

Ken Bobko Electric Company, Inc
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Abbott Construction

Attn: Jeff Phillips

Re: SKYCHEF Method of Procedure DRAFT 5 Bldg F Power Upgrade NO SPLICES IN MAN HOLES

Jeff,

The purpose of this MOP is to outline the proposed work to upgrade the electrical service at Bldg F of the Sky Chef Jumpoff Project.

	CREW #1 Personnel		CREW #2 Personnel
Competent Person	Ron Green Superintendent	Competent Person	Joe Alena Foreman
Journeyman	Casey Widman	Journeyman	Shaun Moorhead
Journeyman	Mike Harvey	Journeyman	Carl Sandell
Apprentice	Tylar Lloyd	Journeyman	Grant Dickau
Apprentice	Branndon Green		
Apprentice	Chris Hentz		

Notes:

MH "E" is the man hole directly adjacent to BLDG E, it has all the secondary feeders from transformer SV52-TWX-2- Transplex. MH "F" is the man hole directly adjacent to BLDF F, it has the feeders to BLDG F and G inside it. Both of these manholes ar 4x4x4 with a 36" opening.

"Transformer" refers to transformer SV52-TWX-2- Transplex. "Switch" refers to T2 located at PMI-52.

1	CREW #1	CREW #2	ESTIMATED TIME
2	Determine scope of work, responsibilities and points of contacts between POS and KBE.		
3	Submit to POS JHA and EEW permit. Review JHA and EEW with all employees associated with work.	Submit to POS JHA and EEW permit. Review JHA and EEW with all employees associated with work.	
4	Notify all effected tenants in Bldgs A, G & E, verify access to electrical rooms to confirm voltages when work is complete.	Install pulling point to structure of electrical room ceiling.	
5	Position required tools, materials and personnel. See attached list.		
6	Barricade two manhole locations, set up temporary generators at manholes. At MH "F" rig feeder wire(reel jacks and pulling head) for later wire pull.		
7		While using ARC flash protection open electrical panel and verify rotation at building F.	
8	Meet POS electrical staff. Proceed with shut down. POS de-energizes transformer. Bldgs A,E,G and F are de-energized.		7:30 AM Meet
9	KBE crew #1 places lock off on primary switch T2 at PMI-52		8:00 AM Power off
10	POS verifies voltage is off at transformer SV52-TWX-2- Transplex.		
11	While using ARC flash protection KBE verifies voltage is off at transformer SV52-TWX-2- Transplex .		
12	Enter vault under transformer. Measure and prep for mounting pulling sheave for use on second outage.	While using ARC flash protection verify voltage is off at Bldg F main panel. Turn off 200 amp switch. Connect toner to neutral conductor in Bldg F.	
13	Remove manhole cover MH "E" . Check for standing water, pump out if required.	Remove manhole cover ay MH "F". Check for standing water, pump out if required.	
14	At transformer do preliminary identification of feeders to be removed. The set to be removed is 4ea 4/0. There are two sets of this configuration in transformer. Remove neutral from busbar for one set of feeders. Confirm correct set by toner from Bldg F. <i>If not correct replace neutral and go to second set.</i> Once		

	toned set is identified remove remaining phase conductors from lugs.		
15		At building F connect all phase conductors (3) to toner.	
16	Verify with toner that all four conductors removed are correct.		
17	Verify with toner correct feeders in MH "E". Label feeders.	Verify with toner correct feeders in MH "F". Label feeders.	
18		Remove cable toner from Bldg F.	
19	Inside MH "E" Place wood barriers to protect feeders to remain or wrap with isolation blankets.	Inside MH "F" Place wood barriers to protect feeders to remain or wrap with isolation blankets.	
20	Disconnect existing feeders from transformer tabs, label CT metering cables and disconnect and insulate. Remove existing CT's at transformer.		
21	At manhole "E" cut feeders to be removed. Remove cables from transformer to MH "E". When removing last cable attach pull rope. Swab conduit . Pull 2 ½" mandrel then 3" mandrel to proof conduit.	At MH "F" cut feeders to Bldg F. When removing last cable attach pull rope. Swab conduit. Pull 2 ½" mandrel then 3" mandrel to proof conduit.	
22	Remove grounding jumper from 480v phases at transformer. Close transformer doors. In MH "E" insulate with blankets non affected feeders to remain.	In MH "F" insulate non effected feeders to remain.	
23	Meet POS, take off KBE lockout #1		10:00 AM Power on
24	POS energizes transformers Bldgs A, G & E are back on line.		
25	In MH "F" attach pull rope to feeders to be removed. Connect wire puller to forklift at MH "E". Remove conductors from existing conduit from MH "F" to MH "E". Connect pull rope for reuse to last conductor removed.	In Bldg F ID all existing feeders begin removing old 200 amp service from wall. Start installing new 400 amp switchboard on wall.	
26	Proof conduit with 2 ½" then 3" mandrels. Swab with cloth rags, pre lube conduit.		
27	DETERMINE AT THIS POINT IF INSTALLATION OF NEW FEEDERS CAN PROCEED. If so continue. If it is determined conduit is damaged continue with contingent plan of reinstalling 4/0 THHN cu.		
28	Connect new feeders to pull rope and install feeders from MH "F" to MH "E". When pulling head arrives at MH "E", allow wire		

	to ride over pulley installed on edge of manhole lid. Layout tarps to protect wire from contact with asphalt. Continue pulling length out (approx 60') for continued wire pull to transformer SV52-TWX-2-Tansplex		
29	Unspool balance of feeders from reels. Guide feeders into conduit to Bldg F from MH "F".	Complete new 400amp panel in Bldg F. Rig pulling sheave to structure above through drywall. Mount tugger to floor of electrical room.	
30		Pull feeders into new 400 amp panel.	
31	Contact POS and have transformer SV52-TWX-2- Transplex de-energized. Install KBE lockout #1 from crew #1.	Clean out manhole close lid at MH "F"	4:00 PM Power off
32	POS opens transformer and verify voltage is off. While using ARC flash protection KBE verifies voltage is off.	Terminate feeders in new 400 panel	
33	Enter vault below transformer. Secure 12" pulling sheave to side of vault at opposite side of conduit entry. Position wire at MH "E" away from transformer, prep pulling head. Position forklift boom with tugger at doors to transformer. Pull wire into transformer.	At Bldg F in new 400 amp panel verify circuit breakers are off. Lock off new 400 amp Main Breaker. Test new conductors back to transformer with megger. Have POS verify if required.	
34	Remove tape from testing, Hypress lugs on to new feeders. Install new CT meters on each phase cable, terminate wires from metering. Land feeders on to transformer tab with single bolt. Torque bolt connection		
35	Have POS verify work. Have L&I inspect work.		
36	Clean out manhole close lid at MH "E"		
37	KBE crew #1 removes lockout #1 at Swt T2 at PMI-52.		
38	POS re-energizes transformer SV52-TWX-2- Transplex and confirms voltage at transformer.	While using ARC flash protection KBE confirms voltage and rotation at Bldg F.	6:00 PM Power on
39	POS & KBE verify voltages at Bldgs A,E, & G.		
40	Clean up equipment remove barricades.	Clean up equipment remove barricades.	

Contingency Plan

To be used if Existing Underground Conduit is Damaged (cannot install 500 MCM feeders)

1	Rack up 4/0 conductors. Pull into conduit from MH"E" to MH "F". Continue and extend conductors into 400 amps panel. Leave length of new conductor to reach inside transformer SV52-TWX-2-Transplex .	Instead of terminating conductors on to 400 amp Main Breaker terminate on to 200 amp sub feed breaker.
2	Contact POS and have transformer de-energized. Install KBE lockout #1 from crew #1.	
	POS opens transformer and verify voltage is off. While using ARC flash protection KBE verifies voltage is off.	
3	Remove previously installed 500 MCM conductors. Install (4) 4/0 CU conductors from MH"E". Reinstall meters previously removed, terminate wires from metering. Land feeders on to transformer at previous lug.	
4	Have POS verify work. Have L&I inspect work.	
5	KBE crew #1 removes lockout #1.	KBE crew #2 removes lockout #2 and stands by at Bldg F electrical room.
6	POS re-energizes transformer and confirms voltage at transformer.	
7	POS & KBE verify voltages at Bldgs A,E, & G.	While using ARC flash protection KBE confirms voltage and rotation at Bldg F
8	Clean up equipment remove barricades.	Clean up equipment remove barricades.