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ADDENDUM NO. 1

PROJECT NAME: City Campus Utility Plant North Cooling Tower Replacement General Installation Contract Package

UNL PROJECT NUMBER: C028P241
BID INVITATION NUMBER: 2247-13-7200

CONSULTANT: Lutz, Daily & Brain, LLC
6400 Glenwood, Suite 200
Overland Park, KS 66202

DATE OF ISSUANCE: October 21, 2013
DATE OF BID OPENING: October 24, 2013, 10:00am CT

The bid documents dated September 20, 2013 for the above referenced project are amended by this addendum.

NOTICE: This Addendum is issued to all interested prospective bidders as an amendment to the project manual or other parts of the bidding (contract) documents for the above named project. Reference to this Addendum must be included in the Bid proposal. The information contained herein shall be fully incorporated into the contract documents as though originally included therein.

PROJECT MANUAL AND SPECIFICATIONS – GENERAL

1. **Section 01 10 00, Page 1 of 16, Paragraph B, Item 2**: Revise to read as follows:

   12.1 The Owner-furnished 42-inch ABZ butterfly valve has been received, off-loaded and stored inside UNL City Campus Central Utility Plant. The remaining six Owner-furnished ABZ butterfly valves with their shop-mounted electric motor operators will be received, off loaded and stored by this Contractor.

2. **Section 01 10 00 Page 2 of 16 Paragraph D**: Revise the 1st line to read as follows:

   "Pre-Bid Meeting: All prospective bidders and sub-bidders are invited to attend a pre-bid meeting as further described in Section 00 11 16, page 2 of 2, Paragraph 7.0. This meeting will be followed by a site visit to UNL City Campus Central Utility Plant."

3. **Section 01 10 00, Page 10 of 16, Paragraph 1.8A**: Delete the word "Later" off of the last reference drawing title.

4. **Section 01 10 00, Page 10 of 16, Paragraph 1.9A** Replace the words "Figure No. 1" with the words "Drawing 40213-CCUP-NCT-CS".

5. **Section 01 60 00, Paragraph 1.2A7**: Delete the words "Reinforced concrete pad" and change "valve" to "Valve".

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6. **Section 31 00 00, Paragraph 3.06**: Add the following subparagraphs:

   C. Finish grading shall be performed by this Contractor so that surface water drainage on the south side of the North Cooling Tower (NCT) basin drains from the east to the west to a central point that is located at the approximate midpoint of the open area between the east end of the existing West Cooling Tower (WCT) and the west end of the new NCT where the surface water runoff is to flow northward to the north sides of the WCT and the NCT.

   D. Once finish grading has been completed as described above, the surface area disturbed by this Contractor shall be re-surfaced with matching crushed rock.

7. **Drawing 40213-CCUP-NCT-C1**: In lower left-hand corner of sheet under "Finish Grading" review Note 3 to read as follows:

   "3. For surface water runoff and re-surfacing see this Addendum related to Specification Section 31 00 00 Paragraph 3.06" above.

8. **Drawing 40213-CCUP-NCT-M1**: Show existing NCT stair tower reinforced concrete pad and add note on this drawing stating the existing NCT stair tower reinforced concrete pad at the east end of the North Cooling Tower basin shall be removed and properly disposed of by this Contractor.

9. **Drawing 40213-CCUP-NCT-M4, Notes 3 & 4**: Change the word "CONTRACT" to "GIC" in Note 3. In Note 4, delete the words "AND REINSTALL".

10. **Drawing 40213-CCUP-NCT-E2**: The following changes shall be made:

    Ductbank Section C: Revise ductbank configuration from 2 conduits wide x 4 conduits deep to 3 conduits wide x 3 conduits deep which changes the ductbank cross section from 1'-8" wide x 3'-0" deep to 2'-4" wide x 2'-4" deep with top of new ductbank being approximately 18 inches below grade.

    At a point in between the existing west and north cooling tower basins the duct bank will be split into two separate duct banks. One is to be 2 conduits wide by 1 conduit deep and will go to a point near the southeast corner of the west cooling tower basin. The other duct bank is to be 3 conduits wide by 2 conduits deep plus 1 conduit on top going near the southwest corner of the north cooling tower basin as shown on reissued drawing 40213-CCUP-NCT-E2.

11. **Drawing 40213-CCUP-RD-4**: Delete part of the note which states "DRAWING TO BE INSERTED LATER" in 3 places; remainder of note will later be relocated on drawing to not overlay valve drawing text in 3 places on this reference drawing.

12. **Responses to Prospective Bidder's Comments**: The following responses have been provided.

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12.1 Prospective Bidder Comment: There is no information concerning the safety switches for the fan units. The questions are listed below.

Fused or non-fused?-- *UNL A/E Response: Non-fused.*

Auxiliary contacts in the switch(s) (this is so the VFD will shut down should the switches be opened).-- *UNL A/E Response: No auxiliary contacts are required. NEC requires a local switch, but tripping the VFD's is not required.*

12.2 Prospective Bidder Comment: In 26 05 00: Para 1.01.E.4 it states that the EC will install the motor operated butterfly valves. Typically these valves would be installed by the mechanical and the actuator (if separate) would be installed by the EC.-- *UNL A/E Response: Each butterfly valve and operator is to be shipped assembled as one unit.*

12.3 Prospective Bidder Comment: Revisit the ductbank issues. I would recommend that the excavated end of the existing ductbank to be abandoned be foamed and/or slugged with concrete and then the interior ends be sealed also. A product similar to "Polywater FTS Duct Sealant" will work to provide a water tight barrier.-- *UNL A/E Response: The existing North Cooling Tower ductbank will be removed at a point starting 8' north of the loading dock and ending at the North Cooling Tower basin. The remaining piece off this existing ductbank which terminates at the north wall of the UNL Central Utility Plant shall be sealed at both ends with Polywater FTS Duct Sealant or Owner approved equal sealant product.*

12.4 Prospective Bidder Comment: The specs and drawings conflict about the usage of conduit type for outside around the cooling tower. The specs call for both RAC & RGC while the drawings call for just RAC. RAC would be the preferred of the two due to the corrosive atmosphere around cooling towers.-- *UNL A/E Response: Aluminum (RAC) is required at the cooling tower, but RGC is required inside the plant.*

12.5 Prospective Bidder Comment: On Dwg Sheet 8 Note 6 it states that the Solenoid Valves (SV00101 thru 00104) are to be F&I by the EC. Again this is typically done by the mechanical and then wired by the EC.-- *UNL A/E Response: Agreed; comment does not impact GIC scope.*

12.6 Prospective Bidder Comment: The heat tracing for the 20' risers piping looks to be short. General practice is that heat tracing be brought down to 3 – 4' below grade due to frost lines in the ground.-- *UNL A/E Response: Not required; bidder's proposal shall be based on what has been shown on the drawings.*

12.7 Prospective Bidder Comment: I have noticed that no fixture models have been given for the project. Based on the info given in the documents it would be best to specify what is required. If not, there will be a substantial debate afterwards if not addressed before bid time.-- *UNL A/E Response: Lights on the new north cooling tower shall be GE Catalog No. P17M17C2C2LSN5GRU. This is a 208V,*

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175W mercury vapor light fixture which changes Specification Section 26 56 00 entitled EXTERIOR LIGHTING.

Part 2 Paragraph A shall be revised to read as follows: "This Contractor shall furnish and install new light fixtures to be manufactured by GE or Owner approved equal.

Part 2 Paragraph C shall be revised to read as follows: "175W mercury vapor light fixtures on fan deck controlled by time clock".

Part 2 Paragraph E shall be revised to read as follows: "208 Volt ac self-protected for lamp failure".

Part 2 Paragraph G Item No. 1.0 Item Description shall be changed to read: "Tower Lights - 175W mercury vapor".

Part 2 Paragraph G Item No. 2.0 Item Description shall be changed to read: "Time Clock".

Lighting detail on Drawing 40213-CCUP-NCT-E5 callout which reads: "250W metal halide" shall be changed to read: "175W mercury vapor".

Callout on Drawing 40213-CCUP-NCT-E4 shall change to read "175W mercury vapor".

13. **Indoor 480V Panel**: The following specifications and drawings changes shall be made:

13.1 Drawings 40213-CCUP-NCT-E2, E3 & E4: 480V Hoffman enclosure removed from plan views.

13.2 Drawing 40213-CCUP-NCT-E6:
Circuit P005 increases in length from 80' to 155'.
Circuit P006 increases in length from 160' to 235'.
Circuit P007 increases in length from 80' to 155'.
Circuit P008 increases in length from 105' to 180'.
Circuit P009 increases in length from 130' to 205'.
Circuit P010 increases in length from 160' to 235'.
Circuit P011 decreases in length from 150' to 75'.
Circuits P005-P010 "From" designation shall read "New 480V panel in basement" instead of "New j-box".
Circuit P011 "To" designation shall read "New 480V Panel in basement" instead of "New junction box".
Raceway R045 "From" designation shall read "New 480V panel in basement" instead of "Duct Bank in CCUP basement".
Raceway R068 added to Raceway list and goes from new 480V panel to duct bank.

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Raceways R005-R010 “From” designation shall read “new j-box at NCT” instead of “480V box”.
Raceway R054 from new junction box to Hoffman box is deleted.

13.3 Drawing 40213-CCUP-NCT-E8: Detail of 480V supply enclosure is removed.

13.4 Drawing 40213-CCUP-NCT-E10: Add 480V panel onto basement plan view.

13.5 Section 26 70 00 Part 2.01 Paragraph B shall read: “Indoor 480V panel with 100A main - Square D Catalog No. HCN2774-1MN with box and surface mount 4-piece trim with door and six three-pole 15A breakers.”

Revised Drawings 40213-CCUP-NCT-E2, E3, E4, E5, E6, E8 and E10 are being reissued as part of this Addendum to show the above described drawing changes and items 12 and 13 above.

All other conditions and specifications remain unchanged.

End of Addendum #1

EXISTING WEST COOLING TOWER

16" BYPASS (TYP. OF 2)

1-1/2" DRAIN LINE SOLENOID VALVE (TYP. OF 4)

20" RISER (TYP. OF 4)

MOV 00105 | SV 00101 | MOV 00101 | FE 00101

CONDUITS FOR MOV 480V SUPPLY AND CONDUITS FOR HEAT TRACING 120V MOUNTED TO OUTSIDE WALL OF BASIN

SV 00102 | MOV 00102 | FE 00102

SV 00103 | MOV 00103 | FE 00103

16" BYPASS

MOV 00106 | SV 00104 | MOV 00104 | FE 00104

INSTRUMENT CABLE CONDUITS MOUNTED TO OUTSIDE WALL OF BASIN

NEW NORTH COOLING TOWER
(FURNISHED & INSTALLED BY OTHERS)

NEW STAIR TOWER AND FOUNDATION BY OTHERS

NEW JUNCTION BOX TO BE PLACED IN LOCATION OF EXISTING JUNCTION BOX - FURNISHED AND INSTALLED BY THIS CONTRACTOR. SEE NOTE 6

NEW CONCRETE PAD WITH TWO 4" CONDUITS RISING 18" ABOVE SURFACE OF CONCRETE, AND CAPPED AT ENDS, FURNISHED AND INSTALLED BY THIS CONTRACTOR

6'-3"

480V POWER CONDUIT - RUN PARALLEL TO HANDRAIL ON UNISTRUT

TE 00004 | LOS 00001 | VSH 00001 | TE 00005

120VAC INSTRUMENT CONDUIT

4-20mA INSTRUMENT CONDUIT

TE 00006 | LOS 00002 | VSH 00002 | TE 00007

FAN DECK LEVEL

TE 00008 | LOS 00003 | VSH 00003 | TE 00009

TE 00010 | LOS 00004 | VSH 00004 | TE 00011

LT 00001

WARM TW HEADER TEMPERATURE

TE 00001

OWNER FURNISHED VALVE VAULT SUMP PUMP

NEW GFI RECEPTACLE FOR SUMP PUMP WEATHERPROOF WHILE-IN-USE

120VAC POWER TO OUTLET FOR SUMP PUMP MOUNTED TO OUTSIDE WALL OF BASIN

MOTOR DISCONNECT (TYP. OF 4) FURNISHED AND INSTALLED BY THIS CONTRACTOR

NEW ELECTRICAL CONTROL CABINET - SEE DWG 40213-CCUP-NCT-E5 FURNISHED BY OWNER, MOUNTED BY THIS CONTRACTOR

4-20mA CONTROL CONDUIT MOUNTED TO OUTSIDE WALL OF BASIN

TE 00002 | TE 00003

NEW DUCT BANK TO BE FURNISHED AND INSTALLED BY THIS CONTRACTOR SEE THIS DRAWING FOR DETAIL

E2 / E2 \ E2 — E / E

E2 / E2 \ E2 — D / D

E2 / E2 \ E2 — C / C

END OF EXISTING DUCT BANK - TO BE SEALED BY THIS CONTRACTOR

8'-0"

NEW DUCT BANK OVER EXISTING DUCT BANK

LOADING DOCK

4/0 GROUND WIRE

2'-4"

TOP OF DUCT BANK SHALL BE APPROXIMATELY 18" BELOW GRADE AND ABOVE LOCATION OF EXISTING DUCT BANK.

4" PVC SCH. 40 CONDUIT

7 1/2" (TYP.)

#3 REBAR 12 PLCS.

7 1/2" (TYP.)

DUCT BANK SECTION C
(FACING SOUTH) E2 / E2
SCALE: 1" = 1'-0"

4/0 GROUND WIRE

2'-4"

4" PVC SCH. 40 CONDUIT

7 1/2" (TYP.)

7 1/2" (TYP.)

2'-4"

#3 REBAR 12 PLCS.

7 1/2" (TYP.)

DUCT BANK SECTION D
(FACING SOUTHWEST) E2 / E2
SCALE: 1" = 1'-0"

1'-8"

#3 REBAR 6 PLCS.

7 1/2" (TYP.)

1'-0"

7 1/2"

4" PVC SCH. 40 CONDUIT

DUCT BANK SECTION E
(FACING SOUTHEAST) E2 / E2
SCALE: 1" = 1'-0"

PARTIAL SITE PLAN
SCALE: 1/4" = 1'-0"

NORTH

LEGEND:

FE - FLOW ELEMENT

LOS - LOW OIL SWITCH

LT - LEVEL TRANSMITTER

MOV - MOTOR OPERATED VALVE

SV - SOLENOID VALVE

TE - TEMPERATURE ELEMENT

VSH - VIBRATION SWITCH HIGH

TW - TOWER WATER

NOTES:

1. SEE DRAWING 40213-CCUP-E5 FOR CONDUIT TO MOTOR CONNECTION DETAIL.

2. SEE DRAWING 40213-CCUP-E5 FOR CONDUIT TO MOV DETAIL.

3. FE, LT, TE, TEMPERATURE TRANSMITTERS, AND FLOW TRANSMITTERS WILL BE FURNISHED AND INSTALLED BY OWNER.

4. LOS & VSH FURNISHED AND INSTALLED WITH COOLING TOWER.

5. MOV'S WILL BE FURNISHED BY OTHERS AND INSTALLED BY THIS CONTRACTOR.

6. ALL CONDUIT, WIRING AND SV'S SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. ALL CONDUIT AT NORTH COOLING TOWER SHALL BE RIGID ALUMINUM.

7. EXISTING DUCT BANK, FROM THE NORTH SIDE OF LOADING DOCK TO THE SITE OF THE EXISTING JUNCTION BOX, SHALL BE REMOVED BY THIS CONTRACTOR. THIS CONTRACTOR SHALL SEAL THE REMAINING PIECE OF THIS DUCT BANK AT BOTH ENDS.

8. THIS CONTRACTOR SHALL REMOVE EXISTING JUNCTION BOX AND INSTALL NEW NEMA 4X STAINLESS STEEL JUNCTION BOX SIZED 24" WIDE X 24" DEEP X 24" TALL IN SAME LOCATION. BOTTOM OF JUNCTION BOX SHALL BE APPROXIMATELY 2' ABOVE GRADE. CONTRACTOR SHALL INSTALL SEALANT INTO BOTTOM CONDUIT ENTRIES AFTER ALL CABLES ARE PULLED.

ISSUED FOR BID
09-18-2013

CAD DATA
FILENAME: 40213-CCUP-NCT-E2
PLOT SCALE: 1:1 (30 x 42)
LAST MODIFIED: 10/18/2013

REV	DESCRIPTION	REV	DESCRIPTION
1	REVISED FOR ADDENDUM 1	10-18-2013	
0	ISSUED FOR BID	09-18-2013	

LUTZ, DAILY & BRAIN, LLC
CONSULTING ENGINEERS
6400 GLENWOOD SUITE 200 OVERLAND PARK KANSAS 66202

DESIGN BY WMH | CHECKED BY BDS
DRAWN BY WMH | APPROVED BY BDS

UNIVERSITY OF NEBRASKA - LINCOLN

CITY CAMPUS UTILITY PLANT
NORTH COOLING TOWER (NCT) REPLACEMENT PROJECT
GENERAL INSTALLATION CONTRACT PACKAGE
UNL PROJECT NO. C028P241

ELECTRICAL
CONDUIT AND INSTRUMENT
PLAN VIEW

DRAWING NUMBER 40213-CCUP-NCT-E2
SHEET NUMBER 8

PARTIAL SITE PLAN

4 2 0 4 8

SCALE: 1/4" = 1'-0"

NORTH

ISSUED FOR
BID
09-18-2013

CAD DATA
FILENAME: 40213-CCUP-NCT-E3
PLOT SCALE: 1:1 (30 x 42)
LAST MODIFIED: 10/18/2013

REV	DESCRIPTION	REV	DESCRIPTION
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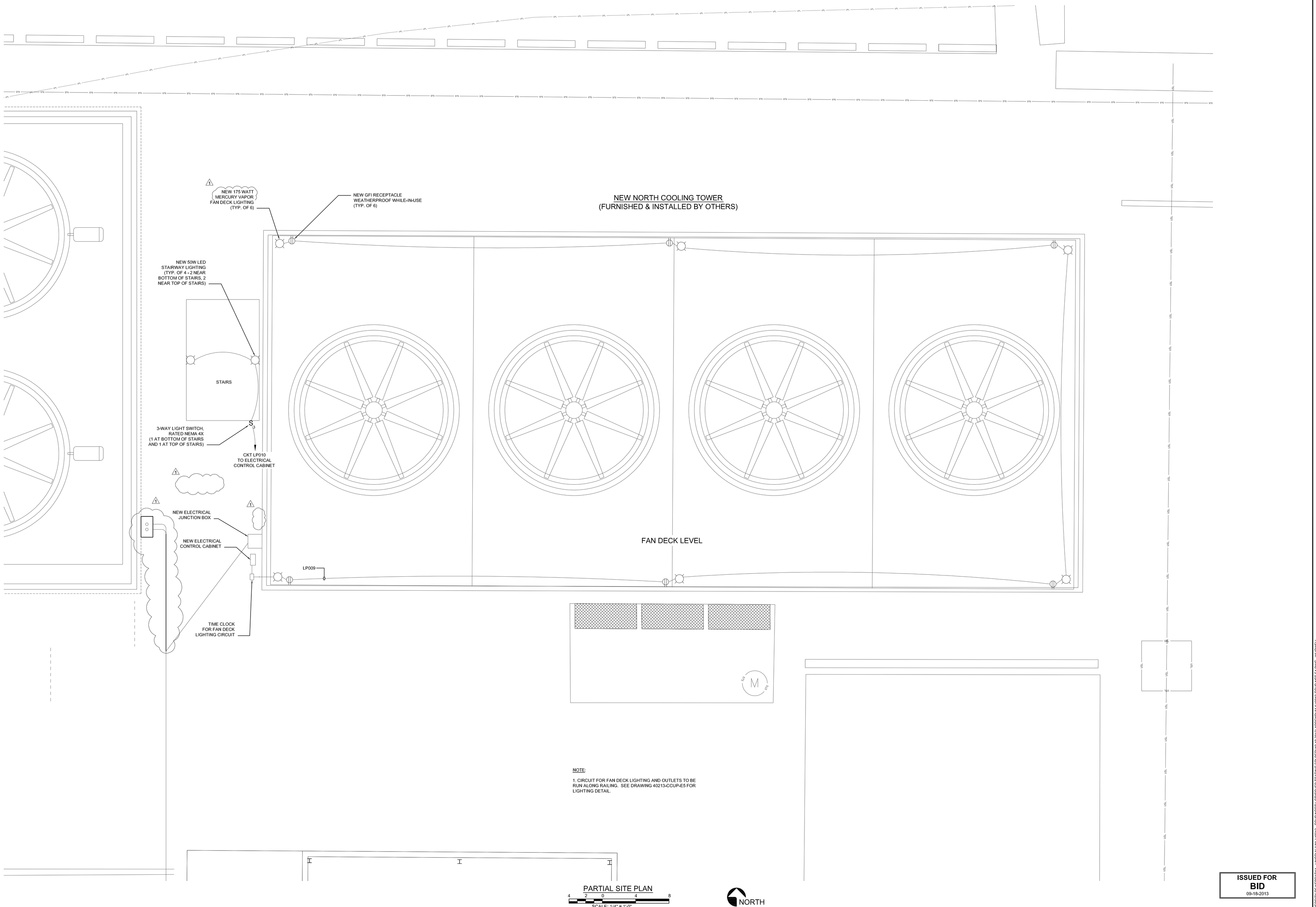
UNL PROJECT NO. C028P241

ELECTRICAL
GROUNDING PLAN VIEW

DRAWING NUMBER
40213-CCUP-NCT-E3
SHEET NUMBER
9



NOTE:

1. CIRCUIT FOR FAN DECK LIGHTING AND OUTLETS TO BE RUN ALONG RAILING. SEE DRAWING 40213-CCUP-E5 FOR LIGHTING DETAIL.

PARTIAL SITE PLAN

4 2 0 4 8

SCALE: 1/4" = 1'-0"

NORTH

ISSUED FOR BID
09-18-2013

CAD DATA
FILENAME: 40213-CCUP-NCT-E4
PLOT SCALE: 1:1 (30 x 42)
LAST MODIFIED: 10/18/2013

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1	REVISED FOR ADDENDUM 1 10-18-2013		
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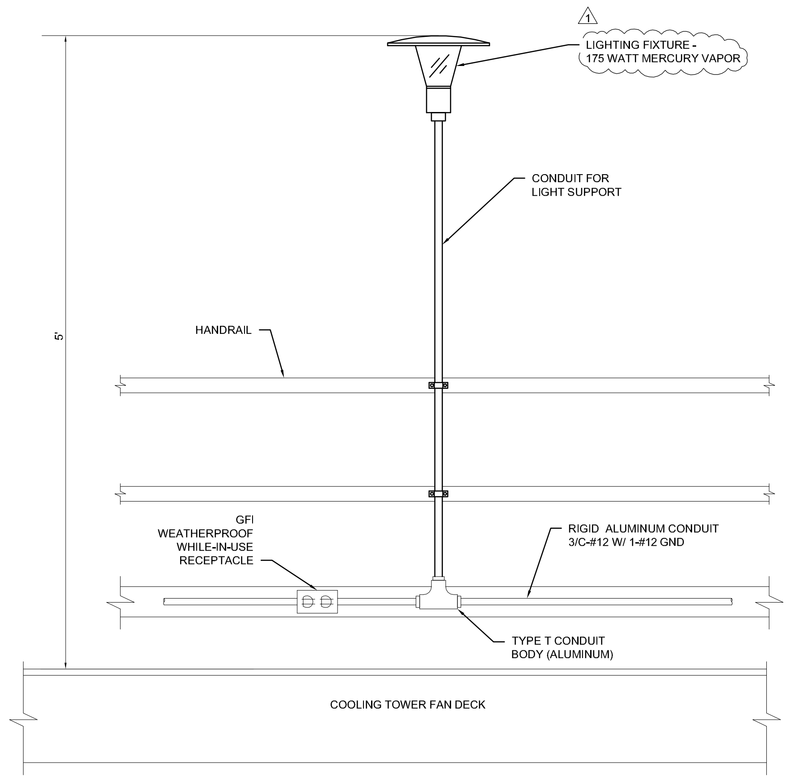
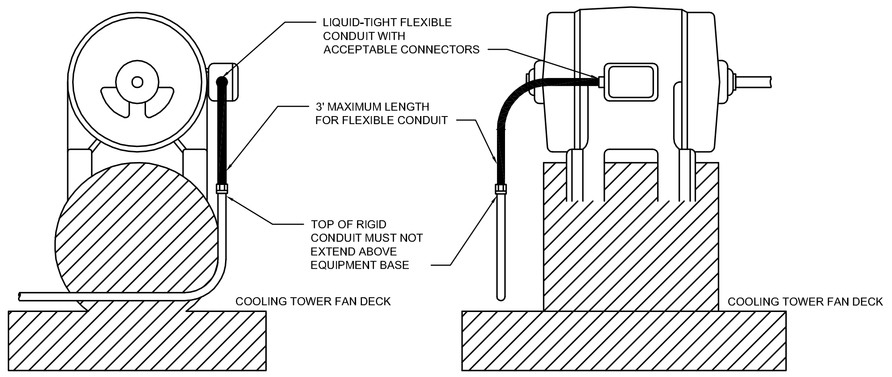
ELECTRICAL
LIGHTING PLAN VIEW

DRAWING NUMBER
40213-CCUP-NCT-E4
SHEET NUMBER
10



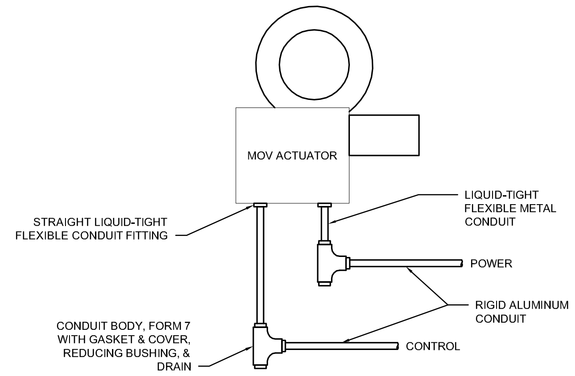
COOLING TOWER LIGHTING DETAIL (TYP. OF 6)

NO SCALE



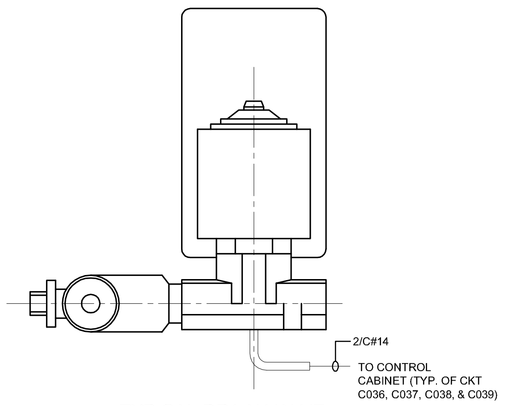
TYPICAL CONDUIT CONNECTION FROM BELOW (TYP. OF 4)

NO SCALE



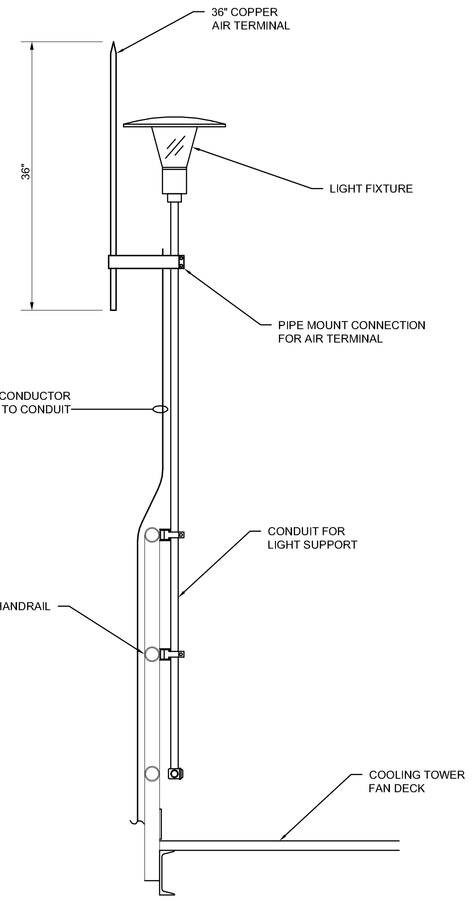
TYPICAL MOTOR OPERATED VALVE (TYP. OF 6)

NO SCALE



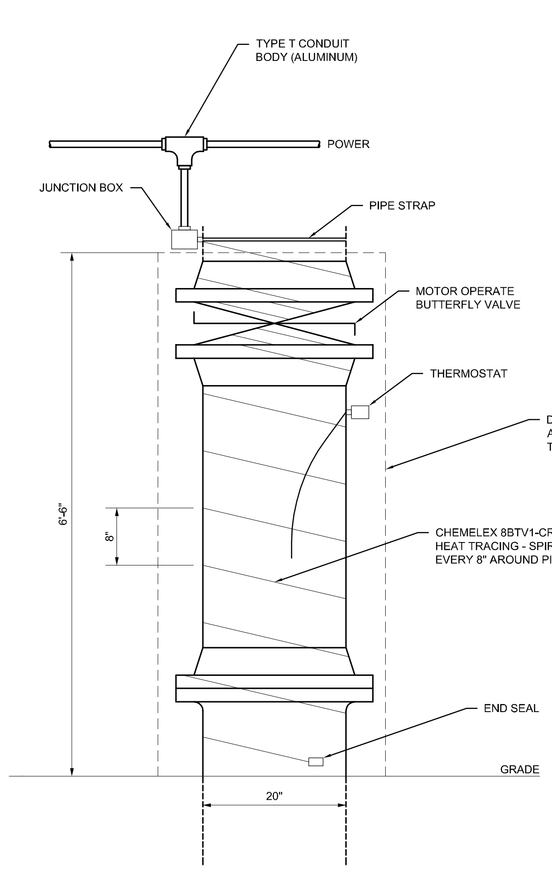
TYPICAL DRAIN VALVE SV DETAIL

NO SCALE



LIGHTNING PROTECTION DETAIL (TYP. OF 6)

NO SCALE

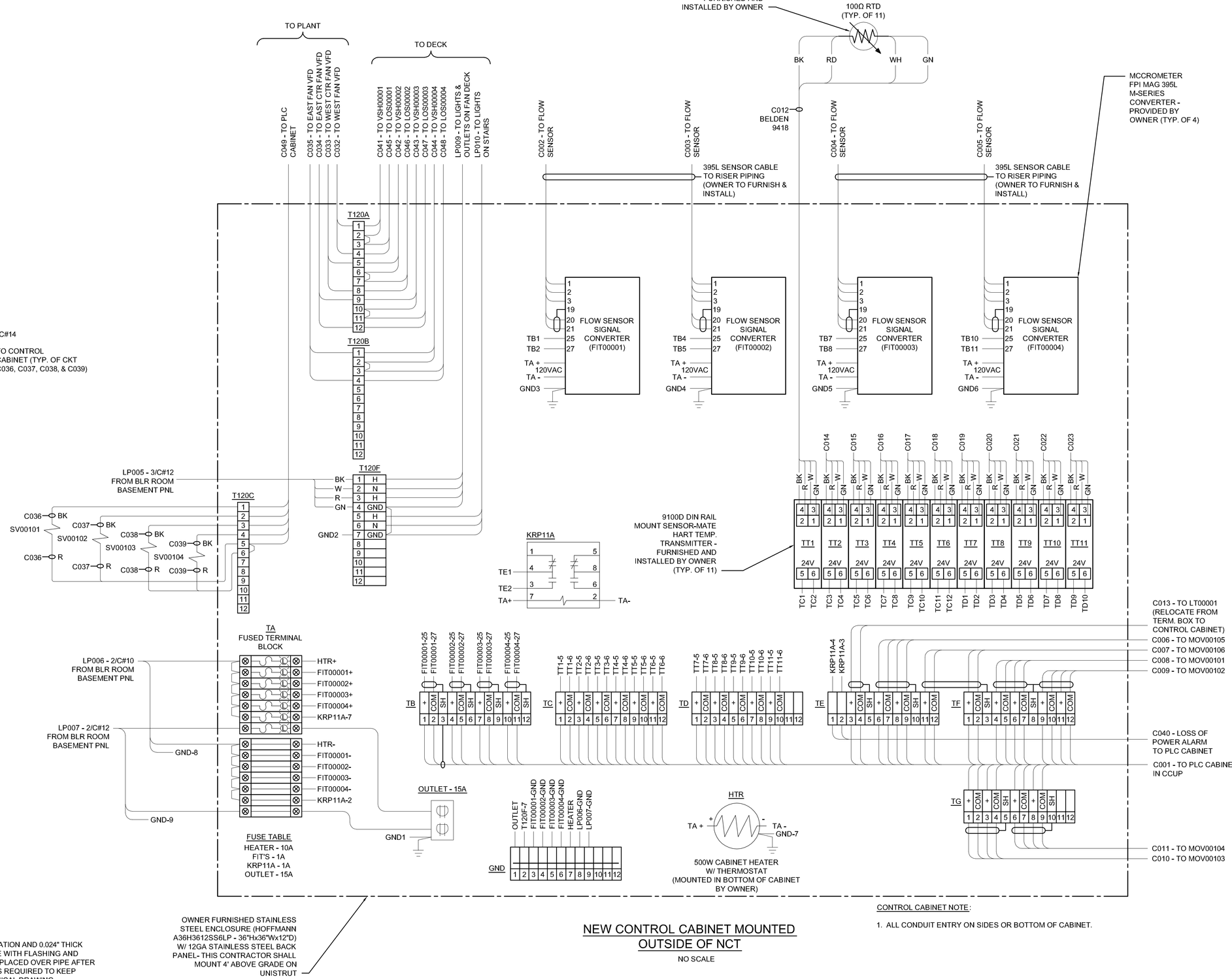


TYPICAL HEAT TRACING ON RISER PIPE (TYP. OF 4)

NO SCALE

HEAT TRACING NOTES:

1. 2" THICK MINERAL FIBER INSULATION AND 0.024" THICK ALUMINUM LAGGING COMPLETE WITH FLASHING AND COUNTER FLASHING SHALL BE PLACED OVER PIPE AFTER HEAT TRACING IS INSTALLED AS REQUIRED TO KEEP INSULATION DRY. SEE MECHANICAL DRAWING 40213-CCUP-NCT-3.
2. HEAT TRACING FOR EACH PIPE TO BE POWERED FROM A 120VAC - 30A BREAKER WITH GROUND FAULT PROTECTION.



NEW CONTROL CABINET MOUNTED OUTSIDE OF NCT

NO SCALE

CONTROL CABINET NOTE:

1. ALL CONDUIT ENTRY ON SIDES OR BOTTOM OF CABINET.

GENERAL NOTES:

1. OWNER WILL INSTALL CABLE FROM FLOW SENSORS TO FLOW TRANSMITTERS. ALL OTHER CABLE SHALL BE INSTALLED BY CONTRACTOR. ALL CONDUIT SHALL BE INSTALLED BY CONTRACTOR. OWNER WILL TERMINATE ALL INSTRUMENT CABLES.
2. ALL EQUIPMENT, CABINETS & APPURTENANCES SHOWN ON THIS DRAWING SHALL BE FURNISHED BY THIS CONTRACTOR, UNLESS OTHERWISE LABELED. ALL EQUIPMENT, CABINETS & APPURTENANCES SHALL BE INSTALLED BY THIS CONTRACTOR.

ISSUED FOR BID
09-18-2013

CAD DATA
FILENAME: 40213-CCUP-NCT-E5
PLOT SCALE: 1:1 (30 x 42)
LAST MODIFIED: 10/18/2013

REV	DESCRIPTION	REV	DESCRIPTION
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NORTH COOLING TOWER (NCT) REPLACEMENT PROJECT
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UNL PROJECT NO. C028P241

ELECTRICAL DETAILS AND NOTES

DRAWING NUMBER 40213-CCUP-NCT-E5
SHEET NUMBER 11

10/18/2013 11:43 AM - L:\UNIVERSITY OF NEBRASKA - LINCOLN (UNL)\40213 - CCUP NORTH CT\CURRENT PROJECT DELIVERABLES\40213-CCUP-NCT-E5.DWG - WHOWELL

Rev.	Circuit No.	Length (ft)	From	To	Cable Size	Function	Notes
	P001	275	Existing VFD	West Cooling Tower Motor	1 - 350MCM/ph w/#2 gnd	Power to West Cooling Tower Motor	New
	P002	300	Existing VFD	West Center Cooling Tower Motor	1 - 350MCM/ph w/#2 gnd	Power to West Center Cooling Tower Motor	New
	P003	325	Existing VFD	East Center Cooling Tower Motor	1 - 350MCM/ph w/#2 gnd	Power to East Center Cooling Tower Motor	New
1	P004	350	Existing VFD	East Cooling Tower Motor	1 - 350MCM/ph w/#2 gnd	Power to East Cooling Tower Motor	New
1	P005	155	New 480V panel in basement	West 16" Bypass MOV (MOV00105)	3 ph #12 w/gnd	Power to west 16" bypass MOV	New
1	P006	235	New 480V panel in basement	East 16" Bypass MOV (MOV00106)	3 ph #12 w/gnd	Power to east 16" bypass MOV	New
1	P007	155	New 480V panel in basement	West 20" MOV (MOV00101)	3 ph #12 w/gnd	Power to west 20" Chilled Water Supply MOV	New
1	P008	180	New 480V panel in basement	West Center 20" MOV (MOV00102)	3 ph #12 w/gnd	Power to west center 20" Chilled Water Supply MOV	New
1	P009	205	New 480V panel in basement	East Center 20" MOV (MOV00103)	3 ph #12 w/gnd	Power to east center 20" Chilled Water Supply MOV	New
1	P010	235	New 480V panel in basement	East 20" MOV (MOV00104)	3 ph #12 w/gnd	Power to east 20" Chilled Water Supply MOV	New
1	P011	75	MCC-2 in basement	New 480V panel in basement	3 ph #10 w/gnd	Power source for all MOV's	New
	LP001	210	Boiler Room Basement Panel	West Heat Trace j-box	2/C #10 w/gnd	Power to west heat trace panel	New
	LP002	235	Boiler Room Basement Panel	West Center Heat Trace j-box	2/C #10 w/gnd	Power to west center heat trace panel	New
	LP003	260	Boiler Room Basement Panel	East Center Heat Trace j-box	2/C #10 w/gnd	Power to east center heat trace panel	New
	LP004	285	Boiler Room Basement Panel	East Heat Trace j-box	2/C #10 w/gnd	Power to east heat trace panel	New
	LP005	140	Boiler Room Basement Panel	New NCT control cabinet	3/C #12 w/gnd	lights & outlets at NCT	New
	LP006	140	Boiler Room Basement Panel	New NCT control cabinet	2/C #10 w/gnd	heating & power for transmitters	New
	LP007	140	Boiler Room Basement Panel	New NCT control cabinet	2/C #12 w/gnd	auxiliary outlet in cabinet	New
	LP008	300	Boiler Room Basement Panel	Valve Vault Sump Pump Outlet	2/C #12 w/gnd	power for basin sump pump	New
	LP009	340	New NCT control cabinet	Lights and Outlets on Fan Deck	3/C #12 w/gnd	power for lights and outlets on fan deck	New
	LP010	105	New NCT control cabinet	Lights on Stairs	2/C #12 w/gnd	power for stair lighting	New
	C001	155	New NCT control cabinet	PLC	28 pr. #18 sh	NCT instrument communication w/PLC	New
	C002	90	West Flow Sensor (FE00101)	West Flow Transmitter (FIT00101)	395L Sensor Cable	FE00101 to control cabinet	UNL
	C003	115	West Center Flow Sensor (FE00102)	West Center Flow Transmitter (FIT00102)	395L Sensor Cable	FE00102 to control cabinet	UNL
	C004	140	East Center Flow Sensor (FE00103)	East Center Flow Transmitter (FIT00103)	395L Sensor Cable	FE00103 to control cabinet	UNL
	C005	170	East Flow Sensor (FE00104)	East Flow Transmitter (FIT00104)	395L Sensor Cable	FE00104 to control cabinet	UNL
	C006	80	West Bypass 16" MOV (MOV00105)	New NCT control cabinet	2 pr. #18 sh	MOV00105 communication w/PLC	New
	C007	160	East Bypass 16" MOV (MOV00106)	New NCT control cabinet	2 pr. #18 sh	MOV00106 communication w/PLC	New
	C008	80	West CWS 20" MOV (MOV00101)	New NCT control cabinet	2 pr. #18 sh	MOV00101 communication w/PLC	New
	C009	105	West Center CWS 20" MOV (MOV00102)	New NCT control cabinet	2 pr. #18 sh	MOV00102 communication w/PLC	New
	C010	130	East Center CWS 20" MOV (MOV00103)	New NCT control cabinet	2 pr. #18 sh	MOV00103 communication w/PLC	New
	C011	160	East CWS 20" MOV (MOV00104)	New NCT control cabinet	2 pr. #18 sh	MOV00104 communication w/PLC	New
	C012	170	Header Temperature Element (TE00001)	Header Temperature Transmitter	4/C#18 sh (Belden 9418)	TE00001 to control cabinet	New
	C013	155	Basin Level Transmitter (LT00001)	New NCT control cabinet	1 pr. #18 sh	LT00001 communication w/PLC	New
	C014	105	SE Basin Temperature Element (TE00002)	Basin Temperature Transmitter	4/C#18 sh (Belden 9418)	TE00002 to control cabinet	New
	C015	105	NW Basin Temperature Element (TE00003)	Basin Temperature Transmitter	4/C#18 sh (Belden 9418)	TE00003 to control cabinet	New
	C016	80	West Fan Bearing Temp. Element 1 (TE00004)	West Fan Bearing Temp. Transmitter 1	4/C#18 sh (Belden 9418)	TE00004 to control cabinet	New
	C017	80	West Fan Bearing Temp. Element 2 (TE00005)	West Fan Bearing Temp. Transmitter 2	4/C#18 sh (Belden 9418)	TE00005 to control cabinet	New
	C018	105	West Center Fan Bearing Temp. Element 1 (TE00006)	West Center Fan Bearing Temp. Transmitter 1	4/C#18 sh (Belden 9418)	TE00006 to control cabinet	New
	C019	105	West Center Fan Bearing Temp. Element 2 (TE00007)	West Center Fan Bearing Temp. Transmitter 2	4/C#18 sh (Belden 9418)	TE00007 to control cabinet	New
	C020	130	East Center Fan Bearing Temp. Element 1 (TE00008)	East Center Fan Bearing Temp. Transmitter 1	4/C#18 sh (Belden 9418)	TE00008 to control cabinet	New
	C021	130	East Center Fan Bearing Temp. Element 2 (TE00009)	East Center Fan Bearing Temp. Transmitter 2	4/C#18 sh (Belden 9418)	TE00009 to control cabinet	New
	C022	155	East Fan Bearing Temp. Element 1 (TE00010)	East Fan Bearing Temp. Transmitter 1	4/C#18 sh (Belden 9418)	TE00010 to control cabinet	New
	C023	155	East Fan Bearing Temp. Element 2 (TE00011)	East Fan Bearing Temp. Transmitter 2	4/C#18 sh (Belden 9418)	TE00011 to control cabinet	New
	C024	140	West Cell VFD	PLC	2 pr. #18 sh	VFD Communication w/PLC	New
	C025	140	West Center Cell VFD	PLC	2 pr. #18 sh	VFD Communication w/PLC	New
	C026	140	East Center Cell VFD	PLC	2 pr. #18 sh	VFD Communication w/PLC	New
	C027	140	East Cell VFD	PLC	2 pr. #18 sh	VFD Communication w/PLC	New
	C028	140	West Cell VFD	PLC	2/C#14	VFD Communication w/PLC	New
	C029	140	West Center Cell VFD	PLC	2/C#14	VFD Communication w/PLC	New
	C030	140	East Center Cell VFD	PLC	2/C#14	VFD Communication w/PLC	New
	C031	140	East Cell VFD	PLC	2/C#14	VFD Communication w/PLC	New
	C032	195	New NCT control cabinet	West Fan VFD	2/C #14	VFD Interlocks	New
	C033	195	New NCT control cabinet	West Center Fan VFD	2/C #14	VFD Interlocks	New
	C034	195	New NCT control cabinet	East Center Fan VFD	2/C #14	VFD Interlocks	New
	C035	195	New NCT control cabinet	East Fan VFD	2/C #14	VFD Interlocks	New
	C036	80	New NCT control cabinet	West Riser Drain Line Solenoid Valve SV00101	2/C #14	control of SV00101	New
	C037	105	New NCT control cabinet	West Center Riser Drain Line Solenoid Valve SV00102	2/C #14	control of SV00102	New
	C038	130	New NCT control cabinet	East Center Riser Drain Line Solenoid Valve SV00103	2/C #14	control of SV00103	New
	C039	160	New NCT control cabinet	East Riser Drain Line Solenoid Valve SV00104	2/C #14	control of SV00104	New
	C040	155	New NCT control cabinet	PLC	2/C #14	loss of power to NCT control cab. Alarm	New
	C041	80	West Vibration Switch (VSH00001)	New NCT control cabinet	2/C #14	VSH00001 VFD Interlock (120VAC)	New
	C042	105	West Center Vibration Switch (VSH00002)	New NCT control cabinet	2/C #14	VSH00002 VFD Interlock (120VAC)	New
	C043	130	East Center Vibration Switch (VSH00003)	New NCT control cabinet	2/C #14	VSH00003 VFD Interlock (120VAC)	New
	C044	155	East Vibration Switch (VSH00004)	New NCT control cabinet	2/C #14	VSH00004 VFD Interlock (120VAC)	New
	C045	80	West Low Oil Switch (LOS00001)	New NCT control cabinet	2/C #14	LOS00001 VFD Interlock (120VAC)	New
	C046	105	West Center Low Oil Switch (LOS00002)	New NCT control cabinet	2/C #14	LOS00002 VFD Interlock (120VAC)	New
	C047	130	East Center Low Oil Switch (LOS00003)	New NCT control cabinet	2/C #14	LOS00003 VFD Interlock (120VAC)	New
	C048	155	East Low Oil Switch (LOS00004)	New NCT control cabinet	2/C #14	LOS00004 VFD Interlock (120VAC)	New
	C049	155	PLC	New NCT control cabinet	5/C#14	control of all drain line solenoid valves	New
	C050	90	PLC	Comm Closet	4 - cat5e	ethernet from PLC to comm closet	New

ELECTRICAL CIRCUIT LIST

Raceway No.	Length (ft)	From	To	Circuits	Size	
R001	80	new j-box at NCT	west NCT motor	P001	3"	480V AT NCT
R002	105	new j-box at NCT	west center NCT motor	P002	3"	
R003	130	new j-box at NCT	east center NCT motor	P003	3"	
R004	155	new j-box at NCT	east NCT motor	P004	3"	
R005	80	new j-box at NCT	MOV00105	P005	1"	
R006	160	new j-box at NCT	MOV00106	P006	1"	
R007	80	new j-box at NCT	MOV00101	P007	1"	
R008	105	new j-box at NCT	MOV00102	P008	1"	
R009	130	new j-box at NCT	MOV00103	P009	1"	
R010	160	new j-box at NCT	MOV00104	P010	1"	
R011	235	new j-box at NCT	heat trace panels	LP001, LP002, LP003, LP004	2"	120V AT NCT
R012	80	New NCT control cabinet	west NCT motor	C041, C045	1"	
R013	105	New NCT control cabinet	west center NCT motor	C042, C046	1"	
R014	130	New NCT control cabinet	east center NCT motor	C043, C047	1"	
R015	155	New NCT control cabinet	east NCT motor	C044, C048	1"	
R016	10	new j-box at NCT	New NCT control cabinet	C032, C033, C034, C035, C040, LP005, LP006, LP007	2"	
R017	340	New NCT control cabinet	lights & outlets on fan deck	LP009	1"	
R018	170	new j-box at NCT	basin sump pump	LP008	1"	
R019	80	New NCT control cabinet	SV00101	C036	1"	
R020	105	New NCT control cabinet	SV00102	C037	1"	
R021	130	New NCT control cabinet	SV00103	C038	1"	
R022	160	New NCT control cabinet	SV00104	C039	1"	
R055	105	New NCT control cabinet	lights on stairs	LP010	1"	
R023	10	existing junction box	New NCT control cabinet	C001	3"	INSTRUMENT CABLE AT NCT
R024	90	New NCT control cabinet	FE00101	C002	1"	
R025	115	New NCT control cabinet	FE00102	C003	1"	
R026	140	New NCT control cabinet	FE00103	C004	1"	
R027	170	New NCT control cabinet	FE00104	C005	1"	
R028	80	New NCT control cabinet	MOV00105	C006	1"	
R029	160	New NCT control cabinet	MOV00106	C007	1"	
R030	80	New NCT control cabinet	MOV00101	C008	1"	
R031	105	New NCT control cabinet	MOV00102	C009	1"	
R032	130	New NCT control cabinet	MOV00103	C010	1"	
R033	160	New NCT control cabinet	MOV00104	C011	1"	
R034	170	New NCT control cabinet	TE00001	C012	1"	
R035	155	New NCT control cabinet	LT00001	C013	1"	
R036	105	New NCT control cabinet	TE00002, TE00003	C014, C015	1"	
R037	80	New NCT control cabinet	TE00004, TE00005	C016, C017	1"	
R038	105	New NCT control cabinet	TE00006, TE00007	C018, C019	1"	
R039	130	New NCT control cabinet	TE00008, TE00009	C020, C021	1"	
R040	155	New NCT control cabinet	TE00010, TE00011	C022, C023	1"	
R041	140	New j-box in CCUP basement	West Fan VFD	C024	1"	INSIDE CCUP
R042	140	New j-box in CCUP basement	West Center Fan VFD	C025	1"	
R043	140	New j-box in CCUP basement	East Center Fan VFD	C026	1"	
R044	140	New j-box in CCUP basement	East Fan VFD	C027	1"	
R045	70	New 480V panel in basement	MCC-2 in basement	P011	1"	
R046	40	Cable Tray in CCUP basement	boiler room basement panel	LP001, LP002, LP003, LP004	2"	
R047	existing	Cable Tray in CCUP basement	boiler room basement panel	LP005, LP006, LP007, LP008	2"	
R048	95	Cable Tray in CCUP basement	West Fan VFD	C032	1"	
R049	95	Cable Tray in CCUP basement	West Center Fan VFD	C033	1"	
R050	95	Cable Tray in CCUP basement	East Center Fan VFD	C034	1"	
R051	95	Cable Tray in CCUP basement	East Fan VFD	C035	1"	
R052	80	Duct Bank in CCUP basement	New j-box in CCUP basement	C001	3"	
R053	90	New j-box in CCUP basement	Comm Closet (ethernet)	C050	2"	
R056	80	Duct Bank in CCUP basement	New j-box in CCUP basement	C040, C049	1"	
R057	90	New j-box in CCUP basement	Comm Closet (120VAC)	future	2"	
R058	140	New j-box in CCUP basement	West Fan VFD	C028	1"	
R059	140	New j-box in CCUP basement	West Center Fan VFD	C029	1"	
R060	140	New j-box in CCUP basement	East Center Fan VFD	C030	1"	
R061	140	New j-box in CCUP basement	East Fan VFD	C031	1"	
R062	15	New j-box in CCUP basement	PLC Cabinet (120VAC)	C028, C029, C030, C031, C040, C049	4"	
R063	15	New j-box in CCUP basement	PLC Cabinet (instrument)	C001, C024, C025, C026, C027, C050	4"	
R064	95	Cable Tray in CCUP basement	West Fan VFD	P001	3"	
R065	95	Cable Tray in CCUP basement	West Center Fan VFD	P002	3"	
R066	95	Cable Tray in CCUP basement	East Center Fan VFD	P003	3"	
R067	95	Cable Tray in CCUP basement	East Fan VFD	P004	3"	
R068	10	New 480V panel in basement	Duct Bank in CCUP basement	P005, P006, P007, P008, P009, P010	3"	

ELECTRICAL RACEWAY LIST

ISSUED FOR
BID
09-18-2013

CAD DATA
FILENAME: 40213-CCUP-NCT-E6
PLOT SCALE: 1:1 (30 x 42)
LAST MODIFIED: 10/18/2013

REV	DESCRIPTION	REV	DESCRIPTION
1	REVISED FOR ADDENDUM 1 10-18-2013		
0	ISSUED FOR BID 09-18-2013		

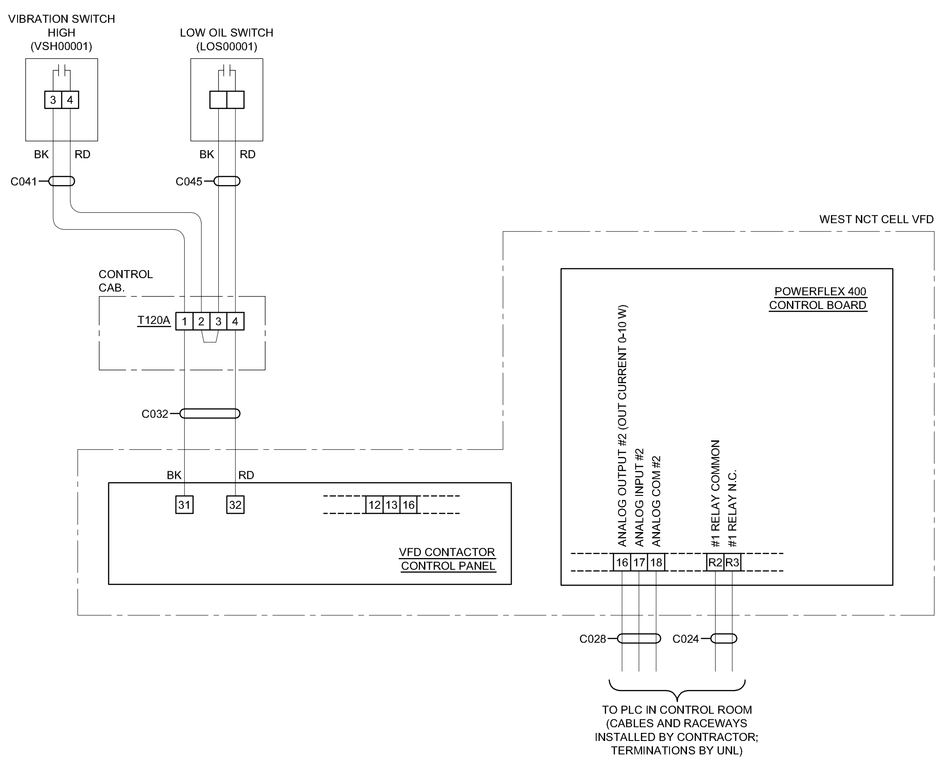
LUTZ, DAILY & BRAIN, LLC
CONSULTING ENGINEERS
6400 GLENWOOD
SUITE 200
OVERLAND PARK
KANSAS 66202
DESIGN BY WMH CHECKED BY BDS
DRAWN BY WMH APPROVED BY BDS

UNIVERSITY OF NEBRASKA
- LINCOLN

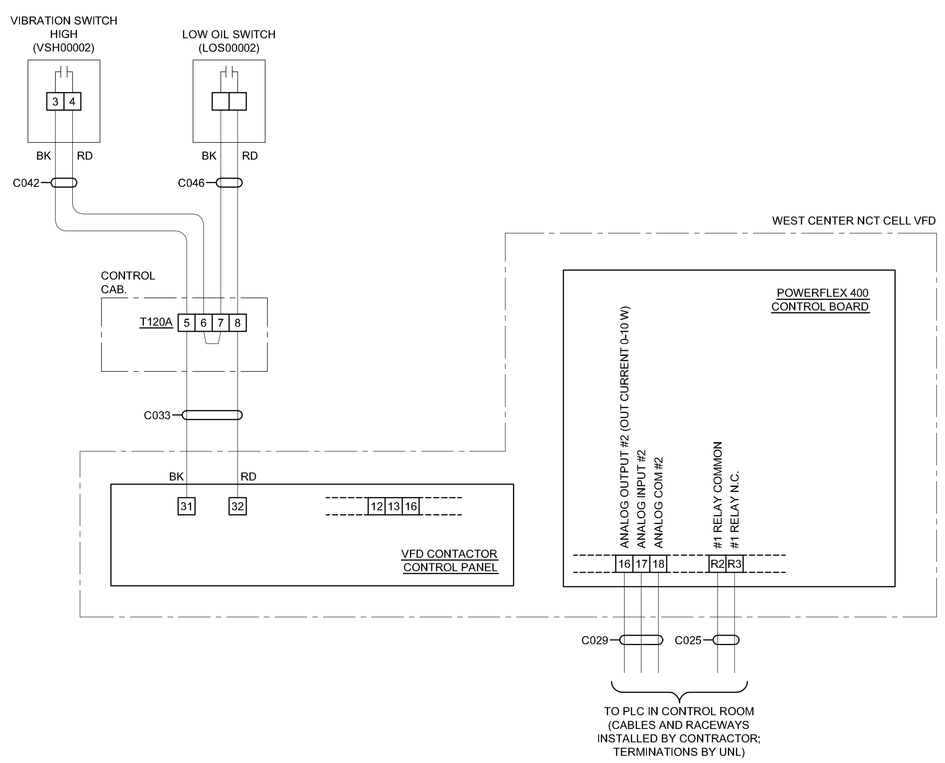
CITY CAMPUS UTILITY PLANT
NORTH COOLING TOWER (NCT) REPLACEMENT PROJECT
GENERAL INSTALLATION CONTRACT PACKAGE
UNL PROJECT NO. C028P241

ELECTRICAL CIRCUIT
AND RACEWAY LIST

DRAWING NUMBER
40213-CCUP-NCT-E6
SHEET NUMBER
12



WEST NCT CELL VFD
WIRING DIAGRAM



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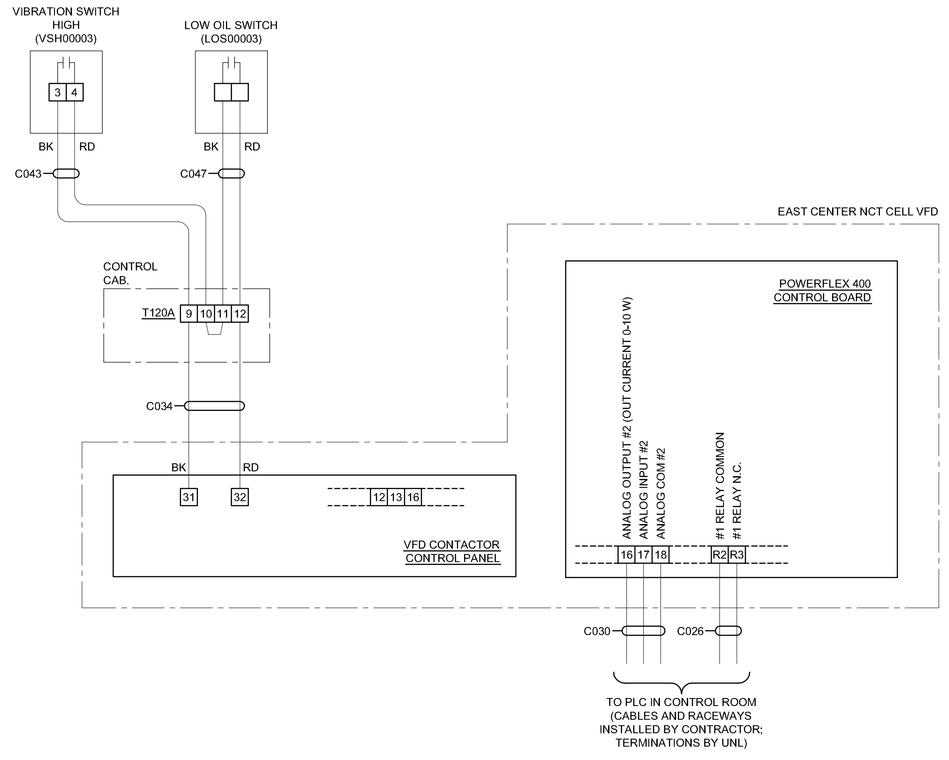
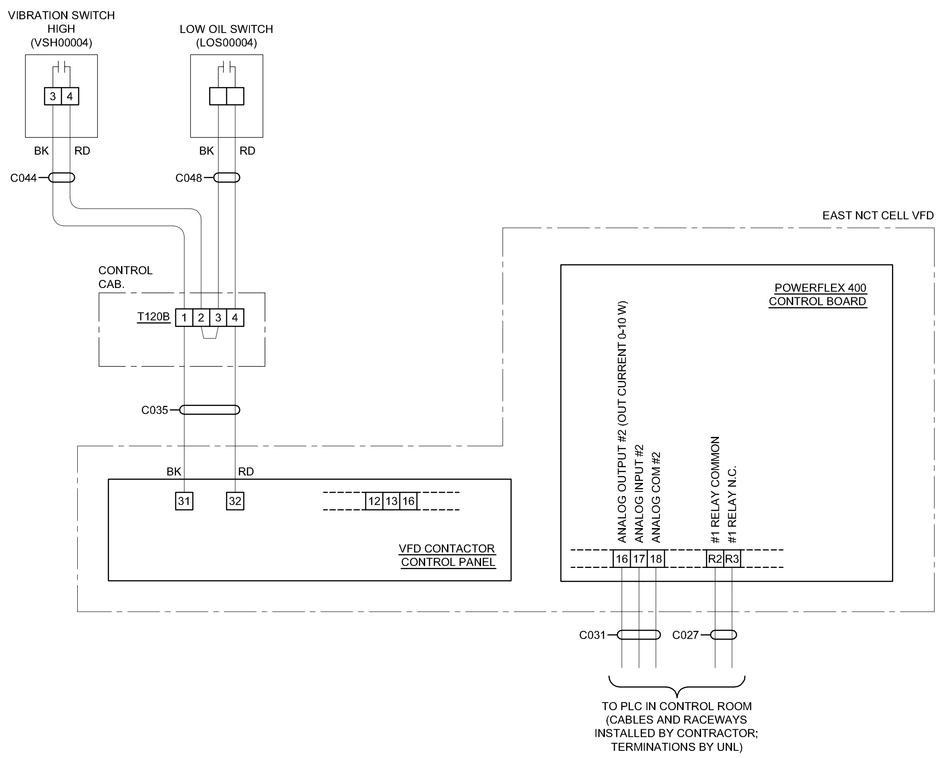
WIRING DIAGRAM



EAST CENTER NCT CELL VFD
WIRING DIAGRAM



EAST NCT CELL VFD
WIRING DIAGRAM

1

ISSUED FOR
BID
09-18-2013

CAD DATA
FILENAME: 40213-CCUP-NCT-E8
PLOT SCALE: 1:1 (30 x 42)
LAST MODIFIED: 10/18/2013

REV	DESCRIPTION	REV	DESCRIPTION
1	REVISED FOR ADDENDUM 1 10-18-2013		
0	ISSUED FOR BID 09-18-2013		

LUTZ, DAILY & BRAIN, LLC
CONSULTING ENGINEERS
6400 GLENWOOD
SUITE 200
OVERLAND PARK
KANSAS 66202

DESIGN BY WMH CHECKED BY BDS
DRAWN BY WMH APPROVED BY BDS

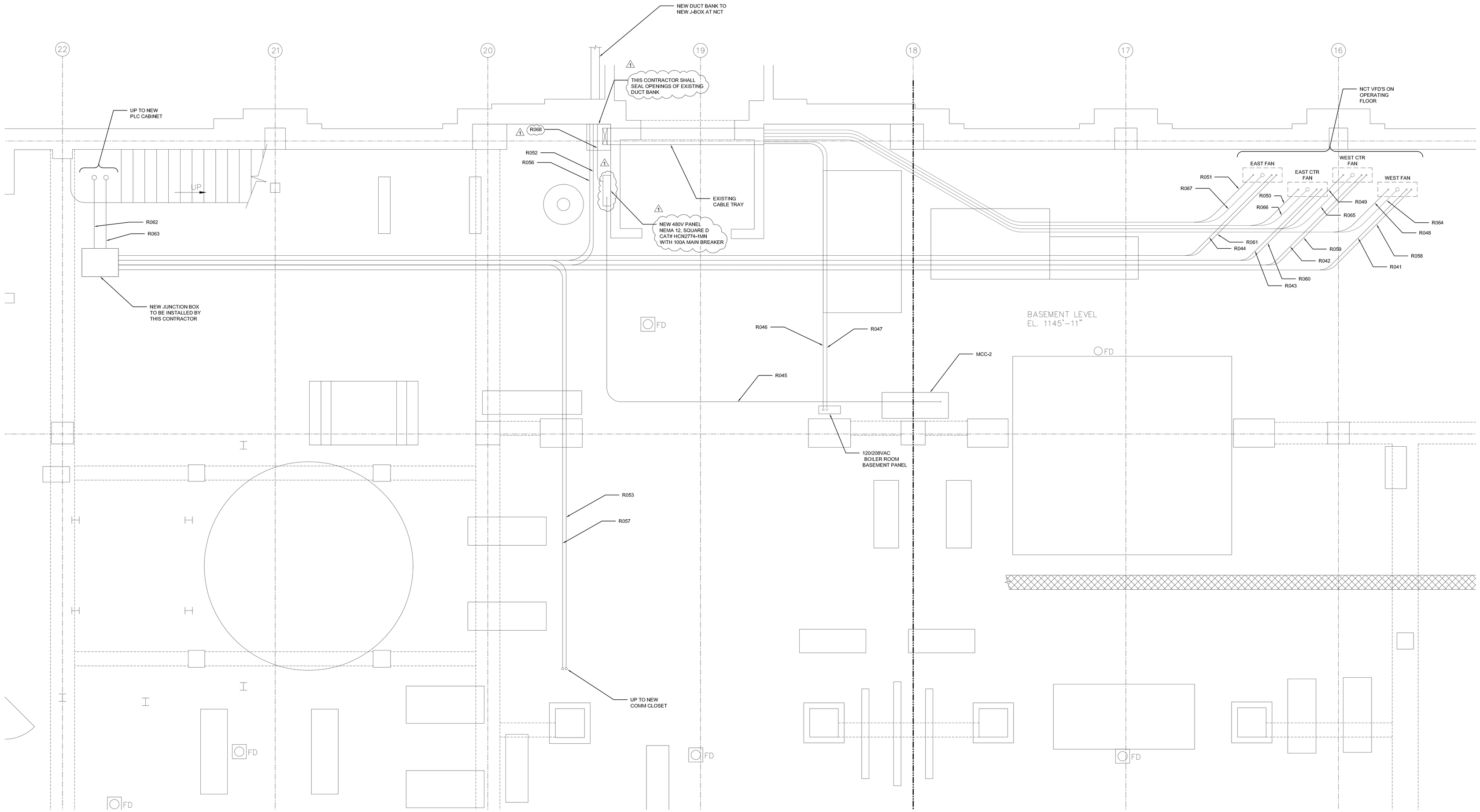
UNIVERSITY OF NEBRASKA
- LINCOLN

CITY CAMPUS UTILITY PLANT
NORTH COOLING TOWER (NCT) REPLACEMENT PROJECT
GENERAL INSTALLATION CONTRACT PACKAGE
UNL PROJECT NO. C028P241

ELECTRICAL VFD WIRING DIAGRAM
AND 480V SUPPLY ENCLOSURE DETAIL

DRAWING NUMBER
40213-CCUP-NCT-E8
SHEET NUMBER
14

10/18/2013 11:54 AM - L:\UNIVERSITY OF NEBRASKA - LINCOLN (UNL)\40213 - CCUP NORTH CT\CURRENT PROJECT DELIVERABLES\40213-CCUP-NCT-E8.DWG - WHOWELL



NOTES:

1. GENERAL ROUTING OF NEW CONDUIT SHOWN. THIS CONTRACTOR SHALL REVIEW PROPOSED ROUTING WITH OWNER AND OBTAIN OWNER'S APPROVAL BEFORE INSTALLATION.
2. SEE DRAWING 40213-CCUP-NCT-E6 FOR LISTING OF CIRCUITS AND RACEWAYS.
3. ALL CONDUIT IN THIS AREA SHALL BE RIGID GALVANIZED STEEL.

ISSUED FOR BID
09-18-2013

CAD DATA
FILENAME: 40213-CCUP-NCT-E10
PLOT SCALE: 1:1 (30 x 42)
LAST MODIFIED: 10/18/2013

REV	DESCRIPTION	REV	DESCRIPTION
1	REVISED FOR ADDENDUM 1 10-18-2013		
2	ISSUED FOR BID 09-18-2013		

LUTZ, DAILY & BRAIN, LLC
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SUITE 200
OVERLAND PARK
KANSAS 66202

DESIGN BY WMH CHECKED BY BDS
DRAWN BY WMH APPROVED BY BDS

UNIVERSITY OF NEBRASKA
- LINCOLN

CITY CAMPUS UTILITY PLANT
NORTH COOLING TOWER (NCT) REPLACEMENT PROJECT
GENERAL INSTALLATION CONTRACT PACKAGE
UNL PROJECT NO. C028P241

NCT ELECTRICAL INSTALLATION
BASEMENT FLOOR
PLAN VIEW

DRAWING NUMBER
40213-CCUP-NCT-E10
SHEET NUMBER
16