



Date: 6-14-2017

Addendum #: 2

Project Name: Critical and Large Customer Improvements #1

Bid Due Date: Tuesday, June 27, 2017, at 10:00 AM

See attached for the Pre-bid meeting report, detail drawing of Okonite primary cable, automatic transfer switch basement, and an updated CR-111 and CR-410 drawing.

Also to address some questions asked/clarifications:

- The primary cable is tape shield, Okonite cutsheet attached 115-23-3135, thus contractor will have to install 1/0 CU USE in addition, wire to be provided by TCL&P.
- Tyson would like the contractors to go through a quick training session (about 15 minutes) prior to entering the switchgear area.
- Note that all animal protection for the new feeder is to be supplied by TCL&P and installed by contractor, this will match what is currently installed.
- #2 or 1/0 copper to be used for jumpers to arrestors, TCL&P to provide arrestors, must use bronze clamps to make connection to cable drop.
- All bronze fittings and connections are required for recloser and exit cable drops.
- Contractor to replace existing recloser on circuit CD-30 with new G&W supplied by TCLP.

Pre-Bid Meeting Report ADDENDUM NO.2

Meeting Date: **Thursday 6/12/2017**
Time: **10:00 AM**
Location: **1131 Hastings**
From: **Tony Chartrand**
Subject: **Pre-Bid Meeting**

Project Name: **Critical and Large Customer
Improvements #1**
Project No.: **17-101.01**
Issue Date: **6/13/2017**

Attendees: **TCL&P**
Tony Chartrand
Karla Myers-Beman

Distribution: **Attendees**

Kent Power
John Lemieux

Newkirk Electric
David Manne

J Ranck Electric
Mick Pfeifer

Rauhorn Electric
Matt Stilson

This report will confirm those items discussed and/or reached. Unless information to the contrary is received within five (5) working days, the writer will assume all participants agree with the contents of this Report. These minutes part of Addendum No.1 and this contract.

1. **Bid opening is on Tuesday June 27, 2017** at Traverse City Light & Power, 1131 Hastings St, Traverse City, MI.
2. Projected Completion date (energization) is **January 2, 2018**.
3. Tony Chartrand reviewed overall project.
4. Karla Myers-Beman reviewed the billing. All invoiced are sent to Tony, after Tony approves then Tony will forward to Karla for payment.
5. Tony Chartrand review "Contractors Bid Price" is not to include "Cost of Owner Furnished Material". The Performance and Payment bonds, HOWEVER, should be set up for the "Total Cost of the Project" which includes the contractors bid price and the cost of the Owner Furnished material. The owner furnished material cost is \$131,560.00.
6. Tony Chartrand reviewed Owner Furnished Material:

- a. (1) G&W Automatic Transfer Switch Anticipated delivery date is 10/6/2017. Contractor is responsible for picking up from 1131 Hastings and installing on site.
 - b. (1) 15kV Recloser from G&W.
 - c. (3) 7.97kV high side recloser switches.
 - d. (3) 7.97kV low side recloser switches.
 - e. (1,822ft) 15kV 750 MCM copper primary conductor.
 - f. (9) 750 MCM cable terminations.
 - g. (9) 600 Amp Elbows
7. Tony Chartrand reviewed examples of contractor provided material; 500 MCM CU, 4/0 stranded CU, control wire, ect.
 8. Tony Chartrand reviewed drops to exit cable and reclosers shall be 500 MCM copper.
 9. Tony Chartrand reviewed the disposition of foundation spoils. Owner will designate a location "OFF-SITE" to place spoils.
 10. Tony Chartrand reviewed station service for the substation.
 11. Tony Chartrand reviewed the Structural Steel drawing (300 series).
 12. Tony Chartrand reviewed the Fiber Optic requirements of the project. The contractor only has to provide conduit and labor. The cable and termination material will be provided by the owner.
 13. Tony Chartrand reviewed the primary (15kV) conduit work. This contractor is to install conduit from the substation risers to the cable exit for CD-30, and the location of the new ATS.
 14. Tony Chartrand reviewed grounding. All below grade connection to be welded, including rod-to-rod. Above grade grounding will be 4/0 cable.
 15. Tony Chartrand reviewed requirements to vacuum out all cabinets after wiring is completed.
 16. Tony Chartrand reviewed cable tabulation drawing 920.
 17. Tony Chartrand reviewed control cable sizes, 12 AWG required. Contractor has the discretion to use next size larger or next cable count larger if they wish.
 18. Tony Chartrand reviewed the Control Cable Specification. **30 mil insulation, 45 mil jacket**, all #12 & #10 control cable. E2 color coding on control cables.
 19. Tony Chartrand reviewed the policy on PVC to RGS transition; ALWAYS BELOW GRADE
 20. All testing and start-up service will be by TCL&P.
 21. A discussion was held about the bid and project schedule.
 22. Tony Chartrand reviewed that contractor is only responsible for pulling in customer supplied fiber, no splicing required.
 23. Tony Chartrand reviewed existing conduit can be used.
 24. Tony Chartrand reviewed no road permit will be required.

25. Tony Chartrand reviewed the Tyson outage can only last 24 hours.
26. Tony Chartrand reviewed the contractor has discretion as to when to perform the cutover for Tyson, must be between December 23rd and January 2nd.
27. Tony Chartrand reviewed currently there is a double run of 500 MCM feeding Tyson to be replaced by one run of 750 MCM.
28. Tony Chartrand reviewed contractor is required to supply riser material, alumiform brackets preferred.
29. Tony Chartrand reviewed contractor to high pot primary cable.

Signed: _____
Traverse City Light & Power



Okoguard®-Okoseal® Type MV-105



15kV Shielded Power Cable

One Okopact® (Compact Stranded) Copper Conductor/105°C Rating
100% and 133% Insulation Level



- A Uncoated, Okopact (Compact Stranded) Copper Conductor
- B Strand Screen- Extruded Semiconducting EPR
- C Insulation-Okoguard EPR
- D Insulation Screen- Extruded semiconducting EPR
- E Shield-Copper Tape
- F Jacket Okoseal

Insulation

Okoguard is Okonite's registered trade name for its exclusive ethylene-propylene rubber (EPR) based, thermosetting compound, whose optimum balance of electrical and physical properties is unequalled in other solid dielectrics. Okoguard insulation, with the distinctive red color and a totally integrated EPR system, provides the optimum balance of electrical and physical properties for long, problem free service.

The triple tandem extrusion of the screens with the insulation provides optimum electrical characteristics.

Jacket

The Okoseal (PVC) jacket supplied with this cable is mechanically rugged and has excellent resistance to oil, acids and most chemicals.

Applications

Okoguard shielded Okoseal Type MV-105 power cables are recommended for distribution circuits, and for feeders or branch circuits.

Type MV cables may be installed in wet or dry locations, indoors or outdoors (exposed to sunlight), in any raceway or underground duct, directly buried if installed in a system with a grounding conductor in close proximity that conforms with NEC Section 250.4(A)(5), or messenger supported in industrial establishments and electric utilities.

Specifications

Conductor: Annealed uncoated copper compact stranded per ASTM B-496.

Strand Screen: Extruded semiconducting EPR strand screen. Meets or exceeds electrical and physical requirements of ICEA S-93-639/NEMA WC74, AEIC CS8, CSA C68.10 and UL 1072.

Insulation: Meets or exceeds electrical and physical requirements of ICEA S-93-639/NEMA WC74 & S-97-682, AEIC CS8, CSA C68.10 and UL 1072.

Insulation Screen: Extruded semiconducting EPR insulation screen. Meets or exceeds electrical and physical requirements of ICEA S-93-639/NEMA WC74 & S-97-682, AEIC CS8, CSA C68.10 and UL 1072.

Shield: 5 mil bare copper tape helically applied with 12.5% nominal overlap.

Jacket: Meets or exceeds electrical and physical requirements of ICEA S-93-639/NEMA WC74 & S-97-682, CSA C68.10 and UL 1072 for polyvinyl chloride jackets.

UL Listed as Type MV-105 and sunlight resistant in accordance with UL 1072 . CSA C68.10 listed as FT1, SR, and LTDD (-25°C).

Product Features

- Triple tandem extruded, all EPR system.
- Okoguard cables meet or exceed all recognized industry standards (UL, AEIC, NEMA/ICEA, IEEE).
- 105°C continuous operating temperature.
- 140°C emergency rating.
- 250°C short circuit rating.
- Excellent corona resistance.
- Screens are clean stripping.
- Exceptional resistance to "treeing".
- Moisture resistant.
- Resistant to most oils, acids, and alkalis.
- Sunlight resistant.
- Improved Temperature Rating.

Okoguard-Okoseal Type MV-105

15kV Shielded Power Cable

One Okopact (Compact Stranded)

Copper Conductor/105°C Rating



Product Data Section 2: Sheet 9

Catalog Number (1)	Conductor Size AWG or kcmil		Conductor Size - mm ²		Approx. Dia. over Insulation (in.)		Approx. Dia. over Screen (in.)		Jacket Thickness - mils		Jacket Thickness - mm		Approx. O.D. - Inches		Approx. O.D. - mm		Approx. Net Weight lbs./1000'		Approx. Ship Weight lbs./1000'		Ampacities (2) Conduit in Air		Ampacities (3) Direct Burial		Ampacities (4) Underground Duct		Conduit Size Inches (5)*		
Okoguard Insulation: 175 mils (4.45mm), 100% Insulation Level																													
115-23-3011	2	33.6	0.67	0.73	60	1.52	0.87	22.1	555	610	165	225	165	3	115-23-3011	2	33.6	0.67	0.73	60	1.52	0.87	22.1	555	610	165	225	165	3
115-23-3013	1	42.4	0.70	0.76	80	2.03	0.94	23.9	665	720	190	260	185	3	115-23-3013	1	42.4	0.70	0.76	80	2.03	0.94	23.9	665	720	190	260	185	3
115-23-3015	1/0	53.5	0.74	0.80	80	2.03	0.98	24.8	755	820	215	295	215	3	115-23-3015	1/0	53.5	0.74	0.80	80	2.03	0.98	24.8	755	820	215	295	215	3
115-23-3017	2/0	67.4	0.78	0.84	80	2.03	1.02	25.8	865	930	255	335	245	3	115-23-3017	2/0	67.4	0.78	0.84	80	2.03	1.02	25.8	865	930	255	335	245	3
115-23-3019	3/0	85.0	0.83	0.89	80	2.03	1.07	27.2	1000	1070	290	380	275	3	115-23-3019	3/0	85.0	0.83	0.89	80	2.03	1.07	27.2	1000	1070	290	380	275	3
115-23-3021	4/0	107.0	0.88	0.94	80	2.03	1.12	28.3	1170	1250	330	435	315	3	115-23-3021	4/0	107.0	0.88	0.94	80	2.03	1.12	28.3	1170	1250	330	435	315	3
115-23-3023	250	127.0	0.93	0.99	80	2.03	1.18	30.0	1325	1405	365	475	345	3½	115-23-3023	250	127.0	0.93	0.99	80	2.03	1.18	30.0	1325	1405	365	475	345	3½
115-23-3027	350	177.0	1.03	1.07	80	2.03	1.26	32.0	1700	1800	440	575	415	3½	115-23-3027	350	177.0	1.03	1.07	80	2.03	1.26	32.0	1700	1800	440	575	415	3½
115-23-3031	500	253.0	1.14	1.19	80	2.03	1.38	35.1	2240	2385	535	700	500	4	115-23-3031	500	253.0	1.14	1.19	80	2.03	1.38	35.1	2240	2385	535	700	500	4
115-23-3035	750	380.0	1.32	1.37	80	2.03	1.55	39.4	3105	3340	655	865	610	5	115-23-3035	750	380.0	1.32	1.37	80	2.03	1.55	39.4	3105	3340	655	865	610	5
115-23-3037	1000	507.0	1.47	1.52	80	2.03	1.71	43.4	3950	4185	755	1005	690	5	115-23-3037	1000	507.0	1.47	1.52	80	2.03	1.71	43.4	3950	4185	755	1005	690	5
Okoguard Insulation: 220 mils (5.59mm), 133% Insulation Level																													
▲ 115-23-3111	2	33.6	0.76	0.81	80	2.03	1.00	25.4	670	720	165	225	165	3	▲ 115-23-3111	2	33.6	0.76	0.81	80	2.03	1.00	25.4	670	720	165	225	165	3
115-23-3113	1	42.4	0.79	0.85	80	2.03	1.04	26.4	755	820	190	260	185	3	115-23-3113	1	42.4	0.79	0.85	80	2.03	1.04	26.4	755	820	190	260	185	3
▲ 115-23-3115	1/0	53.5	0.83	0.89	80	2.03	1.07	27.1	845	915	215	295	215	3	▲ 115-23-3115	1/0	53.5	0.83	0.89	80	2.03	1.07	27.1	845	915	215	295	215	3
▲ 115-23-3117	2/0	67.4	0.87	0.92	80	2.03	1.11	28.2	950	1020	255	335	245	3	▲ 115-23-3117	2/0	67.4	0.87	0.92	80	2.03	1.11	28.2	950	1020	255	335	245	3
115-23-3119	3/0	85.0	0.92	0.98	80	2.03	1.16	29.3	1100	1180	290	380	275	3½	115-23-3119	3/0	85.0	0.92	0.98	80	2.03	1.16	29.3	1100	1180	290	380	275	3½
▲ 115-23-3121	4/0	107.0	0.96	1.02	80	2.03	1.20	30.5	1260	1360	330	435	315	3½	▲ 115-23-3121	4/0	107.0	0.96	1.02	80	2.03	1.20	30.5	1260	1360	330	435	315	3½
▲ 115-23-3123	250	127.0	1.01	1.07	80	2.03	1.26	32.0	1415	1500	365	475	345	3½	▲ 115-23-3123	250	127.0	1.01	1.07	80	2.03	1.26	32.0	1415	1500	365	475	345	3½
▲ 115-23-3127	350	177.0	1.11	1.16	80	2.03	1.35	34.3	1790	1920	440	575	415	4	▲ 115-23-3127	350	177.0	1.11	1.16	80	2.03	1.35	34.3	1790	1920	440	575	415	4
▲ 115-23-3131	500	253.0	1.22	1.28	80	2.03	1.47	37.3	2325	2510	535	700	500	4	▲ 115-23-3131	500	253.0	1.22	1.28	80	2.03	1.47	37.3	2325	2510	535	700	500	4
▲ 115-23-3135	750	380.0	1.40	1.46	80	2.03	1.64	41.7	3220	3455	655	865	610	5	▲ 115-23-3135	750	380.0	1.40	1.46	80	2.03	1.64	41.7	3220	3455	655	865	610	5
▲ 115-23-3139	1000	507.0	1.54	1.60	110	2.79	1.84	46.7	4075	4340	755	1005	690	6	▲ 115-23-3139	1000	507.0	1.54	1.60	110	2.79	1.84	46.7	4075	4340	755	1005	690	6

Okonite's web site, www.okonite.com contains the most up to date information.

▲ **Authorized stock item.** Available from our Customer Service Centers.

Aluminum Conductors

(1) Aluminum conductors are available on special order.

Ampacities

(2) Ampacities are in accordance with Table 310.60(C)(73) of the NEC for three single Type MV-105 conductors, or single conductors twisted together (triplexed) and installed in an isolated conduit in air at an ambient temperature of 40°C and a conductor temperature of 105°C.

(3) Ampacities are in accordance with Table 310.60(C)(81) of the NEC for an insulated single conductor directly buried with a conductor temperature rating of 105°C, ambient earth temperature of 20°C, 100% Load Factor, thermal resistance (RHO) of 90, 7 1/2 inch spacing between conductor center lines, and 24 inch spacing between circuits.

(4) Ampacities are in accordance with Table 310.60(C)(77) of the NEC for three single conductors or triplexed cable in one underground raceway, three feet

deep with a conductor temperature of 105°C, 100% Load Factor, an ambient earth temperature of 20°C, and thermal resistance (RHO) of 90.

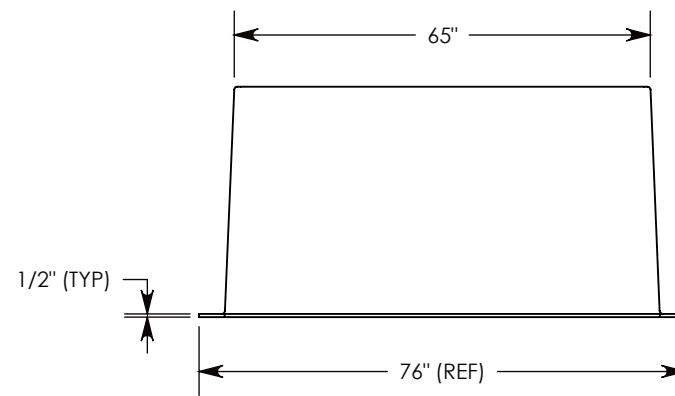
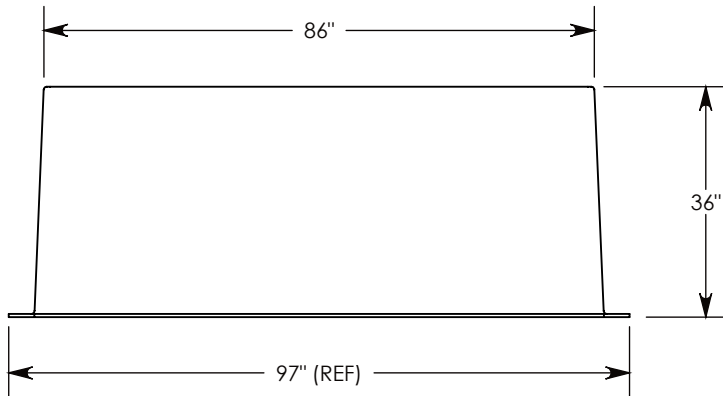
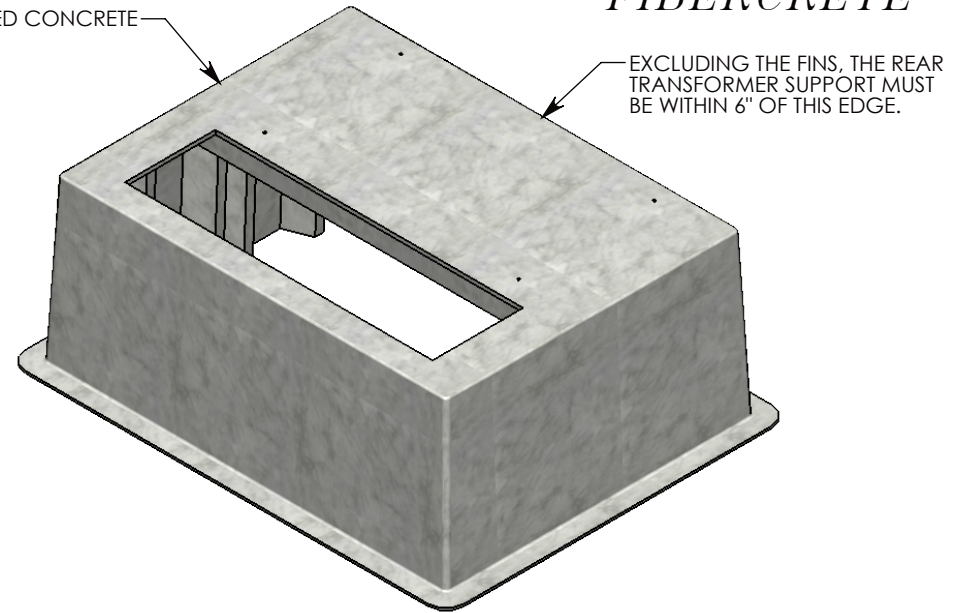
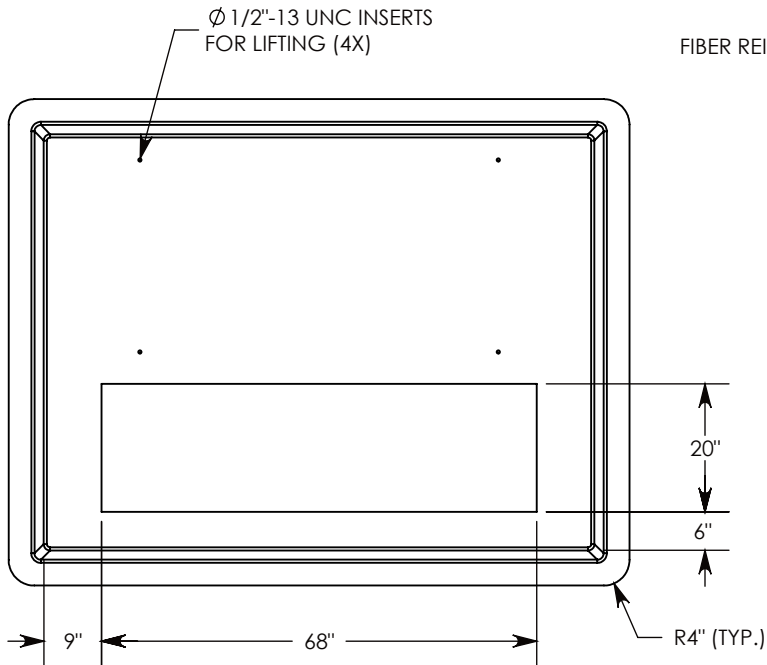
Refer to the NEC, IEEE/ICEA S-135 Power Cable Ampacities, or the Okonite Engineering Data Bulletin for installation in duct banks, multiple point grounded shields, other ambient temperatures, circuit configurations or installation requirements.

(5) Recommended size of rigid or nonmetallic conduit for three conductors based on 40% maximum fill.

*The jam ratio, conduit I.D. to cable O.D. should be checked to avoid possible jamming.

L/17040209

FIBERCRETE[®]



Ø 1/2"-13 UNC LIFTING INSERTS WILL BE CAST INTO BOX PAD
IF SPECIFIC INSERTS OR MOUNTING HARDWARE ARE REQUIRED, PLEASE SPECIFY WHEN ORDERING.

DRAWN BY: ROBIN FLINT

DATE: 7/23/2016

REVISION LEVEL: 0

WEIGHT:

1441 LBS.

MATERIAL:

FIBERCRETE FC



1010 NORTH STAR DRIVE
P.O. BOX 69
ZUMBROTA, MN 55992-0069

DESCRIPTION:

FIBERCRETE PAD BOX

DIMENSIONS ARE IN INCHES

TOLERANCES:
FRACTIONAL: ± 1/8"
ANGULAR: ± 2°

CONTACT INFORMATION:
EMAIL: INFO@CONCASTINC.COM
PHONE: (507) 732-4095
FAX: (507) 732-4094

SHEET 1 OF 1

PART NUMBER:

FC-65-86-36-2068 (6)