SCHEMATIC DESIGN APPROVAL

Name of Project:	**Critical Electrical Distribution Renewal Phase 1B**
Location of Project:	**University of Alaska Fairbanks**
Project Number:	**2010098 UTERB**
Date of Request:	**June 3, 2010**
Project Manager:	**Mike Ruckhaus, P.E.**

Estimated Total Project Cost:	**$10,000,000**
Approval Required:	**Full Board of Regents**
Prior Approvals/Actions:	**Formal Project Approval: 02/18/10**

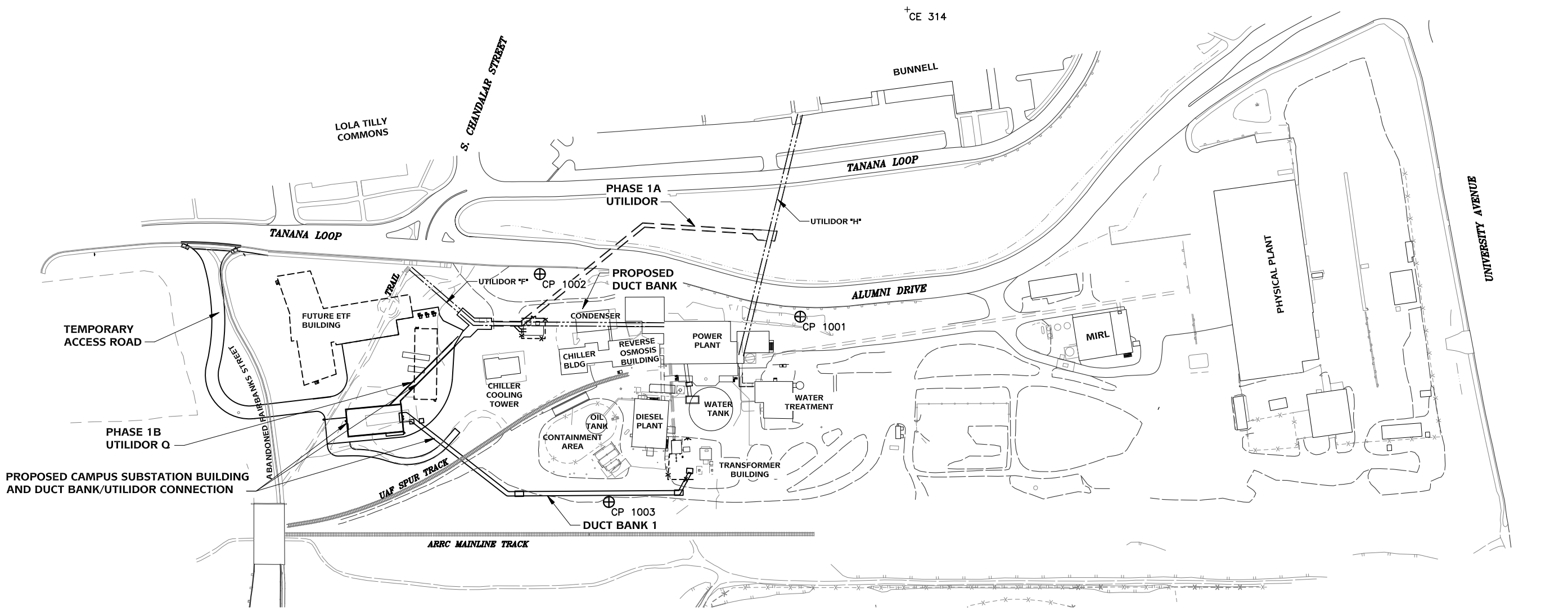
SUPPORTING DOCUMENTS

- One Page Budget
- Drawings
- Phase 1B 65% Design Cost Estimate

UNIVERSITY OF ALASKA

Project Name:	Critical Electrical Distribtution Renewal Phase 1B		
MAU:	UAF		
Building:	TBD	Date:	April 26, 2010
Campus:	Fairbanks	Prepared By:	Mike Ruckhaus
Project #:	2010098 UTERB	Account No.:	TBD
Total GSF Affected by Project:		10000	

PROJECT BUDGET	FPA Budget
A. Professional Services	
Advance Planning, Program Development	$0
Consultant: Design Services	$0
Consultant: Construction Phase Services	$300,000
Consul: Extra Services (List:_____)	$0
Site Survey	$0
Soils Testing & Engineering	$0
Special Inspections	$0
Plan Review Fees / Permits	$20,000
Other	$0
Professional Services Subtotal	**$320,000**
B. Construction	
General Construction Contract (s)	$7,850,000
Other Contractors (List:_____)	$5,000
Construction Contingency	$706,950
Construction Subtotal	**$8,561,950**
Construction Cost per GSF	***N/A***
C. Building Completion Activity	
Equipment	$5,000
Fixtures	$0
Furnishings	$5,000
Signage not in construction contract	$0
Move-Out Cost/Temp. Reloc. Costs	$0
Move-In Costs	$0
Art	$0
Other (List:_____)	$0
OIT Support	$3,000
Maintenance/Operation Support	$5,000
Building Completion Activity Subtotal	**$18,000**
D. Owner Activities & Administrative Cost	
Project Planning and Staff Support	$400,498
Project Management	$662,997
Misc Expenses: Advertising, Printing, Supplies	$8,000
Owner Activities & Administrative Cost Subtotal	**$1,071,494**
E. Total Project Cost	**$9,971,444**
Total Project Cost per GSF	***N/A***
F. Total Appropriation(s)	**$10,000,000**



HORIZONTAL CONTROL

POINT NO	NORTHING	EASTING	DESCRIPTION
CP 1001	3970840.98	1357128.64	2" ALUMINUM CAP ON 5/8" REBAR
CP 1002	3970986.92	1356647.13	2" ALUMINUM CAP ON 5/8" REBAR
CP 1003	3970549.45	1356703.27	2" ALUMINUM CAP ON 5/8" REBAR

VERTICAL CONTROL

POINT NO	NORTHING	EASTING	ELEVATION	DESCRIPTION
CE 314	3971376	1357413	518.49	3" BRASS CAP

LEGEND:

FUTURE:

- BUILDING

PROPOSED:

- BUILDING
- UTILIDOR
- CONTOUR (470)
- APPROXIMATE EXCAVATION LIMITS
- ALIGNMENT CONTROL POINT (100)
- BOLLARD
- PROPOSED OR RELOCATED SIGN
- CLEARING LIMIT

PHASE 1A WORK:

- UTILIDOR

EXISTING:

- BUILDING
- DUCT BANK/UTILIDOR
- FENCE
- RAILROAD TRACK
- ROAD/PARKING
- MANHOLE AND SANITARY SEWER (SS)
- EXISTING CONTOUR (460)
- UNDERGROUND ELECTRIC (UGE)
- CONTROL POINT (CP 1001)
- TEMPORARY BENCHMARK (CE 314)
- SIGN
- TREE
- LIGHT POLE

100 50 0 100 200 300
SCALE IN FEET

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
GENERAL NOTES AND SURVEY CONTROL

DESIGN	DCH
DRAWN	DCH, RJP
CHECKED	MTS
DATE	FEB. 25, 2010

PROJECT No. F08085.01

SHEET NUMBER C1.0 OF 106 SHEETS

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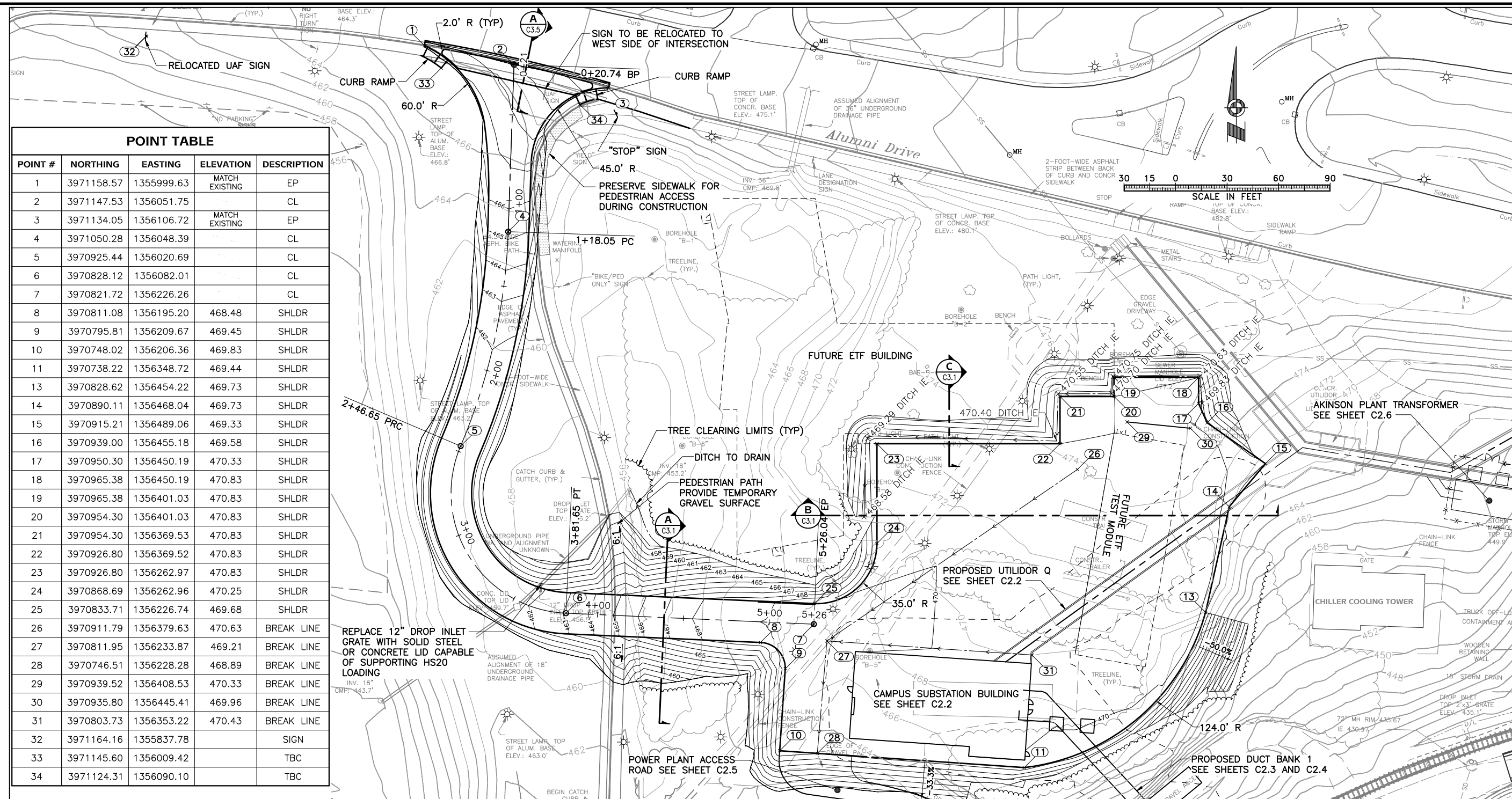
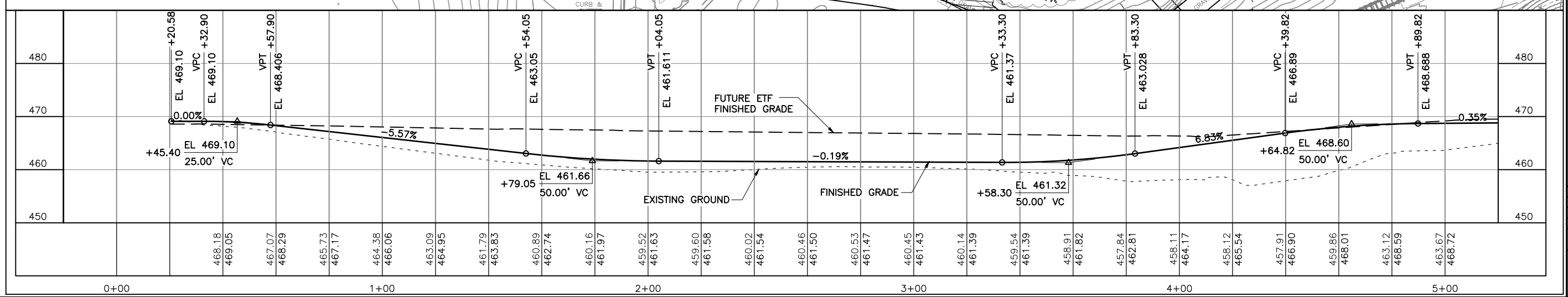


POINT TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	3971158.57	1355999.63	MATCH EXISTING	EP
2	3971147.53	1356051.75		CL
3	3971134.05	1356106.72	MATCH EXISTING	EP
4	3971050.28	1356048.39		CL
5	3970925.44	1356020.69		CL
6	3970828.12	1356082.01		CL
7	3970821.72	1356226.26		CL
8	3970811.08	1356195.20	468.48	SHLDR
9	3970795.81	1356209.67	469.45	SHLDR
10	3970748.02	1356206.36	469.83	SHLDR
11	3970738.22	1356348.72	469.44	SHLDR
13	3970828.62	1356454.22	469.73	SHLDR
14	3970890.11	1356468.04	469.73	SHLDR
15	3970915.21	1356489.06	469.33	SHLDR
16	3970939.00	1356455.18	469.58	SHLDR
17	3970950.30	1356450.19	470.33	SHLDR
18	3970965.38	1356450.19	470.83	SHLDR
19	3970965.38	1356401.03	470.83	SHLDR
20	3970954.30	1356401.03	470.83	SHLDR
21	3970954.30	1356369.53	470.83	SHLDR
22	3970926.80	1356369.52	470.83	SHLDR
23	3970926.80	1356262.97	470.83	SHLDR
24	3970868.69	1356262.96	470.25	SHLDR
25	3970833.71	1356226.74	469.68	SHLDR
26	3970911.79	1356379.63	470.63	BREAK LINE
27	3970811.95	1356233.87	469.21	BREAK LINE
28	3970746.51	1356228.28	468.89	BREAK LINE
29	3970939.52	1356408.53	470.33	BREAK LINE
30	3970935.80	1356445.41	469.96	BREAK LINE
31	3970803.73	1356353.22	470.43	BREAK LINE
32	3971164.16	1355837.78		SIGN
33	3971145.60	1356009.42		TBC
34	3971124.31	1356090.10		TBC



CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
SERVICE YARD AND ACCESS ROAD PLAN AND PROFILE

DESIGN	DCH
DRAWN	DCH, RJP
CHECKED	MTS
DATE	FEB 25, 2010

PROJECT No.
F08085.01

SHEET NUMBER
C2.1
OF 106 SHEETS

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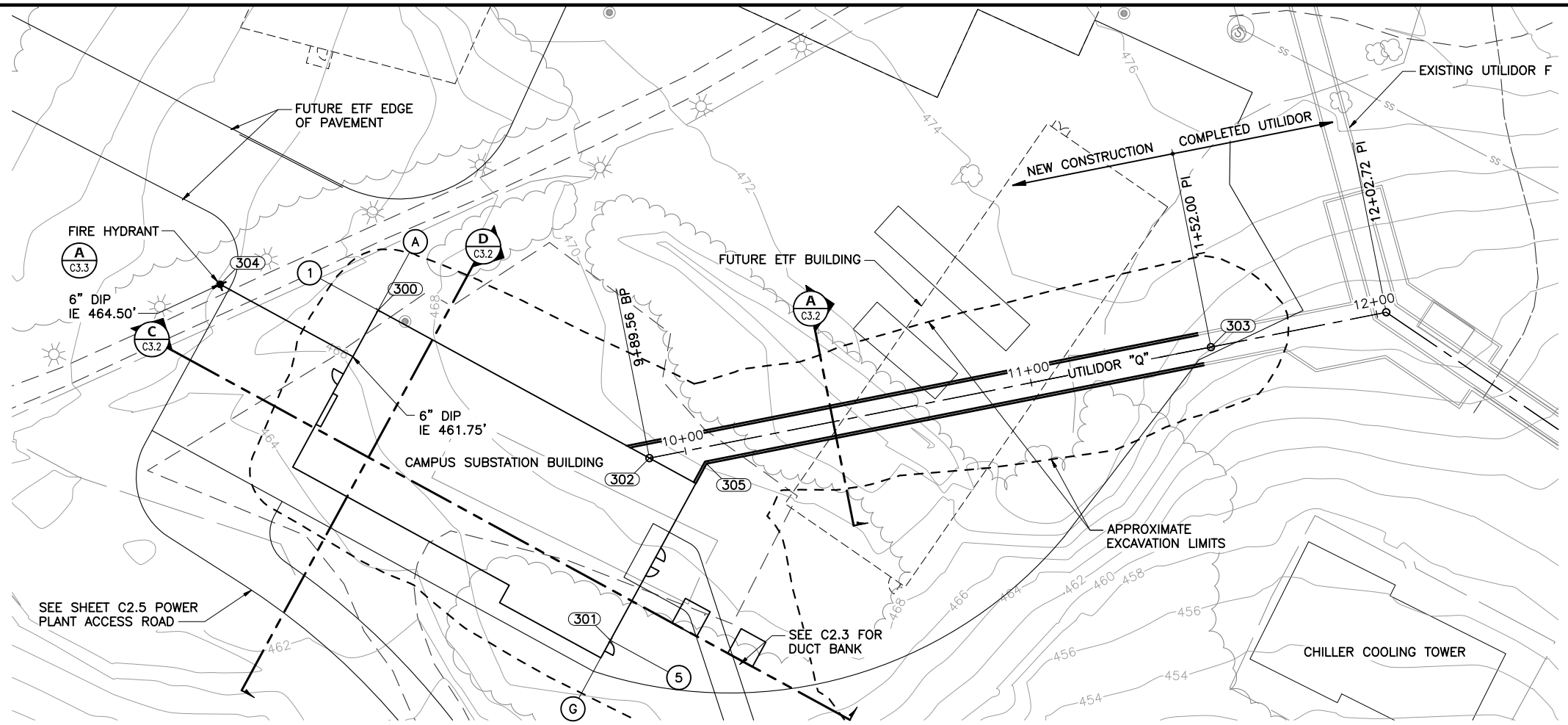
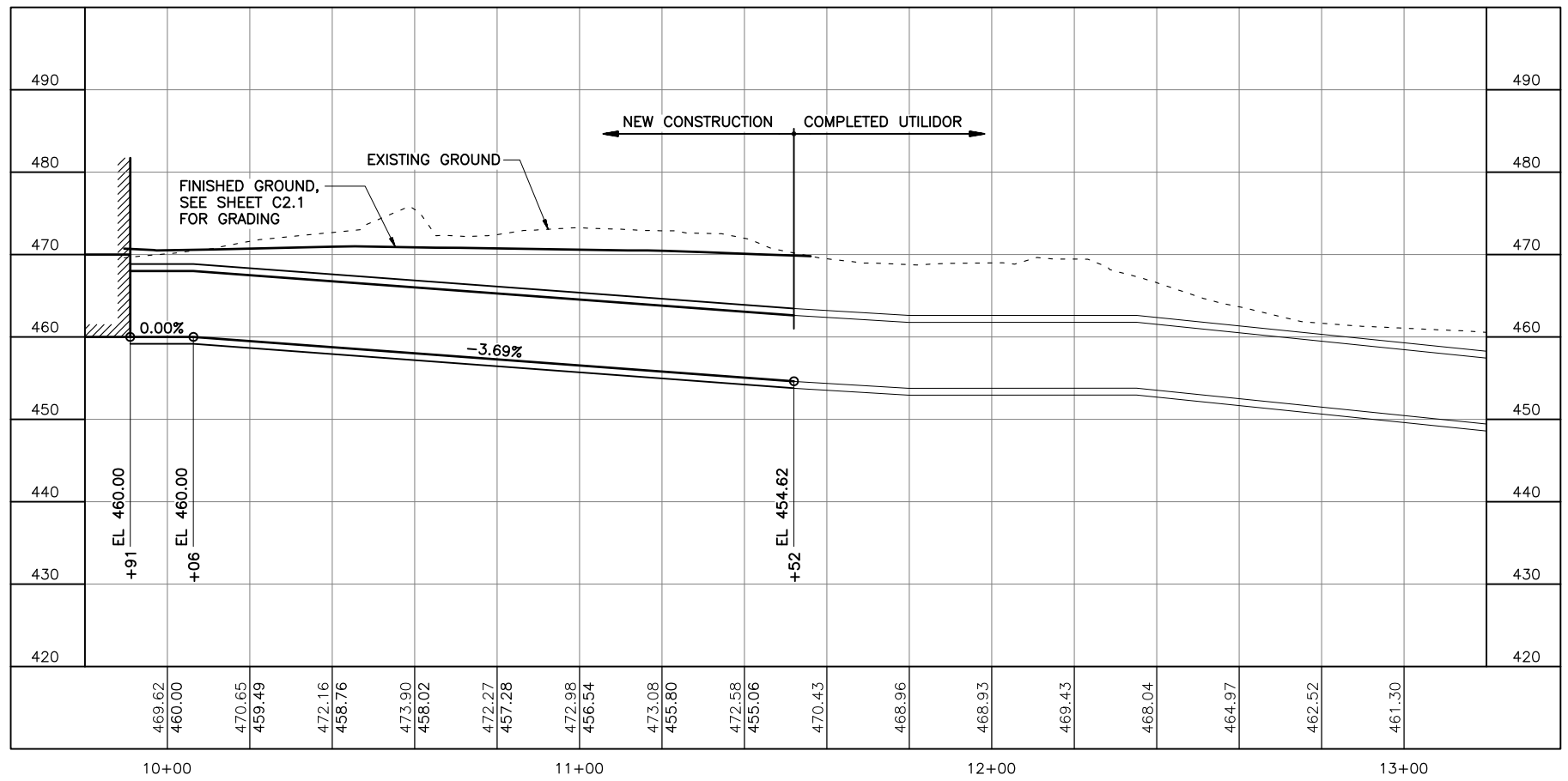


POINT TABLE

POINT #	NORTHING	EASTING	STATION	DESCRIPTION
300	3970805.79	1356250.46		BLDG
301	3970748.20	1356349.40		BLDG
302	3970799.78	1356337.92	9+89.59	UTILIDOR
303	3970894.83	1356469.64	11+52.00	UTILIDOR
304	3970793.81	1356206.67		HYDRANT
305	3970805.11	1356353.32	10+05.17	UTILIDOR

20 10 0 20 40 60
SCALE IN FEET



CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
UTILIDOR Q PLAN AND PROFILE AND SUBSTATION PLAN

DESIGN	DCH
DRAWN	DCH, RJP
CHECKED	MTS
DATE	FEB 25, 2010
PROJECT No.	F08085.01
SHEET NUMBER	C2.2
OF 106 SHEETS	

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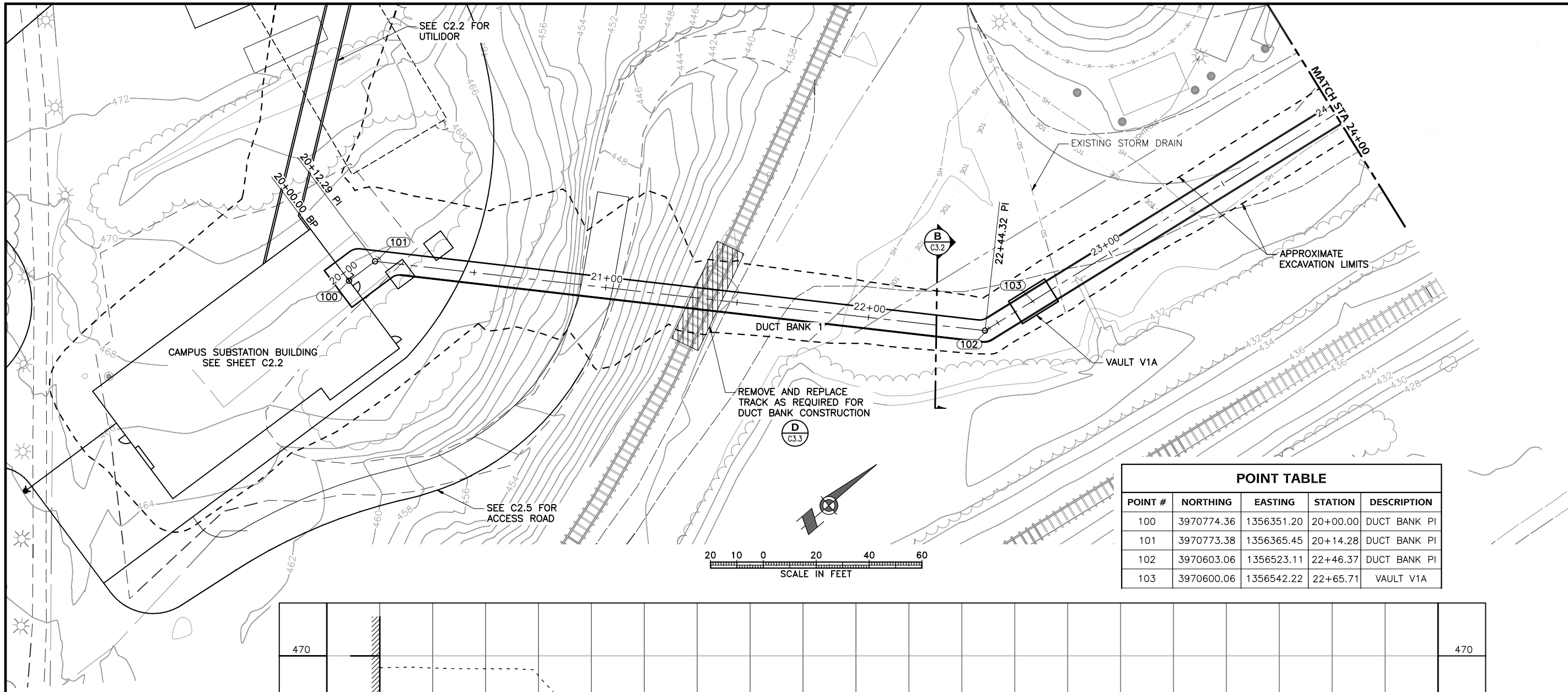
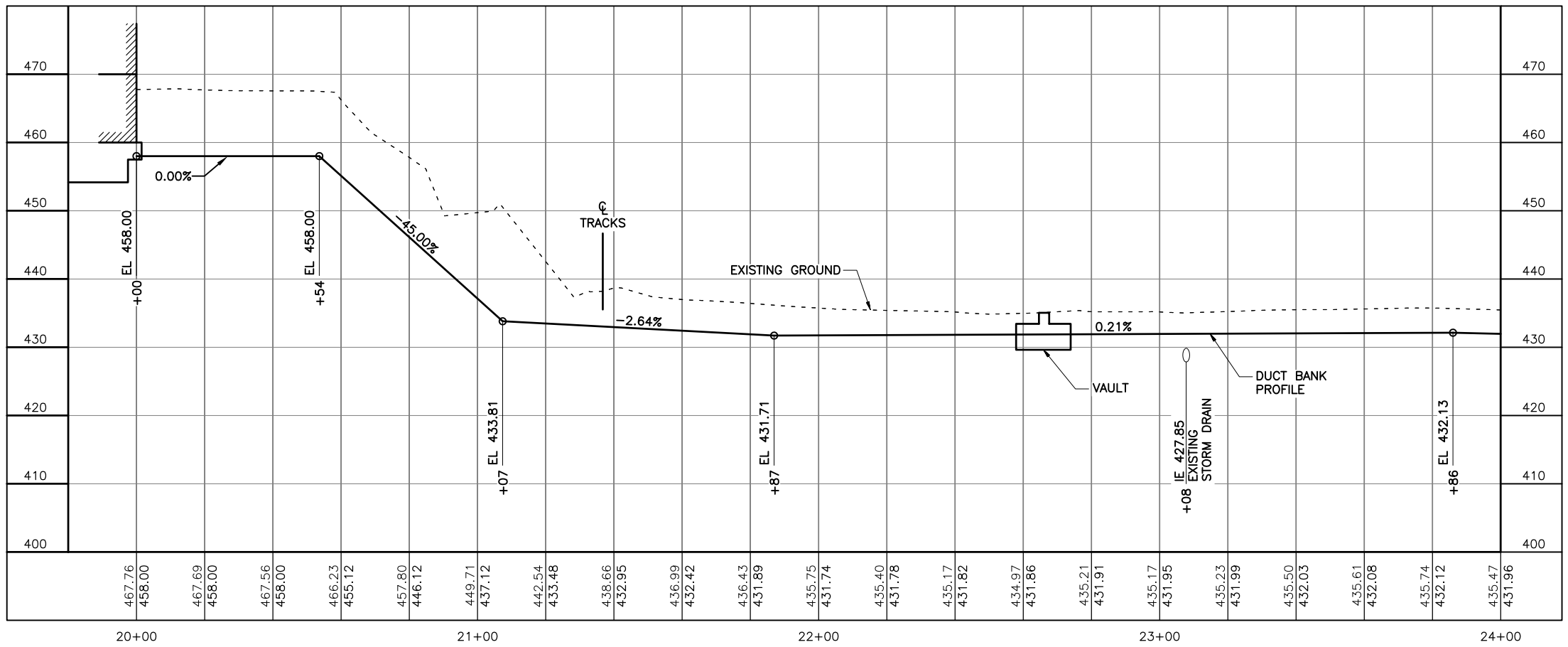


POINT TABLE

POINT #	NORTHING	EASTING	STATION	DESCRIPTION
100	3970774.36	1356351.20	20+00.00	DUCT BANK PI
101	3970773.38	1356365.45	20+14.28	DUCT BANK PI
102	3970603.06	1356523.11	22+46.37	DUCT BANK PI
103	3970600.06	1356542.22	22+65.71	VAULT V1A



CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
DUCT BANK 1 PLAN AND PROFILE (1 OF 2)

DESIGN	DCH
DRAWN	DCH, RJP
CHECKED	MTS
DATE	FEB. 25, 2010
PROJECT No.	F08085.01
SHEET NUMBER	C2.3
OF 106 SHEETS	

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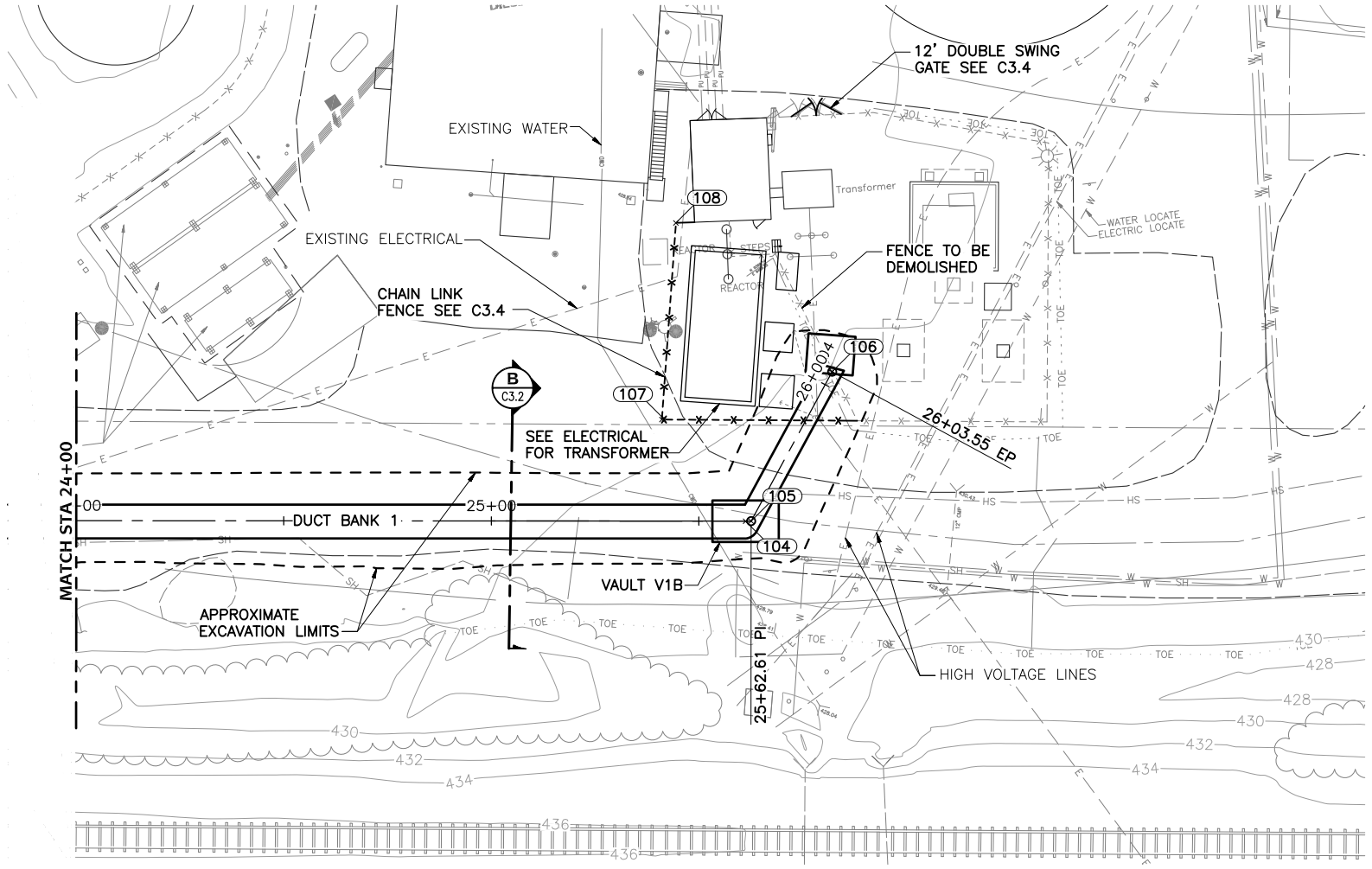
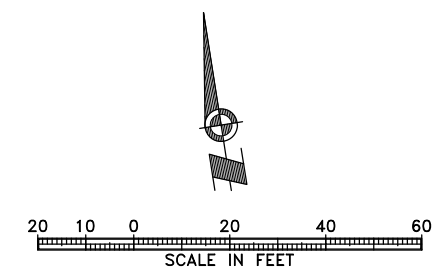
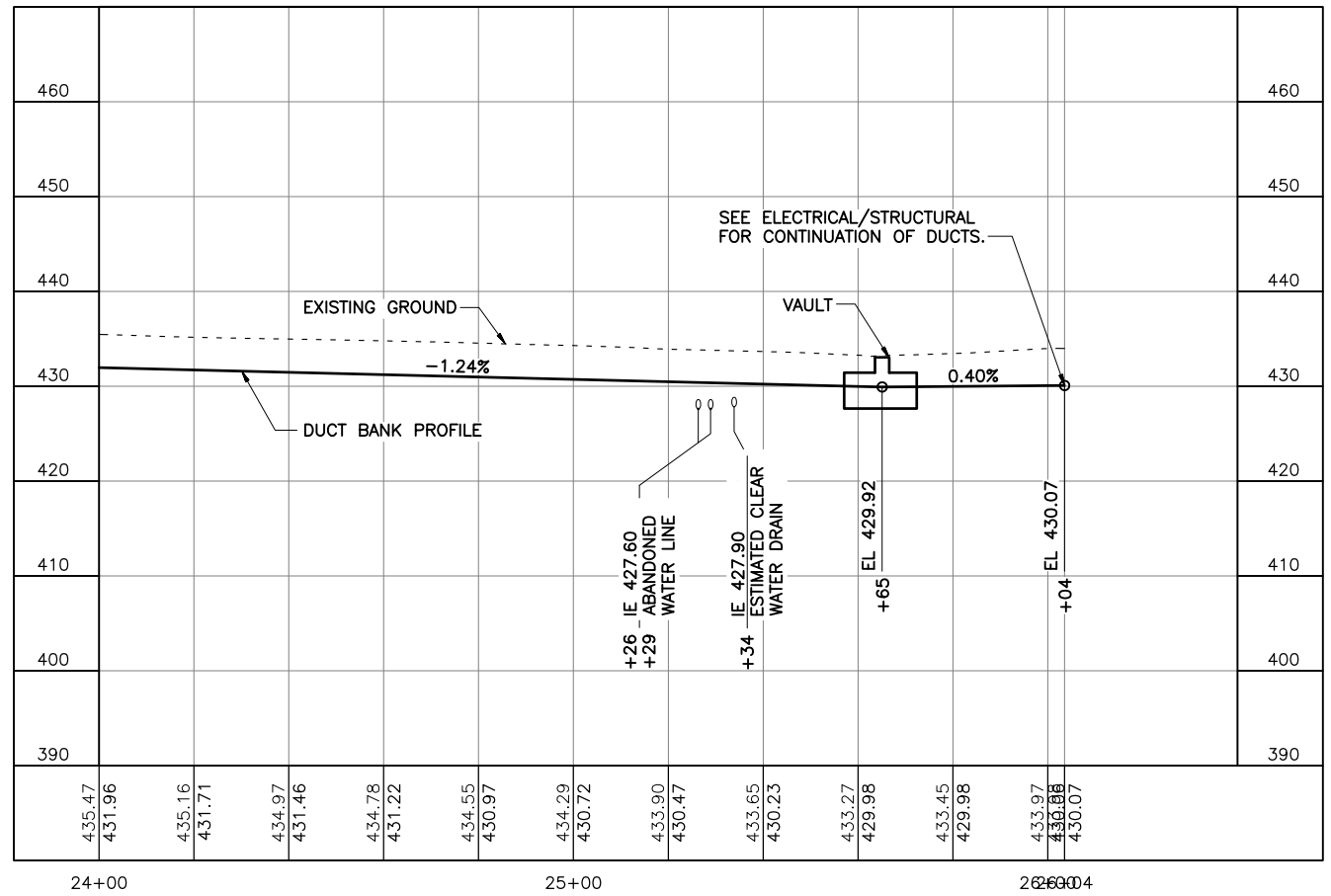


POINT TABLE

POINT #	NORTHING	EASTING	STATION	DESCRIPTION
104	3970554.21	1356834.38	25+61.10	VAULT V1B
105	3970554.03	1356835.73	25+62.46	DUCT BANK PI
106	3970586.56	1356860.57	26+03.55	DUCT BANK PI
107	3970581.52	1356818.25		FENCE
108	3970627.81	1356828.92		FENCE





CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
DUCT BANK 1 PLAN AND PROFILE (2 OF 2)

DESIGN	DCH
DRAWN	DCH, RJP
CHECKED	MTS
DATE	FEB 25, 2010
PROJECT No.	F08085.01
SHEET NUMBER	C2.4
OF 106 SHEETS	

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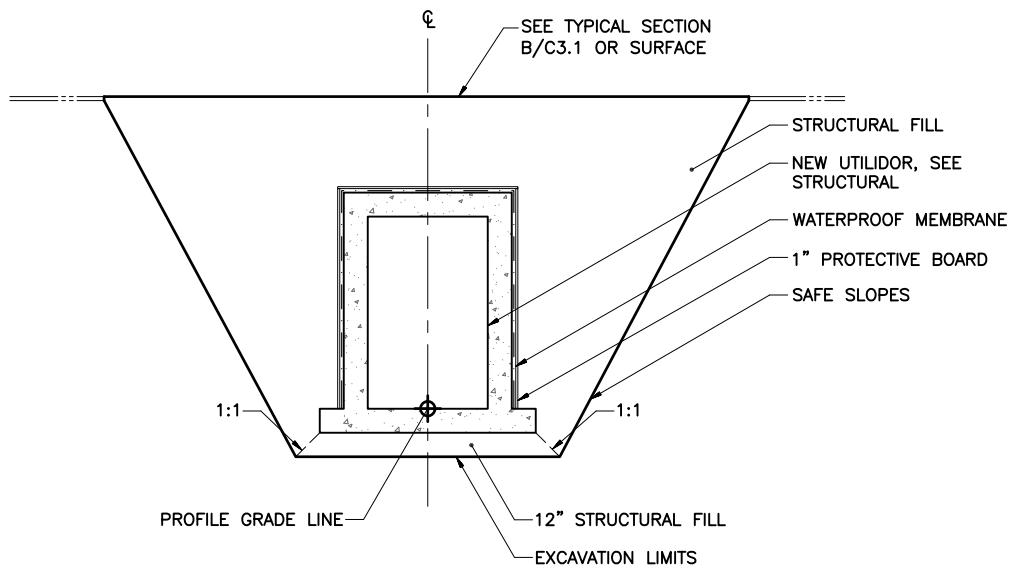
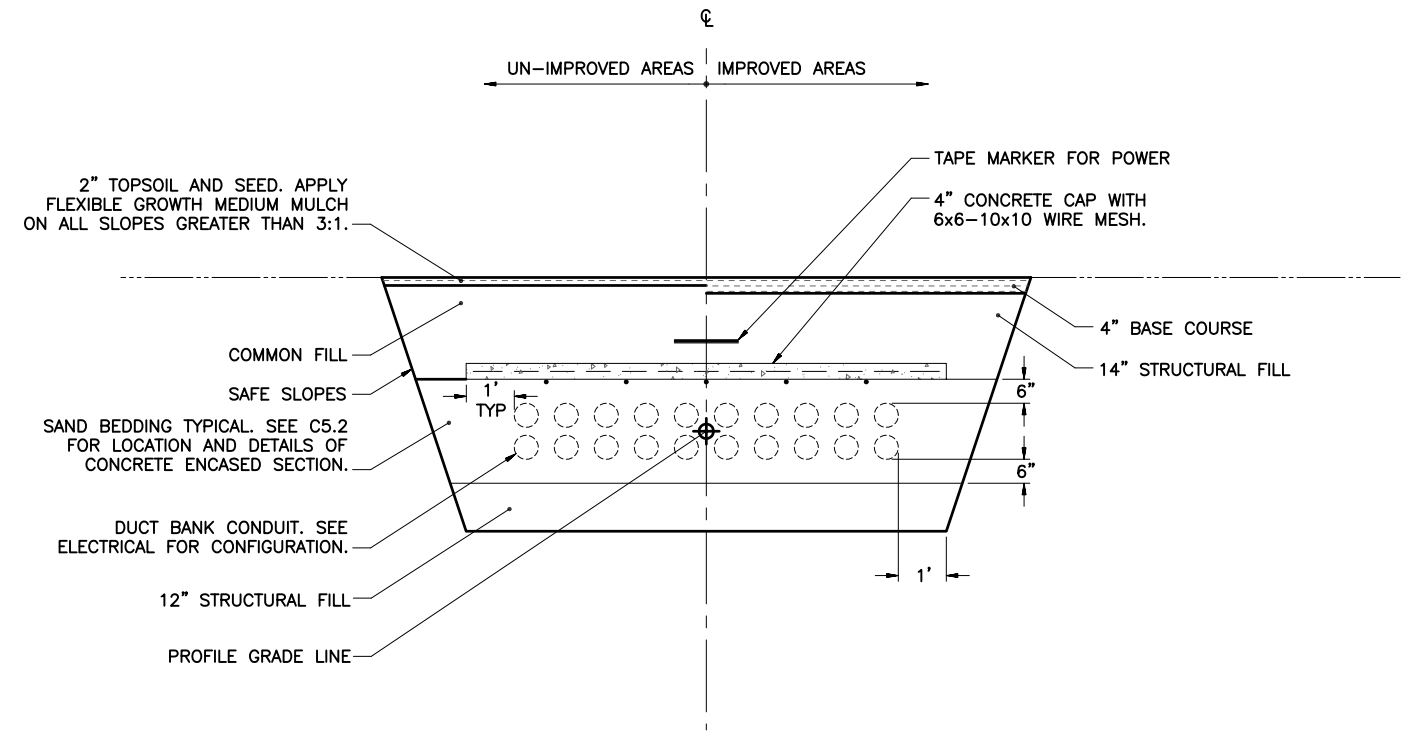
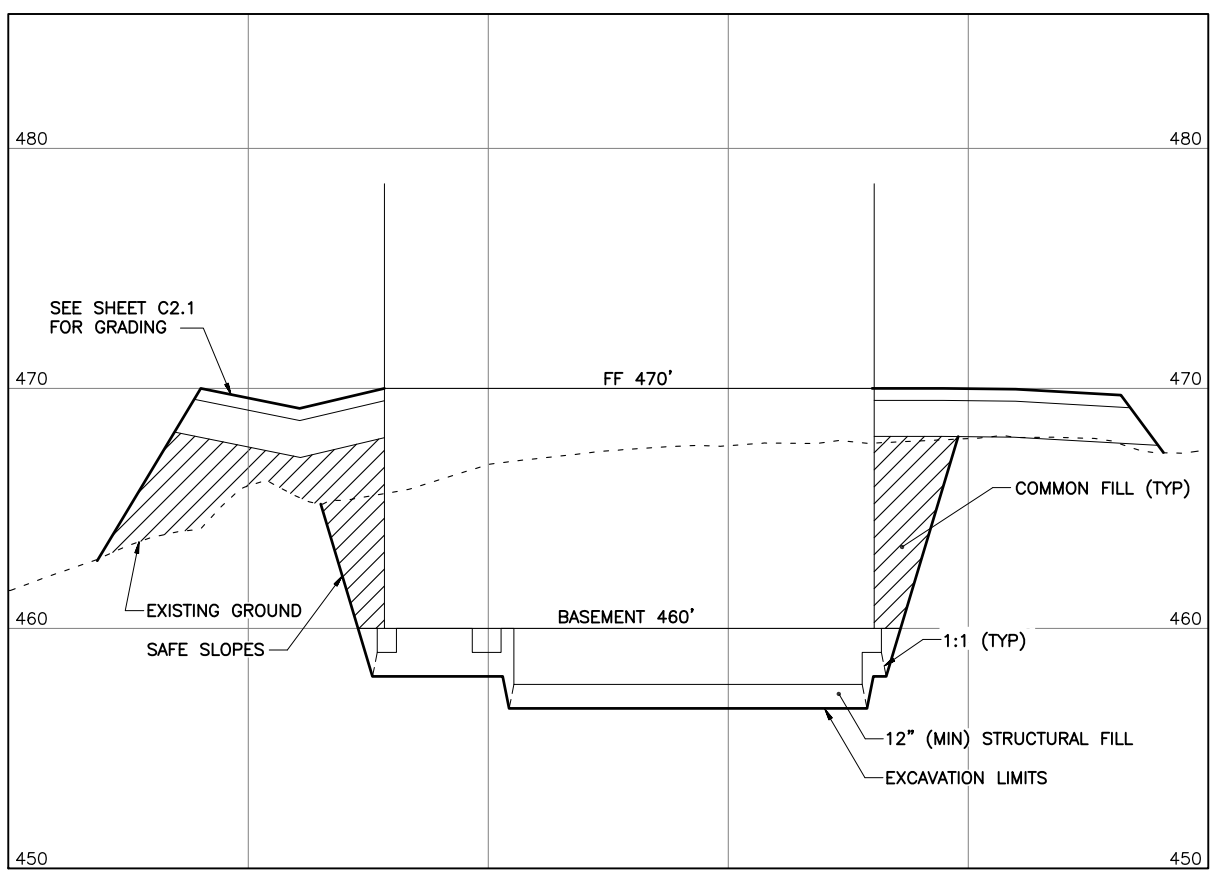


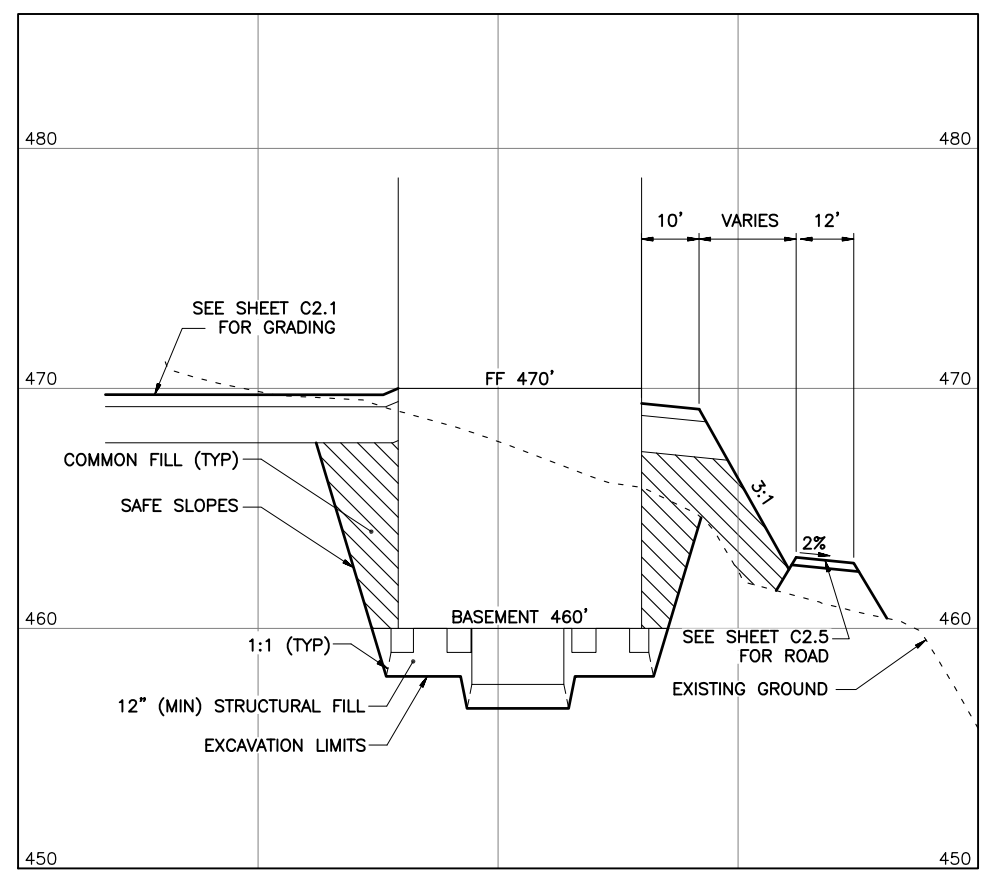
A C3.2 **TYPICAL SECTION: UTILIDOR TRENCH**
NTS



B C3.2 **TYPICAL SECTION: DUCT BANK TRENCH**
NTS



C C3.2 **TYPICAL SECTION: EAST/WEST SWITCH GEAR BUILDING**
SCALE: H 1=20', V 1'=5'



D C3.2 **TYPICAL SECTION: NORTH/SOUTH SWITCH GEAR BUILDING**
SCALE: H 1=20', V 1'=5'

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
DETAILS AND SECTIONS
(2 OF 5)

DESIGN	DCH
DRAWN	DCH, RJP
CHECKED	MTS
DATE	FEB. 25, 2010

PROJECT No.
F08085.01

SHEET NUMBER
C3.2
OF 106 SHEETS

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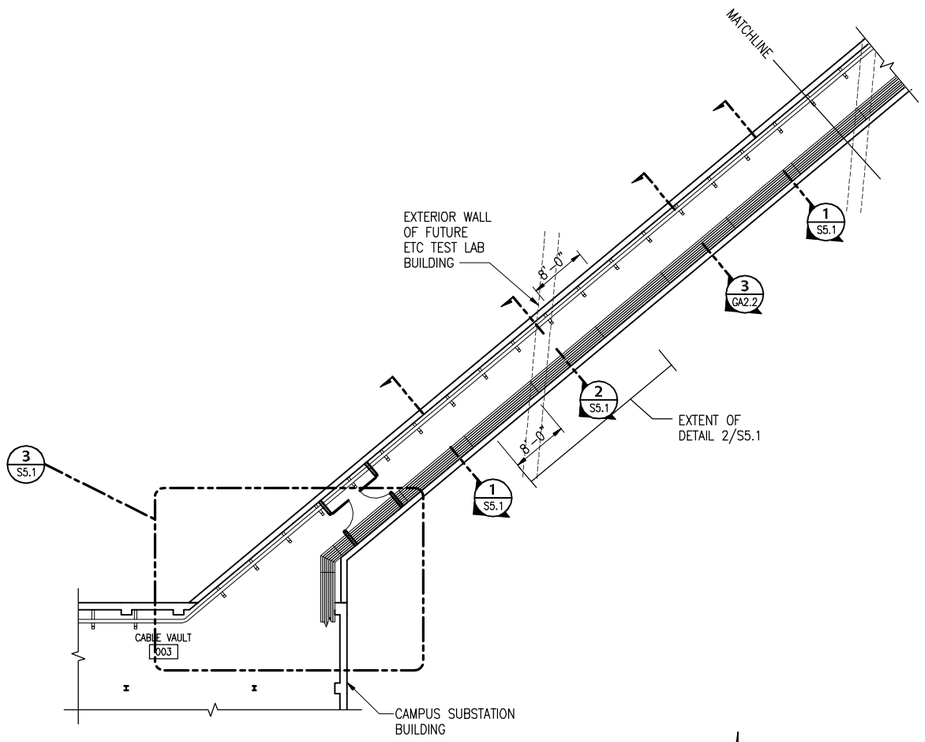
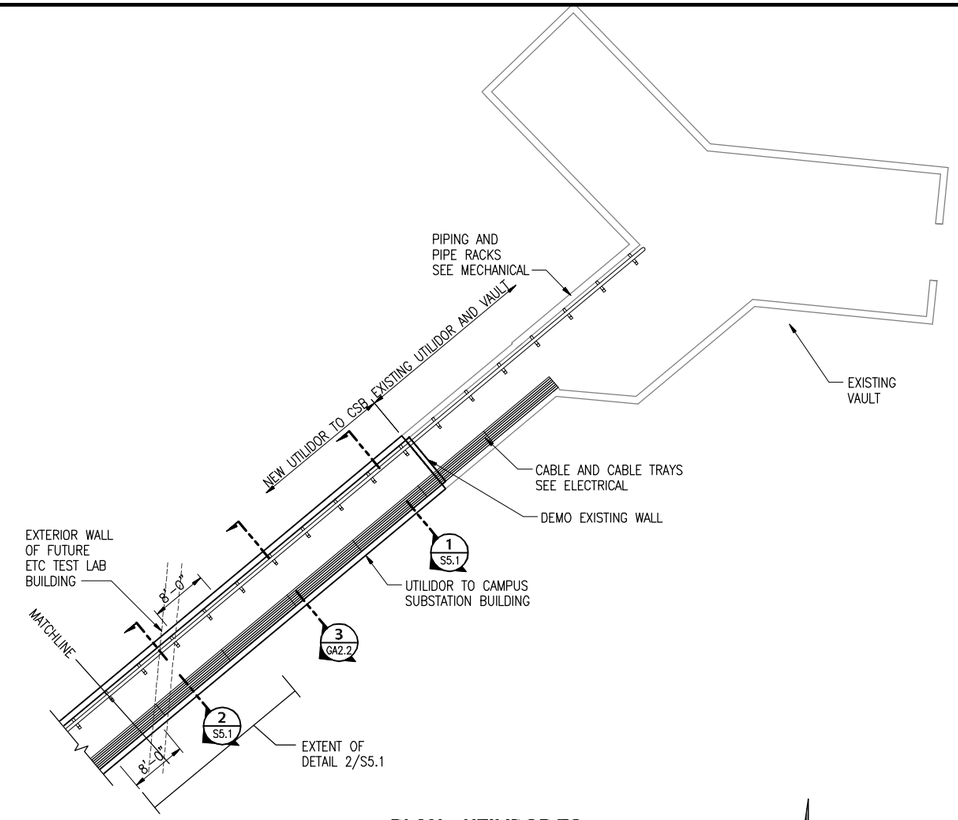


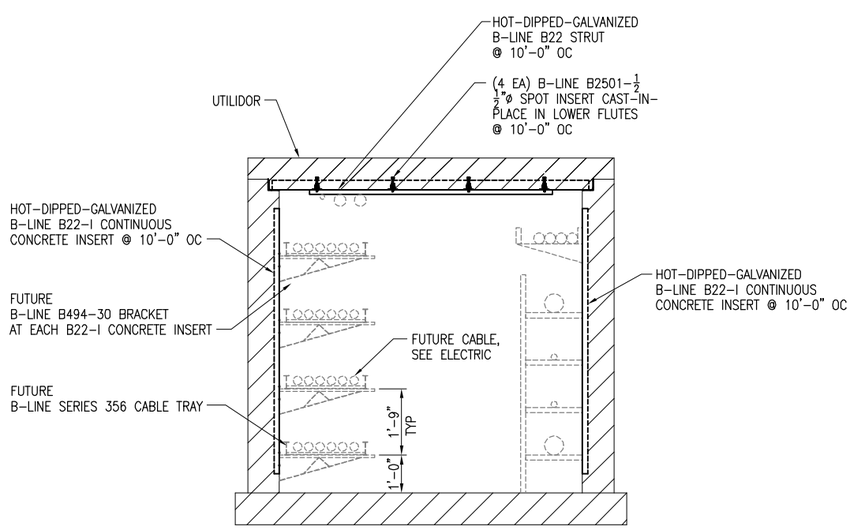
1 GA2.2 PLAN - UTILIDOR TO CAMPUS SUBSTATION BUILDING

5.33 2.66 0 5.33 10.66 16 FEET



2 GA2.2 PLAN - UTILIDOR TO EXISTING VAULT

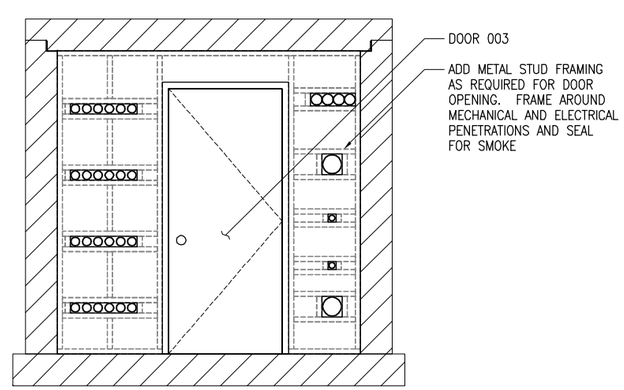
5.33 2.66 0 5.33 10.66 16 FEET



NOTE: SEE STRUCT FOR UTLIDOR REINFORCEMENT

3 GA2.2 STRUT AND CABLE TRAY LAYOUT

1/2"=1'-0" G808501-DETL-0001.dwg



4 GA2.2 STRUT AND CABLE TRAY LAYOUT

1/2"=1'-0" G808501-DETL-0001.dwg

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5529

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

SHEET TITLE :
UTILIDOR TO EXISTING
VAULT PLAN

DESIGN	JJL
DRAWN	DJM
CHECKED	PWR
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
GA2.2
OF 136 SHEETS

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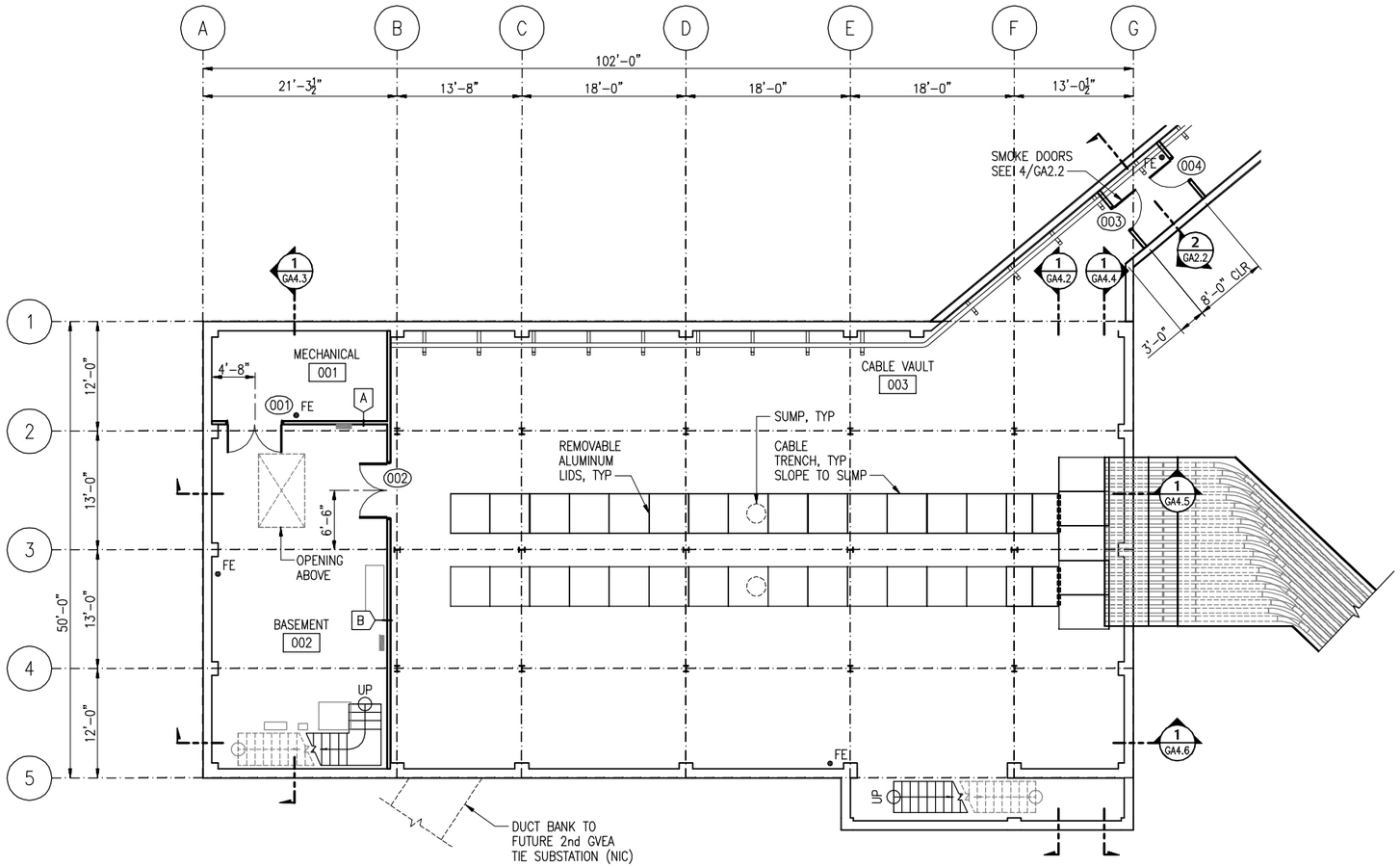

1 GA3.1 **BASEMENT PLAN**

8 4 0 8 16 24 FEET

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5529

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

SHEET TITLE :
BASEMENT PLAN

DESIGN	JJL
DRAWN	DJM
CHECKED	FWR
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
GA3.1
OF 136 SHEETS

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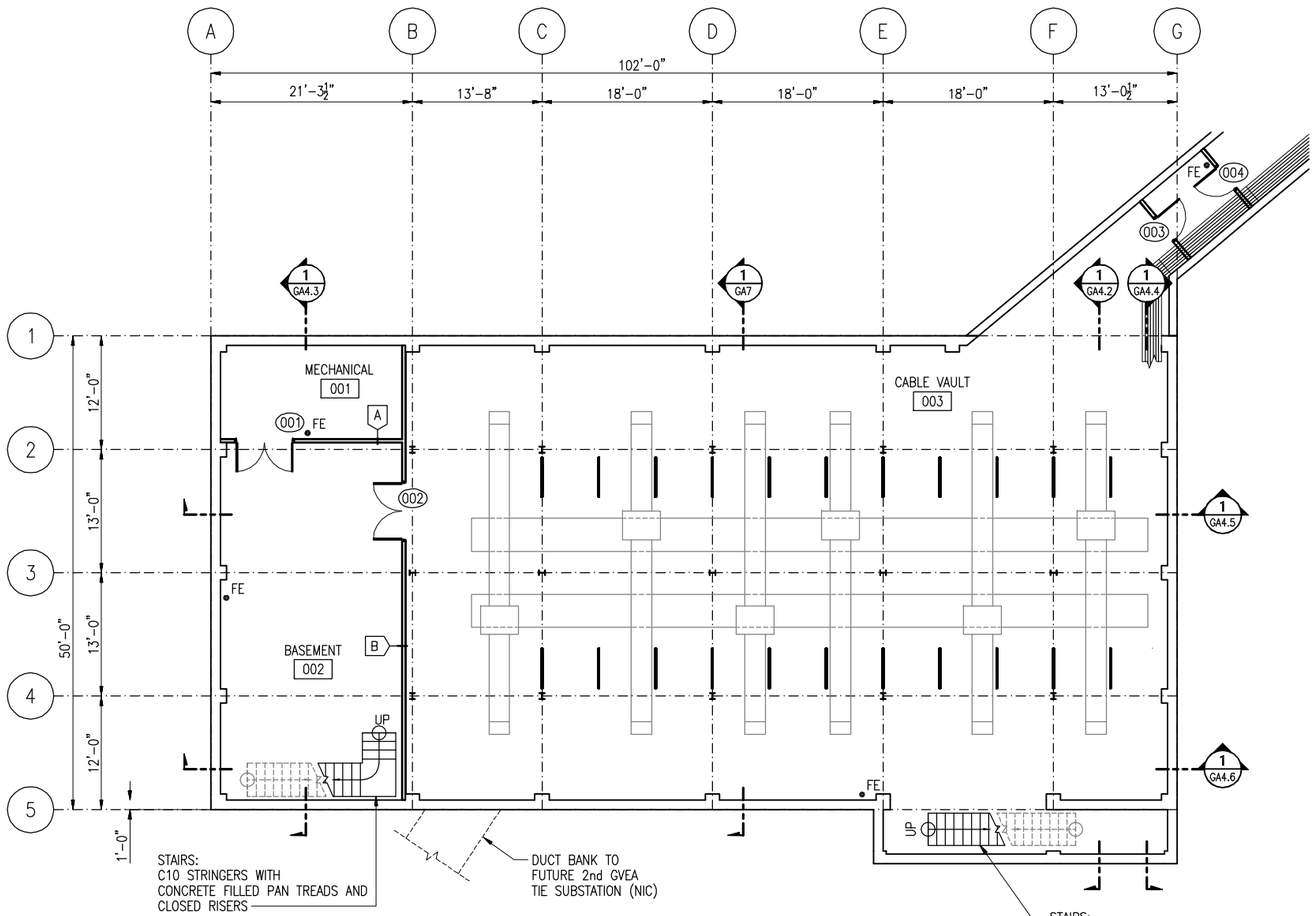

1 GA3.2 **BUSS DUCT AND CABLE SUPPORT PLAN**

8 4 0 8 16 24 FEET

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5529

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

SHEET TITLE :
BASEMENT PLAN

DESIGN	JJL
DRAWN	DJM
CHECKED	PWR
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
GA3.2
OF 136 SHEETS

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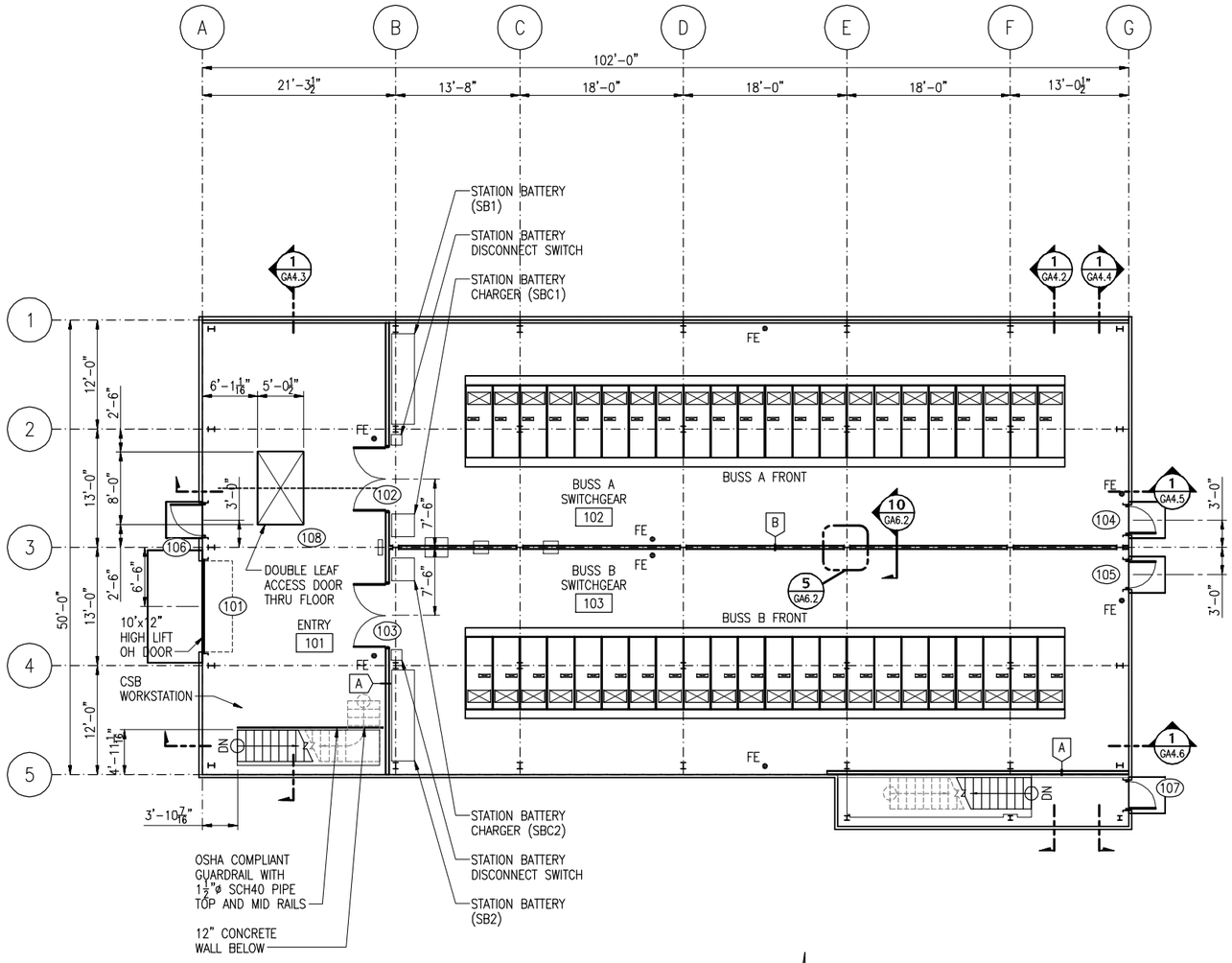


1 GA3.3 **FIRST FLOOR PLAN**

8 4 0 8 16 24 FEET

INTERIOR PARTITION AND FURRING TYPES

A — -5/8-INCH TYPE X GYP BOARD EACH SIDE. -4-INCH METAL STUD (400S162-33) @ 16" OC

B — -5/8-INCH TYPE X GYP BOARD EACH SIDE. -4-INCH METAL STUD (400S200-43) @ 12" OC

DRAWING SYMBOLS

DETAIL NUMBER — 1 GA1.1 — DETAIL LOCATION: DETAIL TAG

DETAIL NUMBER — 1 GA1.1 — DETAIL LOCATION: SECTION TAG

A WALL TAG

104 DOOR TAG

1 KEYNOTE TAG

ELEVATION MARK

FE WALL MOUNTED FIRE EXTINGUISHER

101 ROOM TAG

CONCRETE

EARTH

METAL

RIGID INSULATION

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5529

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

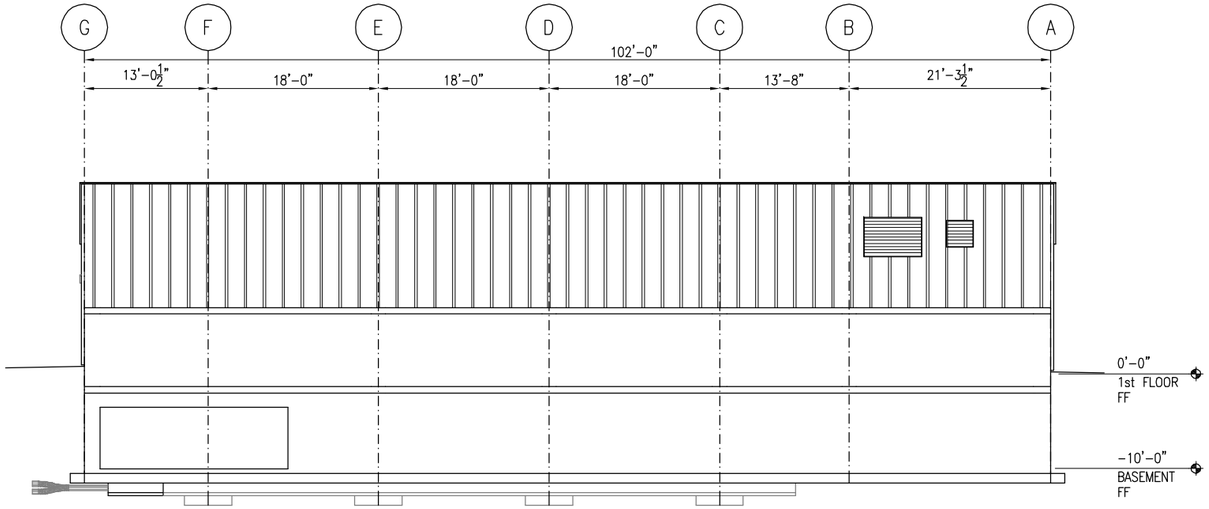
SHEET TITLE :
FIRST FLOOR PLAN

DESIGN	JJL
DRAWN	DJM
CHECKED	PWR
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

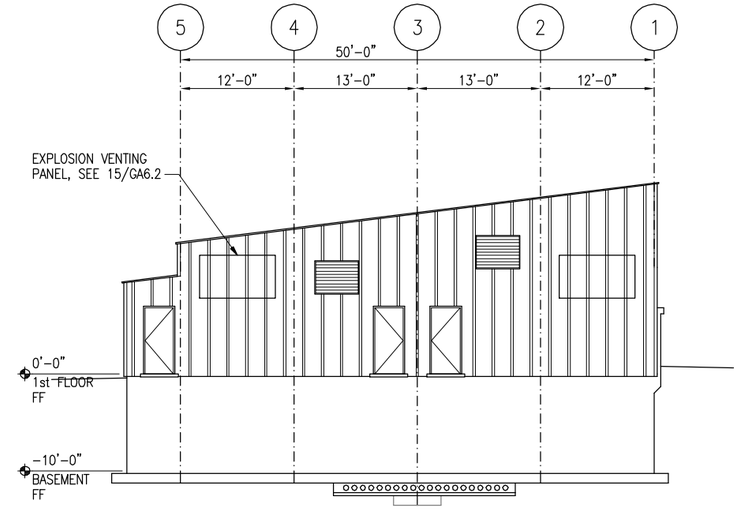
SHEET NUMBER
GA3.3
OF 136 SHEETS

P:\2008\F08085\F08085.01_ Campus Distribution_Phase 1B (Switch Gear Building)\GA\2009pdf\F08085D1: First Floor Plan Apr 19, 2010 5:08 PM



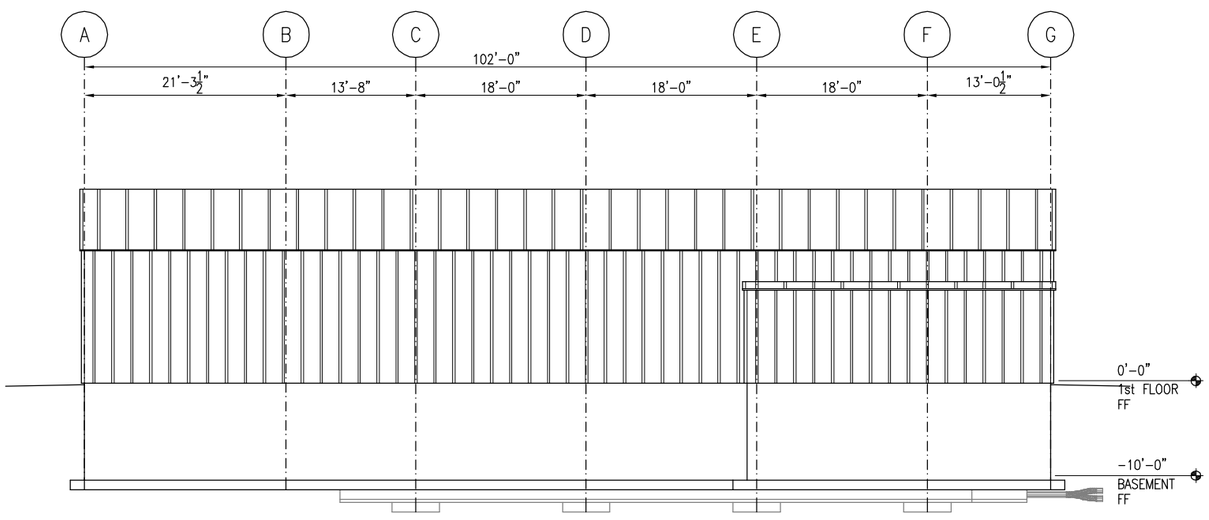
1 GA4.1 **NORTH EXTERIOR BUILDING ELEVATION**

8 4 0 8 16 24 FEET



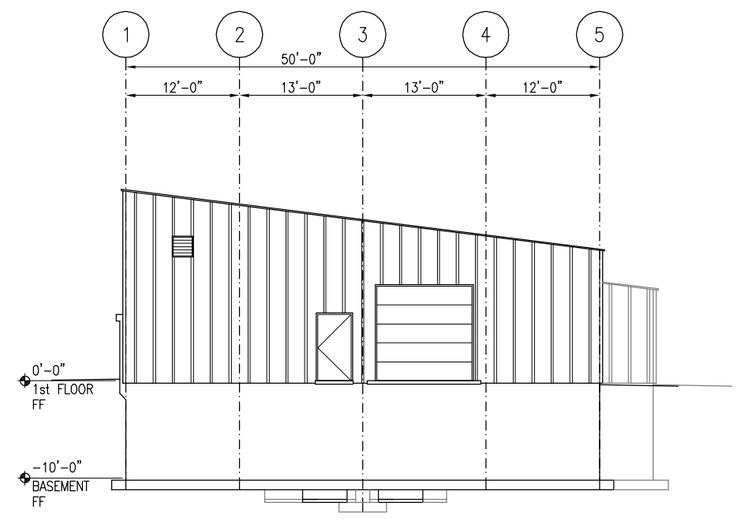
2 GA4.1 **EAST EXTERIOR BUILDING ELEVATION**

8 4 0 8 16 24 FEET



3 GA4.1 **SOUTH EXTERIOR BUILDING ELEVATION**

8 4 0 8 16 24 FEET



4 GA4.1 **WEST EXTERIOR BUILDING ELEVATION**

8 4 0 8 16 24 FEET

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5529

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

SHEET TITLE :
EXTERIOR BUILDING
ELEVATIONS

DESIGN	JJL
DRAWN	DJM
CHECKED	PWR
DATE	APRIL 19, 2010
PROJECT No.	F08085.01
SHEET NUMBER	GA4.1
OF 136 SHEETS	

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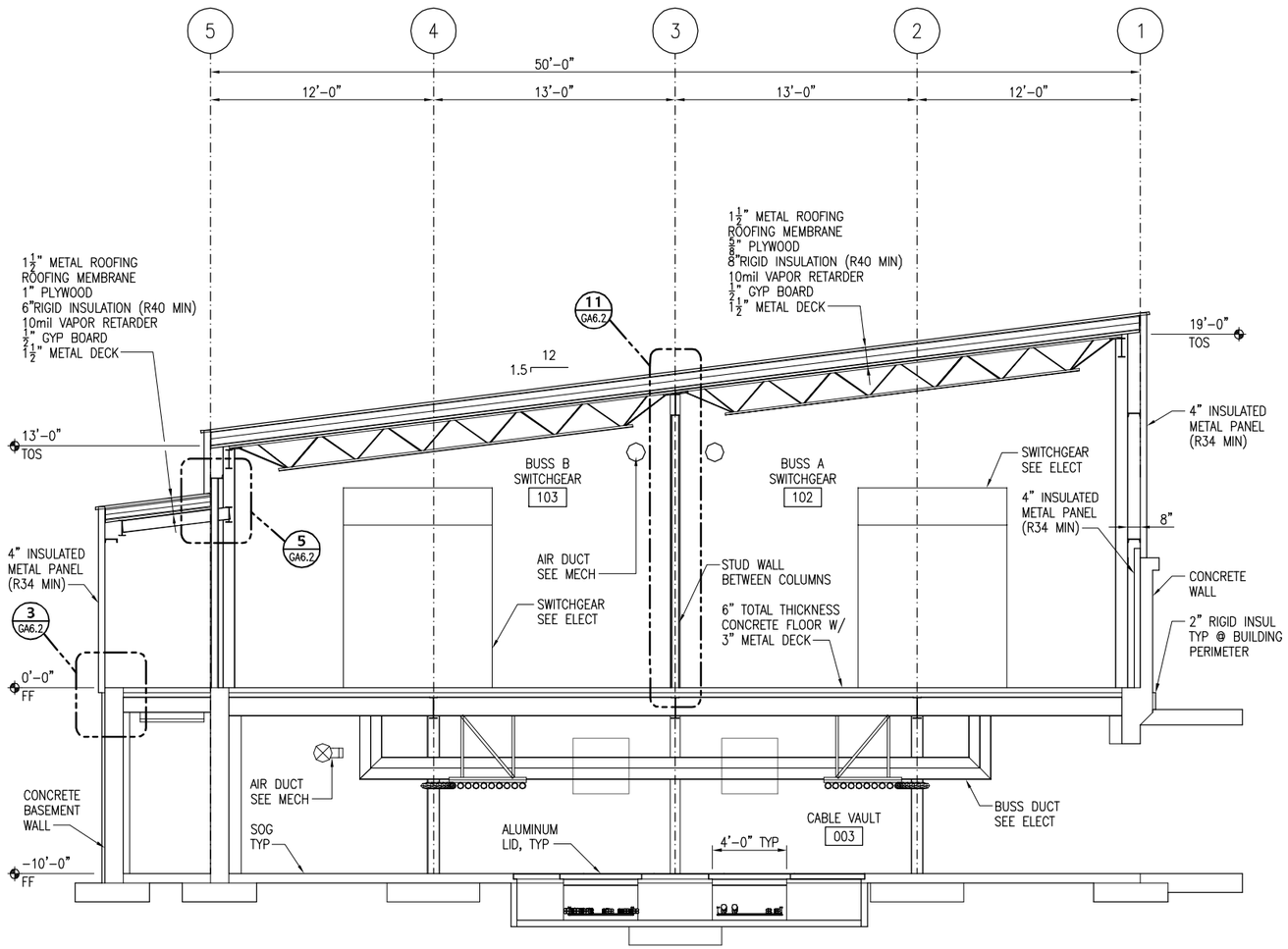

1
GA4.2

BUILDING SECTION

FEET
4 2 0 4 8 12

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5529

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

SHEET TITLE :
BUILDING SECTIONS

DESIGN	JJL
DRAWN	DJM
CHECKED	FWR
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
GA4.2
OF 136 SHEETS

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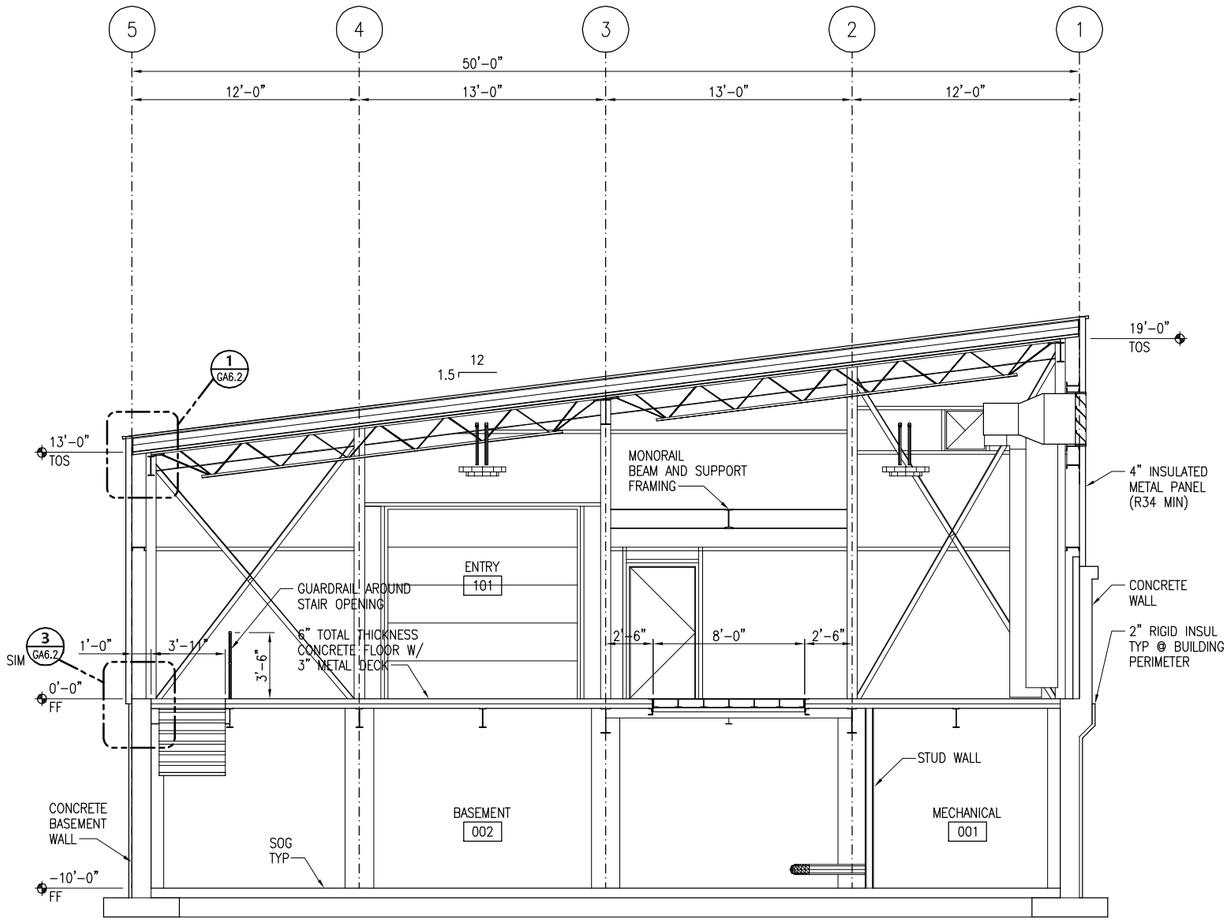

1 GA4.3 **BUILDING SECTION**

4 2 0 4 8 12 FEET

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5529

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

SHEET TITLE :
BUILDING SECTION

DESIGN	JJL
DRAWN	DJM
CHECKED	FWR
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
GA4.3
OF 136 SHEETS

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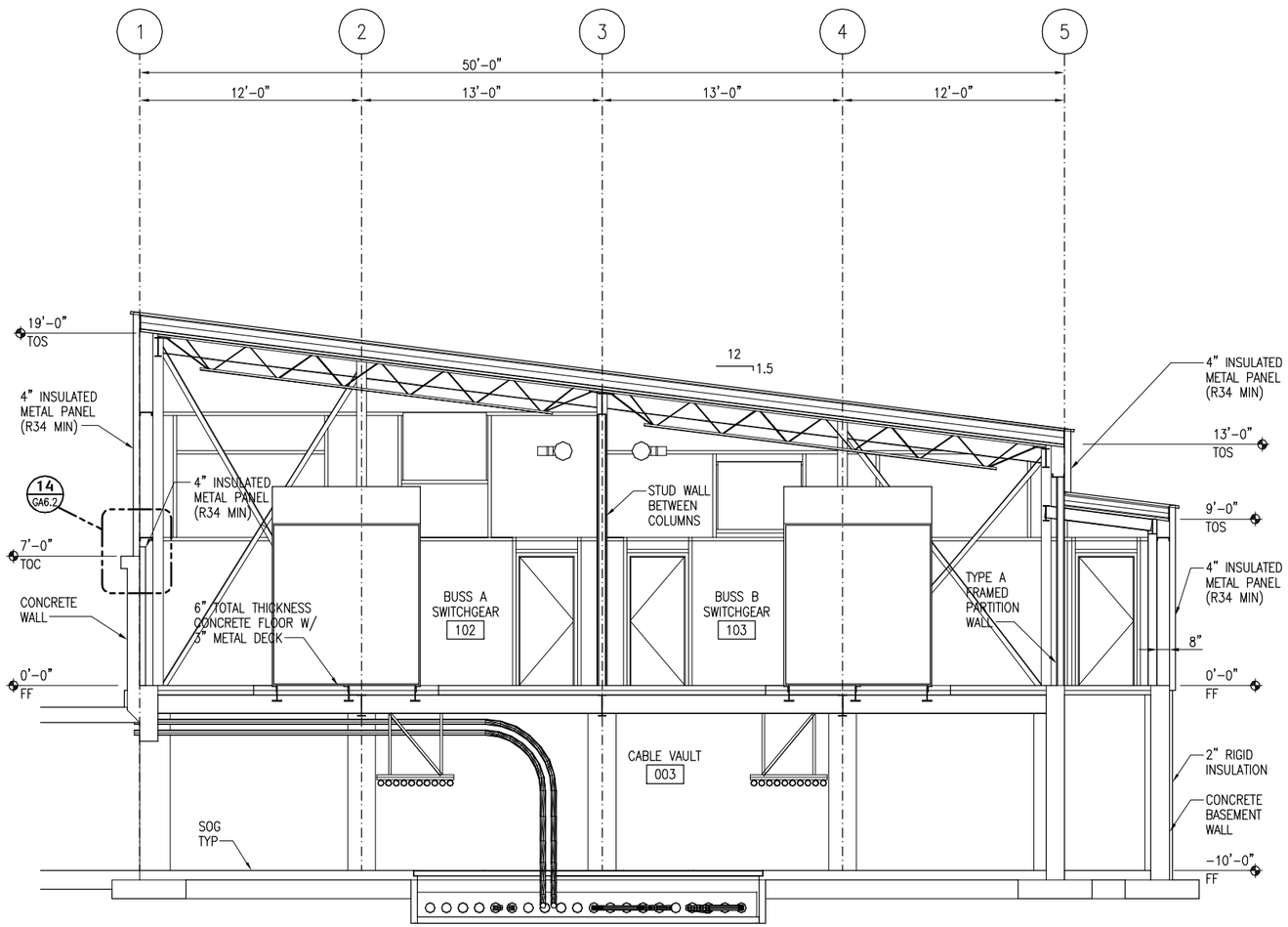

1 GA4.4 **BUILDING SECTION**

4 2 0 4 8 12 FEET

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5529

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

SHEET TITLE :
BUILDING SECTIONS

DESIGN	JJL
DRAWN	DJM
CHECKED	PWR
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
GA4.4
OF 136 SHEETS

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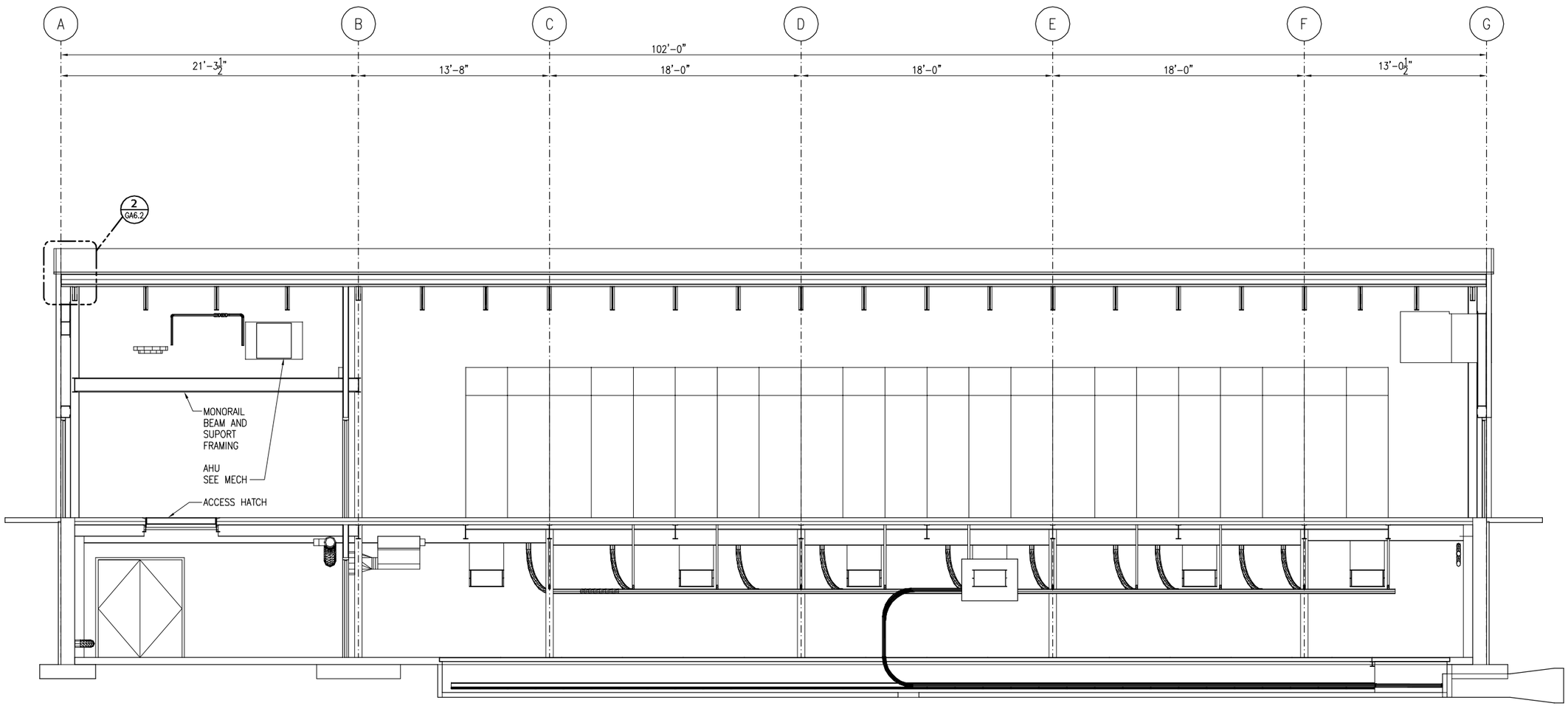


1 GA4.5 **BUILDING SECTION**

4 2 0 4 8 12 FEET

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5529

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

SHEET TITLE :
BUILDING SECTIONS

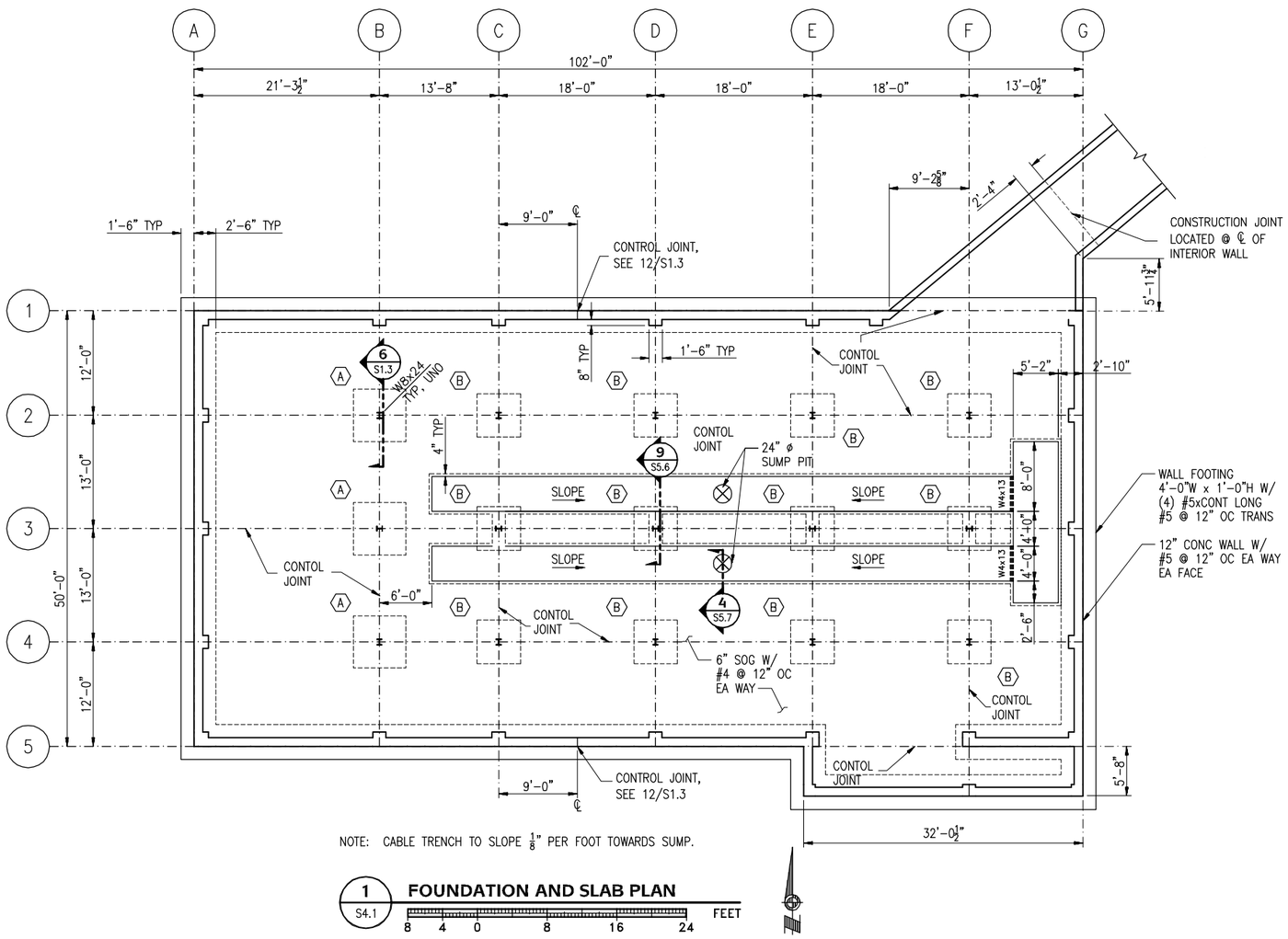
DESIGN	JJL
DRAWN	DJM
CHECKED	FWR
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
GA4.5
OF 136 SHEETS

P:\2008\F08085\F08085.01_ Campus Distribution_Phase 1B (Switch Gear Building)\01\GA04\Dwg\F08085.01 Building Sections (4) Apr 19, 2010 5:06 PM

FOOTING SCHEDULE		
MARK	SIZE	REINFORCING
A	6'-0"x6'-0"x12"	(7) #6 EA WAY
B	5'-0"x5'-0"x12"	(6) #6 EA WAY



NOTE: CABLE TRENCH TO SLOPE $\frac{1}{8}$" PER FOOT TOWARDS SUMP.

1 / S4.1 **FOUNDATION AND SLAB PLAN**

8 4 0 8 16 24 FEET

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5529

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

SHEET TITLE :
FOUNDATION AND SLAB PLAN

DESIGN	JJL
DRAWN	DJM
CHECKED	PWR
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
S4.1
OF 136 SHEETS

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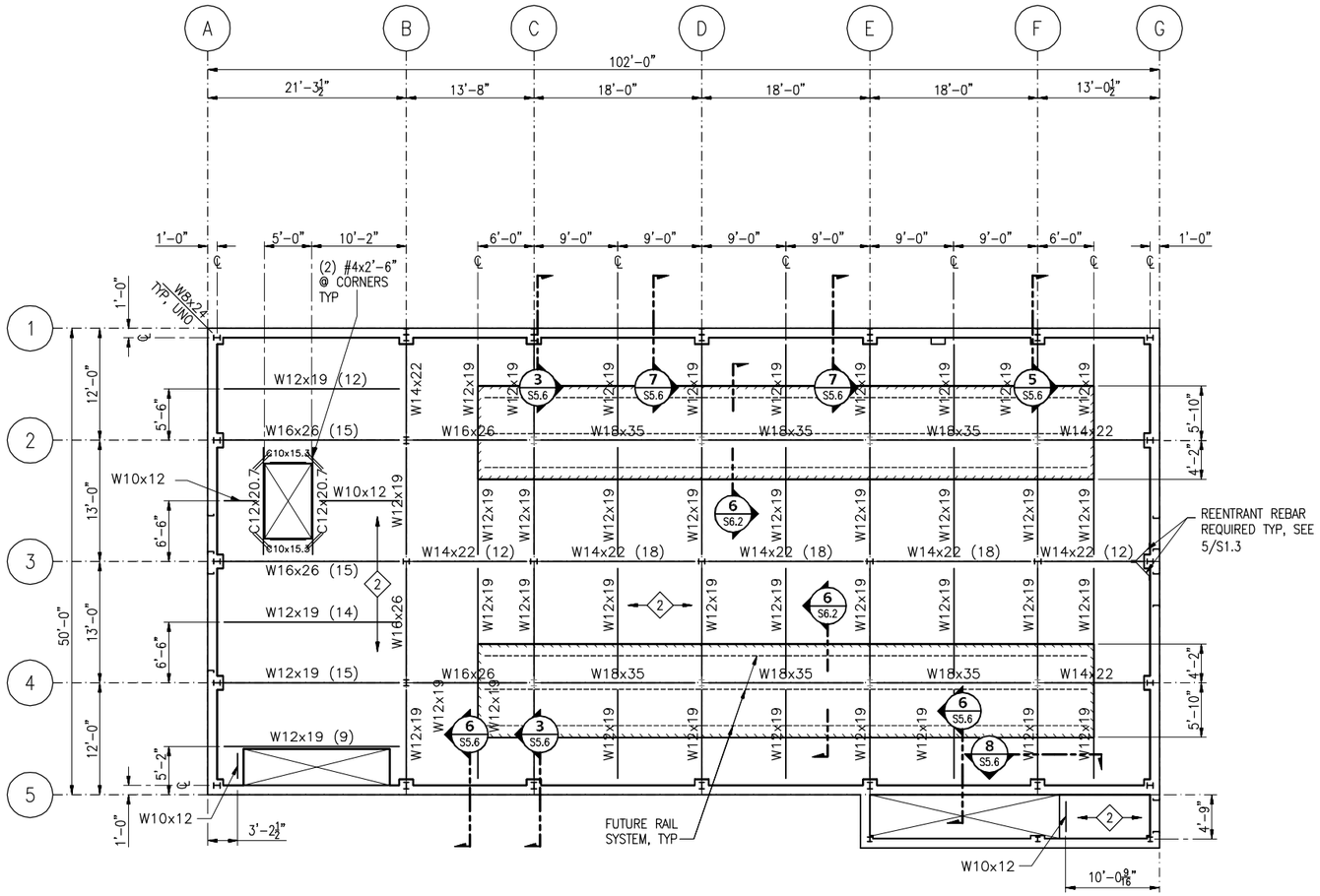

1 S4.2 **FIRST FLOOR FRAMING AND SLAB PLAN**

8 4 0 8 16 24 FEET

SHEET NOTES

1. CONTRACTOR TO COORDINATE ALL FLOOR PENETRATIONS REQUIRED FOR MECHANICAL AND ELECTRICAL EQUIPMENT.
2. W3-18ga METAL DECK WITH 6" TOTAL CONCRETE THICKNESS WITH (4) ½"Ø PUDDLE WELDS PER SHEET AT EACH SUPPORT, ½"Ø PUDDLE WELDS AT 2'-0" ON CENTER IN FIELD AND SIDE LAPS BUTTON PUNCHED AT 2'-0" ON CENTER.
3. SLAB REINFORCING:

   #5 BARS SPACED AT 12" ON CENTER, PARALLEL TO FLUTES, BOTTOM.

   #5 BARS SPACED AT 12" ON CENTER, PERPENDICULAR TO FLUTES, TOP. LOCATE TOP BARS ¾" BELOW TOP OF SLAB.
4. INDICATE BLOCKOUT FOR FUTURE SWGR SUPPORT RAIL SYSTEM.

SHEET SYMBOLS

W12x14 (12)

NUMBER OF STUDS

BEAM SIZE

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5529

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

SHEET TITLE :
FIRST FLOOR FRAMING PLAN

DESIGN	JJL
DRAWN	DJM
CHECKED	FWR
DATE	APRIL 19, 2010

PROJECT No. F08085.01

SHEET NUMBER S4.2 OF 136 SHEETS

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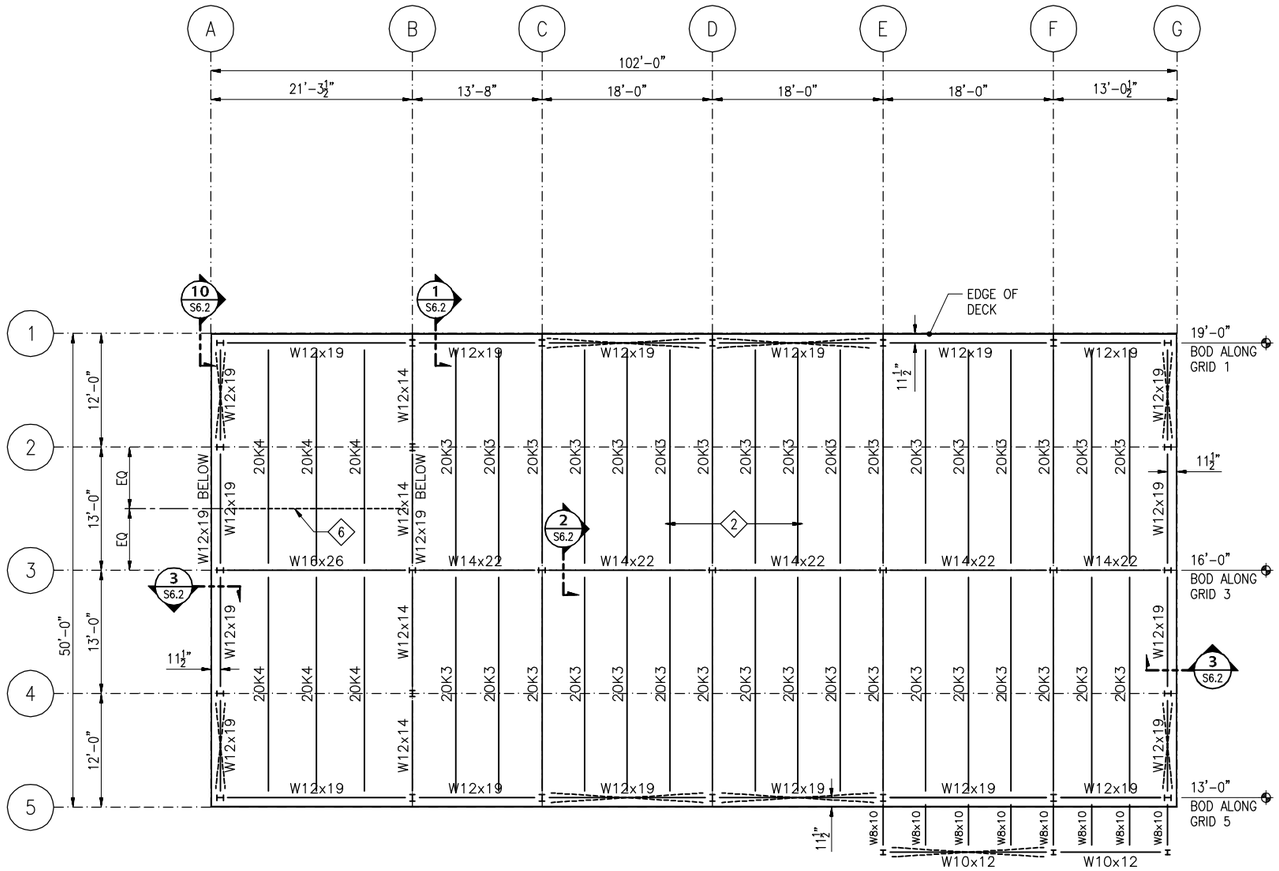


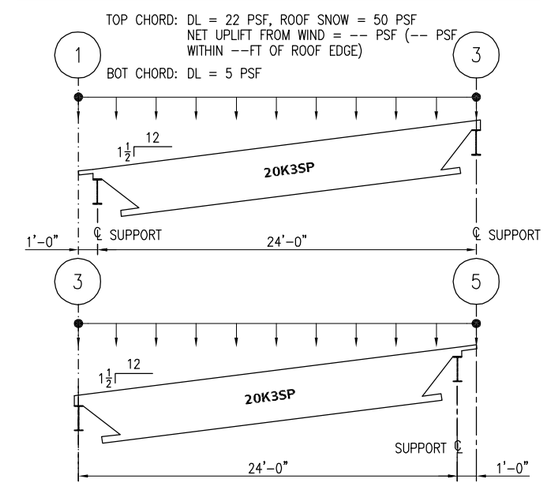
1 S4.3 **ROOF FRAMING PLAN**

8 4 0 8 16 24 FEET

SHEET NOTES

1. BOD = BOTTOM OF METAL ROOF DECK.
2. 1½"–18ga METAL DECK WITH (4) ½"Ø PUDDLE WELDS PER SHEET AT EACH SUPPORT, ½"Ø PUDDLE WELDS AT 2'–0" ON CENTER IN FIELD AND SIDE LAPS BUTTON PUNCHED AT 2'–0" ON CENTER.
3. ALL BOLTED CONNECTIONS ALONG GRID LINES A, G, 1 AND 6 SHALL BE FULLY TENSIONED WITH FAYING SURFACES PREPARED AS FOR CLASS 'A' OR BETTER SLIP CRITICAL CONNECTION.
4. CONTRACTOR TO VERIFY AND COORDINATE ALL CONCENTRATED LOADS FROM MECHANICAL AND ELECTRICAL EQUIPMENT WITH JOIST MANUFACTURER TO ALLOW INSTALLATION OF ADDITIONAL WEB MEMBERS AS REQUIRED.
5. PROVIDE (2) LINES OF DIAGONAL BRACING AT ⅓ POINTS OF JOIST SPAN BETWEEN GRIDS 1 TO 3 AND 3 TO 5.
6. LOCATION OF S12x31.8 WITH C8x11.5 CAP CHANNEL MONORAIL BEAM (2–TON CAPACITY) MOUNTED BELOW ROOF JOISTS.

UNIFORM LOADS



NOTES:

CONTRACTOR TO COORDINATE AND VERIFY ANY POINT LOADS WITH JOIST DESIGNER/MANUFACTURER.

- S4.3 **TYPICAL JOIST LOADING DIAGRAMS**

NTS S8060-DETL-0033.dwg

CONSULTANT :

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PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTERB
FAIRBANKS, ALASKA

SHEET TITLE :
ROOF FRAMING PLAN

DESIGN	JJL
DRAWN	DJM
CHECKED	PWR
DATE	APRIL 19, 2010

PROJECT No. F08085.01

SHEET NUMBER S4.3 OF 136 SHEETS

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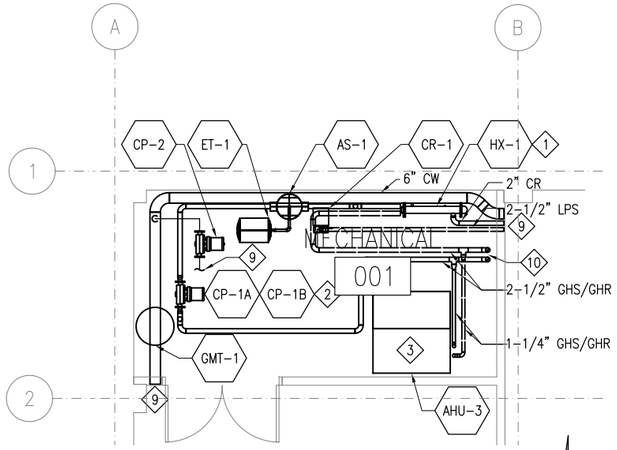
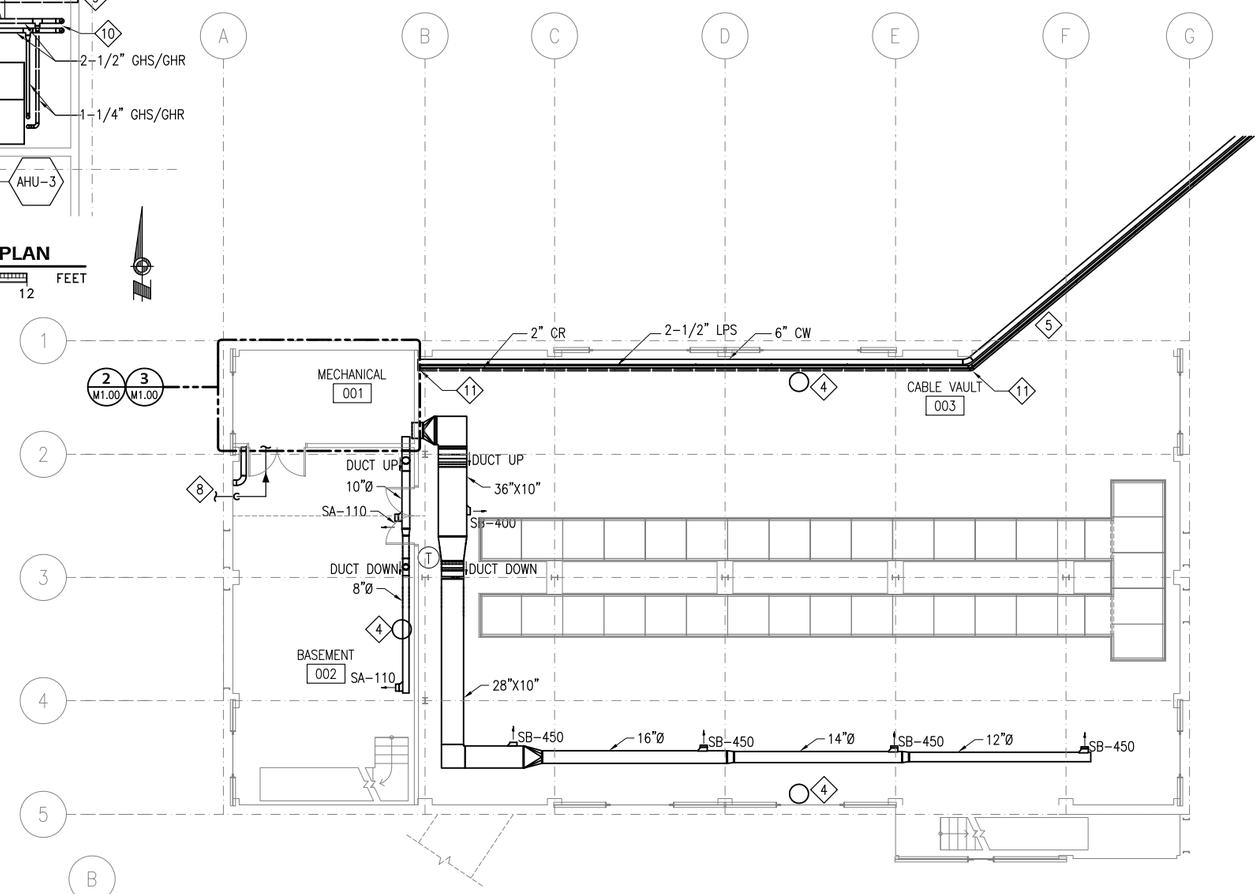


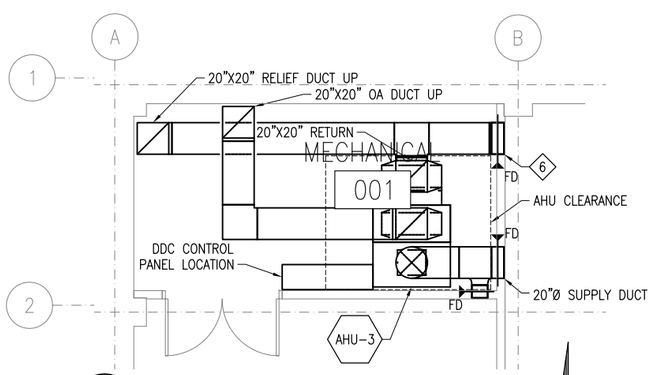
2 / M1.00 MECHANICAL ROOM PIPING PLAN

FEET 4 2 0 8 8 12



1 / M1.00 BASEMENT PLAN

FEET 8 4 0 8 16 24



3 / M1.00 MECHANICAL ROOM VENTILATION PLAN

FEET 4 2 0 4 8 12

SHEET NOTES

1. SEE 1/M2.10 FOR STEAM HEATING DIAGRAM.
2. SEE 2/M2.10 FOR HYDRONIC HEATING DIAGRAM.
3. SEE 1/M2.00 FOR COIL PIPING DIAGRAM.
4. STORAGE TANKS FOR CHEMICAL FIRE SUPPRESSION SYSTEM. TANKS SERVE ROOM THAT THEY ARE LOCATED IN. TANK LOCATED IN BASEMENT #002 ALSO SERVES MECHANICAL #001 ROOM ABOVE ENTRY #101. REFER TO ELECTRICAL DRAWINGS FOR FIRE ZONES.
5. ROUTE PIPES IN UTILIDOR TO VAULT #1. FOR CONTINUATION SEE CIVIL DRAWINGS AND 1/M1.11 .
6. 20"X20" RETURN AIR DUCT WITH EA-2200 GRILLE ON WALL. LOCATE GRILLE AS HIGH AS POSSIBLE.
7. PROVIDE VOLUME DAMPERS AT ALL GRILLES AND DIFFUSERS.
8. 6" CW AND 1" HYDRANT CIRCULATION, CONNECT 6" CW TO FLANGE INSIDE OF BUILDING. REFER TO CIVIL DRAWINGS FOR CONTINUATION.
9. REFER TO 1/M1.00 FOR CONITNUATION.
10. 2-1/2" GHS/GHR UP.
11. SEE 9/M2.00 FOR ANCHORING AND EXPANSION COMPENSATION.

CONSULTANT :

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1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
MECHANICAL PLAN
BASEMENT

DESIGN	RAW
DRAWN	RAW
CHECKED	CF
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
M1.00
OF 136 SHEETS

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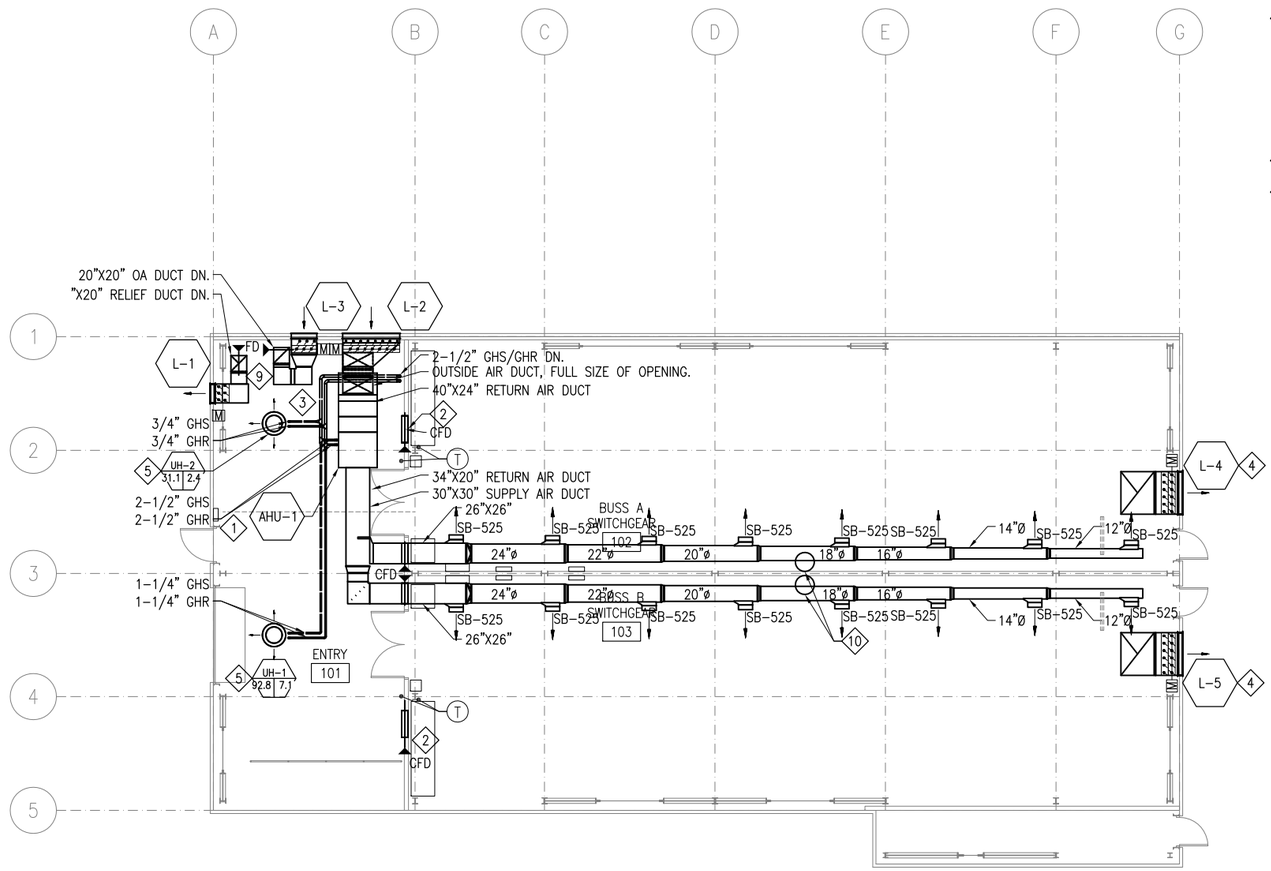
SHEET NOTES

1. CHEMICAL FIRE SUPPRESSION SYSTEM CONTROL PANEL.
2. 34"X20" RETURN AIR DUCT TO RETURN GRILLE RA-4200 IN WALL.
3. DUCTWORK IN THIS AREA TO BE EASILY REMOVABLE TO ALLOW FOR SWITCHGEAR REPLACEMENT. INSULATION SHALL BE INSTALLED TO ACCOMODATE DUCT REMOVAL WITHOUT DAMAGING THE INSULATION.
4. RELIEF AIR LOUVER, SEE 3/M2.00 FOR DETAIL.
5. UNIT HEATER, SEE 4/M2.00 FOR DETAIL.
6. SEE 1/M2.00 FOR COIL PIPING DIAGRAM.
7. PROVIDE VOLUME DAMPERS AT ALL GRILLES AND DIFFUSERS.
8. COORDINATE DUCT ROUTING WITH PANEL CLEARANCES AND LIGHTING.
9. FIRE DAMPERS LOCATED IN FLOOR.
10. STORAGE TANKS FOR CHEMICAL FIRE SUPPRESSION SYSTEM. TANKS SERVE ROOM THAT THEY ARE LOCATED IN. REFER TO ELECTRICAL DRAWINGS FOR FIRE ZONES.



1 M1.10 **FIRST FLOOR PLAN**

8 4 0 8 16 24 FEET

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
MECHANICAL PLAN
FIRST FLOOR

DESIGN	RAW
DRAWN	RAW
CHECKED	CF
DATE	APRIL 19, 2010

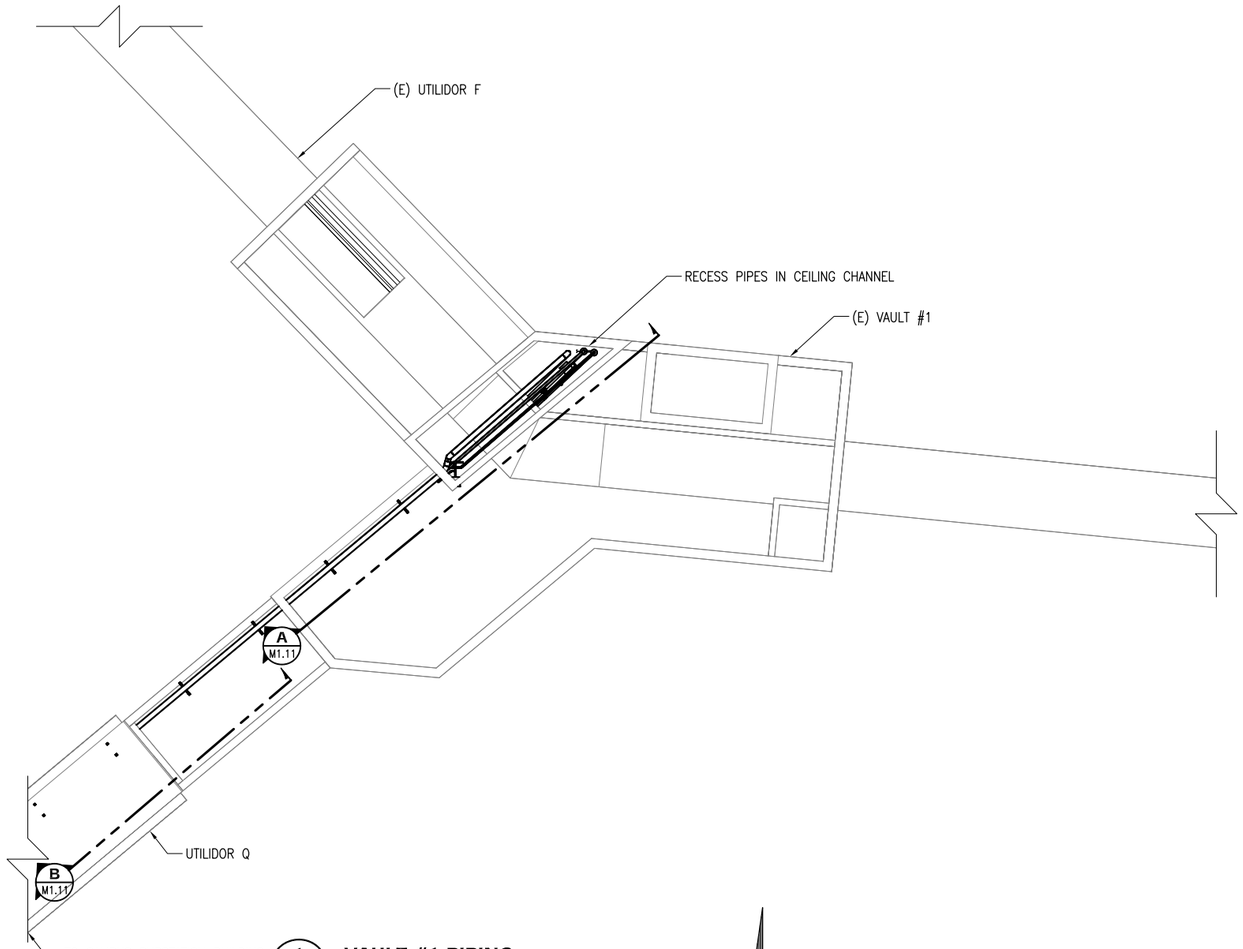
PROJECT No.
F08085.01

SHEET NUMBER
M1.10
OF 136 SHEETS

P:\2008\F08085\F08085.01_ campus distribution_phase 1b (switch gear building)\M\M010100pxuf08085001: First Floor Plan Apr 19, 2010 3:20 PM

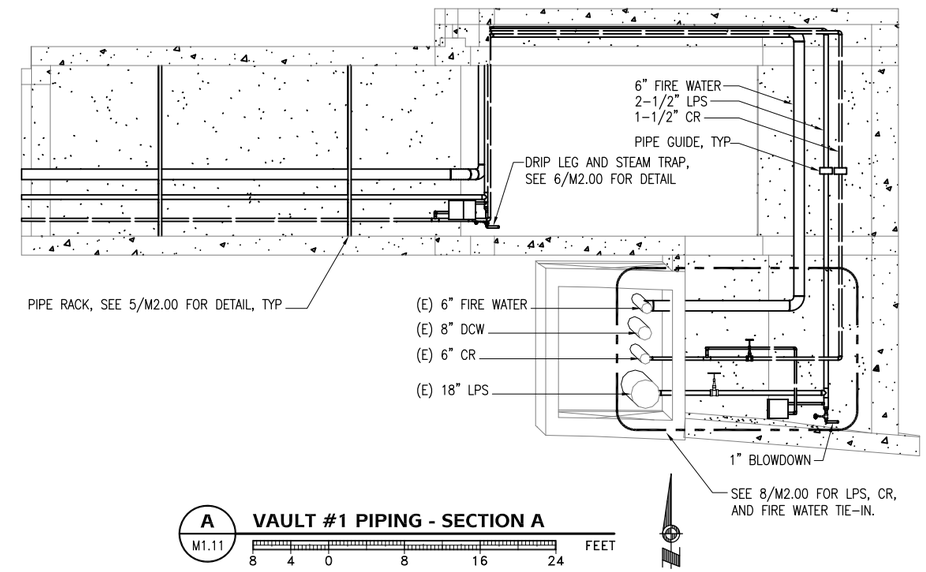
SHEET NOTES

1. SLOPE ALL STEAM AND CONDENSATE PIPE MINIMUM OF 1/2" PER 10'.



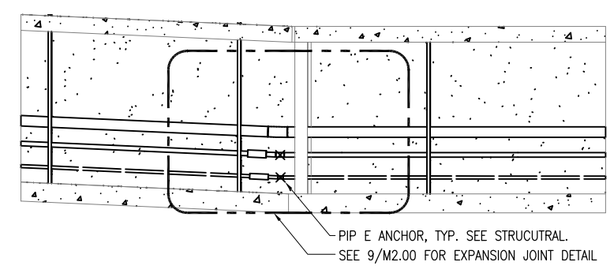
1 M1.11 **VAULT #1 PIPING**

8 4 0 8 16 24 FEET



A M1.11 **VAULT #1 PIPING - SECTION A**

8 4 0 8 16 24 FEET



B M1.11 **VAULT #1 PIPING - SECTION B**

8 4 0 8 16 24 FEET

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

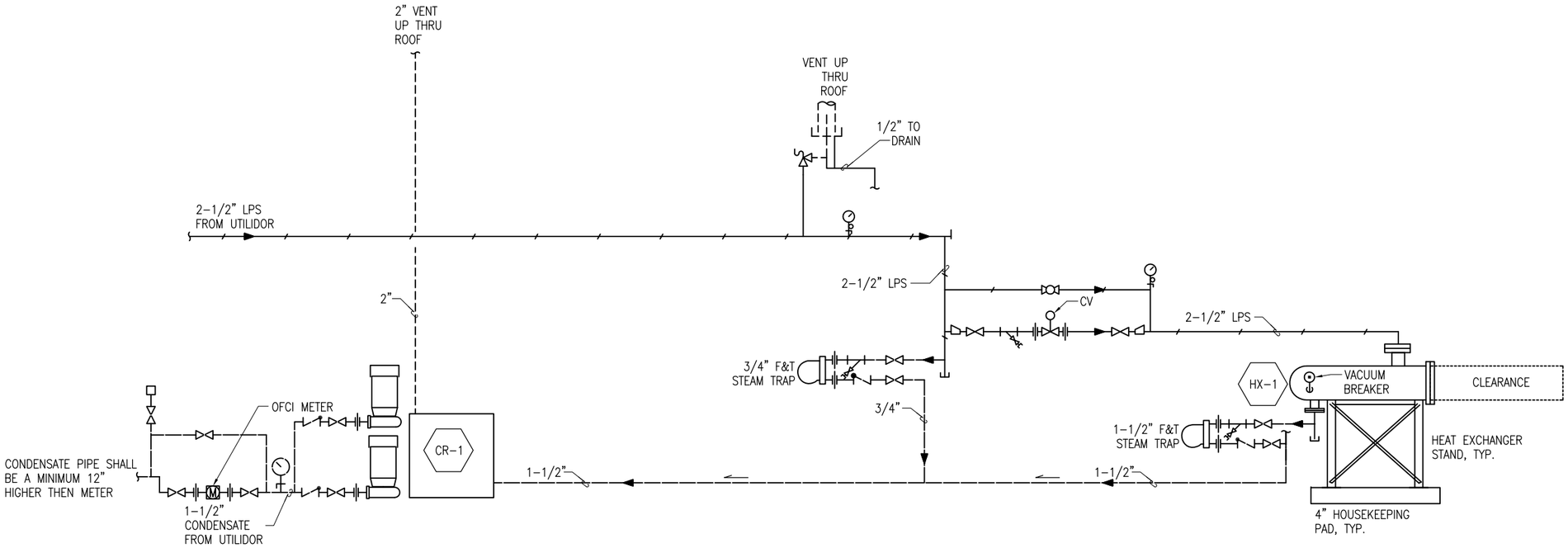
SHEET TITLE :
UTILIDOR PIPING

DESIGN	RAW
DRAWN	RAW
CHECKED	CJF
DATE	APRIL 19, 2010

PROJECT No. F08085.01

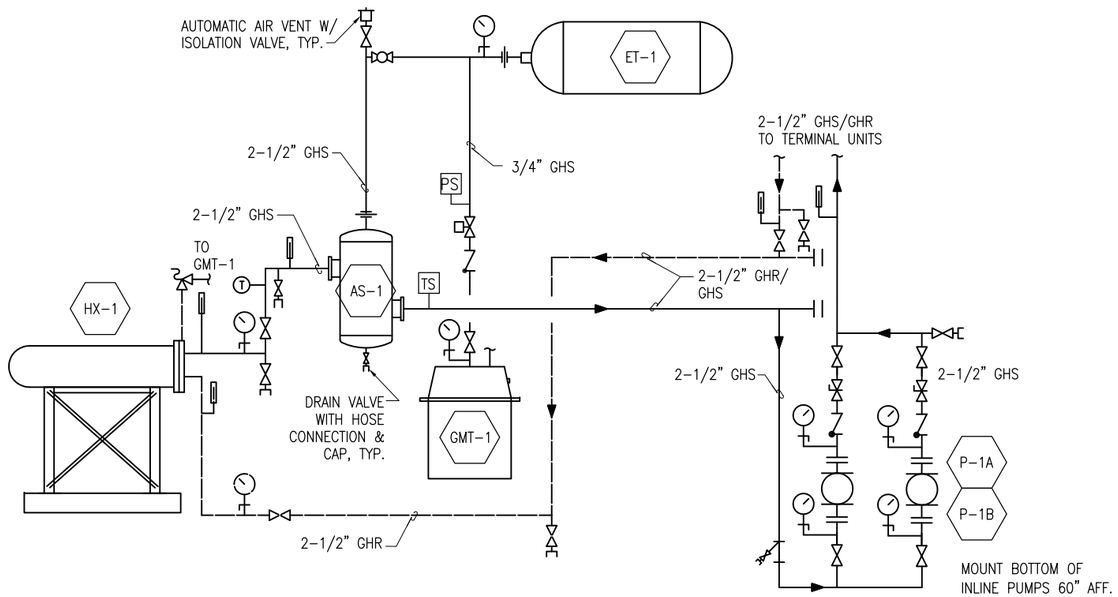
SHEET NUMBER M1.11 OF 136 SHEETS

P:\2008\F08085\F08085.01_ campus distribution_phase 1b (switch gear building)\AA\M010.pgf08085.01; M1.11 Apr 19, 2010 3:20 PM



1 M2.10 **STEAM HEATING DIAGRAM**

SCALE: NTS



2 M2.10 **HYDRONIC HEATING DIAGRAM**

SCALE: NTS

CONSULTANT :

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1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

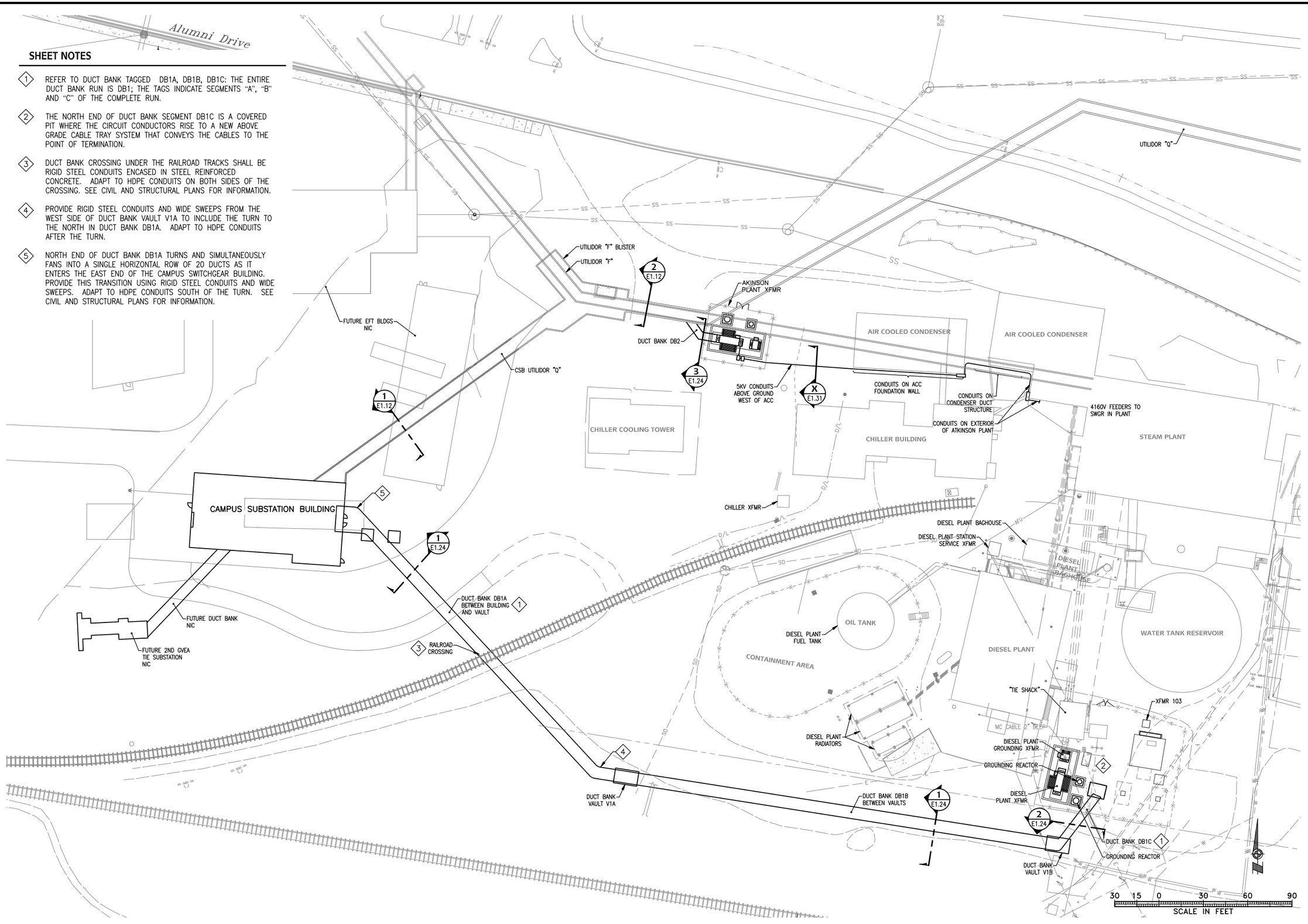
SHEET TITLE :
MECHANICAL DIAGRAMS

DESIGN	RAW
DRAWN	RAW
CHECKED	CJF
DATE	APRIL 19, 2010
PROJECT No.	F08085.01
SHEET NUMBER	M2.10
OF 136 SHEETS	

P:\2008\F08085\F08085.01_ campus distribution_phase 1b (switch gear building)\M\10psix\F08085D1: Diagrams Apr 19, 2010 3:21 PM

SHEET NOTES

1. REFER TO DUCT BANK TAGGED DB1A, DB1B, DB1C: THE ENTIRE DUCT BANK RUN IS DB1; THE TAGS INDICATE SEGMENTS "A", "B" AND "C" OF THE COMPLETE RUN.
2. THE NORTH END OF DUCT BANK SEGMENT DB1C IS A COVERED PIT WHERE THE CIRCUIT CONDUCTORS RISE TO A NEW ABOVE GRADE CABLE TRAY SYSTEM THAT CONVEYS THE CABLES TO THE POINT OF TERMINATION.
3. DUCT BANK CROSSING UNDER THE RAILROAD TRACKS SHALL BE RIGID STEEL CONDUITS ENCASED IN STEEL REINFORCED CONCRETE. ADAPT TO HDPE CONDUITS ON BOTH SIDES OF THE CROSSING. SEE CIVIL AND STRUCTURAL PLANS FOR INFORMATION.
4. PROVIDE RIGID STEEL CONDUITS AND WIDE SWEEPS FROM THE WEST SIDE OF DUCT BANK VAULT V1A TO INCLUDE THE TURN TO THE NORTH IN DUCT BANK DB1A. ADAPT TO HDPE CONDUITS AFTER THE TURN.
5. NORTH END OF DUCT BANK DB1A TURNS AND SIMULTANEOUSLY FANS INTO A SINGLE HORIZONTAL ROW OF 20 DUCTS AS IT ENTERS THE EAST END OF THE CAMPUS SWITCHGEAR BUILDING. PROVIDE THIS TRANSITION USING RIGID STEEL CONDUITS AND WIDE SWEEPS. ADAPT TO HDPE CONDUITS SOUTH OF THE TURN. SEE CIVIL AND STRUCTURAL PLANS FOR INFORMATION.



CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
OVERALL SITE PLAN

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
E1.01
OF 106 SHEETS

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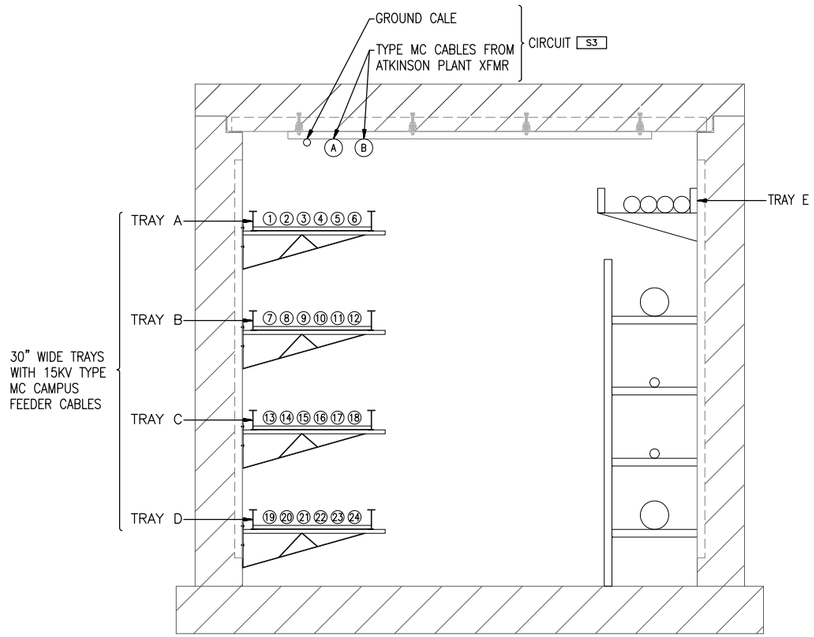

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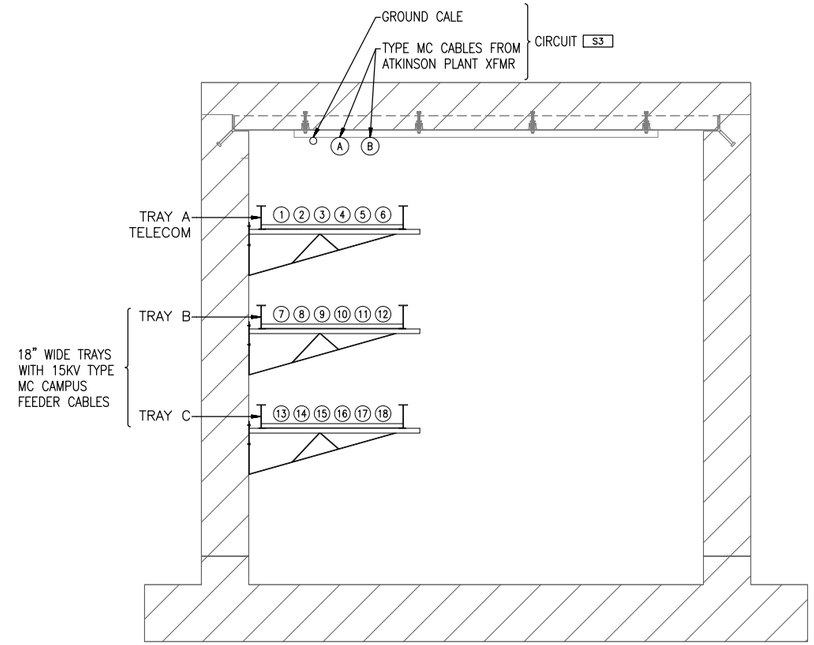
E1.12

SECTION LOOKING SOUTH
CSB UTILIDOR "Q"

NTS



2
E1.12

SECTION LOOKING SOUTH
UTILIDOR "Q"

NTS

CONSULTANT :

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1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
UTILIDOR DETAILS

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
E1.12
OF 106 SHEETS

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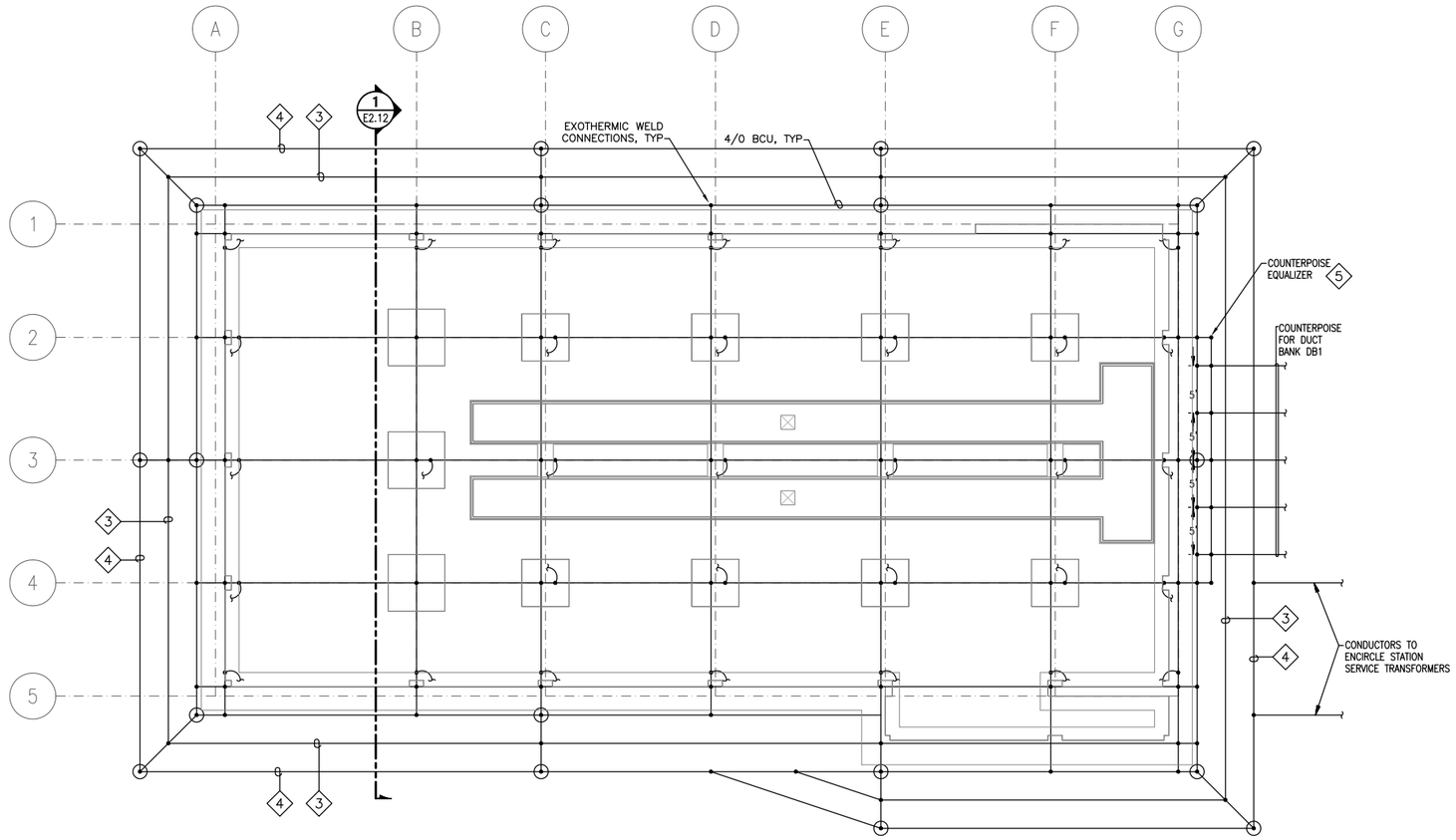
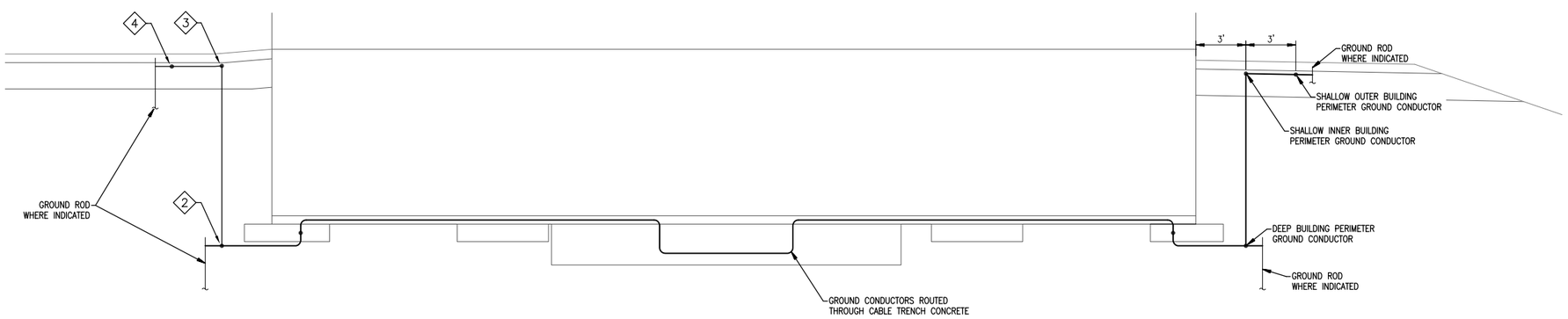


1 E2.12 CSB FOUNDATION GROUND GRID

8 4 0 8 16 24 FEET



2 E2.12 SECTION LOOKING EAST - CSB FOUNDATION GROUND GRID

4 2 0 4 8 12 FEET

SHEET NOTES

1. ALL GROUND GRID TAP CONDUCTORS SHALL BE NO. 4/0 BCU. SEE NEXT SHEET FOR ROUTING AND TERMINATION INFORMATION.

2. ALL GROUND GRID CONDUCTORS WITHIN THE SHALLOW INNER BUILDING PERIMETER GROUND CONDUCTOR SHALL BE PLACED IN THE THE MIDDLE OF THE CONCRETE BASEMENT SLAB.

3. SHALLOW INNER BUILDING PERIMETER GROUND CONDUCTOR POSITIONED 3 FEET FROM THE BUILDING EXTERIOR AND BURIED 18 TO 24 INCHES BELOW FINISHED GRADE.

4. SHALLOW OUTER BUILDING PERIMETER GROUND CONDUCTOR POSITIONED 6 FEET FROM THE BUILDING EXTERIOR AND BURIED 18 TO 24 INCHES BELOW FINISHED GRADE.

5. DUCT BANK COUNTERPOISE CONDUCTORS SHALL BE CONNECTED TOGETHER WITH AN EQUALIZER CONDUCTOR ABOVE THE DUCTS AND THEN CONNECTED TO THE DEEP BUILDING PERIMETER GROUND CONDUCTOR ALONG GRIDS 2 AND 4 AS INDICATED. THE COUNTERPOISE ENDS WEST OF THE EQUALIZER THEN TURN DOWN BETWEEN THE DUCTS AND CONNECT TO THE DEEP BUILDING PERIMETER GROUND CONDUCTOR.

6. ALL GROUND RODS 1 INCH DIAMETER BY 20 FEET LONG.

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RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
CSB GROUNDING PLAN - FOUNDATION

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010

PROJECT No. F08085.01

SHEET NUMBER E2.12 OF 106 SHEETS

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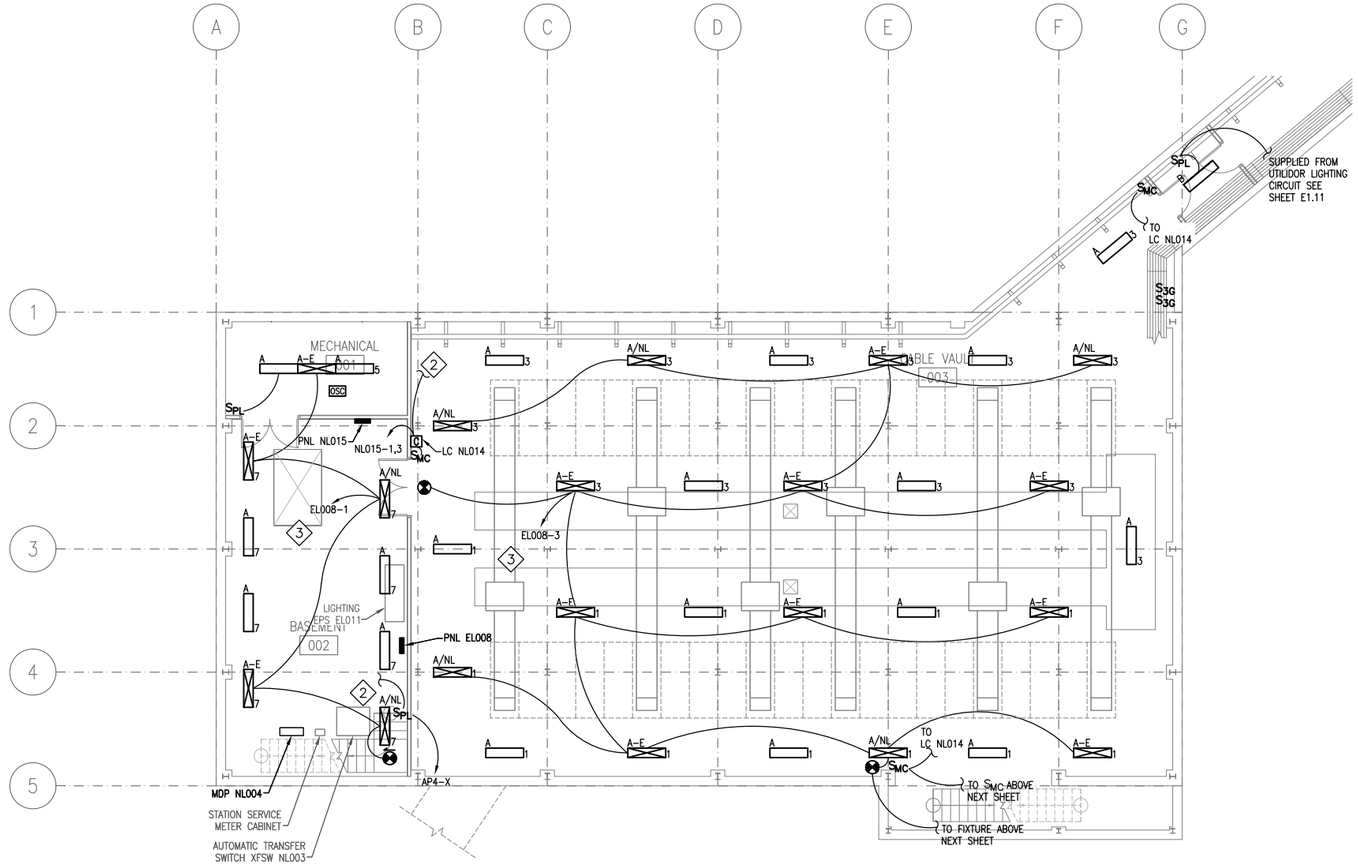

1 E2.22 **CSB LIGHTING PLAN - BASEMENT**

8 4 0 8 16 24 FEET

SHEET NOTES

1. ALL LIGHTING MANUALLY SWITCHED WITH SWITCHES INDICATED FOR RESPECTIVE SPACE.
2. NORMAL POWER BRANCH CIRCUIT SUPPLIES NORMAL FIXTURES THROUGH SWITCHES AND LIGHTING CONTACTOR WHERE INDICATED. NORMAL POWER IS ALSO UTILIZED FOR LIGHTING CONTACTOR CONTROL POWER.
3. UNSWITCHED EMERGENCY POWER SUPPLIES EMERGENCY FIXTURES AND EXIT SIGNS. EMERGENCY POWER IS SUPPLIED THROUGH AN INVERTER.
4. INSTALL MOMENTARY LIGHTING SWITCHES IN A DOUBLE GANG BOX WITH A SEPARATE LED TYPE PILOT LIGHT THAT IS CONTINUOUSLY ILLUMINATED TO SERVE AS A SWITCH MARKER.

CONSULTANT :

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PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
CSB LIGHTING PLAN
BASEMENT

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010
PROJECT No.	F08085.01
SHEET NUMBER	E2.22
OF 106	SHEETS

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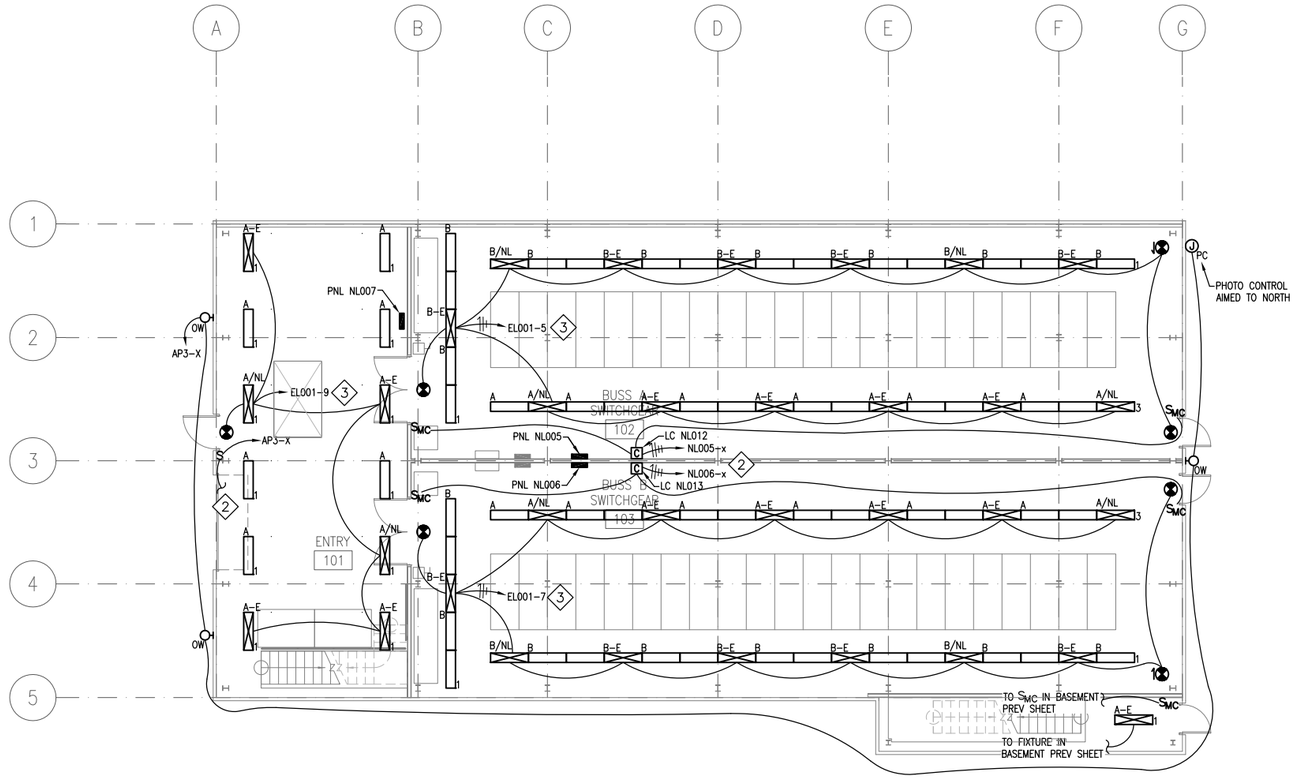

1 E2.23 **CSB LIGHTING PLAN - GROUND LEVEL**

8 4 0 8 16 24 FEET

SHEET NOTES

1. ALL LIGHTING MANUALLY SWITCHED WITH SWITCHES INDICATED FOR RESPECTIVE SPACE.
2. NORMAL POWER BRANCH CIRCUIT SUPPLIES NORMAL FIXTURES THROUGH SWITCHES AND LIGHTING CONTACTOR WHERE INDICATED. NORMAL POWER IS ALSO UTILIZED FOR LIGHTING CONTACTOR CONTROL POWER.
3. UNSWITCHED EMERGENCY POWER SUPPLIES EMERGENCY FIXTURES AND EXIT SIGNS. EMERGENCY POWER IS SUPPLIED THROUGH AN INVERTER.
4. INSTALL MOMENTARY LIGHTING SWITCHES IN A DOUBLE GANG BOX WITH A SEPARATE LED TYPE PILOT LIGHT THAT IS CONTINUOUSLY ILLUMINATED TO SERVE AS A SWITCH MARKER.
5. ALL EXTERIOR FIXTURES SWITCHED THROUGH PHOTO CONTROL AT NORTHWEST CORNER OF BUILDING. ORIENT AND SHIELD PHOTO CONTROL SO OPERATION IS NOT ADVERSELY AFFECTED BY ARTIFICIAL LIGHT SOURCES IN THE AREA.

CONSULTANT :

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CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
CSB LIGHTING PLAN
GROUND LEVEL

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010
PROJECT No.	F08085.01
SHEET NUMBER	E2.23
OF 106 SHEETS	

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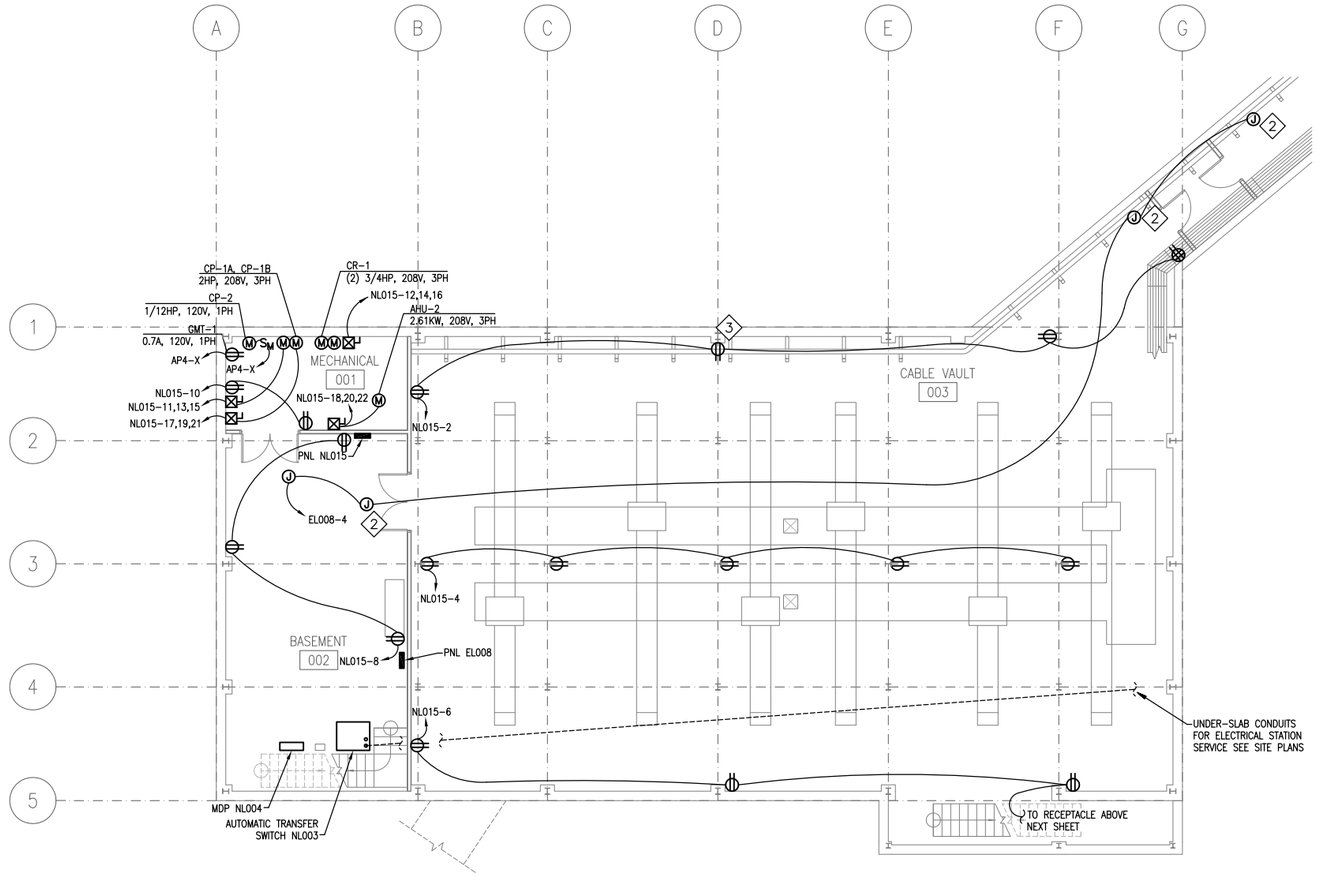

1 / E2.31 CSB GENERAL POWER PLAN - BASEMENT

8 4 0 8 16 24 FEET

SHEET NOTES

1. ALL RACEWAYS THIS SHEET EXPOSED.

2. POWER FOR ELECTROMAGNETIC DOOR HOLDERS, COORDINATE WITH ARCHITECTURAL AND FIRE ALARM SYSTEM PROVIDER.

3. POSITION RECEPTACLE 12 INCHES ABOVE TOP OF HIGHEST PIPE.

MANUAL STARTER SCHEDULE - FRACTIONAL HORSEPOWER

FRACTIONAL HORSEPOWER MANUAL STARTER RATED 16 AMPS CONTINUOUS MINIMUM WITH THERMAL OVERLOAD UNITS

SYSTEM VOLTS AND PHASE	H.P. 1 POLE	H.P. 2 POLE	H.P. 3 POLE	UPSTREAM BREAKER (AMPS)	MOTOR CIRCUIT CONDUCTORS AND CONDUIT: CONDUCTORS TYPE XHHW STRANDED, 75 DEGREES C	MOTOR CIRCUIT CONDUCTORS AND CONDUIT: RMC OR LFMC	REMARKS
120 1 PHASE	1/3 AND LESS			15	2 NO. 12, 1 NO. 12 GND	1/2"	
	1/2 3/4			20 25	2 NO. 12, 1 NO. 12 GND 2 NO. 12, 1 NO. 12 GND	1/2"	
208-240 1 PHASE		1/3 THROUGH 3/4		15 FOR ALL	2 NO. 12, 1 NO. 12 GND FOR ALL	1/2"	
208-240 480 3 PHASE			LESS THAN 1	15 FOR ALL	3 NO. 12, 1 NO. 12 GND FOR ALL	1/2"	

NOTES:
1. NOT ALL MOTORS LISTED ON THIS SCHEDULE ARE USED IN THIS PROJECT.
2. REFER TO PLANS FOR ALTERNATE AND SPECIAL MOTOR/CONTROLLER APPLICATIONS.
3. STARTERS SHALL INCLUDE MOTOR AND BRANCH CIRCUIT OVERLOAD PROTECTION IN ACCORDANCE WITH 2008 N.E.C. ARTICLE 430 PART III.
4. PROVIDE HANDLE GUARD/LOCK-OFF ACCESSORY WITH ALL NON-KEYED TOGGLE TYPE OPERATORS.
5. PROVIDE RED PILOT LIGHT WITH ALL MANUAL MOTOR STARTERS.

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UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
CSB GENERAL POWER
PLAN BASEMENT

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
E2.31
OF 106 SHEETS

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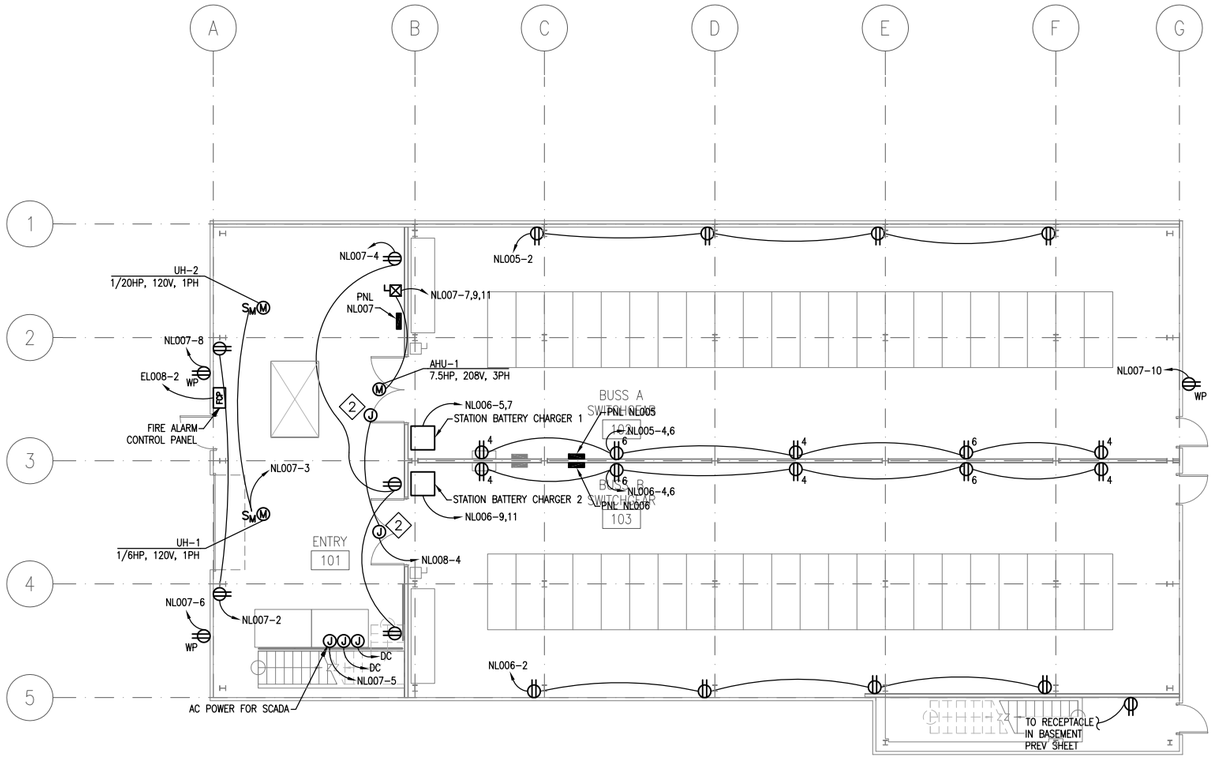

1 E2.32 **CSB GENERAL POWER PLAN - GROUND LEVEL**

8 4 0 8 16 24 FEET

SHEET NOTES

1. ALL RACEWAYS THIS SHEET EXPOSED.

2 POWER FOR ELECTROMAGNETIC DOOR HOLDERS, COORDINATE WITH ARCHITECTURAL AND FIRE ALARM SYSTEM PROVIDER.

FUSED DISCONNECT SWITCH COMBINATION MAGNETIC STARTER SCHEDULE

SYSTEM VOLTAGE 208 VOLTS THREE PHASE - 3 PHASE MOTORS

GENERAL			FUSED SWITCH		MOTOR CKT CONDUCTORS AND CONDUIT		
MOTOR HP	N.E.C. FLA	SIZE (NEMA)	SIZE (AMPS) NOTE 5	FUSE CLASS RK1 TIME DELAY (AMPS)	CONDUCTORS TYPE XHHW STRANDED; 75 DEGREES C	RMC OR LFMC	REMARKS
1/4		00	30	1.5 X FLC	3 NO. 12, 1 NO. 12 GND	1/2"	
1/3		00	30	1.5 X FLC	3 NO. 12, 1 NO. 12 GND	1/2"	
1/2	2.5	00	30	3.5	3 NO. 12, 1 NO. 12 GND	1/2"	
3/4	3.7	00	30	5	3 NO. 12, 1 NO. 12 GND	1/2"	
1	4.8	00	30	6	3 NO. 12, 1 NO. 12 GND	1/2"	
1-1/2	6.9	00	30	9	3 NO. 12, 1 NO. 12 GND	1/2"	
2	7.8	0	30	10	3 NO. 12, 1 NO. 12 GND	1/2"	
3	11	0	30	15	3 NO. 12, 1 NO. 12 GND	1/2"	
5	17.5	1	30	25	3 NO. 12, 1 NO. 12 GND	1/2"	NOTE 6
7-1/2	25.3	1	60	35	3 NO. 10, 1 NO. 10 GND	1/2"	
10	32.2	2	60	45	3 NO. 8, 1 NO. 8 GND	3/4"	

NOTES:
1. NOT ALL MOTORS LISTED ON THIS SCHEDULE ARE USED IN THIS PROJECT.
2. REFER TO PLANS FOR ALTERNATE AND SPECIAL MOTOR/CONTROLLER APPLICATIONS.
3. SCHEDULE APPLIES TO STANDARD SQUIRREL CAGE, 1800 RPM NOMINAL, DESIGN B MOTORS IN NORMAL APPLICATIONS; MAXIMUM MOTOR CODE 'L' FOR 1.5 – 2 HP, CODE 'K' FOR 3 – 5 HP, AND CODE 'H' FOR 7.5 HP AND UP. HIGHER CODE LETTERS REQUIRE LARGER STARTERS.
4. COMBINATION STARTER SHALL INCLUDE MOTOR AND BRANCH CIRCUIT OVERLOAD PROTECTION IN ACCORDANCE WITH 2008 N.E.C. ARTICLE 430 PART III. FUSE SIZES SHOWN COORDINATE WITH MOST COMMON NEMA CLASS 20 OVERLOAD RELAYS.
5. FOR DESIGN 'E' MOTORS GREATER THAN 2 HP THE FUSED DISCONNECT SWITCH SHALL BE EITHER MARKED AS RATED FOR DESIGN 'E' MOTORS OR HAVE A HORSEPOWER RATING 1.4 TIMES FOR MOTORS RATED 3 – 100 HORSEPOWER, OR 1.3 TIMES MOTORS GREATER THAN 100 HORSEPOWER.
6. NEXT LARGER SIZE FUSED DISCONNECT RECOMMENDED FOR HARD-STARTING APPLICATIONS, DESIGN 'E', AND HIGH EFFICIENCY DESIGN 'B' MOTORS.

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UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
CSB GENERAL POWER
PLAN GROUND LEVEL

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
E2.32
OF 106 SHEETS

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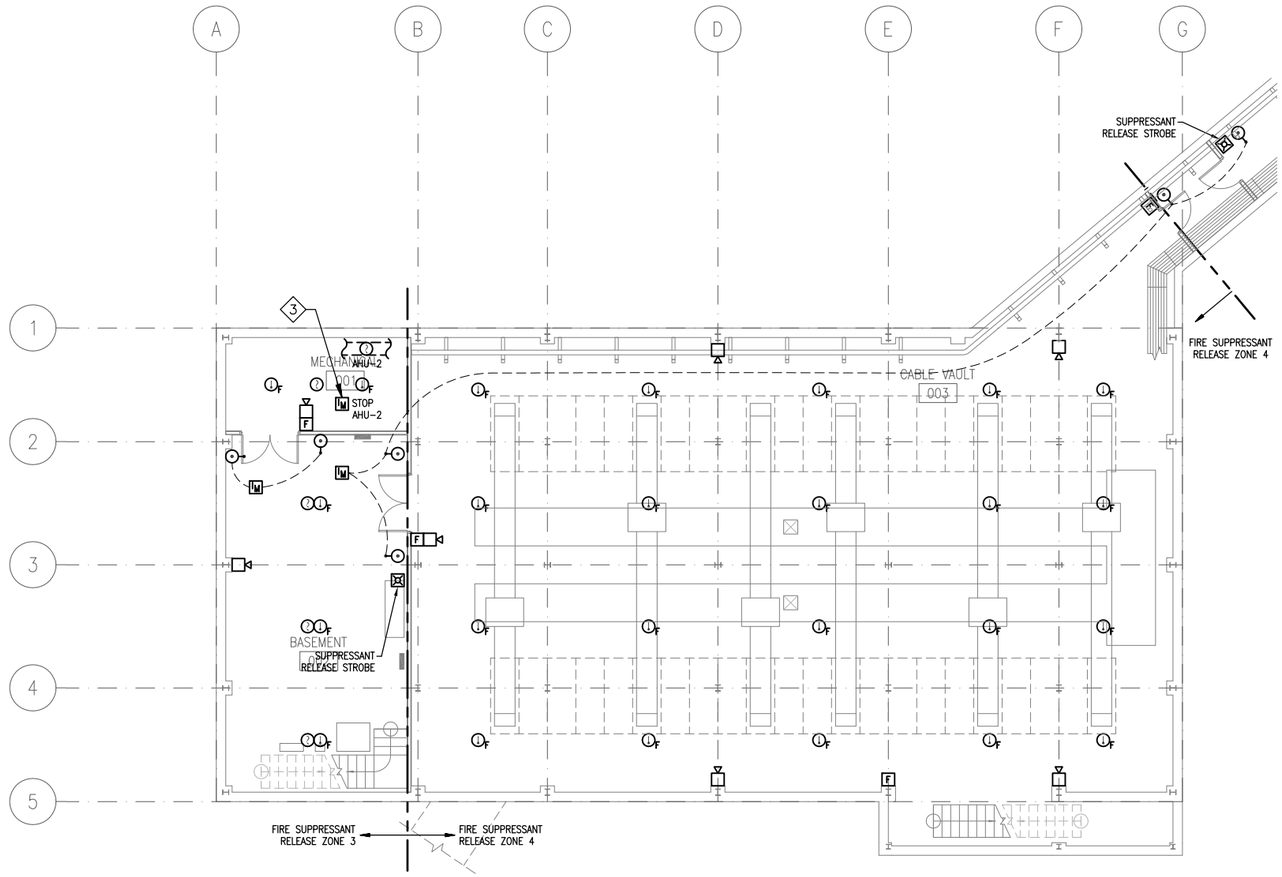

1 E2.41 **CSB FIRE ALARM PLAN - BASEMENT**

8 4 0 8 16 24 FEET

SHEET NOTES

1. ALL RACEWAYS THIS SHEET EXPOSED.
2. ALL MANUAL PULL STATIONS INCLUDE AN ADJACENTLY MOUNTED FIRE SUPPRESSANT RELEASE ABORT PUSH BUTTON.
3. AIR HANDLER AHU-3 SERVES FIRE SUPPRESSANT RELEASE ZONES 3 AND 4. SHUTDOWN AHU-3 AND CLOSE ALL ASSOCIATED FIRE/SMOKE DAMPERS FOR AN ALARM CONDITION IN EITHER OR BOTH ZONES.

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RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
CSB FIRE ALARM PLAN
BASEMENT

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
E2.41
OF 106 SHEETS

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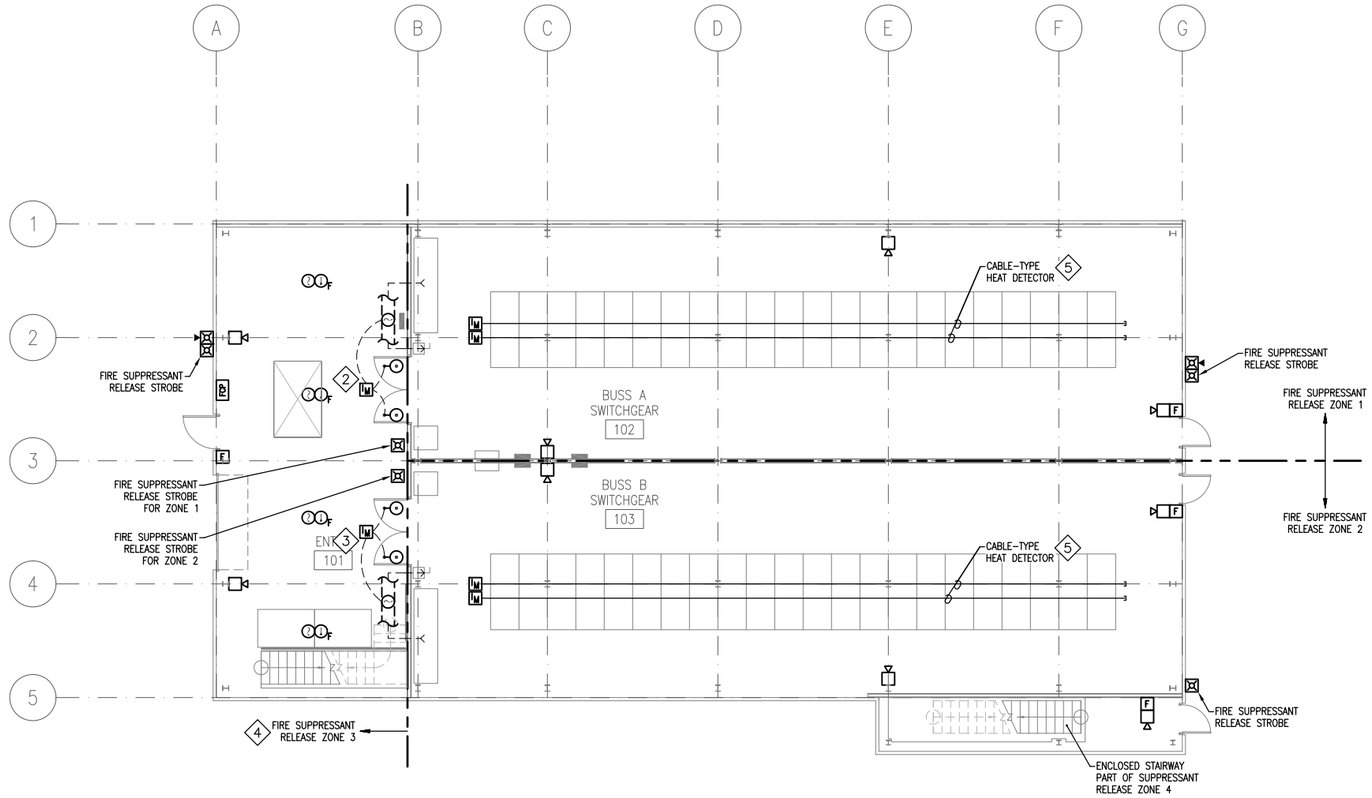

1 CSB FIRE ALARM PLAN - GROUND LEVEL

E2.42

8 4 0 8 16 24 FEET

SHEET NOTES

1. ALL MANUAL PULL STATIONS INCLUDE AN ADJACENTLY MOUNTED FIRE SUPPRESSANT RELEASE ABORT PUSH BUTTON.

2. AIR HANDLER AHU-1 SERVES FIRE SUPPRESSANT RELEASE ZONE 1. SHUTDOWN AHU-1 AND CLOSE ALL ASSOCIATED FIRE/SMOKE DAMPERS FOR AN ALARM CONDITION IN THIS ZONE.

3. AIR HANDLER AHU-2 SERVES FIRE SUPPRESSANT RELEASE ZONE 2. SHUTDOWN AHU-2 AND CLOSE ALL ASSOCIATED FIRE/SMOKE DAMPERS FOR AN ALARM CONDITION IN THIS ZONE.

4. AIR HANDLER AHU-3 SERVES FIRE SUPPRESSANT RELEASE ZONES 3 AND 4. SHUTDOWN AHU-3 AND CLOSE ALL ASSOCIATED FIRE/SMOKE DAMPERS FOR AN ALARM CONDITION IN EITHER OR BOTH ZONES.

5. CABLE TYPE HEAT DETECTORS INITIATE AN ALARM AND FIRE SUPPRESSANT RELEASE WHEN HOT EXHAUST BLAST EXITS THE PLENUM ASSEMBLY LOCATED ALONG THE TOP OF THE SWITCHGEARS DURING AN ARC-FLASH EVENT. THE DUAL HEAT DETECTORS ARE CROSS-ZONED BY FIRE ALARM PANEL LOGIC, AND INITIATE SUPPRESSANT RELEASE ONLY IF BOTH DETECTORS GO INTO ALARM.

CONSULTANT :

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UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
CSB FIRE ALARM PLAN
GROUND LEVEL

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
E2.42
OF 106 SHEETS

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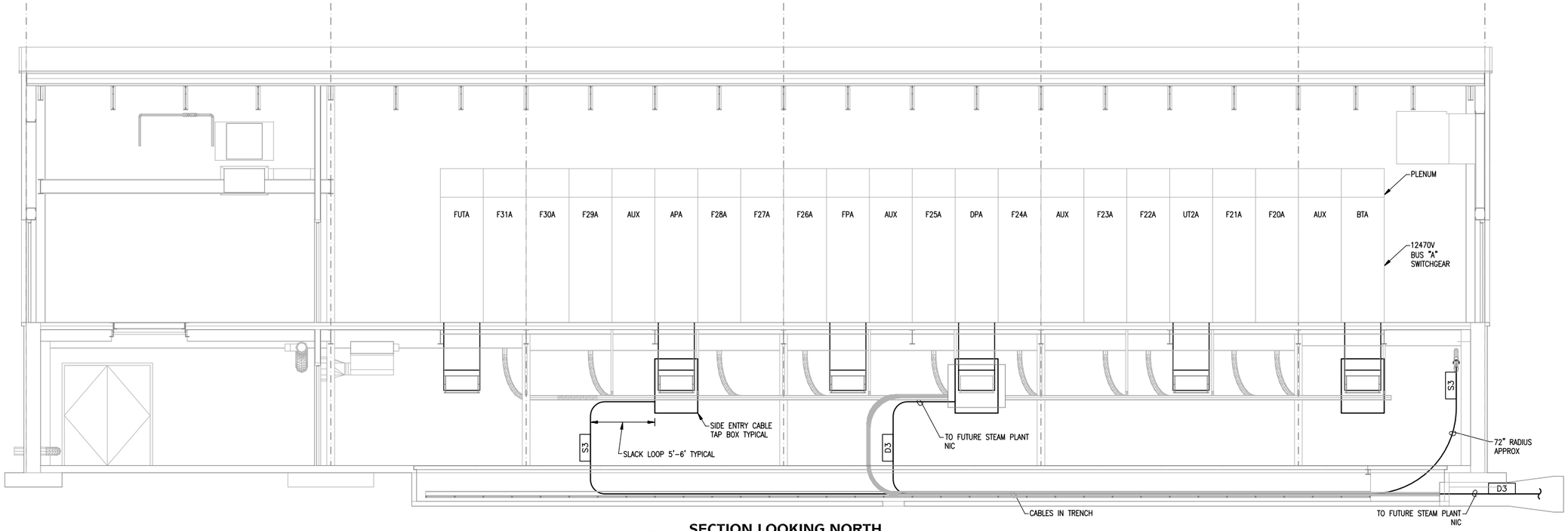

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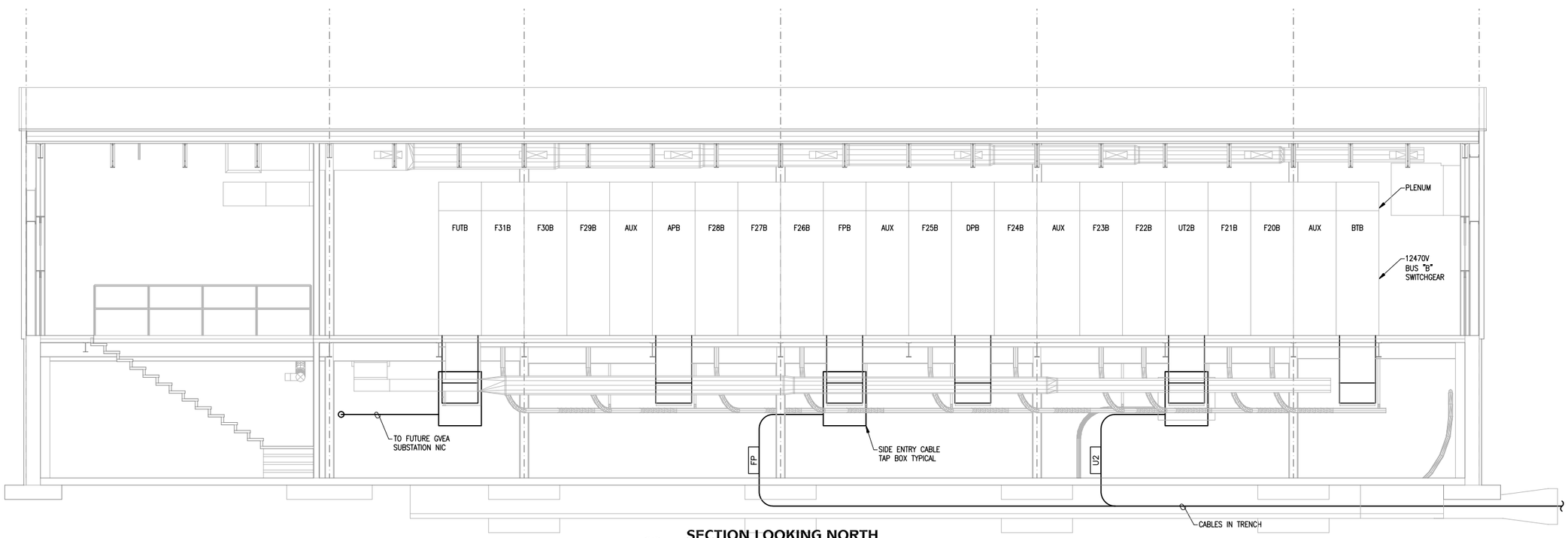
E2.51

SECTION LOOKING NORTH
CAMPUS SUBSTATION BUILDING

4 2 0 4 8 12 FEET



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E2.51

SECTION LOOKING NORTH
CAMPUS SUBSTATION BUILDING

4 2 0 4 8 12 FEET

CONSULTANT :

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PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
CSB EQUIPMENT
DETAILS

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
E2.64
OF 106 SHEETS

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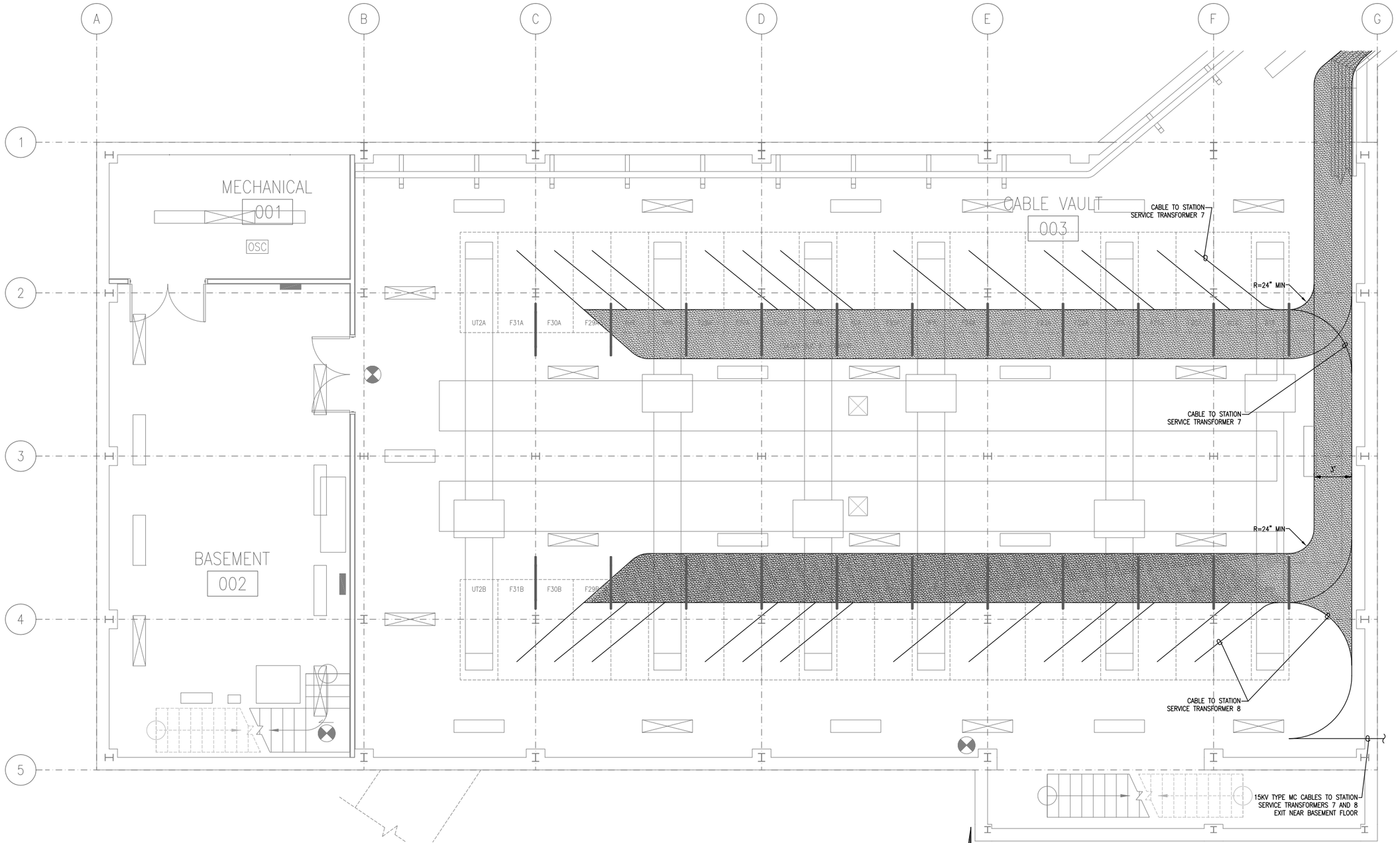

1 / E2.65 **CSB CABLE ROUTING PLAN - BASEMENT**

4 2 0 4 8 12 FEET

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
CSB CABLE ROUTING
PLAN BASEMENT

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
E2.65
OF 106 SHEETS

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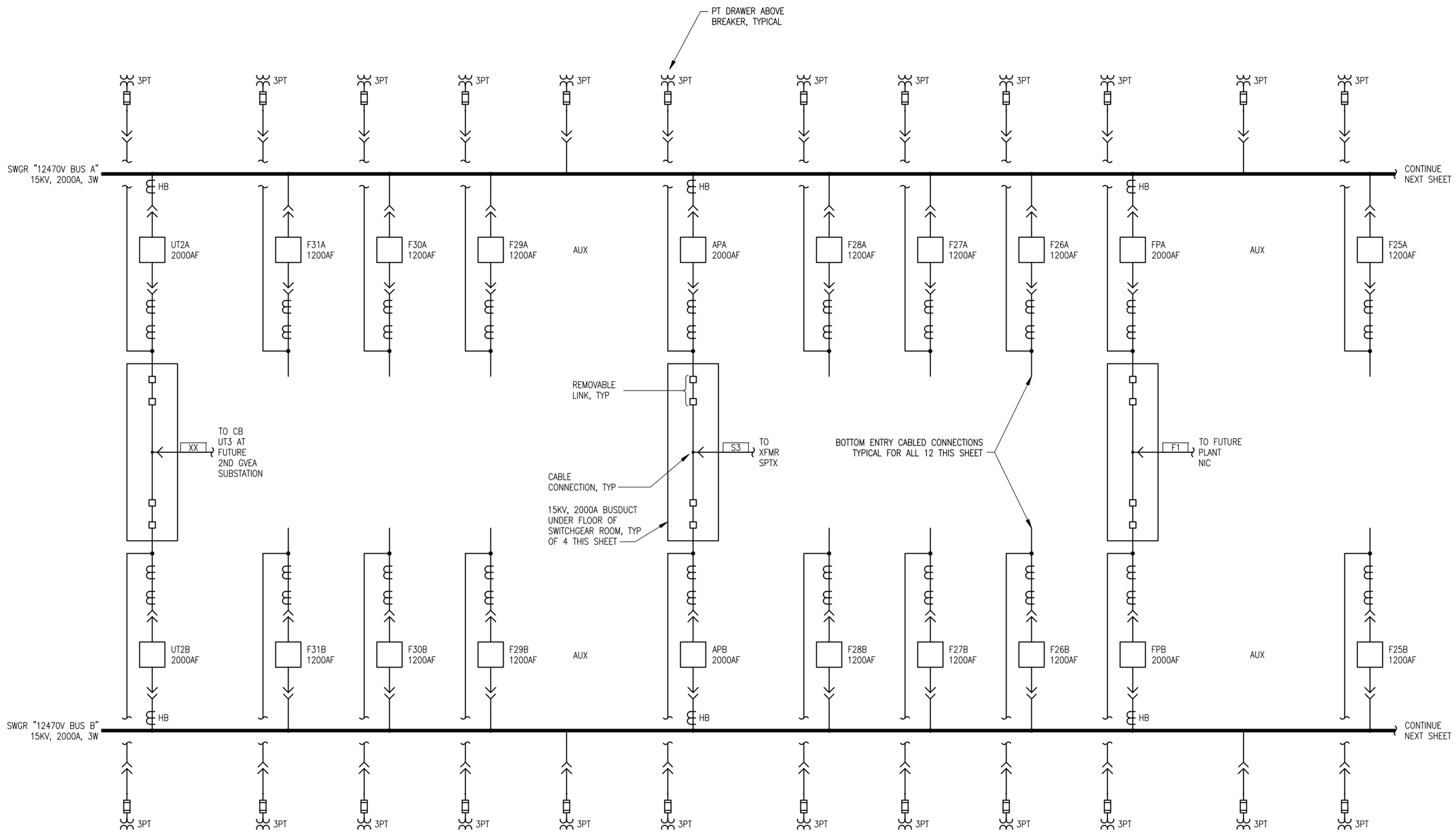

HB – HIGH BURDEN CT FOR EXTERNAL CIRCUIT DIFFERENTIAL PROTECTION

BASIS OF DESIGN INFORMATION SEE NEXT SHEET

1 / E3.01

12470 VOLT CAMPUS DISTRIBUTION SWITCHGEAR ONE-LINE

NTS

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
CAMPUS DISTRIBUTION
SWITCHGEAR
ARRANGEMENT
SCHEMATIC

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010

PROJECT No. F08085.01

SHEET NUMBER E3.01 OF 106 SHEETS

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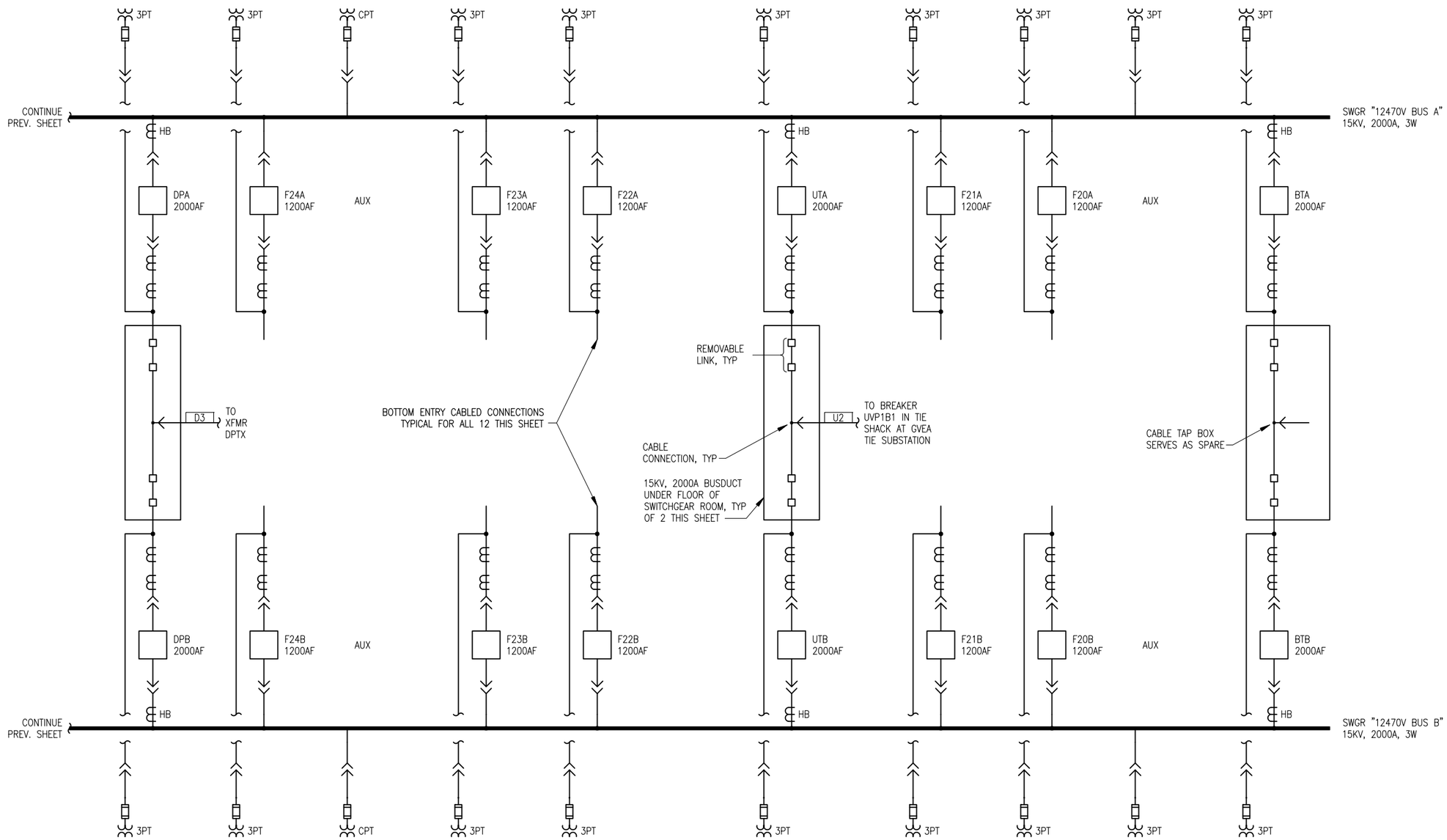

HB – HIGH BURDEN CT FOR
EXTERNAL CIRCUIT
DIFFERENTIAL PROTECTION

SWITCHGEAR BASIS OF DESIGN
PRODUCT: POWELL POWLVAC-AR
MAXIMUM VOLTAGE: 15KV
SYSTEM VOLTAGE: 12.47KV GND WYE
SYM. INT. RATING: 50KA
SYSTEM GROUNDING: LOW IMP. REACTOR
ARC RESISTANT TYPE 2 FRONT/REAR/SIDES
BREAKER SPEED: 3 CYCLE

1 / E3.02

12470 VOLT
CAMPUS DISTRIBUTION SWITCHGEAR ONE-LINE

NTS

CONSULTANT :

PDC INC. ENGINEERS
1028 Aurora Drive, Fairbanks, Alaska 99709-5329

PROJECT :
UNIVERSITY OF ALASKA FAIRBANKS
CRITICAL ELECTRICAL DISTRIBUTION
RENEWAL, PHASE 1B
UAF PROJECT NO. 2010098 UTER
FAIRBANKS, ALASKA

SHEET TITLE :
CAMPUS DISTRIBUTION
SWITCHGEAR
ARRANGEMENT
SCHEMATIC

DESIGN	AJS
DRAWN	JLC
CHECKED	MSG
DATE	APRIL 19, 2010

PROJECT No.
F08085.01

SHEET NUMBER
E3.02
OF 106 SHEETS

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Kiewit Building Group Inc.

UAF UTER Pre-Construction Phase 1B
Project No. 2008089 UTER
Phase 1B 65% Design Estimate

Adjustments shown are scope reductions needed to be within $10.0M TPC, or $7.8M const cost

TOTAL DIRECT WORK COST ITEMS:

ITEM	DESCRIPTION		TOTAL	35% Estimate Totals		Adds/Deducts
1	SURVEY	$	35,000	35000	$	-
2	CIVIL / EARTHWORK / DEMO	$	887,987	1019101	$	(131,114)
3	CONCRETE / REBAR	$	1,039,447	1030033	$	9,414
4	WATERPROOFING / ROOFING	$	172,996	176012	$	(3,016)
5	STRUCTURAL FRAMING	$	425,304	425847	$	(543)
6	MISC METALS	$	9,721	11050	$	(1,329)
7	EXTERIOR FINISH SYSTEMS	$	91,379	82993	$	8,386
8	INTERIOR FRAMING / FRAMES / DOORS / GWB	$	164,131	172770	$	(8,639)
9	FIRE AND SMOKE PROTECTION	$	227,939	395895	$	(167,956)
10	FINISHES, PAINTS, AND COATINGS	$	98,950	129359	$	(30,409)
11	MONORAIL (Deleted)	$	-	87749	$	(87,749)
12	MECHANICAL	$	511,349	583785	$	(72,436)
13	ELECTRICAL	$	4,625,114	11321400	$	(6,696,286)

$1,200,000

TOTAL JOB-RELATED COST ITEMS:

14	MOBILIZATION	$	7,656	5156	$	2,500
15	SUPERVISION	$	555,340	555340	$	-
16	TEMP BUILDINGS	$	14,412	12786	$	1,626
17	TEMP UTILITIES / SERVICES	$	13,044	8331	$	4,713
18	TEMP JOB CONSTRUCTION	$	136,987	127469	$	9,518
19	EQUIPMENT / SMALL TOOLS & SUPPLIES	$	315,637	299675	$	15,962
20	OFFICE / FIELD JOB EXPENSES	$	154,934	324279	$	(169,345)
21	CONTRACT BOND / BUILDERS RISK	$	241,112	438125	$	(197,013)

SUBTOTAL COST	$	9,728,438	$6,253,000
65% "DESIGNED" CONTINGENCY	$	486,422	313,000
MACC	$	10,214,860	6,566,000
FEE (5%)	$	510,743	328,000
GMP	$	10,725,603	6,894,000

UAF SCOPE ITEMS (Not in GMP Contract)	ROM		
S&W Testing Services	15000	0	15000
Siemens DDC	40000	0	40000
SCADA	520900	0	520900
Switchgear & Diesel Plant XFMR	2155500	0	2155500
Medium Voltage Cables	712742	0	712742

work not in this phase

NOTE: See Attached for List of Scope Exclusions from 35% Design (Not in Kiewit GMP Scope/Price)

Kiewit Building Group Inc.

UAF UTER Pre-Construction Phase 1B
Project No. 2008089 UTER
Phase 1B 65% Design Estimate

List of Scope **Exclusions** from 35% Design (Not in Kiewit GMP Scope/Price)

Item No	Description
1	Atkinson Plant Connection to CSB (Includes Transformer, Ductbank, Switchgear)
2	Reduce Initial Switchgear Installation by 10/22 Ratio
3	Delete Requirement for Arc Flash Resistant Switchgear (Includes shorter building)
4	Delete Cable Tray Installation
5	Delete Capacitor Installation
6	Delete Monorail Crane in CSB
7	UAF Purchase of Transformer, Switchgear, and Cable
8	Delete Concrete Painting
9	Delete Metal Liner Panel on Gridline 3 Interior
10	Delete Intumescent Paint on Interior of Metal Panels
11	Winter Work
12	SCADA System
13	DDC Controls for HVAC
14	Concrete and Soil Testing

List of Scope **Inclusions** from 35% Design

Item No	Description
1	Move Clean Suppression System to Center of Building
2	Relocate Temp Facilities
3	Build Temp Road to Staging Area (Reduce Traffic Control)
4	Ventilation Equipment and Ducts
5	Install RAP as Surface Course for Road and Courtyard