS POWER GENERATION

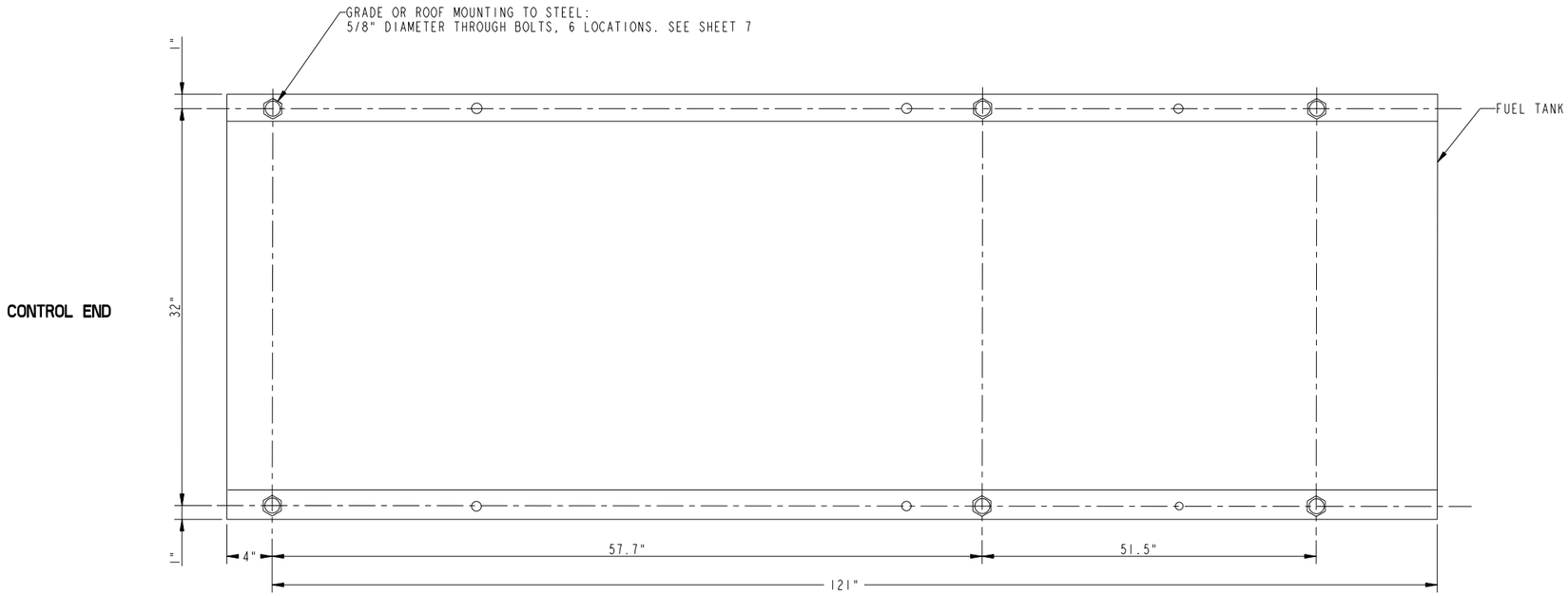
INSTALLATION, GENSET
SEISMIC REQUIREMENTS

DWG SIZE D | A044H911 | SHEET 5 of 7 | DWG REV F

PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-142491	F	2	ADD SHEET 6	PT	NK	D.GILLETT	27MAR14

MOUNTING HOLE LOCATIONS FOR FUEL TANK WITH 6 BOLTS TO MOUNTING STRUCTURE.



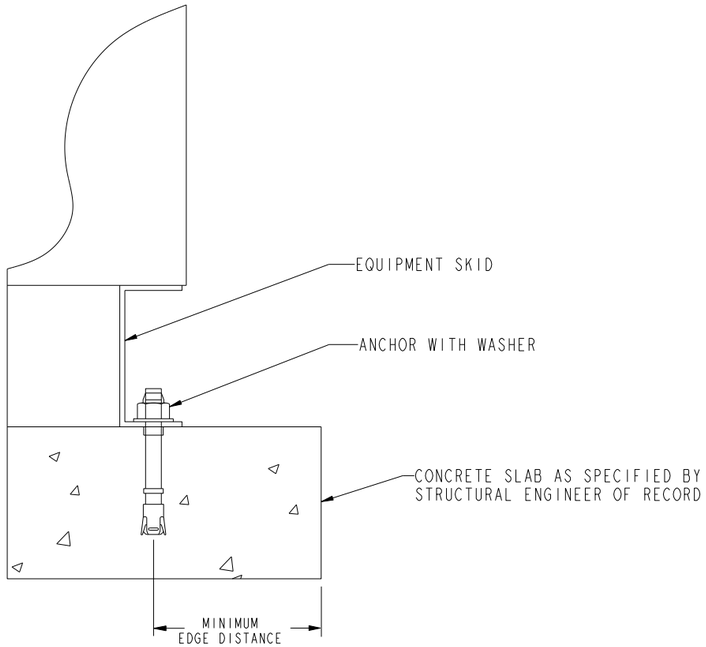
C25 D6, C30 D6, C40 D6, C50 D6, C60 D6 : FUEL TANKS WITH 6 HOLE ATTACHMENT

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS	SIM TO NONE	DRN T_ABEL	CUMMINS POWER GENERATION
DIM: X ± 1, .X ± 0.8, .XX± 0.38 — HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13	DO NOT SCALE PRINT	CKD T_SORENSON	INSTALLATION, GENSET
	- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP	APVD D_GILLETT	SEISMIC REQUIREMENTS
ANG TOL: ± 1.0°	SCALE: 1/1	DATE 18JAN13	SITE CODE PGF
		FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994 — FIRST USED ON ALL	DWG SIZE D — A044H911 — SHEET 6 of 7 — DWG REV F

Drawing Name: A044H912 Revision: F
Part Name: A044H911 Revision: F
Sheet 6 of 8

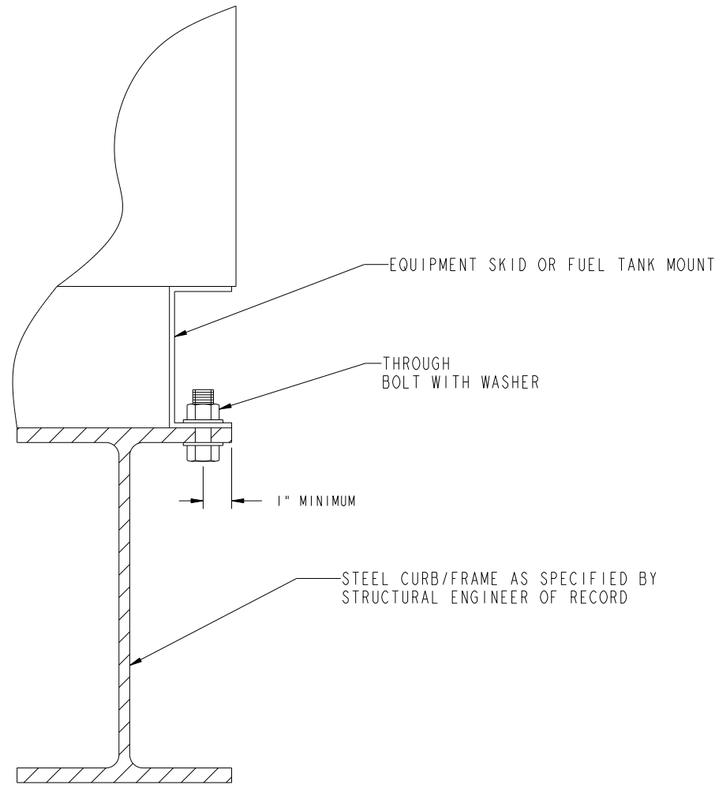
PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-142491	F	3	ADD SHEET 7	PT	NK	D.GILLETT	27MAR14



REFER TO APPLICABLE TABLE FOR ANCHOR SPECIFICATION AND LOCATION

CONCRETE CONNECTION



STEEL CONNECTION

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIN: X ± 1; .X ± 0.8; .XX± 0.38

HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13

ANG TOL: ± 1.0° SCALE: 1/1

SIM TO NONE

DO NOT SCALE PRINT

- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP

DRN T_ABEL

CKD T_SORENSON

APVD D_GILLETT

DATE 18JAN13

FOR INTERPRETATION OF DIMENSIONS AND TOLERANCING, SEE ASME Y14.5M-1994

FIRST USED ON ALL

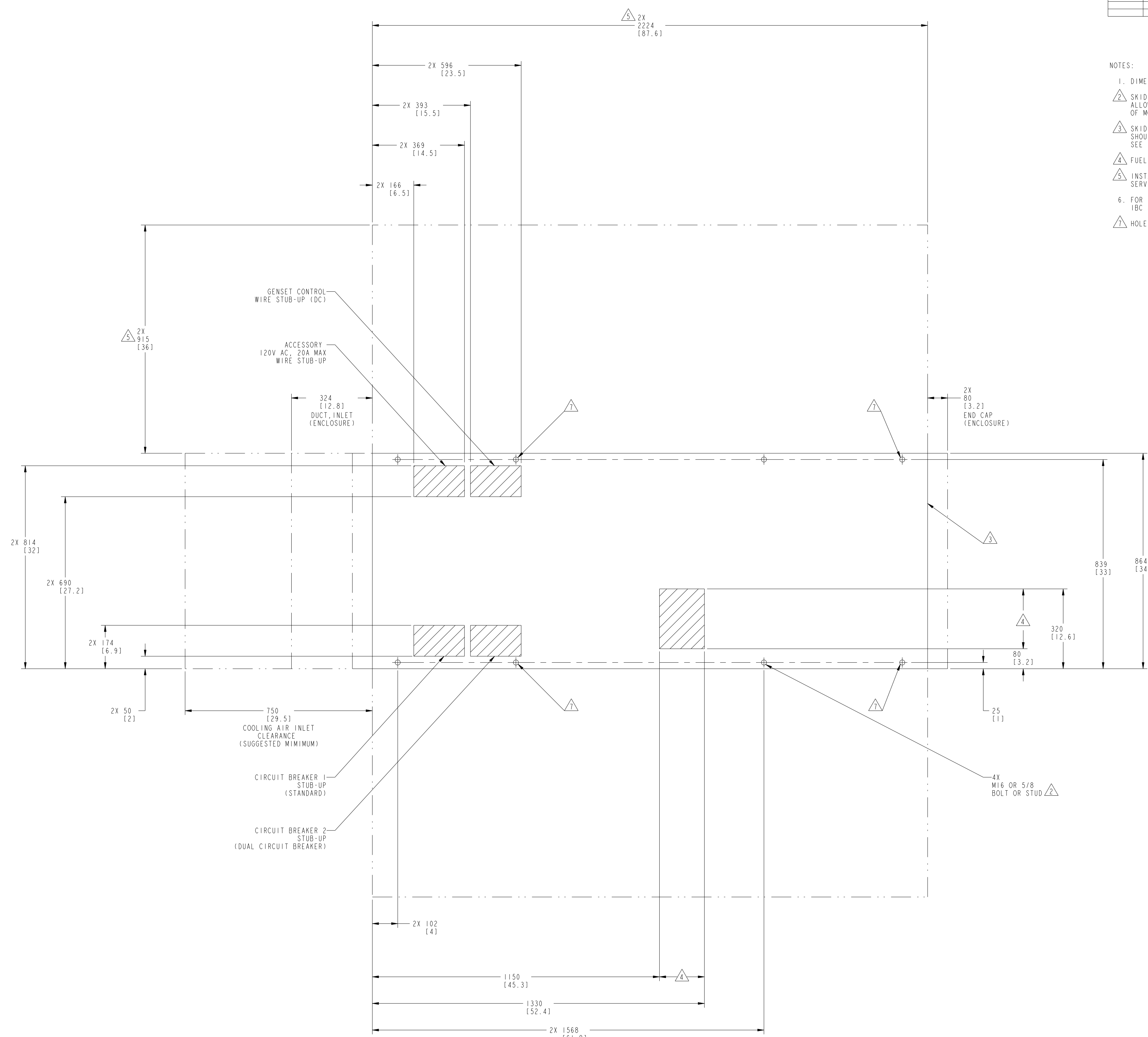
SITE CODE PGF

CUMMINS POWER GENERATION

INSTALLATION, GENSET
SEISMIC REQUIREMENTS

DWG SIZE D | A044H911 | SHEET 7 of 7 | DWG REV F

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-138607	C	1	PRODUCTION RELEASE	DKS	BVM	B.MANN	11OCT13
		2	CHANGED INCH DUAL DIMS TO 1 DECIMAL	DKS	BVM	B.MANN	11OCT13



NOTES:

1. DIMENSIONS IN [ ] ARE IN INCHES.
2. SKID-BASE HAS A FLANGE THICKNESS OF 3.42mm ALLOW EXTRA LENGTH ON HARDWARE FOR UNEVENESS OF MOUNTING SURFACE.
3. SKID-BASE PERIMETER IS SHOWN. FOUNDATION SHOULD BE EXTENDED BEYOND THIS PERIMETER. SEE (T030) APPLICATION MANUAL.
4. FUEL STUB-UP AND RETURN CLEARANCE.
5. INSTALLATION & REMOVAL LIFTING AND SERVICE ACCESS CLEARANCE (SUGGESTED MINIMUM).
6. FOR IBC SEISMIC CERTIFIED INSTALLATIONS, SEE GENSET IBC SEISMIC INSTALLATION REQUIREMENTS DRAWING.
7. HOLE NOT USED.

GENSET MODEL APPLICATION
C25 D6
C30 D6
C35 D6
C40 D6
C50 D6
C60 D6

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM: X ± 1; .X ± 0.8; .XX ± 0.38

HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13

ANG TOL: ± 1.0° SCALE: 3/16

SIM TO .

DO NOT SCALE PRINT

- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP

DWN D.SUTAR
CKD B.MANN
APVD B.MANN
DATE 31JUL13

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994

FIRST USED ON ARROW

SITE CODE PGF

CUMMINS POWER GENERATION

OUTLINE, GENSET
FOUNDATION

DWG SIZE E | A047E122 | SHEET 1 OF 1 | DWG REV C

Cable Verification Worksheet

End-to-End Attenuation (Power Meter and Light Source) Testing and OTDR Testing

Contract No. _____ Contractor: _____

Operator: _____ Date: _____

Link Number: _____ Fiber Number: _____

Test Wavelength (Circle one): 1310 nm 1550 nm

Location of fiber ends: Expected: _____ ft Actual: _____ ft

Power Meter and Light Source Test Results:

Power In:	_____ dBm	1A
Output Power:	_____ dBm	1B
Insertion Loss [1A - 1B]:	_____ dB	1C

OTDR Test Results:

Forward Loss:	_____ dB	2A
Reverse Loss:	_____ dB	2B
Average Loss [(2A + 2B)/2]:	_____ dB	2C

To Be Completed by Caltrans:

Resident Engineer's Signature: _____

Cable Link Accepted: _____

AERIALLY DEPOSITED LEAD SITE INVESTIGATION REPORT

Interstate 5 (02-SHA-5)
Post Mile 3.68 to 18.75
Shasta County, California

PREPARED FOR:

CALIFORNIA DEPARTMENT OF TRANSPORTATION – DISTRICT 3
ENVIRONMENTAL ENGINEERING OFFICE
703 B STREET
MARYSVILLE, CALIFORNIA 95901

PREPARED BY:

GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DRIVE, SUITE 800
RANCHO CORDOVA, CALIFORNIA 95742

GEOCON PROJECT NO. S9805-01-53
TASK ORDER NO. 53, EA 02-4G8401

OCTOBER 2015

GEOCON
CONSULTANTS, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. S9805-01-53
October 22, 2015

Mr. Rajive Chadha
California Department of Transportation - District 3
Environmental Engineering Office
703 B Street
Marysville, California 95901

Subject: AERIALLY DEPOSITED LEAD SITE INVESTIGATION REPORT
INTERSTATE 5 (02-SHA-5) POST MILE 3.68 TO 18.75
SHASTA COUNTY, CALIFORNIA
CONTRACT NO. 03A2132, TASK ORDER NO. 53, EA 02-4G8401

Dear Mr. Chadha:

In accordance with California Department of Transportation (Caltrans) Contract No. 03A2132, Task Order No. 53, and Expense Authorization 02-4G8401, we have performed environmental engineering services at the project site. The Site consists of unpaved shoulder areas and offramps along Interstate 5 from Post Mile 3.68 to 18.75 and State Route 299 in Shasta County, California. The accompanying report summarizes the services performed including the excavation of 45 hand-auger borings for the collection of soil samples for lead analysis.

The contents of this report reflect the views of the author, who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

Please contact us if you have any questions concerning the contents of this report or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.

Rebecca L. Silva
Project Manager

John E. Juhrend, PE, CEG
Principal/Senior Engineer

REGISTERED PROFESSIONAL ENGINEER
JOHN JUHREND
No. 46681
CIVIL
STATE OF CALIFORNIA

(2 + 2 CD) Addressee

TABLE OF CONTENTS

AERIALLY DEPOSITED LEAD SITE INVESTIGATION REPORT

1.0 INTRODUCTION

This Aerially Deposited Lead (ADL) Site Investigation Report for the Interstate 5 (I-5) Post Mile (PM) 3.68 to 18.75 project was prepared under California Department of Transportation (Caltrans) Contract No. 03A2132, Task Order (TO) No. 53, and Expense Authorization (EA) 02-4G8401.

1.1 Project Description and Proposed Improvements

The project locations consist of Caltrans right-of-way (ROW) along the shoulders and offramps of southbound (SB) I-5 and eastbound (EB) State Route 299 (SR-299) (collectively the Project Sites) in the vicinity of the following locations near Redding in Shasta County, California:

- SB I-5 offramp to State Route 273 (SR-273) – Caltrans Location Number 26;
- EB SR-299 (Lake Boulevard) near the I-5 overcrossing (OC) – Caltrans Location Number 23; and
- SB I-5 offramp to westbound (WB) State Route 44 (SR-44) – Caltrans Location Numbers 19 and 20.

Caltrans proposes roadway improvements along I-5 and SR-299. The approximate project locations are depicted on the attached Vicinity Map, Figure 1, and Site Plans, Figures 2-1 through 2-3.

1.2 General Objectives

Construction of planned roadway improvements at the Project Sites will require the disturbance of soil and may generate excess soil. The purpose of the scope of services outlined in TO No. 53 was to evaluate the Project Sites for potential impacts due to ADL from motor vehicle exhaust in the surface and near-surface soils. The investigative results will be used by Caltrans to inform the construction contractor if ADL-impacted soils are present within the project boundaries for construction worker health and safety, and soil management and disposal purposes.

2.0 BACKGROUND

Caltrans requested the site investigation to provide data regarding the potential presence of ADL in soil within the proposed roadway improvement areas.

2.1 Potential Lead Soil Impacts

Ongoing testing by Caltrans has indicated that ADL exists along major freeway routes due to emissions from vehicles powered by leaded gasoline.

2.2 Hazardous Waste Determination Criteria

Regulatory criteria to classify a waste as "California hazardous" for handling and disposal purposes are contained in the California Code of Regulations (CCR), Title 22, Division 4.5, Chapter 11, Article 3, § 66261.24. Criteria to classify a waste as "Resource, Conservation, and Recovery Act (RCRA) hazardous" are contained in Chapter 40 of the Code of Federal Regulations (40 CFR), § 261.

For waste containing metals, the waste is classified as California hazardous when: 1) the representative total metal content equals or exceeds the respective Total Threshold Limit Concentration (TTLC); or 2) the representative soluble metal content equals or exceeds the respective Soluble Threshold Limit Concentration (STLC) based on the standard Waste Extraction Test (WET). A waste may have the potential of exceeding the STLC when the waste's total metal content is greater than or equal to ten times the respective STLC value, since the WET uses a 1:10 dilution ratio. Hence, when a total metal is detected at a concentration greater than or equal to ten times the respective STLC, and assuming that 100 percent of the total metals are soluble, soluble metal analysis is required. A material is classified as RCRA hazardous, or Federal hazardous, when the representative soluble metal content equals or exceeds the Federal regulatory level based on the Toxicity Characteristic Leaching Procedure (TCLP).

The above regulatory criteria are based on chemical concentrations. Wastes may also be classified as hazardous based on other criteria such as ignitability and corrosivity; however, for the purposes of this investigation, toxicity (i.e., representative lead concentrations) is the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for ignitability or corrosivity. Waste that is classified as either California-hazardous or RCRA-hazardous requires management as a hazardous waste.

The Department of Toxic Substances Control (DTSC) regulates and interprets hazardous waste laws in California. DTSC generally considers excavated or transported materials that exhibit "hazardous waste" characteristics to be a 'waste' requiring proper management, treatment and disposal. Soil that contains lead above hazardous waste thresholds and is left in-place would not be necessarily classified by DTSC as a 'waste.' The DTSC has provided site-specific determinations that "movement of wastes within an area of contamination does not constitute 'land disposal' and, thus, does not trigger hazardous waste disposal requirements." Therefore, lead-impacted soil that is scarified in-place, moisture-conditioned, and recompacted during roadway improvement activities might not be considered a 'waste.' DTSC should be consulted to confirm waste classification. It is noted that in addition to DTSC regulations, health and safety requirements and other local agency requirements may also apply to the handling and disposal of lead-impacted soil.

3.0 SCOPE OF SERVICES

The scope of services requested by Caltrans in TO No. 53 included the collection of soil samples for laboratory analysis to determine lead content and the preparation of this report.

3.1 Pre-field Activities

- Retained the services of Advanced Technologies Laboratories (ATL), a Caltrans-approved and California-certified analytical laboratory, to perform the chemical analysis of soil samples.
- Provided 48-hour notification to Underground Service Alert (USA) prior to job site mobilization (USA Ticket Nos. 441029, 441083, 441173, and 441197).

3.2 Field Activities

On September 16 and 17, 2015, 107 soil samples were collected from 45 hand-auger borings located along SB I-5 and EB SR-299. The soil borings were advanced to a maximum sampling depth of 4 feet. Soil samples were collected at depth intervals of 0 to 1 foot, 1 to 2 feet, 2 to 3 feet, and 3 to 4 feet.

The sample locations were selected in the field by the Caltrans Task Order manager. Details of the field activities are presented in the following sections.

4.0 INVESTIGATIVE METHODS

4.1 Soil Sampling Procedures

The following borings were advanced along the shoulders and offramps approximately 3 to 5 feet from the edge of pavement. The boring locations were spaced at approximate 75- to 100-foot intervals. The approximate boring locations are depicted on Figures 2-1 through 2-3.

- Borings B1 through B15 were advanced along the shoulder and offramp of SB I-5 at the SR-273 junction;
- Borings B16 through B30 were advanced along a bicycle path on the south side of SR-299 near the I-5 OC; and
- Borings B31 through B45 were advanced along the shoulder and offramp of SB I-5 at the WB SR-44 junction.

A total of 107 soil samples were collected from 45 borings at the Project Sites for lead analysis. Soil samples were collected using a hand-auger, and the soil samples were transferred to labeled Ziploc® re-sealable plastic bags. The soil samples were then homogenized in the field and subsequently placed in an ice chest, and delivered to ATL for analytical testing under chain-of-custody (COC) documentation. Following sample collection, the borings were backfilled with excess soil cuttings. Soil types were noted on the daily field log.

The coordinates of the boring locations were determined using a differential global positioning system (GPS) except borings B10, B12, B28, B29 and B45. The GPS was utilized during the field activities to locate the horizontal position of the boring locations with an error of no more than 3.3 feet. The latitude and longitude of the boring locations are summarized in Table 1.

4.2 Quality Assurance/Quality Control (QA/QC) Procedures

QA/QC procedures were performed during the field exploration activities. These procedures included the decontamination of sampling equipment before each sample was collected and providing COC documentation for each sample submitted to the laboratory. The soil sampling equipment was cleansed between borings by washing the equipment with an Alconox® solution followed by a double rinse with purified water. The decontamination water was discharged to the ground surface within the Caltrans ROW, away from the roadway and storm drain inlets.

4.3 Laboratory Analyses

The soil samples collected within the project boundaries were submitted to ATL for the following analyses under expedited 5-day turnaround time (TAT). The laboratory was instructed to homogenize the soil samples prior to analysis in accordance with Contract 03A2132 requirements.

- One-hundred-seven soil samples were analyzed for total lead following United States Environmental Protection Agency (EPA) Test Method 6010B.
- Twenty-five soil samples were further analyzed for WET soluble lead following EPA Test Method 7420.
- Four soil samples were analyzed for TCLP soluble lead following EPA Test Method 7420.

QA/QC procedures were performed by ATL as applicable for each method of analysis with specificity for each analyte listed in the test method's QA/QC. QA/QC measures for the lead analysis included the following:

- One method blank for every ten samples, batch of samples or type of matrix, whichever was more frequent.
- One sample analyzed in duplicate for every ten samples, batch of samples or type of matrix, whichever was more frequent.
- One spiked sample for every ten samples, batch of samples or type of matrix, whichever was more frequent, with the spike made at ten times the detection limit or at the analyte level.

Prior to submitting the samples to the laboratory, the COC documentation was reviewed for accuracy and completeness. Copies of the laboratory reports and COC documentation are presented in Appendix A.

5.0 FIELD OBSERVATIONS AND INVESTIGATIVE RESULTS

5.1 Soil Description

Soil encountered during the excavation of borings generally consisted of silt with gravel and cobbles to the maximum sampling depth of 4 feet at the I-5/SR-273 junction. Soil encountered in the borings advanced along SR-299 near I-5 generally consisted of silt to clayey silt with gravel and cobbles to the maximum sampling depth of 4 feet. Soil encountered in the borings advanced at the I-5/SR-44 junction generally consisted of silt with gravel and cobbles to the maximum sampling depth of 3 feet. Refusal conditions were encountered in each boring at the I-5/SR-44 location; therefore, samples could not be collected to a depth of 4 feet. Groundwater was not encountered in the soil borings.

5.2 Soil Analytical Results

5.2.1 I-5/SR-173

Total lead was detected in the 47 soil samples analyzed at concentrations ranging from 3.1 to 160 milligrams per kilogram (mg/kg). Thirteen of the 47 soil samples with total lead concentrations greater than or equal to 50 mg/kg (i.e., ten times the lead STLC of 5.0 milligrams per liter [mg/l]) were analyzed for WET soluble lead. Two of the 47 soil samples were further analyzed for TCLP soluble lead.

WET soluble lead was detected in each of the 13 soil samples analyzed at concentrations ranging from 1.6 to 6.6 mg/l.

TCLP soluble lead was detected in both of the soil samples analyzed at concentrations of 0.091 and 0.22 mg/l, less than the Federal RCRA hazardous waste threshold for lead of 5.0 mg/l.

5.2.2 I-5/SR-299

Total lead was detected in the 33 soil samples analyzed at concentrations ranging from 4.0 to 220 mg/kg. Ten of the 33 soil samples with total lead concentrations greater than or equal to 50 mg/kg were analyzed for WET soluble lead. Two of the 33 soil samples were further analyzed for TCLP soluble lead.

WET soluble lead was detected in each of the 10 soil samples analyzed at concentrations ranging from 1.1 to 13 mg/l.

TCLP soluble lead was detected in both of the soil samples analyzed at concentrations of 0.22 and 0.48 mg/l, less than the Federal RCRA hazardous waste threshold for lead of 5.0 mg/l.

5.2.3 I-5/SR-44

Total lead was detected in the 27 soil samples analyzed at concentrations ranging from 2.8 to 61 mg/kg. Two of the 27 soil samples with total lead concentrations greater than or equal to 50 mg/kg were analyzed for WET soluble lead.

WET soluble lead was detected in both of the soil samples analyzed at concentrations of 1.3 and 1.6 mg/l.

A summary of the analytical results is presented in Table 2. Copies of the laboratory reports and COC documentation are in Appendix A.

5.3 Laboratory QA/QC

We reviewed the QA/QC provided with the ATL laboratory report. The relative percent differences for some sample duplicates and matrix spike duplicates were outside acceptance criteria. Calculation is based on raw values as noted in the laboratory report. Based on the laboratory QA/QC data, no qualification of the data presented herein is necessary, and the data are of sufficient quality for the purposes of this report.

5.4 Statistical Evaluation for Lead Detected in Soil Samples

Statistical methods were applied to the total lead data to evaluate: 1) the upper confidence limits (UCL) of the arithmetic means of the total lead concentrations for each sampling depth; and 2) if an acceptable correlation between total and WET lead concentrations exists that would allow the prediction of WET lead concentrations based on the calculated UCLs.

The total lead data were grouped into three sample populations according to three project locations for statistical evaluation as described below.

- **I-5/SR-273** consists of borings B1 through B15.
- **I-5/SR-299** consists of borings B16 through B30.
- **I-5/SR-44** consists of borings B31 through B45.

5.4.1 Calculating the UCLs for the Arithmetic Mean

The upper one-sided 90% and 95% UCLs of the arithmetic mean are defined as the values that, when calculated repeatedly for randomly drawn subsets of site data, equal or exceed the true mean 90% and 95% of the time, respectively. Statistical confidence limits are the classical tool for addressing uncertainties of a distribution mean. The UCLs of the arithmetic mean concentration are used as mean concentrations because it is not possible to know the true mean due to the essentially infinite number of soil samples that could be collected from a site. The UCLs therefore account for uncertainties due to limited sampling data. As data become less limited at a site, uncertainties decrease, and the UCLs move closer to the true mean.

Non-parametric bootstrap techniques were used to calculate the UCLs. For those samples in which total lead was not detected at concentrations exceeding the laboratory reporting limit (RL), a value equal to one-half of the RL was used in the UCL calculation. The bootstrap results are in Appendix B.

The calculated UCLs and statistical results for the three sample populations are summarized in the following tables:

I-5/SR-273 (B1 through B15)

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0 to 1	74.1	79.1	57.7	3.1	160
1 to 2	38.5	41.9	26.6	4.6	130
2 to 3	44.8	49.0	30.4	4.1	130
3 to 4	9.6	10.1	8.0	4.5	12

mg/kg = milligrams per kilogram

The total lead mean (average) for the **I-5/SR-273** lead data used in the statistical analysis is 35.1 mg/kg.

I-5/SR-299 (B16 through B30)

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0 to 1	111.9	117.4	89.4	14	220
1 to 2	17.8	18.8	14.9	4.1	31
2 to 3	5.6	5.6	4.8	4.0	5.6
3 to 4	4.9	4.9	4.5	4.1	4.9

mg/kg = milligrams per kilogram

The total lead mean (average) for the **I-5/SR-299** lead data used in the statistical analysis is 47.5 mg/kg.

I-5/SR-44 (B31 through B45)

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0 to 1	26.7	28.2	20.7	2.8	61
1 to 2	17.6	18.9	12.9	4.8	42
2 to 3	4.8	4.8	4.8	4.8	4.8

mg/kg = milligrams per kilogram

The total lead mean (average) for the **I-5/SR-44** lead data used in the statistical analysis is 16.9 mg/kg.

5.5.2 Correlation of Total and Soluble Lead (WET and TCLP)

Total and corresponding soluble lead concentrations are bivariate data with a linear structure. This linear structure should allow for the prediction of soluble lead concentrations based on the UCLs calculated above in Section 5.5.1.

To estimate the degree of interrelation between total and corresponding WET soluble lead values (*x* and *y*, respectively), the *correlation coefficient [r]* is used. The correlation coefficient is a ratio that ranges from +1 to –1. A *correlation coefficient* of +1 indicates a perfect direct relationship between two variables; a *correlation coefficient* of –1 indicates that one variable changes inversely with relation to the other. Between the two extremes is a spectrum of less-than-perfect relationships, including zero, which indicates the lack of any sort of linear relationship at all.

WET Soluble Lead

The *correlation coefficient* for each population was calculated for the (*x*, *y*) data points (i.e., soil samples analyzed for both total lead [*x*] and WET soluble lead [*y*]). A *correlation coefficient* greater than or equal to 0.8 is an acceptable indicator that a correlation exists. Consequently, an acceptable *correlation coefficient* was achieved for the total and WET lead data for each population.

For the *correlation coefficient* that indicates a linear relationship between total and WET soluble lead concentrations, it is possible to compute the line of dependence or a best-fit line between the two variables. A least squares method was used to find the equation of a best-fit line (regression line) by forcing the y-intercept equal to zero since that is a known point. The equation of the regression lines for the data populations are summarized in the table below, where *x* represents total lead concentrations and *y* represents predicted WET soluble lead concentrations.

LOCATION	CORRELATION COEFFICIENT	REGRESSION LINE EQUATION
I-5/SR-273	0.8454	*y = 0.0362(x)*
I-5/SR-299	0.8845	*y = 0.0414(x)*
I-5/SR-44	0.9733	*y = 0.0257(x)*

These equations were used to estimate the expected WET soluble lead concentrations for the UCLs calculated in Section 5.4.1. Regression analysis results and scatter plots depicting the (*x*, *y*) data points along with the regression lines are in Appendix B. The 90% and 95% UCL-predicted WET soluble lead concentrations for each population are presented in Section 6.0.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Hazardous waste classification based on the 90% UCL is considered sufficient to satisfy a good faith effort as discussed in SW-846. Risk assessment characterization is typically based on the 95% UCL in accordance with the *Risk Assessment Guidance for Superfund (RAGS) Volume 1 Documentation for Exposure Assessment*. Per Caltrans, 90% UCLs are to be used to evaluate onsite reuse, and 95% UCLs are to be used to evaluate offsite reuse or disposal.

Based on the TCLP soluble lead results of less than 5.0 mg/l, soil generated at the Project Sites will not require disposal as a RCRA hazardous waste. If soil within the project limits is scarified in-place, moisture-conditioned, and recompacted during roadway improvement activities, it may not be considered a "waste."

6.1 I-5/SR-273 – Borings B1 through B15

Total lead concentrations ranged from 3.1 to 160 mg/kg with an average total lead concentration of 35.1 mg/kg. The table below summarizes the excavation scenarios, the weighted average based on the calculated total lead UCLs, and the waste classification for excavated soil within the project limits as represented by borings B1 through B15.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	95% UCL Predicted WET Lead (mg/l)	Waste Classification
0 to 1	74	2.7	79	2.9	Non-hazardous
Underlying Soil (1 to 4 feet)	31	1.1	34	1.2	Non-hazardous
0 to 2 feet	56	2.0	60	2.2	Non-hazardous
Underlying Soil (2 to 4 feet)	27	1.0	30	1.1	Non-hazardous
0 to 3 feet	52	1.9	57	2.1	Non-hazardous
Underlying Soil (3 to 4 feet)	9.6	0.3	10.1	0.4	Non-hazardous
0 to 4 feet	42	1.5	45	1.6	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal.
Predicted WET soluble lead was calculated using the equation of the regression line: $y = 0.0362x$

Based on the table above, soil excavated from the surface to a depth of 4 feet or shallower would not be classified as a California hazardous waste since the calculated 90% and 95% UCL-predicted WET soluble lead concentrations are less than the STLC for lead of 5.0 mg/l. Thus, soil excavated from the surface to a depth of 4 feet or shallower can be reused or disposed of as non-hazardous soil with respect to lead content.

6.2 I-5/SR-299 – Borings B16 through B30

Total lead concentrations ranged from 4.0 to 220 mg/kg with an average total lead concentration of 47.5 mg/kg. The table below summarizes the excavation scenarios, the weighted average based on the calculated total lead UCLs, and the waste classification for excavated soil within the project limits as represented by borings B16 through B30.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	95% UCL Predicted WET Lead (mg/l)	Waste Classification
0 to 1	112	4.6	117	4.9	Non-hazardous
Underlying Soil (1 to 4 feet)	9.4	0.4	9.8	0.4	Non-hazardous
0 to 2 feet	65	2.7	68	2.8	Non-hazardous
Underlying Soil (2 to 4 feet)	5.3	0.2	5.3	0.2	Non-hazardous
0 to 3 feet	45	1.9	47	2.0	Non-hazardous
Underlying Soil (3 to 4 feet)	4.9	0.2	4.9	0.2	Non-hazardous
0 to 4 feet	35	1.5	37	1.5	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal.
Predicted WET soluble lead was calculated using the equation of the regression line: $y = 0.0414x$

Based on the table above, soil excavated from the surface to a depth of 4 feet or shallower would not be classified as a California hazardous waste since the calculated 90% and 95% UCL-predicted WET soluble lead concentrations are less than the STLC for lead of 5.0 mg/l. Thus, soil excavated from the surface to a depth of 4 feet or shallower can be reused or disposed of as non-hazardous soil with respect to lead content.

6.3 I-5/SR-44 – Borings B31 through B45

Total lead concentrations ranged from 2.8 to 61 mg/kg with an average total lead concentration of 16.9 mg/kg. The table below summarizes the excavation scenarios, the weighted average based on the calculated total lead UCLs, and the waste classification for excavated soil within the project limits as represented by borings B31 through B45.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	95% UCL Predicted WET Lead (mg/l)	Waste Classification
0 to 1	27	0.7	28	0.7	Non-hazardous
Underlying Soil (1 to 3 feet)	11	0.3	12	0.3	Non-hazardous
0 to 2 feet	22	0.6	24	0.6	Non-hazardous
Underlying Soil (2 to 3 feet)	4.8	0.1	4.8	0.1	Non-hazardous
0 to 3 feet	16	0.4	17	0.4	Non-hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal.
Predicted WET soluble lead was calculated using the equation of the regression line: $y = 0.0257x$

Based on the table above, soil excavated from the surface to a depth of 3 feet or shallower would not be classified as a California hazardous waste since the calculated 90% and 95% UCL-predicted WET soluble lead concentrations are less than the STLC for lead of 5.0 mg/l. Thus, soil excavated from the surface to a depth of 3 feet or shallower can be reused or disposed of as non-hazardous soil with respect to lead content.

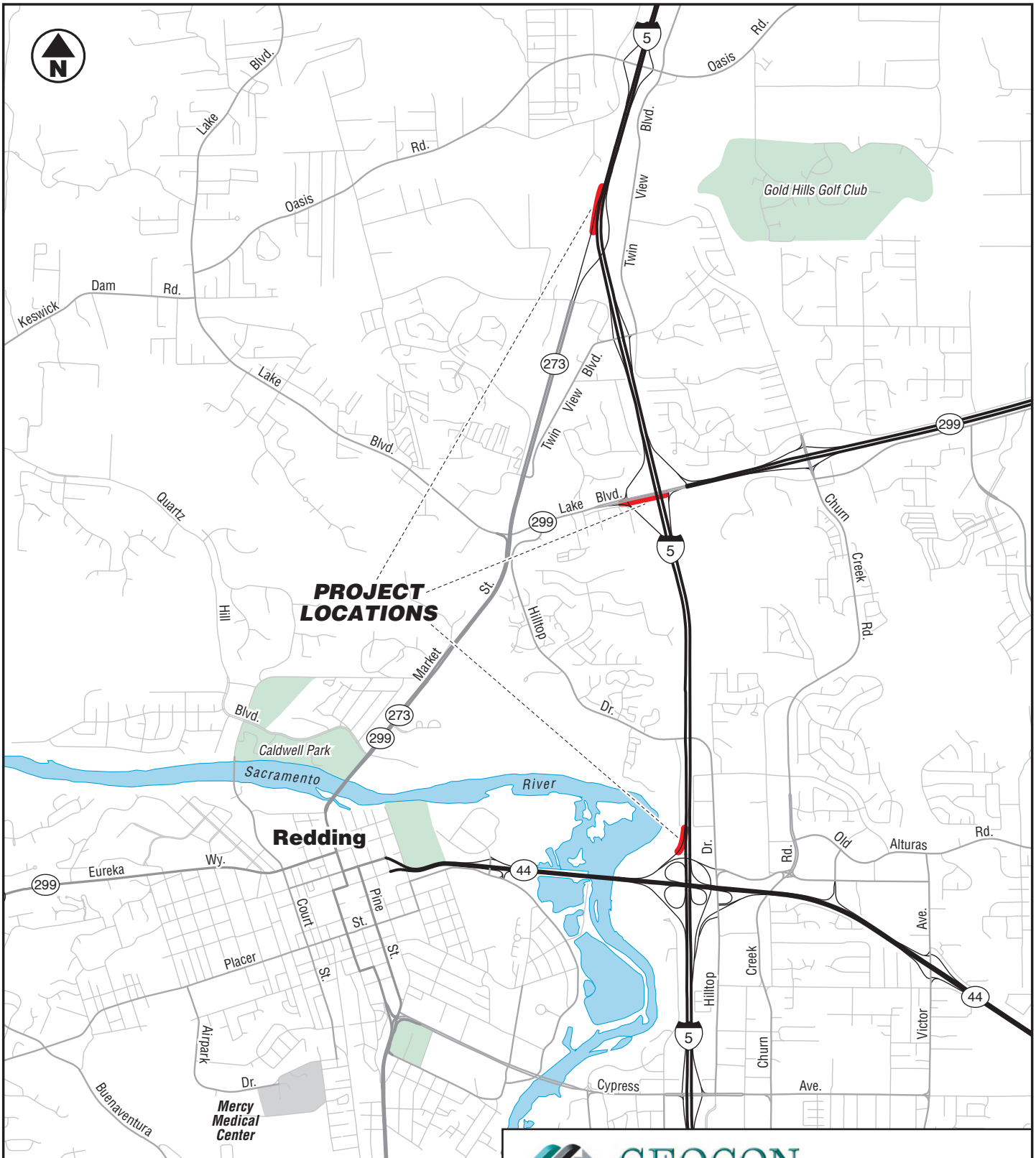
6.4 Worker Protection

The contractor(s) should prepare a project-specific Lead Compliance Plan (CCR Title 8, §1532.1, the "Lead in Construction" standard) to minimize worker exposure to lead-impacted soil. The plan should include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for the handling of lead-impacted soil.

7.0 REPORT LIMITATIONS

This report has been prepared exclusively for Caltrans. The information contained herein is only valid as of the date of the report and will require an update to reflect additional information obtained.

This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence or consultation. We strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.



GEOCON CONSULTANTS, INC.
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Interstate 5 (02-SHA-5) Post Mile 3.68 to 18.75		
Shasta County, California	**VICINITY MAP**	
GEOCON Proj. No. S9805-01-53		
Task Order No. 53	October 2015	Figure 1

LEGEND:

B15 ⊗ Approximate Boring Location

0 60
Scale in Feet

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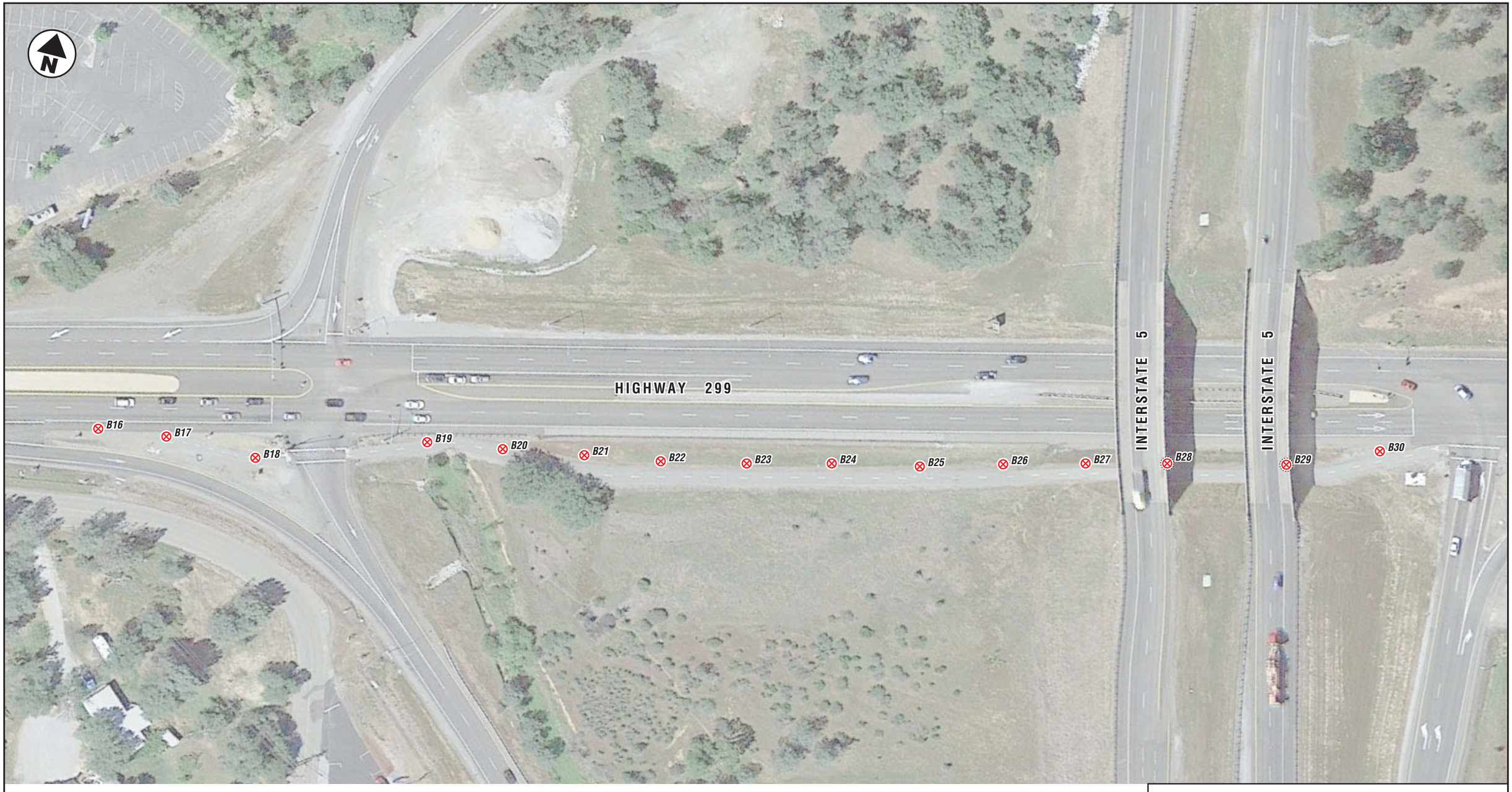
Interstate 5 (02-SHA-5) Post Mile 3.68 to 18.75

Shasta County, California	**SITE PLAN I-5 / SR-273**	
GEOCON Proj. No. S9805-01-53		
Task Order No. 53	October 2015	Figure 2-1



LEGEND:

B30 ⊗ Approximate Boring Location

⊗ Sample Collected Beneath Bridge

0 80

Scale in Feet

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Interstate 5 (02-SHA-5) Post Mile 3.68 to 18.75

Shasta County, California	**SITE PLAN I-5 / SR-299**	
GEOCON Proj. No. S9805-01-53		
Task Order No. 53	October 2015	Figure 2-2

LEGEND:

B44 ⊗ Approximate Boring Location

0 50
Scale in Feet

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Interstate 5 (02-SHA-5) Post Mile 3.68 to 18.75

Shasta County, California	**SITE PLAN I-5 / SR-44**	
GEOCON Proj. No. S9805-01-53		
Task Order No. 53	October 2015	Figure 2-3

TABLE 1
SUMMARY OF SOIL BORING COORDINATES
EA 02-4G8401
INTERSTATE 5 (02-SHA-5) POST MILE 3.68 TO 18.75
SHASTA COUNTY, CALIFORNIA

BORING ID	SAMPLE DATE	LATITUDE	LONGITUDE
B1	9/16/2015	40.632598829	-122.368623535
B2	9/16/2015	40.632465548	-122.368684204
B3	9/16/2015	40.632327111	-122.368743923
B4	9/16/2015	40.632208633	-122.368810114
B5	9/16/2015	40.632051137	-122.368877331
B6	9/16/2015	40.631914622	-122.368937156
B7	9/16/2015	40.631755989	-122.368985686
B8	9/16/2015	40.631572506	-122.369040504
B9	9/16/2015	40.631522055	-122.368856156
B10	9/16/2015	NA	NA
B11	9/16/2015	40.631149611	-122.368900211
B12	9/16/2015	NA	NA
B13	9/16/2015	40.630743339	-122.368936777
B14	9/16/2015	40.630576317	-122.369019138
B15	9/16/2015	40.630352710	-122.369014695
B16	9/16/2015	40.611575861	-122.366753486
B17	9/16/2015	40.611596379	-122.366534278
B18	9/16/2015	40.611596625	-122.366235600
B19	9/16/2015	40.611736317	-122.365702761
B20	9/16/2015	40.611763181	-122.365458589
B21	9/16/2015	40.611754971	-122.365199759
B22	9/16/2015	40.611794467	-122.364943714
B23	9/16/2015	40.611834034	-122.364666944
B24	9/16/2015	40.611890864	-122.364399953
B25	9/16/2015	40.611946549	-122.364120131
B26	9/16/2015	40.611995961	-122.363857111
B27	9/16/2015	40.612052081	-122.363603947
B28	9/16/2015	NA	NA
B29	9/16/2015	NA	NA
B30	9/16/2015	40.612239024	-122.362683540
B31	9/17/2015	40.589280180	-122.360941896
B32	9/17/2015	40.589054729	-122.360970873
B33	9/17/2015	40.588805407	-122.361016857
B34	9/17/2015	40.588573744	-122.361063967
B35	9/17/2015	40.588326745	-122.361154452
B36	9/17/2015	40.588115544	-122.361255857
B37	9/17/2015	40.587906108	-122.361367412
B38	9/17/2015	40.587699106	-122.361575068
B39	9/17/2015	40.588842436	-122.360888591
B40	9/17/2015	40.588652313	-122.360901228
B41	9/17/2015	40.588470113	-122.360940680
B42	9/17/2015	40.588282575	-122.361002712
B43	9/17/2015	40.588124018	-122.361078921
B44	9/17/2015	40.587917403	-122.361209915
B45	9/17/2015	NA	NA

Notes: NA = GPS data not available

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS
EA 02-4G8401
INTERSTATE 5 (02-SHA-5) POST MILE 3.68 TO 18.75
SHASTA COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DEPTH (feet)	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	TCLP LEAD (mg/l)
I-5/SR-273				
B1-0	0 to 1	28	---	---
B1-1	1 to 2	26	---	---
B1-2	2 to 3	8.7	---	---
B1-3	3 to 4	12	---	---
B2-0	0 to 1	53	1.6	---
B2-1	1 to 2	6.2	---	---
B2-2	2 to 3	7.2	---	---
B2-3	3 to 4	4.5	---	---
B3-0	0 to 1	93	2.8	---
B3-1	1 to 2	6.2	---	---
B3-2	2 to 3	9.1	---	---
B3-3	3 to 4	10	---	---
B4-0	0 to 1	64	2.7	---
B4-1	1 to 2	130	6.6	---
B4-2	2 to 3	83	2.2	---
B5-0	0 to 1	160	6.0	0.22
B5-1	1 to 2	9.7	---	---
B5-2	2 to 3	26	---	---
B6-0	0 to 1	3.1	---	---
B6-1	1 to 2	31	---	---
B7-0	0 to 1	4.9	---	---
B7-1	1 to 2	74	2.2	---
B7-2	2 to 3	70	2.2	---
B8-0	0 to 1	16	---	---
B8-1	1 to 2	53	2.4	---
B9-0	0 to 1	140	5.1	0.091
B9-1	1 to 2	4.7	---	---
B9-2	2 to 3	4.1	---	---
B9-3	3 to 4	5.9	---	---
B10-0	0 to 1	140	3.1	---
B10-1	1 to 2	6.2	---	---
B10-2	2 to 3	7.4	---	---
B11-0	0 to 1	61	2.1	---
B11-1	1 to 2	5.0	---	---
B11-2	2 to 3	5.8	---	---
B11-3	3 to 4	11	---	---
B12-0	0 to 1	33	---	---
B12-1	1 to 2	5.3	---	---
B12-2	2 to 3	130	5.8	---

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS
EA 02-4G8401
INTERSTATE 5 (02-SHA-5) POST MILE 3.68 TO 18.75
SHASTA COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DEPTH (feet)	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	TCLP LEAD (mg/l)
B13-0	0 to 1	20	---	---
B13-1	1 to 2	10	---	---
B13-2	2 to 3	9.3	---	---
B13-3	3 to 4	4.7	---	---
B14-0	0 to 1	27	---	---
B15-0	0 to 1	22	---	---
B15-1	1 to 2	4.6	---	---
B15-2	2 to 3	4.4	---	---
I-5/SR-299				
B16-0	0 to 1	14	---	---
B16-1	1 to 2	9.5	---	---
B17-0	0 to 1	170	5.2	---
B17-1	1 to 2	30	---	---
B18-0	0 to 1	92	2.6	---
B18-1	1 to 2	31	---	---
B19-0	0 to 1	53	1.8	---
B20-0	0 to 1	160	6.3	---
B20-1	1 to 2	17	---	---
B21-0	0 to 1	210	13	0.22
B21-1	1 to 2	15	---	---
B22-0	0 to 1	130	4.6	---
B22-1	1 to 2	22	---	---
B23-0	0 to 1	61	2.3	---
B23-1	1 to 2	17	---	---
B24-0	0 to 1	220	8.2	0.48
B24-1	1 to 2	14	---	---
B25-0	0 to 1	47	---	---
B25-1	1 to 2	24	---	---
B26-0	0 to 1	24	---	---
B26-1	1 to 2	5.3	---	---
B27-0	0 to 1	56	1.1	---
B27-1	1 to 2	8.8	---	---
B28-0	0 to 1	33	---	---
B28-1	1 to 2	6.0	---	---

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS
EA 02-4G8401
INTERSTATE 5 (02-SHA-5) POST MILE 3.68 TO 18.75
SHASTA COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DEPTH (feet)	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	TCLP LEAD (mg/l)
B29-0	0 to 1	56	2.0	---
B29-1	1 to 2	4.9	---	---
B29-2	2 to 3	5.6	---	---
B29-3	3 to 4	4.9	---	---
B30-0	0 to 1	15	---	---
B30-1	1 to 2	4.1	---	---
B30-2	2 to 3	4.0	---	---
B30-3	3 to 4	4.1	---	---
I-5/SR-44				
B31-0	0 to 1	3.4	---	---
B31-1	1 to 2	34	---	---
B32-0	0 to 1	2.8	---	---
B32-1	1 to 2	42	---	---
B33-0	0 to 1	52	1.3	---
B33-1	1 to 2	6.5	---	---
B34-0	0 to 1	31	---	---
B34-1	1 to 2	6.3	---	---
B35-0	0 to 1	7.0	---	---
B35-1	1 to 2	4.9	---	---
B36-0	0 to 1	14	---	---
B36-1	1 to 2	4.8	---	---
B37-0	0 to 1	25	---	---
B37-1	1 to 2	7.1	---	---
B38-0	0 to 1	17	---	---
B38-1	1 to 2	8.1	---	---
B38-2	2 to 3	4.8	---	---
B39-0	0 to 1	24	---	---
B39-1	1 to 2	9.6	---	---
B40-0	0 to 1	61	1.6	---
B41-0	0 to 1	8.5	---	---
B42-0	0 to 1	4.5	---	---
B42-1	1 to 2	7.2	---	---
B43-0	0 to 1	43	---	---
B43-1	1 to 2	11	---	---
B44-0	0 to 1	7.7	---	---
B45-0	0 to 1	9.7	---	---

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS
EA 02-4G8401
INTERSTATE 5 (02-SHA-5) POST MILE 3.68 TO 18.75
SHASTA COUNTY, CALIFORNIA

SAMPLE ID	SAMPLE DEPTH (feet)	TOTAL LEAD (mg/kg)	WET LEAD (mg/l)	TCLP LEAD (mg/l)

Notes:
WET = Waste Extraction Test
TCLP = Toxicity Characteristic Leaching Procedure
mg/kg = Milligrams per kilogram
mg/l = Milligrams per liter
--- = Not analyzed

APPENDIX A

ADVANCED TECHNOLOGY LABORATORIES

September 25, 2015

Rebecca Silva
Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova, CA 95742
Tel: (916) 852-9118
Fax:(916) 852-9132

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003
TCEQ No. : T104704502

Re: ATL Work Order Number : 1503238

Client Reference : I-5 Shasta ADL, S9805-01-53

Enclosed are the results for sample(s) received on September 18, 2015 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

Eddie Rodriguez
Laboratory Director

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B1-0	1503238-01	Soil	9/16/15 10:05	9/18/15 8:53
B1-1	1503238-02	Soil	9/16/15 10:07	9/18/15 8:53
B1-2	1503238-03	Soil	9/16/15 10:09	9/18/15 8:53
B1-3	1503238-04	Soil	9/16/15 10:11	9/18/15 8:53
B2-0	1503238-05	Soil	9/16/15 10:32	9/18/15 8:53
B2-1	1503238-06	Soil	9/16/15 10:37	9/18/15 8:53
B2-2	1503238-07	Soil	9/16/15 10:39	9/18/15 8:53
B2-3	1503238-08	Soil	9/16/15 10:41	9/18/15 8:53
B3-0	1503238-09	Soil	9/16/15 10:45	9/18/15 8:53
B3-1	1503238-10	Soil	9/16/15 10:47	9/18/15 8:53
B3-2	1503238-11	Soil	9/16/15 10:49	9/18/15 8:53
B3-3	1503238-12	Soil	9/16/15 10:51	9/18/15 8:53
B4-0	1503238-13	Soil	9/16/15 10:52	9/18/15 8:53
B4-1	1503238-14	Soil	9/16/15 10:54	9/18/15 8:53
B4-2	1503238-15	Soil	9/16/15 11:04	9/18/15 8:53
B5-0	1503238-16	Soil	9/16/15 11:08	9/18/15 8:53
B5-1	1503238-17	Soil	9/16/15 11:11	9/18/15 8:53
B5-2	1503238-18	Soil	9/16/15 11:14	9/18/15 8:53
B6-0	1503238-19	Soil	9/16/15 11:19	9/18/15 8:53
B6-1	1503238-20	Soil	9/16/15 11:21	9/18/15 8:53
B7-0	1503238-21	Soil	9/16/15 11:26	9/18/15 8:53
B7-1	1503238-22	Soil	9/16/15 11:30	9/18/15 8:53
B7-2	1503238-23	Soil	9/16/15 11:37	9/18/15 8:53
B8-0	1503238-24	Soil	9/16/15 11:44	9/18/15 8:53
B8-1	1503238-25	Soil	9/16/15 11:47	9/18/15 8:53
B9-0	1503238-26	Soil	9/16/15 11:57	9/18/15 8:53
B9-1	1503238-27	Soil	9/16/15 12:04	9/18/15 8:53
B9-2	1503238-28	Soil	9/16/15 12:06	9/18/15 8:53
B9-3	1503238-29	Soil	9/16/15 12:08	9/18/15 8:53
B10-0	1503238-30	Soil	9/16/15 12:14	9/18/15 8:53
B10-1	1503238-31	Soil	9/16/15 12:16	9/18/15 8:53
B10-2	1503238-32	Soil	9/16/15 12:18	9/18/15 8:53
B11-0	1503238-33	Soil	9/16/15 12:23	9/18/15 8:53
B11-1	1503238-34	Soil	9/16/15 12:25	9/18/15 8:53

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

B11-2	1503238-35	Soil	9/16/15 12:27	9/18/15 8:53
B11-3	1503238-36	Soil	9/16/15 12:29	9/18/15 8:53
B12-0	1503238-37	Soil	9/16/15 12:49	9/18/15 8:53
B12-1	1503238-38	Soil	9/16/15 12:53	9/18/15 8:53
B12-2	1503238-39	Soil	9/16/15 12:55	9/18/15 8:53
B13-0	1503238-40	Soil	9/16/15 13:05	9/18/15 8:53
B13-1	1503238-41	Soil	9/16/15 13:08	9/18/15 8:53
B13-2	1503238-42	Soil	9/16/15 13:09	9/18/15 8:53
B13-3	1503238-43	Soil	9/16/15 13:11	9/18/15 8:53
B14-0	1503238-44	Soil	9/16/15 13:26	9/18/15 8:53
B15-0	1503238-45	Soil	9/16/15 13:33	9/18/15 8:53
B15-1	1503238-46	Soil	9/16/15 13:42	9/18/15 8:53
B15-2	1503238-47	Soil	9/16/15 13:44	9/18/15 8:53
B16-0	1503238-48	Soil	9/16/15 14:03	9/18/15 8:53
B16-1	1503238-49	Soil	9/16/15 14:05	9/18/15 8:53
B17-0	1503238-50	Soil	9/16/15 14:16	9/18/15 8:53
B17-1	1503238-51	Soil	9/16/15 14:18	9/18/15 8:53
B18-0	1503238-52	Soil	9/16/15 14:29	9/18/15 8:53
B18-1	1503238-53	Soil	9/16/15 14:34	9/18/15 8:53
B19-0	1503238-54	Soil	9/16/15 14:43	9/18/15 8:53
B20-0	1503238-55	Soil	9/16/15 14:53	9/18/15 8:53
B20-1	1503238-56	Soil	9/16/15 15:01	9/18/15 8:53
B21-0	1503238-57	Soil	9/16/15 15:15	9/18/15 8:53
B21-1	1503238-58	Soil	9/16/15 15:20	9/18/15 8:53
B22-0	1503238-59	Soil	9/16/15 15:33	9/18/15 8:53
B22-1	1503238-60	Soil	9/16/15 15:40	9/18/15 8:53
B23-0	1503238-61	Soil	9/16/15 15:47	9/18/15 8:53
B23-1	1503238-62	Soil	9/16/15 15:50	9/18/15 8:53
B24-0	1503238-63	Soil	9/16/15 16:00	9/18/15 8:53
B24-1	1503238-64	Soil	9/16/15 16:05	9/18/15 8:53
B25-0	1503238-65	Soil	9/16/15 16:14	9/18/15 8:53
B25-1	1503238-66	Soil	9/16/15 16:17	9/18/15 8:53
B26-0	1503238-67	Soil	9/16/15 16:32	9/18/15 8:53
B26-1	1503238-68	Soil	9/16/15 16:36	9/18/15 8:53
B27-0	1503238-69	Soil	9/16/15 16:45	9/18/15 8:53
B27-1	1503238-70	Soil	9/16/15 16:49	9/18/15 8:53
B28-0	1503238-71	Soil	9/16/15 17:03	9/18/15 8:53
B28-1	1503238-72	Soil	9/16/15 17:07	9/18/15 8:53
B29-0	1503238-73	Soil	9/16/15 17:19	9/18/15 8:53

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

B29-1	1503238-74	Soil	9/16/15 17:22	9/18/15 8:53
B29-2	1503238-75	Soil	9/16/15 17:24	9/18/15 8:53
B29-3	1503238-76	Soil	9/16/15 17:26	9/18/15 8:53
B30-0	1503238-77	Soil	9/16/15 17:32	9/18/15 8:53
B30-1	1503238-78	Soil	9/16/15 17:37	9/18/15 8:53
B30-2	1503238-79	Soil	9/16/15 17:38	9/18/15 8:53
B30-3	1503238-80	Soil	9/16/15 17:39	9/18/15 8:53
B31-0	1503238-81	Soil	9/17/15 6:49	9/18/15 8:53
B31-1	1503238-82	Soil	9/17/15 6:52	9/18/15 8:53
B32-0	1503238-83	Soil	9/17/15 7:01	9/18/15 8:53
B32-1	1503238-84	Soil	9/17/15 7:04	9/18/15 8:53
B33-0	1503238-85	Soil	9/17/15 7:18	9/18/15 8:53
B33-1	1503238-86	Soil	9/17/15 7:25	9/18/15 8:53
B34-0	1503238-87	Soil	9/17/15 7:29	9/18/15 8:53
B34-1	1503238-88	Soil	9/17/15 7:35	9/18/15 8:53
B35-0	1503238-89	Soil	9/17/15 7:53	9/18/15 8:53
B35-1	1503238-90	Soil	9/17/15 7:57	9/18/15 8:53
B36-0	1503238-91	Soil	9/17/15 8:07	9/18/15 8:53
B36-1	1503238-92	Soil	9/17/15 8:11	9/18/15 8:53
B37-0	1503238-93	Soil	9/17/15 8:20	9/18/15 8:53
B37-1	1503238-94	Soil	9/17/15 8:24	9/18/15 8:53
B38-0	1503238-95	Soil	9/17/15 8:30	9/18/15 8:53
B38-1	1503238-96	Soil	9/17/15 8:35	9/18/15 8:53
B38-2	1503238-97	Soil	9/17/15 8:37	9/18/15 8:53
B39-0	1503238-98	Soil	9/17/15 8:48	9/18/15 8:53
B39-1	1503238-99	Soil	9/17/15 8:52	9/18/15 8:53
B40-0	1503238-AA	Soil	9/17/15 9:00	9/18/15 8:53
B41-0	1503238-AB	Soil	9/17/15 9:07	9/18/15 8:53
B42-0	1503238-AC	Soil	9/17/15 9:15	9/18/15 8:53
B42-1	1503238-AD	Soil	9/17/15 9:23	9/18/15 8:53
B43-0	1503238-AE	Soil	9/17/15 9:27	9/18/15 8:53
B43-1	1503238-AF	Soil	9/17/15 9:31	9/18/15 8:53
B44-0	1503238-AG	Soil	9/17/15 9:45	9/18/15 8:53
B45-0	1503238-AH	Soil	9/17/15 9:55	9/18/15 8:53

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

Lead by ICP-AES EPA 6010B

Analyte: Lead **Analyst: RR**

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1503238-01	B1-0	**28**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:34	
1503238-02	B1-1	**26**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:35	
1503238-03	B1-2	**8.7**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:35	
1503238-04	B1-3	**12**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:36	
1503238-05	B2-0	**53**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:37	
1503238-06	B2-1	**6.2**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:38	
1503238-07	B2-2	**7.2**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:38	
1503238-08	B2-3	**4.5**	mg/kg	0.99	1	B5I0488	09/23/2015	09/24/15 09:25	
1503238-09	B3-0	**93**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:42	
1503238-10	B3-1	**6.2**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:43	
1503238-11	B3-2	**9.1**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:45	
1503238-12	B3-3	**10**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:46	
1503238-13	B4-0	**64**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:46	
1503238-14	B4-1	**130**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:47	
1503238-15	B4-2	**83**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:48	
1503238-16	B5-0	**160**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:51	
1503238-17	B5-1	**9.7**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:51	
1503238-18	B5-2	**26**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:52	
1503238-19	B6-0	**3.1**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:53	
1503238-20	B6-1	**31**	mg/kg	1.0	1	B5I0488	09/23/2015	09/24/15 08:54	
1503238-21	B7-0	**4.9**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:02	
1503238-22	B7-1	**74**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:03	
1503238-23	B7-2	**70**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:04	
1503238-24	B8-0	**16**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:04	
1503238-25	B8-1	**53**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:05	
1503238-26	B9-0	**140**	mg/kg	0.99	1	B5I0489	09/23/2015	09/24/15 09:06	
1503238-27	B9-1	**4.7**	mg/kg	0.99	1	B5I0489	09/23/2015	09/24/15 09:07	
1503238-28	B9-2	**4.1**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:26	
1503238-29	B9-3	**5.9**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:08	
1503238-30	B10-0	**140**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:11	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

Lead by ICP-AES EPA 6010B

Analyte: Lead **Analyst: RR**

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1503238-31	B10-1	**6.2**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:14	
1503238-32	B10-2	**7.4**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:14	
1503238-33	B11-0	**61**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:15	
1503238-34	B11-1	**5.0**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:16	
1503238-35	B11-2	**5.8**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:17	
1503238-36	B11-3	**11**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:17	
1503238-37	B12-0	**33**	mg/kg	0.99	1	B5I0489	09/23/2015	09/24/15 09:18	
1503238-38	B12-1	**5.3**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:21	
1503238-39	B12-2	**130**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:22	
1503238-40	B13-0	**20**	mg/kg	1.0	1	B5I0489	09/23/2015	09/24/15 09:22	
1503238-41	B13-1	**10**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:33	
1503238-42	B13-2	**9.3**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:34	
1503238-43	B13-3	**4.7**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 10:25	
1503238-44	B14-0	**27**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:35	
1503238-45	B15-0	**22**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:36	
1503238-46	B15-1	**4.6**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:37	
1503238-47	B15-2	**4.4**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:37	
1503238-48	B16-0	**14**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:38	
1503238-49	B16-1	**9.5**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:39	
1503238-50	B17-0	**170**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:42	
1503238-51	B17-1	**30**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:44	
1503238-52	B18-0	**92**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:45	
1503238-53	B18-1	**31**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:46	
1503238-54	B19-0	**53**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:47	
1503238-55	B20-0	**160**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:47	
1503238-56	B20-1	**17**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:48	
1503238-57	B21-0	**210**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:49	
1503238-58	B21-1	**15**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:52	
1503238-59	B22-0	**130**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:52	
1503238-60	B22-1	**22**	mg/kg	1.0	1	B5I0490	09/23/2015	09/24/15 09:53	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

Lead by ICP-AES EPA 6010B

Analyte: Lead **Analyst: RR**

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1503238-61	B23-0	**61**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 09:59	
1503238-62	B23-1	**17**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:03	
1503238-63	B24-0	**220**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:03	
1503238-64	B24-1	**14**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:04	
1503238-65	B25-0	**47**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:05	
1503238-66	B25-1	**24**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:06	
1503238-67	B26-0	**24**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:06	
1503238-68	B26-1	**5.3**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:07	
1503238-69	B27-0	**56**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:08	
1503238-70	B27-1	**8.8**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:09	
1503238-71	B28-0	**33**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:13	
1503238-72	B28-1	**6.0**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:14	
1503238-73	B29-0	**56**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:15	
1503238-74	B29-1	**4.9**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:15	
1503238-75	B29-2	**5.6**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:16	
1503238-76	B29-3	**4.9**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:17	
1503238-77	B30-0	**15**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:18	
1503238-78	B30-1	**4.1**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:18	
1503238-79	B30-2	**4.0**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:19	
1503238-80	B30-3	**4.1**	mg/kg	1.0	1	B5I0491	09/23/2015	09/24/15 10:22	
1503238-81	B31-0	**3.4**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 11:05	
1503238-82	B31-1	**34**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:30	
1503238-83	B32-0	**2.8**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:32	
1503238-84	B32-1	**42**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:33	
1503238-85	B33-0	**52**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:34	
1503238-86	B33-1	**6.5**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:35	
1503238-87	B34-0	**31**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:35	
1503238-88	B34-1	**6.3**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:36	
1503238-89	B35-0	**7.0**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:37	
1503238-90	B35-1	**4.9**	mg/kg	0.99	1	B5I0492	09/23/2015	09/24/15 10:38	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

Lead by ICP-AES EPA 6010B

Analyte: Lead **Analyst: RR**

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1503238-91	B36-0	**14**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:42	
1503238-92	B36-1	**4.8**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:43	
1503238-93	B37-0	**25**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:43	
1503238-94	B37-1	**7.1**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 11:06	
1503238-95	B38-0	**17**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:45	
1503238-96	B38-1	**8.1**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:46	
1503238-97	B38-2	**4.8**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 11:07	
1503238-98	B39-0	**24**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:47	
1503238-99	B39-1	**9.6**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:48	
1503238-AA	B40-0	**61**	mg/kg	1.0	1	B5I0492	09/23/2015	09/24/15 10:49	
1503238-AB	B41-0	**8.5**	mg/kg	1.0	1	B5I0493	09/23/2015	09/24/15 10:56	
1503238-AC	B42-0	**4.5**	mg/kg	1.0	1	B5I0493	09/23/2015	09/24/15 10:57	
1503238-AD	B42-1	**7.2**	mg/kg	1.0	1	B5I0493	09/23/2015	09/24/15 10:57	
1503238-AE	B43-0	**43**	mg/kg	1.0	1	B5I0493	09/23/2015	09/24/15 10:58	
1503238-AF	B43-1	**11**	mg/kg	1.0	1	B5I0493	09/23/2015	09/24/15 10:59	
1503238-AG	B44-0	**7.7**	mg/kg	1.0	1	B5I0493	09/23/2015	09/24/15 11:02	
1503238-AH	B45-0	**9.7**	mg/kg	1.0	1	B5I0493	09/23/2015	09/24/15 11:02	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

QUALITY CONTROL SECTION

Lead by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B5I0488 - EPA 3050 Modified_S									
Blank (B5I0488-BLK1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	ND	1.0			NR				
Blank (B5I0488-BLK2)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	ND	1.0			NR				
LCS (B5I0488-BS1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	48.6964	1.0	50.0000		97.4	80 - 120			
Duplicate (B5I0488-DUP1)		**Source: 1503238-20**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	24.0368	1.0		30.7031	NR		24.4	20	R
Duplicate (B5I0488-DUP2)		**Source: 1503238-10**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	6.49464	1.0		6.16946	NR		5.14	20	
Matrix Spike (B5I0488-MS1)		**Source: 1503238-20**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	254.280	1.0	250.000	30.7031	89.4	35 - 129			
Matrix Spike (B5I0488-MS2)		**Source: 1503238-10**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	223.429	1.0	250.000	6.16946	86.9	35 - 129			
Matrix Spike Dup (B5I0488-MSD1)		**Source: 1503238-20**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	28.6664	1.0	250.000	30.7031	-0.815	35 - 129	159	20	M1, R

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

Lead by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B5I0489 - EPA 3050 Modified_S									
Blank (B5I0489-BLK1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	ND	1.0			NR				
Blank (B5I0489-BLK2)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	ND	1.0			NR				
LCS (B5I0489-BS1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	48.7655	1.0	50.0000		97.5	80 - 120			
Duplicate (B5I0489-DUP1)		**Source: 1503238-40**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	18.1591	1.0		20.3821	NR		11.5	20	
Duplicate (B5I0489-DUP2)		**Source: 1503238-30**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	118.253	1.0		138.653	NR		15.9	20	
Matrix Spike (B5I0489-MS1)		**Source: 1503238-40**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	250.456	1.0	250.000	20.3821	92.0	35 - 129			
Matrix Spike (B5I0489-MS2)		**Source: 1503238-30**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	321.642	1.0	250.000	138.653	73.2	35 - 129			
Matrix Spike Dup (B5I0489-MSD1)		**Source: 1503238-40**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	241.800	1.0	250.000	20.3821	88.6	35 - 129	3.52	20	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

Lead by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B5I0490 - EPA 3050 Modified_S									
Blank (B5I0490-BLK1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	ND	1.0			NR				
Blank (B5I0490-BLK2)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	ND	1.0			NR				
LCS (B5I0490-BS1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	49.8628	1.0	50.0000		99.7	80 - 120			
Duplicate (B5I0490-DUP1)		**Source: 1503238-60**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	25.7762	1.0		21.9698	NR		15.9	20	
Duplicate (B5I0490-DUP2)		**Source: 1503238-50**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	237.289	1.0		171.124	NR		32.4	20	R
Matrix Spike (B5I0490-MS1)		**Source: 1503238-60**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	269.686	1.0	250.000	21.9698	99.1	35 - 129			
Matrix Spike (B5I0490-MS2)		**Source: 1503238-50**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	438.328	1.0	252.525	171.124	106	35 - 129			
Matrix Spike Dup (B5I0490-MSD1)		**Source: 1503238-60**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	251.982	1.0	250.000	21.9698	92.0	35 - 129	6.79	20	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

Lead by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B5I0491 - EPA 3050 Modified_S									
Blank (B5I0491-BLK1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	ND	1.0			NR				
Blank (B5I0491-BLK2)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	ND	1.0			NR				
LCS (B5I0491-BS1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	50.5764	1.0	50.0000		101	80 - 120			
Duplicate (B5I0491-DUP1)		**Source: 1503238-80**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	4.38594	1.0		4.08666	NR		7.06	20	
Duplicate (B5I0491-DUP2)		**Source: 1503238-70**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	8.17244	1.0		8.80878	NR		7.49	20	
Matrix Spike (B5I0491-MS1)		**Source: 1503238-80**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	209.216	1.0	250.000	4.08666	82.1	35 - 129			
Matrix Spike (B5I0491-MS2)		**Source: 1503238-70**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	244.306	1.0	250.000	8.80878	94.2	35 - 129			
Matrix Spike Dup (B5I0491-MSD1)		**Source: 1503238-80**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	219.092	1.0	250.000	4.08666	86.0	35 - 129	4.61	20	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

Lead by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B5I0492 - EPA 3050 Modified_S									
Blank (B5I0492-BLK1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	ND	1.0			NR				
Blank (B5I0492-BLK2)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	ND	1.0			NR				
LCS (B5I0492-BS1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	50.0608	1.0	50.0000		100	80 - 120			
Duplicate (B5I0492-DUP1)		**Source: 1503238-AA**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	83.2898	1.0		60.7459	NR		31.3	20	R
Duplicate (B5I0492-DUP2)		**Source: 1503238-90**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	7.16770	1.0		4.85274	NR		38.5	20	R
Matrix Spike (B5I0492-MS1)		**Source: 1503238-AA**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	278.680	1.0	250.000	60.7459	87.2	35 - 129			
Matrix Spike (B5I0492-MS2)		**Source: 1503238-90**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	216.461	1.0	250.000	4.85274	84.6	35 - 129			
Matrix Spike Dup (B5I0492-MSD1)		**Source: 1503238-AA**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	289.150	1.0	250.000	60.7459	91.4	35 - 129	3.69	20	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

Lead by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B5I0493 - EPA 3050 Modified_S									
Blank (B5I0493-BLK1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	ND	1.0			NR				
LCS (B5I0493-BS1)					Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	51.1052	1.0	50.0000		102	80 - 120			
Duplicate (B5I0493-DUP1)		**Source: 1503238-AH**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	7.04048	1.0		9.73490	NR		32.1	20	R
Matrix Spike (B5I0493-MS1)		**Source: 1503238-AH**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	222.912	1.0	250.000	9.73490	85.3	35 - 129			
Matrix Spike Dup (B5I0493-MSD1)		**Source: 1503238-AH**			Prepared: 9/23/2015 Analyzed: 9/24/2015				
Lead	217.166	1.0	250.000	9.73490	83.0	35 - 129	2.61	20	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 09/25/2015

Notes and Definitions

R	RPD value outside acceptance criteria. Calculation is based on raw values.
M1	Matrix spike recovery outside of acceptance limit. The analytical batch was validated by the laboratory control sample.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)
TX1	TX-NELAP (TCEQ)

Notes:
(1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
(2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
(3) Results are wet unless otherwise specified.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: ONTRAC

Sample Condition Upon Receipt:
1. CHILLED 22.C Y ☐ N ☑ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☐

Client: Geocon Consultants, Inc
Address: 3160 Gold Valley Drive, Suite 800
Tel: 916-852-9118
Attention: Rebecca Silva
City: Rancho Cordova State: CA Zip Code: 95742
Fax: 916-852-9132

Project Name: I-5 Shasta ADL Project #: S9805-01-53 Sampler: Matthew Tidwell (Signature)

Relinquished by: (Signature and Printed Name)	Date	Time	Received by: (Signature and Printed Name)	Date	Time
Matthew Tidwell Matthew Tidwell	9/17/2015	1530	ONTRAC	9/17/2015	1530
			KRISTER MANGRUM	9/18/15	08:53

I hereby authorize ATL to perform the work indicated below
Project Mgr /Submitter.
Rebecca Silva 9/17/2015
Print Name Date
Signature

Send Report To
Attn: Rebecca Silva and Rick Day
Co:
Addr:
City: State: Zip:

Bill To
Attn
Co
Addr
City: State: Zip:

Special Instructions/Comments:
Homogenize samples for lead analysis
Caltrans Contract 03A2132
5-Day TAT
Please copy Kari Cook on the results and include an excel file. Thank you. (cook@geoconinc.com)

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample: $2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX: SOIL / WATER / GROUND WATER / WASTEWATER

PRESERVATION

QA/QC: RTNE CT ✓ SWRCB Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Lab No.	Sample Description: Sample ID / Location	Date	Time	Total lead (6010B)	TAT	Container(s) #	Container(s) Type	REMARKS
	1503238-1	B1-0	9/16/15	1005	X	5-Day	1	baggie	
	-2	B1-1		1007					
	-3	B1-2		1009					
	-4	B1-3		1011					
	-5	B2-0		1032					
	-6	B2-1		1037					
	-7	B2-2		1039					
	-8	B2-3		1041					
	-9	B3-0		1045					
	-10	B3-1		1047					
	-11	B3-2		1049					
	-12	B3-3		1051					
	-13	B4-0		1052					
	-14	B4-1		1054					
	-15	B4-2		1104					
	-16	B5-0		1108					
	-17	B5-1		1111					
	-18	B5-2		1114					
	-19	B6-0		1119					
	-20	B6-1		1121					

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs B = Emergency Next Workday C = Critical 2 Workdays D = Urgent 3 Workdays E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl $N=HNO_3$ $S=H_2SO_4$ C=4°C $Z=Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y ☐ N ☑ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: Geocon Consultants, Inc
Address: 3160 Gold Valley Drive, Suite 800
Tel: 916-852-9118
Attention: Rebecca Silva
City: Rancho Cordova State: CA Zip Code: 95742
Fax: 916-852-9132

Project Name: I-5 Shasta ADL Project #: S9805-01-53 Sampler: Matthew Tidwell (Signature)

Relinquished by (Signature and Printed Name)	Date	Time	Received by (Signature and Printed Name)	Date	Time
Matthew Tidwell / Matthew Tidwell	9/16/2015	1530	Ontrae	9/17/2015	1530
Relinquished by (Signature and Printed Name)	Date	Time	Received by (Signature and Printed Name)	Date	Time
			ABLE EXPEDITING	9/18/15	0853
Relinquished by (Signature and Printed Name)	Date	Time	Received by (Signature and Printed Name)	Date	Time

I hereby authorize ATL to perform the work indicated below
Project Mgr /Submitter:
Rebecca Silva 9/17/2015
Print Name Date
Signature

Send Report To:
Attn: Rebecca Silva and Rick Day
Co: _____
Addr: _____
City: State: Zip:

Bill To:
Attn: _____
Co: _____
Addr: _____
City: State: Zip:

Special Instructions/Comments:
Homogenize samples for lead analysis
Caltrans Contract 03A2132
5-Day TAT
Please copy Kari Cook on the results and include an excel file. Thank you. (cook@geoconinc.com)

Sample/Records Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample: $2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX: SOIL / WATER / GROUND WATER / WASTEWATER

PRESERVATION

QA/QC: RTNE CT ✓ SWRCB Logcode_____ OTHER _____

ITEM	LAB USE ONLY: Lab No.	Sample Description: Sample ID / Location	Date	Time	Total lead (6010B)	TAT	Container(s) #	Container(s) Type	REMARKS
	1503237-41	B7-0	9/16/15	1126	X	5-Day	1	baggie	
	-22	B7-1		1130					
	-23	B7-2		1137					
	-24	B8-0		1144					
	-25	B8-1		1147					
	-26	B9-0		1157					
	-27	B9-1		1204					
	-28	B9-2		1206					
	-29	B9-3		1208					
	-30	B10-0		1214					
	-31	B10-1		1216					
	-32	B10-2		1218					
	-33	B11-0		1223					
	-34	B11-1		1225					
	-35	B11-2		1227					
	-36	B11-3		1229					
	-37	B12-0		1249					
	-38	B12-1		1257					
	-39	B12-2		1255					
	-40	B13-0		1305					

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs B = Emergency Next Workday C = Critical 2 Workdays D = Urgent 3 Workdays E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl $N=HNO_3$ $S=H_2SO_4$ C=4°C $Z=Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y ☐ N ☑ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: Geocon Consultants, Inc
Address: 3160 Gold Valley Drive, Suite 800
Tel: 916-852-9118
Attention: Rebecca Silva
City: Rancho Cordova State: CA Zip Code: 95742
Fax: 916-~~852-9132~~

Project Name: I-5 Shasta ADL
Project #: S9805-01-53
Sampler: Matthew T Dowell (Signature)

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Matthew T Dowell Matthew T Dowell	9/17/2015	1530	ontrac	9/17/2015	1530
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
			ARNEL MANGRUM	9/18/15	08:53
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below.
Project Mgr /Submitter:
Rebecca Silva 9/17/2015
Print Name Date
Signature

Send Report To
Attn: Rebecca Silva and Rick Day
Co:
Addr
City: State: Zip:

Bill To:
Attn:
Co:
Addr
City: State: Zip:

Special Instructions/Comments:
Homogenize samples for lead analysis
Caltrans Contract 03A2132
5-Day TAT
Please copy Kari Cook on the results and include an excel file. Thank you. (cook@geoconinc.com)

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report

Storage Fees (applies when storage is requested):
- Sample: $2.00 / sample /mo (after 45 days)
- Records: $1 /ATL workorder /mo (after 1 year)

QA / QC
RTNE CT ☑
SWRCB Logcode_____
OTHER _____
REMARKS

ITEM	LAB USE ONLY: Lab No.	Sample Description: Sample ID / Location	Date	Time	Circle or Add Analysis(es) Requested: Total lead (6010B)	SPECIFY APPROPRIATE MATRIX: SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s): #	Type	PRESERVATION
	1503237-41	B13-1	9/16/15	1308	X			X		5-Day	1	baggie	
	-42	B13-2		1309									
	-43	B13-3		1311									
	-44	B14-0		1326									
	-45	B15-0		1333									
	-46	B15-1		1342									
	-47	B15-2		1344									
	-48	B16-0		1403									
	-49	B16-1		1405									
	-50	B17-0		1416									
	-51	B17-1		1418									
	-52	B18-0		1429									
	-53	B18-1		1434									
	-54	B19-0		1443									
	-55	B20-0		1453									
	-56	B20-1		1501									
	-57	B21-0		1515									
	-58	B21-1		1520									
	-59	B22-0		1535									
	-60	B22-1		1540									

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs B = Emergency Next Workday C = Critical 2 Workdays D = Urgent 3 Workdays E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives:
H=HCl N=HNO_3 S=H_2SO_4 C=4°C
Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y ☐ N ☑ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: Geocon Consultants, Inc
Address: 3160 Gold Valley Drive, Suite 800
Tel: 916-852-9118
Attention: Rebecca Silva
City: Rancho Cordova State: CA Zip Code: 95742
Fax: 916-852-9132

Project Name: I-5 Shasta ADL Project #: S9805-01-53 Sampler: Matthew Tidwell

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Matthew Tidwell / Matthew Tidwell	9/17/2015	1530	Ontrae	9/17/2015	1530
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name) KISNER MANGHAM	Date: 9/18/15	Time: 08:57
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below.
Project Mgr /Submitter: Rebecca Silva 9/17/2015
(Print Name) (Date)
(Signature)

Send Report To
Attn: Rebecca Silva and Rick Day
Co: _____
Addr: _____
City: State: Zip:

Bill To:
Attn: _____
Co: _____
Addr: _____
City: State: Zip:

Special Instructions/Comments:
Homogenize samples for lead analysis
Caltrans Contract 03A2132
5-Day TAT
Please copy Kari Cook on the results and include an excel file. Thank you. (cook@geoconinc.com)

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):
- Sample: $2.00 / sample /mo (after 45 days)
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QA/QC: RTNE ☐ CT ☑ SWRCB Logcode: _____ OTHER: _____

ITEM	LAB USE ONLY: Lab No.	Sample Description: Sample ID / Location	Date	Time	Circle or Add Analysis(es) Requested: Total lead (6010B)	SPECIFY APPROPRIATE MATRIX: SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s): #	Type	PRESERVATION	REMARKS
	1503237-61	B23-0	9/16/15	1547	X	X				5-Day	1	baggie		
	-62	B23-1		1550										
	-63	B24-0		1600										
	-64	B24-1		1605										
	-65	B25-0		1614										
	-66	B25-1		1617										
	-67	B26-0		1652										
	-68	B26-1		1656										
	-69	B27-0		1645										
	-70	B27-1		1649										
	-71	B28-0		1703										
	-72	B28-1		1707										
	-73	B29-0		1719										
	-74	B29-1		1722										
	-75	B29-2		1724										
	-76	B29-3		1726										
	-77	B30-0		1732										
	-78	B30-1		1737										
	-79	B30-2		1738										
	-80	B30-3		1739										

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs B = Emergency Next Workday C = Critical 2 Workdays D = Urgent 3 Workdays E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl $N=HNO_3$ $S=H_2SO_4$ C=4°C $Z=Zn(AC)_2$ O=NaOH $T=Na_2S_2O_3$

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FOR LABORATORY USE ONLY

P.O. #: _____
Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y ☐ N ☑ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: Geocon Consultants, Inc
Address: 3160 Gold Valley Drive, Suite 800
Tel: 916-852-9118
Attention: Rebecca Silva
City: Rancho Cordova State: CA Zip Code: 95742
Fax: 916-852-9132
Project Name: I-5 Shasta ADL Project #: S9805-01-53
Sampler: Matthew Tidwell (Signature)

Relinquished by (Signature and Printed Name)	Date	Time	Received by (Signature and Printed Name)	Date	Time
Matthew Tidwell Matthew Tidwell	9/17/2015	1530	ontrae	9/17/2015	1530
Relinquished by (Signature and Printed Name)	Date	Time	Received by (Signature and Printed Name)	Date	Time
			Aaron Montemayor	9/18/15	08:53
Relinquished by (Signature and Printed Name)	Date	Time	Received by (Signature and Printed Name)	Date	Time

I hereby authorize ATL to perform the work indicated below
Project Mgr /Submitter:
Rebecca Silva 9/17/2015
Print Name Date
Signature

Send Report To:
Attn: Rebecca Silva and Rick Day
Co: _____
Addr: _____
City: State: Zip:

Bill To:
Attn: _____
Co: _____
Addr: _____
City: State: Zip:

Special Instructions/Comments:
Homogenize samples for lead analysis
Caltrans Contract 03A2132
5-Day TAT
Please copy Kari Cook on the results and include an excel file. Thank you. (cook@geoconinc.com)

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QA/QC: RTNE ☐ CT ☑ SWRCB Logcode _____ OTHER _____

ITEM	LAB USE ONLY Lab No	Sample Description: Sample ID / Location	Date	Time	Circle or Add Analysis(es) Requested: Total lead (6010B)	SPECIFY APPROPRIATE MATRIX: SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	1503237-01	B31-0	9/17/15	0649	X	X				5-Day	1	baggie		
	-02	B31-1		0652										
	-03	B32-0		0701										
	-04	B32-1		0704										
	-05	B33-0		0718										
	-06	B33-1		0725										
	-07	B34-0		0729										
	-08	B34-1		0735										
	-09	B35-0		0753										
	-10	B35-1		0757										
	-11	B36-0		0807										
	-12	B36-1		0811										
	-13	B37-0		0820										
	-14	B37-1		0824										
	-15	B38-0		0830										
	-16	B38-1		0835										
	-17	B38-2		0837										
	-18	B39-0		0848										
	-19	B39-1		0852										

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TAT: A = Overnight ≤ 24 hrs B = Emergency Next Workday C = Critical 2 Workdays D = Urgent 3 Workdays E = Routine 7 Workdays

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Logged By: _____ Date: _____

Method of Transport: Client ☐ ATL ☐ CA OverN ☐ FedEx ☐ Other: _____

Sample Condition Upon Receipt:
1. CHILLED Y ☑ N ☐ 4. SEALED Y ☐ N ☑
2. HEADSPACE (VOA) Y ☐ N ☐ 5. # OF SPLS MATCH COC Y ☑ N ☐
3. CONTAINER INTACT Y ☑ N ☐ 6. PRESERVED Y ☐ N ☑

Client: Geocon Consultants, Inc
Address: 3160 Gold Valley Drive, Suite 800
Tel: 916-852-9118
Attention: Rebecca Silva
City: Rancho Cordova State: CA Zip Code: 95742
Fax: 916-852-9132

Project Name: I-5 Shasta ADL
Project #: S9805-01-53
Sampler: Matthew Tidwell (Signature)

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Matthew Tidwell / Matthew Tidwell	9/17/2015	1530	ONTRAC	9/17/2015	1530
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name) FEDEX MAN EARTH	Date: 9/18/15	Time: 08:53
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

I hereby authorize ATL to perform the work indicated below.
Project Mgr /Submitter: Rebecca Silva (Print Name) 9/17/2015 (Date) (Signature)

Send Report To: Attn: Rebecca Silva and Rick Day; Co:; Addr:; City: State: Zip:

Bill To: Attn:; Co:; Addr:; City: State: Zip:

Special Instructions/Comments:
Homogenize samples for lead analysis
Caltrans Contract 03A2132
5-Day TAT
Please copy Kari Cook on the results and include an excel file. Thank you. (cook@geoconinc.com)

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Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX: SOIL / WATER / GROUND WATER / WASTEWATER

PRESERVATION

QA/QC: RTNE CT ☑; SWRCB Logcode:_____; OTHER _____

ITEM	LAB USE ONLY: Lab No.	Sample Description: Sample ID / Location	Date	Time	Total lead (6010B)	TAT	Container(s) #	Container(s) Type	REMARKS
	1503238-A	B40-0	9/17/15	0900	X	5-Day	1	baggie	
	-B	B41-0		0907					
	-C	B42-0		0915					
	-D	B42-1		0923					
	-E	B43-0		0927					
	-F	B43-1		0931					
	-G	B44-0		0945					
	-H	B45-0		0955					

KS 9/17/15

- TAT starts 8AM the following day if samples received after 3 PM

TAT: A = Overnight ≤ 24 hrs; B = Emergency Next Workday; C = Critical 2 Workdays; D = Urgent 3 Workdays; E = Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

ADVANCED TECHNOLOGY LABORATORIES

October 05, 2015

Rebecca Silva
Geocon Consultants, Inc.
3160 Gold Valley Drive, Suite 800
Rancho Cordova, CA 95742
Tel: (916) 852-9118
Fax:(916) 852-9132

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003
TCEQ No. : T104704502

Re: ATL Work Order Number : 1503238

Client Reference : I-5 Shasta ADL, S9805-01-53

Enclosed are the results for sample(s) received on September 18, 2015 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

Eddie Rodriguez
Laboratory Director

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 10/05/2015

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B2-0	1503238-05	Soil	9/16/15 10:32	9/18/15 8:53
B3-0	1503238-09	Soil	9/16/15 10:45	9/18/15 8:53
B4-0	1503238-13	Soil	9/16/15 10:52	9/18/15 8:53
B4-1	1503238-14	Soil	9/16/15 10:54	9/18/15 8:53
B4-2	1503238-15	Soil	9/16/15 11:04	9/18/15 8:53
B5-0	1503238-16	Soil	9/16/15 11:08	9/18/15 8:53
B7-1	1503238-22	Soil	9/16/15 11:30	9/18/15 8:53
B7-2	1503238-23	Soil	9/16/15 11:37	9/18/15 8:53
B8-1	1503238-25	Soil	9/16/15 11:47	9/18/15 8:53
B9-0	1503238-26	Soil	9/16/15 11:57	9/18/15 8:53
B10-0	1503238-30	Soil	9/16/15 12:14	9/18/15 8:53
B11-0	1503238-33	Soil	9/16/15 12:23	9/18/15 8:53
B12-2	1503238-39	Soil	9/16/15 12:55	9/18/15 8:53
B17-0	1503238-50	Soil	9/16/15 14:16	9/18/15 8:53
B18-0	1503238-52	Soil	9/16/15 14:29	9/18/15 8:53
B19-0	1503238-54	Soil	9/16/15 14:43	9/18/15 8:53
B20-0	1503238-55	Soil	9/16/15 14:53	9/18/15 8:53
B21-0	1503238-57	Soil	9/16/15 15:15	9/18/15 8:53
B22-0	1503238-59	Soil	9/16/15 15:33	9/18/15 8:53
B23-0	1503238-61	Soil	9/16/15 15:47	9/18/15 8:53
B24-0	1503238-63	Soil	9/16/15 16:00	9/18/15 8:53
B27-0	1503238-69	Soil	9/16/15 16:45	9/18/15 8:53
B29-0	1503238-73	Soil	9/16/15 17:19	9/18/15 8:53
B33-0	1503238-85	Soil	9/17/15 7:18	9/18/15 8:53
B40-0	1503238-AA	Soil	9/17/15 9:00	9/18/15 8:53

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 10/05/2015

TCLP Metals by ICP-AES EPA 6010B

Analyte: Lead **Analyst: RR**

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1503238-16	B5-0	**0.22**	mg/L	0.050	1	B5J0043	10/02/2015	10/02/15 13:37	
1503238-26	B9-0	**0.091**	mg/L	0.050	1	B5J0043	10/02/2015	10/02/15 13:39	
1503238-57	B21-0	**0.22**	mg/L	0.050	1	B5J0043	10/02/2015	10/02/15 13:42	
1503238-63	B24-0	**0.48**	mg/L	0.050	1	B5J0043	10/02/2015	10/02/15 13:45	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 10/05/2015

STLC Metals by ICP-AES by EPA 6010B

Analyte: Lead **Analyst: RR**

Laboratory ID	Client Sample ID	Result	Units	PQL	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1503238-05	B2-0	**1.6**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:13	
1503238-09	B3-0	**2.8**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:22	
1503238-13	B4-0	**2.7**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:24	
1503238-14	B4-1	**6.6**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:26	
1503238-15	B4-2	**2.2**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:33	
1503238-16	B5-0	**6.0**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:35	
1503238-22	B7-1	**2.2**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:37	
1503238-23	B7-2	**2.2**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:40	
1503238-25	B8-1	**2.4**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:42	
1503238-26	B9-0	**5.1**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:44	
1503238-30	B10-0	**3.1**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:51	
1503238-33	B11-0	**2.1**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 12:54	
1503238-39	B12-2	**5.8**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 13:00	
1503238-50	B17-0	**5.2**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 13:02	
1503238-52	B18-0	**2.6**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 13:05	
1503238-54	B19-0	**1.8**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 13:07	
1503238-55	B20-0	**6.3**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 13:09	
1503238-57	B21-0	**13**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 13:12	
1503238-59	B22-0	**4.6**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 13:14	
1503238-61	B23-0	**2.3**	mg/L	1.0	20	B5J0045	10/02/2015	10/02/15 13:16	
1503238-63	B24-0	**8.2**	mg/L	1.0	20	B5J0047	10/02/2015	10/02/15 12:54	
1503238-69	B27-0	**1.1**	mg/L	1.0	20	B5J0047	10/02/2015	10/02/15 13:10	
1503238-73	B29-0	**2.0**	mg/L	1.0	20	B5J0047	10/02/2015	10/02/15 13:14	
1503238-85	B33-0	**1.3**	mg/L	1.0	20	B5J0047	10/02/2015	10/02/15 13:18	
1503238-AA	B40-0	**1.6**	mg/L	1.0	20	B5J0047	10/02/2015	10/02/15 13:22	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 10/05/2015

QUALITY CONTROL SECTION

TCLP Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B5J0043 - EPA 3010A_S									
Blank (B5J0043-BLK1)					Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	ND	0.050			NR				
LCS (B5J0043-BS1)					Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	0.905136	0.050	1.00000		90.5	80 - 120			
Duplicate (B5J0043-DUP1)		**Source: 1503169-06**			Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	0.225443	0.050		0.146897	NR		42.2	20	R
Matrix Spike (B5J0043-MS1)		**Source: 1503169-06**			Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	2.25714	0.050	2.50000	0.146897	84.4	77 - 121			
Matrix Spike Dup (B5J0043-MSD1)		**Source: 1503169-06**			Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	2.24480	0.050	2.50000	0.146897	83.9	77 - 121	0.548	20	

Certificate of Analysis

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3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 10/05/2015

STLC Metals by ICP-AES by EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B5J0045 - STLC_S Extraction									
Blank (B5J0045-BLK1)					Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	ND	1.0			NR				
Blank (B5J0045-BLK2)					Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	ND	1.0			NR				
LCS (B5J0045-BS1)					Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	1.85168		2.00000		92.6	80 - 120			
Duplicate (B5J0045-DUP1)		**Source: 1503238-05**			Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	1.57140	1.0		1.56887	NR		0.161	20	
Duplicate (B5J0045-DUP2)		**Source: 1503238-26**			Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	5.04136	1.0		5.08487	NR		0.859	20	
Matrix Spike (B5J0045-MS1)		**Source: 1503238-05**			Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	3.89241		2.50000	1.56887	92.9	44 - 130			
Matrix Spike (B5J0045-MS2)		**Source: 1503238-26**			Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	7.03354		2.50000	5.08487	77.9	44 - 130			
Matrix Spike Dup (B5J0045-MSD1)		**Source: 1503238-05**			Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	3.82813		2.50000	1.56887	90.4	44 - 130	1.67	20	

Certificate of Analysis

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3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 10/05/2015

STLC Metals by ICP-AES by EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B5J0047 - STLC_S Extraction									
Blank (B5J0047-BLK1)					Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	ND	1.0			NR				
LCS (B5J0047-BS1)					Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	2.02824		2.00000		101	80 - 120			
Duplicate (B5J0047-DUP1)		**Source: 1503238-63**			Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	8.15141	1.0		8.23891	NR		1.07	20	
Matrix Spike (B5J0047-MS1)		**Source: 1503238-63**			Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	10.3449		2.50000	8.23891	84.2	44 - 130			
Matrix Spike Dup (B5J0047-MSD1)		**Source: 1503238-63**			Prepared: 10/2/2015 Analyzed: 10/2/2015				
Lead	10.2066		2.50000	8.23891	78.7	44 - 130	1.35	20	

Certificate of Analysis

Geocon Consultants, Inc.	Project Number : I-5 Shasta ADL, S9805-01-53
3160 Gold Valley Drive, Suite 800	Report To : Rebecca Silva
Rancho Cordova , CA 95742	Reported : 10/05/2015

Notes and Definitions

R	RPD value outside acceptance criteria. Calculation is based on raw values.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)
TX1	TX-NELAP (TCEQ)

Notes:
(1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
(2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
(3) Results are wet unless otherwise specified.

Diane Galvan

From: Rebecca Silva [silva@geoconinc.com]
Sent: Monday, September 28, 2015 9:49 AM
To: Diane Galvan
Subject: RE: Results/EDD/Invoice - I-5 Shasta ADL (1503238)

Hi Diane – Please run WET lead for the 25 samples with total lead > 50 mg/kg and TCLP lead for B5-0, B9-0, B21-0 and B24-0. We need these on 5-day TAT. Thanks!

APPENDIX B

TABLE
Summary of Statistical Analysis

I-5/SR-273

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 1 ft	74.1	79.1
1 to 2 ft	38.5	41.9
2 to 3 ft	44.8	49.0
3 to 4 ft	9.6	10.1

EXCAVATION SCENARIOS

	90% UCL		95% UCL	
Excavation Depth	**Total Lead (mg/kg)**	**Soluble (WET) Lead* (mg/l)**	**Total Lead (mg/kg)**	**Soluble (WET) Lead* (mg/l)**
0 to 1 ft	74	2.7	79	2.9
Underlying Soil (1 to 4 ft)	*31*	*1.1*	*34*	*1.2*
0 to 2 ft	56	2.0	60	2.2
Underlying Soil (2 to 4 ft)	*27*	*1.0*	*30*	*1.1*
0 to 3 ft	52	1.9	57	2.1
Underlying Soil (3 to 4 ft)	*9.6*	*0.3*	*10.1*	*0.4*
0 to 4 ft	42	1.5	45	1.6

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for onsite reuse; 95% UCL is applicable for offsite reuse/disposal)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.0362\,x$

TABLE
Summary of Statistical Analysis

I-5/SR-299

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 1 ft	111.9	117.4
1 to 2 ft	17.8	18.8
2 to 3 ft	5.6	5.6
3 to 4 ft	4.9	4.9

EXCAVATION SCENARIOS

	90% UCL		95% UCL	
Excavation Depth	**Total Lead (mg/kg)**	**Soluble (WET) Lead* (mg/l)**	**Total Lead (mg/kg)**	**Soluble (WET) Lead* (mg/l)**
0 to 1 ft	112	4.6	117	4.9
Underlying Soil (1 to 4 ft)	*9.4*	*0.4*	*9.8*	*0.4*
0 to 2 ft	65	2.7	68	2.8
Underlying Soil (2 to 4 ft)	*5.3*	*0.2*	*5.3*	*0.2*
0 to 3 ft	45	1.9	47	2.0
Underlying Soil (3 to 4 ft)	*4.9*	*0.2*	*4.9*	*0.2*
0 to 4 ft	35	1.5	37	1.5

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for onsite reuse; 95% UCL is applicable for offsite reuse/disposal)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line,
where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.0414\ x$

TABLE
Summary of Statistical Analysis

I-5/SR-44

TOTAL LEAD UCLs

	Total Lead (mg/kg)	
	90% UCL	**95% UCL**
0 to 1 ft	26.7	28.2
1 to 2 ft	17.6	18.9
2 to 3 ft	4.8	4.8

EXCAVATION SCENARIOS

	90% UCL		95% UCL	
Excavation Depth	**Total Lead (mg/kg)**	**Soluble (WET) Lead* (mg/l)**	**Total Lead (mg/kg)**	**Soluble (WET) Lead* (mg/l)**
0 to 1 ft	27	0.7	28	0.7
Underlying Soil (1 to 3 ft)	*11*	*0.3*	*12*	*0.3*
0 to 2 ft	22	0.6	24	0.6
Underlying Soil (2 to 3 ft)	*4.8*	*0.1*	*4.8*	*0.1*
0 to 3 ft	16	0.4	17	0.4

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for onsite reuse; 95% UCL is applicable for offsite reuse/disposal)
mg/kg = milligrams per kilogram
mg/l = milligrams per liter
* = Soluble (WET) lead concentrations are predicted using slope of regression line, where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y =$ 0.0257 x

SR273-0

Total Number of Observations	15	Number of Distinct Observations	14
Minimum	3.1	Mean	57.67
Maximum	160	Median	33
SD	52.08	Std. Error of Mean	13.45
Coefficient of Variation	0.903	Skewness	0.981
Mean of logged Data	3.562	SD of logged Data	1.164
90% Standard Bootstrap UCL	**74.14**	**95% Standard Bootstrap UCL**	**79.08**

SR273-1

Total Number of Observations	14	Number of Distinct Observations	12
Minimum	4.6	Mean	26.56
Maximum	130	Median	7.95
SD	36.53	Std. Error of Mean	9.763
Coefficient of Variation	1.375	Skewness	2.129
Mean of logged Data	2.588	SD of logged Data	1.149
90% Standard Bootstrap UCL	**38.53**	**95% Standard Bootstrap UCL**	**41.86**

SR273-2

Total Number of Observations	12	Number of Distinct Observations	12
Minimum	4.1	Mean	30.42
Maximum	130	Median	8.9
SD	41.21	Std. Error of Mean	11.9
Coefficient of Variation	1.355	Skewness	1.699
Mean of logged Data	2.668	SD of logged Data	1.212
90% Standard Bootstrap UCL	**44.8**	**95% Standard Bootstrap UCL**	**49.02**

SR273-3

Total Number of Observations	6	Number of Distinct Observations	6
Minimum	4.5	Mean	8.017
Maximum	12	Median	7.95
SD	3.363	Std. Error of Mean	1.373
Coefficient of Variation	0.419	Skewness	0.0639
Mean of logged Data	2.002	SD of logged Data	0.444
90% Standard Bootstrap UCL	**9.605**	**95% Standard Bootstrap UCL**	**10.08**

SR299-0

Total Number of Observations	15	Number of Distinct Observations	14
Minimum	14	Mean	89.4
Maximum	220	Median	56
SD	70.5	Std. Error of Mean	18.2
Coefficient of Variation	0.789	Skewness	0.8
Mean of logged Data	4.156	SD of logged Data	0.9
90% Standard Bootstrap UCL	**111.9**	**95% Standard Bootstrap UCL**	**117.4**

SR299-1

Total Number of Observations	14	Number of Distinct Observations	13
Minimum	4.1	Mean	14.9
Maximum	31	Median	14.5
SD	9.133	Std. Error of Mean	2.441
Coefficient of Variation	0.613	Skewness	0.531
Mean of logged Data	2.5	SD of logged Data	0.688
90% Standard Bootstrap UCL	**17.8**	**95% Standard Bootstrap UCL**	**18.81**

SR299-2

Total Number of Observations	2	Number of Distinct Observations	2
Minimum	4	Mean	4.8
Maximum	5.6	Median	4.8

SR299-3

Total Number of Observations	2	Number of Distinct Observations	2
Minimum	4.1	Mean	4.5
Maximum	4.9	Median	4.5

SR44-0

Total Number of Observations	15	Number of Distinct Observations	15
Minimum	2.8	Mean	20.71
Maximum	61	Median	14
SD	18.52	Std. Error of Mean	4.783
Coefficient of Variation	0.895	Skewness	1.101
Mean of logged Data	2.619	SD of logged Data	0.983
90% Standard Bootstrap UCL	**26.74**	**95% Standard Bootstrap UCL**	**28.21**

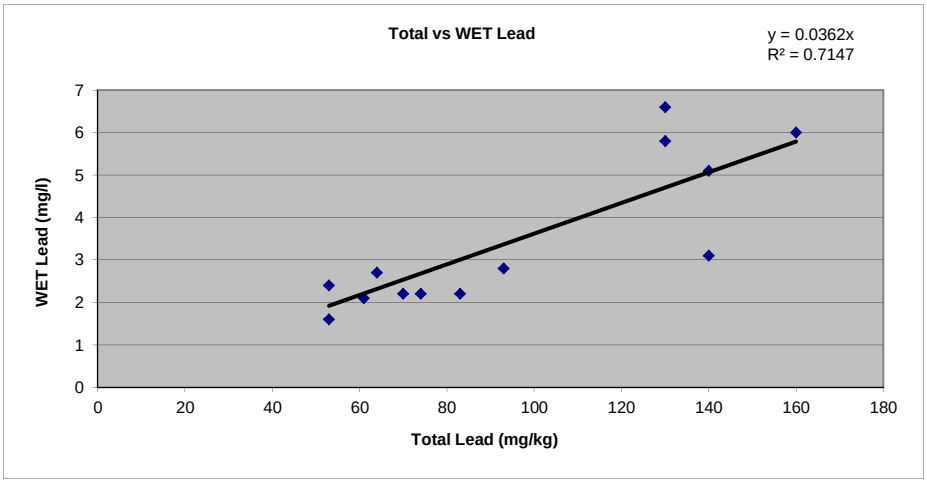
SR44-1

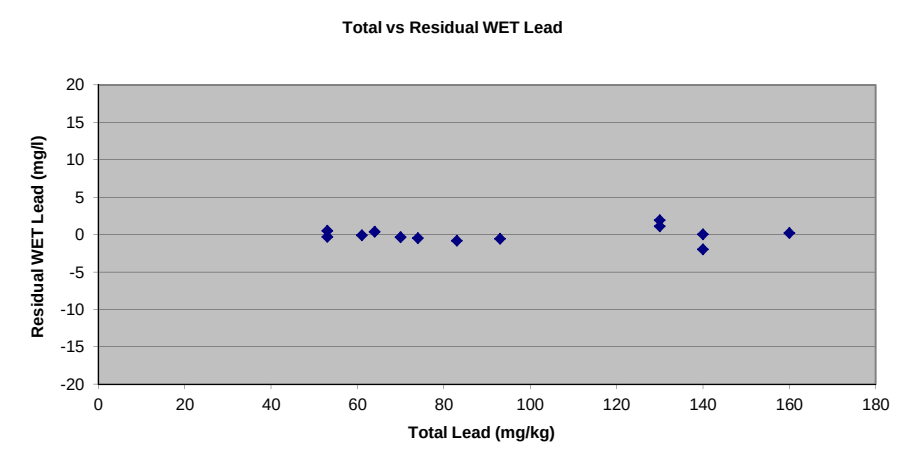
Total Number of Observations	11	Number of Distinct Observations	11
Minimum	4.8	Mean	12.86
Maximum	42	Median	7.2
SD	12.69	Std. Error of Mean	3.826
Coefficient of Variation	0.986	Skewness	1.92
Mean of logged Data	2.256	SD of logged Data	0.725
90% Standard Bootstrap UCL	**17.63**	**95% Standard Bootstrap UCL**	**18.89**

SR44-2

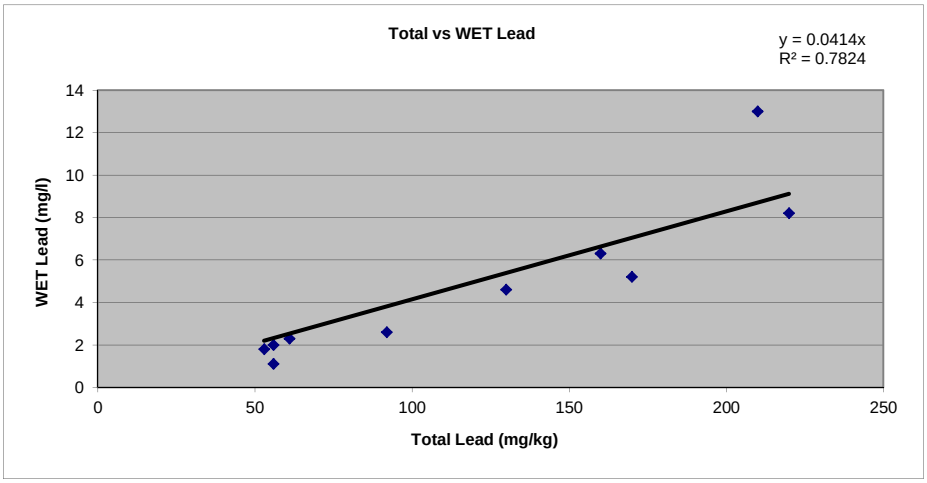
Total Number of Observations	1	Number of Distinct Observations	1
Minimum	4.8	Mean	4.8
Maximum	4.8	Median	4.8

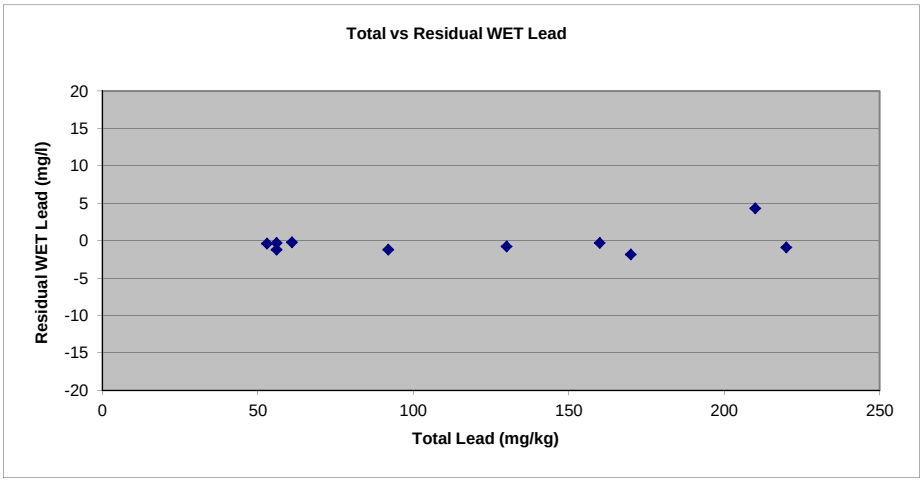
Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
B2-0	0	53	1.6	-0.32	0.10
B11-0	0	61	2.1	-0.11	0.01
B4-2	2	83	2.2	-0.80	0.65
B7-1	1	74	2.2	-0.48	0.23
B7-2	2	70	2.2	-0.33	0.11
B8-1	1	53	2.4	0.48	0.23
B4-0	0	64	2.7	0.38	0.15
B3-0	0	93	2.8	-0.57	0.32
B10-0	0	140	3.1	-1.97	3.87
B9-0	0	140	5.1	0.03	0.00
B12-2	2	130	5.8	1.09	1.20
B5-0	0	160	6.0	0.21	0.04
B4-1	1	130	6.6	1.89	3.59





Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
B27-0	0	56	1.1	-1.22	1.49
B19-0	0	53	1.8	-0.40	0.16
B29-0	0	56	2.0	-0.32	0.10
B23-0	0	61	2.3	-0.23	0.05
B18-0	0	92	2.6	-1.21	1.47
B22-0	0	130	4.6	-0.79	0.62
B17-0	0	170	5.2	-1.84	3.40
B20-0	0	160	6.3	-0.33	0.11
B24-0	0	220	8.2	-0.92	0.84
B21-0	0	210	13.0	4.30	18.48





Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
B33-0	0	52	1.3	-0.04	0.00
B40-0	0	61	1.6	0.03	0.00