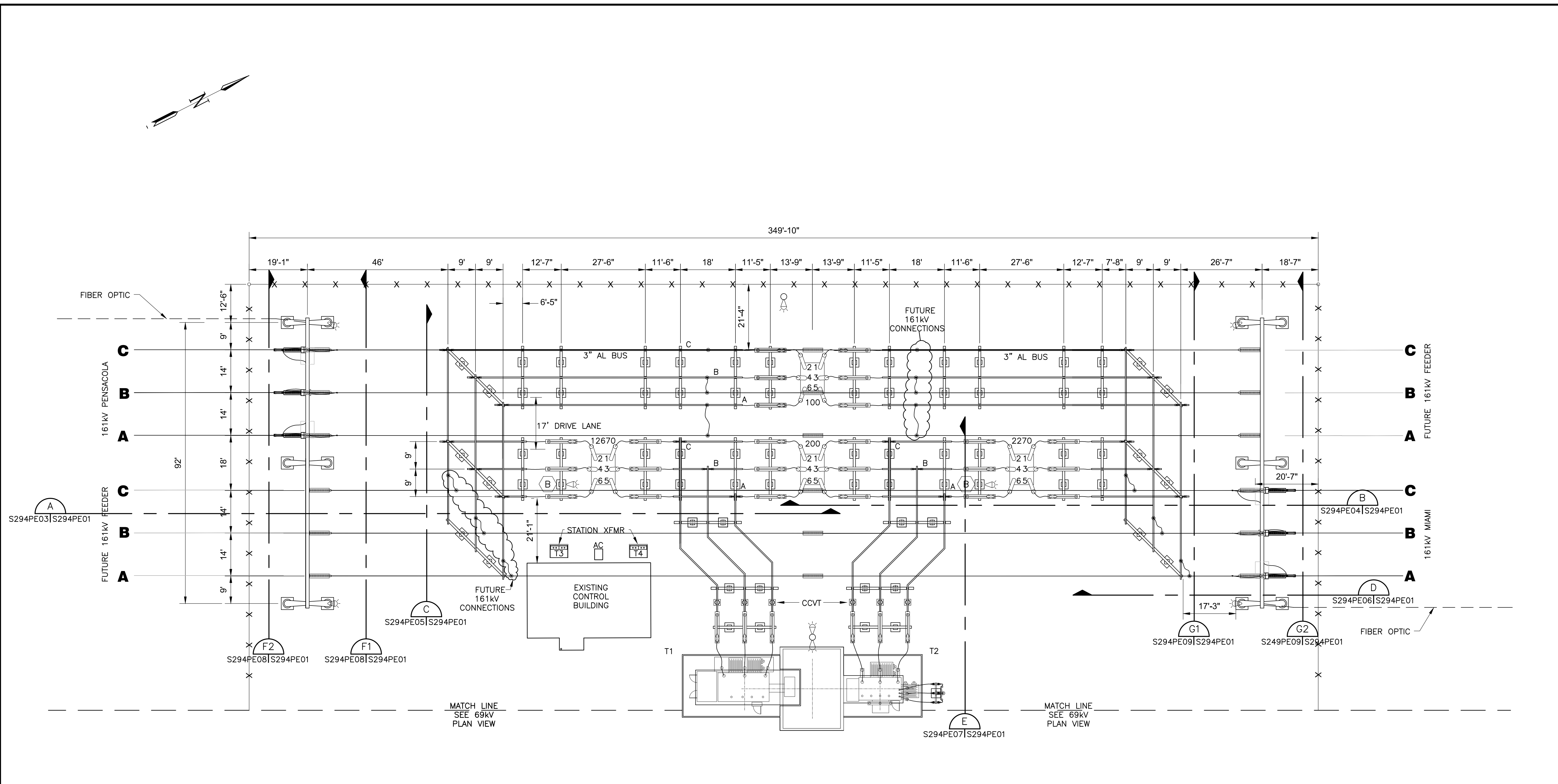
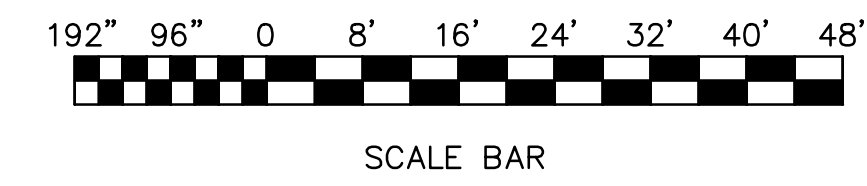


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REFERENCE DRAWINGS

- S294PE02 69kV EQUIPMENT PLAN VIEW
- S294PE03 161kV ELEVATION VIEW A
- S294PE04 161kV ELEVATION VIEW B
- S294PE05 161kV ELEVATION VIEW C
- S294PE06 161kV ELEVATION VIEW D
- S294PE07 161kV ELEVATION VIEW E
- S294PE08 161kV ELEVATION VIEW F1 & F2
- S294PE09 161kV ELEVATION VIEW G1 & G2

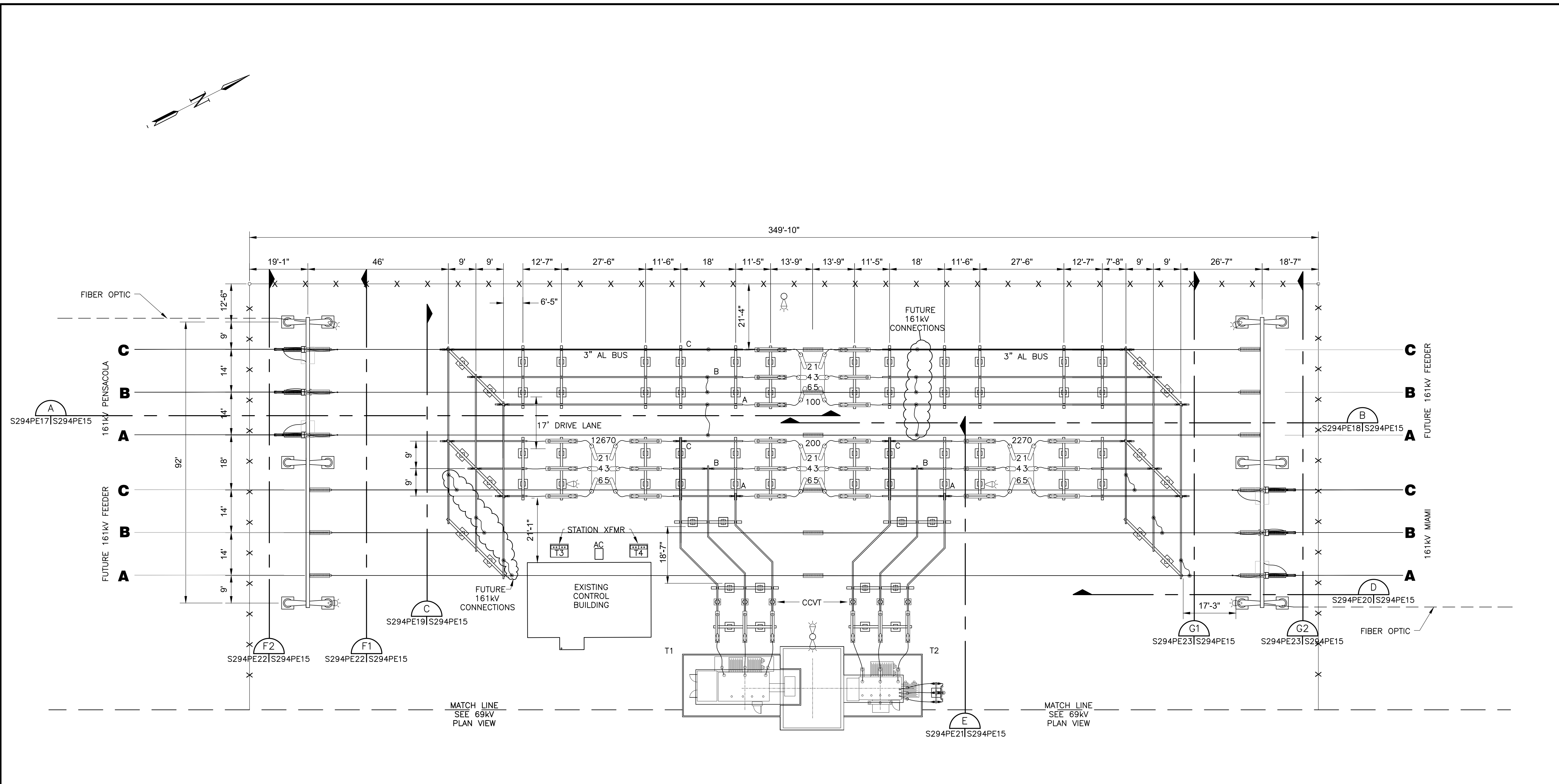


ISSUED FOR BID

GRAND RIVER DAM AUTHORITY AFTON SUBSTATION S294 AFTON, OKLAHOMA 161/69kV			
161kV EQUIPMENT PLAN VIEW			
SCALE: AS SHOWN	DRAWN BY: DKG	ENGR: AEM	APPD: BA
CH: MW		DATE: 3/7/2011	
GRAND RIVER DAM AUTHORITY P.O. BOX 409 VINITA, OK 74301		DRAWING No. S294PE01	REV. 1

REV	DATE	REVISION DESCRIPTION	DFT	ENG
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0	5/29/12	ISSUED FOR BID	AS	BA

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- REFERENCE DRAWINGS**
- S294PE16 69kV EQUIPMENT PLAN VIEW
 - S294PE17 161kV ELEVATION PARTS LIST VIEW A
 - S294PE18 161kV ELEVATION PARTS LIST VIEW B
 - S294PE19 161kV ELEVATION PARTS LIST VIEW C
 - S294PE20 161kV ELEVATION PARTS LIST VIEW D
 - S294PE21 161kV ELEVATION PARTS LIST VIEW E
 - S294PE22 161kV ELEVATION PARTS LIST VIEW F1 & F2
 - S294PE23 161kV ELEVATION PARTS LIST VIEW G1 & G2
 - S294DE01 BILL OF MATERIALS SHEET 1 OF 4
 - S294DE02 BILL OF MATERIALS SHEET 2 OF 4
 - S294DE03 BILL OF MATERIALS SHEET 3 OF 4
 - S294DE04 BILL OF MATERIALS SHEET 4 OF 4



REV	DATE	REVISION DESCRIPTION	DFT	ENG
1	06JUN12	MOVED 161W DEAD END LOCATION	JT	BA
0	5/11/12	ISSUED FOR BID	AS	BA

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
 AFTON SUBSTATION S294
 AFTON, OKLAHOMA
 161/69KV

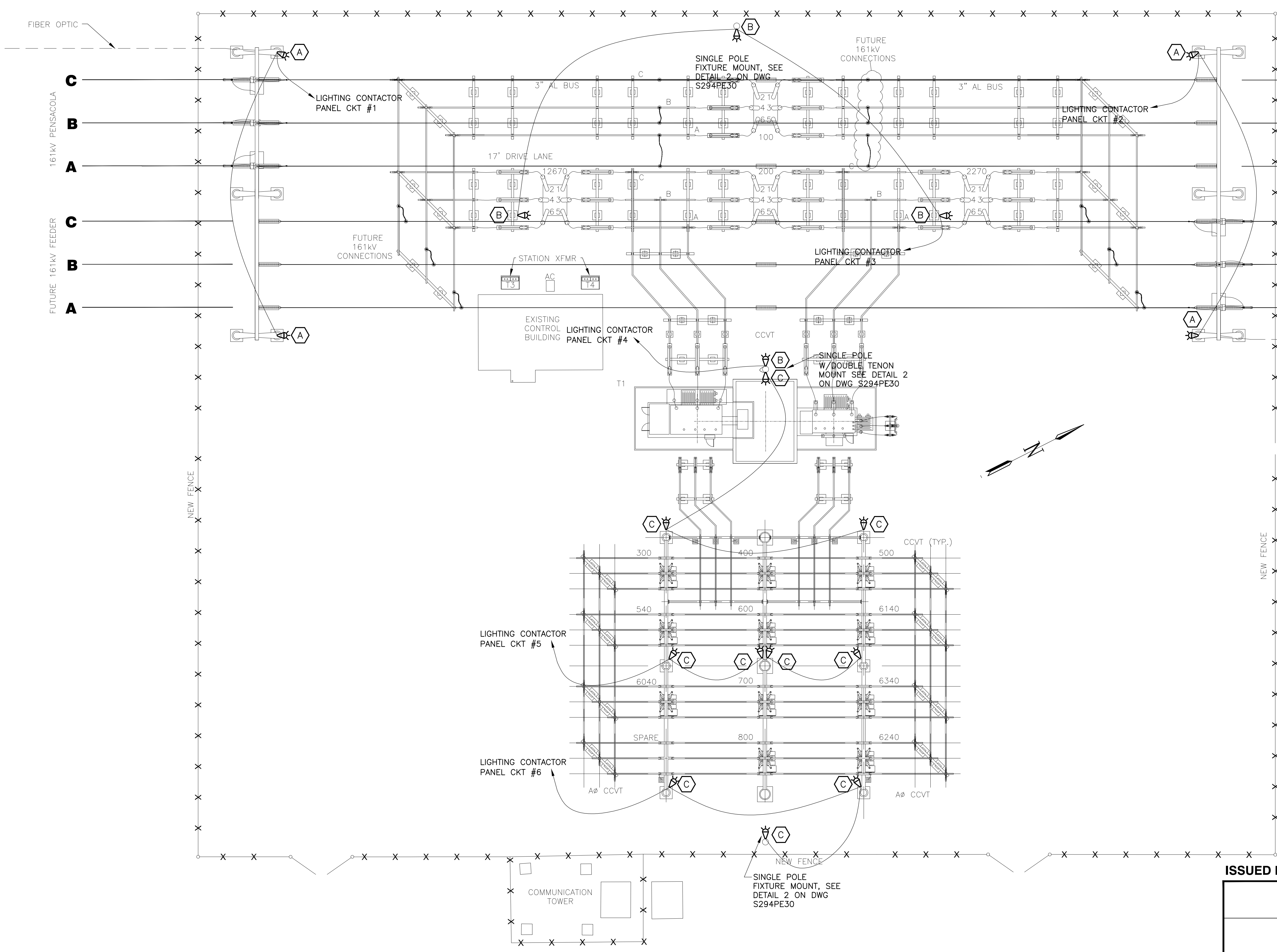
PARTS LIST 161KV EQUIPMENT
 PLAN VIEW

SCALE: AS SHOWN DRAWN BY: DKG ENGR: AEM APPD: BA
 CH: MW DATE: 3/7/2011

GRDA
 GRAND RIVER DAM AUTHORITY
 P.O. BOX 409
 VINITA, OK 74301

DRAWING No. S294PE15 REV. 1

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- REFERENCE DRAWINGS**
- S294PE02 69kV EQUIPMENT PLAN VIEW
 - S294PE03 161kV ELEVATION VIEW A
 - S294PE04 161kV ELEVATION VIEW B
 - S294PE05 161kV ELEVATION VIEW C
 - S294PE06 161kV ELEVATION VIEW D
 - S294PE07 161kV ELEVATION VIEW E
 - S294PE08 161kV ELEVATION VIEW F1 & F2
 - S294PE09 161kV ELEVATION VIEW G1 & G2
 - S294PE01 161kV EQUIPMENT PLAN VIEW
 - S294PE10 69kV ELEVATION VIEW H
 - S294PE11 69kV ELEVATION VIEW J
 - S294PE12 69kV ELEVATION VIEW K
 - S294PE13 69kV ELEVATION VIEW L
 - S294PE14 69kV ELEVATION VIEW M
 - S294PE30 FENCE DETAILS

- (A) 4 EA. 1000W M.H. 33' AFG
- (B) 4 EA. 175W M.H. 11' AFG
- (C) 10 EA. 400W M.H. 11' AFG

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
AFTON SUBSTATION S294
 AFTON, OKLAHOMA
 161/69kV
LIGHTING PLAN VIEW
 PLAN VIEW

SCALE: AS SHOWN	DRAWN BY: DKG	ENGR: AEM	APPD: BA
CH: MW		DATE: 3/7/2011	
GRDA <small>GRAND RIVER DAM AUTHORITY</small> <small>P.O. BOX 409</small> <small>VINITA, OK 74301</small>		DRAWING No. S294PE40	REV. 1

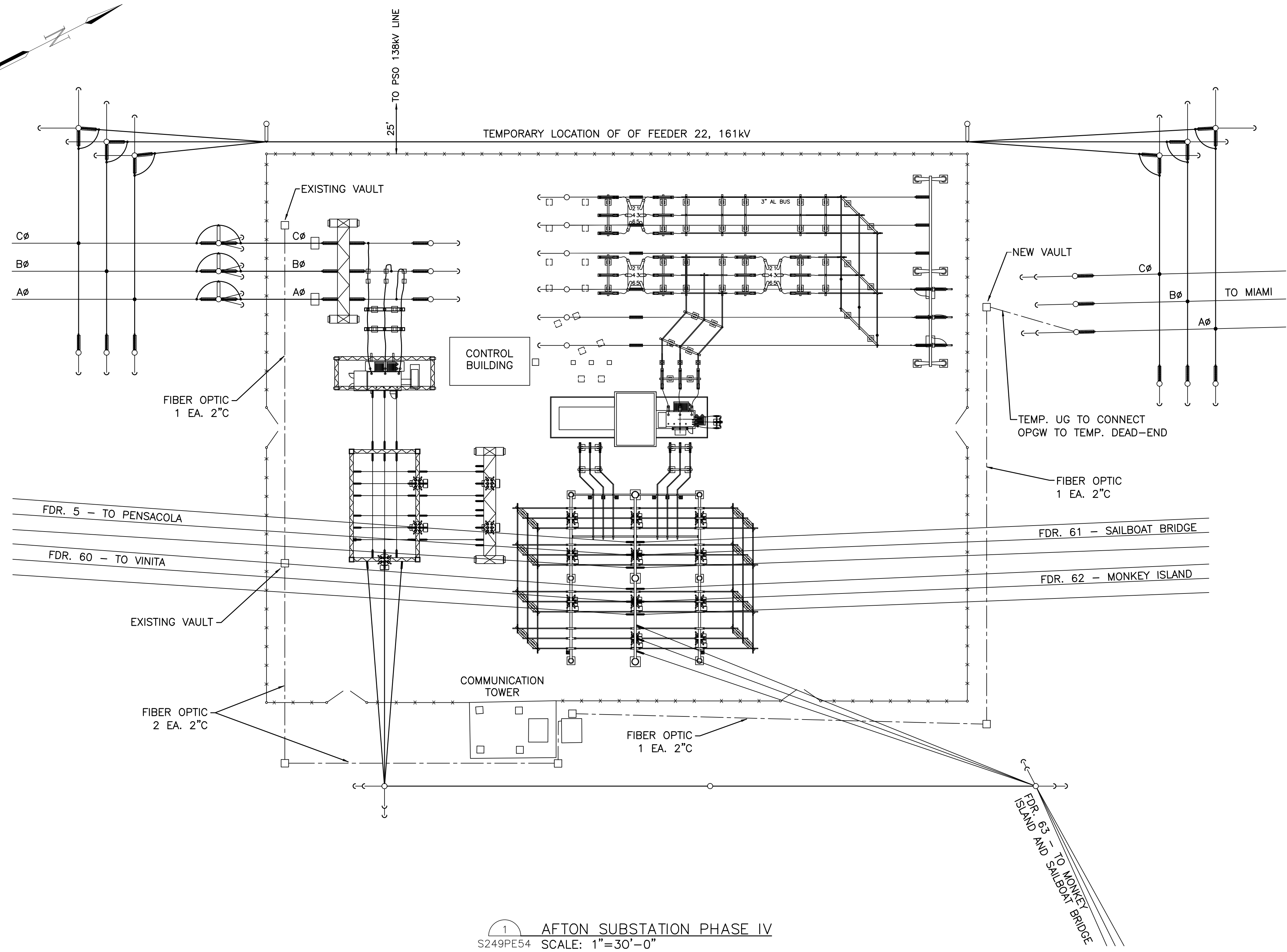
REV	DATE	REVISION DESCRIPTION	DFT	ENG
1	06/JUN/12	MOVED 161KV DEAD END LOCATION	JT	BA
0	5/29/12	ISSUED FOR BID	AS	BA

PHASE IV CONSTRUCTION SCHEDULE

1. CONSTRUCT TEMPORARY 161KV TRANSMISSION LINE TO RE-ROUTE FEEDER 22 FROM SOUTH OF NEW SUBSTATION FENCE TO WEST SIDE OF FENCE, THEN NORTHWARD ALONG FENCE TO NORTHWEST OF FENCE, THEN EASTWARD TO TEMPORARY 3-POLE STRUCTURE LOCATED EAST OF SECTION OF FEEDER 22 TO MIAMI FREEHAUF. TEMPORARY ANCHORS MUST BE INSTALLED FOR CONDUCTOR TERMINATIONS. THIS SECTION OF LINE WILL BE INSTALLED UNDER EXISTING FEEDER 22 AND EAST OF PSO 138KV TRANSMISSION LINE.
2. CLEARANCE ON FEEDER 22 AND EXISTING 161KV TRANSFORMER (TRANSFORMER #1) BEGINNING JANUARY 28, 2013 TO FEBRUARY 01, 2013.
3. INSTALL TEMPORARY 3-POLE STRUCTURE AND ANCHORS TO NORTH OF EXISTING SOUTH SUBSTATION DEAD-END STRUCTURE.
4. TRANSFER SECTION OF OVERHEAD CONDUCTOR ACROSS 161KV SECTION OF SUBSTATION TO TEMPORARY 3-POLE STRUCTURE.
5. CONNECT TEMPORARY JUMPERS TO CIRCUIT SWITCHER #71.
6. REMOVE REMAINDER OF OVERHEAD CONDUCTOR AND SHIELD WIRE TO EXISTING NORTH SUBSTATION DEAD-END STRUCTURE.
7. INSTALL TEMPORARY 3-POLE STRUCTURE AND ANCHORS TO NORTH OF SUBSTATION FENCE.
8. TRANSFER EXISTING NORTH SECTION OF FEEDER 22 AND FIBER OPTIC TO TEMPORARY 3-POLE STRUCTURE.
9. INSTALL JUMPERS TO TEMPORARY 3-POLE STRUCTURES NORTH AND SOUTH OF FENCE.
10. CHECK PHASING AND ENERGIZE FEEDER 22 AND 161KV TRANSFORMER #1 BY END OF DAY, FEBRUARY 01, 2013.
11. BEGINNING ON FEBRUARY 01, 2013, CONSTRUCT NORTH SECTION OF 161KV SUBSTATION FROM SWITCH 133 AND SWITCH 129. CONSTRUCTION INCLUDES, BUT NOT LIMITED TO, INSTALLING THREE 161KV BREAKERS, SWITCHES, STEEL DEAD-ENDS, BUS SUPPORTS, BUS, CONDUIT, GROUNDING, MODIFICATIONS TO CONTROL HOUSE, RELAY PANELS, TRANSFORMER PANEL, CONNECTIONS TO TRANSFORMER #2, TERMINATIONS FROM RISER POLE OF 161KV TRANSFORMER #2 TO STATION SERVICE TRANSFORMER #4, INSTALL TWO 3-POLE STRUCTURES AND TEMPORARY ANCHORS TO SOUTH OF SWITCH 133 AND SWITCH 129, INSTALL CONDUCTORS, ISOLATION INSULATORS, AND SHIELD WIRE TO TEMPORARY 3-POLE STRUCTURES, INSTALL JUMPERS FROM OVERHEAD CONDUCTOR TO EAST SIDE OF 161KV BUS AND INSTALL SECTION OF FEEDER 62 FROM TEMPORARY DEAD-END STRUCTURE TO PERMANENT LOCATION ON NEW 69KV DEAD-END STEEL.
12. THIS WORK TO BE COMPLETED BY MAY 01, 2013.
13. CLEARANCE OF FEEDER 22 - MAY 02, 2013.
14. REMOVE JUMPERS FROM TEMPORARY 161KV LINE TO FEEDER 22 NEAR 3-POLE LOCATED NORTH OF NEW SUBSTATION DEAD-END. INSTALL NEW SECTION OF CONDUCTOR AND SPLICE IN TO EXISTING FEEDER 22. TRANSFER CONDUCTOR AND SHIELD WIRE TO NEW LOCATION ON NORTHEAST SUBSTATION STEEL DEAD-END. RE-INSTALL JUMPERS FROM TEMPORARY LINE TO NEW LOCATION OF FEEDER 22. ENERGIZE FEEDER 22.
15. ENERGIZE AND PERFORM CHECK-OUT ON TRANSFORMER #2 - MAY 03, 2013 TO MAY 10, 2013.
16. CLEARANCE ON FEEDER 5/61 - MAY 13, 2013 AND MAY 14, 2013.
17. INSTALL ADDITIONAL CONDUCTOR AND SHIELD WIRE, TRANSFER FEEDER 5 TO PERMANENT LOCATION ON SOUTH 69KV SUBSTATION DEAD-END, TRANSFER FEEDER 61 TO PERMANENT LOCATION ON NORTH 69KV SUBSTATION STEEL, REMOVE TEMPORARY 69KV TRANSMISSION LINE, AND ENERGIZE FEEDER 5 AND FEEDER 61 FROM WEST SIDE OF NEW 69KV BUS.
18. INSTALL SECTION OF NEW CONDUCTOR, AND TRANSFER FEEDER 62 TO PERMANENT LOCATION ON NEW 69KV SUBSTATION STEEL DEAD-END. ENERGIZE FEEDER 62 ON NORTH SECTION OF NEW 69KV BUS.
19. RE-INSTALL JUMPERS TO ENERGIZED 69KV FEEDER 62 AT STRUCTURE 65-3. OPEN LINE-SWITCHES PREVIOUSLY INSTALLED ON FEEDER 63 WEST OF STRUCTURE 3-8.
20. OPEN TEMPORARY BREAKER 6340. TRANSFER FEEDER 63 TO PERMANENT LOCATION ON NORTHEAST 69KV SUBSTATION STEEL DEAD-END.
21. CLOSE LINE-SWITCHES NEAR STRUCTURE 3-8 ON FEEDER 63 AND ENERGIZE FEEDER 63 NOW LOCATED AT PERMANENT POSITION ON NORTH 69KV BUS.
22. CHECK OPEN SWITCH 6054 AND INSTALL SECTION OF FEEDER 60 TO PERMANENT LOCATION ON SOUTH SIDE OF NEW 69KV BUS. ENERGIZE FEEDER 60 FROM NEW 69KV BUS.

NOTES:

1. REFER TO NOTES ON THIS DRAWING FOR FIBER OPTIC INSTALLATION.
2. GRDA TO FURNISH POLES, LINE HARDWARE, ANCHORS, CONDUCTOR AND SHIELD WIRE FOR TEMPORARY AND PERMANENT TRANSMISSION LINE CONSTRUCTION.
3. ALL LINE OUTAGES MUST BE KEPT TO A MINIMUM. A HOLD-ORDER WILL BE PLACED ON ENERGIZED LINES OR BUS WHEN PERFORMING WORK NEAR ENERGIZED CIRCUITS.
4. USE ONLY QUALIFIED JOURNEYMAN LINEMAN EXPERIENCED IN WORKING ON OR NEAR ENERGIZED CIRCUITS WHEN PERFORMING WORK ON TRANSMISSION LINES.



1 AFTON SUBSTATION PHASE IV
S249PE54 SCALE: 1"=30'-0"

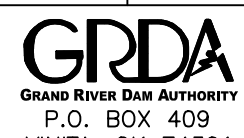
FIBER OPTIC NOTES:

1. BEFORE THE MIAMI FIBER LINE CAN BE TRANSFERRED TO THE SUBSTATION STEEL OFF OF THE TEMPORARY DEAD-END STRUCTURE, A SINGLE 2" CONDUIT MUST BE RUN FROM THE VAULT TO THE NEW DEAD-END POSITION ON THE NEW SUBSTATION STEEL.
2. INSTALL NEW OPGW STORAGE RACK AND DOWN-LEAD CLAMPS ON THE NEW SUBSTATION DEAD-END.
3. THE OPGW SPLICE CLOSURE ON THE TEMPORARY STRUCTURE, AND THE UNDERGROUND CABLE AT THE TEMPORARY STRUCTURE WILL BE RE-ROUTED TO THE NEW SUBSTATION STEEL DEAD-END. THE EXTRA SLACK ON THE COIL RACK OF THE TEMPORARY DEAD-END STRUCTURE WILL BE USED TO EXTEND THE CABLE TO THE NEW SUBSTATION STEEL.
4. THE TRANSFER OF THE OPGW WILL NEED TO BE MADE IN THE "MAINTENANCE WINDOW" FROM 12:00 A.M. TO 06:00 A.M.
5. THIS WORK MUST BE SCHEDULED AT LEAST 2 WEEKS IN ADVANCE.
6. THE CONTRACTOR IS TO SUPPLY ALL LABOR AND MATERIALS FOR THE FIBER OPTIC RE-LOCATION AND SPLICING.
7. INSTALLATION OF THE FIBER OPTIC MUST BE COORDINATED WITH GRDA AND KAMO.

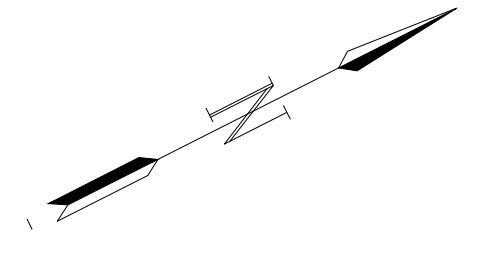
REFERENCE DRAWINGS

S294PE01	161KV EQUIPMENT PLAN VIEW
S294PE50	AFTON SUBSTATION BEFORE CONSTRUCTION
S294PE51	AFTON SUBSTATION PHASE I
S294PE52	AFTON SUBSTATION PHASE II
S294PE53	AFTON SUBSTATION PHASE III
S294PE55	AFTON SUBSTATION PHASE V
S294PG20	69KV FOUNDATION PLAN
S294PG30	TYPICAL FOUNDATION DETAILS
S294PG33	TYPICAL FOUNDATION DETAILS
S294PG34	TRENCH LAYOUT PLAN

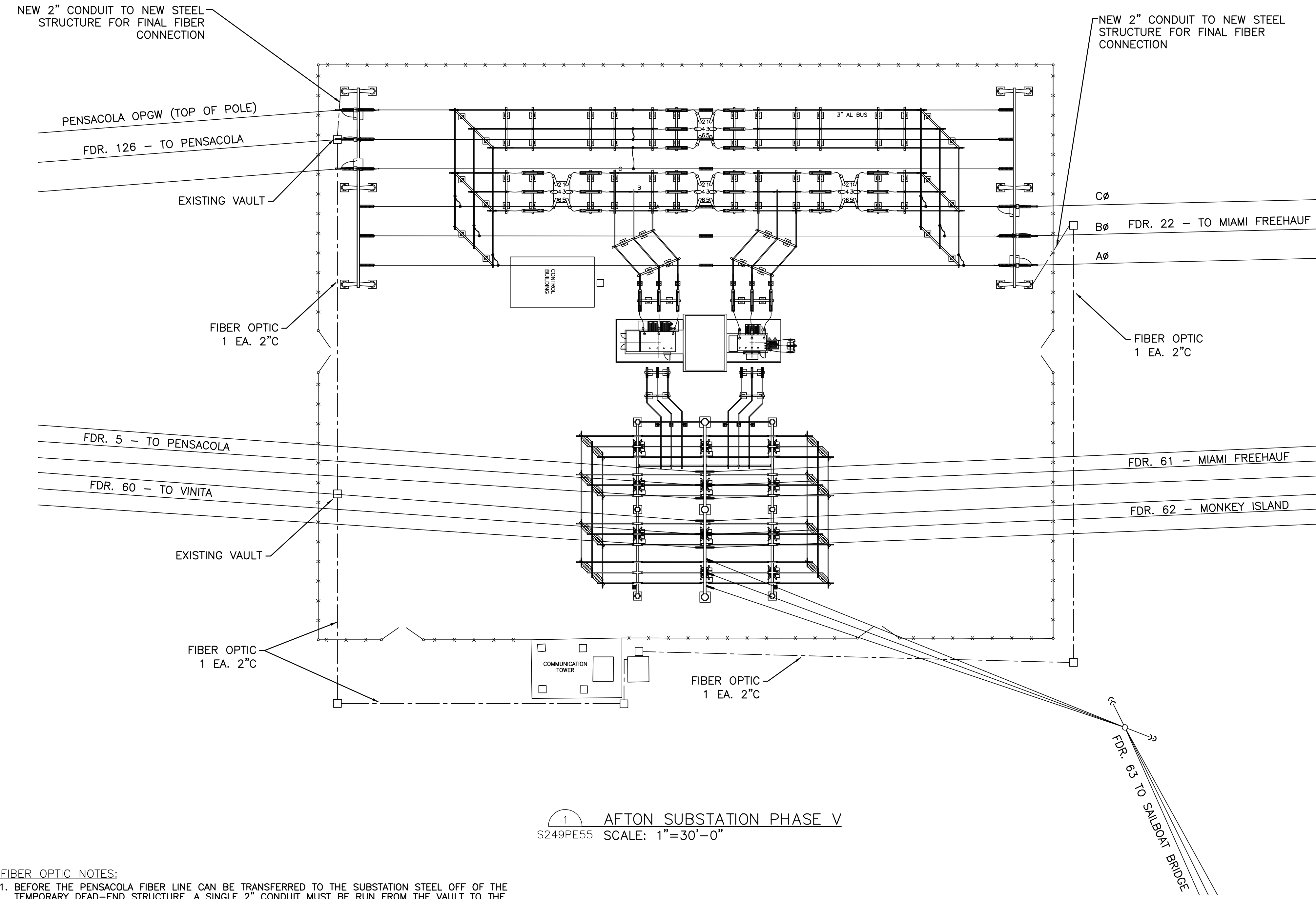
ISSUED FOR BID

GRAND RIVER DAM AUTHORITY			
AFTON SUBSTATION		S294	
AFTON, OKLAHOMA			
161/69KV			
AFTON SUBSTATION PHASE IV			
SCALE: 1"=30'	DRAWN BY: JT	ENGR: BA	APPD: BA
CH: MW	DATE: 01MAY12	DRAWING No. S294PE54	
 GRAND RIVER DAM AUTHORITY P.O. BOX 409 VINITA, OK 74301			REV. 1

REV	DATE	REVISION DESCRIPTION	DFT	ENG
1	06/JUN/12	MOVED 161KV DEAD END LOCATION	JT	BA
0	5/29/12	ISSUED FOR BID	JT	BA



PHASE V CONSTRUCTION SCHEDULE



1. CLEARANCE ON FEEDER 22 AND EXISTING 161KV TRANSFORMER (TRANSFORMER #1) ON MAY 21, 2013 TO REMOVE SECTION OF LINE FROM TEMPORARY 3-POLE STRUCTURE SOUTH OF EXISTING STEEL LATTICE DEAD-END TO TEMPORARY 3-POLE STRUCTURE IN 161KV SUBSTATION. LINE TO BE RE-ENERGIZED AT END OF DAY
2. REMOVE EXISTING LATTICE TOWER, CIRCUIT SWITCHER #71, 161KV PT'S, CCVT'S, AND PRE-EXISTING 69KV STEEL, BREAKERS AND EQUIPMENT.
3. MOVE TRANSFORMER #1 TO NEW LOCATION.
4. CONSTRUCT SECTION OF 161KV SUBSTATION SOUTH OF SWITCH 133 AND SWITCH 129.
5. INSTALL POWER CABLE FROM RISER POLE FOR TRANSFORMER #1 TO STATION SERVICE TRANSFORMER #3.
6. COMPLETE INSTALLATION OF FINAL RELAY AND TRANSFORMER PANELS AND COMMUNICATION RACKS. COMPLETE FINAL MODIFICATION TO CONTROL BUILDING.
7. THIS WORK TO BE COMPLETED BY JUNE 25, 2013.
8. CLEARANCE ON FEEDER 22 AND TRANSFORMER #2 - JUNE 27, 2013.
9. REMOVE JUMPERS FROM TEMPORARY 161KV TRANSMISSION LINE ON NORTH AND SOUTH END OF SUBSTATION. SPLICE IN SECTION OF CONDUCTOR AND SHIELD WIRE AND TRANSFER FEEDER 126 (FORMERLY FEEDER 22) TO NEW LOCATION ON SOUTH-WEST STEEL SUBSTATION DEAD-END. INSTALL JUMPERS, CHECK PHASING, AND RE-ENERGIZE FEEDER 126, FEEDER 22, TRANSFORMER #1 AND TRANSFORMER #2.
10. SUBSTATION NOW FULLY ENERGIZED - JUNE 27, 2013.
11. REMOVE TEMPORARY 161KV TRANSMISSION LINE AND ANCHORS, RESTORE DISTURBED AREA AROUND SUBSTATION, REMOVE EXISTING FOUNDATIONS, RETURN EXCESS AND SURPLUS MATERIAL TO WAREHOUSE, INSTALL FINAL LAYER OF ROCK, AND COMPLETE ALL WORK RELATED TO PROJECT BY JULY 31, 2013.

- NOTES:**
1. REFER TO NOTES ON THIS DRAWING FOR FIBER OPTIC INSTALLATION.
 2. GRDA TO FURNISH POLES, LINE HARDWARE, ANCHORS, CONDUCTOR AND SHIELD WIRE FOR TEMPORARY AND PERMANENT TRANSMISSION LINE CONSTRUCTION.
 3. ALL LINE OUTAGES MUST BE KEPT TO A MINIMUM. A HOLD-ORDER WILL BE PLACED ON ENERGIZED LINES OR BUS WHEN PERFORMING WORK NEAR ENERGIZED CIRCUITS.
 4. USE ONLY QUALIFIED JOURNEYMAN LINEMAN EXPERIENCED IN WORKING ON OR NEAR ENERGIZED CIRCUITS WHEN PERFORMING WORK ON TRANSMISSION LINES.

1 AFTON SUBSTATION PHASE V
S249PE55 SCALE: 1"=30'-0"

- FIBER OPTIC NOTES:**
1. BEFORE THE PENSACOLA FIBER LINE CAN BE TRANSFERRED TO THE SUBSTATION STEEL OFF OF THE TEMPORARY DEAD-END STRUCTURE, A SINGLE 2" CONDUIT MUST BE RUN FROM THE VAULT TO THE NEW DEAD-END POSITION ON THE NEW SUBSTATION STEEL.
 2. INSTALL NEW OPGW STORAGE RACK AND DOWN-LEAD CLAMPS ON THE NEW SUBSTATION DEAD-END.
 3. THE OPGW SPLICE CLOSURE ON THE TEMPORARY STRUCTURE, AND THE UNDERGROUND CABLE AT THE TEMPORARY STRUCTURE WILL BE RE-ROUTED TO THE NEW SUBSTATION STEEL DEAD-END. THE EXTRA SLACK ON THE COIL RACK OF THE TEMPORARY DEAD-END STRUCTURE WILL BE USED TO EXTEND THE CABLE TO THE NEW SUBSTATION STEEL.
 4. THE TRANSFER OF THE OPGW WILL NEED TO BE MADE IN THE "MAINTENANCE WINDOW" FROM 12:00 A.M. TO 06:00 A.M.
 5. THIS WORK MUST BE SCHEDULED AT LEAST 2 WEEKS IN ADVANCE.
 6. THE CONTRACTOR IS TO SUPPLY ALL LABOR AND MATERIALS FOR THE FIBER OPTIC RE-LOCATION AND SPLICING.
 7. INSTALLATION OF THE FIBER OPTIC MUST BE COORDINATED WITH GRDA AND KAMO.

REFERENCE DRAWINGS

S294PE01	161KV EQUIPMENT PLAN VIEW
S294PE50	AFTON SUBSTATION BEFORE CONSTRUCTION
S294PE51	AFTON SUBSTATION PHASE I
S294PE52	AFTON SUBSTATION PHASE II
S294PE53	AFTON SUBSTATION PHASE III
S294PE54	AFTON SUBSTATION PHASE IV
S294PG30	GROUNDING PLAN
S294PG31	161KV FOUNDATION PLAN
S294PG33	TYPICAL FOUNDATION DETAILS
S294PG34	TYPICAL FOUNDATION DETAILS
S294PG50	TRENCH LAYOUT PLAN

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
AFTON SUBSTATION S294
AFTON, OKLAHOMA
161/69KV

AFTON SUBSTATION PHASE V
100% COMPLETE

SCALE: 1"=30'	DRAWN BY: JT	ENGR: BA	APPD: BA
CH: MW	DATE: 01MAY12		
DRAWING No. S294PE55		REV. 1	

GRDA
Grand River Dam Authority
P.O. BOX 409
VINITA, OK 74301

1	06JUN12	MOVED 161KV DEAD END LOCATION	JT	BA
0	5/29/12	ISSUED FOR BID	JT	BA
REV	DATE	REVISION DESCRIPTION	DFT	ENG

NOTES:

1. INSTALL EROSION CONTROLS IN ACCORDANCE WITH DETAILS ON SHEET S294PG12.
2. ALL GRADED AND OTHERWISE DISTURBED AREAS SHALL BE STABILIZED WITHIN 15 DAYS IMMEDIATELY AFTER THE GRADING IS COMPLETED.
3. NO WETLANDS HAVE BEEN DISCOVERED ON THIS SITE.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER INSTALLATION OF THESE DEVICES AS SHOWN ON THIS SHEET. ADDITIONAL EROSION CONTROL AND/OR ADJUSTMENT OF LOCATIONS FOR EROSION CONTROL MAY BE REQUIRED.
5. SILT FENCES SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS AND ACCORDING TO THESE PLANS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL EROSION CONTROL DEVICES. CONTRACTOR SHALL REMOVE AND REPLACE EROSION CONTROL AS NEEDED FOR CONSTRUCTION OR ACCESS. ALL EROSION CONTROL MUST BE IN PLACE AT ALL TIMES DURING CONSTRUCTION.
7. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO USE WHATEVER MEANS NECESSARY TO CONTROL AND LIMIT SILT AND SEDIMENT LEAVING THE SITE. SPECIFICALLY, THE CONTRACTOR SHALL PROTECT ALL PARKING AREAS, STREAMS, CREEKS, STORM DRAIN SYSTEMS AND INLETS FROM EROSION DEPOSITS.
8. WHERE EXCESSIVE DUST MAY BECOME A PROBLEM, A PLAN FOR SPRAYING WATER ON HEAVILY TRAVELED DIRT AREAS SHALL BE ADDRESSED.
9. NATURAL VEGETATION. THE POTENTIAL FOR SOIL LOSS SHALL BE MINIMIZED BY RETAINING NATURAL VEGETATION WHEREVER POSSIBLE.
10. ANY DEBRIS, SOIL, OR MUD FROM THE SITE REACHING A PUBLIC STREET SHALL BE IMMEDIATELY REMOVED.
11. CONTRACTOR SHALL SALVAGE AND REINSTALL ANY EXISTING SIGNAGE ON THE EXISTING CHAINLINK FENCE WHERE DIRECTED BY THE ENGINEER.

REMOVE AND DISPOSE OF EXISTING CHAINLINK SECURITY FENCE AFTER NEW CHAINLINK SECURITY FENCE IS INSTALLED.

ERECT SILT FENCE ON INSIDE OF PROPOSED BARBED WIRE FENCE ON SOUTH AND WEST PROPERTY LINES AS SHOWN.



TRACT "B" EASEMENT
BK 322 PG 310

REMOVE AND DISPOSE OF THIS SECTION OF EXISTING BARBED WIRE FENCE AS DIRECTED.

INSTALL 7' CHAINLINK SECURITY FENCE WITH TWO 20' GATES AS SHOWN. CONNECT TO EXISTING FENCE AROUND COMMUNICATIONS TOWER.

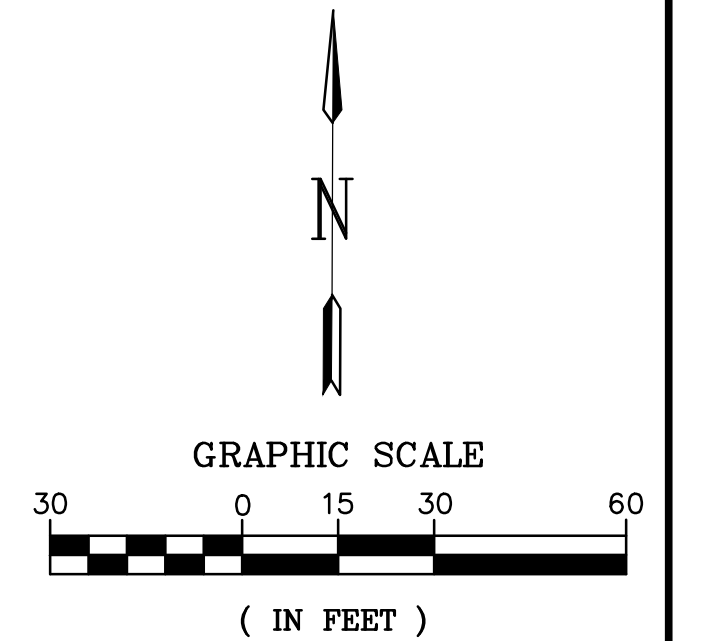
HORIZONTAL CONTROL BASED ON NGS MONUMENT AFTON PID#GG0714 AND NGS CORS STATIONS OKTU,ARHR,AND ICT1. VERTICAL IS BASED ON Q 163 PID#GG0254 AND THE NGS CORS STATIONS ABOVE. HORIZONTAL DATUM IS OKLAHOMA NORTH NAD 83 GRID AND THE VERTICAL DATUM IS NAVD 88.

PROJECT CONTROL POINTS (CP#)

PT. NO.	NORTHING	EASTING	ELEV.	DESCRIPTION
1	629238.0498	2869192.5976	788.91	CAPPED IRON ROD
2	629450.7428	2869202.3256	785.65	CAPPED IRON ROD
3	629591.4259	2869056.2469	----	60D NAIL W/DISC
4	629597.0451	2869216.5966	----	60D NAIL W/DISC
5	629508.9255	2869038.0240	----	60D NAIL W/DISC
6	629479.6440	2868953.3958	----	60D NAIL W/DISC
7	629159.5479	2869007.6451	----	60D NAIL W/DISC
8	629175.1824	2868844.1891	----	60D NAIL W/DISC

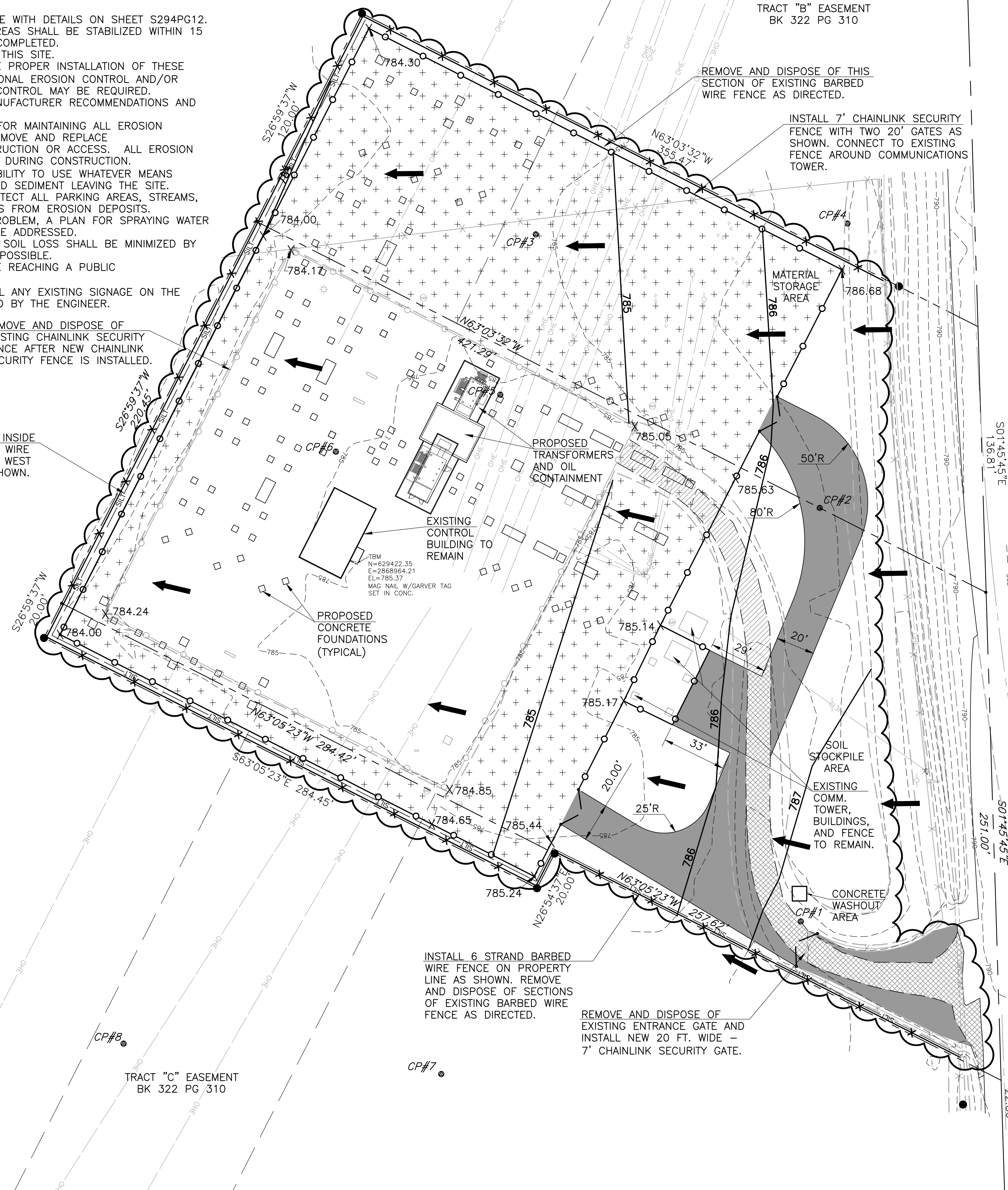
LEGEND:

- STRIP AND STOCKPILE TOPSOIL TO A MINIMUM DEPTH OF 1.0 FT. AND UNDERCUT AREA 1.0 FT. (TYPICAL) BELOW THE STRIPPING DEPTH AND CONSTRUCT 6" OF AGGREGATE BASE COURSE COMPACTED TO 95% MODIFIED PROCTOR OVER APPROVED SUBGRADE MATERIAL COMPACTED TO 95% STANDARD PROCTOR.
- REMOVE AND DISPOSE OF EXISTING GRAVEL DRIVEWAY AND PLACE 4" OF TOPSOIL AND SEED AND MULCH OUTSIDE OF THE PROPOSED FENCE.
- CONTRACTOR SHALL GRADE THE EXISTING GRAVEL DRIVE AS AN EVEN CROSS SLOPE AND PLACE AN ADDITIONAL 6" OF AGGREGATE BASE COURSE COMPACTED TO 95% MODIFIED PROCTOR.
- STRIP AND STOCKPILE TOPSOIL TO A MINIMUM DEPTH OF 1.0 FT. AND UNDERCUT AREA 1.0 FT. (TYPICAL) BELOW THE STRIPPING DEPTH AND CONSTRUCT 6" OF 3/4" WASHED GRAVEL OVER APPROVED SUBGRADE MATERIAL COMPACTED TO 95% STANDARD PROCTOR.
- 785 --- EXISTING CONTOUR
- 785 --- PROPOSED CONTOUR
- X 785 SPOT ELEVATION
- EXISTING BREAKLINE
- PROPERTY LINE
- OHE --- EXISTING OVERHEAD ELECTRIC
- EXISTING CHAINLINK FENCE
- X --- EXISTING BARBED WIRE FENCE
- PROPOSED CHAINLINK FENCE
- X --- PROPOSED BARBED WIRE FENCE
- SILT FENCE
- DIRECTION OF DRAINAGE FLOW
- DISTURBED AREA = 3.40 AC



SEQUENCE OF CONSTRUCTION:

1. INSTALL ALL EROSION CONTROL DEVICES.
2. CONSTRUCT DIRTWORK FOR SUBSTATION PAD.
3. GRADE ALL AREAS TO FINAL GRADE.
4. STABILIZE ALL DISTURBED AREAS.
5. FINAL SITE CLEANUP.



TRACT "C" EASEMENT
BK 322 PG 310

INSTALL 6 STRAND BARBED WIRE FENCE ON PROPERTY LINE AS SHOWN. REMOVE AND DISPOSE OF SECTIONS OF EXISTING BARBED WIRE FENCE AS DIRECTED.

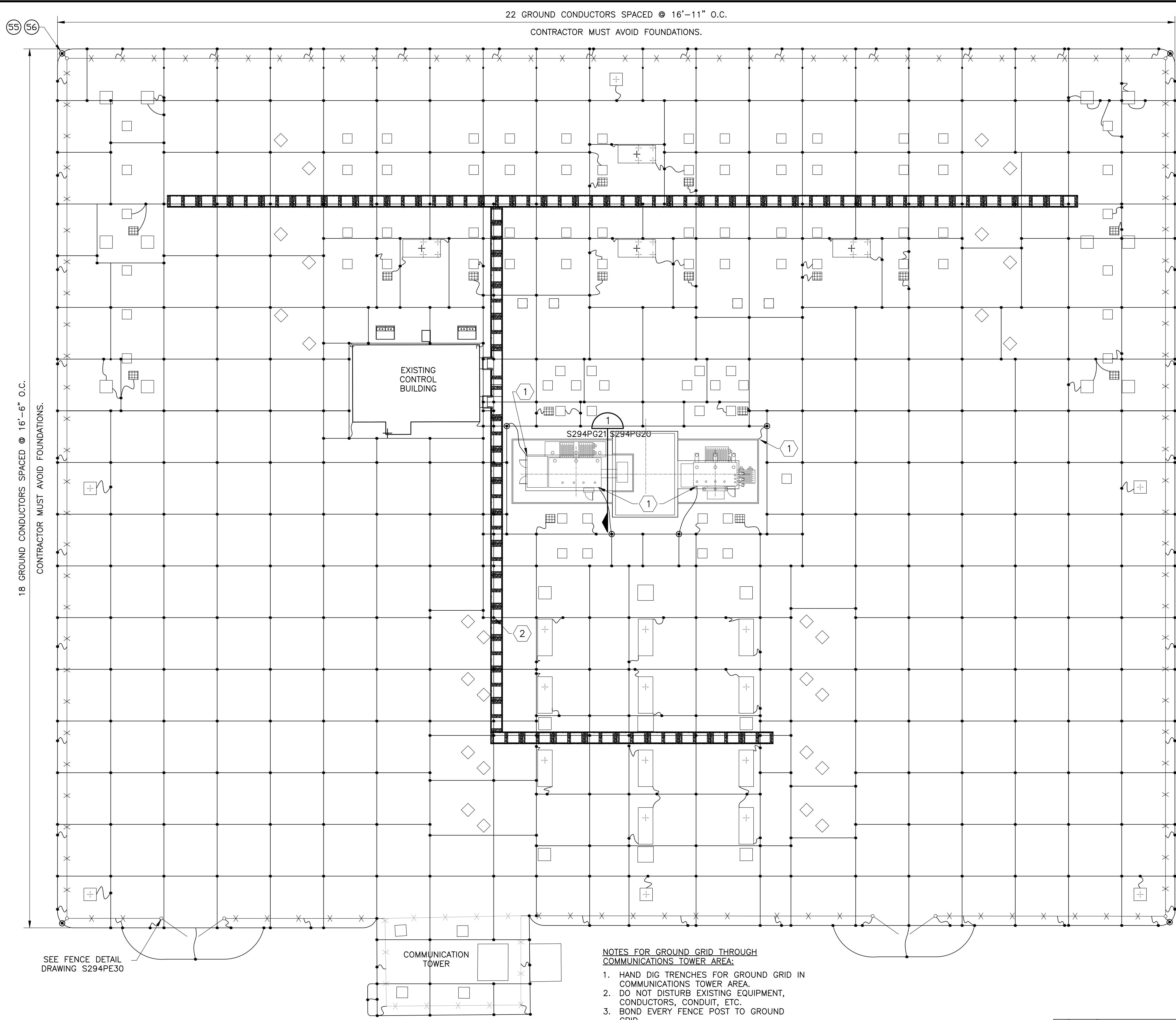
REMOVE AND DISPOSE OF EXISTING ENTRANCE GATE AND INSTALL NEW 20 FT. WIDE 7' CHAINLINK SECURITY GATE.

ISSUED FOR BID

GRDA Grand River Dam Authority P.O. BOX 409 VINITA, OK 74301			
GRAND RIVER DAM AUTHORITY AFTON SUBSTATION S294 AFTON, OKLAHOMA 161/69 KV		SITE GRADING PLAN	
SCALE: 1" = 30'	DRAWN BY: DJW	ENGR: DJW	APPD: BA
CH: MW	DATE: 3/7/2011	DRAWING No. S294PG11	REV. 1

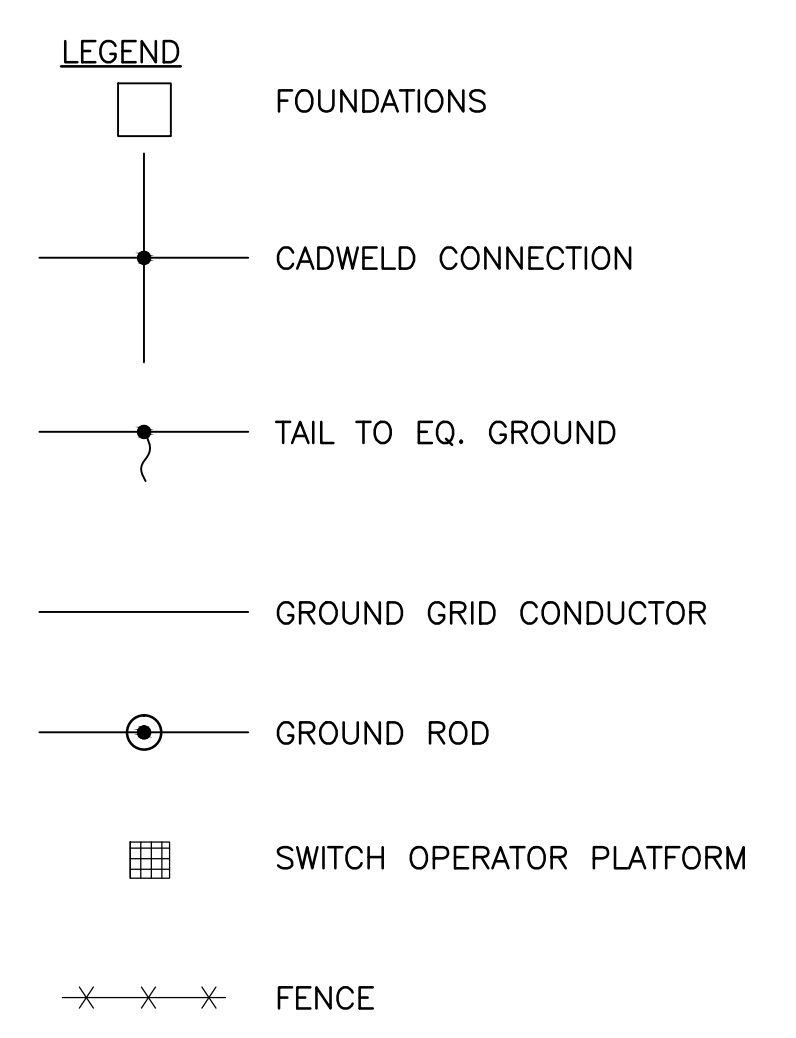
REV	DATE	REVISION DESCRIPTION	DFT	ENG
1	06/JUN/12	MOVED 161HW DEAD END LOCATION	JT	BA
0	5/29/12	ISSUED FOR BID	AS	BA

File: G:\Substation\AFTON\Carver CAD Drawings 2-16-12\S294PG20 GROUNDING PLAN.dwg Last Saved: 6/8/2012 9:09 AM Last saved by: JTrundle
 Last plotted by: Trundle, Jimmy Plot Style: Carver Standard Half.ctb Plot Scale: 1:2 Plot Date: 6/8/2012 9:10 AM Plotter used: Adobe PDF



- NOTES:**
1. INSTALL GROUND GRID 30" BELOW TOP OF ROCK SURFACING (24" BELOW EARTH GRADE).
 2. ALL ABOVE GRADE GROUNDING TO BE 19#9 CCS #40 DSA. (4/0 COPPERWELD)
 3. BOND GROUND GRID TO FENCE AT INTERVALS NOT TO EXCEED 30'. SEE DWG. S294PE30 FOR FENCE DETAILS.
 4. FORM ALL FOUNDATION GROUND TAILS CLOSE TO FOUNDATION SURFACES.
 5. GROUND GRID IS DESIGNED FOR A PRIMARY FAULT CURRENT OF 15kA.
 6. WHEN INSTALLING GROUND GRID UNDER TRENCH SECTIONS, CONTRACTOR IS TO ACCOMMODATE FOR THE DEPTH OF THE TRENCH. (SEE DWG S294PG51)
 7. CONTRACTOR TO INSTALL #4/0 GROUNDING CABLE IN TRENCH. BOND TO GROUND GRID AT EVERY OTHER INTERSECTION POINT UNDER TRENCH.
 8. INSTALL GROUND GRID 3' BEYOND THE SWING OF ANY DOORS & GATES.
 9. ALL SWITCHMATS, SWITCHES, STEEL EQUIPMENT TO BE BONDED TO GROUND GRID IN TWO PLACES.

- KEYED NOTES:**
- 1 ATTACH GROUNDING CABLE TO GROUNDING PAD ON TRANSFORMER.
 - 2 BOND GROUND GRID TO GROUND IN TRENCH AT EVERY OTHER INTERSECTION POINT.



REFERENCE DRAWINGS

S294DE01	BILL OF MATERIALS SHEET 1 OF 3
S294DE02	BILL OF MATERIALS SHEET 2 OF 3
S294DE03	BILL OF MATERIALS SHEET 3 OF 3
S294PE30	FENCE DETAILS
S294PG21	GROUNDING DETAILS
S294PG51	RACEWAY CABLE & CONDUIT DETAILS

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY			
AFTON SUBSTATION		S294	
AFTON, OKLAHOMA 161/69KV			
GROUNDING PLAN			
SCALE: AS SHOWN	DRAWN BY: DKG	ENGR: AEM	APPD: BA
GRDA GRAND RIVER DAM AUTHORITY P.O. BOX 409 VINITA, OK 74301		DRAWING No. S294PG20	REV. 1
		CH: MW	DATE: 3/7/2011

- NOTES FOR GROUND GRID THROUGH COMMUNICATIONS TOWER AREA:**
1. HAND DIG TRENCHES FOR GROUND GRID IN COMMUNICATIONS TOWER AREA.
 2. DO NOT DISTURB EXISTING EQUIPMENT, CONDUCTORS, CONDUIT, ETC.
 3. BOND EVERY FENCE POST TO GROUND GRID.

REV	DATE	REVISION DESCRIPTION	DFT	ENG
1	06JUN12	MOVED 161KV DEAD END LOCATION	JT	BA
0	5/11/12	ISSUED FOR BID	AS	BA

18 GROUND CONDUCTORS SPACED @ 16'-6" O.C.
 CONTRACTOR MUST AVOID FOUNDATIONS.

22 GROUND CONDUCTORS SPACED @ 16'-11" O.C.
 CONTRACTOR MUST AVOID FOUNDATIONS.

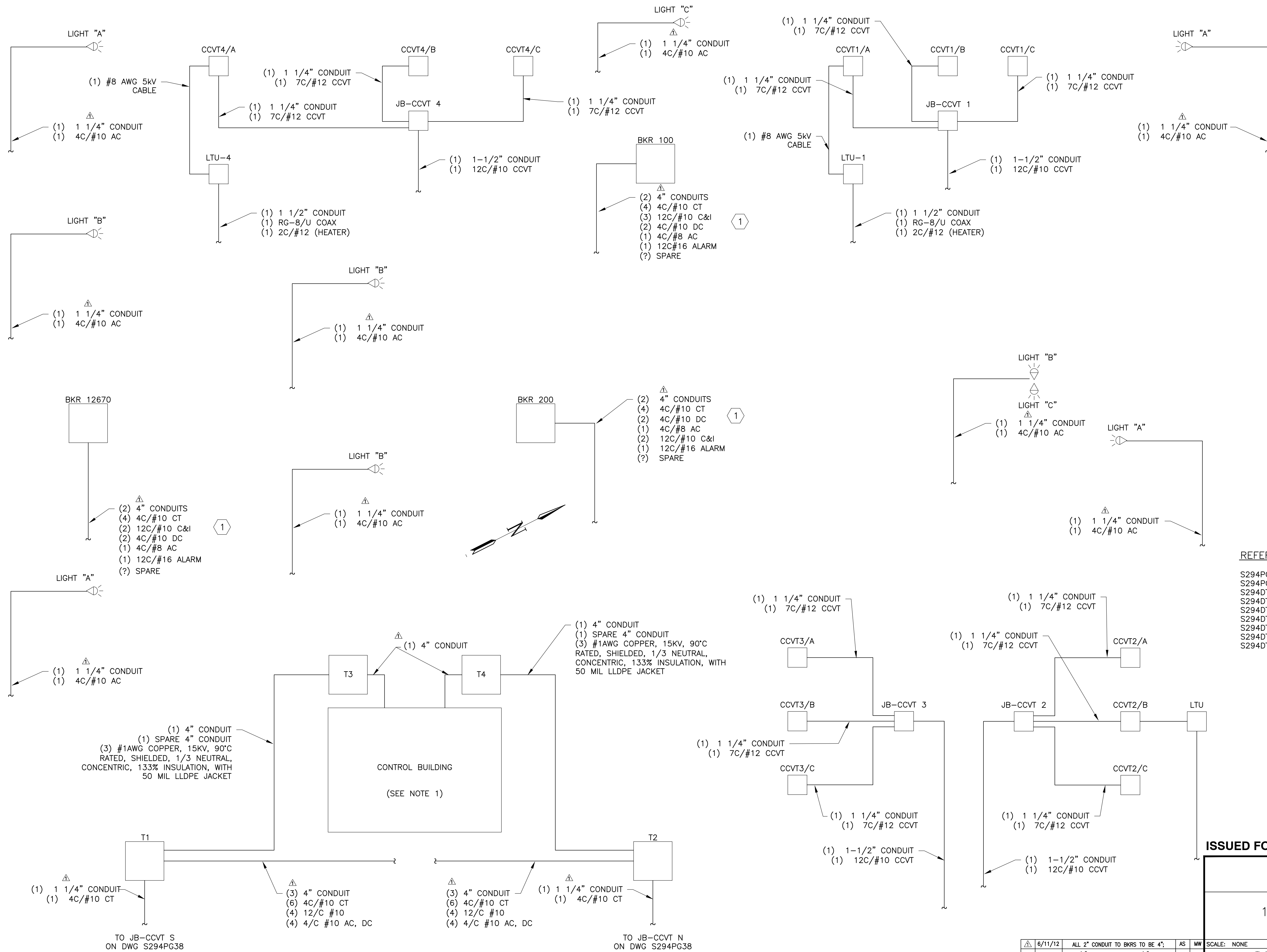
SEE FENCE DETAIL
 DRAWING S294PE30

COMMUNICATION TOWER

EXISTING CONTROL BUILDING

S294PG21 S294PG20

File: I:\Substation\Afton Contract 34303 Drawings\S294PG40 161KV CABLE & CONDUITS.dwg, Last Saved: 6/13/2012 12:21 PM, Last saved by: Ashults
 Last plotted by: Shults, Ariene Plot_Scale: 1:1 Plot_Date: 6/13/2012 12:23 PM Plotter used: DWG To PDF.pc3



- NOTES:**
- SEE CABLE SCHEDULE FOR FINAL DESTINATIONS OF CONDUCTORS.
 - TO MINIMIZE CONDUIT RUNS, ROUTE CABLES THROUGH CLOSEST CABLE TRENCH LOCATION. (SEE DWG S294PG50 FOR TRENCH LAYOUT)
 - SIZE CONDUITS TO MEET NEC, 2008 EDITION, FILL TABLES CH9.
 - LIGHT "A" IS A HOLOPHANE PRISMBEAM II 1000W.
 - LIGHT "B" IS A HOLOPHANE PREDATOR 175W.
 - LIGHT "C" IS A HOLOPHANE PREDATOR 400W.

- KEYED NOTES:**
- ① GROUP AC & DC CIRCUITS & C&I CIRCUITS TOGETHER AND CT CIRCUITS SEPARATELY.

- REFERENCE DRAWINGS**
- S294PG41 69kV CABLE & CONDUITS
 - S294PG50 TRENCH LAYOUT PLAN
 - S294DT101 CABLE SCHEDULE BUSHING CT'S
 - S294DT102 CABLE SCHEDULE BUSHING CT'S
 - S294DT201 CABLE SCHEDULE BUSHING CCVT'S
 - S294DT202 CABLE SCHEDULE BUSHING CCVT'S
 - S294DT401 CABLE SCHEDULE CONTROL & INDICATION
 - S294DT501 CABLE SCHEDULE 125VDC
 - S294DT502 CABLE SCHEDULE 125VDC

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GRAND RIVER DAM AUTHORITY
AFTON SUBSTATION S294
 AFTON, OKLAHOMA
 161/69kV

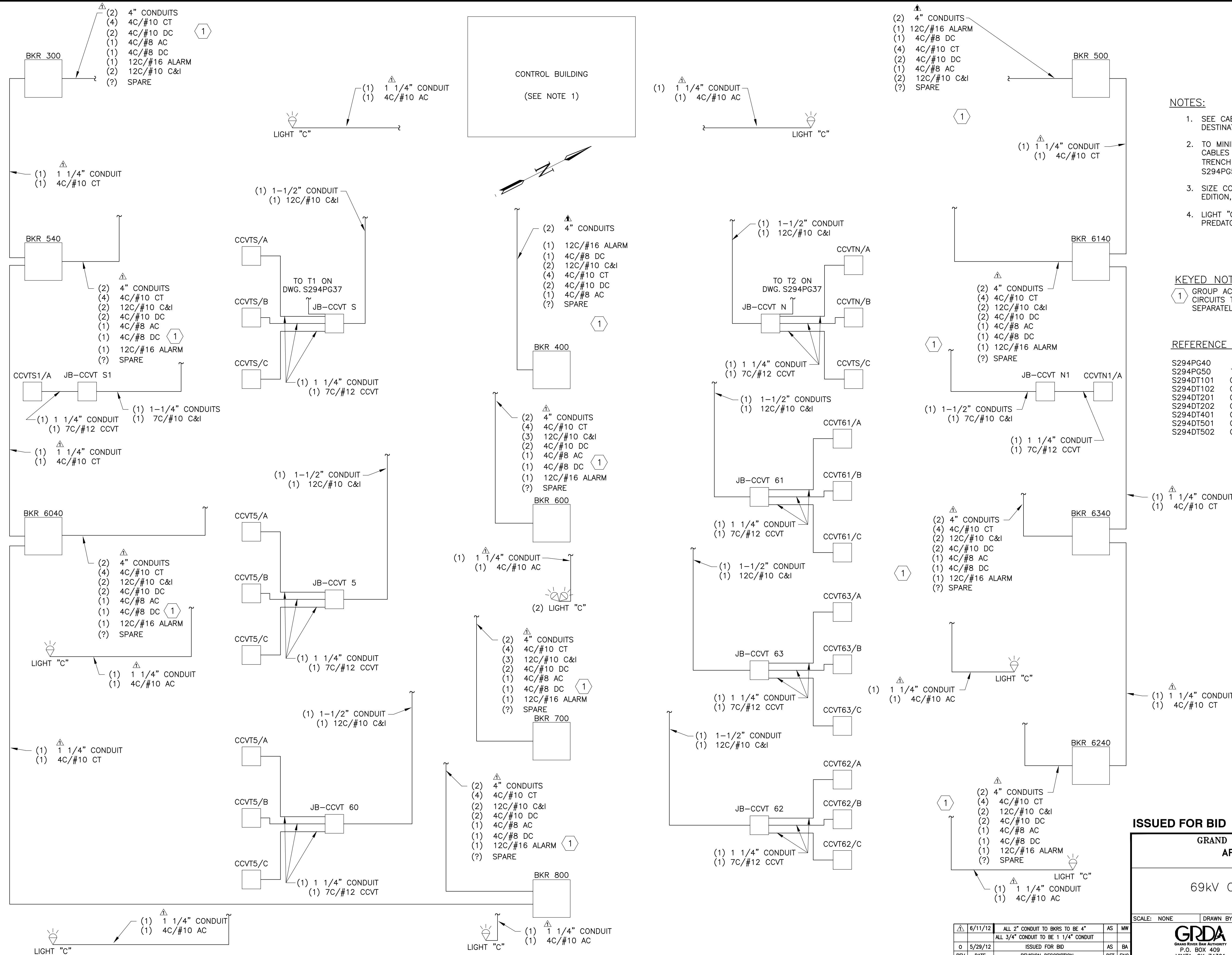
161KV CABLE & CONDUITS

6/11/12	ALL 2" CONDUIT TO BKRS TO BE 4";	AS	MW	SCALE: NONE	DRAWN BY: DJR	ENGR: RGS	APPD: BA
	ALL 3/4" CONDUIT TO BE 1 1/4" CONDUIT;					CH: MW	DATE: 3/7/2011
	T1, T2, T3 & T4 CONDUIT UPDATED						
o	5/29/12	ISSUED FOR BID	AS	BA			DRAWING No. S294PG40
REV	DATE	REVISION DESCRIPTION	DFT	ENG			REV. 1

GRDA
 GRAND RIVER DAM AUTHORITY
 P.O. BOX 409
 VINITA, OK 74301

6/11/12	ALL 2" CONDUIT TO BKRS TO BE 4";	AS	MW
	ALL 3/4" CONDUIT TO BE 1 1/4" CONDUIT;		
	T1, T2, T3 & T4 CONDUIT UPDATED		
o	5/29/12	ISSUED FOR BID	AS BA
REV	DATE	REVISION DESCRIPTION	DFT ENG

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 Last Plotted By: Shults, Ariene Plot Style: Monochrome.ctb Plot Scale: 1:1 Plot Date: 6/13/2012 12:31 PM Plotter used: DWG To PDF.pc3



NOTES:

1. SEE CABLE SCHEDULE FOR FINAL DESTINATIONS OF CONDUCTORS.
2. TO MINIMIZE CONDUIT RUNS, ROUTE CABLES THROUGH CLOSEST CABLE TRENCH LOCATION. (SEE DWG S294PG50 FOR TRENCH LAYOUT)
3. SIZE CONDUITS TO MEET NEC, 2008 EDITION, FILL TABLES CH9.
4. LIGHT "C" IS A HOLOPHANE PREDATOR 400W MH.

KEYED NOTES:

- ① GROUP AC & DC CIRCUITS & C&I CIRCUITS TOGETHER AND CT CIRCUITS SEPARATELY.

REFERENCE DRAWINGS

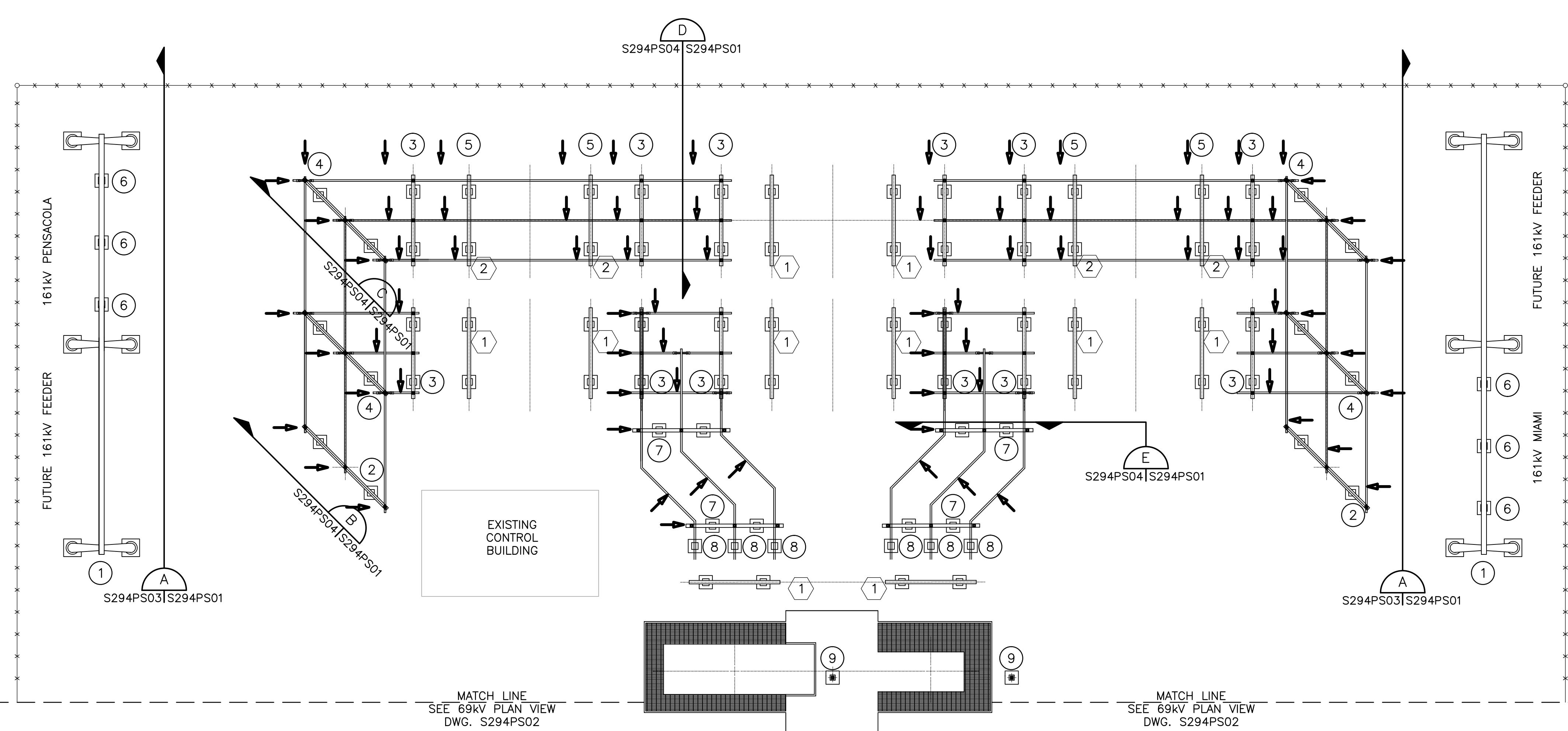
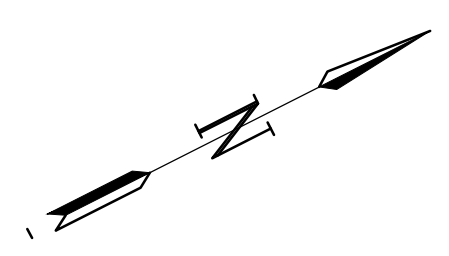
S294PG40	161kV CABLE & CONDUITS
S294PG50	TRENCH LAYOUT PLAN
S294DT101	CABLE SCHEDULE BUSHING CT'S
S294DT102	CABLE SCHEDULE BUSHING CT'S
S294DT201	CABLE SCHEDULE BUSHING CCVT'S
S294DT202	CABLE SCHEDULE BUSHING CCVT'S
S294DT401	CABLE SCHEDULE CONTROL & INDICATION
S294DT501	CABLE SCHEDULE 125VDC
S294DT502	CABLE SCHEDULE 125VDC

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY			
AFTON SUBSTATION		S294	
AFTON, OKLAHOMA 161/69kV			
69kV CABLE & CONDUITS			
SCALE: NONE	DRAWN BY: DJR	ENGR: RGS	APPD: BA
CH: MW	DATE: 3/7/2011		
DRAWING No. S294PG41		REV. 1	

REV	DATE	REVISION DESCRIPTION	AS	BA	DFT	ENG
6/11/12		ALL 2" CONDUIT TO BKRS TO BE 4"	AS	MW		
		ALL 3/4" CONDUIT TO BE 1 1/4" CONDUIT	AS	MW		
5/29/12		ISSUED FOR BID	AS	BA		

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LEGEND
 → WIND LOADING DIRECTION
 SEE NOTE 1 & 2.



REFERENCE DRAWINGS

S294PS02	69kV STEEL PLAN VIEW
S294PS03	161kV DEAD-END STRUCTURE VIEW A & END VIEW
S294PS04	161kV BUS SUPPORT STRUCTURE VIEW B, C, D, & E
S294PS10	STEEL DETAILS
S294PS11	STEEL DETAILS

- STRUCTURE NUMBERS**
- ① 161kV DEADEND STRUCTURE, QTY. 2, SEE S294PS03
 - ② 161kV ANGLED BUS SUPPORT-HIGH, QTY. 2, SEE S294PS04
 - ③ 161kV BUS SUPPORT, QTY. 12, SEE S294PS04
 - ④ 161kV ANGLED BUS SUPPORT-LOW, QTY. 4, SEE S294PS04
 - ⑤ 161kV BUS SUPPORT (FUTURE SWITCH LOCATION), QTY. 4, SEE DWG. S294PS04
 - ⑥ CCVT STANDS, QTY. 6, SEE S294PS03
 - ⑦ 161kV BUS SUPPORT-NARROW, QTY. 4, SEE S294PS04
 - ⑧ CCVT STAND, QTY. 6, SEE S294PS04
 - ⑨ TERMINATION STAND, QTY. 2, SEE S294PS04

- NOTES:**
- STEEL MANUFACTURER SHALL DESIGN STEEL FOR A WIND LOADING OF 218.8 LBS PLUS ELECTRICAL FAULT LOADING FOR 161KV OF 60 LBS. THE LOADINGS SHALL BE APPLIED AT EACH BUS SUPPORT IN ANY DIRECTION.
 - WIND LOADING IS SHOWN IN ONE DIRECTION PERPENDICULAR TO THE BUS. WIND SHALL BE CONSIDERED IN ANY ONE DIRECTION AND ELECTRICAL FAULT LOADING SHALL BE ADDITIVE TO WIND LOADING.

- KEYED NOTES:**
- ① SWITCH MOUNTING STEEL PROVIDED BY SWITCH MANUFACTURER. VERIFY FOUNDATION DIMENSIONS WITH SWITCH MANUFACTURER SHOP DRAWINGS.
 - ② FOUNDATION DIMENSIONS FOR THESE FOUNDATIONS TO MATCH 161KV SWITCH MANUFACTURERS SHOP DRAWINGS. FABRICATE THESE 161KV BUS SUPPORTS TO FIT FOUNDATIONS.

REV	DATE	REVISION DESCRIPTION	DFT	ENG
1	06JUN12	MOVED 161KV DEAD END LOCATION	JT	BA
0	5/11/12	ISSUED FOR BID	JT	BA

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY
AFTON SUBSTATION S294
 AFTON, OKLAHOMA
 161/69kV
161kV
STEEL PLAN VIEW

SCALE: AS SHOWN	DRAWN BY: DKG	ENGR: AEM	APPD: BA
CH: MW		DATE: 3/7/2011	
DRAWING No. S294PS01			REV. 1

GRDA
 GRAND RIVER DAM AUTHORITY
 P.O. BOX 409
 VINITA, OK 74301

GRDA AFTON 161kV SUBSTATION 10045100

DRAWING INDEX

Dwg. No	Rev.	Title	Dwg. No	Rev.	Title	Dwg. No	Rev.	Title	Dwg. No	Rev.	Title
S294Z001		COVER SHEET	S294PE51		AFTON SUB. PHASE I	S294PS07		69KV TRANSFORMER FDR BAY STRUCTURE VIEW H	S294SF009		BREAKER 200 FAILURE & CONTROL
S294Z002		DRAWING INDEX 1 OF 2	S294PE52		AFTON SUB. PHASE II	S294PS08		69KV TRANSFORMER FDR BAY STRUCTURE VIEW J & K	S294S001		CARRIER SCHEMATIC
S294Z003		DRAWING INDEX 2 OF 2	S294PE53		AFTON SUB. PHASE III	S294PS09		69KV BREAKER STRUCTURE VIEW L	S294SF010		21P PENSACOLA
S294Z005		ELECTRICAL LEGEND	△ S294PE54	1	AFTON SUB. PHASE IV	S294PS10		STEEL DETAILS SHEET 1 OF 5	S294SF011		21A PENSACOLA
S294PG01		PLAT OF SURVEY	△ S294PE55	1	AFTON SUB. PHASE V 100% COMPLETE	S294PS11		STEEL DETAILS SHEET 2 OF 5	S294SF012		BREAKER 12670 FAILURE & CONTROL
S294PG02		EXISTING TOPOGRAPHIC SURVEY	△ S294PG20	1	GROUNDING PLAN	S294PS12		STEEL DETAILS SHEET 3 OF 5	S294S002		CARRIER SCHEMATIC
S294PG03		COMMUNICATIONS EASEMENT	S294PG21		GROUNDING DETAILS	S294PS13		STEEL DETAILS SHEET 4 OF 5	S294SB100		BREAKER 100 DC SCH. DIA.
△ S294PG11	1	SITE GRADING PLAN	S294PE30		FENCE DETAIL	S294PS14		STEEL DETAILS SHEET 5 OF 5	S294SB100a		BREAKER 100 AC/DC SCH. DIA.
S294PG12		EROSION CONTROL AND SITE DETAILS	S294PG30		161KV FOUNDATION PLAN	S294PS15		161KV SWITCH STAND	S294SB100b		BREAKER 100 BKR AUX
△ S294PE01	1	161KV EQUIPMENT PLAN VIEW	S294PG31		69KV FOUNDATION PLAN	S294PS16		161KV DEAD-END STRUCTURE TENSION LOADS	S294SB2270		BREAKER 2270 DC SCH. DIA.
S294PE02		69KV EQUIPMENT PLAN VIEW	S294PG32		STATION CENTERLINE CONTROL POINTS	S294PS17		69KV DEAD-END STRUCTURE TENSION LOADS	S294SB2270a		BREAKER 2270 AC/DC SCH. DIA.
S294PE03		161KV ELEVATION VIEW A	S294PG33		TYPICAL FOUNDATION DETAILS	S294PS18		161KV DEAD-END STRUCTURE VERTICAL LOADS	S294SB2270b		BREAKER 2270 BKR AUX
S294PE04		161KV ELEVATION VIEW B	S294PG34		TYPICAL FOUNDATION DETAILS	S294PS19		161KV BUS SUPPORT STRUCTURE VERTICAL LOADS	S294SB200		BREAKER 200 DC SCH. DIA.
S294PE05		161KV ELEVATION VIEW C	S294PZ01		OIL CONTAINMENT PLAN	S294PS20		69KV DEAD-END VIEW F VERTICAL LOADS	S294SB200a		BREAKER 200 AC/DC SCH. DIA.
S294PE06		161KV ELEVATION VIEW D	S294PZ02		OIL CONTAINMENT DETAILS	S294PS21		69KV BREAKER STRUCTURE VIEW G VERTICAL LOADS	S294SB200b		BREAKER 200 BKR AUX
S294PE07		161KV ELEVATION VIEW E	△ S294PG40	1	161KV CABLE & CONDUITS	S294PS22		69KV TRANSFORMER FDR BAY STRUCT VIEW H V.L.	S294SB12670		BREAKER 12670 DC SCH. DIA.
S294PE08		161KV ELEVATION VIEW F1 & F2	△ S294PG41	1	69KV CABLE & CONDUITS	S294PS23		69KV TRANSFORMER FDR BAY STRUCT VIEW J & K V.L.	S294SB12670a		BREAKER 12670 AC/DC SCH. DIA.
S294PE09		161KV ELEVATION VIEW G1 & G2	△ S294PE40	1	LIGHTING PLAN VIEW	S294PS24		69KV BREAKER STRUCTURE VIEW L VERTICAL LOADS	S294SB12670b		BREAKER 12670 BKR AUX
S294PE10		69KV ELEVATION VIEW H	S294PG50		TRENCH LAYOUT PLAN	S294S0001		ONE LINE	S294SB300		BREAKER 300 DC SCH. DIA.
S294PE11		69KV ELEVATION VIEW J	S294PG51		TRENCH DETAILS	S294S0010		ONE LINE 161KV RING BUS			
S294PE12		69KV ELEVATION VIEW K	S294PH01		CONTROL HOUSE LAYOUT REMOVAL PLAN	S294S0011		ONE LINE TRANSFORMERS T1 & T2 161/69KV			
S294PE13		69KV ELEVATION VIEW L	S294PH02		CONTROL HOUSE LAYOUT	S294S0012		ONE LINE DIAGRAM - 69KV - BKR 540, 600, & 6140			
S294PE14		69KV ELEVATION VIEW M	S294PH03		CONTROL HOUSE GROUNDING	S294S0013		ONE LINE DIAGRAM - 69KV - FDR 60 VINITA - FDR 63 MONKEY ISLAND			
△ S294PE15	1	PARTS LIST 161KV EQUIP PLAN VIEW	S294PH04		PANEL VIEW A	S294SF001		BREAKER 100 PANEL 101 & THREE LINE AC DIAGRAM			
S294PE16		PARTS LIST 69KV EQUIP PLAN VIEW	S294PH05		PANEL VIEW B & C	S294SF002		BREAKER 2270 & 200 PANEL 102 & THREE LINE AC DIAGRAM			
S294PE17		PARTS LIST 161KV ELEVATION VIEW A	S294PH06		PANEL VIEW D & E	S294SF003		BREAKER 200 PANEL 103 & THREE LINE AC DIAGRAM			
S294PE18		PARTS LIST 161KV ELEVATION VIEW B	S294PH07		PANEL VIEW F	S294SF004		BREAKER 12670 PANEL 103 & THREE LINE AC DIAGRAM			
S294PE19		PARTS LIST 161KV ELEVATION VIEW C	S294PH08		PANEL VIEW G & H	S294SX001		TRANSFORMER NO.1 THREE LINE DIAGRAM			
S294PE20		PARTS LIST 161KV ELEVATION VIEW D	S294PH09		CABLE RACEWAY DETAIL	S294SX002		TRANSFORMER NO.2 THREE LINE DIAGRAM			
S294PE21		PARTS LIST 161KV ELEVATION VIEW E	S294PH10		CONTROL HOUSE BATTERY AREA EXHUAUST FAN	S294SF300		BREAKER 300 PANEL 104 & THREE LINE AC DIAGRAM			
S294PE22		PARTS LIST 161KV ELEVATION VIEW F1 & F2	S294PH11		GENERAL NOTES & MISC. DETAILS	S294SF400		BREAKER 400 PANEL 105 & THREE LINE AC DIAGRAM			
S294PE23		PARTS LIST 161KV ELEVATION VIEW G1 & G2	S294SH001		AC CONTROL HOUSE ONE-LINE	S294SF500		BREAKER 500 PANEL 106 & THREE LINE AC DIAGRAM			
S294PE24		PARTS LIST 69KV ELEVATION VIEW H	S294SH002		AC CONTROL HOUSE PANEL SCHEDULES	S249SF107		BKR 540 PANEL 107 & THREE LINE AC DIA.			
S294PE25		PARTS LIST 69KV ELEVATION VIEW J	S294WZ10		CONTROL HOUSE PANEL D 125VDC WIRING DIAGRAM	S294SF108		BKR 6140 & 600 PANEL 108 & THREE LINE AC DIA.			
S294PE26		PARTS LIST 69KV ELEVATION VIEW K	S294WZ11		CONTROL HOUSE PANEL E 125VDC WIRING DIAGRAM	S294SF109		BKR 6040 PANEL 109 & THREE LINE AC DIA.			
S294PE27		PARTS LIST 69KV ELEVATION VIEW L	S294WZ12		CONTROL HOUSE PANEL F 125VDC WIRING DIAGRAM	S294SF110		BKR 6340 & 700 PANEL 110 & THREE LINE AC DIA.			
S294PE28		PARTS LIST 69KV ELEVATION VIEW M	△ S294PS01	1	161KV STEEL PLAN VIEW	S294SF111		BKR 6240 & 800 PANEL 110, 112 & THREE LINE AC DIA.			
S294DE01		BILL OF MATERIALS SHEET 1 OF 4	S294PS02		69KV STEEL PLAN VIEW	S294SF112		SOUTH & NORTH BUS			
S294DE02		BILL OF MATERIALS SHEET 2 OF 4	S294PS03		161KV DEAD-END STRUCTURE VIEW A & END VIEW	S294SF005		21P MIAMI			
S294DE03		BILL OF MATERIALS SHEET 3 OF 4	S294PS04		161KV BUS SUPPORT STRUCTURE VIEW B, C, D, & E	S294SF006		21A MIAMI			
S294DE04		BILL OF MATERIALS SHEET 4 OF 4	S294PS05		69KV DEAD-END STRUCTURE VIEW F & END VIEW	S294SF007		BREAKER 100 FAILURE & CONTROL			
S294PE50		AFTON SUB. BEFORE CONSTRUCTION	S294PS06		69KV BREAKER STRUCTURE VIEW G & END VIEW	S294SF008		BREAKER 2270 FAILURE & CONTROL			

NOTE: RELAY DRAWINGS (S294WBXXX) ARE NOT INCLUDED

ISSUED FOR BID

GRAND RIVER DAM AUTHORITY			
AFTON SUBSTATION		S294	
AFTON, OKLAHOMA 161/69KV			
DRAWING INDEX 1 OF 2			
SCALE: NONE	DRAWN BY: DJR	ENGR:	APPD: BA
		CH: MW	DATE: 3/7/2011
GRDA GRAND RIVER DAM AUTHORITY P.O. BOX 409 VINITA, OK 74301		DRAWING No. S294Z002	REV. 1