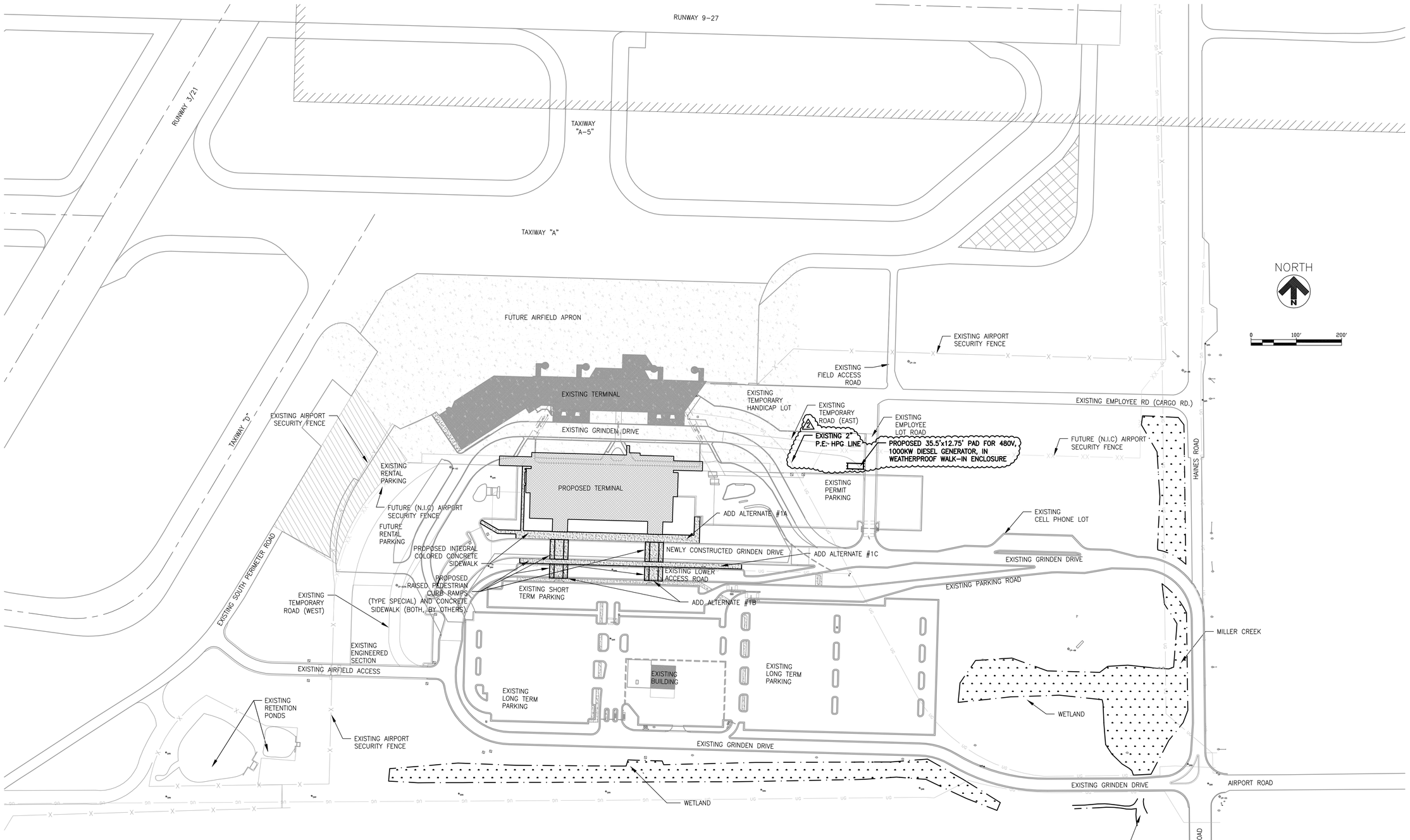


ULTIMATE DEVELOPMENT SITE PLAN NOTES:

1. THIS DRAWING DEPICTS EXISTING CONDITIONS, WORK PROPOSED TO BE ACCOMPLISHED UNDER THIS CONTRACT, AND FUTURE DEVELOPMENT THAT IS NOT INCLUDED IN THIS CONTRACT. THIS DRAWING IS PRESENTED FOR CONTRACTOR'S INFORMATION ONLY, TO REPRESENT HOW THE CONTRACT WORK RELATES TO EXISTING CONDITIONS AND THE ULTIMATE DEVELOPMENT.

2. WHERE THE WORD "FUTURE" IS USED IN THESE DOCUMENTS, IT REPRESENTS ELEMENTS OF THE PROJECT NOT INCLUDED IN THIS CONTRACT, BUT IS PROVIDED FOR INFORMATION PURPOSES ONLY.

3. WHERE THE WORD "PROPOSED" IS USED IN THESE DOCUMENTS, IT REPRESENTS ELEMENTS OF THE PROJECT INCLUDED IN THIS CONTRACT FOR INSTALLATION, CONSTRUCTION, OR MODIFICATION AS SHOWN IN THE PLANS AND SPECIFICATIONS.

ADD ALTERNATE #1A, #1B, AND #1C NOTES:

1. ADD ALTERNATE #1A: ADD SNOWMELT SYSTEM FOR THE PROPOSED SIDEWALK AREA NORTH OF GRINDEN DRIVE AS INDICATED ON SHEET C205.

2. ADD ALTERNATE #1B: ADD SNOWMELT SYSTEM FOR PROPOSED SIDEWALK AREA NORTH AND RAISED PEDESTRIAN CROSSWALKS (BY OTHERS) AS INDICATED ON SHEET C205.

3. ADD ALTERNATE #1C: ADD SNOWMELT SYSTEM FOR PROPOSED SIDEWALK AREA NORTH OF GRINDEN DRIVE, RAISED PEDESTRIAN CROSSWALKS (BY OTHERS), AND SIDEWALK AREA BETWEEN GRINDEN DRIVE AND THE LOWER ACCESS ROAD (BY OTHERS) AS INDICATED ON SHEET C205.

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Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	

DATE ISSUED: 02-25-11
REVIEWED BY: JEH
DRAWN BY: RDRE
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

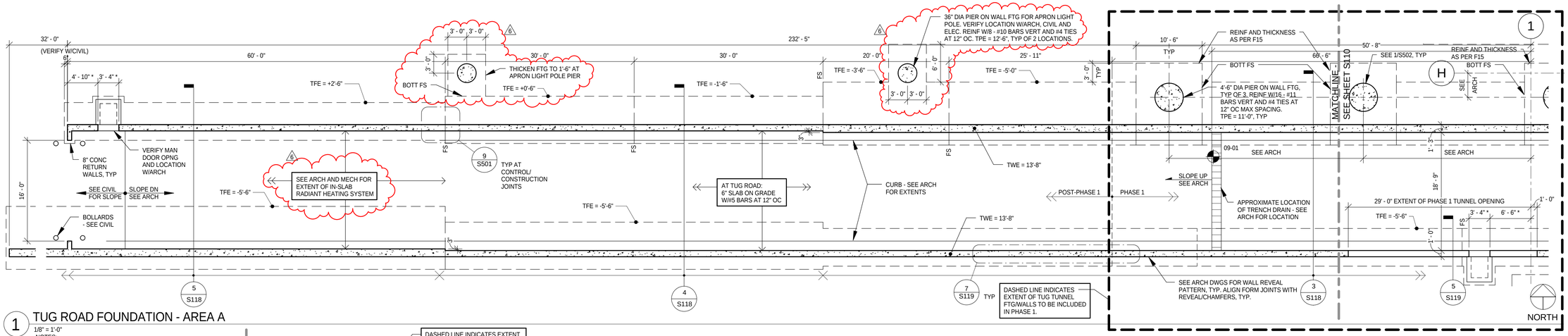
ULTIMATE DEVELOPMENT SITE PLAN

SHEET NUMBER

C004

BID PACKAGE 2A ADDENDUM 2

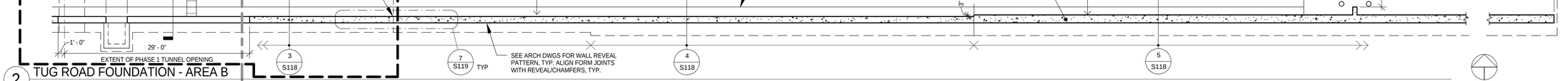
Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\TERMINAL BID PKG 2A\C\DLH-C004 add 2.dwg Plotted on: 2/25/2011 9:05 AM Plotted by: Erdmann, Ryan



1 TUG ROAD FOUNDATION - AREA A

1/8" = 1'-0"

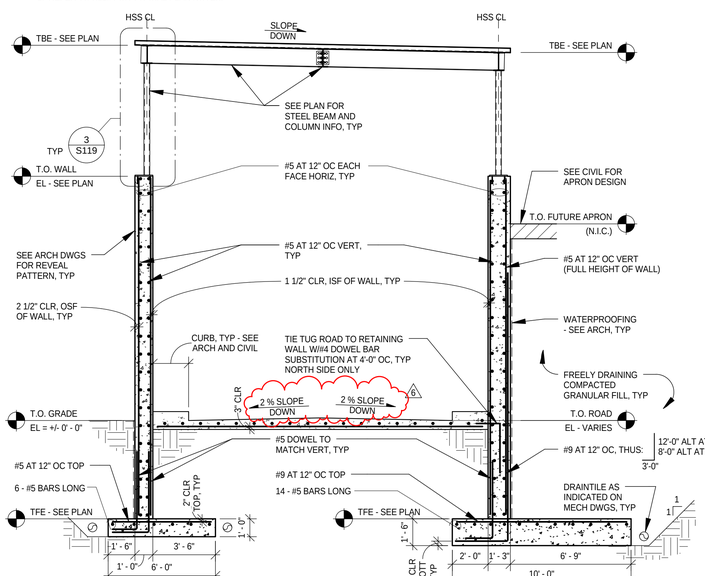
NOTES:
1. REFER TO S110 FOR TYPICAL PLAN NOTES.



2 TUG ROAD FOUNDATION - AREA B

1/8" = 1'-0"

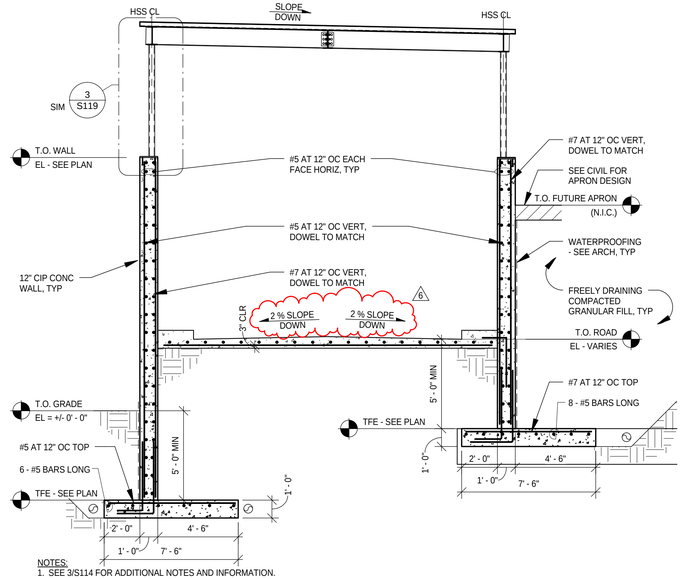
NOTES:
1. REFER TO S110 FOR TYPICAL PLAN NOTES.



NOTES:
1. SEE ARCHITECTURAL DRAWINGS FOR REVEAL AND ADDITIONAL CONTROL JOINTING INFORMATION. SEE 9/S501 FOR TYPICAL CONTROL/CONSTRUCTION JOINT INFORMATION.
2. SEE SPECIFICATION FOR CONCRETE WALL FINISH INFORMATION.
3. CONTRACTOR TO ADEQUATELY SEQUENCE BACKFILLING OPERATIONS OR BRACE WALL UNTIL CONCRETE REACHES ITS 28-DAY COMPRESSIVE STRENGTH.
4. FREE-DRAINING COMPACTED GRANULAR BACKFILL TO BE AS DEFINED IN THE PROJECT GEOTECHNICAL REPORT.
5. FOR DRAIN TILE DESIGN AND LAYOUT - SEE MECHANICAL DRAWINGS.

3 SECTION NEAR TERMINAL (LOOKING WEST)

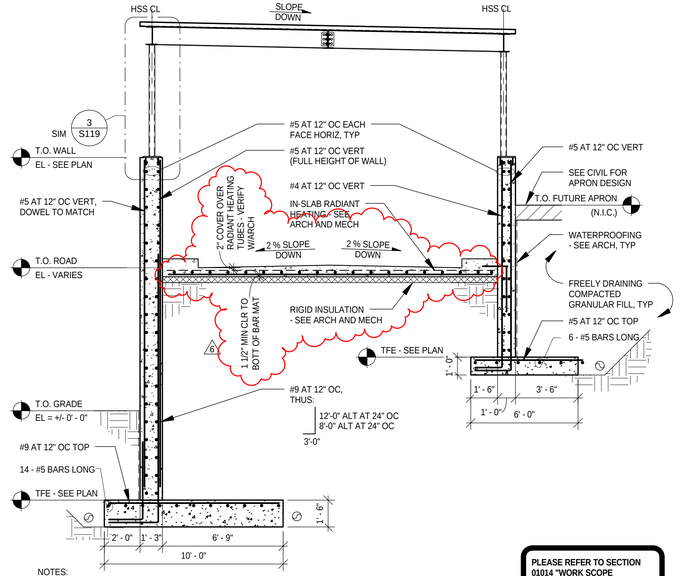
1/4" = 1'-0"



NOTES:
1. SEE 3/S114 FOR ADDITIONAL NOTES AND INFORMATION.

4 SECTION HALFWAY DOWN TUG ROAD (LOOKING WEST)

1/4" = 1'-0"



NOTES:
1. SEE 3/S114 FOR ADDITIONAL NOTES AND INFORMATION.

5 SECTION (LOOKING WEST)

1/4" = 1'-0"

PLEASE REFER TO SECTION 01014 "WORK SCOPE DESCRIPTION" FOR DEFINITION OF WORK IN THIS PACKAGE.

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Landscape Consultants:
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TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Paul A. Johnson

Signature:

Date: June 3, 2010 Reg. No.: 20379

REVISIONS

NO.	DESCRIPTION	DATE
	BID PACKAGE 1	5.12.10
	FOUNDATION PERMIT	6.4.10
1,2,3	NOT CHANGED	
	CONFORMANCE SET	7.12.10
	BUILDING PERMIT	8.6.10
5	100% REVIEW	12.15.10
	BID PACKAGE 2A	01.24.11
6	BP2A ADDENDUM 2	02.25.11

DATE ISSUED: 01-24-11
REVIEWED BY: PAJ / CWB
DRAWN BY: SJL
DESIGNED BY: CWB

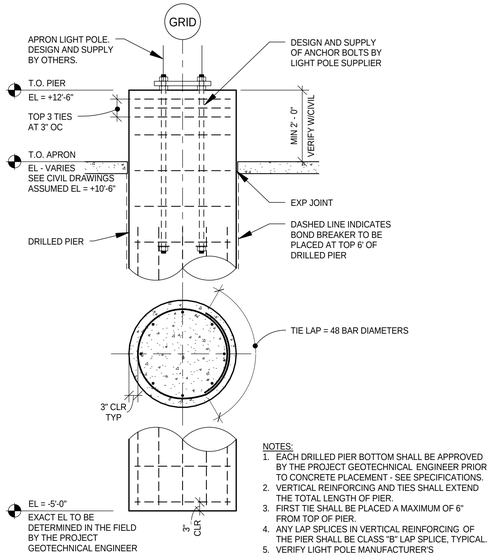
AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
TUG ROAD FOUNDATION PLAN

SHEET NUMBER
S118

BID PACKEAGE 2A ADDENDUM 2



NOTES:

1. EACH DRILLED PIER BOTTOM SHALL BE APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER PRIOR TO CONCRETE PLACEMENT - SEE SPECIFICATIONS.
2. VERTICAL REINFORCING AND TIES SHALL EXTEND THE TOTAL LENGTH OF PIER.
3. FIRST TIE SHALL BE PLACED A MAXIMUM OF 6" FROM TOP OF PIER.
4. ANY LAP SPLICES IN VERTICAL REINFORCING OF THE PIER SHALL BE CLASS "B" LAP SPLICE, TYPICAL.
5. VERIFY LIGHT POLE MANUFACTURER'S RECOMMENDATIONS FOR NO GROUT BENEATH BASE PLATE.

1 DRILLED PIER DETAIL

1/2" = 1'-0"

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TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Paul A. Johnson

Signature:

Date: June 3, 2010 Reg. No.: 20379

REVISIONS

NO.	DESCRIPTION	DATE
1	BP2A ADDENDUM 2	02.25.11

DATE ISSUED: 01-24-11
REVIEWED BY: PAJ / CWB
DRAWN BY: SJL
DESIGNED BY: CWB

AEP PROJECT NUMBER

213-1882-091

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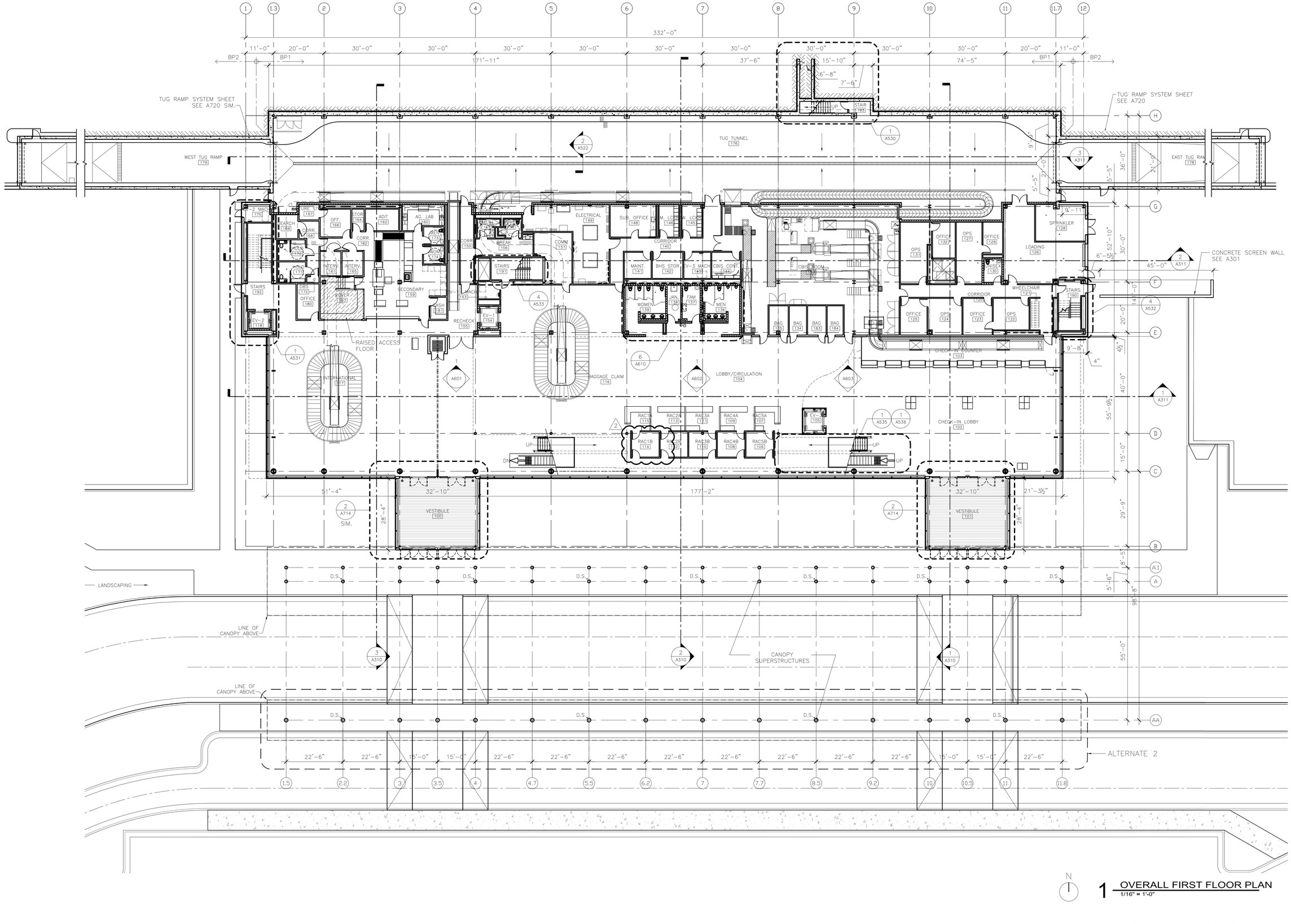
SHEET TITLE

STRUCTURALN DETAILS

SHEET NUMBER

S506

BID PACKEAGE 2A ADDENDUM 2



1 OVERALL FIRST FLOOR PLAN
1/16" = 1'-0"

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TEL: (218) 591-5079

ARCHITECTURAL CERTIFICATION
I hereby certify that the architectural plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Architect under the laws of the State of Minnesota.

Print Name: Mark Ip

Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DATE
	BID PACKAGE 1	5.12.10
	FOUNDATION PERMIT	6.11.10
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.15.10
	BID PACKAGE 2A	1.24.11
2	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

AEP PROJECT NUMBER
213-1882-091

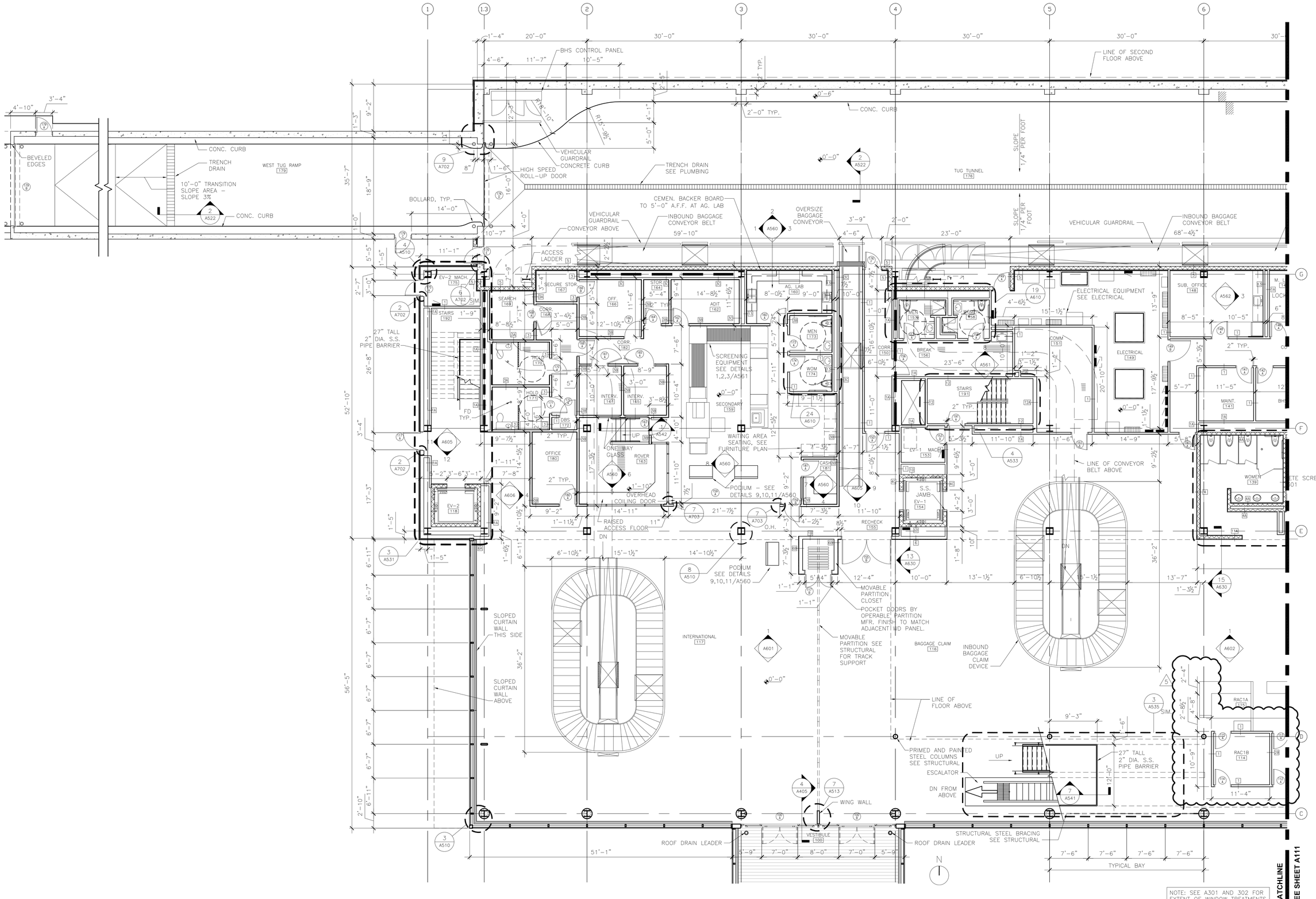
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SHEET TITLE
OVERALL FIRST FLOOR PLAN

SHEET NUMBER
A101

BID PACKAGE 2A ADDENDUM 2

Drawing: T:\P\2131882.091 Duluth New Terminal\Cad\A\Sheets\A101 Overall First Floor Plan.dwg Plotted on: 2/24/2011 2:59 PM Plotted by: lp, Mark



1 ENLARGED FIRST LEVEL FLOOR PLAN - AREA A
1/8" = 1'-0"

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Print Name: Mark Ip

Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DATE
	BID PACKAGE 1	5.12.10
	FOUNDATION PERMIT	6.11.10
1,2,3	NOT CHANGED	
	CONFORMANCE SET	7.12.10
	BUILDING PERMIT	8.16.10
4	BUILDING PERMIT REVISIONS	11.12.10
	100% REVIEW	12.15.10
	BID PACKAGE 2A	1.24.11
5	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

AEP PROJECT NUMBER
213-1882-091

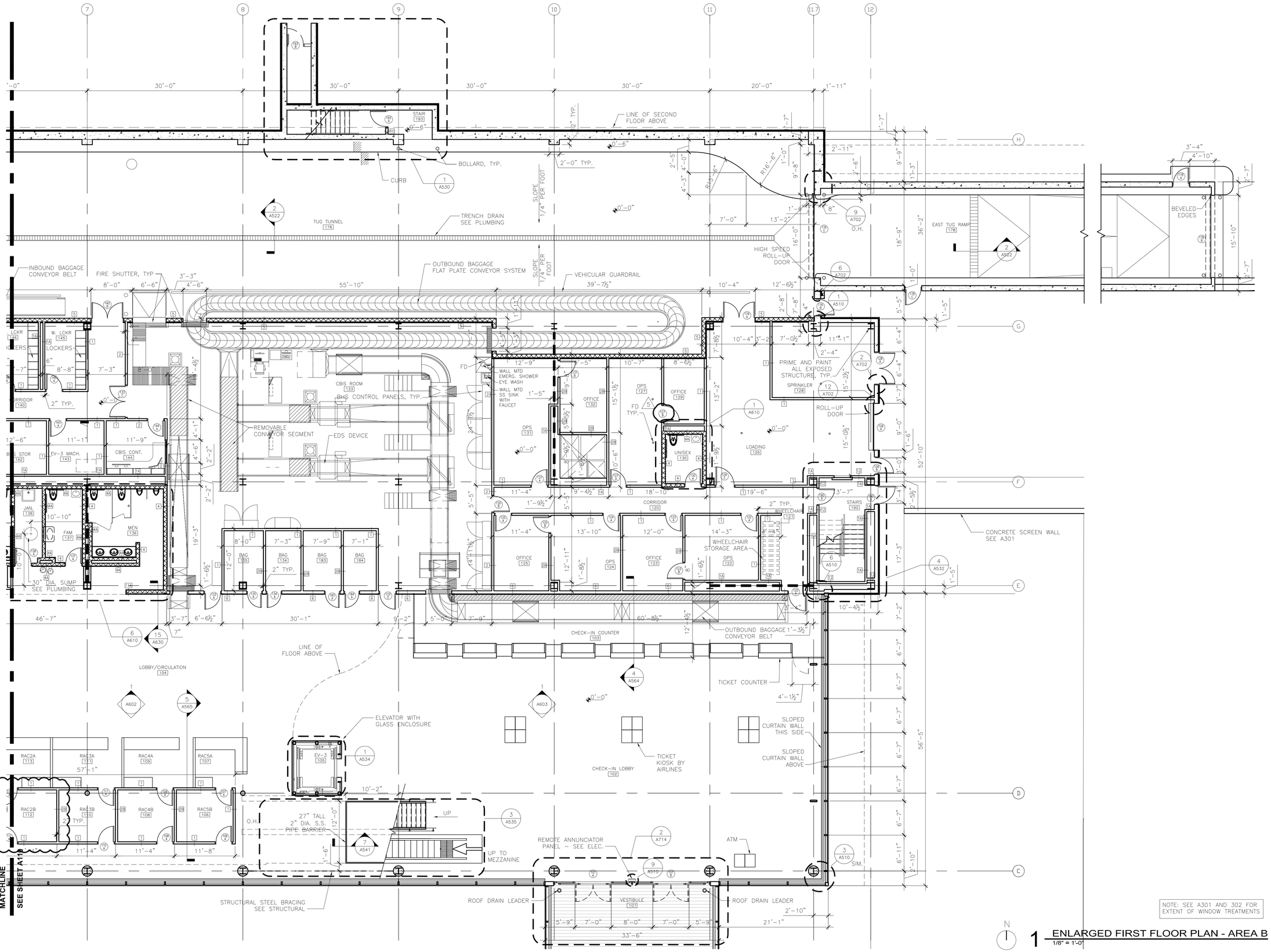
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SHEET TITLE
ENLARGED FIRST FLOOR PLAN AREA A

SHEET NUMBER
A110

BID PACKAGE 2A ADDENDUM 2

Drawing: T:\P\2131882.091 Duluth New Terminal\Cad\A\Sheets\A110 First Floor Area A.dwg Plotted on: 2/24/2011 3:02 PM Plotted by: Ip, Mark



NOTE: SEE A301 AND 302 FOR EXTENT OF WINDOW TREATMENTS

N

1 ENLARGED FIRST FLOOR PLAN - AREA B
1/8" = 1'-0"

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Print Name: Mark Ip

Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DATE
	BID PACKAGE 1	5.12.10
	FOUNDATION PERMIT	6.11.10
1,2,3	NOT CHANGED	
	CONFORMANCE SET	7.12.10
	BUILDING PERMIT	8.16.10
4	BUILDING PERMIT REVISIONS	11.12.10
	100% REVIEW	12.15.10
	BID PACKAGE 2A	1.24.11
5	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

AEP PROJECT NUMBER
213-1882-091

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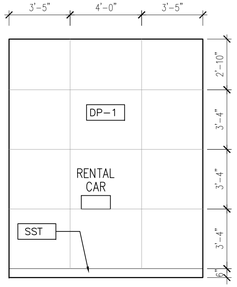
SHEET TITLE

ENLARGED FIRST FLOOR PLAN AREA B

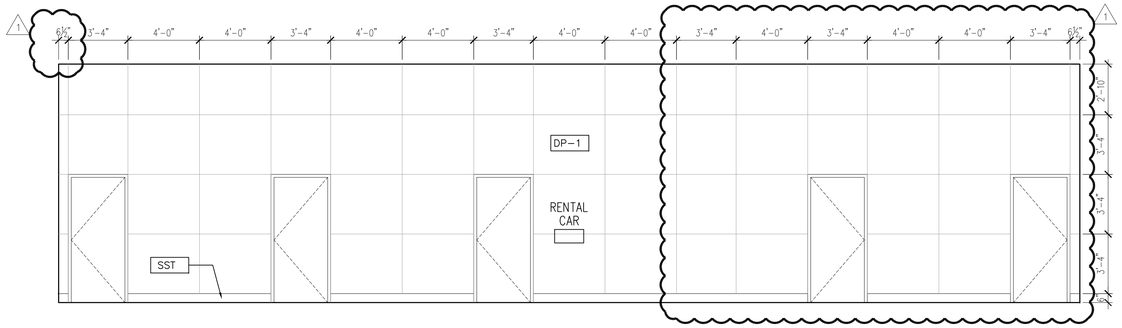
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A111

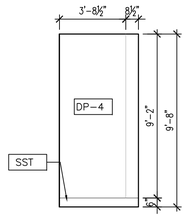
BID PACKAGE 2A ADDENDUM 2



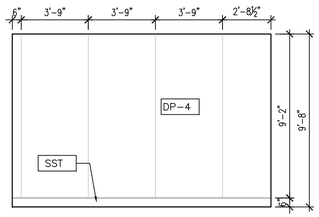
2 RENTAL CAR ELEVATION EAST/WEST
1/4" = 1'-0"



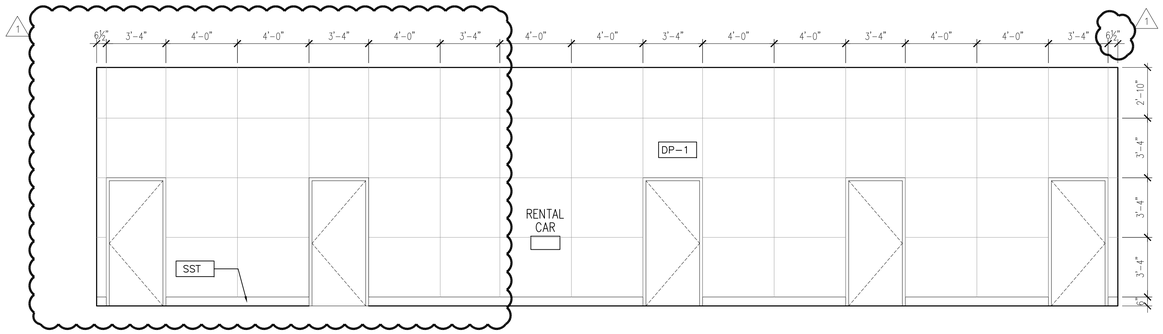
1 RENTAL CAR ELEVATION SOUTH
1/4" = 1'-0"



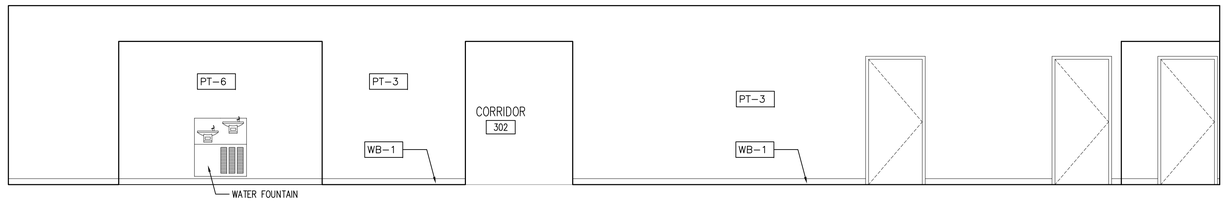
5 LOBBY PARTIAL ELEVATION EAST/WEST
1/4" = 1'-0"



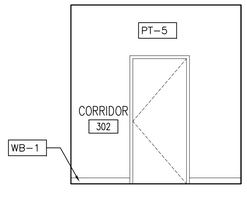
4 INTL. BAG CLAIM PARTIAL ELEVATION EAST
1/4" = 1'-0"



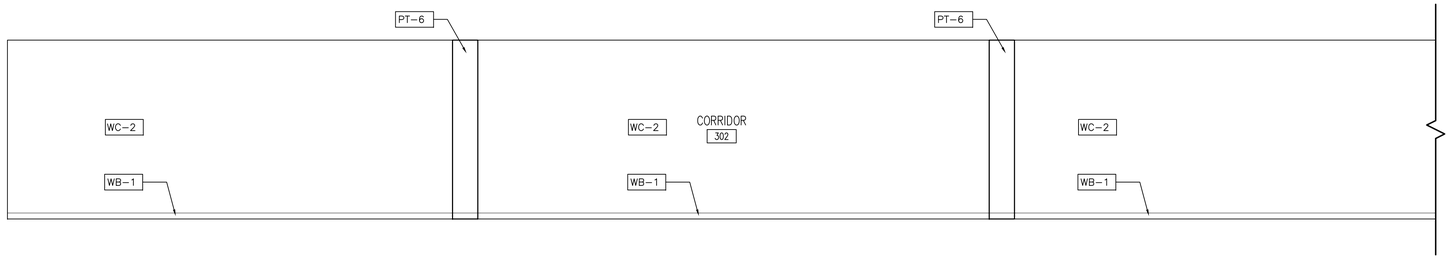
3 RENTAL CAR ELEVATION NORTH
1/4" = 1'-0"



6 THIRD FLOOR CORRIDOR ELEVATION NORTH
1/4" = 1'-0"



8 THIRD FLOOR CORRIDOR ELEVATION EAST
1/4" = 1'-0"



7 THIRD FLOOR CORRIDOR ELEVATION SOUTH
1/4" = 1'-0"

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CONSULTANTS

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Baggage Handling Systems Consultants:
BNP ASSOCIATES INC.
101 East Ridge Office Park, Suite 103, Danbury CT 06810
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Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

ARCHITECTURAL CERTIFICATION
I hereby certify that the architectural plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Architect under the laws of the State of Minnesota.

Print Name: Mark Ip

Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DATE
	FOUNDATION PERMIT	6.11.10
	100% REVIEW	12.15.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
INTERIOR ELEVATIONS

SHEET NUMBER
A606

BID PACKAGE 2A ADDENDUM 2

DOOR SCHEDULE - FIRST FLOOR

Door Number	Opening Width	Opening Height	Door Thick	Door Type	Frame Mat.	Frame Type	Frame Mat.	Rating	Details Head	Details Sill	Details Jamb	Hdwr. Group	Remarks
100A	15'-2"	7'-0"	1 3/4"	D	ALUM.	4	ALUM.	--	1/A520	--	4/A511	--	2, 6
100B	15'-2"	7'-0"	1 3/4"	D	ALUM.	4	ALUM.	--	1/A520	--	4/A511	--	2
100C	15'-2"	7'-0"	1 3/4"	D	ALUM.	4	ALUM.	--	--	--	5/A511	47	2
100D	15'-2"	7'-0"	1 3/4"	D	ALUM.	4	ALUM.	--	--	--	5/A511	47	2
101A	15'-2"	7'-0"	1 3/4"	D	ALUM.	4	ALUM.	--	1/A520	--	4/A511	--	2
101B	15'-2"	7'-0"	1 3/4"	D	ALUM.	4	ALUM.	--	1/A520	--	4/A511	--	2
101C	15'-2"	7'-0"	1 3/4"	D	ALUM.	4	ALUM.	--	--	--	5/A511	47	2
101D	15'-2"	7'-0"	1 3/4"	D	ALUM.	4	ALUM.	--	--	--	5/A511	47	2
106A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	9	
107A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	8	
108A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	9	
109A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	8	
110A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	9	
111A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	8	
112A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	9	
113A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	8	
114A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	9	
115A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	8	
117A	3'-4"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	1/A702	--	2/A702	43	
117B	5'-0"	7'-0"	1 3/4"	--	--	--	--	--	--	--	--	--	
120A	3'-4"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	3	
120B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	--	9/A703	1	
122A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
123A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
123B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	--	9/A703	20	
124A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
125A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
125B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	--	9/A703	20	
126A	9'-0"	7'-0"	1"	E	STL.	--	STL.	--	11/A702	12/A702	13/A702	--	4
126B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	1/A702	2/A702	4/A702	40	
126C	3'-6"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	16	
127A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
127B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	--	9/A703	20	
128A	6'-0"	7'-0"	1 3/4"	B	H.M.	2	H.M.	--	1/A702	2/A702	4/A702	37	
130A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	--	--	14	
131A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
131B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	--	9/A703	9	
133A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	1	
133B	DELETED												
133C	6'-0"	7'-0"	1 3/4"	B	H.M.	2	H.M.	1	8/A703	--	9/A703	31	
133D	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	1	
134A	2'-8"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	13	
135A	2'-8"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	13	
137A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	--	7/A630	14	
138A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	--	7/A630	9	
140A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	1	
140B	6'-0"	7'-0"	1 3/4"	B	H.M.	1	H.M.	1	--	--	--	46	
141A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
142A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
143A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	12	
144A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	--	9/A703	9	
145A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	9	
146A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	9	
148A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
149A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	--	--	48	
149B	4'-0"	6'-8"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	5	
150A	3'-6"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	3	
151A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	1	
153A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	12	
155B	9'-6"	7'-0"	1 3/4"	D	H.M.	2	H.M.	--	2/A630	--	3/A630	30	
156A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
157A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	14	
158A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	14	
159A	21'-0"	7'-0"	1"	E	ALUM.	--	ALUM.	--	5/A703	--	7/A703	--	
159B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	1	
160A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	2	
161A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
162A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	21	
163A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
164A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	11	
165A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
166A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
166B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	32	
168A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
169A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	34	
170A	3'-0"	7'-0"	1 3/4"	F	H.M.	1	H.M.	--	8/A703	--	9/A703	34	3
171A	3'-0"	7'-0"	1 3/4"	F	H.M.	1	H.M.	--	8/A703	--	9/A703	34	3
172A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	33	
173A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	14	
174A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	14	
175A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	1/A702	2/A702	4/A702	38	
176A	6'-0"	7'-0"	1 3/4"	B	H.M.	2	H.M.	1	--	--	--	31	
176B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	19/A702	6/A702	7/A702	39	
176C	16'-0"	7'-0"	1 3/4"	H	FAB.	--	STL.	--	8/A702	9/A702	10/A702	--	5
176D	16'-0"	7'-0"	1 3/4"	H	FAB.	--	STL.	--	8/A702	9/A702	10/A702	--	5
176E	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	19/A702	6/A702	7/A702	39	
176F	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	--	--	--	54	
178A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	--	--	55	
178B	16'-0"	7'-0"	1 3/4"	H	FAB.	--	STL.	--	--	--	--	--	5
178C	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	--	--	39	
179A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	--	--	55	
179B	16'-0"	7'-0"	1 3/4"	H	FAB.	--	STL.	--	--	--	--	--	5
179C	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	--	--	39	
180A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	1	
181A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	21	
183A	2'-8"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	13	
184A	2'-8"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	13	
190A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	--	9/A703	6	
190B	3'-4"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	1/A702	2/A702	4/A702	39	
191A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	2/A630	--	3/A630	22	
193A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	--	--	42	
193B	3'-4"	7'-0"	1 3/4"	A	H.M.	5	H.M.	--	--	--	--	41	

Remarks

1	Deleted, see hardware group.
2	Provide Break-Away emergency exit doors
3	Provide 12 ga Hollow Metal Door and Frame
4	Provide insulated door
5	Provide high speed fabric door
6	Provide access control and remote 2 point locking options

5 DOOR SCHEDULE - FIRST FLOOR

DOOR SCHEDULE - SECOND FLOOR

Door Number	Opening Width	Opening Height	Door Thick	Door Type	Frame Mat.	Frame Type	Frame Mat.	Rating	Details Head	Details Sill	Details Jamb	Hdwr. Group	Remarks
203A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	5	
203B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	45	
204A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
205A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	16	
208A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	5	
208B	9'-9 3/4"	7'-0"	1"	J	ALUM.	1	H.M.	--	1/A703	--	3&4/703	--	
209A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	11	
210A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
211A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
212A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
213A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
214A	28'-3"	7'-0"	1"	J	ALUM.	1	H.M.	--	1/A703	--	6/A703	23	
214B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	23	
215A	4'-3 1/2"	--	--	--	--	--	--	--	--	--	--	--	2
215B	4'-3 1/2"	--	--	--	--	--	--	--	--	--	--	--	2
215C	4'-3 1/2"	--	--	--	--	--	--	--	--	--	--	--	2
215D	4'-3 1/2"	--	--	--	--	--	--	--	--	--	--	--	2
217A	3'-5"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	1	
219A	3'-6"	7'-0"	1 3/4"	A	ALUM.	1	ALUM.	--	--	--	--	56	
219B	3'-2"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	5	
219C	4'-6"	7'-0"	1 3/4"	--	--	1	H.M.	--	--	--	--	--	
219E	3'-6"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	10/A522	7/A521	2/A511	49	
219F	3'-0"	7'-0"	1 3/4"	G	ALUM.	6	ALUM.	--	3/A522	4/A522	3/A512	50	
219G	3'-6"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	3/A521	1/A511	49	
219H	3'-6"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	3/A521	1/A511	49	
219I	3'-0"	7'-0"	1 3/4"	G	ALUM.	6	ALUM.	--	3/A522	4/A522	3/A512	50	
223A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	--	--	7/A630	14	
224A	17'-3 3/4"	7'-0"	1"	J	ALUM.	--	STL.	--	1/A703	--	3&4/A703	--	
225A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
226A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	9	1
226B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
226C	2'-6"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
226D	7'-5 1/2"	7'-0"	1"	J	ALUM.	--	STL.	--	1/A703	--	3&4/A703	--	
230A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
231A	3'-0"	7'-0"	1 3/4"	A	ALUM.	1	ALUM.	--	--	--	--	15	
232A	3'-0"	7'-0"	1 3/4"	G	ALUM.	6	ALUM.	--	3/A522	4/A522	6/A512	4	
232B	3'-0"	7'-0"	1 3/4"	G	ALUM.	1	ALUM.	--	--	--	--	51	
233B	3'-6"	7'-0"	1 3/4"	A	ALUM.	1	ALUM.	--	--	--	--	52	
234A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	4	
235A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	8	
236A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	8	
237A	10'-1"	10'-0"	1 3/8"	D	ALUM.	--	--	--	--	--	--	15	2
237B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	4	
237C	3'-6"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	57	
237D	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	2/A630	--	3/A630	44	
238A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	15	
239A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	15	
240A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
241A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
242A	3'-6"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	10/A522	7/A521	2/A511	49	
242C	3'-0"	7'-0"	1 3/4"	G	ALUM.	6	ALUM.	--	3/A522	4/A522	3/A512	50	
245A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
249A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	12	
250A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
250B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
251A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
290A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	6/A541	9/A703	22	
291A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	6/A541	9/A703	22	

Remarks

1	Deleted, see hardware group.
2	Provide Break-Away emergency exit doors
3	
4	
5	
6	

4 DOOR SCHEDULE - SECOND FLOOR

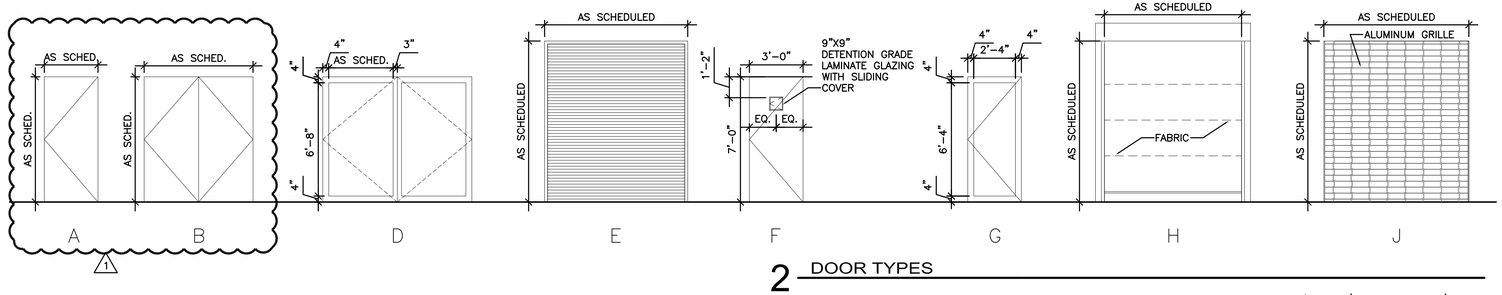
DOOR SCHEDULE - THIRD FLOOR

Door Number	Opening Width	Opening Height	Door Thick	Door Type	Frame Mat.	Frame Type	Frame Mat.	Rating	Details Head	Details Sill	Details Jamb	Hdwr. Group	Remarks
301A	4'-6"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	29	
301B	4'-6"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	29	
301C	4'-6"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	29	
301D	4'-6"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	29	
302A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	5	
304A	6'-0"	7'-0"	1 3/4"	B	H.M.	2	H.M.	1	8/A703	--	9/A703	26	
304B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	--	9/A703	6	
304C	6'-0"	7'-0"	1 3/4"	B	H.M.	2	H.M.	--	17/A702	18/A702	15/A702	35	
305A	3'-0"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	58	1
305B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	59	
306A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
307A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
308A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	9	
309A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	9	
310A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	10	
311A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
312A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
313A	3'-0"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	19	
313B	3'-0"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	19	
314A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
315A	3'-0"	7'-0"	1 3/4"	A	WD	1	H.M.	--	--	--	--	17	
316A	3'-0"	7'-0"	1 3/4"	A	WD	1	H.M.	--	--	--	--	17	
317A	3'-0"	7'-0"	1 3/4"	A	WD	3	H.M.	--	8/A703	--	9/A703	5	
317B	5'-0"	7'-0"	1 1/4"	B	WD	2	H.M.	--	--	--	--	--	
318A	6'-0"	7'-0"	1 3/4"	B	WD	2	H.M.	--	8/A703	--	9/A703	27	
318C	3'-0"	7'-0"	1 3/4"	A	WD	3	H.M.	--	8/A703	--	9/A703	24	
319A	3'-0"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	11	
320A	3'-0"	7'-0"	1 3/4"	A	WD	3	H.M.	--	8/A703	--	9/A703	24	
322A	3'-0"	7'-0"	1 3/4"	A	WD	3	H.M.	--	8/A703	--	9/A703	24	
323A	3'-0"	7'-0"	1 3/4"	A	WD	3	H.M.	--	8/A703	--	9/A703	8	
324A	3'-0"	7'-0"	1 3/4"	A	WD	3	H.M.	--	8/A703	--	9/A703	8	
325A	3'-0"	7'-0"	1 3/4"	A	WD	3	H.M.	--	8/A703	--	9/A703	8	
326A	3'-0"	7'-0"	1 3/4"	A	WD	3	H.M.	--	8/A703	--	9/A703	8	
327A	3'-0"	7'-0"	1 3/4"	A	WD	3	H.M.	--	8/A703	--	9/A703	8	
331A	3'-0"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	18	
331B	3'-0"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	18	
332A	3'-0"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	8	
333A	6'-0"	7'-0"	1 3/4"	B	H.M.	2	H.M.	1	8/A703	--	9/A703	26	
333B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	14/A702	16/A702	15/A702	36	
333C	6'-0"	7'-0"	1 3/4"	B	H.M.	2	H.M.	--	17/A702	18/A702	15/A702	35	
334A	6'-0"	7'-0"	1 3/4"	B	H.M.	2	H.M.	1	8/A703	--	9/A703	25	
335C	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	28	
336A	3'-0"	7'-0"	1 3/4"	A	WD	1	H.M.	--	8/A703	--	9/A703	1	
336B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	8	
337A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	--	8/A703	--	9/A703	1	
390A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	6/A541	9/A703	7	
391A	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	6/A541	9/A703	22	
391B	3'-0"	7'-0"	1 3/4"	A	H.M.	1	H.M.	1	8/A703	6/A541	9/A703	7	

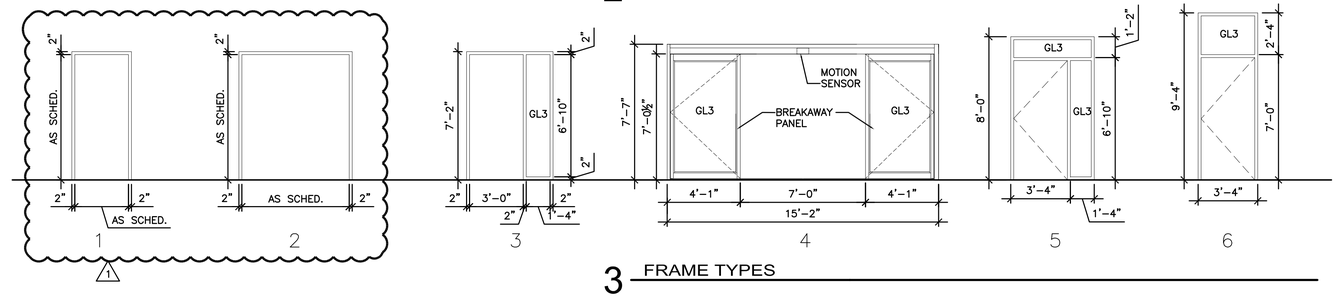
Remarks

1	Deleted, see hardware group.
2	
3	
4	
5	
6	

1 DOOR SCHEDULE - THIRD FLOOR



2 DOOR TYPES



3 FRAME TYPES

Reynolds, Smith and Hills, Inc.
4525 Airport Approach Rd, Ste A
Duluth, Minnesota 55811
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www.rsandh.com

DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

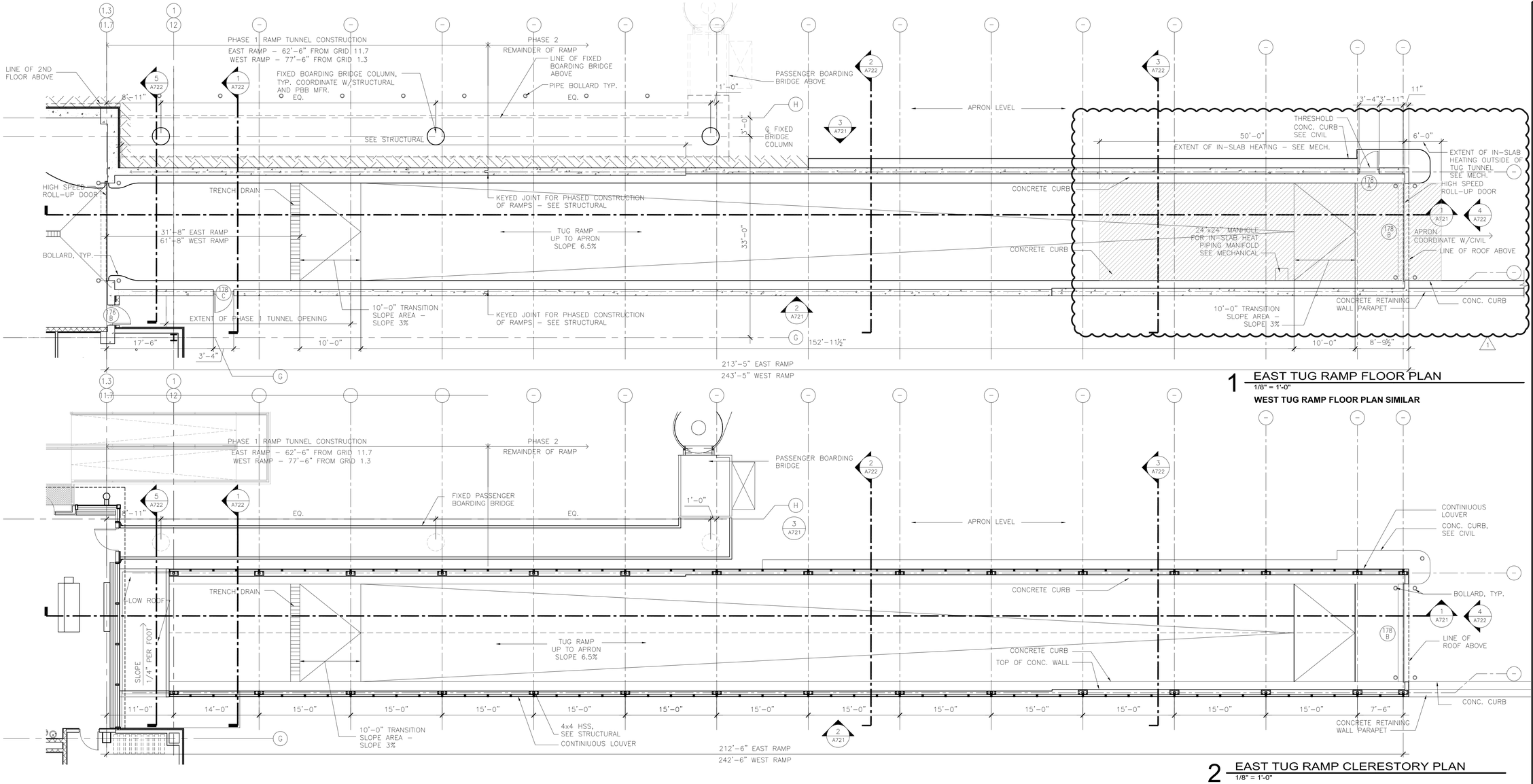
CONSULTANTS

Interior Architects:
SJA ARCHITECTS
11 E Superior Street Suite 340, Duluth MN 55802
TEL: (218) 724-8578 / FAX: (218) 724-8717

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M/E/P/FP Engineers:
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TEL: (312) 201-7408 / FAX: (312) 201-0031

Baggage Handling Systems Consultants:
BNP ASSOCIATES INC.
101 East Ridge Office Park, Su



1 EAST TUG RAMP FLOOR PLAN

1/8" = 1'-0"

WEST TUG RAMP FLOOR PLAN SIMILAR

2 EAST TUG RAMP CLERESTORY PLAN

1/8" = 1'-0"

WEST TUG RAMP CLERESTORY PLAN SIMILAR

3 EAST TUG RAMP ROOF PLAN

1/8" = 1'-0"

WEST TUG RAMP ROOF SIMILAR

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Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

ARCHITECTURAL CERTIFICATION
I hereby certify that the architectural plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Architect under the laws of the State of Minnesota.

Print Name: Mark Ip

Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DATE
	FOUNDATION PERMIT	6.11.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.15.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

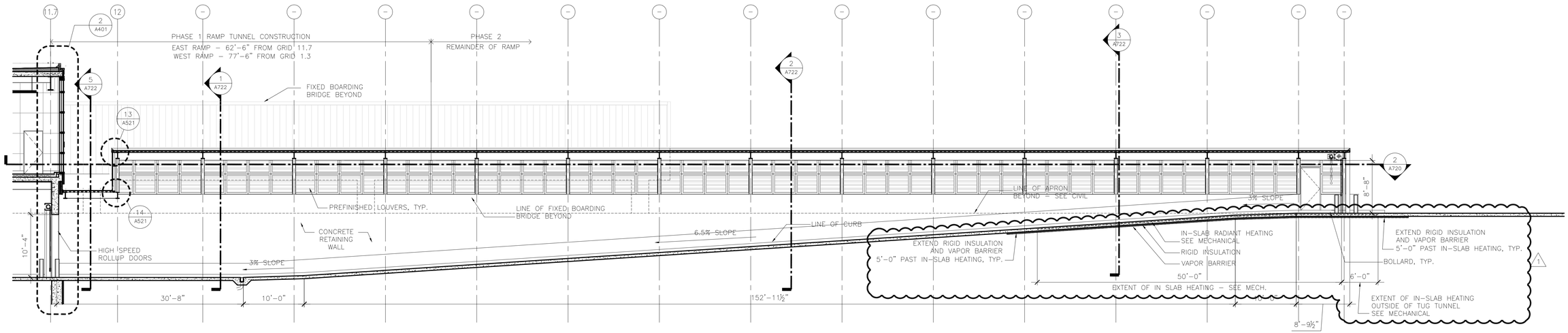
EXTERIOR SYSTEMS TUG TUNNEL

SHEET NUMBER

A720

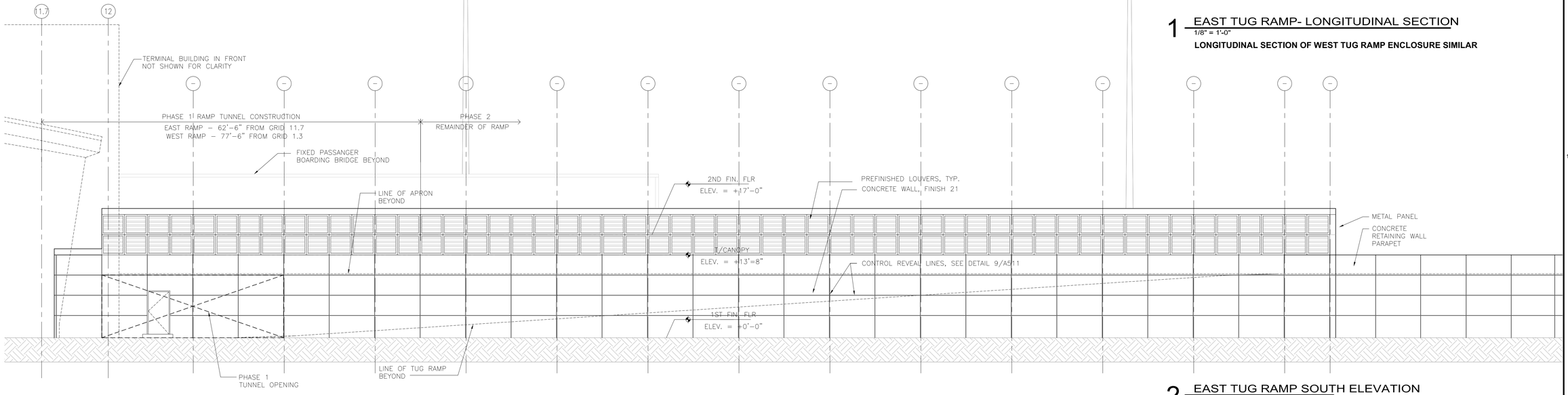
BID PACKAGE 2A ADDENDUM 2

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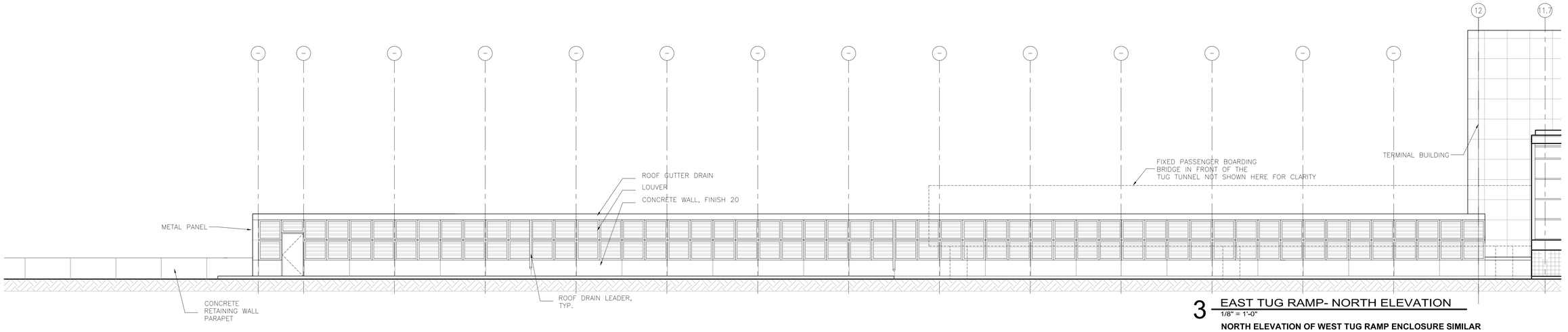
1 EAST TUG RAMP- LONGITUDINAL SECTION
1/8" = 1'-0"

LONGITUDINAL SECTION OF WEST TUG RAMP ENCLOSURE SIMILAR



2 EAST TUG RAMP SOUTH ELEVATION
1/8" = 1'-0"

SOUTH ELEVATION OF WEST TUG RAMP ENCLOSURE SIMILAR



3 EAST TUG RAMP- NORTH ELEVATION
1/8" = 1'-0"

NORTH ELEVATION OF WEST TUG RAMP ENCLOSURE SIMILAR

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NEW PASSENGER TERMINAL

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Print Name: Mark Ip

Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DATE
	FOUNDATION PERMIT	6.11.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.15.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

AEP PROJECT NUMBER
213-1882-091

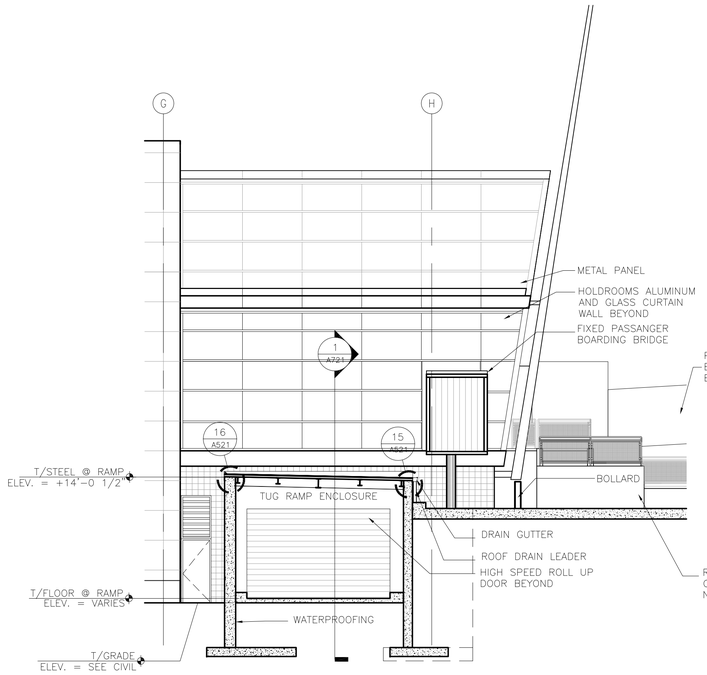
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SHEET TITLE
EXTERIOR SYSTEMS TUG TUNNEL

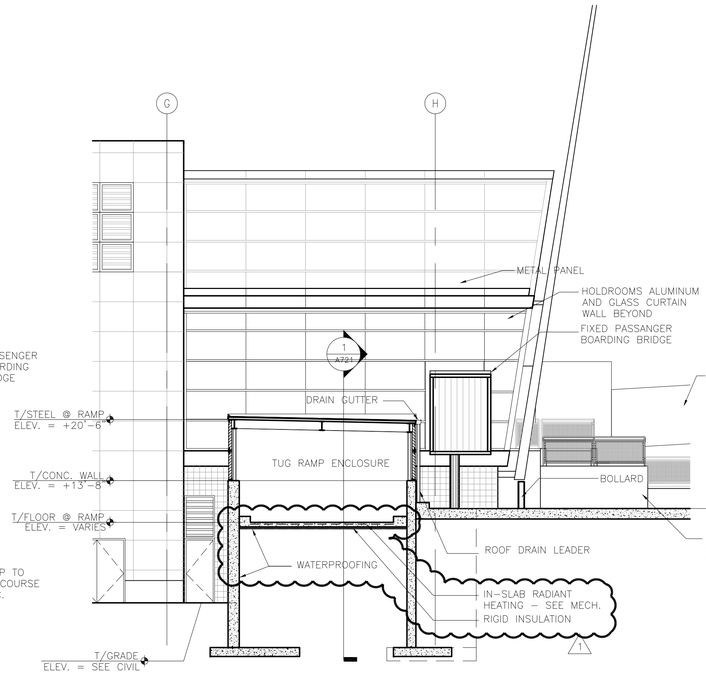
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A721

BID PACKAGE 2A ADDENDUM 2

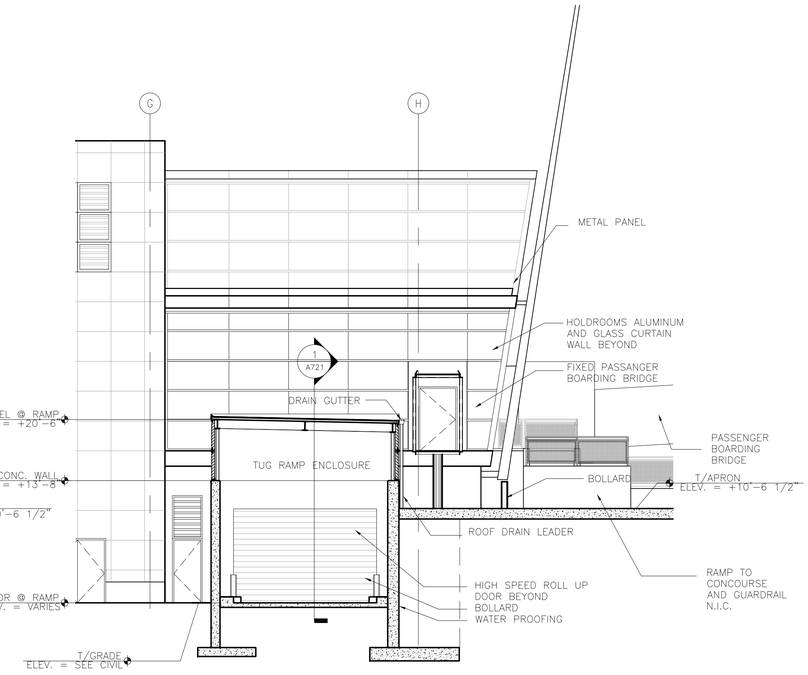
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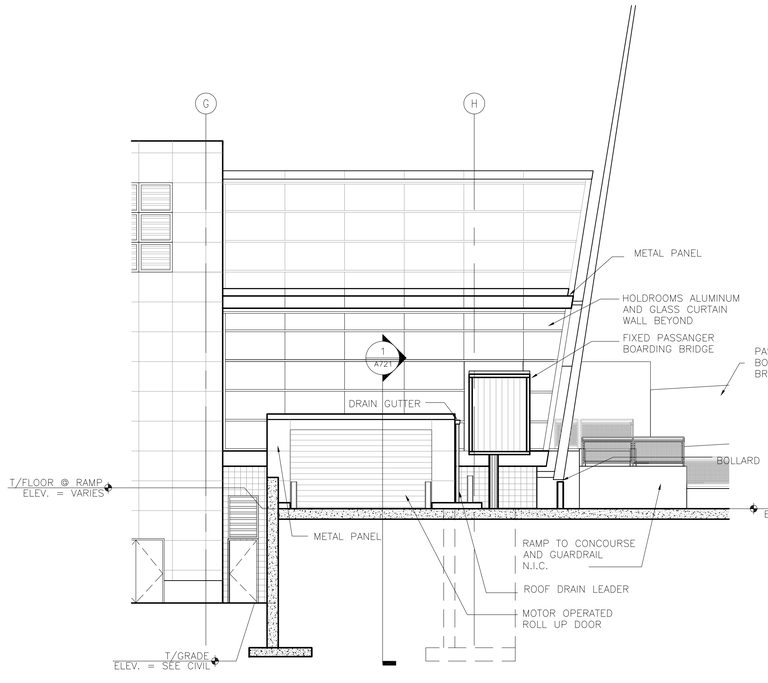
5 EAST TUG RAMP- CROSS SECTION
1/8" = 1'-0"
CROSS SECTION OF WEST TUG RAMP ENCLOSURE SIMILAR



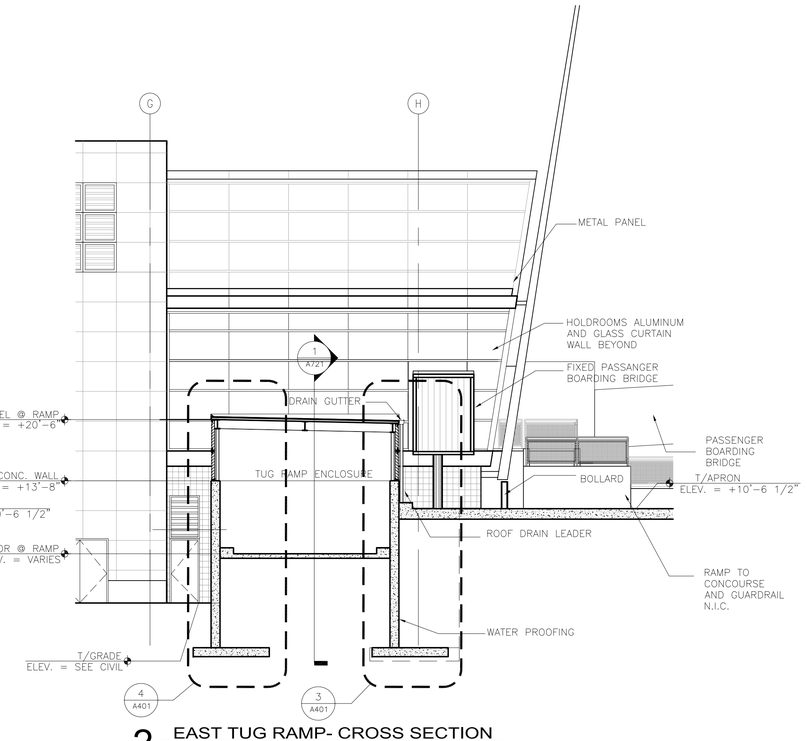
3 EAST TUG RAMP- CROSS SECTION
1/8" = 1'-0"
CROSS SECTION OF WEST TUG RAMP ENCLOSURE SIMILAR



1 EAST TUG RAMP- CROSS SECTION
1/8" = 1'-0"
CROSS SECTION OF WEST TUG RAMP ENCLOSURE SIMILAR



4 EAST TUG RAMP ENCLOSURE- EAST ELEVATION
1/8" = 1'-0"
WEST ELEVATION OF WEST TUG RAMP ENCLOSURE SIMILAR



2 EAST TUG RAMP- CROSS SECTION
1/8" = 1'-0"
CROSS SECTION OF WEST TUG RAMP ENCLOSURE SIMILAR

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Print Name: Mark Ip

Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DATE
	FOUNDATION PERMIT	6.11.10
	BUILDING PERMIT	9.16.10
	100% REVIEW	12.15.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
EXTERIOR SYSTEMS TUG TUNNEL

SHEET NUMBER
A722

BID PACKAGE 2A ADDENDUM 2

DUCTWORK SYMBOLS & STANDARDS

WHERE DUCTWORK IS SHOWN SINGLE LINE, FOLLOWING SHALL APPLY FOR ACTUAL DUCT CONSTR.

SINGLE LINE	ACTUAL CONSTRUCTION
ELBOW	DOUBLE THICKNESS TURNING VANES ROUND ELBOW W/ TURNING BLADES IF W > 18" — R = 3W/4
TAP TAKE-OFF	ADJUSTABLE TAP DAMPER — SUPPLY / RETURN
RISE OR DROP	ELEVATION — OFFSET IN VERTICAL PLANE SHALL BE MADE WITH SMOOTH FITTINGS. ARROW IN DIRECTION OF AIRFLOW. — RISE OR DROP
HORIZONTAL OFFSET	OFFSET IN HORIZONTAL PLANE SHALL BE MADE WITH SMOOTH FITTINGS.
PLENUM OVER DIFFUSER — CONN. TO LINEAR DIFFUSER PLENUM	PLENUM OVER DIFFUSER CONICAL FITTINGS REGULATION OF VOLUME DAMPER SHALL BE ACCESSIBLE THROUGH THE FACE OF DIFFUSER
FLD — FIRE RATED WALL — FIRE DAMPER	ACCESS DOOR IN DUCT FLD MOUNTING TYPE DEPENDS ON AIR VELOCITIES AND DUCT SIZE — SEE SPECIFICATIONS. RATING EQUAL TO PARTITION UNLESS NOTED OTHERWISE. (2HR MIN.)
HTG. COIL — HEATING COIL	COIL WITH FLANGED CONNECTION ALL AROUND DIRECTION OF FLOW ACCESS DOORS NOTE: INSTALL ELECTRIC DUCT HEATERS 2'-0" MIN FROM ANY FANS, ELBOWS, OR "T" FITTINGS.
VD	VOLUME DAMPER
AD	AUTOMATIC LOUVER DAMPER (MOTORIZED DAMPER)
BDD	BDD — BACKDFAFT DAMPER T THERMOSTAT
FLEXIBLE CONNECTION	TRANSITION

SUPPLY — RETURN OR EXHAUST

SOLID CROSS INDICATES UP OR TOWARD. DASHED CROSS INDICATES DOWN OR AWAY.

GRILLE, REGISTER AND DIFFUSER SYMBOLS:

SQUARE CEILING SUPPLY DIFFUSER OR REGISTER — CEILING RETURN OR EXHAUST GRILLE OR REGISTER — SIDEWALL SUPPLY REGISTER — SIDEWALL RETURN OR EXHAUST GRILLE OR REGISTER

ROUND CEILING SUPPLY DIFFUSER OR REGISTER — A B / 300 — TYPE (SEE SCHEDULE); ø NECK SIZE OR WIDTH X HEIGHT OR SLOT X LENGTH; CFM

CONTINUOUS FIN TUBE RADIATION

PIPE HANGER & SUPPORT SCHEDULE

#1 #2 #3 CLEVIS HANGERS (FOR 6" PIPE BELOW)

#4 #5 #6 CLEVIS ROLLER HANGERS (FOR 8" PIPE BELLOW)

#7 #8 #9 TWO ROD RIGID HANGERS (FOR 8" PIPE AND ABOVE)

#10 #11 #12 TWO ROD RIGID HANGERS (FOR 8" PIPE AND ABOVE)

#13 #14 #15 #16

#17 #18 #19 WELDED STEEL BRACKETS

#20 #21 #22 ADJ. A DJ. C.I. PIPE ROLL STAND

#22 #22 #22 ADJ. STANCHION SUPPORTS

#26 BASE PIPE STANCHION SUPPORT (SIZE PER SPECIFICATIONS)

#27 SINGLE BOLT RISER CLAMP SEE SPECIFICATIONS FOR SAFE SIZES

#28 SPRING WITH DOUBLE BOLT RISER CLAMP SEE SPECIFICATIONS FOR SAFE SIZES

#29 SINGLE ROD SPRING

#30 DOUBLE SPRING

#31 TRAPEZE SPRING

#32 #33 WELDED STEEL BRACKET

#37 MULTI TWO ROD RIGID HANGER GANG HANGER

FIG NO.	LESS THAN 1/4" MOVEMENT EXCEPT AS NOTED: NON. INSUL.	CH.W. LINES	HOT LINES	MORE THAN 1/4" MOVEMENT EXCEPT AS NOTED: NON. INSUL.	CH.W. LINES	HOT LINES
OVERHEAD SUPPORTS (HORIZONTAL PIPING)						
1						
2		✳				
3			✳			
4				✳		
5					✳	
6						✳
7				✳		
8					✳	
9						✳
10	✳					
11		✳				
12			✳			
WALL SUPPORTS (HORIZONTAL PIPING)						
13	✳					
14		✳				
15			✳			
16				✳		
17					✳	
18						✳
19	✳	✳	✳	✳	✳	✳
FLOOR SUPPORTS (HORIZONTAL PIPING)						
20				✳		
21					✳	
22						✳
23	✳					
24		✳				
25			✳			
FLOOR SUPPORTS (VERTICAL PIPING)						
26	✳	✳	✳			
27	✳	✳	✳			
28				✳	✳	✳
OVERHEAD SUPPORTS (VERTICAL & HORIZ. PIPING)						
29				✳ ●	✳ ●	✳ ●
30				✳ ●	✳ ●	✳ ●
31				✳ ●	✳ ●	✳ ●
WALL SUPPORTS (VERTICAL PIPING)						
32	✳	✳	✳			
33				✳ ●	✳ ●	✳ ●
ANCHORS (VERTICAL & HORIZONTAL PIPING)						
34	APPLIES TO ALL PIPES TO STOP MOVEMENT					
35						
GANG HANGERS (VERTICAL PIPING)						
36	✳	✳	✳			
GANG HANGERS (HORIZONTAL PIPING)						
37	✳	✳	✳	TO BE INDIVIDUALLY SUPPORTED		
GUIDES (VERTICAL & HORIZONTAL PIPING)						
38					✳	
39						✳
40				✳		
41					✳	
42						✳

#34 SINGLE BOLT RISER CLAMP — #35 STRUCT. STEEL FRAME TO SUIT — #36 MULTI- J HOOK PLATE GANG HANGER — ANCHORS

#38 #39 OPEN BAY-NO SLEEVE IN FLOOR. STEEL FRAME

#40 #41 #42 SINGLE BOLT RISER CLAMS

G U I D E S

MECHANICAL DRAWING LIST

SHEET NO.	DESCRIPTION	ISSUED FOR	DESIGN DEVELOPMENT 11/30/09	60% CONSTRUCTION DOCUMENTS 02/11/10	90% CONSTRUCTION DOCUMENTS 04/12/10	BID PACKAGE 1 05/07/10	SITE WORK AND FNDN PERMIT 06/02/10	BID PACKAGE 1 CONFORMANCE 07/12/10	BUILDING PERMIT 08/16/10	100% REVIEW 12/17/10	BID PACKAGE 2A 1/24/2011	BID PACKAGE 2A - ADDENDUM 2 2/25/2011	
M001	MECHANICAL LEGEND		●	●	●	●	●	●	●	●	●	●	
M002	MECHANICAL SYMBOLS & ABBREVIATIONS		●	●	●	●	●	●	●	●	●	●	
M108	ENLARGED UNDERGROUND MECHANICAL PLAN - AREA A		●	●	●	●	●	●	●	●	●		
M109	ENLARGED UNDERGROUND MECHANICAL PLAN - AREA B		●	●	●	●	●	●	●	●	●		
M110	ENLARGED FIRST FLOOR MECHANICAL PLAN - AREA A		●	●	●				●	●	●	●	
M111	ENLARGED FIRST FLOOR MECHANICAL PLAN - AREA B		●	●	●				●	●	●	●	
M112	ENLARGED SECOND FLOOR MECHANICAL PLAN - AREA A		●	●	●				●	●	●	●	
M113	ENLARGED SECOND FLOOR MECHANICAL PLAN - AREA B		●	●	●				●	●	●	●	
M114	ENLARGED THIRD FLOOR MECHANICAL PLAN - AREA A		●	●	●				●	●	●	●	
M115	ENLARGED THIRD FLOOR MECHANICAL PLAN - AREA B		●	●	●				●	●	●	●	
M116	ENLARGED ROOF LEVEL MECHANICAL PLAN - AREA A				●				●	●	●	●	
MP110	ENLARGED FIRST FLOOR MECHANICAL PIPING PLAN - AREA A				●				●	●	●	●	
MP111	ENLARGED FIRST FLOOR MECHANICAL PIPING PLAN - AREA B				●				●	●	●	●	
MP112	ENLARGED SECOND FLOOR MECHANICAL PIPING PLAN - AREA A				●				●	●	●	●	
MP113	ENLARGED SECOND FLOOR MECHANICAL PIPING PLAN - AREA B				●				●	●	●	●	
MP114	ENLARGED THIRD FLOOR MECHANICAL PIPING PLAN - AREA A				●				●	●	●	●	
MP115	ENLARGED THIRD FLOOR MECHANICAL PIPING PLAN - AREA B				●				●	●	●	●	
M201	DIESEL GENERATOR MECHANICAL PLAN & DETAILS		●	●	●				●	●	●		
M202	MECHANICAL SECTIONS & ELEVATIONS				●				●	●	●	●	
M301	HEATING HOT WATER FLOW DIAGRAM		●	●	●				●	●	●	●	
M302	CHILLED WATER FLOW DIAGRAM		●	●	●				●	●	●		
M303	TUG TUNNEL RAMP SNOW MELT PLAN, FLOW DIAGRAM & DETAILS		●	●	SHEET DELETED							●	
M303A	LANDSIDE SNOW MELT SYSTEM SCHEMATIC INTERIOR PIPE ROUTING DIAGRAM									●	●	●	
M401	MECHANICAL EQUIPMENT SCHEDULES I		●	●	●				●	●	●	●	
M402	MECHANICAL EQUIPMENT SCHEDULES II		●	●	●				●	●	●	●	
M403	MECHANICAL EQUIPMENT SCHEDULES III								●	●	●	●	
M501	MECHANICAL DETAILS I		●	●	●	●	●	●	●	●	●		
M502	MECHANICAL DETAILS II		●	●	●				●	●	●	●	
M503	MECHANICAL DETAILS III		●	●	●				●	●	●	●	
M504	MECHANICAL DETAILS IV								●	●	●		
M505	MECHANICAL DETAILS V										●		
M506	RAMP SNOW MELT SYSTEM DETAILS											●	

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE FOLLOWING CODES AND STANDARDS AT A MINIMUM:

   2007 MINNESOTA STATE BUILDING CODE
   2007 MINNESOATE STATE MECHANICAL AND FUEL GAS CODES
   2007 COMMERCIAL ENERGY CODE
   MINNESOTA SUSTAINABLE BUILDING GUIDELINES (REQUIRED SECTIONS ONLY)
   ASHRAE STANDARD 90.1–2007
   ASHRAE STANDARD 62.1–2007
   ASHRAE STANDARD 55–2004

2. ACCESS PANELS ARE REQUIRED FOR ALL AIR TERMINAL DEVICES, VALVES, AND DAMPERS LOCATED ABOVE CEILINGS. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL PANEL SIZES AND LOCATIONS WITH GENERAL CONTRACTOR AND ARCHITECT. ACCESS PANELS TO BE CONSTRUCTED PER ARCHITECTURAL SPECIFICATIONS AND DETAILS.

3. FINAL LOCATION OF ALL DIFFUSERS & SENSORS INSTALLED IN FINISHED SPACES SHALL BE REVIEWED AND APPROVED BY ARCHITECT.

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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

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ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: Douglas C. Mass
Signature:
Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
MECHANICAL LEGEND

SHEET NUMBER
M001

BID PACKAGE 2A ADDENDUM 2

Drawing: I:\2538.00 Duluth Airport\5.0 CADD\(5.4) HVAC\Dwgs\2538_M001.dwg Plotted on: 2/25/2011 11:39 AM Plotted by: Brandi Mark

HVAC PIPE SYMBOLS

- ANGLE VALVE
- AUTO. VENT PIPE DISCHARGE TO DRAIN
- BLIND FLANGE
- BASKET TYPE STRAINER
- DUPLEX BASKET TYPE STRAINER
- CAP
- COUPLING TYPE FLEXIBLE CONNECTION
- MOTOR OPERATED VALVE (AUTOMATIC)
- DRAIN VALVE PIPE TO FLOOR DRAIN
- EXPANSION JOINT
- FLEXIBLE CONNECTION
- FLOAT OPERATED VALVE
- FLOW IN THE DIRECTION OF THE ARROW
- FMD — FLOW MEASURING DEVICE
- FS — FLOW SWITCH
- GAUGE COCK
- GATE VALVE
- GLOBE VALVE
- HOSE END DRAIN VALVE (3/4")
- MANUAL BUTTERFLY VALVE
- MANUAL AIR VENT VALVE
- MOTOR OPERATED BUTTERFLY VALVE
- NEEDLE VALVE
- ORIFICE
- PIPE ANCHOR
- PIPE ANCHOR OR SUPPORT
- PIPE GUIDE
- PLUG VALVE OR COCK
- PRESSURE GAUGE ASSEMBLY
- PRESSURE GAUGE ASSEMBLY W/ SNUBBER
- PRESSURE REDUCING VALVE
- PIPE REDUCER OR INCREASER
- RELIEF OR SAFETY VALVE
- SOLENOID OPERATED VALVE
- SWING CHECK VALVE
- THERMOMETER
- PETE'S PLUG
- THREE-WAY CONTROL VALVE
- UNION
- Y-TYPE STRAINER WITH CLEANOUT PLUG
- TWO-WAY CONTROL VALVE
- BEAM PENETRATION
- GRISWOLD VALVE
- BUTTERFLY VALVE
- BALANCING VALVE
- FOR — BALANCING VALVE
- —V— VENT LINE
- CD — CONDENSATE DRAIN
- FOS — FUEL OIL SUPPLY
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- HHWS — HOT WATER SUPPLY
- HHWR — HOT WATER RETURN
- G — GAS

HVAC DUCT SYMBOLS

- HINGED ACCESS DOOR IN EQUIPMENT OR DUCT
- CEILING DIFFUSER WITH TAG NO. AND AIR QUANTITY. SEE SCHEDULE FOR SIZE BLANK OFF
- COLUMN NUMBER OR LETTER
- DETAIL OR SECTION– REMOTE LOCATION
- DETAIL OR SECTION– DRAWING
- DIRECTION OF AIR FLOW
- DUCT ELBOW TURNED DOWN
- DUCT ELBOW TURNED UP
- RETURN AIR OPENING THRU PARTITION ABOVE CEILING
- DUCT INCLINED DOWN WITH RESPECT TO AIRFLOW
- DUCT INCLINED UP WITH RESPECT TO AIRFLOW
- DUCT–SIZE IN "N" FIRST DIMENSION IS SIDE SHOWN
- DUCT–SIZE TRANSITION
- FIRE DAMPER W/ ACCESS PANEL
- VOLUME DAMPER
- MOTOR OPERATED DAMPER
- FLEXIBLE DUCT CONNECTION
- FLEXIBLE DUCT
- LINED DUCT– DIMENSION SHOWN IS CLEAR INSIDE
- SQUARE TURNED ELBOW WITH TURNING VANES
- SMOKE DAMPER W/ACCESS PANEL
- COMBINATION FIRE/SMOKE DAMPER W/ACCESS PANEL
- DUCT SOUND ATTENUATOR
- BRANCH TAKEOFF WITH VOLUME DAMPER
- SUPPLY DUCT RISER OR SECTION
- EXHAUST OR RETURN DUCT RISER OR SECTION
- SUPPLY REGISTER (WALL)
- RETURN REGISTER (WALL)
- RETURN GRILLE (CEILING)
- UNDERCUT DOOR MAXIMUM 1"
- DUCT–MOUNTED HEATING COIL
- BEAM PENETRATION
- FINNED TUBE RADIATOR

CONTROL SYMBOLS

- C — COMMON
- CCP — CENTRAL CONTROL PANEL
- DPT — DIFFERENTIAL PRESSURE TRANSMITTER
- FS — FLOW SWITCH
- LLR — LOW LIMIT RELAY
- LP — LOCAL PANEL
- OPER — OPERATION
- PI — PRESSURE INDICATOR
- RC — RECEIVER CONTROLLER
- SAV — SOLENOID AIR VALVE
- SPT — STATIC PRESSURE TRANSMITTER
- TC — TIME CLOCK
- TI — TEMPERATURE INDICATOR
- TT — TEMPERATURE TRANSMITTER
- VIB — VIBRATION
- VPT — VELOCITY PRESSURE TRANSMITTER
- CA — COMPRESSED AIR PIPING
- DAMPER END SWITCH
- DEVICE WITH AVERAGING SENSING DEVICE
- DP — DIFFERENTIAL PRESSURE SWITCH CONTROLLER
- ELECTRIC CONTACT (N.C.)
- ELECTRIC CONTACT (N.O.)
- ELECTRIC PNEUMATIC VALVE (EP)
- IMMERSION OR INSERTION STATUS
- INDICATION POINT
- MOTOR OPERATOR FOR DAMPER OR VALVE
- OPPOSED DAMPER BLADE
- PARALLEL DAMPER BLADE
- PLOT UNIT RUN STATUS
- PRESSURE ELECTRIC SWITCH (PE)
- RECEIVER CONTROLLER
- ROOM THERMOSTAT
- PNEUMATIC ELECTRIC SWITCH
- 3 POSITION SWITCH & HAND OFF AUTO
- 3–WAY AIR VALVE
- T — THERMOSTAT
- DD — DUCT SMOKE DETECTOR
- H — HUMIDISTAT
- CO2 — CARBON DIOXIDE SPACE SENSOR

HVAC ABBREVIATIONS

ACCU	AIR COOLED CONDENSING UNIT
AC	AIR CONDITIONING
AD	ACCESS DOOR
AH	AIR HANDLING SYSTEM
AL	ACOUSTICAL LINING
APPROX.	APPROXIMATE
AVG	AVERAGE
ABV	ABOVE
AS	AIR SEPARATOR
B	BOILER
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BI	BLACK IRON
BOD	BOTTOM OF DUCT
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
CA	COMPRESSOR AIR
CC	COOLING COIL
CCW	COUNTER CLOCKWISE
CD	CONDENSATE DRAIN
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
CH	CHEMICAL TREATMENT TANK
CI	CAST IRON
CL	CENTER LINE
CLG	CEILING
C.O.	CLEAN OUT
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
COT	COMPRESSION TANK
CONC	CONCRETE
COND. DR.	CONDENSATE DRAIN (COIL. PAN DRAIN)
CONN.	CONNECTION
CR	CEILING REGISTER
CT	COOLING TOWER
CW	CLOCKWISE
CY	CYCLE
DB	DRY BULB TEMPERATURE
DD	DUCT SMOKE DETECTOR
DFN	DEFLECTION
DG	DOOR GRILLE
DIA	DIAMETER
DIFF	DIFFUSER
DX	DIRECT EXPANSION
DN	DOWN
DWG.	DRAWING
EF	EXHAUST FAN
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ED	EXHAUST DISCHARGE
EE	ELECTRICAL ROOM EXHAUST
EFF	EFFICIENCY
EH	EXHAUST HEAD
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC.	ELECTRIC
ELEV.	ELEVATOR
EOAT	ENTERING OUTSIDE AIR TEMPERATURE
ET	EXPANSION TANK
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXP	EXPANSION
F	FILTER
FA	FREE AREA
FD	FIRE DAMPER
F/SD	FIRE SMOKE DAMPER
FHE	FUME HOOD EXHAUST
FL	FLOOR
FLEX.	FLEXIBLE
FMD	FLOW MEASURING DEVICE
FO	FILTER ON OUTSIDE AIR
FP	FAN POWER
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FR	FILTER ON RETURN AIR
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT
FTR	FINNED TUBE RADIATOR
FLGD	FLANGED
GA	GAGE OR GAUGE
GC	GENERAL CONTRACTOR
GD	GRAVITY DAMPER
GE	GENERAL EXHAUST
GR	GRILLE
GALV	GALVANIZED
H	HORIZONTAL
HC	HEATING COIL
HP	HORSEPOWER
HTG	HEATING
HU	HUMIDIFIER
HVAC	HEATING VENTILATION & AIR CONDITIONING
HX	HEAT EXCHANGER
HZ	HERTZ
ID	INSIDE DIAMETER
IAC	INSTRUMENTS AIR COMPRESSOR
IN	INCH
INSUL	INSULATION
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
KWH	KILOWATT HOUR
LD	LINED DUCT
LN	LINEAR
LOV	INTAKE OR EXHAUST LOUVER
LWT	LEAVING WATER TEMPERATURE
MACH	MACHINE
MAT	MIXED AIR TEMPERATURE
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MD	MOTORIZED DAMPER
MIN	MINIMUM
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MCC	MOTOR CONTROL CENTER
NC	NOISE CRITERIA
N.C.	NORMALLY CLOSED
N.I.C.	NOT IN CONTRACT
NK	NECK
N.O.	NORMALLY OPEN
NR	NO REQUIREMENT
NRO	NET ROOF OPENING
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DAMPER
OSD	OPEN SITE DRAIN
OV	OUTLET VELOCITY
PFR	PREFILTER ON RETURN AIR
1 PH	SINGLE PHASE
3 PH	THREE PHASE
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PS	PIPE SUPPORT
PSIG	POUND PER SQUARE INCH
PNEU.	PNEUMATIC
R	REFRIGERATION
RA	RETURN AIR
REF	RECIRCULATION/EXHAUST FAN
REG	REGISTER
REQ'D	REQUIRED
RET	RETURN
RM	ROOM
RP	REFRIGERANT PUMPOUT UNIT
RPM	REVOLUTIONS PER MINUTE
RV	PRESSURE RELIEF VALVE
S	SUPPLY FAN
SA	SUPPLY AIR
SD	SMOKE DAMPER
SF	SQUARE FEET
SHT	SHEET
SM	SHEET METAL
SMS/R	SNOW MELT SUPPLY & RETURN (1)
SP	STATIC PRESSURE
SPD	SPLITTER DAMPER
SPEC	SPECIFICATION
ST	SOUND ATTENUATOR
STD	STANDARD
SUP	SUPPLY
SOL	SOLENOID
SCRD	SCREWED
SS	STAINLESS STEEL
T	TANK
TD	TEMPERATURE DIFFERENCE
TE	TOILET EXHAUST
TEMP	TEMPERATURE
TR	TON OF REFRIGERATION
TS	TOP SPEED
T.S.P.	TOTAL STATIC PRESSURE
TYP	TYPICAL
TCP	TEMPERATURE CONTROL PANEL
TH	TOP HORIZONTAL
UG	UNDERGROUND
UB	UP BLAST
V	VENTILATION FAN
VA	VALVE
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VOL	VOLUME
VTR	VENT THRU ROOF
W	WATT
W/	WITH
WB	WET BULB TEMPERATURE
WE	WALL EXHAUST
WC	WATER COLUMN
WM	WATER METER
WMS	WIRE MESH SCREEN
Z	ZONE

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Landscaping Consultants:
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TEL: (218) 591-5079

ENGINEER CERTIFICATION
I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: Douglas C. Mass
Signature:
Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
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1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

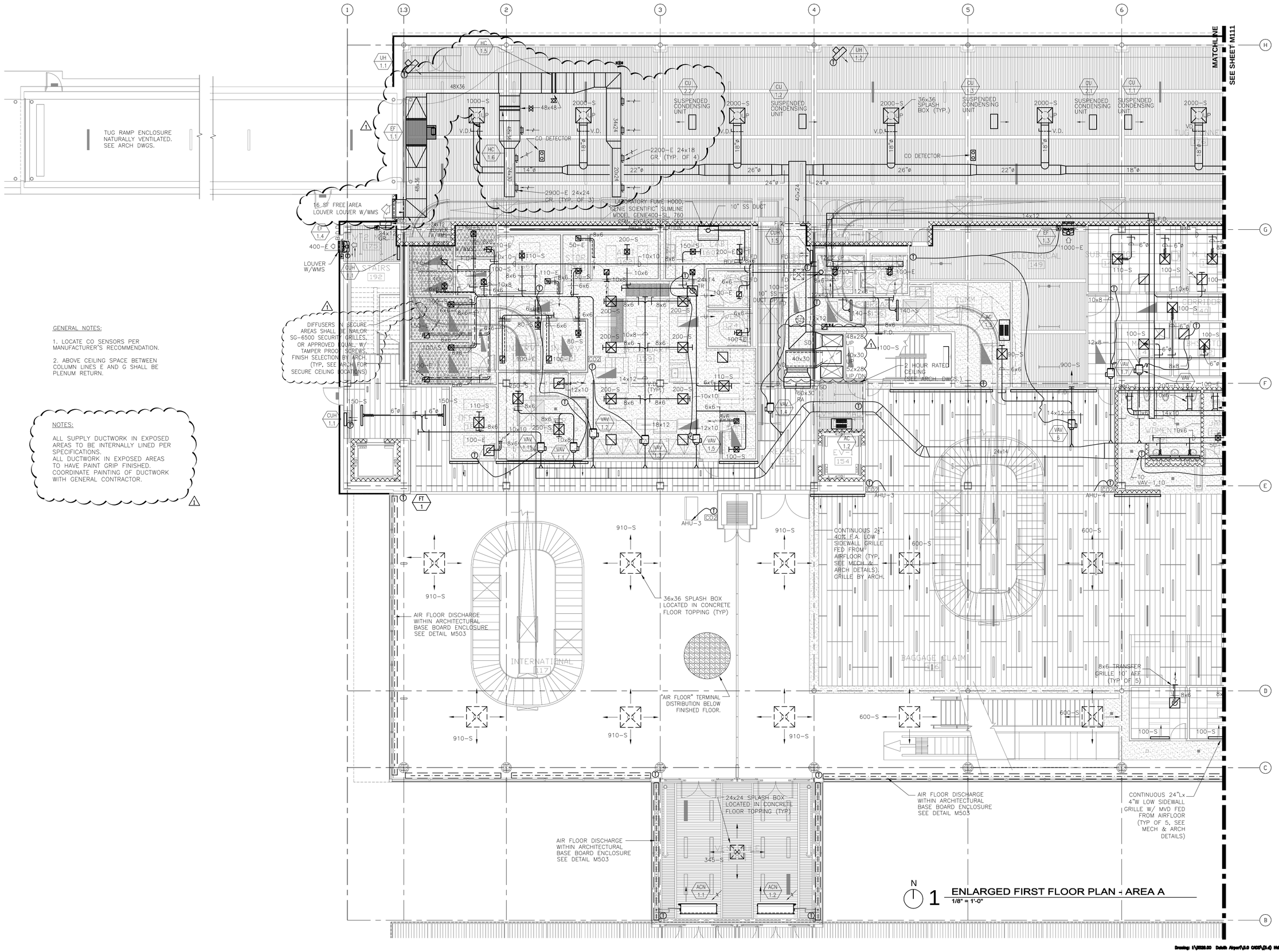
MECHANICAL SYMBOLS & ABBREVIATIONS

SHEET NUMBER

M002

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\8038.00 Duluth Airport\8.0 CADD\(8.4) MAC\Dwgs\M038_M002.dwg Plotted on: 2/25/2011 11:39 AM Plotted by: Brandt, Mark



GENERAL NOTES:

1. LOCATE CO SENSORS PER MANUFACTURER'S RECOMMENDATION.

2. ABOVE CEILING SPACE BETWEEN COLUMN LINES E AND G SHALL BE PLENUM RETURN.

NOTES:

ALL SUPPLY DUCTWORK IN EXPOSED AREAS TO BE INTERNALLY LINED PER SPECIFICATIONS.
ALL DUCTWORK IN EXPOSED AREAS TO HAVE PAINT GRIP FINISHED.
COORDINATE PAINTING OF DUCTWORK WITH GENERAL CONTRACTOR.

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218-722-1227 Fax: 218-722-1052
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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

Interior Architects:
SJA ARCHITECTS
11 E Superior Street Se 340, Duluth MN 55802
TEL: (218) 724-8578 / FAX: (218) 724-8717

Structural Engineers:
MBJ CONSULTING ENG.
501 Lake Avenue South, Suite 300, Duluth MN 55802
TEL: (218) 722-1056 / FAX: (218) 722-9306

M/E/P/FP Engineers:
COSENTINI ASSOCIATES INC.
1 South Wacker Drive, 37th Floor, Chicago IL 60606
TEL: (312) 201-7408 / FAX: (312) 201-0031

Baggage Handling Systems Consultants:
BNP ASSOCIATES INC.
101 East Ridge Office Park, Suite 103, Danbury CT 06810
TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

ENGINEER CERTIFICATION
I hereby certify that the engineerinh plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: Douglas C. Mass

Signature:

Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	8.16.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

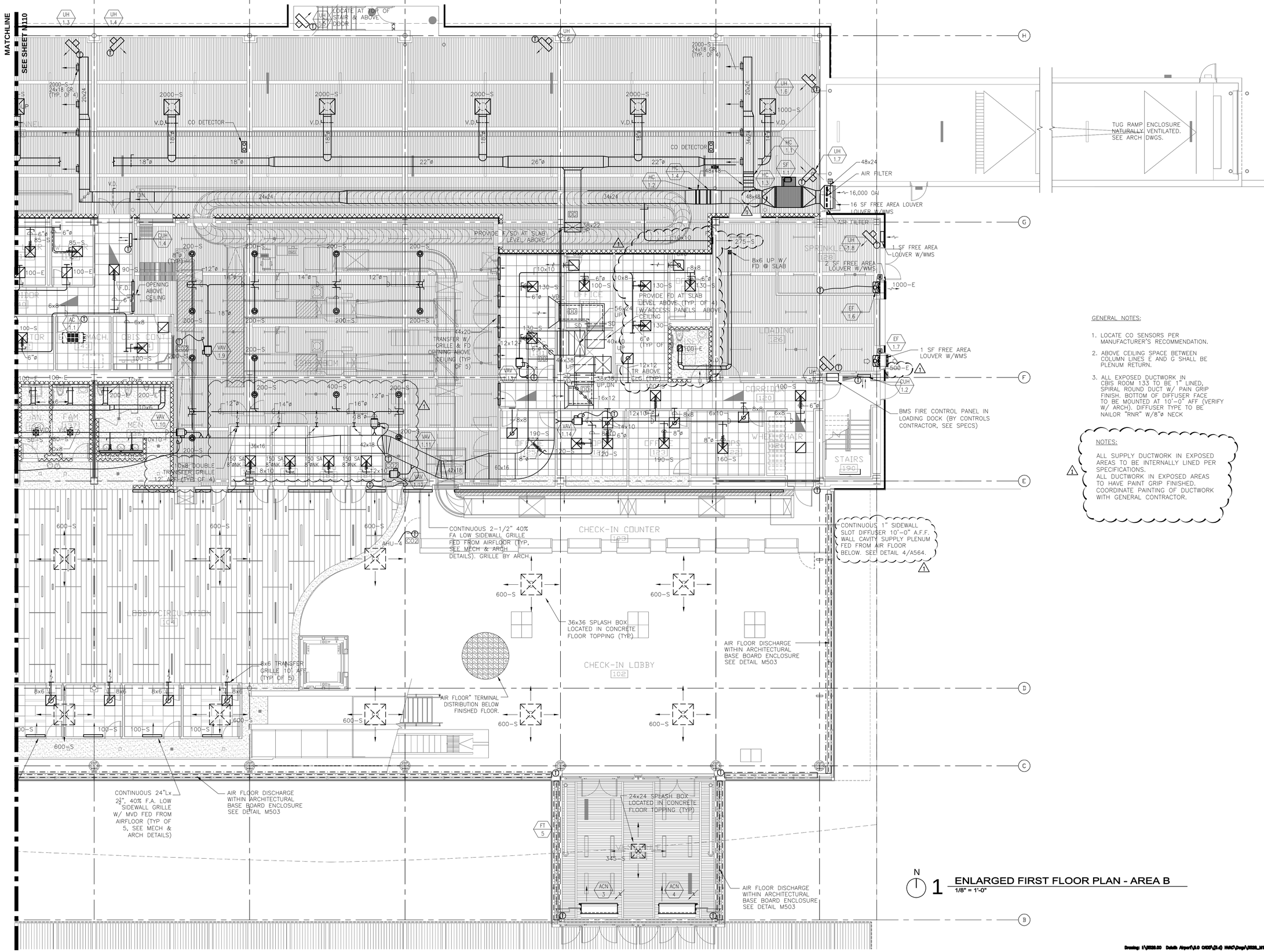
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SHEET TITLE
ENLARGED FIRST FLOOR MECHANICAL PLAN AREA A

SHEET NUMBER
M110

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2220.00 Duluth Airport\3.0 CADD\(3.4) HVAC\Dwgs\2220_M110.dwg Plotted on: 2/25/2011 11:41 AM Plotted by: Brandt, Mark



N

1 ENLARGED FIRST FLOOR PLAN - AREA B

1/8" = 1'-0"

GENERAL NOTES:

1. LOCATE CO SENSORS PER MANUFACTURER'S RECOMMENDATION.
2. ABOVE CEILING SPACE BETWEEN COLUMN LINES E AND G SHALL BE PLENUM RETURN.
3. ALL EXPOSED DUCTWORK IN CBIS ROOM 133 TO BE 1" LINED, SPIRAL ROUND DUCT W/ PAIN GRIP FINISH. BOTTOM OF DIFFUSER FACE TO BE MOUNTED AT 10'-0" AFF (VERIFY W/ ARCH). DIFFUSER TYPE TO BE NAILOR "RNR" W/8"ø NECK

NOTES:

1. ALL SUPPLY DUCTWORK IN EXPOSED AREAS TO BE INTERNALLY LINED PER SPECIFICATIONS. ALL DUCTWORK IN EXPOSED AREAS TO HAVE PAINT GRIP FINISHED. COORDINATE PAINTING OF DUCTWORK WITH GENERAL CONTRACTOR.

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	100% REVIEW	8.16.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED:	02-25-11
REVIEWED BY:	XXX
DRAWN BY:	JEH
DESIGNED BY:	MXB

AEP PROJECT NUMBER
213-1882-091

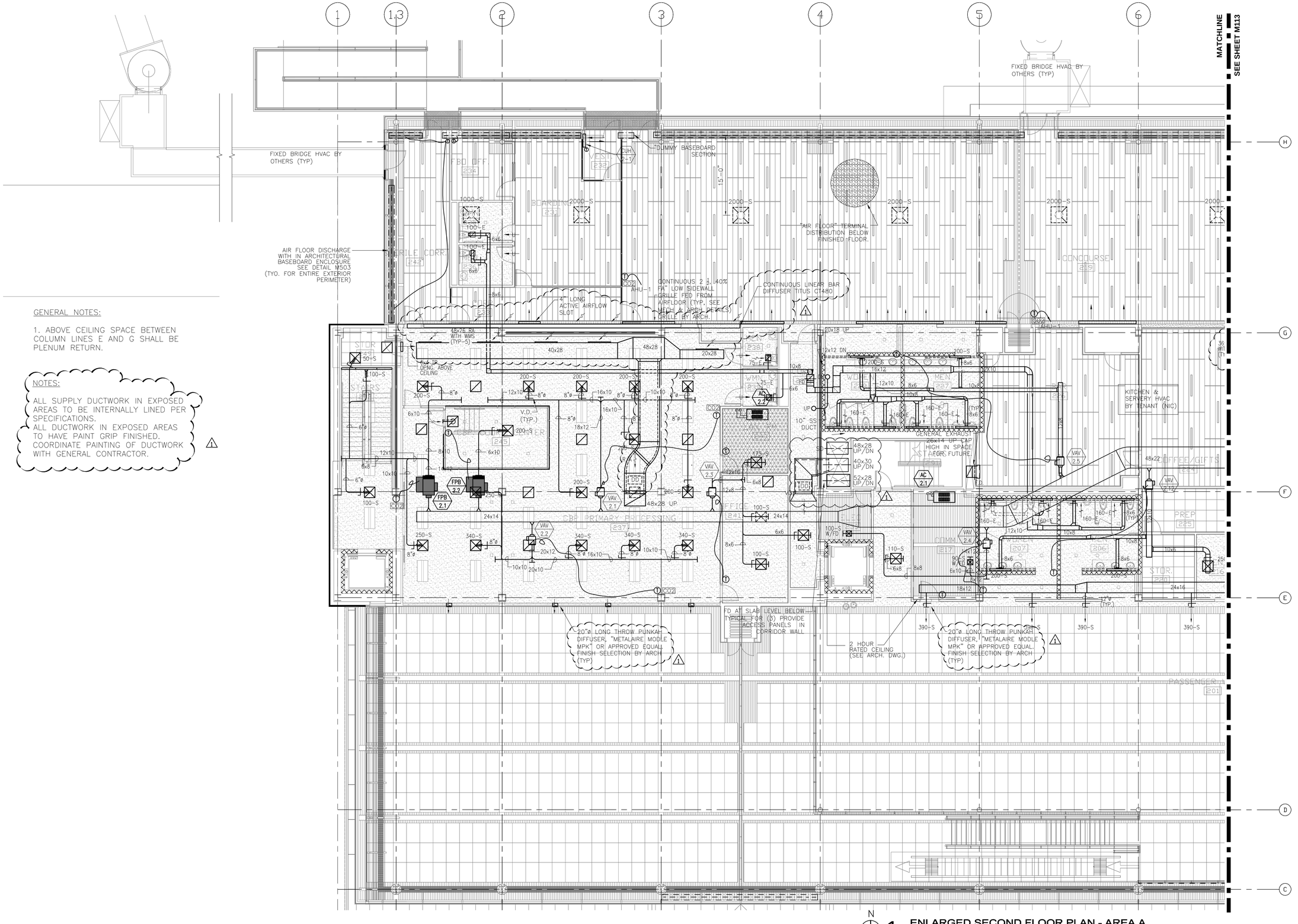
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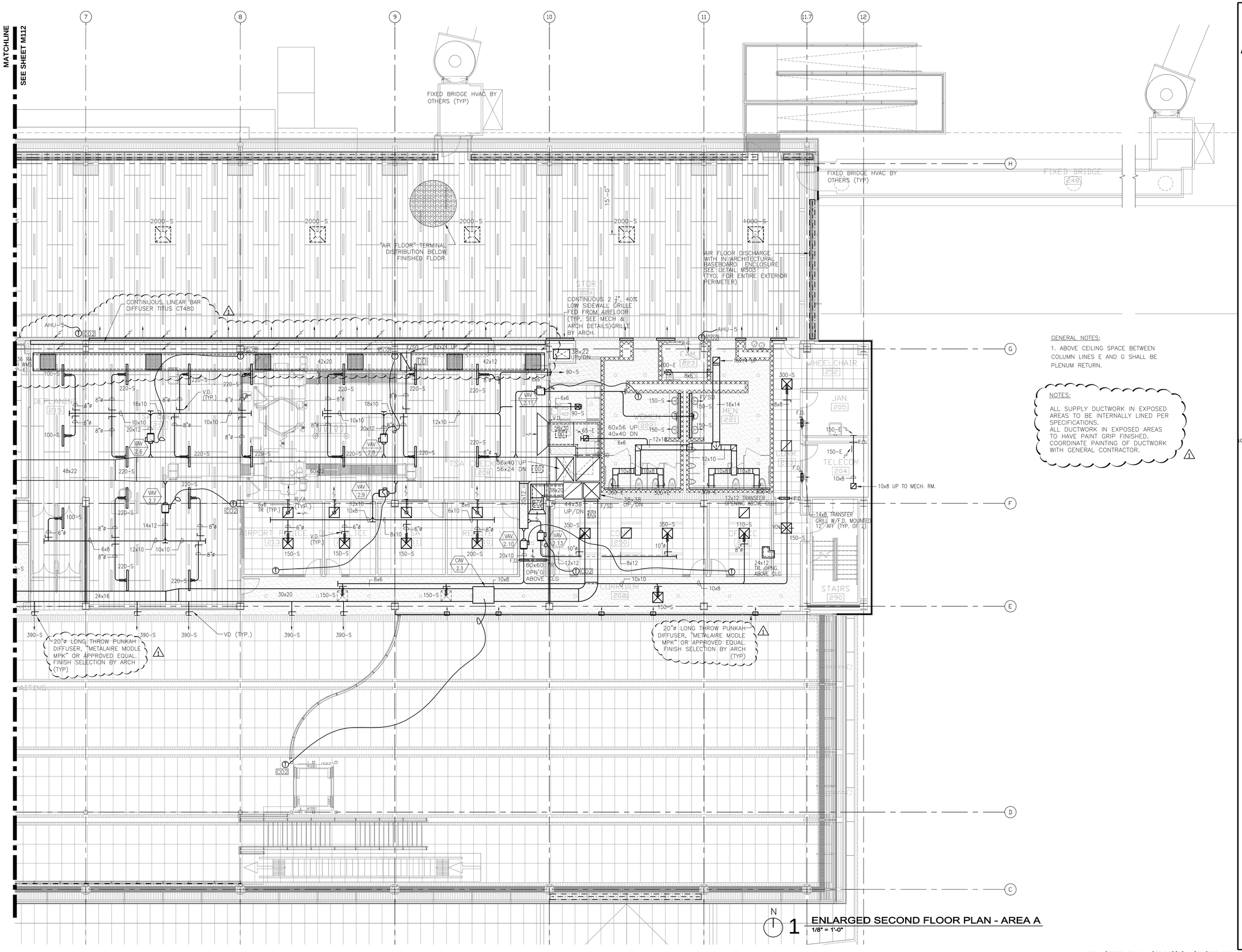
SHEET TITLE
ENLARGED FIRST FLOOR MECHANICAL PLAN AREA B

SHEET NUMBER
M111

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2038.00 Duluth Airport\8.0 CADD\(8.4) HVAC\Dwgs\2038_M111.dwg Plotted on: 2/25/2011 11:45 AM Plotted by: Brandt, Mark


1
1.3
2
3
4
5
6
MATCHLINE
SEE SHEET M113
H
G
F
E
D
C
FIXED BRIDGE HVAC BY OTHERS (TYP)
FIXED BRIDGE HVAC BY OTHERS (TYP)
AIR FLOOR DISCHARGE WITH IN ARCHITECTURAL BASEBOARD ENCLOSURE SEE DETAIL M503 (TYP. FOR ENTIRE EXTERIOR PERIMETER)
DUMMY BASEBOARD SECTION
"AIR FLOOR" TERMINAL DISTRIBUTION BELOW FINISHED FLOOR.
CONTINUOUS 2 3/4" 40% FA" LOW SIDEWALL GRILLE FED FROM AIRFLOOR (TYP. SEE MECH. & ARCH. PLANS) GRILLE BY ARCH.
4" LONG ACTIVE AIRFLOW SLOT
CONTINUOUS LINEAR BAR DIFFUSER TITUS CT480
KITCHEN & SERVERY HVAC BY TENANT (NIC)
GENERAL EXHAUST 26x14 UP CAP HIGH IN SPACE SS LARGER FUTURE
FD AT SLAB LEVEL BELOW TYPICAL FOR (3) PROVIDE ACCESS PANELS IN CORRIDOR WALL
20"ø LONG THROW PUNKAH DIFFUSER, "METALAIRE MODLE MPK" OR APPROVED EQUAL. FINISH SELECTION BY ARCH (TYP)
2 HOUR RATED CEILING (SEE ARCH. DWG.)
20"ø LONG THROW PUNKAH DIFFUSER, "METALAIRE MODLE MPK" OR APPROVED EQUAL. FINISH SELECTION BY ARCH (TYP)
FBO OFF 234
BOARDING 231
VEST 232
SECURITY CORRIDOR 242
SECURITY SCREENING 243
CBP PRIMARY PROCESSING 237
OFFICE 241
CONCOURSE 229
PASSENGER 201
MEN 238
WOMEN 239
MEN 227
WOMEN 228
MEN 207
WOMEN 206
MEN 236
WOMEN 235
STOR. 220
PREP 225
DIFFER/GIFTS 226
STORAGE 245
STAIRS
ELEV
ELEV
ELEV



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Print Name: Douglas C. Mass
Signature:
Date: 08/16/10
Reg. No.: 21067

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	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
ENLARGED SECOND FLOOR MECHANICAL PLAN AREA B

SHEET NUMBER
M113

BID PACKAGE 2A
ADDENDUM 2

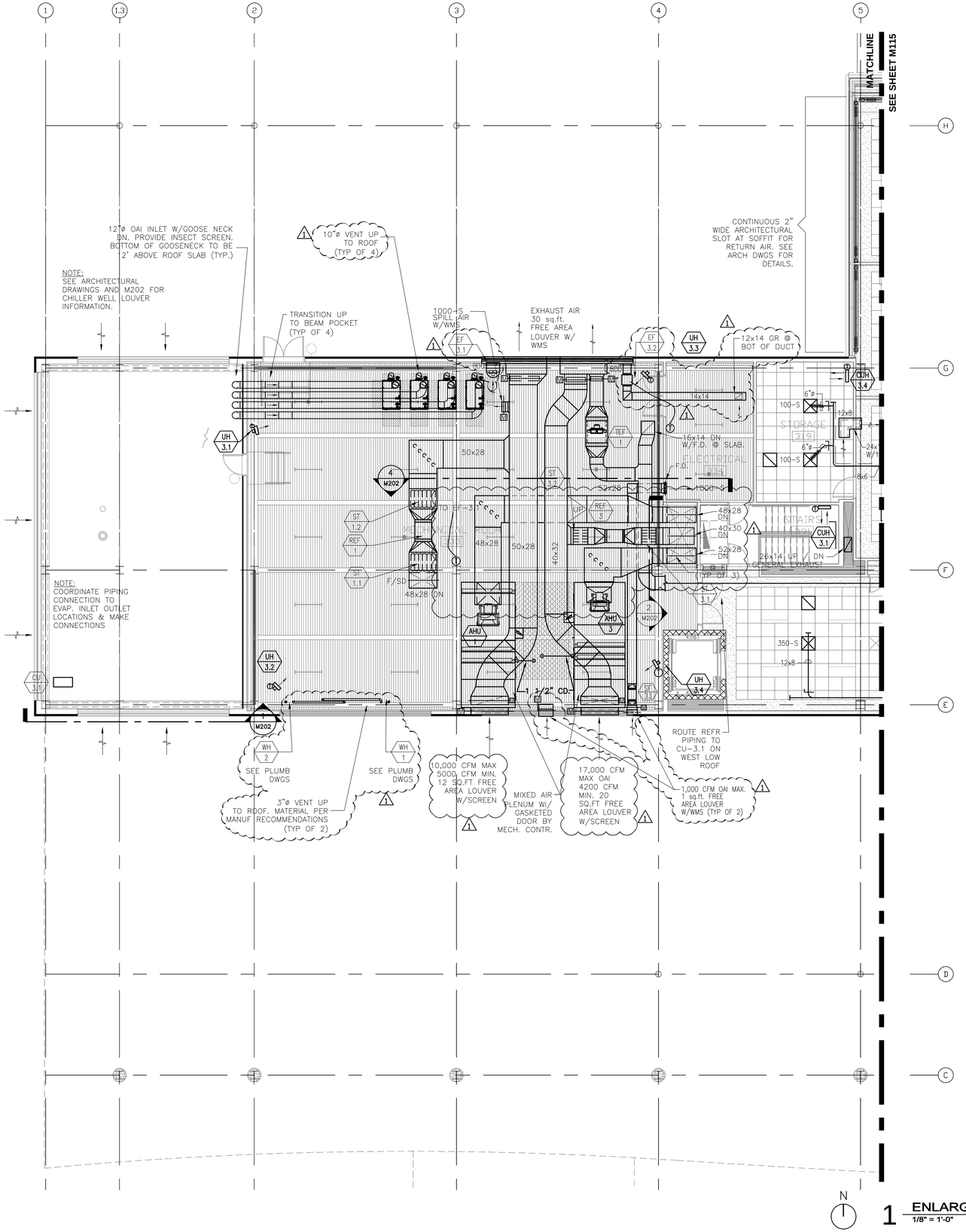
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GENERAL NOTES:

1. ABOVE CEILING SPACE BETWEEN COLUMN LINES E AND G SHALL BE PLENUM RETURN.

NOTES :

ALL SUPPLY DUCTWORK IN EXPOSED AREAS TO BE INTERNALLY LINED PER SPECIFICATIONS.
ALL DUCTWORK IN EXPOSED AREAS TO HAVE PAINT GRIP FINISHED. COORDINATE PAINTING OF DUCTWORK WITH GENERAL CONTRACTOR. (1)



1 ENLARGED THIRD LEVEL PLAN - AREA A
1/8" = 1'-0"

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NEW PASSENGER TERMINAL

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ENGINEER CERTIFICATION
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Print Name: Douglas C. Mass
Signature:
Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
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3	PERMIT REVISIONS	7.23.10
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	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: MB/JH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
ENLARGED THIRD FLOOR MECHANICAL PLAN AREA A

SHEET NUMBER
M114

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\5035.00 Duluth Airport\5.0 CADD\(5.4) HVAC\Dwgs\M35B_M114.dwg Plotted on: 2/25/2011 11:00 AM Plotted by: Brandt, Mark

MATCHLINE
SEE SHEET M114

CONTINUOUS 2" WIDE ARCHITECTURAL SLOT AT SOFFIT FOR RETURN AIR. SEE ARCH DWGS FOR DETAILS.

CONTINUOUS 2" WIDE ARCHITECTURAL SLOT AT SOFFIT FOR RETURN AIR. SEE ARCH DWGS FOR DETAILS.

GENERAL NOTES:

1. ABOVE CEILING SPACE BETWEEN COLUMN LINES E AND G SHALL BE PLENUM RETURN.

1

NOTES:

ALL SUPPLY DUCTWORK IN EXPOSED AREAS TO BE INTERNALLY LINED PER SPECIFICATIONS.
ALL DUCTWORK IN EXPOSED AREAS TO HAVE PAINT GRIP FINISHED.
COORDINATE PAINTING OF DUCTWORK WITH GENERAL CONTRACTOR.

EXHAUST AIR 70.0 sq.ft. FREE AREA LOUVER AND SCREEN.

IN-LINE EXH. FAN MOUNTED VERTICALY
16x14 DOWN W/F.D. @ SLAB

100x30 R/A DOWN TO MIXING BOX DAMPER

38,000 CFM OAI MAX. 42 sq.ft. FREE AREA LOUVER W/WMS

1,000 CFM OAI MAX. 1 sq.ft. FREE AREA LOUVER W/WMS

27,000 CFM OAI 30 sq.ft. FREE AREA LOUVER W/WMS

10x8 DN W/FD @ SLAB

EF 3.4 IN-LINE-EXH.FAN MOUNTED VERTICALLY

AT RETURN DUCT BELOW

AT OA DUCT BELOW

PROVIDE 20x12 TRANSFER GRILLE ABOVE CENTERED AT 12' AFF

N

1 ENLARGED THIRD LEVEL PLAN - AREA B
1/8" = 1'-0"

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DATE ISSUED: 02-25-11
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213-1882-091

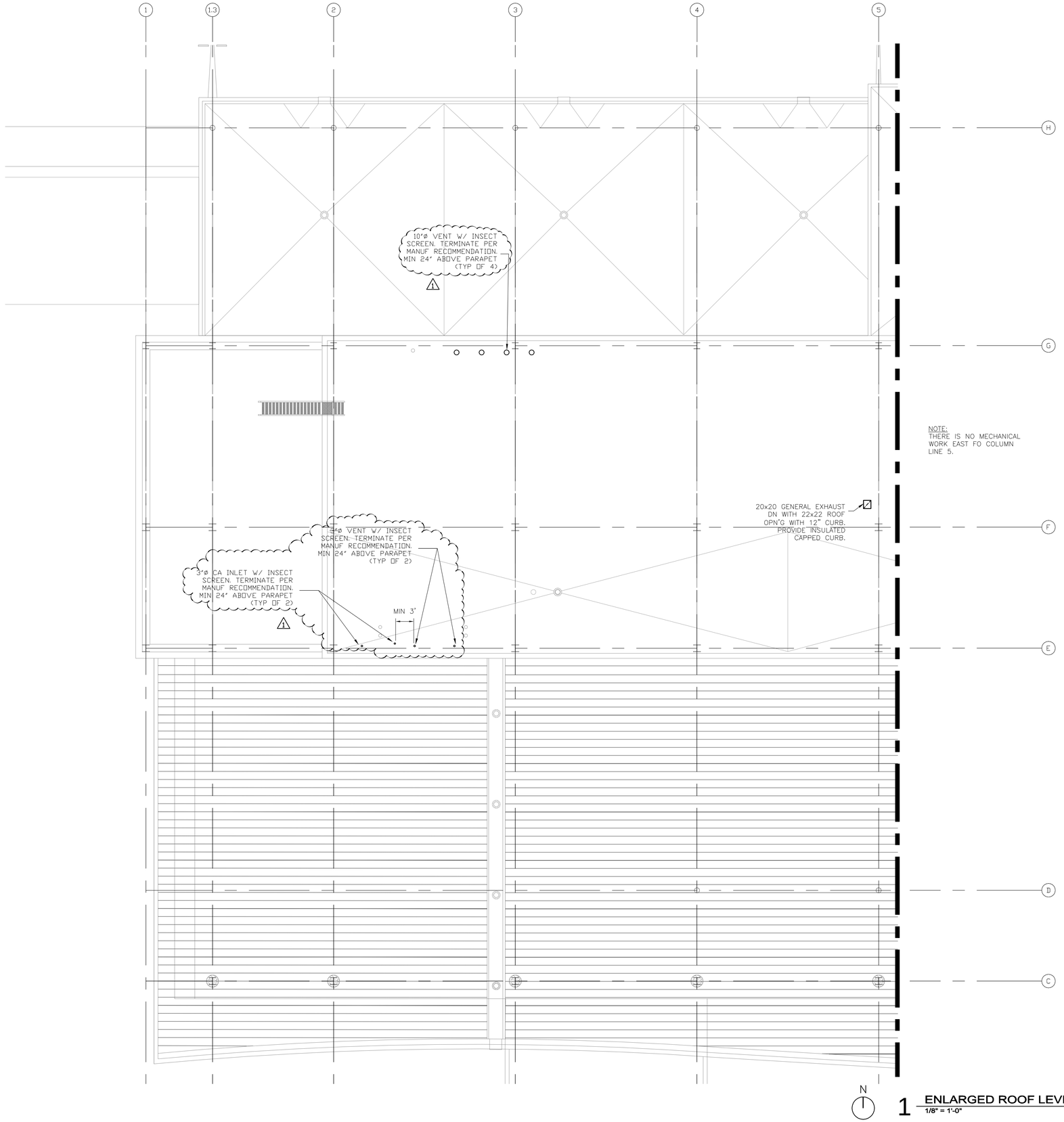
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SHEET TITLE
ENLARGED THIRD FLOOR MECHANICAL PLAN AREA B

SHEET NUMBER
M115

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\5535.00 Duluth Airport\5.0 CAD\(5.4) HVAC\Dwgs\ENLR_M115.dwg Plotted on: 2/25/2011 11:01 AM Plotted by: Brandt, Mark



1 ENLARGED ROOF LEVEL PLAN - AREA A
1/8" = 1'-0"

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	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
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DRAWN BY: MB/JH
DESIGNED BY: MXB

AEP PROJECT NUMBER
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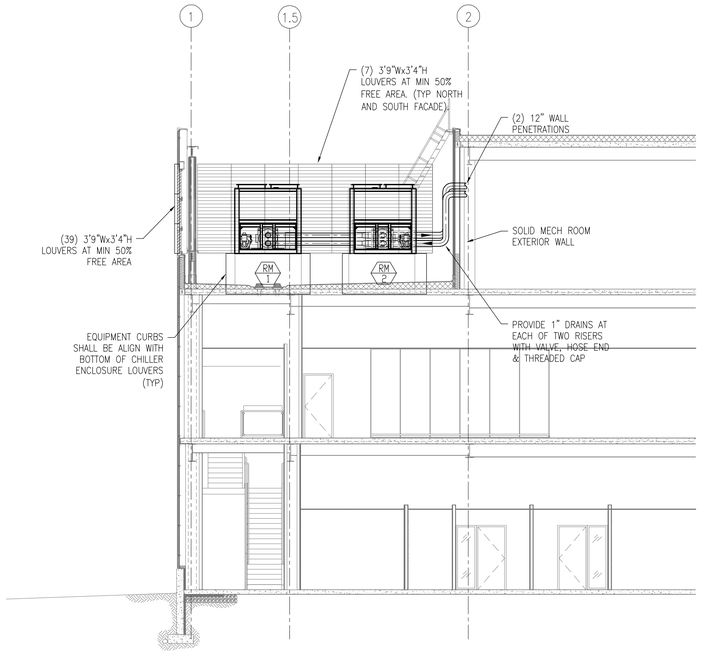
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SHEET TITLE
ENLARGED ROOF LEVEL MECHANICAL PLAN AREA A

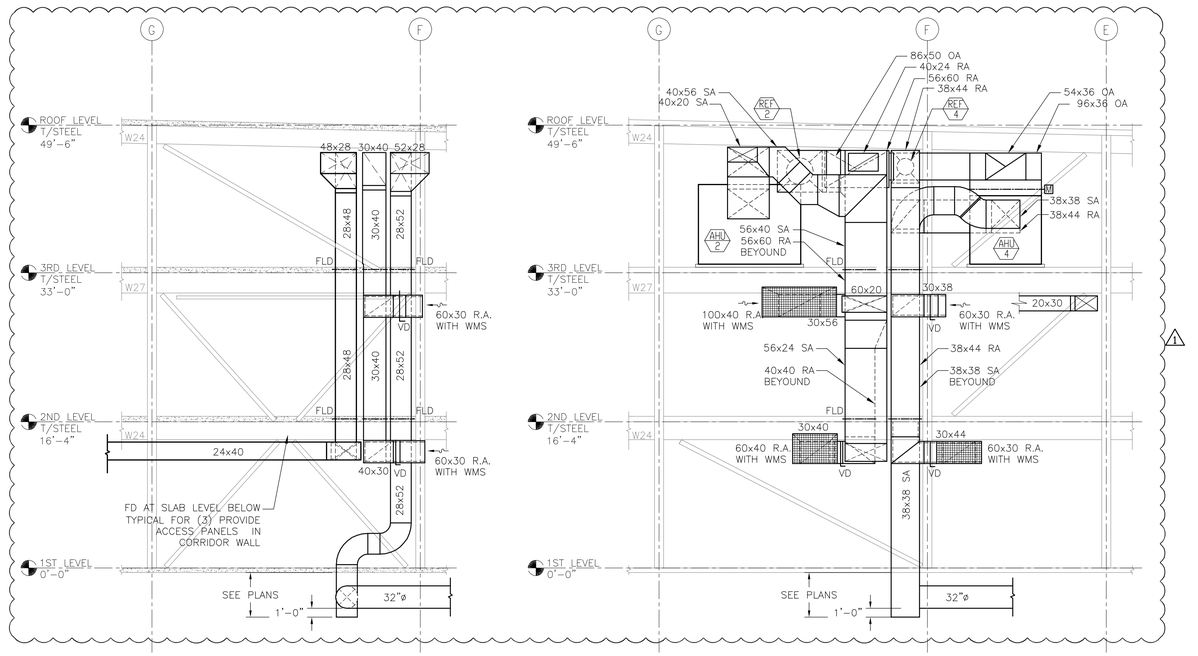
SHEET NUMBER
M116

BID PACKAGE 2A
ADDENDUM 2

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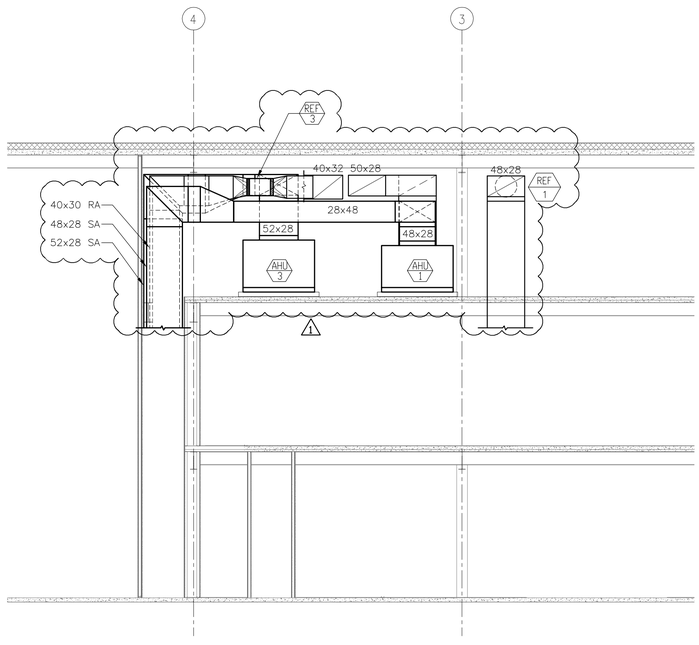


1 CHILLER WELL SOUTH ELEVATION
1/8" = 1'-0"



2 DUCTWORK RISER AT COLUMN LINE 4
1/8" = 1'-0"

3 DUCTWORK RISER AT COLUMN LINE 10
1/8" = 1'-0"



4 DUCTWORK SECTION AT EAST MECH RM
1/8" = 1'-0"

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DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: IF
DESIGNED BY: MXB

AEP PROJECT NUMBER
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SHEET TITLE

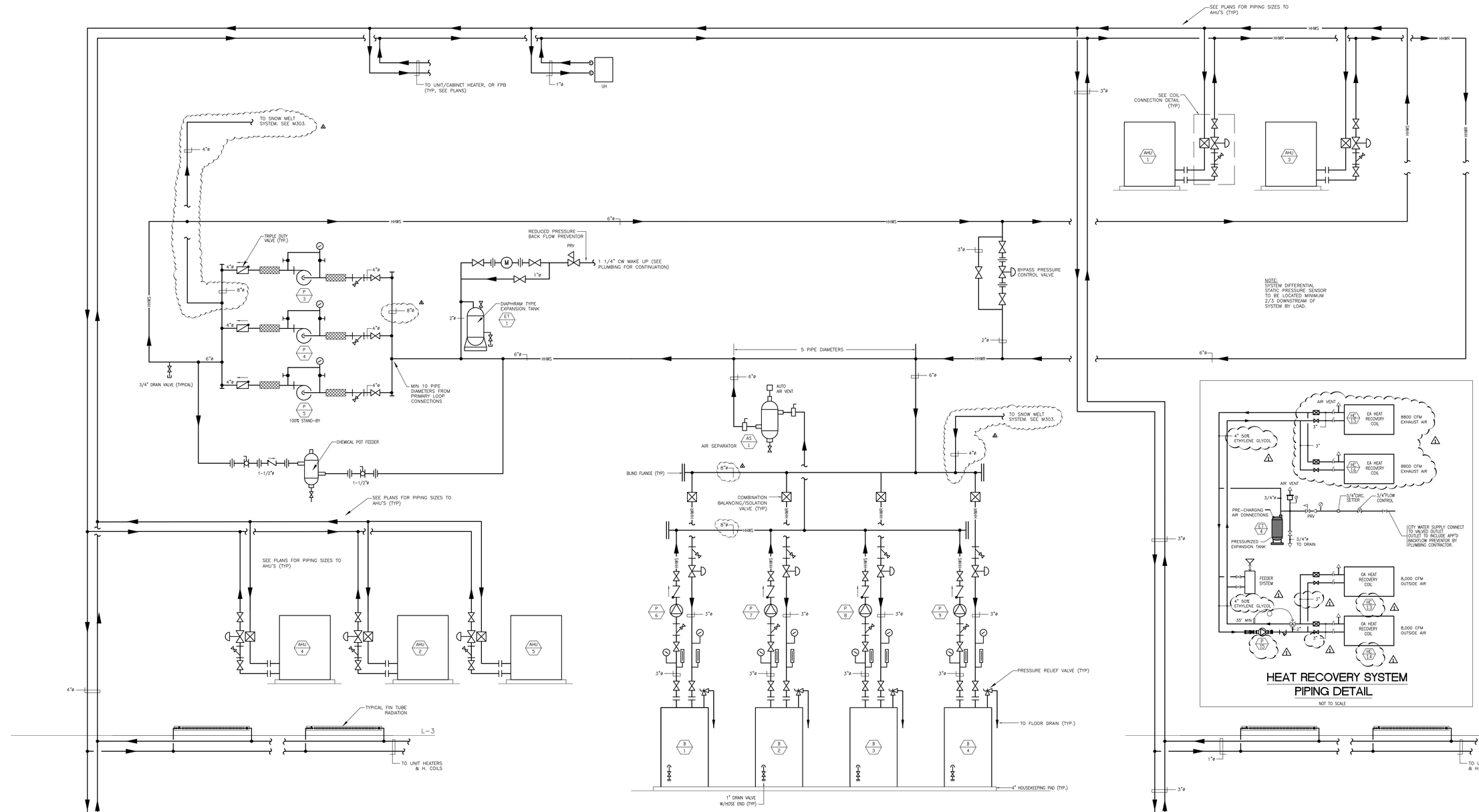
MECHANICAL SECTIONS & ELEVATIONS

SHEET NUMBER

M202

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2028.00 Duluth Airport\5.0 CADD\(5.4) HVAC\Dwgs\2028_M202.dwg Plotted on: 2/25/2011 11:02 AM Plotted by: Brandt, Mark



HEAT RECOVERY SYSTEM PIPING DETAIL

NOT TO SCALE

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4525 Airport Approach Rd, Ste A
Duluth, Minnesota 55811
218-722-1227 Fax: 218-722-1052
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DULUTH AIRPORT AUTHORITY

DULUTH
INTERNATIONAL
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DULUTH, MN

NEW PASSENGER
TERMINAL

CONSULTANTS

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TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: MXB
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

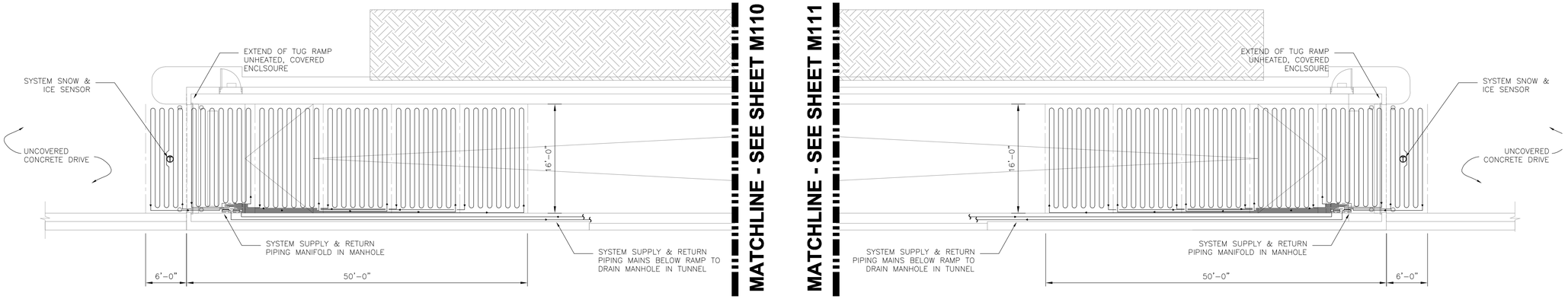
HEATING HOT WATER FLOW DIAGRAM

SHEET NUMBER

M301

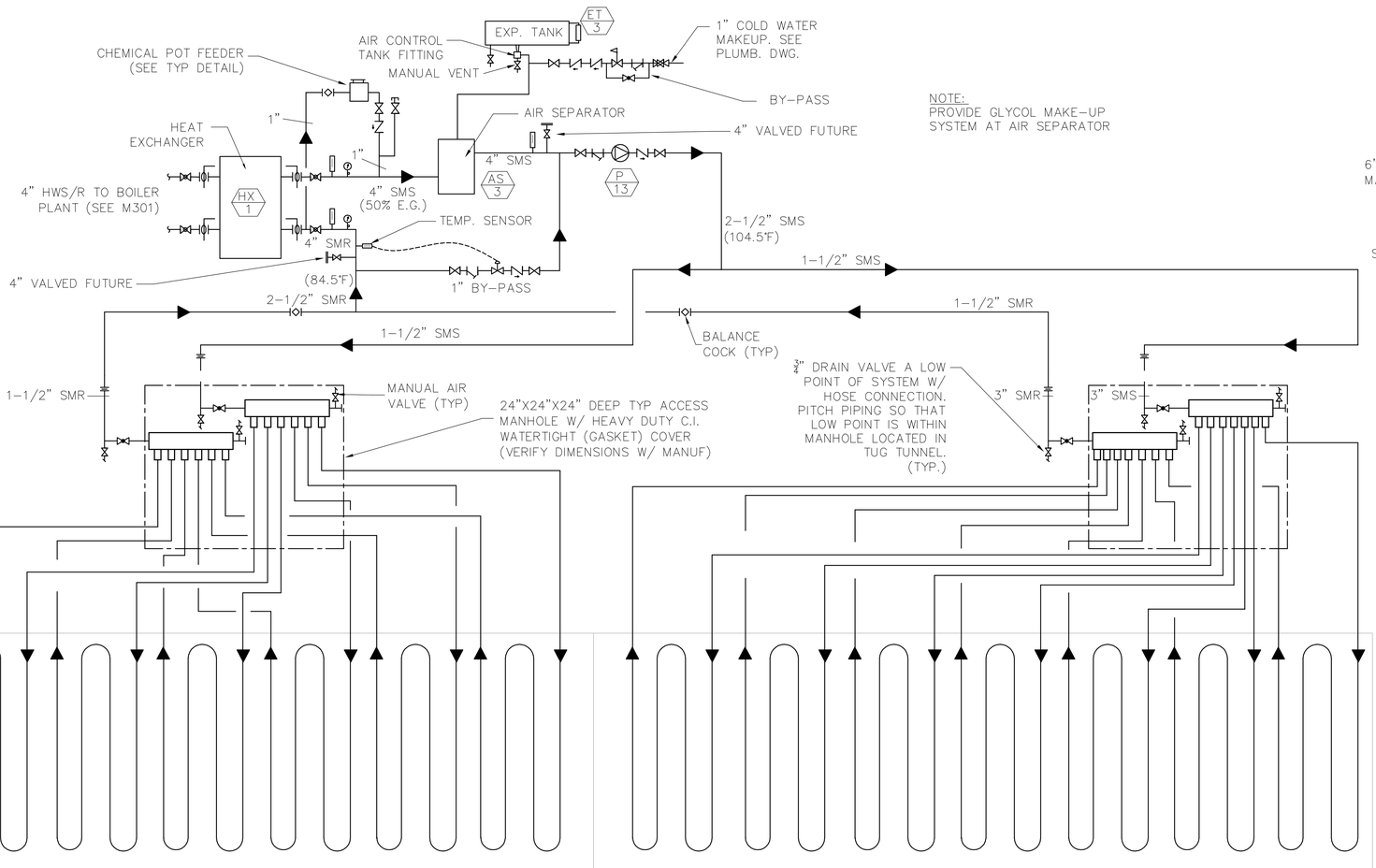
BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2538.00 Duluth Airport\5.0 CADD\(5.4) HVAC\Dwgs\2538_M301.dwg Plotted on: 2/25/2011 11:02 AM Plotted by: Brandt, Mark



N 1 **ENLARGED FIRST LEVEL TUG TUNNEL WEST**
1/8" = 1'-0"

N 2 **ENLARGED FIRST LEVEL TUG TUNNEL EAST**
1/8" = 1'-0"



NOTE:
PROVIDE GLYCOL MAKE-UP SYSTEM AT AIR SEPARATOR

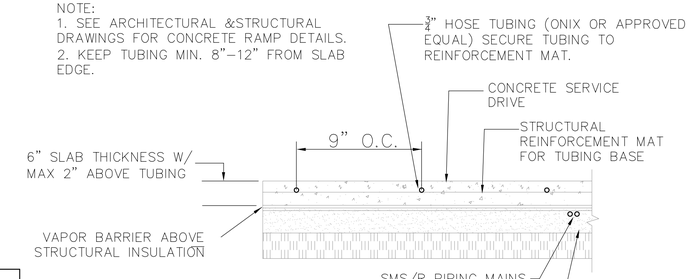
SNOW MELTING FLOW DIAGRAM
NOT TO SCALE

3 **SNOW MELT SYSTEM DIAGRAM, NOTES & DETAILS**
NO SCALE

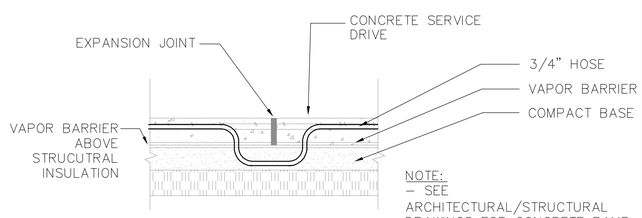
NOTES:

1. PROVIDE COMPLETE SNOW MELTING SYSTEM INCLUDING THREE ZONES, EIGHT CIRCUITS MAXIMUM PER ZONE (SEE PLANS), 9" O.C. SPACING PER CIRCUIT. PROVIDE 3/4" ONIX TUBING FOR CIRCUITS EMBEDDED IN CONCRETE SERVICE DRIVE RAMP.
2. TUBING WILL BE AS MANUFACTURED BY WATTS RADIANT, OR APPROVED EQUAL.
3. DISTRIBUTING MANIFOLDS SHALL BE REVERSE RETURN CONFIGURATION AND SHALL INCLUDE BRANCHES AND FITTINGS, MINI-BALL VALVES AT SUPPLY AND RETURN SIDE OF EACH TUBE, VENT/PURGE VALVES & TENSION CLAMPS.

NOTE:
1. SEE ARCHITECTURAL &STRUCTURAL DRAWINGS FOR CONCRETE RAMP DETAILS.
2. KEEP TUBING MIN. 8"-12" FROM SLAB EDGE.



TYP. SNOW MELTING HOSE DETAIL
NOT TO SCALE



TYP. HOSE DETAIL AT EXPANSION JOINT
NOT TO SCALE

NOTE:
- SEE ARCHITECTURAL/STRUCTURAL DRAWINGS FOR CONCRETE RAMP DETAILS.
- 12" LONG SLEEVE THROUGH EXPANSION JOINT IS ACCEPTABLE UPON REVIEW AND APPROVAL BY STRUCTURAL ENGINEER.

4. PROVIDE 40% ETHYLENE GLYCOL BY VOLUME IN SNOW MELTING HEATING WATER SYSTEM.
5. PROVIDE VENT/PURGE ASSEMBLY W/ HOSE CONNECTIONS ON RETURN SIDE MANIFOLDS. RETURN MANIFOLDS SHALL BE MOUNTED HIGHER THAN SUPPLY MANIFOLD FOR SAME ZONE.
6. THE SYSTEM SHALL BE DESIGNED AND TESTED FOR LEAKS, AT 100 PSIG MINIMUM PRESSURE.
7. SECURE & SUPPORT PIPING, 6'-0" ON CENTERS, & PITCH FOR DRAINAGE.
8. SLAB TEMPERATURE SENSORS SHALL BE PROVIDED FOR EACH ZONE. SENSOR & CONTROLLER TO BE PROVIDED BY TEKMAR OR APPROVED EQUAL. CONTROLS SHAL INTEGRATE BOILER & PUMP PACKAGES. ROUTE 3/4" PVC CONDUIT IN TOPPING SLAB FOR EACH SENSOR TO CONTROL PANEL IN BOILER ROOM. CONDUIT SHALL BE ROUTED FROM SENORS TO MANIFOLD MANHOLE FOR EACH ZONE. ROUTE CONDUIT TRUNK IN TOPPING SLAB AT SIDE OF RAMP TO MAIN CONTROLLER. LOCATE SENSOR APPROXIMATELY 2 FT. OFF WEST CURB OR PER MANUFACTURERS RECOMMENDATION.
9. BURIED SMS/R MAIN PIPING BELOW RAMP SHALL BE PRE-INSULATED, FLEXIBLE PEX PIPING (WATTS RADIANT R-FLEX OR APPROVED EQUAL). INSULATION SHALL BE CELLULAR FOAM MINIMUM 1" THICK, U=0.025 BTU/HR SQ.FT °F. JACKET SHALL BE CORRUGATED, DOUBLEWALL HDPE. PIPING SHALL HAVE OXYGEN BARRIER COATING. PROVIDE ALL FITTINGS BY SAME MANUFACTURER.

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Print Name: Douglas C. Mass
Signature:
Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
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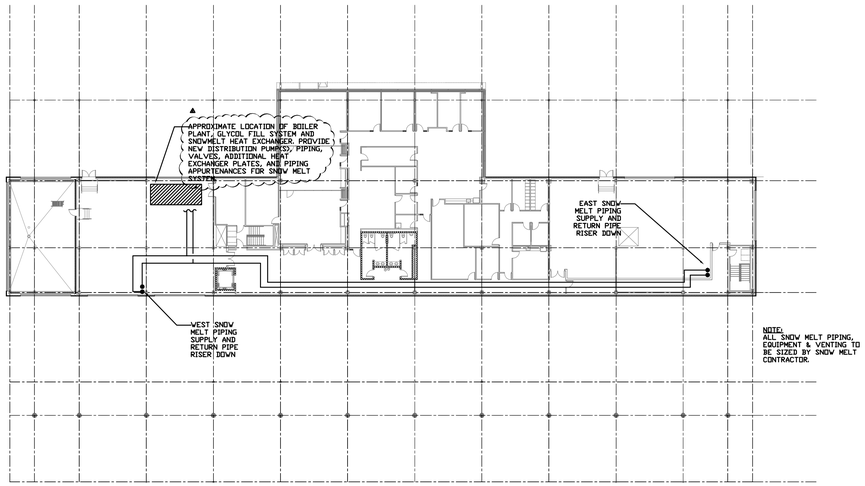
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SHEET TITLE
TUG TUNNEL RAMP SNOW MELT PLAN, FLOW DIAGRAM & DETAILS

SHEET NUMBER
1 M303

BID PACKAGE 2A
ADDENDUM 2

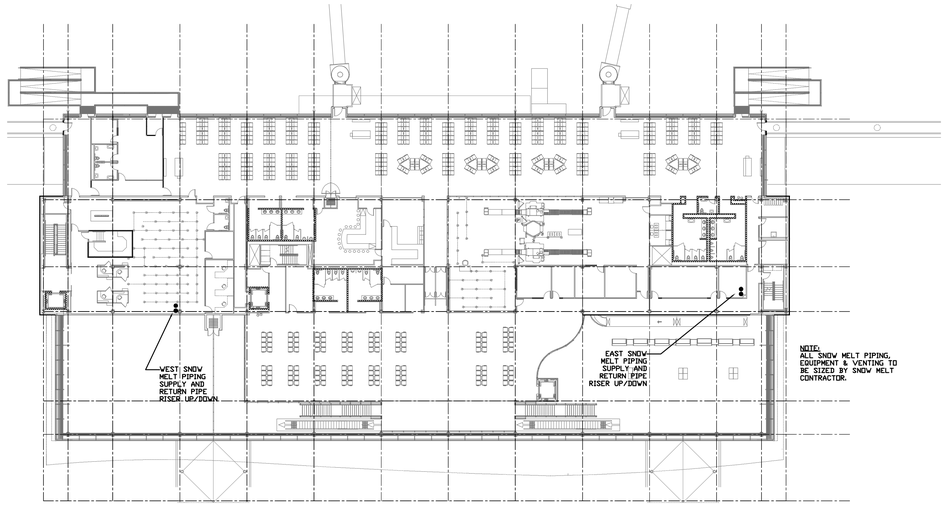
Drawing: I:\2038.00 Duluth Airport\5.0 CADD\(5.4) HVAC\Dwgs\M303_M303.dwg Plotted on: 2/25/2011 11:02 AM Plotted by: Brandt, Mark



N

3 THIRD FLOOR PLAN

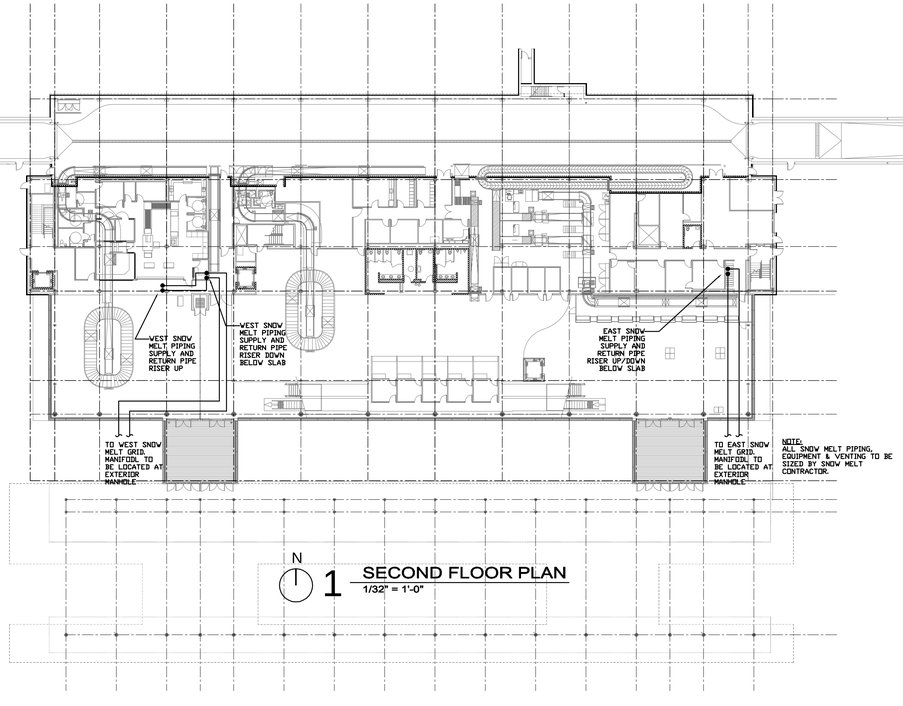
1/32" = 1'-0"



N

2 SECOND FLOOR PLAN

1/32" = 1'-0"



N

1 SECOND FLOOR PLAN

1/32" = 1'-0"

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Reg. No.: 21067

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3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
2	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: MXB
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

LANDSIDE SNOW MELT SYSTEM SCHEMATIC INTERIOR PIPING ROUTING DIAGRAM

SHEET NUMBER

M303A

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2008.00 Duluth Airport\8.0 CADD\[8.4] HVAC\Dwgs\M303_M303A.dwg Plotted on: 2/25/2011 11:03 AM Plotted by: Brandt, Mark

AIR HANDLING UNIT UNIT SCHEDULE

UNIT NO.	SERVICE	LOCATION	FAN DATA								OUTSIDE AIR				COOLING COIL DATA											HEATING COIL DATA										FILTERS									Volts/Ph/Hz	MANUF & MODEL NO.	REMARKS
			CFM	SP (IN W.G.)		RPM	FAN TYPE	MOTOR DATA			CFM	TEMP (°F)			AIR TEMP (°F)				TOTAL MBH	SENS. MBH	WATER TEMP. (°F)		GPM	WORK PRESS (PSIG)	FACE AREA (SF)	MAX FACE VELOC. (FPM)	MAX. P.D.		AIR TEMP (°F)		TOTAL MBH	WATER TEMP. (°F)		GPM	WORK PRESS (PSIG)	FACE AREA (SF)	MAX FACE VELOC. (FPM)	MAX. P.D.		PRE-FILTER				FINAL						
				EXT.	TOT.			RPM	BHP	HP		HEATING	COOLING		ENT		LVG				ENT	LVG							ENT	LVG									TYPE	NO.	SIZE EACH FILTER	MID-LIFE P.D. (IN)	TYPE	NO.	SIZE EACH FILTER	MID-LIFE P.D. (IN)			
												DB	DB	WB	DB	WB	DB	WB			ENT	LVG			AIR (IN)	WTR (FT)	DB	DB		ENT	LVG			AIR (IN)	WTR (FT)											
AHU-1	AIRSIDE WEST	333 MECH RM	10,000	2.0		1336	PLUG	1200	13.172	15	5,000	-21	81	67	83.0	67.0	52.5	52.1	479.9	360.8	42	58	59.78	150	29.01	550	0.60	12.4	22.5	120.0	1,053.0	180	100	75.1	150	27.00	550	0.33	4.28	PLEATED MERV-8	-	-		ELECT MERV-13	-			460/3/60	TRANE PERFORMANCE CLIMATECHANGER	SEE BELOW
AHU-2	CORE	304 MECH RM	38,000	3.5		760	PLUG	1800	56.391	60	15,000	-21	81	67	79.2	64.6	52.5	52.2	1,464.3	1,121.7	42	58	182.4	150	78.75	550	0.71	9.0	31.7	62.0	679.9	180	100	45	150	60.38	550	0.13	0.08	PLEATED MERV-8	-	-		ELECT MERV-13	-			460/3/60	TRANE PERFORMANCE CLIMATECHANGER	SEE BELOW
AHU-3	LANDSIDE WEST	333 MECH RM 4	17,000	2.5		1304	PLUG	1200	22.045	20	4,200	-21	81	67	84.0	67.0	52.5	52.2	622.2	473.1	42	58	77.51	150	34.14	550	0.74	16.7	44.5	120.0	1,405.5	180	100	93.6	150	34.14	550	0.33	4.28	PLEATED MERV-8	-	-		ELECT MERV-13	-			460/3/60	TRANE PERFORMANCE CLIMATECHANGER	SEE BELOW
AHU-4	LANDSIDE EAST	304 MECH RM	17,000	2.5		1304	PLUG	1200	22.045	20	5,400	-21	81	67	83.7	67.0	52.5	52.2	622.2	473.1	42	58	77.51	150	34.14	550	0.74	16.7	38.4	120.0	1,405.5	180	100	93.6	150	34.14	550	0.33	4.28	PLEATED MERV-8	-	-		ELECT MERV-13	-			460/3/60	TRANE PERFORMANCE CLIMATECHANGER	SEE BELOW
AHU-5	AIRSIDE EAST	304 MECH RM	10,000	2.0		1336	PLUG	1200	13.172	15	5,000	-21	81	67	83.0	67.0	52.5	52.1	479.9	360.8	42	58	59.78	150	29.01	550	0.60	12.4	22.5	120.0	1,053.0	180	100	75.1	150	27.00	550	0.33	4.28	PLEATED MERV-8	-	-		ELECT MERV-13	-			460/3/60	TRANE PERFORMANCE CLIMATECHANGER	SEE BELOW

1. PROVIDE VFD WITH INTEGRAL DISCONNECT SWITCH.
2. FINAL FILTER SHALL BE DYNAMIC AIR TYPE xxx ANGLE FILTER AND BE LOCATED UPSTREAM OF AIR COILS.
3. PROVIDE AUXILIARY DRAIN PAN PIPING CONNECTION WITH DRAIN.

FAN SCHEDULE

FAN NO.	LOCATION	SERVICE	CFM	STATIC PRESS. IN.W.G.	TYPE	DRIVE	RPM	BHP	MOTOR HP	VOLT/PH/HZ	MFR.	MODEL NO.	REMARKS
SF-1.1	TUG TUNNEL	TUG TUNNEL	16,000	1.50	INLINE CENT	BELT	992	8.47	10	480/3/60	TWIN CITY	330 TSL	1, 2, 3, 4, 5 W/ VFD, SIDE MOTOR MOUNT
EF-1.1	TUG TUNNEL	TUG TUNNEL	17,600	0.50	INLINE CENT	BELT	934	5.7	7 1/2	480/3/60	TWIN CITY	330 TSL	1, 2, 3, 4, 5 W/ VFD, SIDE MOTOR MOUNT
EF-1.2	NOT USED												
EF-1.3	1ST FL ELECTRICAL	1ST FL ELECTRICAL	1,000	0.25	PROP	DIRECT	1650	-	1/8	120/1/60	TWIN CITY	122 TCPE	1, 2, 6
EF-1.4	WEST ELEV MACH ROOM	WEST ELEV MACH ROOM	400	0.25	PROP	DIRECT	1350	-	1/8	120/1/60	TWIN CITY	100A TCPE	1, 2, 6
EF-1.5	NOT USED												
EF-1.6	SPRINKLER 126	SPRINKLER 126	1,000	0.25	PROP	DIRECT	1650	-	1/8	120/1/60	TWIN CITY	122 TCPE	1, 2, 6
EF-1.7	LOADING 126	LOADING 126 1	500	0.25	PROP	DIRECT	1650 1	- 1	1/8	120/1/60	TWIN CITY 1	102A TCPE	1, 2, 6
EF-3.1	WEST MECH RM	WEST MECH RM	1,000	0.25	PROP	DIRECT	1650	-	1/8	120/1/60	TWIN CITY	122 TCPE	1, 2, 6
EF-3.2	ELECT 334	ELECT 334	1,000	0.25	INLINE CENT	BELT	1275	-	1/4	120/1/60	TWIN CITY	100A BSI	1, 2
EF-3.3	EAST MECH RM	EAST MECH RM	1,000	0.25	PROP	DIRECT	1650	-	1/8	120/1/60	TWIN CITY	122 TCPE	1, 2, 6
EF-3.4	EAST MECH RM	2ND FL ELEC & TELECOM	300	0.50	INLINE CENT	BELT	1250	0.05	1/4	120/1/60	TWIN CITY	080A BSI	1, 2
TEF-1	WEST MECH RM	WEST TOILET ROOMS	2,500	1.00	INLINE CENT	BELT	1799	1.13	1 1/2	480/3/60	TWIN CITY	150 TSL	1, 2
TEF-2	EAST MECH RM	EAST TOILET ROOMS	2,500	1.00	INLINE CENT	BELT	1799	1.13	1 1/2	480/3/60	TWIN CITY	150 TSL	1, 2
REF-1	WEST MECH RM	AHU-1	9,000	1.50	INLINE CENT	BELT	1020	5.4	7 1/2	480/3/60	TWIN CITY	300 TSL	1, 2 W/ VFD
REF-2	EAST MECH RM	AHU-2	32,000	2.00	INLINE CENT	BELT	690	20	25	480/3/60	TWIN CITY	490 TSL	1, 2 W/ VFD
REF-3	WEST MECH RM	AHU-3	15,000	2.00	INLINE CENT	BELT	850	8.9	10	480/3/60	TWIN CITY	365 TSL	1, 2 W/ VFD
REF-4	EAST MECH RM	AHU-4	15,000	2.00	INLINE CENT	BELT	850	8.9	10	480/3/60	TWIN CITY	365 TSL	1, 2 W/ VFD
REF-5	EAST MECH RM	AHU-5	9,000	1.50	INLINE CENT	BELT	1020	5.4	7 1/2	480/3/60	TWIN CITY	300 TSL	1, 2 W/ VFD

1. PROVIDE COMBINATION STARTER/DISCONNECT.
2. PROVIDE OSHA BELT & MOTOR GUARD.
3. ALL VFD'S TO HAVE NEMA 4X ENCLOSURE WITH VENT FAN AND STRIP HEATER FOR COLD START
4. CLAM SHELL DESIGN.
5. PROVIDE EXPLOSION PROOF MOTOR.
6. PROVIDE WALL SLEEVE WITH INTEGRAL BACKDRAFT DAMPER (U.N.O W/ MOTORIZED DAMPER ON DRAWINGS)

FAN POWERED TERMINAL UNIT SCHEDULE

TAG	UNIT SIZE-INLET DIAMETER (INCHES)	AIRFLOW RANGE (CFM)	PRIMARY AIR MINIMUM (CFM)	PRIMARY AIR MAXIMUM (CFM)	HOT WATER HEATING COIL			FAN								MANUFACTURER AND MODEL NUMBER	REMARKS
					MBH	GPM	P.D. (FT W.C.)	FAN CFM COOLING MINIMUM	FAN CFM COOLING MAXIMUM	FAN CFM HEATING	ESP (IN.)	RPM	HP	ELECT DATA VOLT/PH	ELECT DATA FLA		
SECOND FLOOR																	
FPB-2.1	3 - 10"	200-1100	180	700	17	1	1.25	180	700	700	0.3	1750	1/2	277/1	3.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-2.2	1 - 8"	100-475	110	400	12	0.5	1.0	110	200	200	0.3	1750	1/3	277/1	1.9	NAILOR 35 SWST	DDC W/ ECM MOTOR
1					THIRD FLOOR					1							
FPB-3.1	5 - 14"	500-2000	360	1800	48	3.5	1.5	1400	2220	1900	0.38	1750	3/4	277/1	5.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-3.2	5 - 14"	500-2000	375	1300	22	1.5	0.35	500	1300	730	0.38	1750	3/4	277/1	5.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-3.3	5 - 12"	500-2000	300	1470	31	3	1.5	500	1125	1200	0.36	1750	3/4	277/1	5.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-3.4	3 - 10"	200-1100	400	820	21	1.5	0.35	400	820	660	0.36	1750	3/4	277/1	5.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-3.5	5 - 12"	500-2000	165	1500	19	1.5	0.35	500	1470	740	0.38	1750	3/4	277/1	5.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-3.6	3 - 10"	200-1100	200	550	17	1	1.25	200	890	630	0.36	1750	1/2	277/1	3.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-3.7	3 - 10"	200-1100	200	810	21	2	0.7 1	600	810	810	0.38	1750	3/4	277/1	5.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-3.8	5 - 14"	500-2000	825	1850	43	3.5	1.5	825	1850	1400	0.38	1750	3/4	277/1	5.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-3.9	3 - 10"	200-1100	300	690	16	1	1.25	300	880	500	0.36	1750	1/2	277/1	3.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-3.10	3 - 10"	200-1100	400	800	21	1.5	0.35	400	800	660	0.36	1750	3/4	277/1	5.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-3.11	3 - 8"	200-1100	200	600	9	1.5	0.35	200	600	280	0.36	1750	3/4	277/1	5.1	NAILOR 35 SWST	DDC W/ ECM MOTOR
FPB-3.12	3 - 8"	200-1100	200	400	9	1.5	0.35	200	400	280	0.36	1750	3/4	277/1	5.1	NAILOR 35 SWST	DDC W/ ECM MOTOR

1. ALL FPB W/ PRIMARY AIR MAXIMUM OVER 2000 CFM SHALL HAVE PERFORATED, DOUBLE-WALL HOUSING.
2. PROVIDE PLENUM RETURN INLET SMOKE DETECTORS FOR ALL FPB'S W/ PRIMARY AIR MAXIMUM OVER 2000 CFM. DETECTOR SHALL BE HARDWIRED TOFAN TO SHUT DOWN UPON DETECTION AND ALARM BMS.

VAV TERMINAL UNIT SCHEDULE

TAG	INLET DIAM. (IN.)	CFM			HEATING CAPACITY			MANUFACTURER & MODEL	REMARKS
		MAXIMUM CAPACITY	MAXIMUM SETTING	MINIMUM SETTING	MBH	GPM	P.D. (FT W.G.)		
FIRST FLOOR									
VAV-1.1	8	1000	500 1	50	-	-	-	NAILOR 3001	
VAV-1.2	8	1000	770	80	-	-	-	NAILOR 3001	
VAV-1.3	12	2185	1200	100	-	-	-	NAILOR 3001	
VAV-1.4	8	710	480	50	-	-	-	NAILOR 3001	
VAV-1.5	8	1000	560	60	-	-	-	NAILOR 3001	
VAV-1.6	9	1300	990	100	-	-	-	NAILOR 3001	
VAV-1.7	7	710	380	50	-	-	-	NAILOR 3001	
VAV-1.8	8	710	490	50	-	-	-	NAILOR 3001	
VAV-1.9	12	2185	1600	200	-	-	-	NAILOR 3001	
VAV-1.10	8	1000	570	60	-	-	-	NAILOR 3001	
VAV-1.11	8	2185	1600	200	-	-	-	NAILOR 3001	
VAV-1.12	8	1000	600 1	60	-	-	-	NAILOR 3001	
VAV-1.13	8	1000	750	125	-	-	-	NAILOR 3001	
VAV-1.14	9	1300	980	100	-	-	-	NAILOR 3001	
VAV-1.15	7	710	410	50	-	-	-	NAILOR 3001	
SECOND FLOOR									
VAV-2.1	12	2185	1400	100	-	-	-	NAILOR 3001	
VAV-2.2	12	2185	1610	200	-	-	-	NAILOR 3001	
VAV-2.3	8	710	475	50	-	-	-	NAILOR 3001	
VAV-2.4	7	710	300	50	-	-	-	NAILOR 3001	
VAV-2.5	7	710	400	40	-	-	-	NAILOR 3001	
VAV-2.6	12	2185	1520	200	-	-	-	NAILOR 3001	
VAV-2.7	9	1300	980	50	-	-	-	NAILOR 3001	
VAV-2.8	12	2185	1500	200	-	-	-	NAILOR 3001	
VAV-2.9	8	1000	650	70	-	-	-	NAILOR 3001	
VAV-2.10	9	1300	1010	100	-	-	-	NAILOR 3001	
VAV-2.11	8	1000	600	60	-	-	-	NAILOR 3001	
VAV-2.12	8	1000	650	70	-	-	-	NAILOR 3001	
VAV-2.13	8	1000	700	70	-	-	-	NAILOR 3001	

NOTES:
1. ALL UNIT SHALL BE DDC CONTROLLED.
2. MINIMUM CFM SETTING SHALL BE SCHEDULED VALUE OR VAV BOX MINIMUM CAPACITY, WHICHEVER IS GREATER.

CAV TERMINAL UNIT SCHEDULE

TAG	INLET DIAM. (IN.)	CFM			HEATING CAPACITY			MANUFACTURER & MODEL	REMARKS
		MAXIMUM CAPACITY	MAXIMUM SETTING	MINIMUM SETTING	MBH	GPM	P.D. (FT W.G.)		
SECOND FLOOR									
CAV-2.1	SEE PLANS	4375	3500	700	-	-	-	NAILOR 1120	SEE BELOW

NOTES:
1. ALL UNIT SHALL BE DDC CONTROLLED W/ ELECTRIC ACTUATOR, OPPOSED BLADE LOW LEAKAGE CONTROL DAMPER W/ AIRFOIL BLADES.
2. PROVIDE VOLU-PROBE/VS AIR-MONITORING STATION FOR PRESSURE INDEPENDENT CONTROL OF CAV CONTROL DAMPER.
3. CONTRACTOR SHALL PROVIDE ALL EXTERNAL CONTROLS & BMS PROGRAMMING FOR CAV TO FUNCTION IN SAME MANNER AS VAV TERMINAL UNIT.

BMS SMOKE PURGE SEQUENCE OF OPERATIONS:

MANUAL FAN SHUT DOWN AND SMOKE PURGE CONTROL PANEL BY (BMS) BUILDING MANAGEMENT SYSTEM. ON/OFF/AUTO TOGGLE SWITCHES SHALL PROVIDE CONTROL OF MAIN HVAC SYSTEM RETURN/EXHAUST FANS. NO AUTO SMOKE EXHAUST SYSTEM PROVIDED PER IBC 909. SIMILAR CONTROL OF ALL SMOKE DAMPERS PROVIDED HERE. FIRE ALARM SYSTEM SHALL PROVIDE AUTO SHUT DOWN OF FANS, CLOSE SMOKE DAMPERS UPON ALARM ACTIVATION. PROVIDE RELAY CONNECTION FROM FIRE ALARM SYSTEM.

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DULUTH, MN

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ENGINEER CERTIFICATION
I hereby certify that the engineering plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: Douglas C. Mass
Signature:
Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
4	BUILDING PERMIT REVISIONS	10.15.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
MECHANICAL EQUIPMENT SCHEDULES I

SHEET NUMBER
M401

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2028.00 Duluth Airport\8.0 CADD\(8.4) HVAC\Dwgs\2028_M401.dwg Plotted on: 2/25/2011 11:54 AM Plotted by: Brandt, Mark

PACKAGED AIR COOLED WATER CHILLER SCHEDULE

UNIT NO.	SERVICE	LOCATION	CHILLER DATA						COMPRESSOR DATA					CONDENSER DATA				TOTAL KW UNIT	V/PH/HZ	WEIGHT (LBS)	MFG. & MODEL NO.	REMARKS
			MIN RATED TONS (ARI)	TOTAL GPM	TEMP ENT (°F)	TEMP LVG (°F)	MAX. PD FT.	FOULING FACTOR	NO.	TYPE	MAX POWER KW	REFRIG.	CHARGE (LBS/COMP)	NO. OF FANS	NO. OF MOTORS	H.P. EACH	AMBIENT TEMP					
RM-1	CHW SYSTEM	WEST LOW ROOF	200	311.6	58	42	5.3	0.0001	2	ROTARY	203.1	R-134a	215	12	12	1.5	82	221.6	460/3/60	12,784	TRANE RTAC 200	SEE BELOW
RM-2	CHW SYSTEM	WEST LOW ROOF	200	311.6	58	42	5.3	0.0001	2	ROTARY	203.1	R-134a	215	12	12	1.5	82	221.6	460/3/60	12,784	TRANE RTAC 200	SEE BELOW

1. PROVIDE SINGLE POINT POWER CONNECTION. MCA: 412 AMPS, MOCP: 500 AMPS
2. PROVIDE UNIT MOUNTED WYE-DELTA STARTER.
3. PROVIDE LOW AMBIENT CONTROL ON CONDENSER AND FREEZE PROTECTION KIT ON EVAPORATOR. PROVIDE LOW POINT DRAINS AND ATOMSPHERIC FILL PORT ON EVAPORATOR.
4. UNIT EFFICIENCY MUST MEET MINIMUM ASHRAE STANDARD 90.1-2007 REQUIREMENTS.
5. UNIT WEIGHT, DIMENSIONS & UNIT CONNECTIONS TO BE VERIFIED WITH MANUFACTURER. COORDINATE VARIATIONS WITH OTHER TRADES AT NO COST TO OWNER.
6. SELECTION BASED ON 82 DEG F AMBIENT.

PUMP SCHEDULE

PUMP NO.	SERVICE	4. PROVIDE COIL FREEZESTATE WITH PUMP INTERLCOK AND BMS ALARM.	TYPE	GPM	TOTAL HEAD FEET	MIN. DESIGN WORKING PRESS. P.S.I.G.	MOTOR BHP	MOTOR HP	MOTOR RPM	MOTOR V/Ph/Hz	MANUFACTURER & MODEL NO.	REMARKS
P-1	CHILLED WATER	301 MECHANICAL RM	VERTICAL SPLIT IN-LINE	315	80	150	9.08	15	1750	480/3/60	B&G SERIES 80SC 4x4x11	1
P-2	CHILLED WATER	301 MECHANICAL RM	VERTICAL SPLIT IN-LINE	315	80	150	9.08	15	1750	480/3/60	B&G SERIES 80SC 4x4x11	1
P-3	CHILLED WATER	301 MECHANICAL RM	VERTICAL SPLIT IN-LINE	315	80	150	9.08	15	1750	480/3/60	B&G SERIES 80SC 4x4x11	1, 50% CAPACITY STANDBY
P-4	HEATING HOT WATER	301 MECHANICAL RM	VERTICAL SPLIT IN-LINE	560	80	150	9.02	15	1750	480/3/60	B&G SERIES 80SC 4x4x9-1/2	1
P-5	HEATING HOT WATER	301 MECHANICAL RM	VERTICAL SPLIT IN-LINE	560	80	150	9.02	15	1750	480/3/60	B&G SERIES 80SC 4x4x9-1/2	1
P-6	HEATING HOT WATER	301 MECHANICAL RM	VERTICAL SPLIT IN-LINE	560	80	150	9.02	15	1750	480/3/60	B&G SERIES 80SC 4x4x9-1/2	1, 50% STANDBY/ 100% SNOW MELT
P-7	BOILER CIRCULATING	301 MECHANICAL RM	INLINE	280	25	150	2.71	5	1750	480/3/60	B&G SERIES 80 5x5x7	1, 2
P-8	BOILER CIRCULATING	301 MECHANICAL RM	INLINE	280	25	150	2.71	5	1750	480/3/60	B&G SERIES 80 5x5x7	1, 2
P-9	BOILER CIRCULATING	301 MECHANICAL RM	INLINE	280	25	150	2.71	5	1750	480/3/60	B&G SERIES 80 5x5x7	1, 2
P-9	BOILER CIRCULATING	301 MECHANICAL RM	INLINE	280	25	150	2.71	5	1750	480/3/60	B&G SERIES 80 5x5x7	1, 2
P-11	HW PRESSURE FILL	301 MECHANICAL RM	END SUCTION CENT	1035 GPH	20 PSI	150	-	1/3	1750	120/1/60	B&G BPF-3H3005M	
P-12	CHW PRESSURE FILL	301 MECHANICAL RM	END SUCTION CENT	1035 GPH	20 PSI	150	-	1/3	1750	120/1/60	B&G BPF-3H3005M	
P-13	TUG TUNNEL RAMP SNOW MELT	301 MECHANICAL RM	INLINE	40	75	150	-	5	1750	480/3/60	B&G SERIES 80 2x2x9-1/2B	1, 2, 3 (50% ETHYLENE GLYCOL)
P-14	TUG TUNNEL HC-1&2 RECIRC	TUG TUNNEL	INLINE	150	20	150	1.21	1.5	1750	480/3/60	B&G SERIES 80 3x3x7B	1, 4
P-15	TUG TUNNEL HC-1.3 THRU 6 CIRC	TUG TUNNEL	INLINE	250	40	150	4.62	7.5	1750	480/3/60	B&G SERIES 80 3x3x9-1/2B	1 (50% ETHYLENE GLYCOL)

1. PROVIDE VFD WITH INTEGRAL DISCONNECT.
2. INTEGRATE WITH BOILER CONTROLS.
3. INTEGRATE WITH SNOW MELT SYSTEM CONTROLS.
4. PROVIDE PUMP FREEZESTAT WITH PUMP INTERLCOK AND BMS ALARM.

HIGH EFFICIENCY GAS FIRED HOT WATER BOILER SCHEDULE

UNIT NO.	LOCATION	INPUT MBH	OUTPUT MBH	BOILER HP	GPM	WATER TEMP (F) ENT.	WATER TEMP (F) LVG.	PD (FT, MAX FLOW)	FLUE OUTLET	FUEL	TYPE	MIN. DESIGN WORKING PRESS. (PSIG)	OPERATING WEIGHT (LBS)	MANUF & MODEL NO.	REMARKS
B-1	301 MECH RM	3,000	2,850	85.1	260	140	180	18	10"	NATURAL GAS	CONDENSING	150	1600	PATTERSON-KELLEY MACH 3000	
B-2	301 MECH RM	3,000	2,850	85.1	260	140	180	18	10"	NATURAL GAS	CONDENSING	150	1600	PATTERSON-KELLEY MACH 3000	
B-3	301 MECH RM	3,000	2,850	85.1	260	140	180	18	10"	NATURAL GAS	CONDENSING	150	1600	PATTERSON-KELLEY MACH 3000	
B-4	301 MECH RM	3,000	2,850	85.1	260	140	180	18	10"	NATURAL GAS	CONDENSING	150	1600	PATTERSON-KELLEY MACH 3000	

1. BOILERS CONTROLS SHALL BE NON-PROPRIETARY AND FULLY INTEGRATABLE TO BUILDING MANAGEMENT SYSTEM.
2. PROVIDE 12" SEALED COMBUSTION AIR INTAKE. INTAKE & VENT MATERIAL PER MANUFACTURER'S RECOMMENDATION.
3. INLET GAS PRESSURE SHALL BE 4.5"-14" W.C. (MAY VARY BY MANUF).
4. PROVIDE CONDENSATE NEUTRALIZATION SYSTEM.
5. ELECTRICAL REQUIREMENTS ARE 208V/3-PH, LESS THAN 20 AMPS PER BOILER.
6. AJAX, CAMUS & FULTON ACCEPTABLE MANUFACTURER

CABINET UNIT HEATER SCHEDULE

TAG	SERVICE	LOCATION	MBH	EWT (F)	LWT (F)	GPM	CFM	HP	V/Ph/Hz	MANUF. & MODEL NUMBER	REMARKS
CUH-1.0	STAIRS #192	STAIRS #192	29.8	180	160	3	400	1/10	115/1/60	STERLING FI-1050	1, 2, 3
CUH-1.1	ELEVATOR #175	ELEVATOR #175	22.8	180	160	2.3	300	1/10	115/1/60	STERLING FI-1050	1, 2, 3
CUH-1.2	STAIRS #190	STAIRS #190	29.8	180	160	3	400	1/10	115/1/60	STERLING FI-1050	1, 2, 3
CUH-2.1	VEST. #232	VEST. #232	29.8	180	160	3	400	1/10	115/1/60	STERLING FI-1050	1, 2, 3
CUH-3.1	STAIRS #391	STAIRS #391	29.8	180	160	3	400	1/10	115/1/60	STERLING FI-1050	1, 2, 3
CUH-3.2	STAIRS #390	STAIRS #390	29.8	180	160	3	400	1/10	115/1/60	STERLING FI-1050	1, 2, 3
CUH-3.3	CORRIDOR #304	CORRIDOR #304	29.8	180	160	3	400	1/10	115/1/60	STERLING FI-1050	1, 2, 3
CUH-3.4	STORAGE #319	STORAGE #319	29.8	180	160	3	400	1/10	115/1/60	STERLING FI-1050	1, 2, 3

1. SIZES 53"L x 47"H x 9 1/2" DEEP
2. INCLUDE 1" AIR FILTER
3. PROVIDE INTEGRAL LINE VOLTAGE THERMOSTAT AND NON-FUSED DISCONNECT.

EXPANSION TANK SCHEDULE

UNIT NO.	SERVICE	LOCATION	LENGTH (IN)	DIAM. (IN)	CAPAC. (GAL)	WORK. PRESS. (PSIG)	OPERATING WEIGHT	MANUFACTURER & MODEL NO.	REMARKS
ET-1	CHILLED WATER	301 MECH RM				125		BELL & GOSSETT	DIAPHRAGM TYPE, ASME CONSTRUCTION
ET-2	HOT WATER	301 MECH RM				125		BELL & GOSSETT	DIAPHRAGM TYPE, ASME CONSTRUCTION

AIR SEPARATOR SCHEDULE

TAG	SERVICE	LOCATION	SIZE	GPM	SIZE-DIM	REMARKS
AS-1	HOT WATER HEATING	MECH. ROOM	6"	650	14" D x 33" H	TACO # 4906AD
AS-2	CHILLED WATER	MECH. ROOM				

FINNED-TUBE RADIATION SCHEDULE

SYMBOL	BTUH/LF	E.W.T. (°F)	L.W.T. (°F)	FINS SIZE	FINS PER FT.	FINS MAT.	FINS ROWS	PIPE SIZE	PIPE MAT.	ENCLOSURE HGT.	ENCLOSURE DEPTH	ENCLOSURE TYPE	MODEL	REMARKS
FT-1	1100	180	160	4-1/4" SQ	40	AL	2	1-1/2"	CU	-	-	-	STERLING BARE "B"	1
FT-2	650	180	160	3-1/4" SQ	40	AL	1	1"	CU	8"	8"	TROUGH	STERLING BARE "A"	1, 2, 3
FT-3	350	180	160	-	-	-	-	3/4"	-	11-1/2"	2"	PANEL RADIATOR	RUNTAL R-4	3, 6
FT-4	500	180	160	3-1/4" SQ.	32	AL	1	1"	CU	14-7/16"	4-3/8"	CLASSIC, TOP OUTLET	STERLING JVA VA-AR14	2, 3, 4
FT-5	900	180	160	3-5/8"x4-1/4"	50	AL	1	3/4"	CU	-	-	-	STERLING BARE "B"	1
FT-6	450	180	160	4-1/4"x3-5/8"	40	AL	1	3/4"	CU	10-3/4"	6-1/16"	PEDESTAL, TOP OUTLET	STERLING CUSTOM	2, 3, 5

1. TO BE INSTALLED WITHIN CUSTOM ARCHITECTURAL ENCLOSURE. MOUNT PER MANUFACTURER RECOMMENDATIONS. SEE ARCH & MECH DETAILS.
2. PROVIDE 14 GA STAINLESS STEEL FINISH.
3. PROVIDE TRIM & MITERED END ENCLOSURE PIECES FOR CONITNUOUS APPEARANCE. FINISH SELECTION & MOUNTING HEIGHT BY ARCH. SEE SPECS FOR MORE INFO.
4. PROVIDE EXTRUDED ALUMINUM INLET GRILLES AT UNDERSIDE OF ENCLOSURE.
5. MOUNTING HEIGHT INCLUDES SUPPORTS. SEE ARCH DWGS FOR CUSTOM ENCLOSURE DETAILS.
6. SIDE INLET & OUTLET CONCEALED, SAME-END PIPING CONNECTIONS. SEE MANUF INFO FOR REQUIRED # OF CONNECTIONS. SURFACE WALL MOUNT W/ CONCEALED BRACKET, FASTENEERS & STIFFENERS.

HORIZONTAL TYPE UNIT HEATERS SCHEDULE

TAG	AREA SERVED	LOCATION	OUTPUT MBH	EWT (F)	LWT (F)	RPM	CFM	HP	V/Ph/Hz	MANUF. & MODEL NUMBER	REMARKS
UH-1.1 TO 1.7	TUG TUNNEL	TUG TUNNEL	34.8	180	160	1070	300	1/20	115/1/60	STERLING HS-48	1
UH-1.8	SPRINKLER ROOM #128	SPRINKLER ROOM #128	26.1	180	160	1070	400	1/20	115/1/60	STERLING HS-36	1
UH-1.9	LOADING DOCK #126	LOADING DOCK #126	45	180	160	1070	400	1/20	115/1/60	STERLING HS-60	1
UH-3.1,3.2, 3.3, 3.4	MECH. ROOM #333	MECH. ROOM #333	34.8	180	160	1070	400	1/20	115/1/60	STERLING HS-48	1
UH-3.5, 3.6 & 3.7	MECH ROOM #304	MECH ROOM #304	34.8	180	160	1070	400	1/20	115/1/60	STERLING HS-48	1

1. PROVIDE LINE VOLTAGE THERMOSTAT AND NON-FUSED DISCONNECT.

HOT WATER COIL SCHEDULE

TAG	SERVICE	LOCATION	CFM	EAT (°F)	LAT (°F)	MBH	GPM	EWT (°F)	LWT (°F)	FLUID PD (FT)	AIR PD (IN)	MAX FACE VELOCITY (FPM)	NO. ROWS	REMARKS
HC-1.1	TUG SERVICE TUNNEL	TUG SERVICE TUNNEL	8000	-21	60	702	75	160	140	6.3	0.16	500	4	
HC-1.2	TUG SERVICE TUNNEL	TUG SERVICE TUNNEL	8000	-21	60	702	75	160	140	6.3	0.16	500	4	
HC-1.3	TUG SUPPLY HEAT RECOVERY	TUG SERVICE TUNNEL	8000	-21	-8	115	125	20.8	18.9	7.1	0.16	500	2	SEE BELOW
HC-1.4	TUG SUPPLY HEAT RECOVERY	TUG SERVICE TUNNEL	8000	-21	-8	115	125	20.8	18.9	7.1	0.16	500	2	SEE BELOW
HC-1.5	TUG EXHAUST HEAT RECOVERY	TUG SERVICE TUNNEL	8800	60 DB/48 WB	48.1 DB/42.4 WB	115	125	18.9	20.8	6.8	0.19	500	2	SEE BELOW
HC-1.6	TUG EXHAUST HEAT RECOVERY	TUG SERVICE TUNNEL	8800	60 DB/48 WB	48.1 DB/42.4 WB	115	125	18.9	20.8	6.8	0.19	500.0	2	SEE BELOW

NOTES:
1. HC-1.3 THRU 1.6 SHALL CICRCULATE A 50% ETHYLENE GLYCOL SOLUTION.

HYDRONIC AIR CURTAIN SCHEDULE

UNIT NO.	AREA SERVED	LOCATION	TYPE	CFM (HI SPEED)	AIR TEMP RISE @ HI SPEED (°F)	TOTAL CAPACITY MBH	HEATING COIL HOT WATER TEPM (°F) ENT	HEATING COIL HOT WATER TEPM (°F) LVG	HEATING COIL HOT WATER GPM	HEATING COIL HOT WATER WATER PD (FT)	HEATING COIL PRESS. (PSIG)	FAN MOTOR QUANTITY	FAN MOTOR HP	FAN MOTOR RPM	FAN MOTOR V/Ph/Hz	WEIGHT (LBS)	MANUF. & MODEL	REMARKS
ACN-1.1	VESTIBULE 100	VESTIBULE 100	SUSPENDED	2093	37	87	140	120	8.7		150	2	1/2	1075	208/1/60	271	POWERED AIRE CHS 2-84	1, 2
ACN-1.2	VESTIBULE 100	VESTIBULE 100	SUSPENDED	2093	37	87	140	120	8.7		150	2	1/2	1075	208/1/60	271	POWERED AIRE CHS 2-84	1, 2
ACN-1.3	VESTIBULE 101	VESTIBULE 101	SUSPENDED	2093	37	87	140	120	8.7		150	2	1/2	1075	208/1/60	271	POWERED AIRE CHS 2-84	1, 2
ACN-1.4	VESTIBULE 101	VESTIBULE 101	SUSPENDED	2093	37	87	140	120	8.7		150	2	1/2	1075	208/1/60	271	POWERED AIRE CHS 2-84	1, 2

1. PROVIDE SINGLE POINT POWER CONNECTION WITH CONTROL PANEL AND INTEGRAL LOCKING DISCONNECT.
2. PROVIDE CONTROL VALVE & THERMOSTAT (BY BMS CONTROCTOR) WITH LOCKING COVER & DOOR SWITCH INTERLOCK CONTROL.. T-STAT SHALL PROVIDE OVERRIDE FOR FAN OPERATION WHEN DOORS ARE CLOSED. INTERLOCK AIR CURTAINS IN SAME VESTIBULE TO SINGLE T-STAT.

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101 East Ridge Office Park, Suite 103, Danbury CT 06810
TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

ENGINEER CERTIFICATION
I hereby certify that the engineerinh plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: Douglas C. Mass
Signature:
Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
MECHANICAL EQUIPMENT SCHEDULES II

SHEET NUMBER
M402

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\5538.00 Duluth Airport\5.0 CADD\(5.4) HVAC\Dwgs\5538_M402.dwg Plotted on: 2/25/2011 11:54 AM Plotted by: Brandt, Mark

COMPUTER ROOM AIR-CONDITIONING UNIT SCHEDULE

SYMBOL	LOCATION	SERVICE	NOMINAL TONS	REFR. TYPE	REFR. CHARGE (OZ)	FAN			COOLING CAPACITY						FILTER			ELECTRICAL DATA			HUMIDIFIER / REHEAT (FLA/MOPD)	UNIT WEIGHT (LBS)	MFR. & MODEL NUMBER	REMARKS
						CFM	EXT. S.P. IN.W.G.	H.P.	E.A.T.			MBH		FACE AREA SQ. FT.	NO. ROWS	TYPE	NO.	FILTER SIZE (INxINxIN)	VOLT/PH/HZ	FLA	MOPD				
									(°F) DB	(°F) DB	%RH	TOTAL	SENS											
AC-1.1	ELEV MACH 153	ELEV MACH 153	3	R-407C	7	1,000	0.3	0.5	75	61	45	32.5	28.4	3.1	3	MERV-8	1	40x20x20	208/3/60	2.8	15	NONE	225	LIEBERT MMD36E7P00DG	CEILING MOUNT W/ 1" VIBRATION ISOLATORS
AC-1.2	ELEV MACH 143	ELEV MACH 143	3	R-407C	7	1,000	0.3	0.5	75	61	45	32.5	28.4	3.1	3	MERV-8	1	40x20x20	208/3/60	2.8	15	NONE	225	LIEBERT MMD36E7P00DG	CEILING MOUNT W/ 1" VIBRATION ISOLATORS
AC-1.3	COMM 151	COMM 151	5	R-407C	4	2,500	0.5	1.5	75	61	45	62.7	55.8	5.6	4	MERV-8	2	40x20x20	208/3/60	5.6	15	NONE	498	LIEBERT MMD60E7A00LG	CEILING MOUNT W/ 1" VIBRATION ISOLATORS
AC-2.1	COMM 217	COMM 217	3	R-407C	7	1,000	0.3	0.5	75	61	45	32.5	28.4	3.1	3	MERV-8	1	40x20x20	208/3/60	2.8	15	NONE	225	LIEBERT MMD36E7P00DG	CEILING MOUNT W/ 1" VIBRATION ISOLATORS
AC-2.2	LAN ROOM 240	LAN ROOM 240	3	R-407C	7	1,000	0.3	0.5	75	61	45	32.5	28.4	3.1	3	MERV-8	1	40x20x20	208/3/60	2.8	15	NONE	225	LIEBERT MMD36E7P00DG	CEILING MOUNT W/ 1" VIBRATION ISOLATORS
AC-3.1	COMM/ELEC 313	COMM/ELEC 313	3	R-407C	7	1,000	0.3	0.5	75	61	45	32.5	28.4	3.1	3	MERV-8	1	40x20x20	208/3/60	2.8	15	NONE	225	LIEBERT MMD36E7P00DG	CEILING MOUNT W/ 1" VIBRATION ISOLATORS

FOR ALL UNITS:
1. PROVIDE HIGH LEVEL WATER LEVEL SENSOR WITH CUT OFF SWITCH AND BMS ALARM FOR ALL AC UNIT CONDENSATE DRAIN PANS.
2. PROVIDE CONDENSATE PUMP. PUMP TO BE POWERED FROM MAIN AC UNIT ELECTRICAL FEED.
3. INSULATE DISCHRAGE LINE TO CONDENSING UNIT THROUGH & ABOVE ALL CONDITIONED SPACES.

⚠1

COMPUTER ROOM AIR-COOLED CONDENSING UNIT SCHEDULE

SYMBOL	LOCATION	SERVICE	NOMINAL TONS	NO. OF COMPR.	REFR. TYPE	REFR. CHARGE (OZ.)	FAN			COOLING CAPACITY			ELECTRICAL DATA			HUMIDIFIER / REHEAT (FLA/MOPD)	UNIT WEIGHT (LBS)	MFR. & MODEL NUMBER	REMARKS
							CFM	EXT. S.P. IN.W.G.	H.P.	E.A.T. (°F) DB	FACE AREA SQ. FT.	NO. ROWS	VOLT/PH/HZ	FLA	MOPD				
CU-1.1	TUG TUNNEL	AC-1.1	3	1	R-407C	213	3,000	N/A	0.2	95	7.7	2	480/3/60	6.4	15	NONE	351	LIEBERT PFHZ37A-AL7	SUSPENDED W/ 1" VIBRATION ISOLATORS
CU-1.2	TUG TUNNEL	AC-1.2	3	1	R-407C	213	3,000	N/A	0.2	95	7.7	2	480/3/60	6.4	15	NONE	351	LIEBERT PFHZ37A-AL7	SUSPENDED W/ 1" VIBRATION ISOLATORS
CU-1.3	TUG TUNNEL	AC-1.3	5	1	R-407C	426	4,200	N/A	0.5	95	10.5	3	480/3/60	11.7	20	NONE	351	LIEBERT PFH067A-AL7	SUSPENDED W/ 1" VIBRATION ISOLATORS
CU-2.1	TUG TUNNEL	AC-2.1	3	1	R-407C	213	3,000	N/A	0.2	95	7.7	2	480/3/60	6.4	15	NONE	351	LIEBERT PFH037A-AL7	SUSPENDED W/ 1" VIBRATION ISOLATORS
CU-2.2	TUG TUNNEL	AC-2.2	3	1	R-407C	213	3,000	N/A	0.2	95	7.7	2	480/3/60	6.4	15	NONE	351	LIEBERT PFH037A-AL7	SUSPENDED W/ 1" VIBRATION ISOLATORS
CU-3.1	WEST LOW ROOF	AC-3.1	3	1	R-407C	213	3,000	N/A	0.2	95	7.7	2	480/3/60	6.4	15	NONE	351	LIEBERT PFH037A-AL7	ROOF MOUNTED; SEE SPECS

⚠1

FOR ALL UNITS:
1. PROVIDE HIGH LEVEL WATER LEVEL SENSOR WITH CUT OFF SWITCH AND BMS ALARM FOR ALL AC UNIT CONDENSATE DRAIN PANS.
2. PROVIDE INSECT SCREEN ON CONDENSENING UNIT INLET/OUTLET.
3. PROVIDE LOW AMBIENT KIT (-30 DEG F).
4. CONDENSER FAN MUST BE HORIZONTAL DISCHARGE FOR UNITS AC-1.1 THRU 2.2

⚠1

PLATE & FRAME HEAT EXCHANGER SCHEDULE

UNIT NO.	SERVICE	LOCATION	HEAT EXCHANGED (MBH)	COLD SIDE				HOT SIDE				MFR. AND MODEL NO.	SURFACE AREA SQ. FT.	OPERATING WEIGHT (LBS)	REMARKS
				GPM	EWT (°F)	LWT (°F)	PD FT.	GPM	EWT (°F)	LWT (°F)	PD FT.				
HX-1	TUG TUNNEL RAMP SNOW MELT	301 MECHANICAL RM	360.3	40	85	105	7.47	36.9	160	140	6.16	ALFA LAVAL AQ2-FG	16	306	SEE BELOW

⚠1

NOTES:
1. COLD SIDE IS 50% ETHYLENE GLYCOL MIXTURE.
2. FRAME SHALL BE SIZED SUCH THAT PLATES CAN BE ADDED FOR TOTAL HEAT EXCHANGE CAPACITY OF 2266 MBH AT SAME TEMPERATURES (211 GPM HOT, 229 GPM COLD), 116 SQ FT SURFACE AREA, 422 LBS OPERATING WEIGHT

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DULUTH, MN

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SHEET TITLE

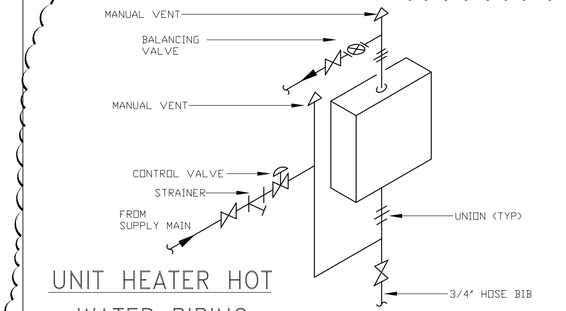
MECHANICAL EQUIPMENT SCHEDULES III

SHEET NUMBER

M403

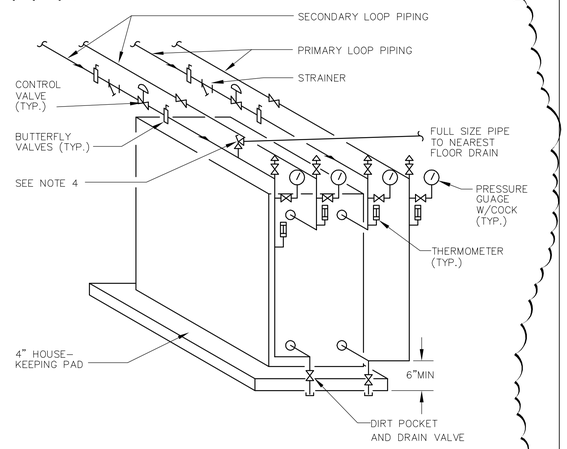
BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2008.00 Duluth Airport\8.0 CADD\(8.4) HVAC\Dwgs\2008_M403.dwg Plotted on: 2/25/2011 11:54 AM Plotted by: Brandt, Mark



UNIT HEATER HOT WATER PIPING

N.T.S.

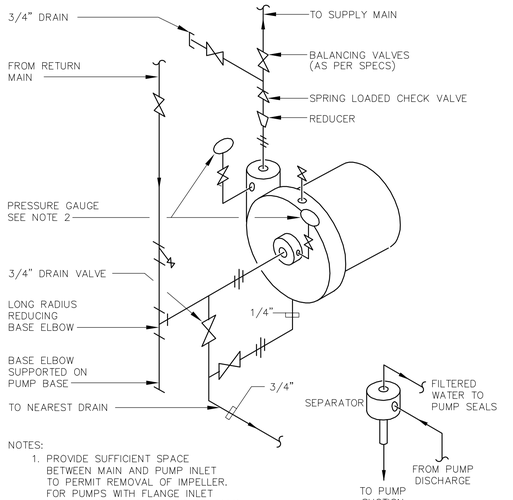


NOTES:

1. PROVIDE THERMOMETERS AND SEPARABLE SOCKETS FOR THERMOMETERS.
2. PROVIDE PRESSURE GUAGES AND GUAGE TEST CONNECTIONS.
3. ALL PIPING SHALL BE ARRANGED TO ALLOW REMOVAL OF PLATE FIN SECTIONS FOR CLEANING W/MIN. DISTURBANCE TO PIPING.
4. RELIEF VALVE SETTING SHALL BE 10 PSI BELOW RATING OF PIPING SYSTEM OF HEAT EXCHANGER.

PLATE + FRAME HEAT EXCHANGER

NOT TO SCALE



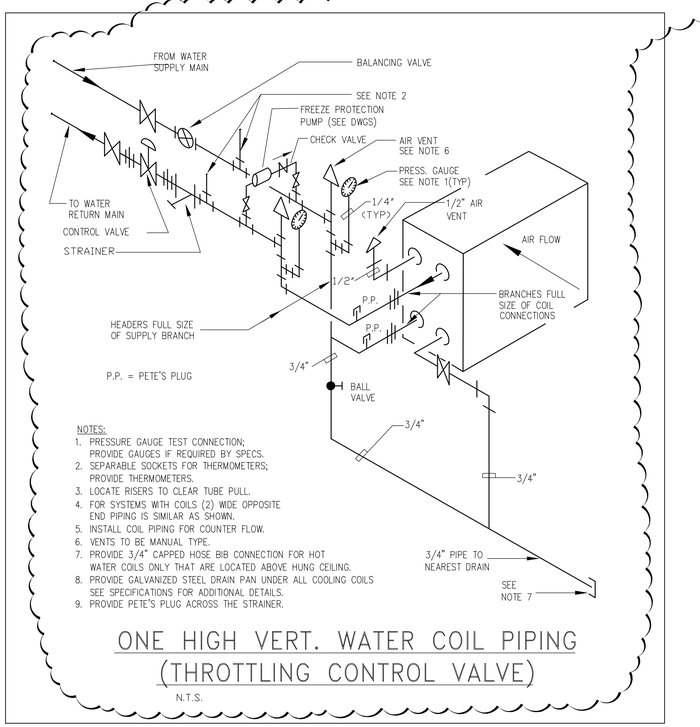
NOTES:

1. PROVIDE SUFFICIENT SPACE BETWEEN MAIN AND PUMP INLET TO PERMIT REMOVAL OF IMPELLER. FOR PUMPS WITH FLANGE INLET PROVIDE SPOOL PIECE FOR IMPELLER REMOVAL.
2. INSTALL PRESSURE GAUGES FOR 150% OF WORKING PRESSURE IN 1/4" TAPPING PROVIDED BY VENDOR. IF TAPS ARE NOT PROVIDED, PROVIDE IN PIPING.

ABRASIVE SEPARATOR PIPING
(SEE SPECIFICATIONS)

WATER PUMP PIPING END SUCTION PUMP DETAIL

NOT TO SCALE

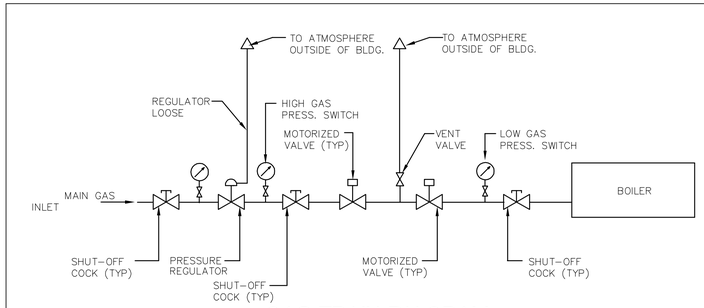


NOTES:

1. PRESSURE GAUGE TEST CONNECTION; PROVIDE GAUGES IF REQUIRED BY SPECS.
2. SEPARABLE SOCKETS FOR THERMOMETERS; PROVIDE THERMOMETERS.
3. LOCATE RISERS TO CLEAR TUBE PULL.
4. FOR SYSTEMS WITH COILS (2) WIDE OPPOSITE END PIPING IS SIMILAR AS SHOWN.
5. INSTALL COIL PIPING FOR COUNTER FLOW.
6. VENTS TO BE MANUAL TYPE.
7. PROVIDE 3/4" CAPPED HOSE BIB CONNECTION FOR HOT WATER COILS ONLY THAT ARE LOCATED ABOVE HUNG CEILING.
8. PROVIDE GALVANIZED STEEL DRAIN PAN UNDER ALL COOLING COILS SEE SPECIFICATIONS FOR ADDITIONAL DETAILS.
9. PROVIDE PETE'S PLUG ACROSS THE STRAINER.

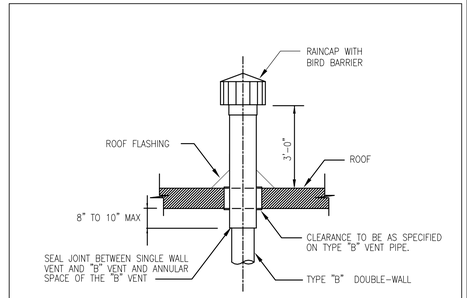
ONE HIGH VERT. WATER COIL PIPING (THROTTLING CONTROL VALVE)

N.T.S.



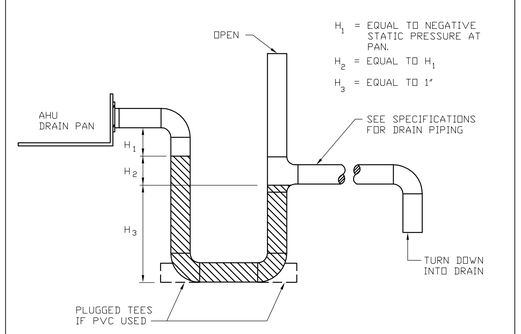
GAS TRAIN DIAGRAM

NOT TO SCALE



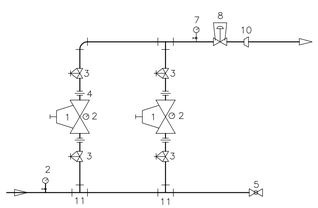
DETAIL - TYPICAL FLUE TERMINAL

NOT TO SCALE



DRAW-THROUGH UNIT DRAIN DETAIL

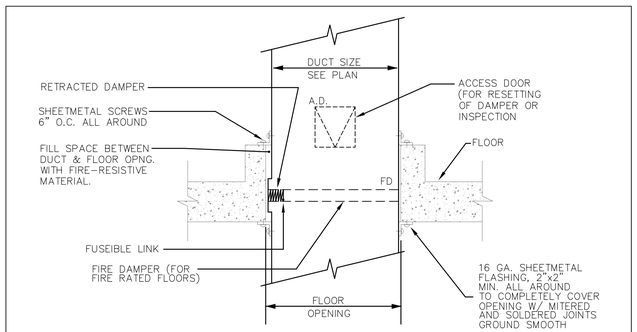
N.T.S.



1 J.R.GUNZENHAUSER #1130HI PRV
2 PRESSURE GAUGE
3 BALL VALVE
4 UNION
5 BLOW-OFF VALVE
7 MERCOID PRESSURE SWITCH (MANUAL RESET)
8 CLA-VAL SOLENOID SAFETY SHUTOFF VALVE-ENERGIZE TO CLOSE
10 INCREASER
11 REDUCING TEES

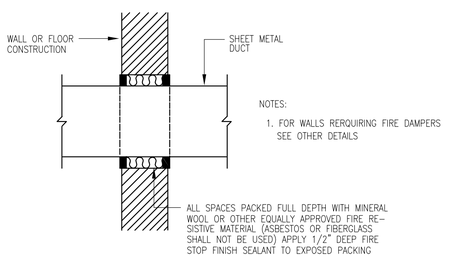
GAS PRV DETAIL

N.T.S.



DUCT THRU FLOOR WITH FIRE DAMPER DETAIL

NOT TO SCALE



CAULKING DETAIL OF DUCT PIERCING RATED ASSEMBLIES WHERE FIRE DAMPERS ARE NOT REQUIRED

NOT TO SCALE

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SHEET TITLE

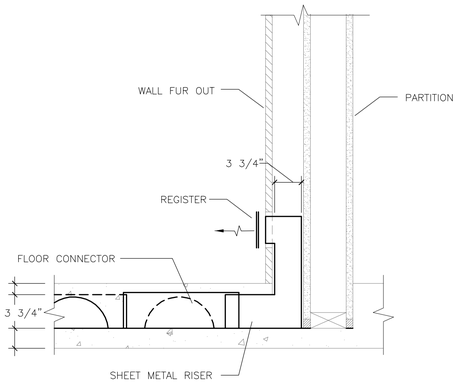
MECHANICAL DETAILS II

SHEET NUMBER

M502

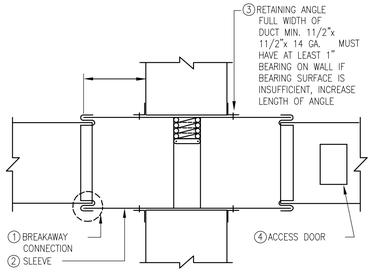
BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\5038.00 Duluth Airport\9.0 CADD\(9.4) HVAC\Dwgs\M502_M502.dwg Plotted on: 2/25/2011 11:54 AM Plotted by: Brandt, Mark



AIRFLOOR SIDEWALL GRILLE DETAIL

NOT TO SCALE



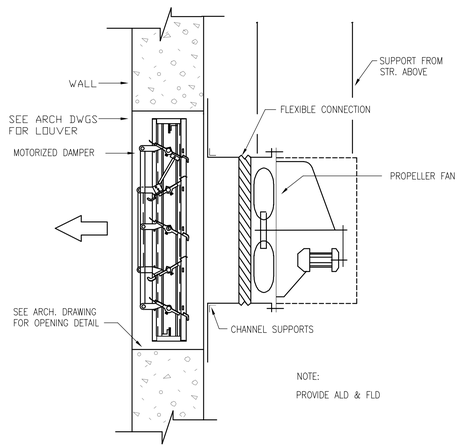
IN-DUCT MOUNTED FIRE DAMPER

NOTE: THIS INSTALLATION DETAIL IS TYPICAL FOR ALL TYPES OF DAMPERS (A-B-C). FOR TYPE B & C DAMPERS, THE SHUTTER SHALL BE OUTSIDE OF AIR STREAM.

1. BREAKAWAY CONNECTION SHALL BE SIMILAR TO UL555 SEC. 14.4 AND NFPA 90A APPROVED TYPES
2. SLEEVE MAY BE DUCT GAUGE IF UL555 CONNECTIONS ARE USED GAUGE SHALL BE #16 UP TO 36Wx24H OR 14 GA. FOR LARGER SIZES.
3. SHEET METAL CONTRACTOR SHALL FURNISH CONSTRUCTION CONTRACTOR WITH OPENING SIZES, ALL OPENINGS SHALL BE PACKED WITH SUITABLE FIRE RETARDANT MATERIAL.
4. ACCESS DOOR MUST BE LOCATED AS REQUIRED TO ENABLE RESETTING OF DAMPER. MORE THAN ONE DOOR MAY BE REQUIRED ON LARGE DUCTS.

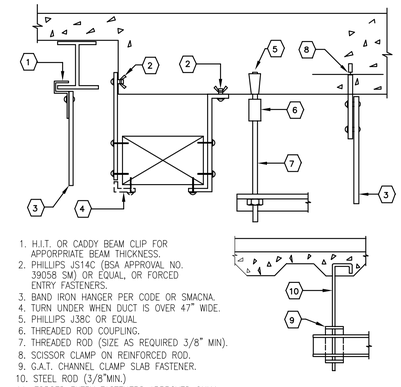
FIRE DAMPER

FOR DUCT SYSTEMS WHICH ARE NOT PART OF SMOKE EXHAUST SYSTEM AND WITHOUT NFPA BOOT.



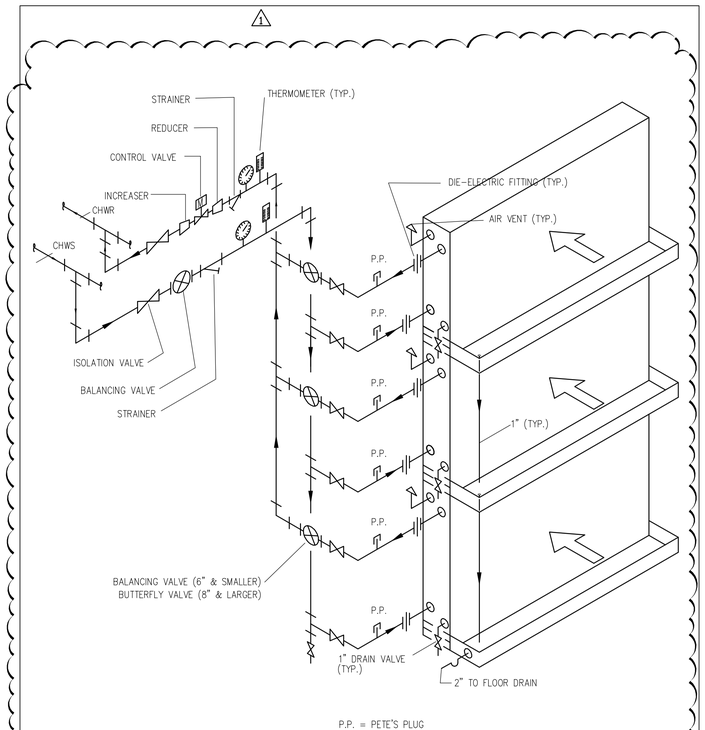
WALL EXHAUST FAN DETAIL

NOT TO SCALE



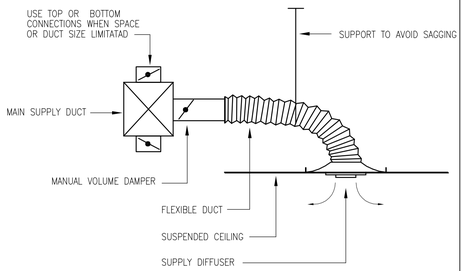
METHOD OF HANGING DUCTWORK

NOT TO SCALE



TYPICAL MULTIPLE CHILLED WATER COOLING COIL PIPING DETAIL

N.T.S.

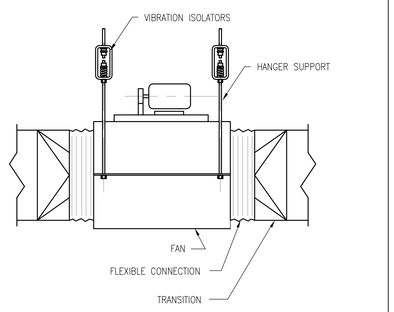


NOTE :

1. LENGTH OF FLEXIBLE DUCTS SHALL NOT EXCEED 5'-0", INCLUDING ELBOWS.

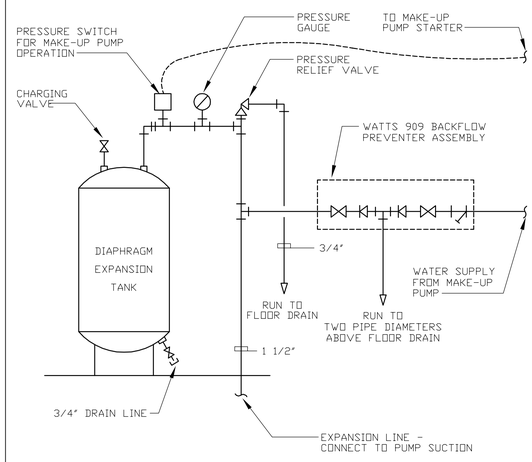
TYPICAL SUPPLY DIFFUSER CONNECTION

NOT TO SCALE



IN-LINE FAN SUPPORT DETAIL

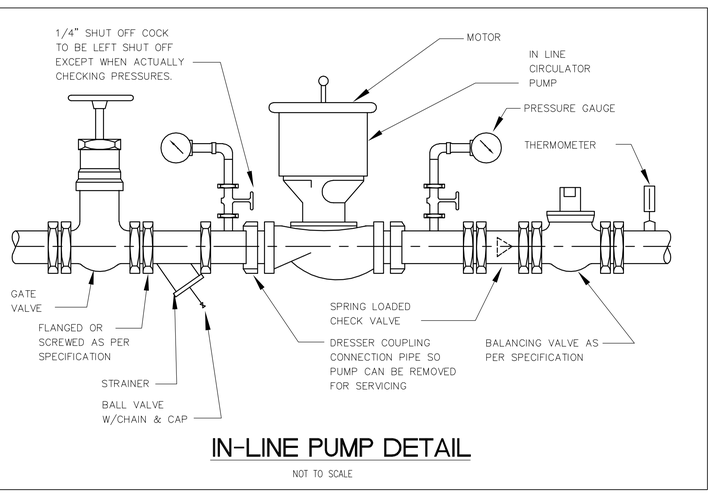
NOT TO SCALE



NOTE:

1. USE ONLY WHERE DOMESTIC WATER PRESS IS HIGHER THAN INITIAL TANK CHARGE PRESS AND WHERE DIRECT DOMESTIC WATER CONNECTION IS ALLOWED.

COMPRESSION TANK DETAIL DIAPHRAGM TYPE



IN-LINE PUMP DETAIL

NOT TO SCALE

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DULUTH, MN

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Landscaping Consultants:
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ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: Douglas C. Mass

Signature:

Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: MXB
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

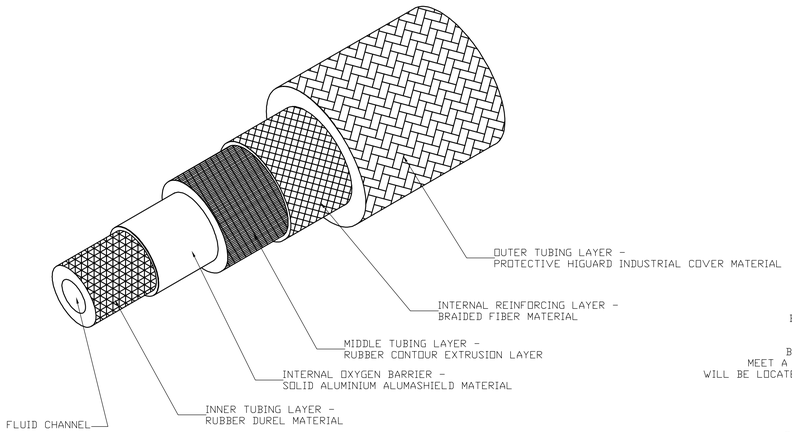
MECHANICAL DETAILS III

SHEET NUMBER

M503

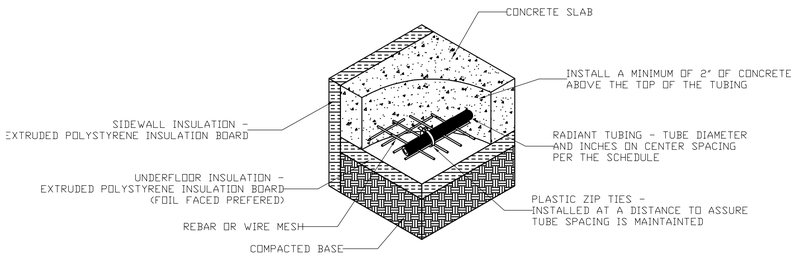
BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\5038.00 Duluth Airport\9.0 CADD\(9.4) HVAC\Dwgs\M503_M503.dwg Plotted on: 2/25/2011 11:05 AM Plotted by: Brandt, Mark



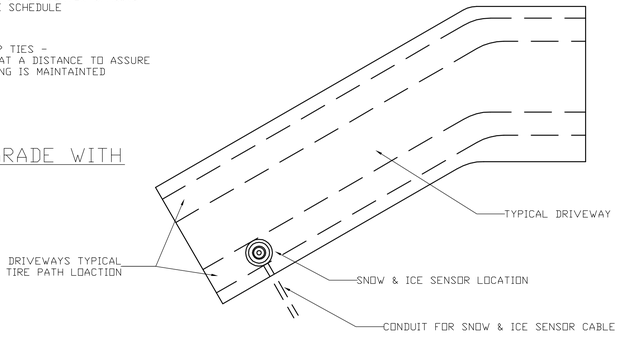
RADIANT TUBING MATERIAL - RUBBER

NOT TO SCALE

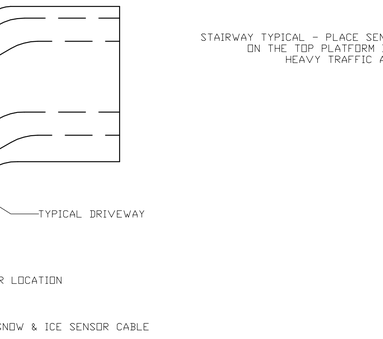


RADIANT SNOWMELT - SLAB ON GRADE WITH FOAM INSULATION

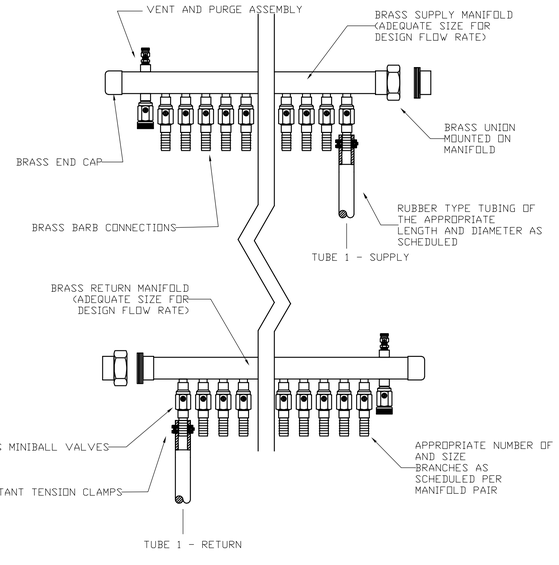
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RECOMMENDED SENSOR INSTALLATION - DRIVEWAY INSTALLATIONS

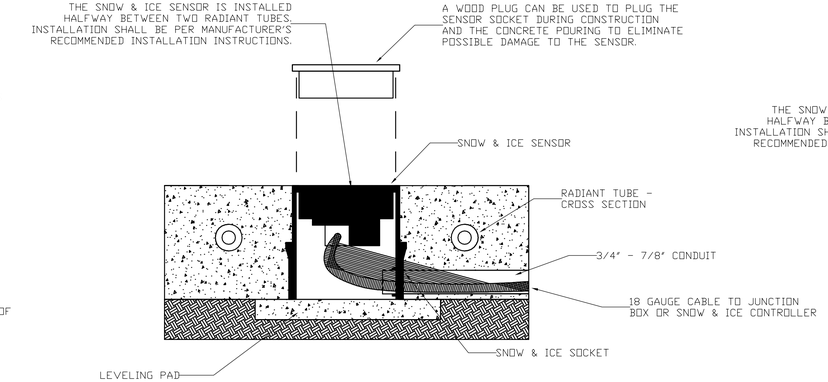


RECOMMENDED SENSOR INSTALLATION - STAIRS AND SIDEWALKS INSTALLATIONS

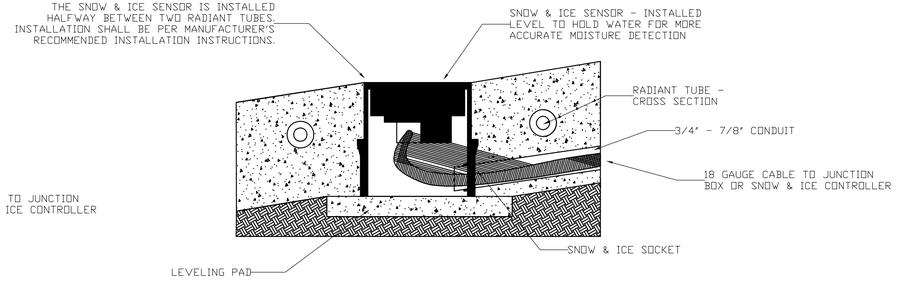


RADIANT TUBING MANIFOLD - RUBBER TUBING

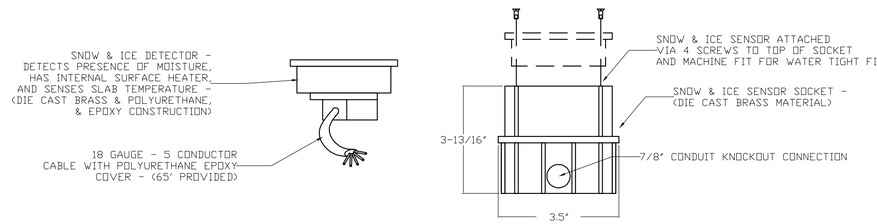
NOT TO SCALE



INSTALLATION OF SENSOR IN LEVEL SURFACE

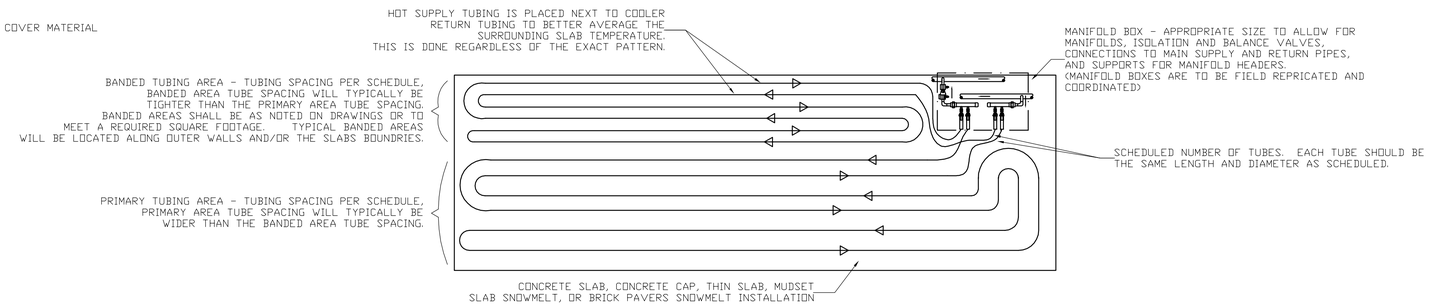


INSTALLATION OF SENSOR IN SLOPPED SURFACE



RADIANT SNOWMELT SYSTEM - SNOW & ICE SENSOR WITH SOCKET DETAIL

NOT TO SCALE



RADIANT TUBING LAYOUT - ENCAPSULATED TUBING INSTALLATION - DOUBLE SERPENTINE LAYOUT

NOT TO SCALE

RADIANT SNOWMELT SYSTEM - SNOW & ICE SENSOR (WITH SOCKET) INSTALLATION

NOT TO SCALE

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Print Name: Douglas C. Mass
Signature:
Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED:	**02-25-11**
REVIEWED BY:	MXB
DRAWN BY:	MXB
DESIGNED BY:	MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

RAMP SNOW MELT SYSTEM DETAILS

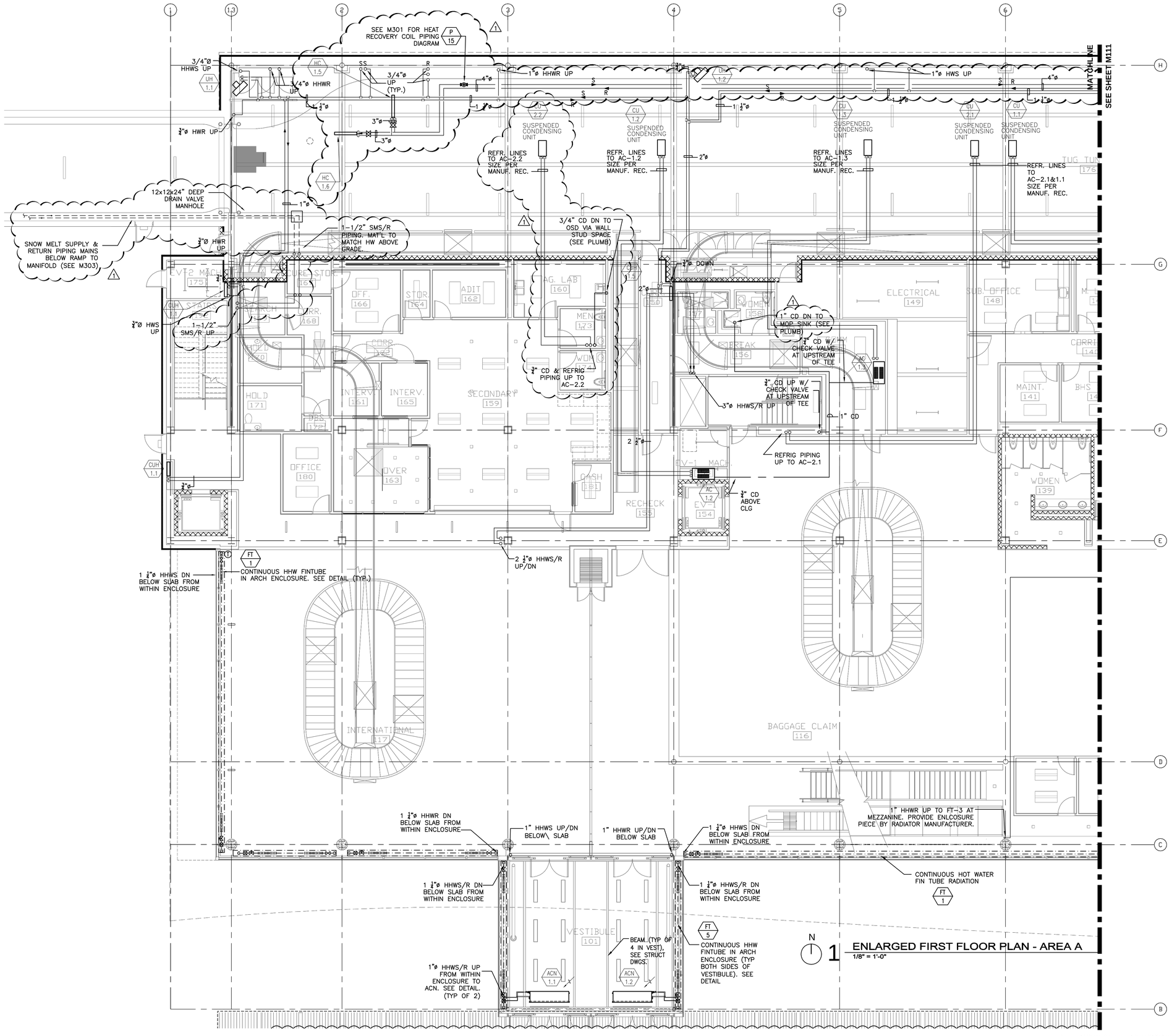
SHEET NUMBER
1 M506

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2010.00 Duluth Airport\5.0 CADD\(5.4) HVAC\Dwg\M506_M506.dwg Plotted on: 2/25/2011 11:55 AM Plotted by: Brandt, Mark

GENERAL NOTES:

1. SEE M108 FOR BELOW GRADE PIPING IN THIS AREA.
2. EXPOSED PIPING IN MAIN ENTRANCE VESTIBULES TO HAVE 0.04" ALUMINUM JACKET WITH POLISHED FINISH & PRE-FORMED ELBOWS.
3. EXPOSED PIPING IN MAIN ENTRANCE VESTIBULES TO HAVE 0.04" ALUMINUM JACKET WITH POLISHED FINISH & PRE-FORMED ELBOWS.



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NEW PASSENGER TERMINAL

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ENGINEER CERTIFICATION

I hereby certify that the engineering plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

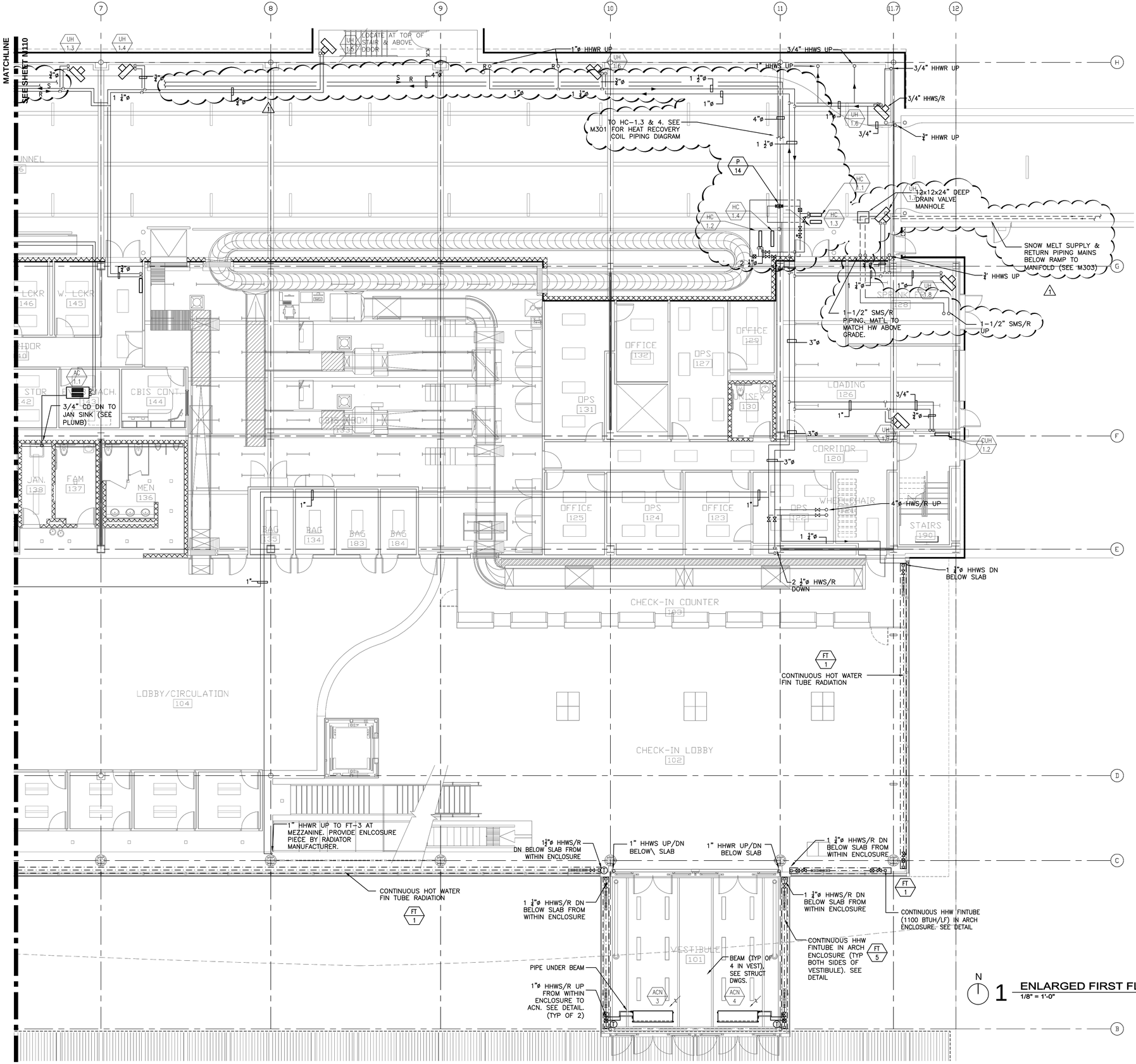
ENLARGED FIRST FLOOR MECHANICAL PIPING PLAN AREA A

SHEET NUMBER

MP110

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2028.00 Duluth Airport\5.0 CADD\5.4) HVAC\Dwgs\2028_MP110.dwg Plotted on: 2/25/2011 11:07 AM Plotted by: Brandt, Mark



N

1 ENLARGED FIRST FLOOR PLAN - AREA B

1/8" = 1'-0"

GENERAL NOTES:

1. SEE M109 FOR BELOW GRADE PIPING IN THIS AREA.
2. EXPOSED PIPING IN MAIN ENTRANCE VESTIBULES TO HAVE 0.04" ALUMINUM JACKET WITH POLISHED FINISH & PRE-FORMED ELBOWS.
3. EXPOSED PIPING IN MAIN ENTRANCE VESTIBULES TO HAVE 0.04" ALUMINUM JACKET WITH POLISHED FINISH & PRE-FORMED ELBOWS.

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DULUTH, MN

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Print Name: Douglas C. Mass
Signature:
Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

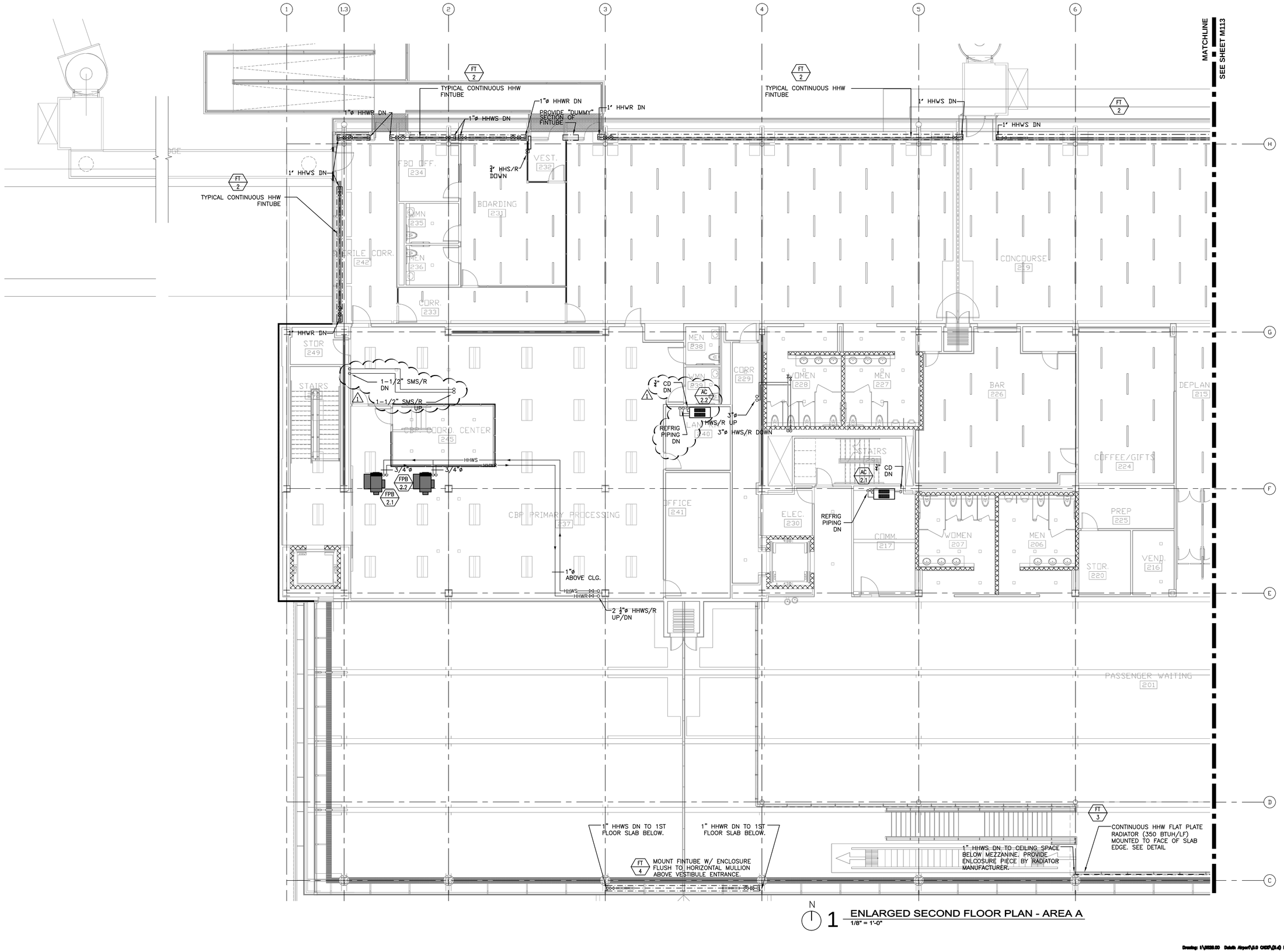
ENLARGED FIRST FLOOR MECHANICAL PIPING PLAN AREA B

SHEET NUMBER

MP111

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2035.00 Duluth Airport\5.0 CADD\(5.4) HVAC\Dwgs\2035_MP111.dwg Plotted on: 2/25/2011 11:09 AM Plotted by: Brandt, Mark



N

1 ENLARGED SECOND FLOOR PLAN - AREA A

1/8" = 1'-0"

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DULUTH, MN

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Print Name: Douglas C. Mass
Signature:
Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

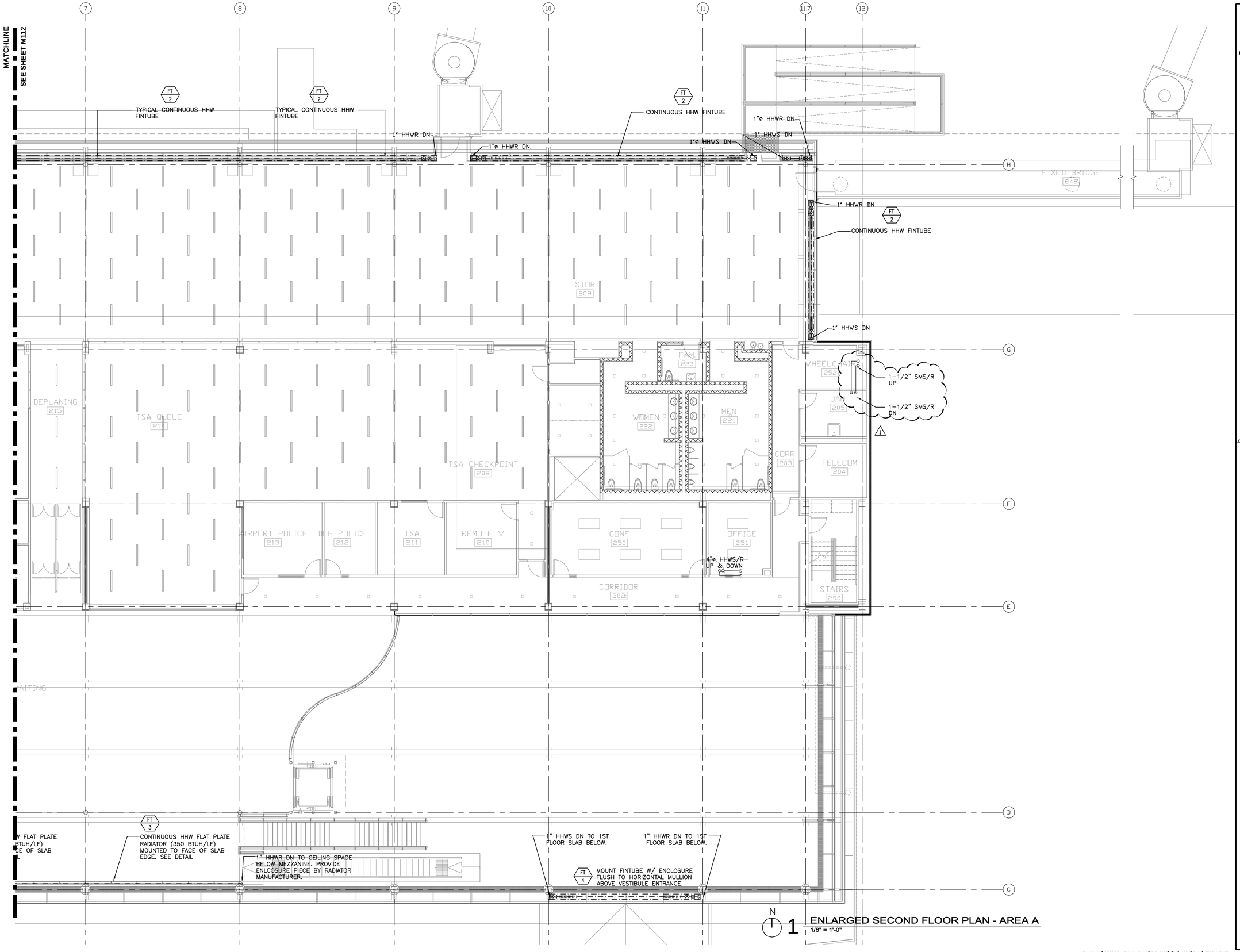
ENLARGED SECOND FLOOR MECHANICAL PIPING PLAN AREA A

SHEET NUMBER

MP112

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2028.00 Duluth Airport\8.0 CADD\[8.4] HVAC\Dwgs\2028_MP112.dwg Plotted on: 2/25/2011 12:01 PM Plotted by: Brandt, Mark



1 ENLARGED SECOND FLOOR PLAN - AREA A
1/8" = 1'-0"

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DULUTH, MN

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NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
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	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
ENLARGED SECOND FLOOR MECHANICAL PIPING PLAN AREA B

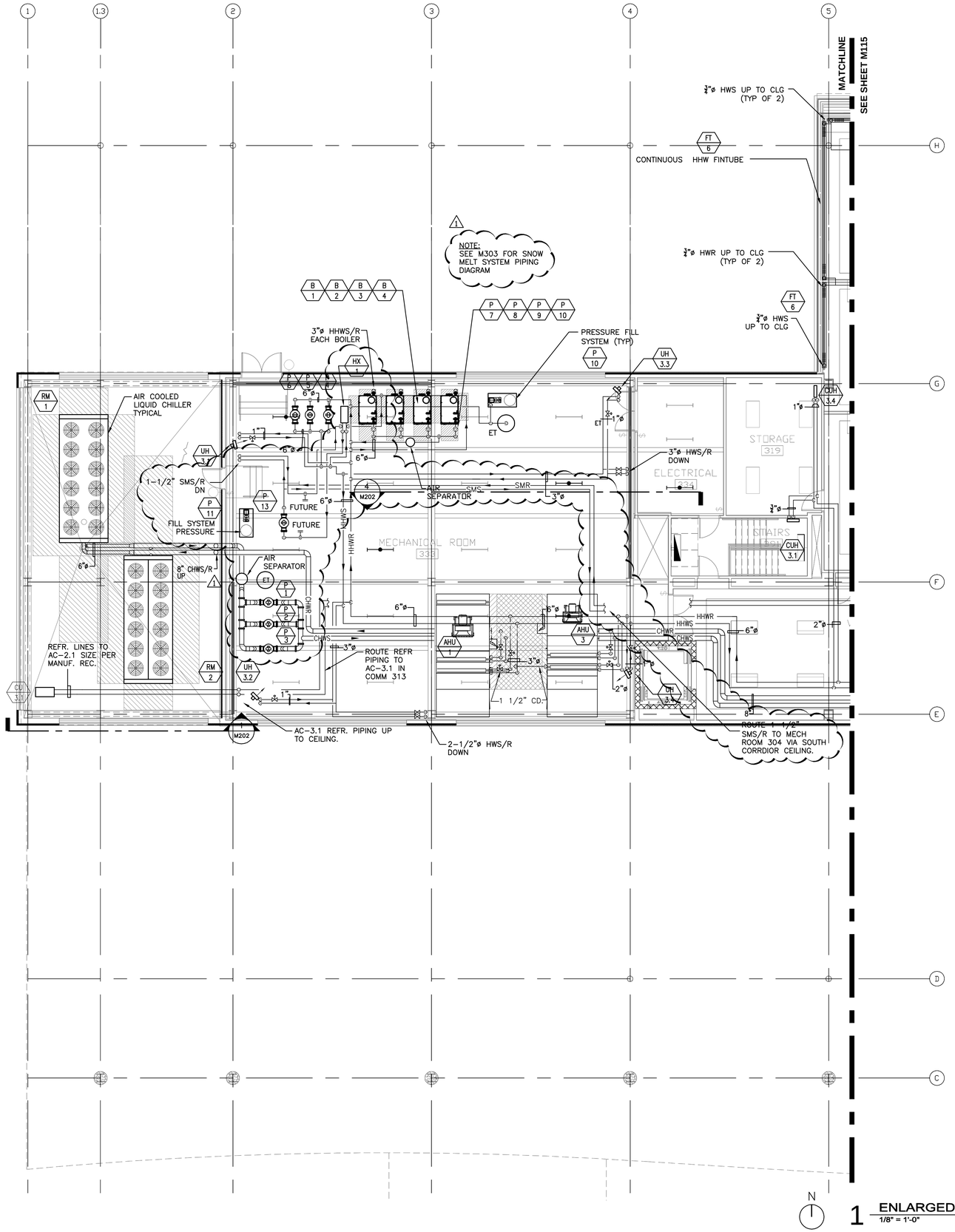
SHEET NUMBER
MP113

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2028.00 Duluth Airport\3.0 CADD\(3.4) HVAC\Dwgs\2028_MP113.dwg Plotted on: 2/25/2011 12:02 PM Plotted by: Brandt, Mark

GENERAL NOTES:

1. PERIMETER FINTUBE SHALL BE CONTROLLED AS FIRST STAGE OF HEATING THROUGH DDC INTERLOCK WITH RESPECTIVE ZONE FPB.



1 ENLARGED THIRD LEVEL FLOOR PLAN - ADMIN.
1/8" = 1'-0"

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	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: MB/JH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
ENLARGED THIRD FLOOR MECHANICAL PIPING PLAN AREA A

SHEET NUMBER
MP114

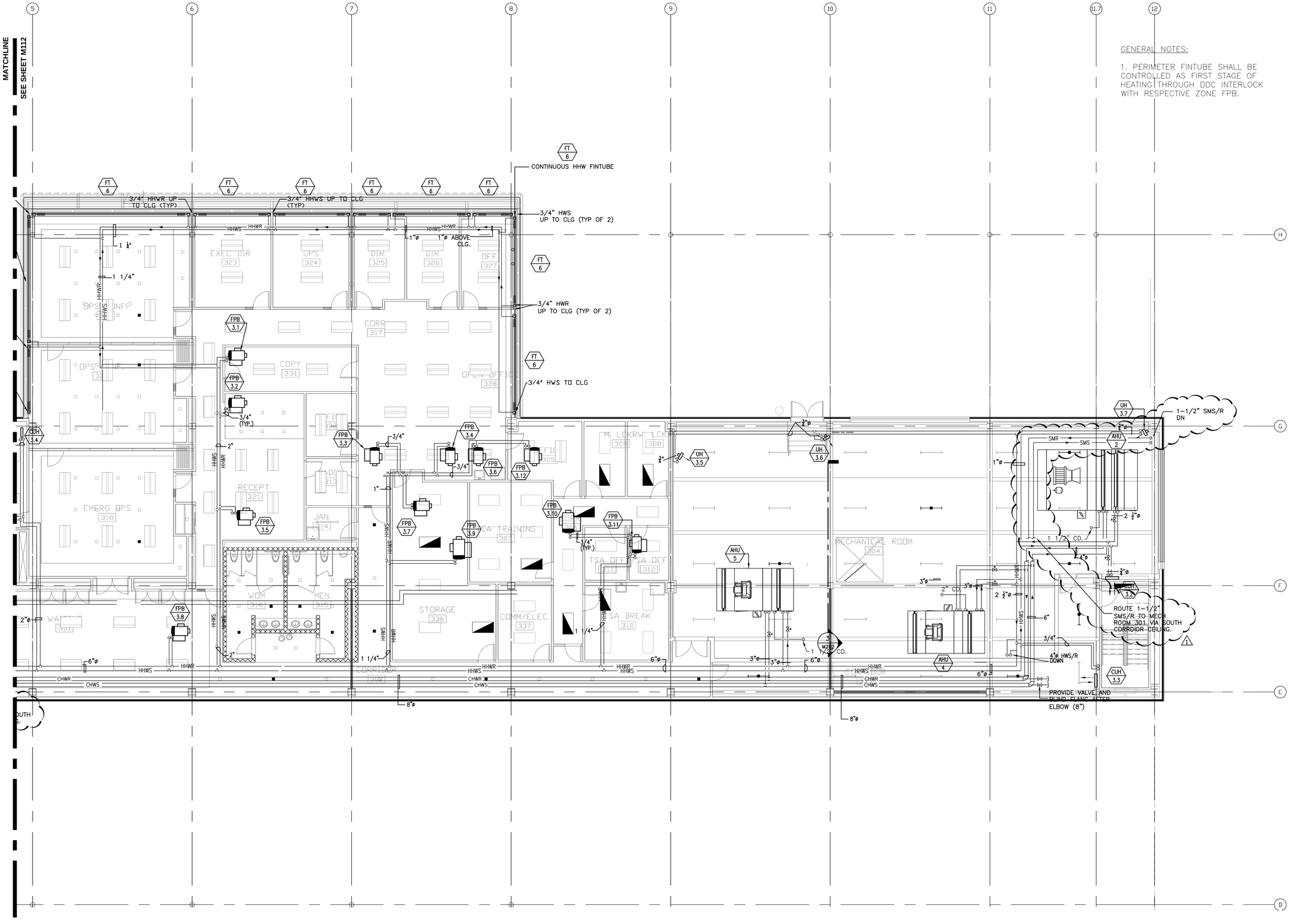
BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2010.00 Duluth Airport\5.0 CADD\5.4) HVAC\Dwgs\2010_MP114.dwg Plotted on: 2/25/2011 12:03 PM Plotted by: Brandi, Mark

MATCHLINE
SEE SHEET M112

GENERAL NOTES:

1. PERIMETER FINTUBE SHALL BE CONTROLLED AS FIRST STAGE OF HEATING THROUGH DDC INTERLOCK WITH RESPECTIVE ZONE FPB.



N

1 ENLARGED THIRD LEVEL MECHANICAL PLAN - AREA B
1/8" = 1'-0"

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ENGINEER CERTIFICATION
I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: Douglas C. Mass
Signature:
Date: 08/16/10
Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: MXB
DRAWN BY: MB/JEH
DESIGNED BY: MXB

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
ENLARGED THIRD FLOOR MECHANICAL PIPING PLAN AREA B

SHEET NUMBER
MP115

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2028.00 Duluth Airport\8.0 CAD\[8.4] HVAC\Dwgs\2028_MP115.dwg Plotted on: 2/25/2011 12:04 PM Plotted by: Brandi. Mark

SYMBOL	DESCRIPTION	NOTES
LIGHTING FIXTURES		
F1 a, F2 c, F3 b, F4 d	CEILING MOUNTED LIGHTING FIXTURES	UPPER CASE LETTERS INSCRIBED IN SYMBOL INDICATE FIXTURE TYPE REFERENCES TO FIXTURE LIST SUBSCRIPT LOWER CASE LETTERS INDICATE SWITCH CONTROL ASSOCIATIONS INIDCATES EMERGENCY LIGHTING:
F1 a, F4 d	WALL MOUNTED LIGHTING FIXTURES	F1 a, F3 b, F1 a CIRCUITRY FOR EMERGENCY LIGHTING AND EXIT SIGNS ARE DESIGNATED WITH "E" BEFORE THE CIRCUIT NUMBER.
	FLOOR MOUNTED LIGHTING FIXTURE	
EXIT SIGNS		
	WALL MOUNTED EXIT SIGN	APPLICATION OF SHADED QUADRANTS AND ARROWS THUS: INDICATE LETTERED FACE AND DIRECTIONAL ARROWS AT SYMBOLS FOR SIGNS FOR WHICH SELECTION OF SUCH FEATURES IS REQUIRED. SUBSCRIPT DESIGNATIONS XA, XB, XC, ETC. INDICATE EXIT SIGN TYPE REFERENCES TO LIGHTING FIXTURE LIST.
	CEILING MOUNTED EXIT SIGN	
JUNCTION AND PULL BOXES – SECONDARY LIGHT AND POWER WIRING		
HJ	PULL BOX OR JUNCTION BOX–OUTLET BOX TYPE WALL MOUNTED	
J	PULL BOX OR JUNCTION BOX–OUTLET BOX TYPE MOUNTED AT CEILING	
JB	JUNCTION BOX	
SECONDARY FEEDERS		
	FEEDER RUN CONCEALED ABOVE AS PER BASIC REQUIREMENTS FOR THE INSTALLATION OF CIRCUITRY.	
	FEEDER RUN CONCEALED BELOW AS PER BASIC REQUIREMENTS FOR THE INSTALLATION OF CIRCUITRY.	
	FEEDER RUN EXPOSED AS PER BASIC REQUIREMENTS FOR THE INSTALLATION OF	
FIRE PROTECTIVE ALARM SYSTEMS SOUNDING AND VISUAL DEVICES		
S	SPEAKER	SUBSCRIPT -P- DENOTES PRESIGNAL SUBSCRIPT -T- DENOTES TROUBLE SIGNAL SYMBOLS AS SHOWN REPRESENT CLG MOUNTED DEVICES–CIRCUMSCRIBED CIRCLES THUS:- SV DENOTE WALL MOUNTING SYMBOLS WITH LOWER PORTION LEFT UNSHADED DENOTE THAT THE ITEMS ARE PART OF AN OVERALL FIRE PROTECTIVE ALARM SYSTEM INSCRIBED SHADING IN LOWER PORTION DENOTES THAT THE ITEMS ARE PART OF A SEPARATE SYSTEM WHICH INCORPORATES ACTUATING DEVICES REPRESENTED BY SIMILARLY SHADED SYMBOLS SUBSCRIPT LOWER CASE LETTERS IN QUOTES DENOTE EXCEPTIONS TO SPECIFIED MOUNTING AS FOLLOWS: "f" - flush "s" - surface
SV	SPEAKER w/ VISUAL ALARM DEVICE	
V	VISUAL ALARM DEVICE	
FIRE PROTECTIVE ALARM SYSTEMS BASIC ITEMS		
FCP	CENTRAL EQUIPMENT OF SYSTEM	
FAA	OUTLYING ANNUNCIATOR	

SYMBOL	DESCRIPTION	NOTES
FIRE PROTECTIVE ALARM SYSTEM ACTUATING DEVICES		
S	MANUAL FIRE ALARM ACTUATING DEVICE OR STATION	SUBSCRIPT -K- DENOTES STRAP KEY STATION SUBSCRIPT UPPER CASE LETTERS DENOTE THE FOLLOWING:- a–main alarm valve waterflow detector W–WATERFLOW DETECTOR T–TAMPER SWITCH F–FLOAT SWITCH FR-FIRE PUMP RUNNING ALARM RELAY CONTACTS fp-fire pump power available alarm relay contacts P–AIR PRESSURE SWITCH DF-DRY PIPE AIR COMP. power failure DP-DRY PIPE air comp. low air comp SUBSCRIPT UPPER CASE LETTERS DENOTE THE FOLLOWING:- -RT-FIRESTAT–RATE OF RISE PLUS FIXED TEMPERATURE TYPE -FT-FIRESTAT–FIXED TEMPERATURE TYPE -PM–PNEUMATIC TUBE DIAPHRAGM SWITCH SUBSCRIPT NUMBERS IN PARENTHESIS AT SYMBOLS REPRESENTING FIRESTATS DENOTE EXCEPTIONS TO SPECIFIED STANDARD TEMPERATURE SETTINGS SUBSCRIPT NUMBERS IN PARENTHESIS AT SYMBOLS REPRESENTING PNEUMATIC TUBE DIAPHRAGM SWITCHES DENOTE LENGTH OF ASSOCIATED TUBING	SUBSCRIPT NUMBERS INDICATE ZONE OR CIRCUIT SUBSCRIPT LOWER CASE LETTERS IN QUOTES DENOTE EXCEPTIONS TO SPECIFIED STANDARD MOUNTING AS FOLLOWS:- "f" - flush "sf" -semiflush "s" - surface "d" - in duct SUBSCRIPT ROMAN NUMERALS DENOTE SYSTEM WHERE THERE IS MORE THAN ONE. SYMBOLS AS SHOWN REPRESENT WALL MOUNTED DEVICES –CIRCUMSCRIBED CIRCLES THUS:- DENOTE CEILING MOUNTING EXCEPT THAT FOR AUTOMATIC FIRE DETECTION ACTUATING DEVICES AS SHOWN DENOTE CEILING MOUNTED DEVICES AND CIRCUMSCRIBED CIRCLES DENOTE MOUNTING IN RAISED FLOOR. SUBSCRIPT UPPER CASE LETTERS IN PARENTHESIS DENOTE DEVICE FUNCTION THUS:- (TE)-TOCCC EVACUATION (FE)-FLOOR EVACUATION
SV	WATERFLOW SWITCH	
VSS	VALVE SUPERVISOR SWITCH	
SD	AUTOMATIC FIRE DETECTION ALARM ACTUATING DEVICES SMOKE DETECTOR	SUBSCRIPT UPPER CASE LETTERS DENOTE THE FOLLOWING:-
DD	DUCT SMOKE DETECTOR	
D	HEAT DETECTOR	
SD_T	BEAM TYPE SMOKE DETECTOR SUBSCRIPT "T" INDICATES TRANSMITTER	
SD_R	SUBSCRIPT "R" INDICATES RECEIVER	
	ELECTRIC DOOR LOCK	
DTU	DATA TRANSMISSION UNIT	
IR	AREA OF RESCUE ASSISTANCE INTERCOM STATION	

SYMBOL	DESCRIPTION	NOTES
WIRING DEVICES		
	WIRING DEVICE TYPE SWITCH	WITHOUT SUBSCRIPT NUMBER SYMBOL DENOTES "SINGLE POLE" SUBSCRIPT NUMBERS DENOTE -2 POLE- -3 WAY-, -4 WAY-, ETC. SUBSCRIPT LETTERS IN PARENTHESIS THUS:- (PL) INDICATE SEPARATE PILOT LIGHT.
	SWITCH WITH THERMAL OVERLOAD PROTECTION FOR 120V FRACTIONAL HP MOTORS	
	KEY OPERATED SWITCH	
		WITHOUT SUBSCRIPT UPPER CASE LETTERS SYMBOLS DENOTE WIRING DEVICE STANDARD AS SPECIFIED. SUBSCRIPT UPPER CASE LETTERS DENOTE NON STANDARD TYPE REFERENCE TO SCHEDULE OF NON STANDARD WIRING DEVICES. SUBSCRIPT LOWER CASE LETTERS INDICATE SWITCH CONTROL ASSOCCIATIONS.

SYMBOL	DESCRIPTION	NOTES
WIRING DEVICES (CONT)		
	WALL DUPLEX CONVENIENCE RECEPTACLE	SHADING OF SYMBOL THUS:- INDICATES RECEPTACLE WITH EACH HALF SEPARATELY WIRED (HALF CONSTANT, HALF SWITCH CONTROLLED)	"D" INDICATES DEDICATED RECEPTACLE
	WALL DOUBLE DUPLEX (QUAD) CONV. RECEPT.	
	GFI (GROUND FAULT INTERRUPTING) WALL DUPLEX CONVENIENCE RECEPTACLE	
	WALL SINGLE CONVENIENCE RECEPTACLE		
PS	POWER SUPPLY FOR ACCESS CONTROL		
	QUAD RECEPTACLE IN FLUSH FLOOR BOX	SEE TELECOM PLANS ("ET" SERIES) FOR INDICATION WHETHER BOX CONTAINS DATA	
	DUPLEX RECEPTACLE IN FLUSH FLOOR BOX		
P	QUAD RECEPTACLE PENDANT MOUNTED FROM CEILING		
1	CEILING DUPLEX RECEPTACLE		
	WALL SPECIAL PURPOSE POWER SUPPLY RECEPTACLE		
	FLOOR SPECIAL PURPOSE POWER SUPPLY RECEPTACLE		
	CEILING SPECIAL PURPOSE POWER SUPPLY RECEPTACLE	GANGING SYMBOL SHOWN IN CIRCUITRY RUN IN COMBINATION WITH ANY WIRING DEVICE SYMBOLS THUS:- DENOTES WIRING DEVICES WHICH ARE TO BE GANGED IN A SINGLE COMMON PLATE OUTLET.	
FB	FLOOR BOX FOR ILLUMINATED SIGNS - COORDINATE WITH MANUFACTURER REQUIREMENTS FOR COMPONENTS.		
	WIRING DEVICE GANGING SYMBOL		
MOTORS, PANELS, AND INDIVIDUALLY MOUNTED DEVICES AND EQUIPMENT - SECONDARY LIGHT AND POWER WIRING		
	MOTORS IN MECHANICAL SYSTEM EQUIPMENT.	COMPLETE INFORMATION FOR MOTORS IS INDICATED BY APPLICATION OF TAG SYMBOL REFERENCE TO MOTOR LIST	
	INDIVIDUALLY MOUNTED SECONDARY OVERCURRENT AND SWITCHING DEVICES (CIRCUIT BREAKERS, FUSIBLE SWITCHES, UNFUSED SWITCHES, ETC.) APPLIED AS SPECIFIED.	PROVIDE VOLTAGE TO MATCH EQUIPMENT VOLTAGE. AMPERAGE AND POLES ARE INDICATED ON PLANS - SOME SIZES SHOULD BE VERIFIED WITH EQUIPMENT MANUFACTURER (WHERE NOTED).	
	MOTOR STARTER FOR MOTORS IN MECHANICAL SYSTEM EQUIPMENT.	SUBSCRIPT NUMBERS INDICATE FUSING WHERE REQUIRED (3 POLE FUSING UNLESS NOTED).	COMPLETE INFORMATION FOR MOTOR CONTROL ITEMS IS INDICATED BY THE TAG SYMBOL REFERENCE APPLIED TO ASSOCIATED MOTORS–WHERE RELATION OF MOTORS TO CONTROL ITEMS IS NOT EVIDENT, MOTOR TAG SYMBOLS ARE REPEATED AT SYMBOLS REPRESENTING THESE ITEMS TO CLARIFY THESE ASSOCIATIONS.
	POWER OR DISTRIBUTION PANEL.	ARROW OF NOTE INDICATING PANEL DESIGNATION ALSO DENOTES FRONT FACE OF PANEL.	
	LIGHTING OR APPLIANCE PANEL.		
	INDIVIDUALLY MOUNTED DRY TYPE TRANSFORMER PRIMARY VOLTAGE TO SECONDARY VOLTAGE	SUBSCRIPT NUMBERS INDICATE KVA RATING.	

SYMBOL	DESCRIPTION	NOTES
LIGHTING CONTROL - ALL LIGHTING CONTROL TO ACCOMODATE 277V U.N.O.		
	DESCRIPTION	MANUFACTURER/CAT. #
Sos	LINE VOLTAGE, DUAL TECHNOLOGY WALL SWITCH SENSOR WALL–MOUNTED AT STANDARD SWITCH HEIGHT NEAR DOORS. SET FOR MANUAL–ON, AUTOMATIC–OFF OPERATION. PROVIDE THREE–WAY VERSION WHERE REQUIRED. 180° COVERAGE PATTERN REQUIRED.	WATTSTOPPER DT-200 LEVITON OSSMT HUBBELL H-MOSS AD1277W1
Sos2	LINE VOLTAGE, DUAL RELAY WALL SWITCH SENSOR WALL–MOUNTED AT STANDARD SWITCH HEIGHT NEAR DOORS. SET FOR MANUAL–ON, AUTOMATIC–OFF OPERATION. 180° COVERAGE PATTERN REQUIRED.	WATTSTOPPER DW-200 LEVITON OSSMD HUBBELL WS1277W2
$	DIMMING SWITCH	
DL	INDOOR DAYLIGHTING SENSOR. CEILING MOUNTED.	SQUARE D C–BUS LIGHT LEVEL SENSOR
OS	LINE VOLTAGE, DUAL TECHNOLOGY MOTION SENSOR. MINIMUM 1,000 SQUARE FOOT COVERAGE. RECEIVES LOW VOLTAGE POWER FROM SWITCHPACK, AND RETURNS A LOW–VOLTAGE SIGNAL TO SWITCHPACK WHEN MOTION IS DETECTED. CEILING MOUNTED.	WATTSTOPPER DT-300 LEVITON OSC10–MDW HUBBELL OMNI–DT–2000

SYMBOL	DESCRIPTION	NOTES
TAG SYMBOLS		
	SECONDARY FEEDER TAG SYMBOL	INFORMATION IS LISTED IN THE TAG SYMBOL THUS:- FEEDER DESIGNATION NUMBER AND SIZE OF CONDUITS NUMBER AND SIZE OF CONDUCTORS REFERENCE TO AN APPLICABLE NOTE CONDUIT SIZE INDICATED ALONE DENOTES A SINGLE CONDUIT.
	SECONDARY INDIVIDUALLY MOUNTED OVERCURRENT AND/OR SWITCHING DEVICE TAG SYMBOL	INFORMATION IS LISTED IN THE TAG SYMBOL THUS:- "600" OR "250" INDICATES VOLTAGE RANGE AT WHICH DEVICE IS TO OPERATE. "2", "3", "3-N", ETC, INDICATES "2" POLE "3 POLE "3 POLE PLUS NEUTRAL, "ETC. DEVICE SIZE IN AMPERES. "U" INDICATES THAT NO OVERCURRENT PROTECTION IS REQUIRED–NUMBER INDICATES SIZE OF OVERCURRENT PROTECTION REQUIRED. INDIVIDUALLY MOUNTED OVERCURRENT AND SWITCHING DEVICES ARE FOR SURFACE MOUNTING UNLESS THE TAG SYMBOL CARRIES AN EXTERNAL SUBSCRIPT "f" INDICATING FLUSH MOUNTING.

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ENGINEER CERTIFICATION
I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
ELECTRICAL SYMBOLS

SHEET NUMBER
E001

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2008.09 Duluth Airport\5.0 CAD\(5.1) Electrical\Dwgs\2008_E001.dwg Plotted on: 2/24/2011 3:02 PM Plotted by: Koelker, Jennifer

NOTES:

1. BRANCH CIRCUITS IN ELEVATOR MACHINE ROOM SHALL BE CONNECTED TO "ELEV" PANEL LOCATED WITHIN ROOM.
2. COMPUTER RECEPTACLES SHALL BE IG TYPE (ISOLATED GROUND) AND ON A DEDICATED CIRCUIT, CONNECTED TO "ERP" PANEL AS INDICATED ON THIS SHEET U.N.O. CIRCUIT NUMBERS ARE DESIGNATED WITH PREFIX "C".
3. RECEPTACLES AND OTHER ELECTRICAL DEVICES ON NORMAL POWER SHALL BE CONNECTED TO PANEL "RP" PANELS AS INDICATED ON THIS SHEET U.N.O.
4. FANS FOR UNIT HEATERS ("UH") AND CABINET UNIT HEATERS ("CUH") ON THIS SHEET SHALL BE CONNECTED TO PANEL "RP-1A" U.N.O.
5. CIRCUITS 25,27 AND 29 ARE DESIGNATED FOR BREAK ROOM APPLIANCES. SEE PANEL SCHEDULE "RP-1B".
6. PROVIDE BHS MAINTENANCE RECECPTACLES ALONG CONVEYOR LINES. RECEPTACLES SHALL BE 20A, 120V GROUNDED DUPLEX. COORDINATE WITH BHS MANUFACTURER FOR RECOMMENDED LOCATIONS AND SPACING.
7. STROBES THAT ARE LOCATED WITHIN THE SAME FIELD OF VIEW SHALL FLASH IN SYNCHRONIZATION.
8. PROVIDE RACEWAYS, JUNCTION BOXES AND POWER, WHERE REQUIRED, FOR TELECOM, SECURITY, AV DEVICES AND SIGNAGE. REFER TO RESPECTIVE PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
9. POWER PROVISIONS FOR MOTORIZED ROLLING DOORS AND SHUTTERS SHALL BE BASED ON MANUFACTURER'S REQUIREMENTS (INCLUDING LOCAL DISCONNECT). CONTRACTOR SHALL ALSO WIRE ASSOCIATED PUSHBUTTONS SUPPLIED WITH DOORS/SHUTTERS.
10. REFER TO "ET" SERIES DWGS FOR EXACT LOCATION AND MOUNTING DETAILS FOR FIDS. ADJUST POWER PROVISIONS ACCORDINGLY.
11. PROVIDE CODE REQUIRED CLEARANCE IN FRONT OF PANELBOARDS LOCATED IN ELEVATOR MACHINE ROOMS.

KEYED NOTES:

(1) MINIMUM QUANTITY OF SMOKE DETECTORS INDICATED. SMOKE DETECTOR PLACEMENT AND QUANTITY SHALL BE BASED ON COORDINATION WITH EQUIPMENT LAYOUT.

(2) LOCATE RECEPTACLE IN INTERVIEW ROOM 6" ABOVE WRITING COUNTER.

(3) LOCATE POWER STRIP CONTAINING IG, GFI TYPE RECEPTACLES 6" ABOVE WORK SURFACE.

(4) NOT USED

(5) PROVIDE A ELEVATOR MACHINE ROOM HEAT DETECTOR WITHIN 24" OF EACH SPRINKLER HEAD.

(6) JBOX FOR BAGGAGE CONVEYOR MCP 480V POWER. CONTRACTOR SHALL VERIFY LOCATION OF MCP AND POWER REQUIREMENTS PER BAGGAGE HANDLING SYSTEM MANUFACTURER.

(7) JBOX FOR BAGGAGE CONVEYOR MCP 120V POWER. CONTRACTOR SHALL VERIFY LOCATION OF MCP.

(8) NOT USED

(9) RECEPTACLES FOR SECURITY XRAY MACHINE. LOCATED PER MANUFACTURER'S REQUIREMENTS.

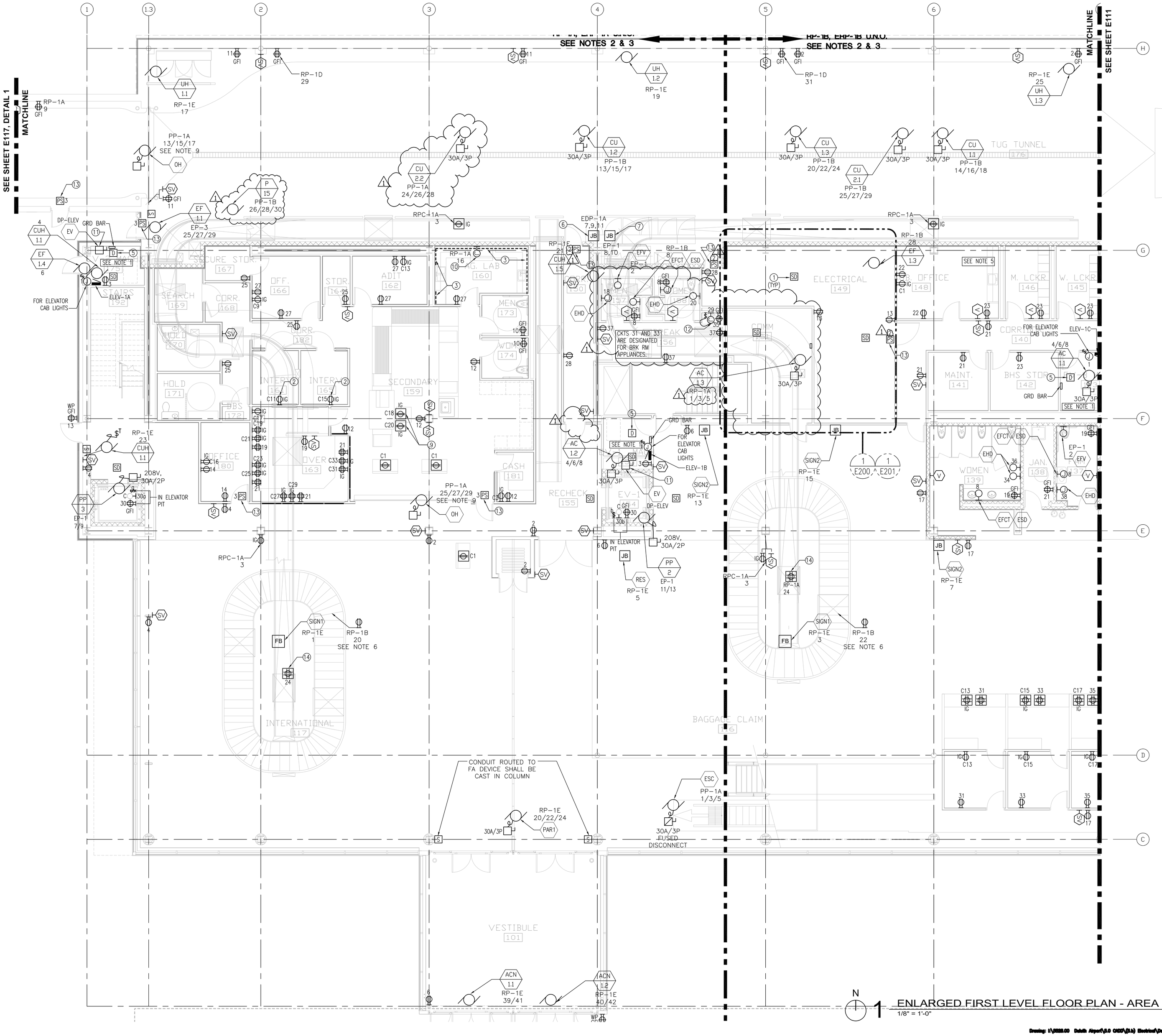
(10) JBOX FOR FUME HOOD. COORDINATE OCP DEVICE AND FEEDER SIZE PER MANUFACTURER'S REQUIREMENTS.

(11) PROVIDE POWER MODULE SWITCH EATON TYPE "PS6T48R1KGBF3" OR APPROVED EQUAL FOR EACH ELEVATOR. CAT. # IS BASED ON MOTOR SIZE 25HP OR BELOW, ADJUST ACCORDINGLY IF MOTOR EXCEEDS 25HP.

(12) JUNCTION BOX FOR GARBAGE DISPOSAL. VERIFY POWER REQUIREMENTS PER EQUIPMENT MANUFACTURER.

(13) PROVIDE POWER FOR ACCESS CONTROL POWER SUPPLY (POWER SUPPLY ENCLOSURE PROVIDED BY OTHERS). REFER TO "ET" SERIES DWGS FOR ADDITIONAL INFORMATION. INTERFACE EIBS WITH FA SYSTEM WHERE INDICATED ON "ET" SERIES DWGS.
ACCESS CONTROL POWER SUPPLIES SHALL BE CONNECTED TO PNL "EPP-1D". (THERE SHALL BE NO MORE THAN 4 POWER SUPPLIES PER CIRCUIT.

(14) QUAD RECEPTACLE FOR AIRPORT SIGNAGE. CONFIRM CORRECT LOCATION AND POWER REQUIREMENTS.



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Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	**ADDENDUM 1**	**6.11.10**
	CONFORMANCE SET	**7.12.10**
3	**PERMIT REVISIONS**	**7.23.10**
	BUILDING PERMIT	**8.16.10**
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

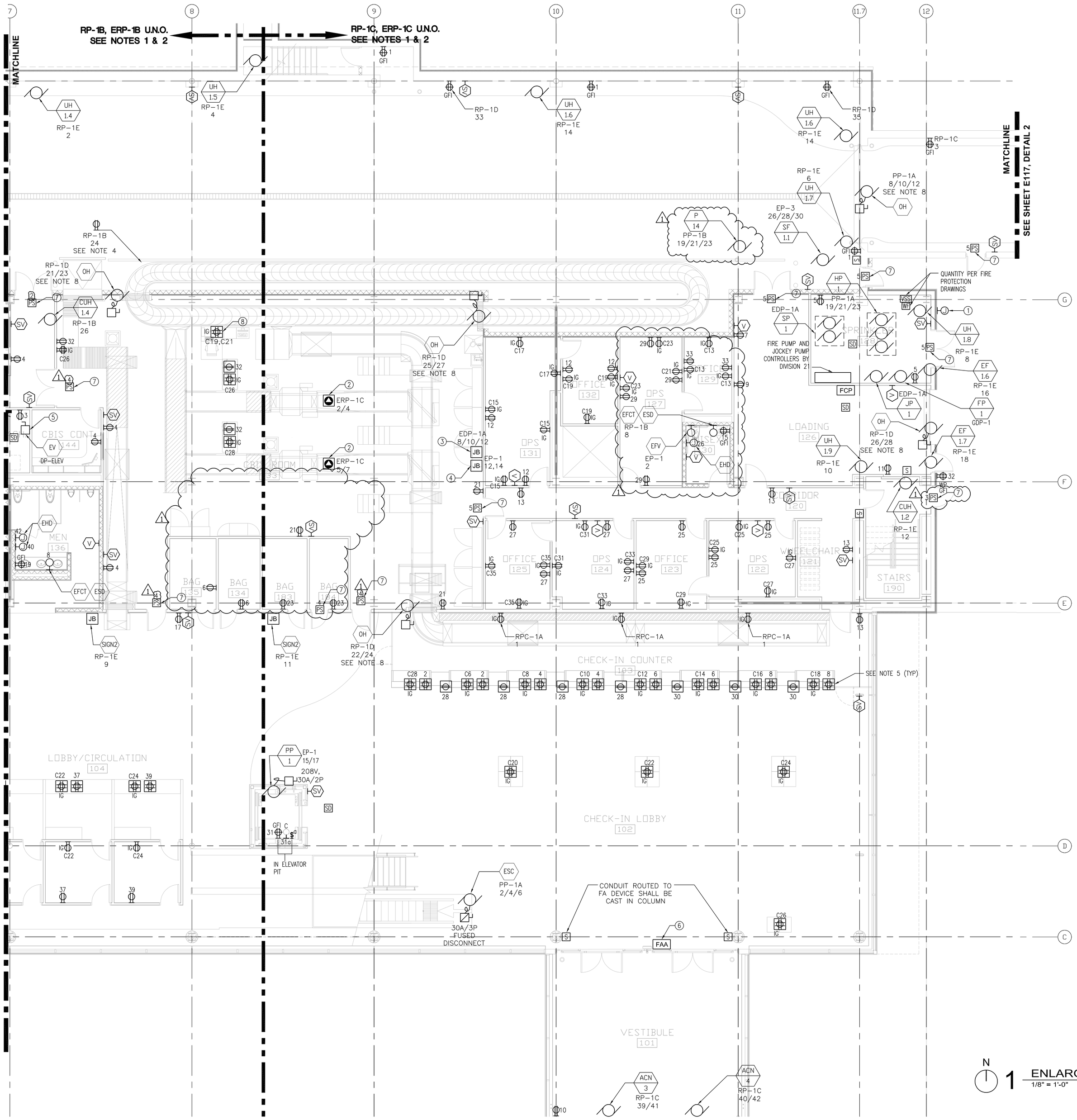
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SHEET TITLE
ENLARGED FIRST FLOOR ELECTRICAL PLAN AREA A

SHEET NUMBER
E110

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2008.00 Duluth Airport\5.0 CADD\(5.1) Electrical\Dwgs\2008_E110.dwg Plotted on: 2/24/2011 4:09 PM Plotted by: Koelker, Jennifer



1 ENLARGED FIRST LEVEL FLOOR PLAN - AREA B
1/8" = 1'-0"

NOTES:

1. COMPUTER RECEPTACLES SHALL BE IG TYPE (ISOLATED GROUND) AND ON A DEDICATED CIRCUIT, CONNECTED TO "ERP" PANEL AS INDICATED ON THIS SHEET U.N.O. CIRCUIT NUMBERS ARE DESIGNATED WITH PREFIX "C".
2. RECEPTACLES AND OTHER ELECTRICAL DEVICES ON NORMAL POWER SHALL BE CONNECTED TO "RP" PANELS AS INDICATED ON THIS SHEET U.N.O.
3. FANS FOR UNIT HEATERS ("UH") AND CABINET UNIT HEATERS ("CUH") ON THIS SHEET SHALL BE CONNECTED TO PANEL "RP-1B" U.N.O.
4. PROVIDE BHS MAINTENANCE RECEPTACLES ALONG CONVEYOR LINES. RECEPTACLES SHALL BE 20A, 120V GROUNDED DUPLEX. COORDINATE WITH BHS MANUFACTURER FOR RECOMMENDED LOCATIONS AND SPACING.
5. MOUNTING/LOCATION FOR TICKET COUNTER RECEPTACLES SHALL BE CONFIRMED.
6. STROBES THAT ARE LOCATED WITHIN THE SAME FIELD OF VIEW SHALL FLASH IN SYNCHRONIZATION.
7. PROVIDE RACEWAYS, JUNCTION BOXES AND POWER, WHERE REQUIRED, FOR TELECOM, SECURITY, AV DEVICES AND SIGNAGE. REFER TO RESPECTIVE PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
8. POWER PROVISIONS FOR MOTORIZED ROLLING DOORS AND SHUTTERS SHALL BE BASED ON MANUFACTURER'S REQUIREMENTS (INCLUDING LOCAL DISCONNECT). CONTRACTOR SHALL ALSO WIRE ASSOCIATED PUSHBUTTONS SUPPLIED WITH DOORS/SHUTTERS.
9. REFER TO "ET" SERIES DWGS FOR EXACT LOCATION AND MOUNTING DETAILS FOR FIDS. ADJUST POWER PROVISIONS ACCORDINGLY.

KEYED NOTES:

1. JUNCTION BOX FOR FIRE BELL. BELL SHALL BE CONNECTED TO PANEL "EPP-1D", CKT 1.
2. NEMA L6-30R RECEPTACLE FOR EDS MACHINE. LOCATE RECEPTACLE PER MANUFACTURER REQUIREMENTS.
3. JBOX FOR BAGGAGE CONVEYOR MCP 480V POWER. CONTRACTOR SHALL VERIFY LOCATION OF MCP AND POWER REQUIREMENTS PER BAGGAGE HANDLING SYSTEM MANUFACTURER.
4. JBOX FOR BAGGAGE CONVEYOR MCP 120V POWER. CONTRACTOR SHALL VERIFY LOCATION OF MCP.
5. PROVIDE POWER MODULE SWITCH EATON TYPE "PS6T48R1KGBF3" OR APPROVED EQUAL FOR EACH ELEVATOR. CAT. # IS BASED ON MOTOR SIZE 25HP OR BELOW, ADJUST ACCORDINGLY IF MOTOR EXCEEDS 25HP.
6. REMOTE FIRE ALARM ANNUNCIATOR. SEE ARCHITECTURAL PLANS FOR EXACT LOCATION.
7. PROVIDE POWER FOR ACCESS CONTROL POWER SUPPLY (POWER SUPPLY ENCLOSURE PROVIDED BY OTHERS). REFER TO "ET" SERIES DWGS FOR ADDITIONAL INFORMATION. INTERFACE EIBS WITH FA SYSTEM WHERE INDICATED ON "ET" SERIES DWGS.
   ACCESS CONTROL POWER SUPPLIES SHALL BE CONNECTED TO PNC "EPP-1D". THERE SHALL BE NO MORE THAN 4 POWER SUPPLIES PER CIRCUIT. (1)
8. WIRE EACH HALF OF QUAD RECEPTACLE SEPARATELY TO ACCOMODATE BOTH BAGGAGE VIEWING STATION AND FIELD DATA RECORDING STATION. VERIFY LOCATION OF POWER CONNECTION.

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ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

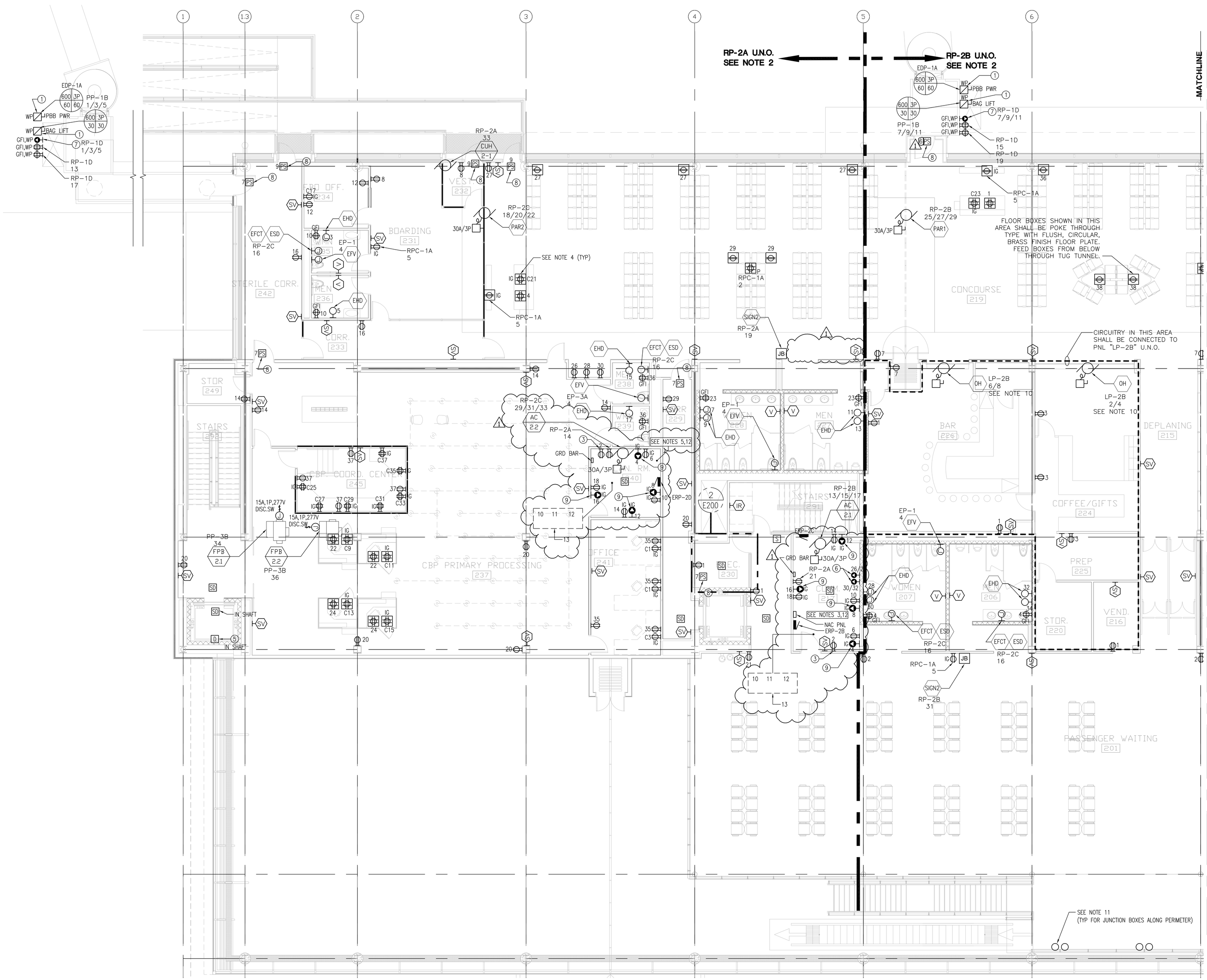
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SHEET TITLE
ENLARGED FIRST FLOOR ELECTRICAL PLAN AREA A

SHEET NUMBER
E111

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2010.00 Duluth Airport\5.0 CADD\(2d) Electrical\Dwgs\2010_E111.dwg Plotted on: 2/24/2011 4:04 PM Plotted by: Kastner, Jennifer



N

1 ENLARGED SECOND LEVEL FLOOR PLAN - AREA A
1/8" = 1'-0"

NOTES:

1. COMPUTER RECEPTACLES SHALL BE IG TYPE (ISOLATED GROUND) AND ON A DEDICATED CIRCUIT, CONNECTED TO PANEL "ERP-2B" U.N.O. CIRCUIT NUMBERS ARE DESIGNATED WITH PREFIX "C".
2. RECEPTACLES AND OTHER ELECTRICAL DEVICES ON NORMAL POWER ON THIS SHEET SHALL BE CONNECTED TO "RP" PANELS AS INDICATED ON THIS SHEET U.N.O.
3. WALL RECEPTACLES IN COMM. ROOM 211 SHALL BE CONNECTED TO PANEL "ERP-2B" U.N.O. CEILIING MOUNTED RECEPTACLES SHALL BE CONNECTED TO PANEL "ERP-2C".
4. MOUNTING LOCATION FOR TICKET COUNTER RECEPTACLES SHALL BE CONFIRMED.
5. RECEPTACLES IN COMP. ROOM 222 SHALL BE CONNECTED TO PANEL "ERP-2D" U.N.O.
6. AVOID ROUTING UNDER FLOOR CONDUIT THROUGH TSA AREA UNLESS CONDUIT IS SERVING DEVICES IN AREA.
7. STROBES THAT ARE LOCATED WITHIN THE SAME FIELD OF VIEW SHALL FLASH IN SYNCHRONIZATION.
8. PROVIDE RACEWAYS, JUNCTION BOXES AND POWER, WHERE REQUIRED, FOR TELECOM, SECURITY, AV DEVICES AND SIGNAGE. REFER TO RESPECTIVE PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
9. REFER TO "ET" SERIES DWGS FOR EXACT LOCATION AND MOUNTING DETAILS FOR FIDS. ADJUST POWER PROVISIONS ACCORDINGLY.
10. POWER PROVISIONS FOR MOTORIZED ROLLING GRILLES AND PARTITIONS SHALL BE BASED ON MANUFACTURER'S REQUIREMENTS (INCLUDING LOCAL DISCONNECT). CONTRACTOR SHALL ALSO WIRE ASSOCIATED PUSHBUTTONS SUPPLIED WITH GRILLES.
11. JUNCTION BOX FOR MECHOSHADE MOTORIZED SHADE, "WHISPER SHADE" SERIES – CONNECT SHADES TO PANEL "RP-2C". WORK ASSOCIATED WITH MOTORIZED SHADES IS AN ALTERNATE AND SHOULD BE PRICED SEPARATELY. SEE ARCHITECTURAL PLANS FOR FULL SHADE SPECIFICATION. INCLUDE WIRING FOR BUS SUPPLIES, MOTOR CONTROLLERS AND OTHER SHADE SYSTEM COMPONENTS – COORDINATE WITH MANUFACTURER FOR FULL REQUIREMENTS.
12. COORDINATE LOCATIONS OF GROUND BAR, PANELBOARDS AND WALL MOUNTED RECEPTACLES WITH LOCATIONS OF TELECOM EQUIPMENT. PROVIDE CODE REQUIRED CLEARANCES FOR ELECTRICAL EQUIPMENT.
13. PROVIDE QUAD RECEPTACLE FOR ASTRO BASE STATIONS LOCATED IN TELECOM EQUIPMENT ROOMS ON DEDICATED 20A/1P CIRCUIT. CONNECT TO "ERP" PANEL WITHIN SAME ROOM. LOCATION SHALL BE FIELD VERIFIED.

KEYED NOTES:

1. VERIFY POWER REQUIREMENTS WITH MANUFACTURER OF EQUIPMENT FOR PASSENGER BRIDGE (PBB PWR) AND BAG LIFT. COORDINATE LOCATION OF POWER CONNECTION WITH OWNER.
2. NOT USED
3. DEDICATED 20A DUPLEX RECEPTACLE FOR FM-200 SYSTEM CONTROLS. COORDINATE RECEPTACLE LOCATION WITH FM-200 LOCATION. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.
4. NOT USED
5. LOCATE A ELEVATOR SHAFT HEAT DETECTOR WITH 24" OF EACH SPRINKLER HEAD.
6. 30A, 208V, SINGLE PHASE RECEPTACLE WITH TWISTLOCK FOR PAGING SYSTEM. CONFIRM LOCATION WITHIN ROOM.
7. 30A, 208V, 3PH, GFI, WP RECEPTACLE WITH TWISTLOCK. CONFIRM AMPERAGE OF RECEPTACLE. LOCATION TO BE COORDINATED WITH OWNER.
8. PROVIDE POWER FOR ACCESS CONTROL POWER SUPPLY (POWER SUPPLY ENCLOSURE PROVIDED BY OTHERS). REFER TO "ET" SERIES DWGS FOR ADDITIONAL INFORMATION. INTERFACE EIBS WITH FA SYSTEM WHERE INDICATED ON "ET" SERIES DWGS.
   ACCESS CONTROL POWER SUPPLIES SHALL BE ~~CONNECTED TO PNL "ERP-1C".~~ THERE SHALL BE NO MORE THAN 4 POWER SUPPLIES PER CIRCUIT.
9. 20A DUPLEX RECEPTACLE WITH TWISTLOCK, NEMA L5-20.
10. PROVIDE DUPLEX CEILING MOUNTED RECEPTACLE ABOVE EACH RACK ON A DEDICATED CIRCUIT. SEE SHEET ET502 FOR RACK LOCATIONS.
11. PROVIDE DUPLEX CEILING MOUNTED RECEPTACLE WITH TWISTLOCK, NEMA L5-20, ABOVE EACH RACK ON A DEDICATED CIRCUIT. SEE SHEET ET502 FOR RACK LOCATIONS.
12. PROVIDE A 30A, 208V CEILING MOUNTED RECEPTACLE FOR EACH RACK MOUNTED UPS ON A DEDICATED CIRCUIT. SEE SHEET ET501 FOR INDICATION OF RACKS CONTAINING UPS EQUIPMENT AND SHEET ET502 FOR RACK LOCATIONS.
13. INSTALL CEILING MOUNTED RECEPTACLES WITHIN 8'-0" OF BOTTOM OF RACK. SEE SHEET ET502 FOR RACK LOCATIONS.

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ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

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1	ADDENDUM 1	6.11.10
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	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

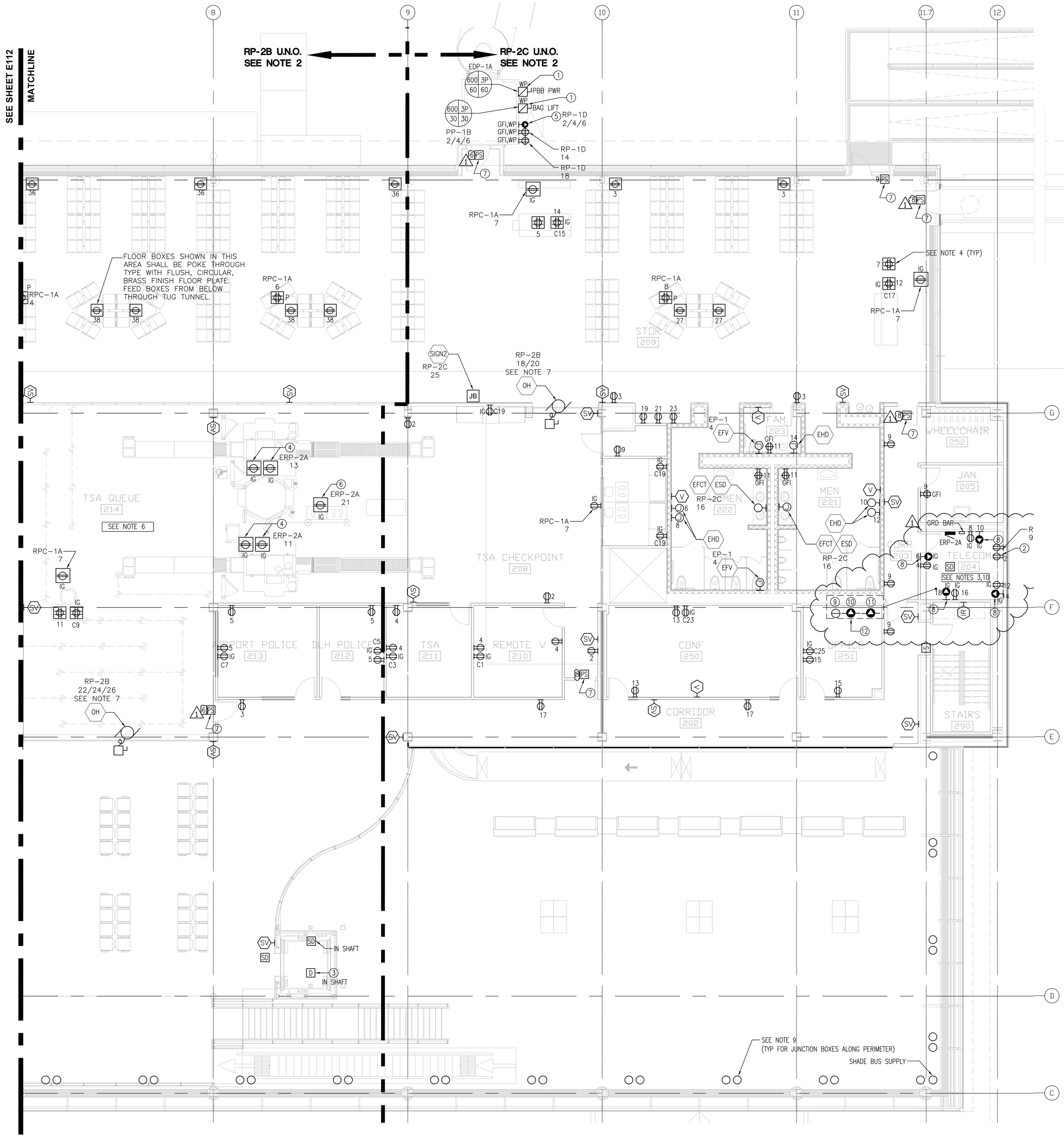
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SHEET TITLE
ENLARGED SECOND FLOOR ELECTRICAL PLAN AREA A

SHEET NUMBER
E112

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2035.00 Duluth Airport\5.0 CADD\(5.1) Electrical\Dwgs\2035_E112.dwg Plotted on: 2/24/2011 4:05 PM Plotted by: Kastner, Jennifer



N

1 ENLARGED SECOND LEVEL FLOOR PLAN - AREA B
1/8" = 1'-0"

NOTES:

1. COMPUTER RECEPTACLES SHALL BE IG TYPE (ISOLATED GROUND) AND ON A DEDICATED CIRCUIT, CONNECTED TO PANEL "ERP-2A" U.N.O. CIRCUIT NUMBERS ARE DESIGNATED WITH PREFIX "C".
2. RECEPTACLES AND OTHER ELECTRICAL DEVICES ON NORMAL POWER ON THIS SHEET SHALL BE CONNECTED TO "RP" PANELS AS INDICATED ON THIS SHEET, U.N.O.
3. RECEPTACLES IN TELECOM ROOM 243 SHALL BE CONNECTED TO PANEL "ERP-2A" U.N.O.
4. MOUNTING/LOCATION FOR TICKET COUNTER RECEPTACLES SHALL BE CONFIRMED.
5. STROBES THAT ARE LOCATED WITHIN THE SAME FIELD OF VIEW SHALL FLASH IN SYNCHRONIZATION.
6. PROVIDE RACEWAYS, JUNCTION BOXES AND POWER, WHERE REQUIRED, FOR TELECOM, SECURITY, AV DEVICES AND SIGNAGE. REFER TO RESPECTIVE PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. POWER PROVISIONS FOR MOTORIZED ROLLING GRILLES SHALL BE BASED ON MANUFACTURER'S REQUIREMENTS (INCLUDING LOCAL DISCONNECT). CONTRACTOR SHALL ALSO WIRE ASSOCIATED PUSHBUTTONS SUPPLIED WITH GRILLES.
8. REFER TO "ET" SERIES DWGS FOR EXACT LOCATION AND MOUNTING DETAILS FOR FIDS. ADJUST POWER PROVISIONS ACCORDINGLY.
9. JUNCTION BOX FOR MECHOSHADE MOTORIZED SHADE, "WHISPER SHADE" SERIES – CONNECT SHADES TO PANEL "RP-2C". WORK ASSOCIATED WITH MOTORIZED SHADES IS AN ALTERNATE AND SHOULD BE PRICED SEPARATELY. SEE ARCHITECTURAL PLANS FOR FULL SHADE SPECIFICATION. INCLUDE WIRING FOR BUS SUPPLIES, MOTOR CONTROLLERS AND OTHER SHADE SYSTEM COMPONENTS – COORDINATE WITH MANUFACTURER FOR FULL REQUIREMENTS.
10. COORDINATE LOCATIONS OF GROUND BAR, PANELBOARDS AND WALL MOUNTED RECEPTACLES WITH LOCATIONS OF TELECOM EQUIPMENT. PROVIDE CODE REQUIRED CLEARANCES FOR ELECTRICAL EQUIPMENT.
11. PROVIDE QUAD RECEPTACLE FOR ASTRO BASE STATIONS LOCATED IN TELECOM EQUIPMENT ROOMS ON DEDICATED 20A/1P CIRCUIT. CONNECT TO "ERP" PANEL WITHIN SAME ROOM. LOCATION SHALL BE FIELD VERIFIED.

KEYED NOTES:

(1) VERIFY POWER REQUIREMENTS WITH MANUFACTURER OF EQUIPMENT FOR PASSENGER BRIDGE (PBB PWR) AND BAG LIFT. COORDINATE LOCATION OF POWER CONNECTION WITH OWNER.

(2) DEDICATED 20A DUPLEX RECEPTACLE FOR FM-200 SYSTEM CONTROLS. COORDINATE RECEPTACLE LOCATION WITH FM-200 LOCATION. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.

(3) LOCATE A ELEVATOR SHAFT HEAT DETECTOR WITH 24" OF EACH SPRINKLER HEAD.

(4) COORDINATE LOCATION OF RECEPTACLE FOR XRAY MACHINE PER MANUFACTURER REQUIREMENTS.

(5) 30A, 208V, 3PH, GFI, WP RECEPTACLE WITH TWISTLOCK. CONFIRM AMPERAGE OF RECEPTACLE. LOCATION TO BE COORDINATED WITH OWNER.

(6) COORDINATE LOCATION OF RECEPTACLE FOR WHOLE BODY IMAGER PER MANUFACTURER REQUIREMENTS.

(7) PROVIDE POWER FOR ACCESS CONTROL POWER SUPPLY (POWER SUPPLY ENCLOSURE PROVIDED BY OTHERS). REFER TO "ET" SERIES DWGS FOR ADDITIONAL INFORMATION. INTERFACE EIBS WITH FA SYSTEM WHERE INDICATED ON "ET" SERIES DWGS.
ACCESS CONTROL POWER SUPPLIES SHALL BE ~~CONNECTED TO PNL "ERP-1A". THERE~~ SHALL BE NO MORE THAN 4 POWER SUPPLIES PER CIRCUIT.

(8) 20A DUPLEX RECEPTACLE WITH TWISTLOCK, NEMA L5-20.

(9) PROVIDE DUPLEX CEILING MOUNTED RECEPTACLE ABOVE EACH RACK ON A DEDICATED CIRCUIT. SEE SHEET ET502 FOR RACK LOCATIONS.

(10) PROVIDE DUPLEX CEILING MOUNTED RECEPTACLE WITH TWISTLOCK, NEMA L5-20, ABOVE EACH RACK ON A DEDICATED CIRCUIT. SEE SHEET ET502 FOR RACK LOCATIONS.

(11) PROVIDE A 30A, 208V CEILING MOUNTED RECEPTACLE FOR EACH RACK MOUNTED UPS ON A DEDICATED CIRCUIT. SEE SHEET ET501 FOR INDICATION OF RACKS CONTAINING UPS EQUIPMENT AND SHEET ET502 FOR RACK LOCATIONS.

(12) INSTALL CEILING MOUNTED RECEPTACLES WITHIN 8'-0" OF BOTTOM OF RACK. SEE SHEET ET502 FOR RACK LOCATIONS.

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TEL: (218) 591-5079

ENGINEER CERTIFICATION
I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

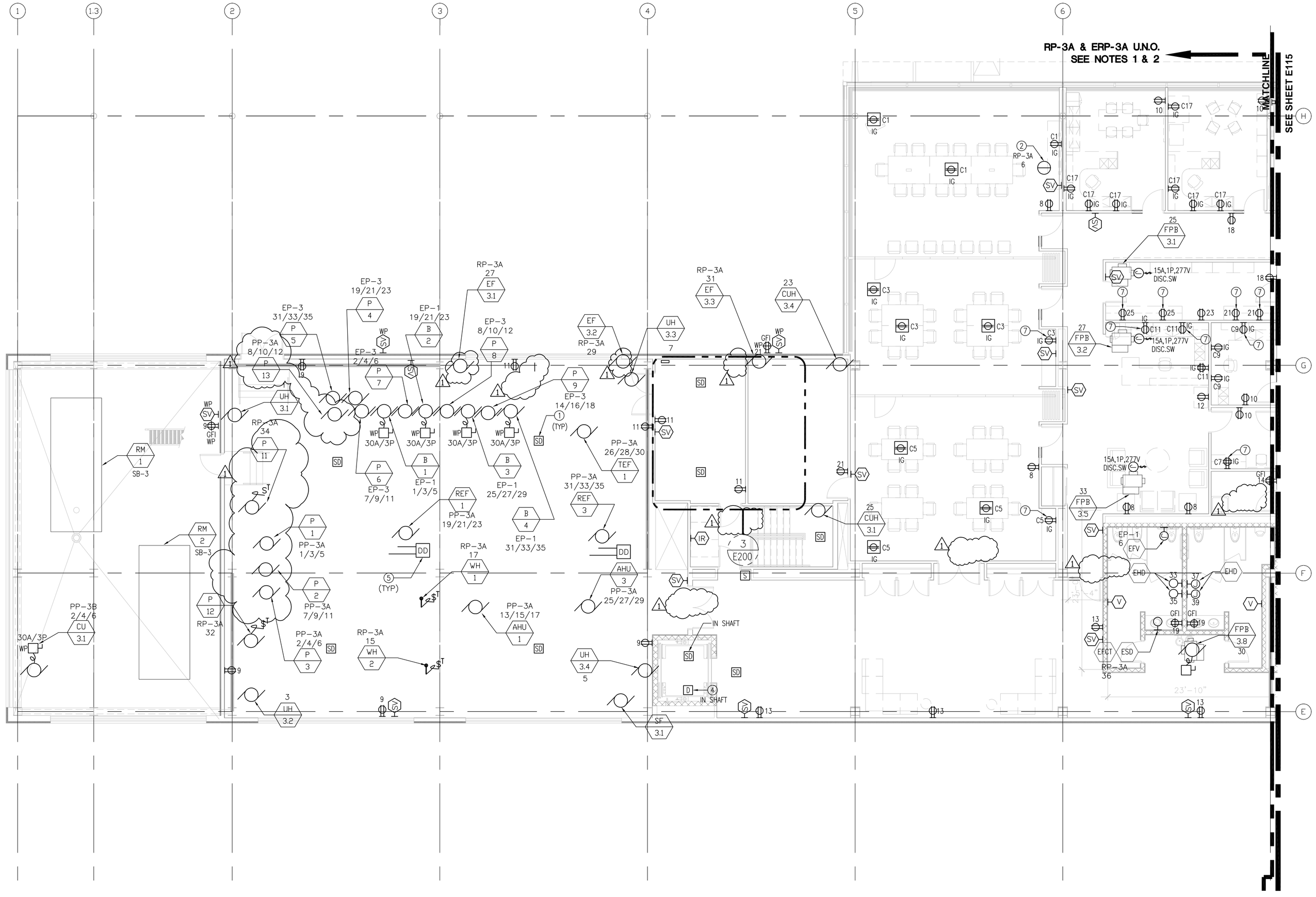
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SHEET TITLE
ENLARGED SECOND FLOOR ELECTRICAL PLAN AREA B

SHEET NUMBER
E113

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2010.00 Duluth Airport\5.0 CADD\(5.1) Electrical\Dwgs\2010_E113.dwg Plotted on: 2/25/2011 8:11 AM Plotted by: Koelker, Jennifer



NOTES:

1. COMPUTER RECEPTACLES SHALL BE IG TYPE (ISOLATED GROUND) AND ON A DEDICATED CIRCUIT, CONNECTED TO PANEL "ERP-3A". CIRCUIT NUMBERS ARE DESIGNATED WITH PREFIX "C".
2. RECEPTACLES AND OTHER ELECTRICAL DEVICES ON NORMAL POWER ON THIS SHEET SHALL BE CONNECTED TO PANEL "RP-3A" U.N.O.
3. FANS FOR UNIT HEATERS ("UH") AND CABINET UNIT HEATERS ("CUH") ON THIS SHEET SHALL BE CONNECTED TO PANEL "RP-3A" U.N.O.
4. SOME FLOORBOX RECEPTACLES CONTAIN DATA, SEE "ET" SERIES DRAWINGS FOR LOCATIONS.
5. STROBES THAT ARE LOCATED WITHIN THE SAME FIELD OF VIEW SHALL FLASH IN SYNCHRONIZATION.
6. PROVIDE RACEWAYS, JUNCTION BOXES AND POWER, WHERE REQUIRED, FOR TELECOM, SECURITY, AV DEVICES AND SIGNAGE. REFER TO RESPECTIVE PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. FAN POWER BOXES "FPB" SHALL BE CONNECTED TO PANEL "PP-3B".
8. REFER TO "ET" SERIES DWGS FOR EXACT LOCATION AND MOUNTING DETAILS FOR FIDS. ADJUST POWER PROVISIONS ACCORDINGLY.

KEYED NOTES:

1. MINIMUM QUANTITY OF SMOKE DETECTORS INDICATED. SMOKE DETECTOR PLACEMENT AND QUANTITY SHALL BE BASED ON COORDINATION WITH DUCTWORK AND EQUIPMENT LAYOUT.
2. CEILING MOUNTED RECEPTACLE FOR PROJECTION SCREEN. CONFIRM LOCATION WITH OWNER.
3. NOT USED
4. LOCATE A ELEVATOR SHAFT HEAT DETECTOR WITHIN 24" OF EACH SPRINKLER HEAD.
5. LOCATE DUCT DETECTOR ON RETURN AIR DUCT FOR "REF" EQUIPMENT.
6. PROVIDE POWER FOR ACCESS CONTROL POWER SUPPLY (POWER SUPPLY ENCLOSURE PROVIDED BY OTHERS). REFER TO "ET" SERIES DWGS FOR ADDITIONAL INFORMATION. INTERFACE EIBS WITH FA SYSTEM WHERE INDICATED ON "ET" SERIES DWGS.
   ACCESS CONTROL POWER SUPPLIES SHALL BE CONNECTED TO PNL "EPP-1DC". THERE SHALL BE NO MORE THAN 4 POWER SUPPLIES PER CIRCUIT.
7. MOUNT RECEPTACLE ABOVE COUNTER.

N

1 ENLARGED THIRD LEVEL FLOOR PLAN - ADMIN.
1/8" = 1'-0"

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Print Name: Douglas C. Mass
Signature:
Date: 08/16/10 Reg. No.: 21067

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DATE ISSUED: 02-25-11
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DESIGNED BY: JK

AEP PROJECT NUMBER
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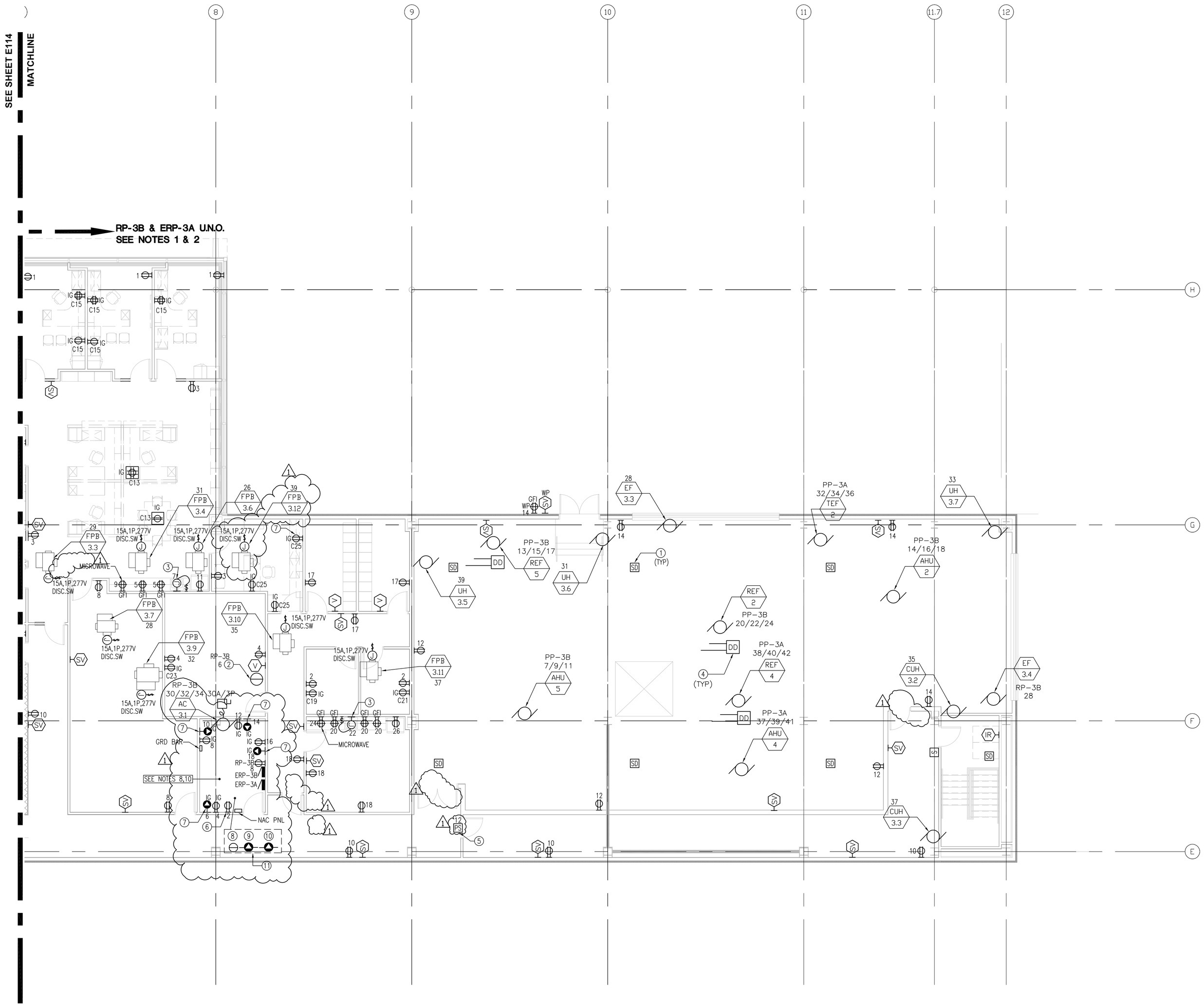
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SHEET TITLE
ENLARGED THIRD FLOOR ELECTRICAL PLAN AREA A

SHEET NUMBER
E114

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2008.00 Duluth Airport\8.0 CADD\(8.3) Electrical\Dwgs\2008_E114.dwg Plotted on: 2/25/2011 8:13 AM Plotted by: Kastner, Jennifer



NOTES:

1. COMPUTER RECEPTACLES SHALL BE IG TYPE (ISOLATED GROUND) AND ON A DEDICATED CIRCUIT, CONNECTED TO PANEL "ERP-3A". CIRCUIT NUMBERS ARE DESIGNATED WITH PREFIX "C".
2. RECEPTACLES AND OTHER ELECTRICAL DEVICES ON NORMAL POWER ON THIS SHEET SHALL BE CONNECTED TO PANEL "RP-3B" U.N.O.
3. FANS FOR UNIT HEATERS ("UH") AND CABINET UNIT HEATERS ("CUH") ON THIS SHEET SHALL BE CONNECTED TO PANEL "RP-3B" U.N.O.
4. STROBES THAT ARE LOCATED WITHIN THE SAME FIELD OF VIEW SHALL FLASH IN SYNCHRONIZATION.
5. PROVIDE RACEWAYS, JUNCTION BOXES AND POWER, WHERE REQUIRED, FOR TELECOM, SECURITY, AV DEVICES AND SIGNAGE. REFER TO RESPECTIVE PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
6. FAN POWER BOXES ("FPB") SHALL BE CONNECTED TO PANEL "PP-3B".
7. REFER TO "ET" SERIES DWGS FOR EXACT LOCATION AND MOUNTING DETAILS FOR FIDS. ADJUST POWER PROVISIONS ACCORDINGLY.
8. WALL MOUNTED RECEPTACLES IN COMM. RM 337 SHALL BE CONNECTED TO PNL "ERP-3A", U.N.O.
9. SOME FLOORBOX RECEPTACLES CONTAIN DATA, SEE "ET" SERIES DRAWINGS FOR LOCATIONS.

1 10. COORDINATE LOCATIONS OF GROUND BAR, PANELBOARDS AND WALL MOUNTED RECEPTACLES WITH LOCATIONS OF TELECOM EQUIPMENT. PROVIDE CODE REQUIRED CLEARANCES FOR ELECTRICAL EQUIPMENT.

11. PROVIDE QUAD RECEPTACLE FOR ASTRO BASE STATIONS LOCATED IN TELECOM EQUIPMENT ROOMS ON DEDICATED 20A/1P CIRCUIT. CONNECT TO "ERP" PANEL WITHIN SAME ROOM. LOCATION SHALL BE FIELD VERIFIED.

KEYED NOTES:

1. MINIMUM QUANTITY OF SMOKE DETECTORS INDICATED. SMOKE DETECTOR PLACEMENT AND QUANTITY SHALL BE BASED ON COORDINATION WITH DUCTWORK AND EQUIPMENT LAYOUT.
2. CEILING MOUNTED RECEPTACLE FOR PROJECTION SCREEN. CONFIRM LOCATION WITH OWNER.
3. JUNCTION BOX FOR GARBAGE DISPOSAL. VERIFY POWER REQUIREMENTS PER EQUIPMENT MANUFACTURER.
4. LOCATE DUCT DETECTOR ON RETURN AIR DUCT FOR "REF" EQUIPMENT.
5. PROVIDE POWER FOR ACCESS CONTROL POWER SUPPLY (POWER SUPPLY ENCLOSURE PROVIDED BY OTHERS). REFER TO "ET" SERIES DWGS FOR ADDITIONAL INFORMATION. INTERFACE EIBS WITH FA SYSTEM WHERE INDICATED ON "ET" SERIES DWGS.
   ACCESS CONTROL POWER SUPPLIES SHALL BE CONNECTED TO PNL "ERP-1D". THERE SHALL BE NO MORE THAN 4 POWER SUPPLIES PER CIRCUIT.
6. DEDICATED 20A DUPLEX RECEPTACLE FOR FM-200 SYSTEM CONTROLS. COORDINATE RECEPTACLE LOCATION WITH FM-200 LOCATION. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.

1 7. 20A DUPLEX RECEPTACLE WITH TWISTLOCK, NEMA L5-20.

8. PROVIDE DUPLEX CEILING MOUNTED RECEPTACLE ABOVE EACH RACK ON A DEDICATED CIRCUIT. SEE SHEET ET502 FOR RACK LOCATIONS.
9. PROVIDE DUPLEX CEILING MOUNTED RECEPTACLE WITH TWISTLOCK, NEMA L5-20, ABOVE EACH RACK ON A DEDICATED CIRCUIT. SEE SHEET ET502 FOR RACK LOCATIONS.
10. PROVIDE A 30A, 208V CEILING MOUNTED RECEPTACLE FOR EACH RACK MOUNTED UPS ON A DEDICATED CIRCUIT. SEE SHEET ET501 FOR INDICATION OF RACKS CONTAINING UPS EQUIPMENT AND SHEET ET502 FOR RACK LOCATIONS.
11. INSTALL CEILING MOUNTED RECEPTACLES WITHIN 8'-0" OF BOTTOM OF RACK. SEE SHEET ET502 FOR RACK LOCATIONS.

N

1 ENLARGED THIRD LEVEL FLOOR PLAN - ADMIN.
1/8" = 1'-0"

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ENGINEER CERTIFICATION
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Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

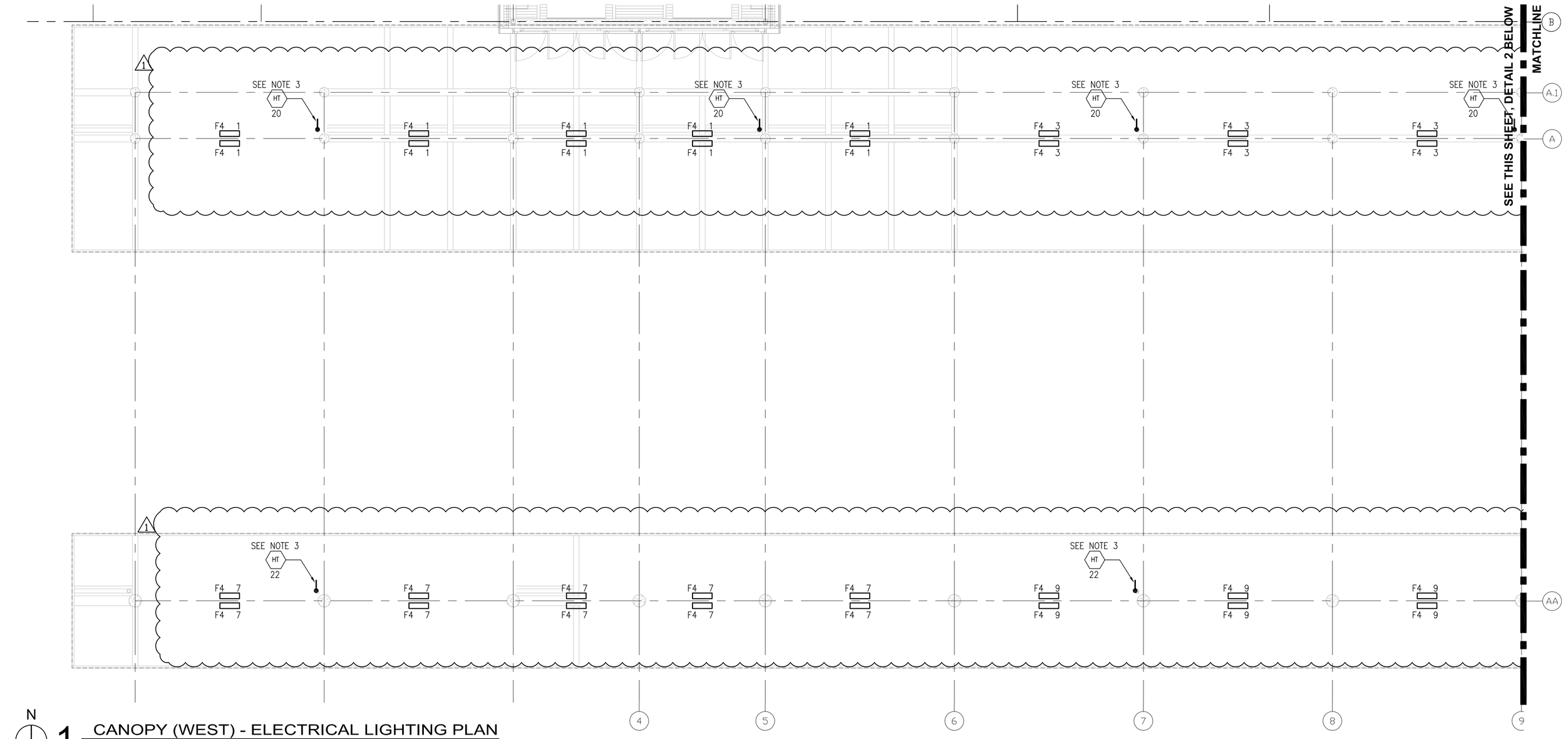
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SHEET TITLE
ENLARGED
THIRD FLOOR
ELECTRICAL PLAN
AREA B

SHEET NUMBER
E115

BID PACKAGE 2A
ADDENDUM 2

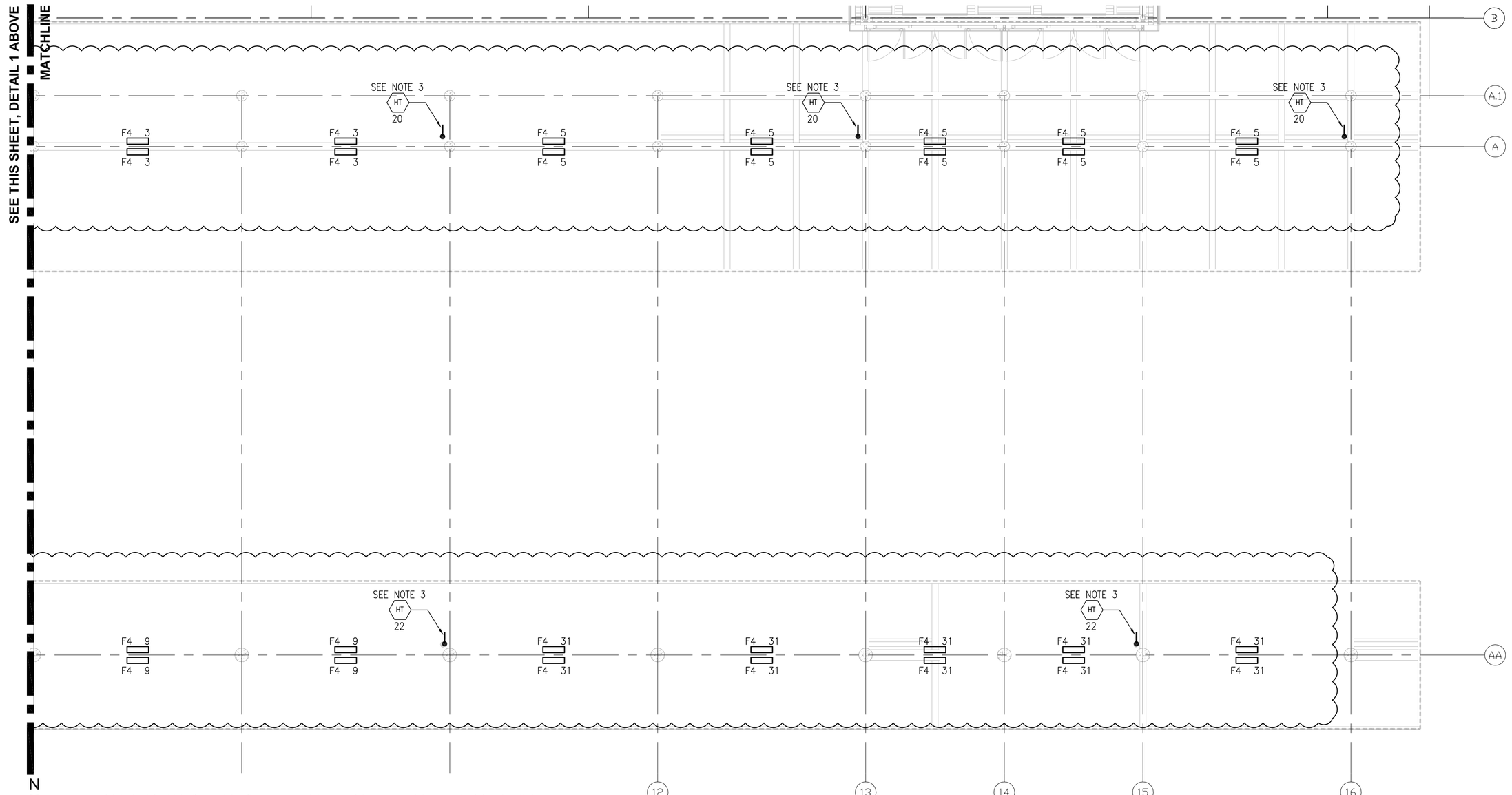
Drawing: I:\2008.00 Duluth Airport\5.0 CADD\(5.1c) Electrical\Dwgs\2008_E115.dwg Plotted on: 2/25/2011 8:31 AM Plotted by: Koelker, Jennifer



N

1 CANOPY (WEST) - ELECTRICAL LIGHTING PLAN

1/8" = 1'-0"



N

2 CANOPY (EAST) - ELECTRICAL LIGHTING PLAN

1/8" = 1'-0"

NOTES:

1. CANOPY LIGHTING FIXTURES ARE CONNECTED TO PANEL "LP-1A".
2. UTILIZE EXISTING EMPTY CONDUIT (INSTALLED IN UNDERGROUND PACKAGE) FOR CIRCUITRY ASSOCIATED WITH CANOPY LIGHTING.
1. 3. PROVIDE HEAT TRACE CABLE IN CANOPY STORM PIPES – SEE DWG E402 FOR SPECIFICATION. PROVIDE 277V/1P LOCAL DISCONNECT FOR EACH HEAT TRACE CIRCUIT. CONNECT CIRCUITS TO PANEL "PP-1A".

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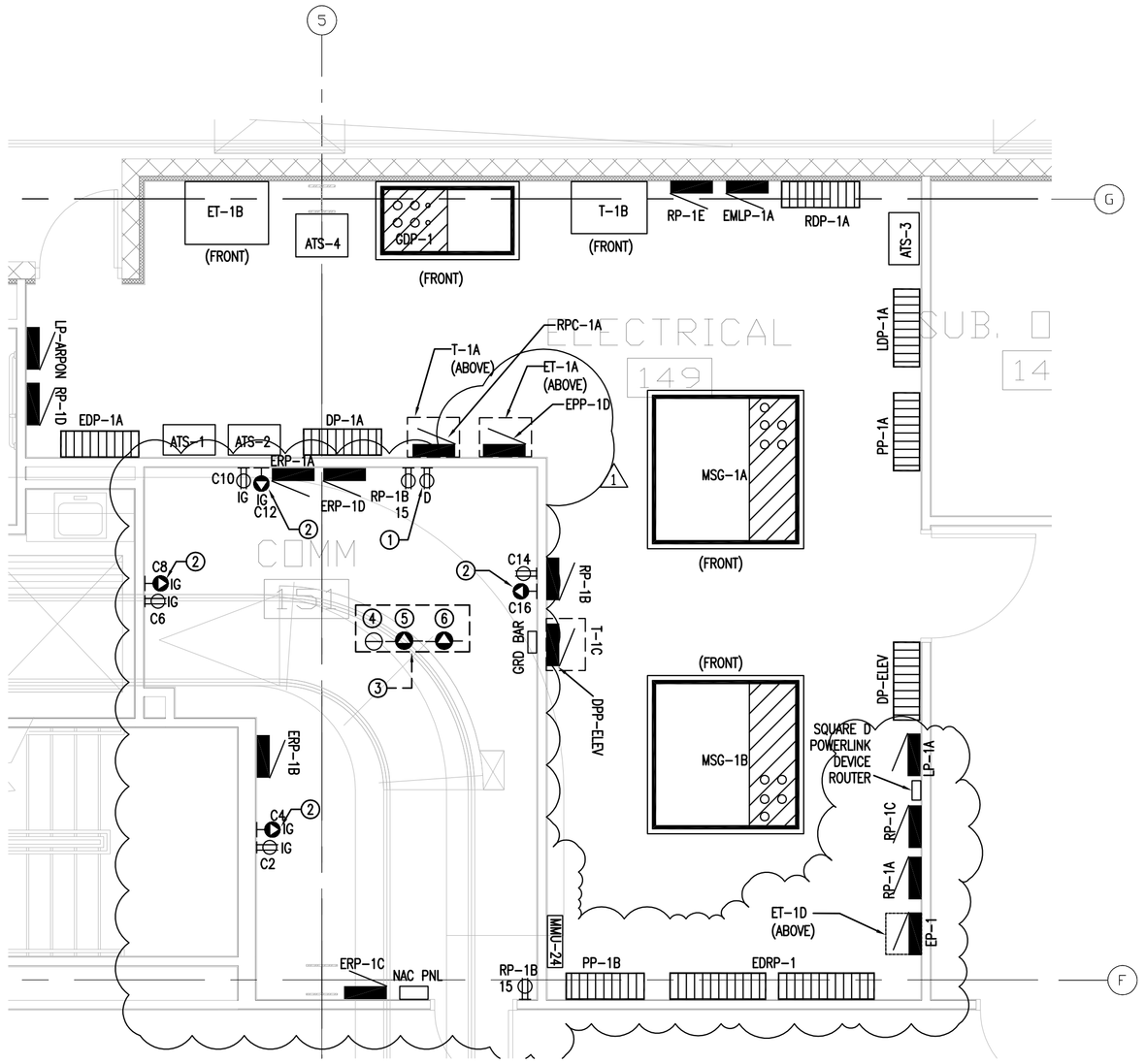
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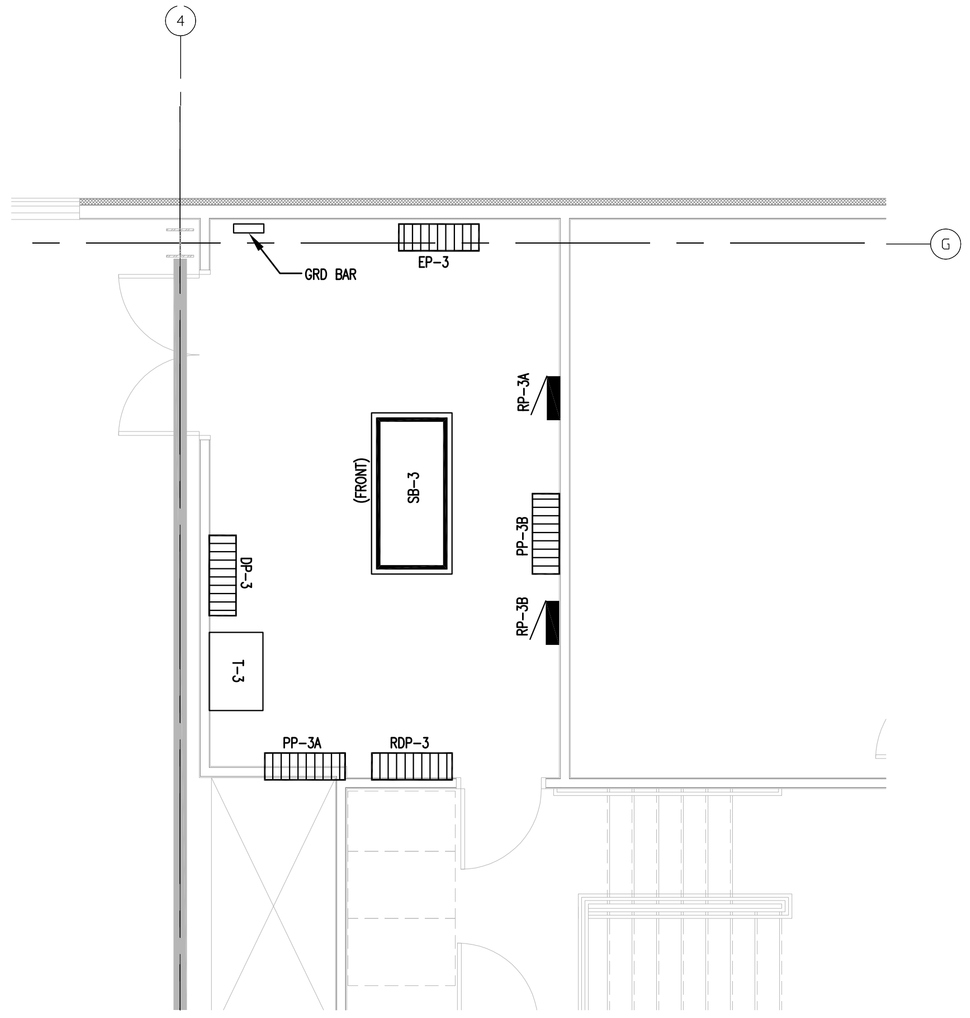
SHEET TITLE
CANOPY
LIGHTING PLAN

SHEET NUMBER
E118

BID PACKAGE 2A
ADDENDUM 2

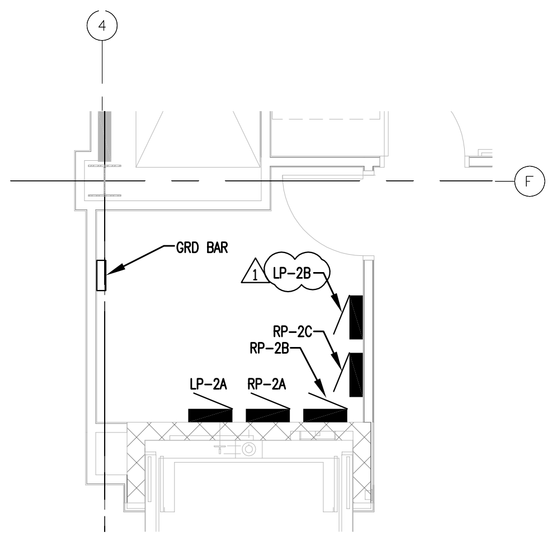
Drawing: I:\2008.00 Duluth Airport\5.0 CADD\(5.3) Electrical\Dwgs\2008_E118.dwg Plotted on: 2/25/2011 8:39 AM Plotted by: Kastner, Jennifer





N
1 ENLARGED MAIN ELECTRICAL ROOM - 1ST FLR
1/4" = 1'-0"

N
3 ENLARGED 3RD FLOOR ELECTRICAL ROOM
1/4" = 1'-0"



N
2 ENLARGED 2ND FLOOR ELECTRICAL ROOM
1/4" = 1'-0"

1

NOTES COMM RM 151 IN DETAIL 1;

1. COORDINATE LOCATIONS OF GROUND BAR, PANELBOARDS AND WALL MOUNTED RECEPTACLES WITH LOCATIONS OF TELECOM EQUIPMENT. PROVIDE CODE REQUIRED CLEARANCES FOR ELECTRICAL EQUIPMENT.
2. COMPUTER RECEPTACLES SHALL BE IG TYPE (ISOLATED GROUND) AND ON A DEDICATED CIRCUIT, CONNECTED TO "ERP" PANELS AS INDICATED ON THIS SHEET U.N.O. CIRCUIT NUMBERS ARE DESIGNATED WITH PREFIX "C".
3. WALL MOUNTED COMPUTER RECEPTACLES SHALL BE CONNECTED TO PANEL "ERP-1B".
4. PROVIDE QUAD RECEPTACLE FOR ASTRO BASE STATION ON DEDICATED 20A/1P CIRCUIT. CONNECT TO "ERP" PANEL WITHIN SAME ROOM. LOCATION SHALL BE FIELD VERIFIED.

KEYED NOTES FOR COMM RM 151 IN DETAIL 1;

(1) DEDICATED 20A DUPLEX RECEPTACLE FOR FM-200 SYSTEM CONTROLS. COORDINATE RECEPTACLE LOCATION WITH FM-200 LOCATION. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.

(2) 20A DUPLEX RECEPTACLE WITH TWISTLOCK, NEMA L5-20. CONNECT TO PANEL "ERP-1B".

(3) INSTALL CEILING MOUNTED RECEPTACLES WITHIN 8'-0" OF BOTTOM OF RACK. SEE SHEET ET502 FOR RACK LOCATIONS.

(4) PROVIDE DUPLEX CEILING MOUNTED RECEPTACLE ABOVE EACH RACK ON A DEDICATED CIRCUIT FROM PANEL "ERP-1B". SEE SHEET ET502 FOR RACK LOCATIONS.

(5) PROVIDE DUPLEX CEILING MOUNTED RECEPTACLE WITH TWISTLOCK, NEMA L5-20, ABOVE EACH RACK ON A DEDICATED CIRCUIT FROM PANEL "ERP-1D". SEE SHEET ET502 FOR RACK LOCATIONS.

(6) PROVIDE A 30A, 208V CEILING MOUNTED RECEPTACLE FOR EACH RACK MOUNTED UPS ON A DEDICATED CIRCUIT FROM PANEL "ERP-1D". SEE SHEET ET501 FOR INDICATION OF RACKS CONTAINING UPS EQUIPMENT AND SHEET ET502 FOR RACK LOCATIONS.

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Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

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1	BP2A ADDENDUM 2	2.25.11

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DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
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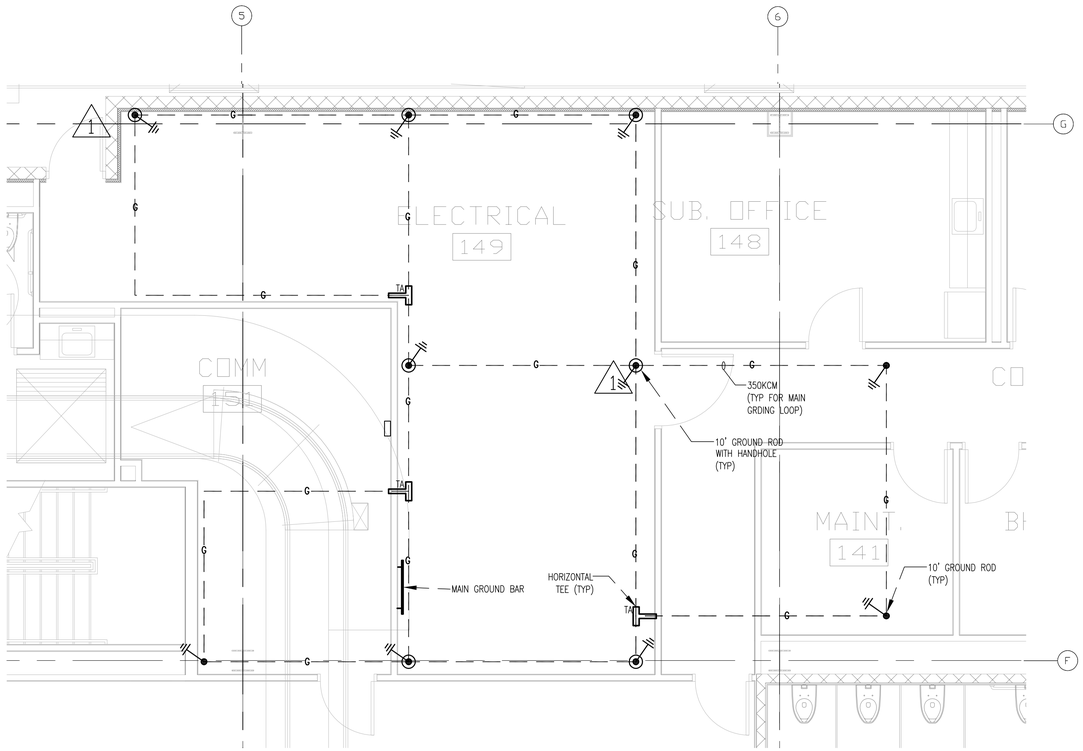
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SHEET TITLE
ENLARGED
EQUIPMENT ROOMS

SHEET NUMBER
E200

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2008.00 Duluth Airport\5.0 CADD\(5.1) Electrical\Dwgs\2008_E200.dwg Plotted on: 2/25/2011 8:52 AM Plotted by: Kastner, Jennifer



N

1 GROUNDING PLAN
1/4" = 1'-0"

GROUNDING TABLE			
#	FROM	TO	GND WIRE SIZE (AWG)
1	MAIN GROUND BAR	SWGR "MSG-1A"	SEE RISER DIAGRAM ON DWG E300
2	MAIN GROUND BAR	SWGR "MSG-1B"	SEE RISER DIAGRAM ON DWG E300
3	MAIN GROUND BAR	SWBD "GDP-1"	SEE RISER DIAGRAM ON DWG E300
4	MAIN GROUND BAR	ELEV. MACH RM 175 GRD BAR	#8
5	MAIN GROUND BAR	ELEV. MACH RM 153 GRD BAR	#8
6	MAIN GROUND BAR	ELEV. MACH RM 143 GRD BAR	#8
8	MAIN GROUND BAR	GENERATOR	SEE RISER DIAGRAM ON DWG E300
9	MAIN GROUND BAR	FIRE PUMP	SEE RISER DIAGRAM ON DWG E300
10	MAIN GROUND BAR	TELEPHONE RM 151 ISOL. GRD BAR	#6
11	MAIN GROUND BAR	MAIN WATER SERVICE PIPE	#1/0
12	MAIN GROUND BAR	TRANSFORMERS IN MAIN ELEC RM 149	SEE RISER DIAGRAM ON DWG E300
13	MAIN GROUND BAR	2ND FLR COMM. RM 217 ISOL. GRD BAR	#6
14	MAIN GROUND BAR	2ND FLR COMP. RM 240 ISOL. GRD BAR	#6
15	MAIN GROUND BAR	2ND FLR TELECOM RM 204 ISOL. GRD BAR	#6
16	MAIN GROUND BAR	2ND FLR ELEC. RM 230 GRD BAR	#4
17	MAIN GROUND BAR	3RD FLR ELEC. RM 334 GRD BAR	#1/0
18	MAIN GROUND BAR	3RD FLR COMM. RM 313 ISOL. GRD BAR	#6
19	MAIN GROUND BAR	LIGHTNING PROTECTION SYSTEM	#1
20	MAIN GROUND BAR	LIGHTNING PROTECTION SYSTEM	#1
21	3RD FLR ELEC. RM 334 GRD BAR	SWBD "SB-3"	SEE RISER DIAGRAM ON DWG E300
22	3RD FLR ELEC. RM 334 GRD BAR	TRANSFORMERS IN 3RD FLR ELEC. RM 334	SEE RISER DIAGRAM ON DWG E300

NOTES:

1. REFER TO SPECIFICATION 16060 FOR ADDITIONAL INFORMATION.
2. SIZE GROUND BARS (LENGTH) AS REQUIRED PER NUMBER OF CONNECTIONS.
3. SEE UNDERGROUND PACKAGE TO COORDINATE EXISTING AND NEW WORK.
3. TELECOMMUNICATIONS GROUNDING BUSBARS SHALL BE NEWTON PART FIG. 3058 INSULATED GROUND BAR, 1/4"X4"X10" OR EQUIVALENT.

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	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
GROUNDING PLAN

SHEET NUMBER
E201

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2010.00 Duluth Airport\5.0 CADD\(5.1) Electrical\Dwgs\2010_E201.dwg Plotted on: 2/25/2011 8:55 AM Plotted by: Koelker, Jennifer

GENERAL NOTES:

1. SEE TABLE 3 ON THIS DRAWING FOR TRANSFORMER FEEDER SIZES, INCLUDING GROUNDING ELECTRODE SIZE.
2. PULL NEW WIRE IN EXISTING EMPTY 2" CONDUIT TO EXISTING 100A, 480/277V PARKING LOT PANEL LOCATED IN PARKING LOT BOOTH. INCREASE FEEDER SIZE AS REQUIRED TO ACCOUNT FOR VOLTAGE DROP IF NECESSARY.
3. EMPTY CONDUIT WAS PROVIDED FOR FEEDER TAGS WITH THIS NOTE ADJACENT TO IT AS PART OF UNDERGROUND PACKAGE 1.
4. PROVIDE POWER WHERE REQUIRED PER "ET" SERIES DRAWINGS AND ASSOCIATED SPECIFICATIONS FOR TELECOM, SECURITY, AV DEVICES AND SIGNAGE. NOTE THAT 25% SPARE QUANTITY OF CIRCUIT BREAKERS SHALL BE PROVIDED IN PANELBOARDS. AN ADDITIONAL PANELBOARD SHALL BE PROVIDED IF BRANCH CIRCUIT QUANTITY EXCEEDS THIS AMOUNT WITH PANELS SHOWN IN RISER BELOW.
5. GENERATOR ENCLOSURE SHOULD BE PROVIDED IN ACCORDANCE WITH STATE OF MINNESOTA REQUIREMENTS, INCLUDING "INDUSTRALIZED MODULAR BUILDING BULLETIN #38"; THIS STATES ENCLOSURE REQUIRES IMBC (INDUSTRIALIZED MODULAR BUILDING COMMISSION) CERTIFICATION LABEL AND REQUIREMENTS FOR H-3 TYPE OCCUPANCIES AS DEFINED IN INTERNATIONAL BUILDING CODE 2006. REFER TO CIVIL DRAWING FOR LOCATION OF GENERATOR.

KEYED NOTES:

1. MOTOR PROTECTOR WITH MAGNETIC TRIP THAT OPENS ON SHORT CIRCUIT ONLY. CIRCUIT BREAKER SHALL NOT HAVE THERMAL TRIP.
2. MULTIPLE METER UNIT CABINET FOR SUBMETERS. METER CABINET SHALL BE EMON TYPE "MMU24" OR APPROVED EQUAL. SEE PANEL SCHEDULES AND SPECIFICATION 16428 FOR ADDITIONAL SUBMETERING REQUIREMENTS.
3. "LP" PANELS SHALL BE SQUARE D POWERLINK G3 TYPE PANELS OR APPROVED EQUAL. LIGHTING CIRCUITS SHALL BE ON CONTROLLABLE CIRCUIT BREAKERS WHERE INDICATED ON PANEL SCHEDULES AND ARE CONTROLLED BY THE BAS (BUILDING AUTOMATION SYSTEM) – COORDINATE WITH BAS CONTRACTOR.

   PANELS SHOWN ON RISER WITH "M" INSIDE THEM ARE SQUARE D POWERLINK G3 MASTER PANELS (INCLUDE CONTROLLER). PANELS SHOWN WITH "S" INSIDE OF THEM ARE SQUARE D POWERLINK G3 SLAVE PANELS. SEE SPECIFICATION SECTION 16146 FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
4. SQUARE D POWERLINK DEVICE ROUTER. LOCATE ROUTER WITHIN 50 FT OF MASTER PANEL. RS232 CABLE CONNECTION BETWEEN MASTER PANEL AND ROUTER IS PROVIDED BY SQUARE D.
5. CONTROL WIRE IN BETWEEN SQUARE D MASTER PANEL AND SLAVE PANELS SHALL BE 4-WIRE, CLASS 1 COMMUNICATIONS CABLE (BELDEN 27326 OR EQUIVALENT).

TABLE 3

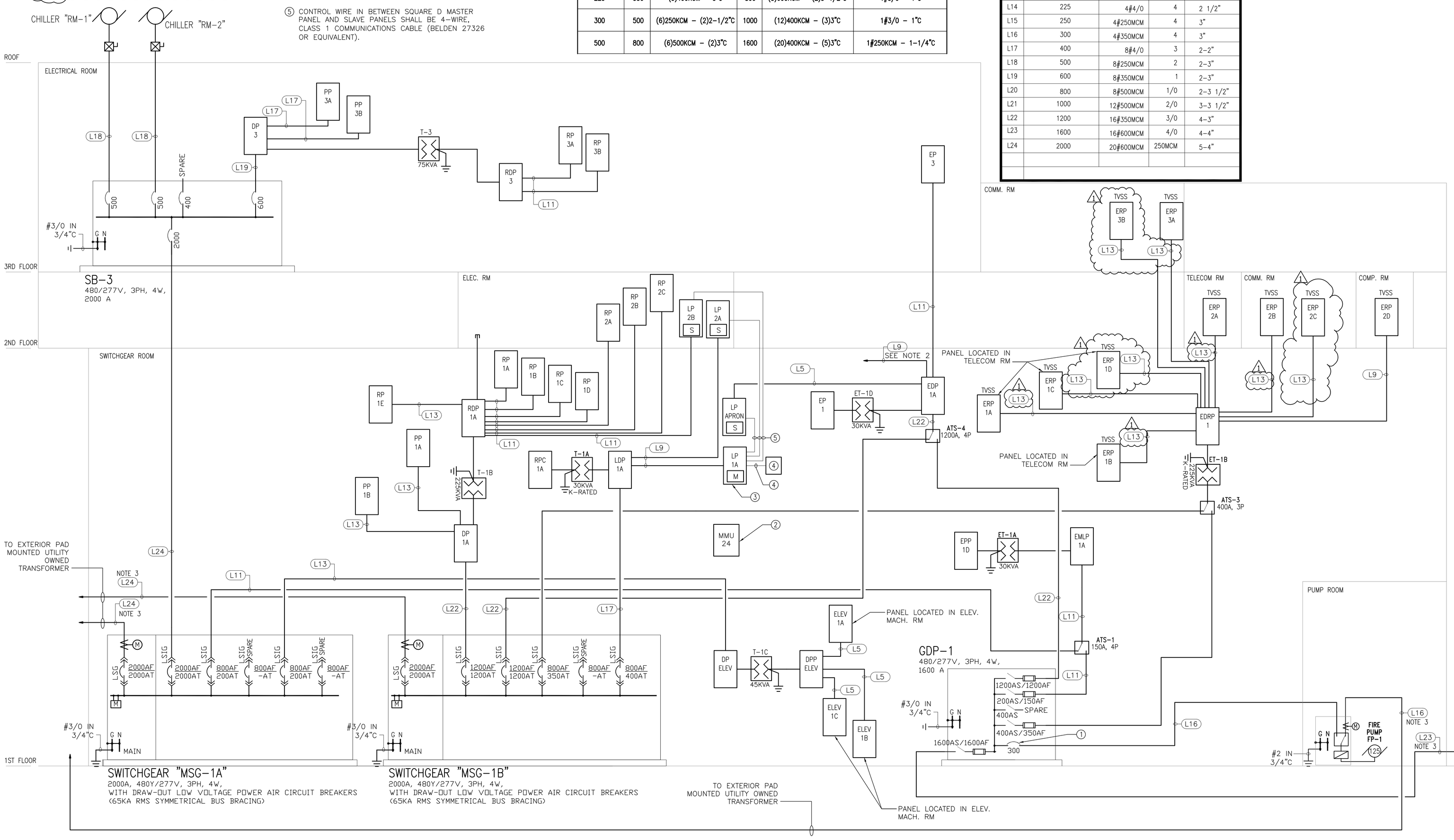
TRANSFORMER SCHEDULE

TRANSFORMER (KVA)	480 VOLT SIDE		120/208 VOLT SIDE		
	OCD (AMPS)	FEEDER	OCD (AMPS)	NON "K" RATED TRANSFORMER FEEDER	GROUNDING ELECTRODE CONDUCTOR
9	15	3#12 – 3/4"C	40	4#8 – 3/4"C	1#8 – 1/2"C
15	30	3#10 – 3/4"C	50	4#6 – 1"C	1#8 – 1/2"C
30	50	3#6 – 1"C	100	4#2 – 1-1/4"C	1#8 – 1/2"C
45	70	3#4 – 1"C	150	4#1/0 – 2"C	1#6 – 1/2"C
75	125	3#1 – 1-1/4"C	250	4#250KCM – 2-1/2"C	1#2 – 3/4"C
112.5	175	3#2/0 – 1-1/2"C	400	(4)600KCM – 3-1/2"C	1#1/0 – 1"C
150	225	3#4/0 – 2"C	500	(8)250KCM – (2)2-1/2"C	1#1/0 – 1"C
225	350	(3)400KCM – 3"C	800	(8)600KCM – (2)3-1/2"C	1#3/0 – 1"C
300	500	(6)250KCM – (2)2-1/2"C	1000	(12)400KCM – (3)3"C	1#3/0 – 1"C
500	800	(6)500KCM – (2)3"C	1600	(20)400KCM – (5)3"C	1#250KCM – 1-1/4"C

SIZING OF 3PH, 4W & GROUND FEEDERS (COPPER CONDUCTORS)

1 NOTE: PROVIDE 200% NEUTRAL FOR "ERP" PANELS

TAG	REQUIRED OVERCURRENT DEVICE (OCD) WITH FUSE OR C/B TRIP (AMPS)	QUANTITY AND SIZE OF CONDUCTORS AND CONDUIT		
		4WIRE SET	GROUND WIRE	CONDUIT(S)
L1	20	4#12	12	3/4"
L2	30	4#10	10	3/4"
L3	40	4#8	10	3/4"
L4	50	4#6	10	1"
L5	60	4#6	10	1"
L6	70	4#4	8	1 1/4"
L7	80	4#2	8	1 1/4"
L8	90	4#2	8	1 1/4"
L9	100	4#1	8	1 1/2"
L10	125	4#1	6	1 1/2"
L11	150	4#1/0	6	2"
L12	175	4#2/0	6	2"
L13	200	4#3/0	6	2"
L14	225	4#4/0	4	2 1/2"
L15	250	4#250MCM	4	3"
L16	300	4#350MCM	4	3"
L17	400	8#4/0	3	2-2"
L18	500	8#250MCM	2	2-3"
L19	600	8#350MCM	1	2-3"
L20	800	8#500MCM	1/0	2-3 1/2"
L21	1000	12#500MCM	2/0	3-3 1/2"
L22	1200	16#350MCM	3/0	4-3"
L23	1600	16#600MCM	4/0	4-4"
L24	2000	20#600MCM	250MCM	5-4"



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TEL: (218) 591-5079

ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
POWER RISER DIAGRAM

SHEET NUMBER
E300

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2010\10.00 Duluth Airport\5.0 CADD\(5.1c) Electrical\Dwgs\2010_E300.dwg Plotted on: 2/25/2011 8:55 AM Plotted by: Koehler, Jennifer

LIGHTING FIXTURE SCHEDULE (BACK OF HOUSE)

TYPE	SYMBOL	DESCRIPTION	MANUFACTUR. & CATALOG NO.	LAMPS QTY	LAMPS TYPE	FIXTURE TOTAL VA	VOLTAGE	MOUNTINGS: P–PENDANT R–RECESSED S–SURFACE	REMARKS
A		FLUORESCENT WRAPAROUND WITH HIGH IMPACT ACRYLIC LENS	COLUMBIA WC4–232–EU–DR OR APPROVED EQUAL BY LIGHTOLIER OR LITHONIA	2	32W T8	60	277	P/S	
B		4', ENCLOSED, SURFACE OR PENDANT MOUNTED INDUSTRIAL T8 FLUORESCENT FIXTURE	LITHONIA CLM–232–277–GEB10IS OR APPROVED EQUAL BY COLUMBIA OR LIGHTOLIER	2	32W T8 PROVIDE GE SPX LAMP OR APPROVED EQUAL FOR FIXTURES IN CBIS RM 133	60	277	P/S	PROVIDE SWIVEL–STEM HANGER "SQ" OPTION FOR AREAS W/O FINISHED CLG
B2		SIMILAR TO FIXTURE "B" EXCEPT 120V	LITHONIA CLM–232–120–GEB10IS OR APPROVED EQUAL BY COLUMBIA OR LIGHTOLIER	2	32W T8	60	120	P/S	PROVIDE SWIVEL–STEM HANGER "SQ" OPTION FOR AREAS W/O FINISHED CLG
C		WALL OR CEILING MOUNTED GUARDED GLASS COVERED VAPOR–PROOF INCANDESCENT	HALUX ELBA20GSV OR ELJA20GSV. GE–H7 SERIES HUBBELL–V SERIES	1	100W–A21	100	120	S	ELEVATOR PITS
D		FULL CUTOFF METAL HALIDE WALL PACK. WET LOCATION LISTED	HUBBELL LCC–50P8–* OR APPROVED EQUAL BY COLUMBIA OR LITHONIA *–FINISH BY ARCHITECT	1	50W MH	70	277	S	EXTERIOR (BACK OF HOUSE)
D–EM		SAME AS TYPE "D" WITH EGRESS LAMP SOCKET. PROVIDE 50W HALOGEN EGRESS LAMP.	HUBBELL LCC–50P8–* OR APPROVED EQUAL BY COLUMBIA OR LITHONIA *–FINISH BY ARCHITECT	1 1 EM LAMP	50W MH 50W MH	70 70	277	S	EXTERIOR (BACK OF HOUSE)
F		4' SURFACE MOUNTED FLUORESCENT WALL BRACKET WITH T8 LAMPS.	COLUMBIA W4–232–E120 OR APPROVED EQUAL BY LIGHTOLIER OR LITHONIA	2	32W T8	60	277	S	STAIRWELL
G		2' SURFACE MOUNTED FLUORESCENT WALL BRACKET WITH T8 LAMPS.	COLUMBIA W2–217–EU OR APPROVED EQUAL BY LIGHTOLIER OR LITHONIA	2	17W T8	30	120V FOR FIXTURE IN CLOSET WITHIN BAR 226 AND 277V ELSEWHERE	S	
H		2'X4' SURFACE MOUNT FLUORESCENT HIGH ABUSE FIXTURE. 18–GAUGE CRS HOUSING AND LENS FRAME.	KENALL HASES124–3–32–IS–2–277 –2F–2H–6 OR APPROVED EQUAL BY L.C. DOANE OR LIGHTOLIER	3	32W T8	90	277	S	
J		2'X4' SURFACE MOUNT FLUORESCENT FIXTURE.	COLUMBIA SM24–332–FSA12–EU OR APPROVED EQUAL BY LIGHTOLIER OR LITHONIA	3	32W T8	90	277	S	
K		UNDERCABINET FLUORESCENT FIXTURE	LITHONIA N2S–32–277–GEB10IS OR APPROVED EQUAL BY LIGHTOLIER OR LITHONIA	1	32W T8	30	277	S	
L		2'X4' SURFACE MOUNT FLUORESCENT FIXTURE.	COLUMBIA SM24–232–FSA12–EU OR APPROVED EQUAL BY LIGHTOLIER OR LITHONIA	2	32W T8	60	277	S	
M		2'X4' GRID MOUNT, AIR HANDLING, 18–CELL PARABOLIC FLUORESCENT FIXTURE.	LITHONIA 2ES8P–A–232–277–BILP OR APPROVED EQUAL BY COLUMBIA OR LIGHTOLIER	2	32W T8	48	277	G	
M2		SAME AS FIXTURE "M" BUT 120V.	LITHONIA 2ES8P–A–232–120–BILP OR APPROVED EQUAL BY COLUMBIA OR LIGHTOLIER	2	32W T8	48	120	G	
N		5"X48" LINEAR FLUORESCENT FIXTURE WITH COLD FORMED, POLYCARBONATE LENS. CEILING (PENDANT) MOUNT.	KENALL TSH548–C–3–32–EB–1 –277 AND SUP–XX–OAH OPTION FOR SUSPENSION OR APPROVED EQUAL BY L.C. DOANE OR LIGHTOLIER	3	32W T8	80	277	P	FIXTURE SHALL BE MOUNTED 11' AFF
N2		SAME AS FIXTURE "N", WITH COLD WEATHER BALLAST OPTION ADDED.	KENALL TSH548–C–3–32–EB–1 –277 AND SUP–XX–OAH OPTION FOR SUSPENSION AND "CW" OPTION (COLD WEATHER BALLAST) OR APPROVED EQUAL BY L.C. DOANE OR LIGHTOLIER	3	32W T8	80	277	P	FIXTURE SHALL BE MOUNTED 11' AFF
P		2'X4' RECESSED MOUNT FLUORESCENT WITH ACRYLIC LENS	LITHONIA 2GT8–2–32–A12–277–GEB10IS OR APPROVED EQUAL BY LIGHTOLIER OR COLUMBIA	2	32W T8	58	277	S	
XA		EDGE LIT LED EXIT SIGN.	COOPER LIGHTING SURELITES EEX SERIES OR APPROVED EQUAL BY ALKCO OR DAYBRITE		LED	6 – SINGLE FACE 12 – DBL FACE	277	S	PUBLIC AREAS
XB		LED EXIT SIGN WITH STEEL HOUSING.	COOPER LIGHTING SURELITES SLX SERIES OR APPROVED EQUAL BY ALKCO OR DAYBRITE		LED	6 – SINGLE FACE 12 – DBL FACE	277	S	BACK OF HOUSE AREAS
XC	WP	WEATHERPROOF EXIT SIGN.	COOPER LIGHTING SURELITES UX7 SERIES OR APPROVED EQUAL BY ALKCO OR DAYBRITE		LED	6 – SINGLE FACE 12 – DBL FACE	277	S	EXTERIOR AREAS

GENERAL NOTES FOR LIGHTING FIXTURE SCHEDULES

1. SEE MANUFACTURER DATA SHEETS FOR MORE INFORMATION.
2. CONTRACTOR TO PROVIDE ALL PARTS AND HARDWARE NESESSARY FOR A COMPLETE INSTALLATION.
3. ALL REMOTE LOW VOLTAGE TRANSFORMERS AND SECONDARY WIRING RUNS TO BE LOCATED AND INSTALLED BY CONTRACTOR TO LIMIT VOLTAGE DROP TO NO MORE THAN 5% MEASURED AT THE LAST LAMP.
4. CONTRACTOR TO INSTALL ALL COVE LIGHTING IN A CONTINUOUS FASHION SO AS TO MINIMIZE DARK SPOTS ON ADJACENT WALLS, FLOOR, OR CEILING.
5. REFER TO ARCHIECTURAL PLANS FOR SPECIFICATION OF ADDITIONAL LIGHTING FIXTURES INCLUDING THOSE, BUT NOT LIMITED TO, SHOWN IN PUBLIC AREAS, EXTERIOR AND APRON.
6. CONTRACTOR TO COORDINATE MOUNTING PROVISIONS FOR FIXTURES WITH CEILING TYPE.
7. TV CAMERA LIGHTS ARE TO BE RELOCATED FROM EXISTING TERMINAL TO NEW TERMINAL TO LOCATION AS SHOWN ON PLANS. PROVIDE 120–277V STEP UP TRANSFORMER IF EXISTING LIGHT FIXTURES ARE 120V.

Duluth New Terminal

Lighting Schedule

Type	Description	Mounting	Lamp Qty	Lamp Type	Total Fixture VA	Volts	Manufacturer	Model/Series Number
F1	Low Profile linear fluorescent 4' architectural strip fixture with integral ballast. Provide length as required for fixtures shown in restrooms.	Suspended/Recessed/Cove	1	F28T5	Approx. 9VA/LF	277	Bartco Lighting	MiT5-1T/28-28W-277
F1A	Low Profile linear fluorescent 4' architectural strip fixture with integral ballast	Suspended/Recessed	1	F54T5HO	60	277	Bartco Lighting	MiT5-1T/54-54W HO-277
F1C	Low Profile linear fluorescent 4' architectural strip fixture with integral ballast and opaque lens	Surface	1	F28T5	35	277	Bartco Lighting	MiT5-1T/28-28W -277-LNO
F1B	Low Profile linear fluorescent 2' architectural strip fixture with integral ballast.	Suspended/Recessed	1	F14T5	20	277	Bartco Lighting	MiT5-1T/14-14W -277
F2	Suspended Cylinder, two level metal halide, Down light	Suspended	1	50W MH	60	277	Kirlin Lighting	HSR-09095-50
F2A	Suspended Cylinder, two level metal halide, Down light	Suspended	1	70W MH	80	277	Kirlin Lighting	HSR-09095-70
F2C	Open Appearance square can light 6"X6"	Recessed	2	42W CFL	100	277	Kirlin Lighting	FRT-04092-77
F2D	Open Appearance square can light 6" X 6"	Recessed	1	42W CFL	50	277	Kirlin Lighting	FRS-06088-77
F2B	Suspended Cylinder, two level metal halide, Down light	Suspended	1	175W MH	215	277	Kirlin Lighting	HRS-12107-175
F2B-E	Same as type "F2B" but with quartz lamp included							
F2E	Open Appearance square can light 6" X 6" with dimming ballast	Recessed	1	42W CFL	50	277	Kirlin Lighting	FRS-06088-39-77
F2F	Wall washer square can light 6" X 6"	Recessed	1	42W CFL	50	277	Kurt Versen Kirlin Lighting	H8653FM-SY FRS-06096-77
F3	Direct/indirect lay-in 2'x4' architectural lighting fixture.	Recessed	3	F28T5	100	277	Mark Arcitectural Lighting	MDLS 24 DF 3T5 EB
F3C	Direct/indirect lay-in 2'x4' architectural lighting fixture.	Recessed	2	F28T5	70	277	Focal Point Mark Arcitectural Lighting	FAR 24 AC 2 T5 E 277 WH MDLS 24 DF 2T5 EB
F3B	Direct/indirect asymmetric lay-in 2'x4' architectural lighting fixture w/ perforated side basket.	Recessed	2	F28T5	60	277	Focal Point	FBX 24 W 2 T5 E 277 PS WH
F4	Pendant, Indirect canopy lighting	Pendent	1	150W MH	190	277	Elliptipar	M154-150C
F5	Wall mounted security metal halide fixture	Surface	1	70W MH	80	277	Lithonia Lighting	WST 70M MD277 QBS
F6	Pole mounted metal halide fixture, pole mounted 60' AFG	Pole mounted. Millerbernd Pole Model #UWLA 600, base "A", prime paint finish, type 2 brackets for poles attached to building and type 4R for the poles located at the apron. For building attached poles, contractor shall coordinate with architectural and structural drawings for special attachment.	1	1000W MH	1100	277	Sterner Infranor	876-1000MH-277V
F7	Halogen TV Camera lights		1	750W HAL.	750	277	Lowel	"Tota", See note 7 on this sheet
F8	Similar to fixture "F1" except 120V	Suspended	1	F28T5	35	120	Bartco Lighting	MiT5-1T/28-28W-120

1

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DULUTH, MN

NEW PASSENGER TERMINAL

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ENGINEER CERTIFICATION

I hereby certify that the engineeringh plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	**ADDENDUM 1**	**6.11.10**
	CONFORMANCE SET	**7.12.10**
3	**PERMIT REVISIONS**	**7.23.10**
	BUILDING PERMIT	**8.16.10**
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
LIGHTING FIXTURE SCHEDULE

SHEET NUMBER
E401

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2010.00 Duluth Airport\5.0 CADD\(5.1) Electrical\Dwgs\2010_E401.dwg Plotted on: 2/25/2011 8:57 AM Plotted by: Kastner, Jennifer

SWGR DISTRIBUTION: MSG-1A W/TVSS

SERVICE: 480/277V, 3PH, 4W + GND
BUS SIZE: 2000A LOAD:
MAIN DEVICE: 2000A CONN 1146.0 kVA
DEM. 1146.0 kVA
DEM. 1379.1 Amps

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	DEM.	CB AF	AT	REMARKS
1	SWITCHBOARD "SB-3"	1024.0	1024.0	2000	2000	
2	"ATS-1" (EM LTG)	23.0	23.0	800	150	
3	SPARE			800		
4	PNL "DP-ELEV"	99.0	99.0	800	200	
5	SPARE			800		

SWGR DISTRIBUTION: MSG-1B W/TVSS

SERVICE: 480/277V, 3PH, 4W + GND
BUS SIZE: 2000A LOAD:
MAIN DEVICE: 2000A CONN 1221.0 kVA
DEM. 1213.0 kVA
DEM. 1459.7 Amps 1

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	DEM.	CB AF	AT	REMARKS
1	PNL "DP-1A"	373.0	365.0	1200	1200	
2	"ATS-4" (CRITICAL)	633.0	633.0	1200	1200	
3	"ATS-3" (CRITICAL) 1	134.0	134.0	800	350	
4	PNL "LDP-1A"	81.0	81.0	800	400	
5	SPARE			800		

SWBD DISTRIBUTION: GDP-1 W/TVSS

SERVICE: 480/277V, 3PH, 4W + GND
BUS SIZE: 1600A LOAD: NOTES:
MAIN DEVICE: 1600A CONN 959.0 kVA SEE KEYED NOTE 1
DEM. 959.0 kVA ON DWG E300
DEM. 1154.0 Amps 1

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	DEM.	DEVICES (A)		REMARKS
1	FIRE PUMP "FP-1"	130.0	130.0	300		CB - NOTE 1
2	"ATS-3" (CRITICAL) 1	134.0	134.0	400	350	SWITCH/FUSE
3	SPARE			400		SWITCH
4	"ATS-1" (EM LTG)	23.0	23.0	200	200	SWITCH/FUSE
5	"ATS-4" (HOUSE CRTCL)	672.0	672.0	1200	1200	SWITCH/FUSE

PANEL DISTRIBUTION: DP-ELEV

SERVICE: 480/277V, 3PH, 4W + GND
BUS SIZE: 200A LOAD:
MAIN DEVICE: 200A CONN 99.0 kVA
DEM. 99.0 kVA 1 - CONFIRM OCP
DEM. 119.1 Amps SIZE W/ELEV. MANUF.

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	DEM.	DEVICES (A) CB		REMARKS
1	ELEVATOR #112	28.0	28.0	60		NOTE 1
2	ELEVATOR #124	28.0	28.0	60		NOTE 1
3	ELEVATOR #105	28.0	28.0	60		NOTE 1
4	XMFR "T-1C"	15.0	15.0	70		

SWBD DISTRIBUTION: SB-3

SERVICE: 480/277V, 3PH, 4W + GND
BUS SIZE: 2000A LOAD:
MAIN DEVICE: 2000A CONN 1024.0 kVA
DEM. 1024.0 kVA
DEM. 1232.3 Amps

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	DEM.	DEVICES (A) CB		REMARKS
1	CHILLER "RM-1"	343.0	343.0	500		
2	CHILLER "RM-2"	343.0	343.0	500		
3	SPARE			400		
4	PNL "DP-3"	338.0	338.0	600		

PANEL DISTRIBUTION: DP-1A

SERVICE: 480/277V, 3PH, 4W + GND
BUS SIZE: 1200A LOAD: NOTES
MAIN DEVICE: 1200A CONN 373.0 kVA 1-PROVIDE EMON
DEM. 365.0 kVA METER FOR CIRCUIT
DEM. 439.2 Amps

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	DEM.	DEVICES (A) CB		REMARKS
1	PNL "PP-1B"	93.0	93.0	200		
2	XMFR "T-1B"	189.0	181.0	350		
3	PNL "PP-1A"	91.0	91.0	200		
4	SPARE (FUT. PC AIR)			150		
5	SPARE (FUT. PC AIR)			150		
6	SPARE (FUT. PC AIR)			150		
7	SPARE (FUT. LOAD SHED)			150		
8	SPARE (FUT. LOAD SHED)			150		
9	SPARE (FUT. LOAD SHED)			150		
10	SPARE			100		

PANEL DISTRIBUTION: DP-3

SERVICE: 480/277V, 3PH, 4W + GND
BUS SIZE: 600A LOAD:
MAIN DEVICE: 600A CONN 338.0 kVA
DEM. 338.0 kVA
DEM. 406.7 Amps

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	DEM.	DEVICES (A) CB		REMARKS
1	PANEL "PP-3A"	151.0	151.0	400		
2	PANEL "PP-3B"	151.0	151.0	400		
3	XMFR "T-3"	36.0	36.0	125		

PANEL DISTRIBUTION: EDP-1A

SERVICE: 480/277V, 3PH, 4W + GND
BUS SIZE: 1200A LOAD: FUSIBLE SWITCH PNL
MAIN DEVICE: 1200A CONN 672.0 kVA 1-CONFIRM OCP
DEM. 672.0 kVA SIZE W/MANUF.
DEM. 808.7 Amps 2-PROVIDE EMON METER

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	DEM.	DEVICES (A) SWITCH	FUSE	REMARKS
1	PNL "LP-APRON"	27.0	27.0	60	60	
2	PNL "EP-3"	60.0	60.0	200	150	
3	BAGGAGE SYS-INBND	166.0	166.0	300	300	NOTE 1
4	BAGGAGE SYS-OUTBND	172.0	172.0	300	300	NOTE 1
5	SPARE (FUT. BAG. SYS)			60		
6	SUMP PUMP "SP-1"	23.0	23.0	60	60	NOTE 1
7	PASSENGER BRIDGE	33.0	33.0	60	60	NOTES 1,2
8	PASSENGER BRIDGE	33.0	33.0	60	60	NOTES 1,2
9	PASSENGER BRIDGE	33.0	33.0	60	60	NOTES 1,2
10	PASSENGER BRIDGE	33.0	33.0	60	60	NOTES 1,2
11	JOCKEY PUMP "JP-1"	12.0	12.0	30	20	NOTE 1
12	XMFR "ET-1D"	20.0	20.0	60	50	
13	PNL "P-PL" (PRKING LOT)	60.0	60.0	100	100	

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Print Name: Douglas C. Mass
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Date: 08/16/10 Reg. No.: 21067

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DATE ISSUED: 02-25-11
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DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
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SHEET TITLE
PANEL SCHEDULES

SHEET NUMBER
E403

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2008.00 Duluth Airport\8.0 CADD\(8.3) Electrical\Dwgs\2008_E403.dwg Plotted on: 2/25/2011 8:50 AM Plotted by: Koelker, Jennifer

PANELBOARD: PP-1A

SERVICE: 480/277V, 3PH, 4W + GND

BUS SIZE: 200A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 200A | **CONN 98.2 kVA** | 1-VERIFY OCP DEVICE SIZE PER MANUFACTURER'S REQ.

DEM. 98.2 kVA

DEM. 118.2 Amps

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	NOTES	TRIP/ POLE	CKT #
1				3,880	3,880								2
3	30/3		ESCALATOR			3,880	3,880			ESCALATOR		30/3	4
5								3,880	3,880				6
7				4,000	4,000								8
9	30/3	1	OH DOOR- W. RAMP			4,000	4,000			OH DOOR-E. RAMP	1	30/3	10
11								4,000	4,000				12
13				4,000	4,000								14
15	30/3	1	OH DOOR- W. RAMP			4,000	4,000			OH DOOR-E. RAMP	1	30/3	16
17								4,000	4,000				18
19				5,543	1,600					HEAT TRACE-CANOPY		20/1	20
21	30/3		HSE PMP "HP-1"			5,543	900			HEAT TRACE-CANOPY		20/1	22
23								5,543	1,774				24
25				831	1,774					CU-2.2		15/3	26
27	15/3	1	OH DOOR-SEC. XRAY			831	1,774						28
29								831		SPARE		20/1	30
31	20/1		SPARE							SPARE		20/1	32
33	20/1		SPARE							SPARE		20/1	34
35	20/1		SPARE							SPARE		20/1	36
37	20/1		SPARE							SPARE		20/1	38
39	20/1		SPARE							SPARE		20/1	40
41	20/1		SPARE							SPARE		20/1	42
TOTAL CONNECTED LOADS:				**18,254**	**15,254**	**18,254**	**14,554**	**18,254**	**13,654**				

1

PANELBOARD: PP-1B

SERVICE: 480/277V, 3PH, 4W + GND

BUS SIZE: 200A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 200A | **CONN 109.3 kVA** | 1-VERIFY OCP DEVICE SIZE PER MANUFACTURER'S REQ.

DEM. 109.3 kVA

DEM. 131.6 Amps

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	NOTES	TRIP/ POLE	CKT #
1				6,000	6,000								2
3	30/3	1	PASSENGER BRIDGE			6,000	6,000			PASSENGER BRIDGE	1	30/3	4
5			BAG LIFT					6,000	6,000	BAG LIFT			6
7				6,000	6,000								8
9	30/3	1	PASSENGER BRIDGE			6,000	6,000			PASSENGER BRIDGE	1	30/3	10
11			BAG LIFT					6,000	6,000	BAG LIFT			12
13				1,774	1,774								14
15	15/3		CU-1.2 (TUG TNL)			1,774	1,774			CU-1.1 (TUG TNL)		15/3	16
17								1,774	1,774				18
19				831	3,242								20
21	15/3		PUMP "P-14"			831	3,242			CU-1.3 (TUG TNL)		20/3	22
23								831	3,242				24
25				1,774	3,048								26
27	15/3		CU-2.1			1,774	3,048			PUMP "P-15"		20/3	28
29								1,774	3,048				30
31	20/1		SPARE							SPARE		20/1	32
33	20/1		SPARE							SPARE		20/1	34
35	20/1		SPARE							SPARE		20/1	36
37	20/1		SPARE							SPARE		20/1	38
39	20/1		SPARE							SPARE		20/1	40
41	20/1		SPARE							SPARE		20/1	42
TOTAL CONNECTED LOADS:				**16,379**	**20,064**	**16,379**	**20,064**	**16,379**	**20,064**				

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PANELBOARD: PP-3A

SERVICE: 480/277V, 3PH, 4W + GND

BUS SIZE: 400A | **LOAD:** | **NOTES:**

MAIN DEVICE: 400A | **CONN 148.7 kVA** | CIRCUIT BREAKER PANEL

DEM. 148.7 kVA

DEM. 178.9 Amps

CKT #	TRIP/ POLE	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1			5,820	0							2
3	40/3	PUMP "P-1"			5,820	0			PUMP "P-3"	40/3	4
5							5,820	0	STANDBY PUMP		6
7			5,820	2,106							8
9	40/3	PUMP "P-2"			5,820	2,106			PUMP "P-13"	15/3	10
11							5,820	2,106			12
13			5,820	0							14
15	40/3	AHU-1			5,820	0			SPARE	30/3	16
17							5,820	0			18
19			3,048	0							20
21	20/3	REF-1			3,048	0			SPARE	30/3	22
23							3,048	0			24
25			7,482	2,106							26
27	60/3	AHU-3			7,482	2,106			TEF-1	15/3	28
29							7,482	2,106			30
31			3,880	2,106							32
33	25/3	REF-3			3,880	2,106			TEF-2	15/3	34
35							3,880	2,106			36
37			7,482	3,880							38
39	60/3	AHU-4			7,482	3,880			REF-4	25/3	40
41							7,482	3,880			42
TOTAL CONNECTED LOADS:			**39,352**	**10,198**	**39,352**	**10,198**	**39,352**	**10,198**			

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PANELBOARD: PP-3B

SERVICE: 480/277V, 3PH, 4W + GND

BUS SIZE: 400A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 400A | **CONN 146.8 kVA**

DEM. 146.8 kVA

DEM. 176.7 Amps

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	NOTES	TRIP/ POLE	CKT #
1				0	1,774								2
3	15/3		SPARE			0	1,774			CU-3.1 (ROOF)		15/3	4
5								0	1,774				6
7				5,820	0								8
9	40/3		AHU-5			5,820	0			SPARE		20/3	10
11								5,820	0				12
13				3,048	21,339								14
15	20/3		REF-5			3,048	21,339			AHU-2		110/3	16
17								3,048	21,339				18
19				0	9,422								20
21	20/3		SPARE			0	9,422			REF-2		70/3	22
23								0	9,422				24
25	15/1		FPB-3.1	2,548	859					FPB-3.6		15/1	26
27	15/1		FPB-3.2			1,413	1,413			FPB-3.7		15/1	28
29	15/1		FPB-3.3					1,413	2,548	FPB-3.8		15/1	30
31	15/1		FPB-3.4	1,413	859					FPB-3.9		15/1	32
33	15/1		FPB-3.5			1,413	1,413			FPB-2.1		15/1	34
35	15/1		FPB-3.10					1,413	360	FPB-2.2		15/1	36
37	15/1		FPB-3.11	1,413						SPARE		20/1	38
39	20/1		FPB-3.12			2,548	804			HT TRACE-GUTTER		20/1	40
41	20/1		SPARE						804	HT TRACE-GUTTER		20/1	42
TOTAL CONNECTED LOADS:				**14,242**	**34,253**	**14,242**	**36,165**	**11,694**	**36,247**				

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PANELBOARD: EP-3

SERVICE: 480/277V, 3PH, 4W + GND

BUS SIZE: 200A | **LOAD:** | **NOTES:**

MAIN DEVICE: 150A | **CONN 65.8 kVA** | FUSIBLE SWITCH PANEL

DEM. 65.8 kVA

DEM. 79.2 Amps

CKT #	SW/FUSE POLE	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	SW/FUSE POLE	CKT #
1			0	2,106							2
3	30AS/30AF	SPARE			0	2,106			PUMP "P-7"	30AS/15AF	4
5	3P						0	2,106		3P	6
7			0	2,106							8
9	30AS/30AF	PUMP "P-6"			0	2,106			PUMP "P-8"	30AS/15AF	10
11	3P	STANDY PUMP					0	2,106		3P	12
13			0	2,106							14
15	30AS/	SPARE			0	2,106			PUMP "P-9"	30AS/15AF	16
17	3P						0	2,106		3P	18
19			5,820	0							20
21	30AS/30AF	PUMP "P-4"			5,820	0			SPARE	30AS/	22
23	3P						5,820	0		3P	24
25			3,048	942							26
27	30AS/20AF	"EF-1.1"			3,048	942			"SF-2"	30AS/15AF	28
29	3P						3,048	942		3P	30
31			5,820	0							32
33	30AS/30AF	PUMP "P-5"			5,820	0			SPARE	30AS/	34
35	3P						5,820	0		3P	36
37			0	0							38
39	30AS/	SPARE			0	0			SPARE	30AS/	40
41	3P						0	0		3P	42
TOTAL CONNECTED LOADS:			**14,688**	**7,260**	**14,688**	**7,260**	**14,688**	**7,260**			

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DULUTH, MN

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CONSULTANTS

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BNP ASSOCIATES INC.
101 East Ridge Office Park, Suite 103, Danbury CT 06810
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Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
PANEL SCHEDULES

SHEET NUMBER
E404

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2035.00 Duluth Airport\5.0 CADD\(5.3) Electrical\Dwgs\2035_E404.dwg Plotted on: 2/25/2011 8:59 AM Plotted by: Kastner, Jennifer

PANEL DISTRIBUTION: DPP-ELEV

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 200A | LOAD: | NOTES:

MAIN DEVICE: 150A | CONN 15.0 kVA

DEM. 15.0 kVA

DEM. 41.7 Amps

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	LOAD (kVA) DEM.	DEVICES (A) CB		REMARKS
1	PNL "ELEV-1A"	5.0	5.0	60		
2	PNL "ELEV-1B"	5.0	5.0	60		
3	PNL "ELEV-1C"	5.0	5.0	60		

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PANEL DISTRIBUTION: EDRP-1 W/TVSS

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 800A | LOAD: | NOTES:

MAIN DEVICE: 800A | CONN 134.0 kVA | FUSIBLE SWITCH PNL

DEM. 134.0 kVA | TWO SECTION

DEM. 372.2 Amps

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	LOAD (kVA) DEM.	DEVICES (A) SWITCH	DEVICES (A) FUSE	REMARKS
1	PANEL "ERP-1A"	6.0	6.0	200	200	
2	PANEL "ERP-1B"	12.0	12.0	200	200	
3	PANEL "ERP-1C"	27.0	27.0	200	200	
4	PANEL "ERP-1D"	12.0	12.0	200	200	
5	PANEL "ERP-2A"	13.0	13.0	200	200	
6	PANEL "ERP-2B"	18.0	18.0	200	200	
7	PANEL "ERP-2C"	18.0	18.0	200	200	
8	PANEL "ERP-2D"	8.0	8.0	100	100	
9	PANEL "ERP-3A"	12.0	12.0	200	200	
10	PANEL "ERP-3B"	8.0	8.0	200	200	
11	SPARE			60		

PANEL DISTRIBUTION: RDP-1A

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 800A | LOAD: | NOTES:

MAIN DEVICE: 800A | CONN 189.0 kVA | CIRCUIT BREAKER PNL

DEM. 181.0 kVA | 1-PROVIDE EMON

DEM. 502.8 Amps | METER FOR CIRCUIT

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	LOAD (kVA) DEM.	DEVICES (A) CB	REMARKS
1	PANEL "RP-1A"	22.0	22.0	150	
2	PANEL "RP-1B"	26.0	26.0	150	
3	PANEL "RP-1C"	19.0	19.0	150	
4	PANEL "RP-1D"	36.0	28.0	150	
5	PANEL "RP-2A"	27.0	27.0	150	
6	PANEL "RP-2B"	26.0	26.0	150	
7	PANEL "LP-2B"			150	NOTE 1
8	PANEL "RP-1E"	10.0	10.0	150	
9	PANEL "RP-2C"	23.0	23.0	150	

PANEL DISTRIBUTION: RDP-3

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 250A | LOAD: | NOTES:

MAIN DEVICE: 250A | CONN 36.0 kVA | CIRCUIT BREAKER PNL

DEM. 36.0 kVA

DEM. 100.0 Amps

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	LOAD (kVA) DEM.	DEVICES (A) CB	REMARKS
1	PANEL "RP-3A"	20.0	20.0	150	
2	PANEL "RP-3B"	16.0	16.0	150	

PANEL DISTRIBUTION: LDP-1A

SERVICE: 480/277V, 3PH, 4W + GND

BUS SIZE: 400A | LOAD: | NOTES

MAIN DEVICE: 400A | CONN 81.0 kVA

DEM. 81.0 kVA

DEM. 97.5 Amps

FEEDER No:	FEEDER CONTROLLED	LOAD (kVA) CONN.	LOAD (kVA) DEM.	DEVICES (A) CB		REMARKS
1	XMFR "T-1A"	7.0	7.0	50		
2	PNL "LP-1A"	34.0	34.0	100		
3	PNL "LP-2A"	40.0	40.0	100		
4	SPARE			200		

PANELBOARD: LP-APRON

SERVICE: 480/277V, 3PH, 4W + GND

BUS SIZE: 60A | LOAD: | NOTES: | SQUARE D POWERLINK PNL

MAIN DEVICE: 60A | CONN 26.4 kVA | 1 - PROVIDE CONTROLLABLE CIRCUIT BREAKER

DEM. 26.4 kVA | 2 - CONTROLLED BY PHOTOCELL

DEM. 31.8 Amps

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	NOTES	TRIP/ POLE	CKT #
1	20/1	1,2	LTG-APRON	2,200	2,200		LTG-APRON	1,2	20/1	2
3	20/1	1,2	LTG-APRON		2,200	2,200	LTG-APRON	1,2	20/1	4
5	20/1	1,2	LTG-APRON			2,200	LTG-APRON	1,2	20/1	6
7	20/1	1,2	LTG-APRON	2,200	2,200		LTG-APRON	1,2	20/1	8
9	20/1	1,2	LTG-APRON		2,200	2,200	LTG-APRON	1,2	20/1	10
11	20/1		SPARE			2,200	LTG-APRON	1,2	20/1	12
13	20/1		SPARE		2,200		LTG-APRON	1,2	20/1	14
15	20/1		SPARE				SPARE		20/1	16
17	20/1		SPARE				SPARE		20/1	18
19	20/1		SPARE				SPARE		20/1	20
21	20/1		SPARE				SPARE		20/1	22
23	20/1		SPARE				SPARE		20/1	24
25	20/1		SPARE				SPARE		20/1	26
27	20/1		SPARE				SPARE		20/1	28
29	20/1		SPARE				SPARE		20/1	30
TOTAL CONNECTED LOADS:				4,400	6,600	4,400	4,400	2,200	4,400	

PANELBOARD: LP-1A

SERVICE: 480/277V, 3PH, 4W + GND

BUS SIZE: 100A | LOAD: | NOTES: | SQUARE D POWERLINK PNL

MAIN DEVICE: 100A | CONN 42.7 kVA | 1 - PROVIDE CONTROLLABLE CIRCUIT BREAKER

DEM. 42.7 kVA | 2 - CONTROLLED BY DAYLIGHT SENSOR

DEM. 51.4 Amps | 3 - CONTROLLED BY PHOTOCELL

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	NOTES	TRIP/ POLE	CKT #
1	20/1	1,3	LTG-CANOPY	3,800	180		LTG-EAST STAIR	1	20/1	2
3	20/1	1,3	LTG-CANOPY		3,800	180	LTG-CENTER STAIR	1	20/1	4
5	20/1	1,3	LTG-CANOPY			3,800	1,710 LTG-FLR 1 LOBBY	1	20/1	6
7	20/1	1,3	LTG-CANOPY	3,800	490		LTG-FLR 1 LOBBY	1,2	20/1	8
9	20/1	1,3	LTG-CANOPY		3,800	350	LTG-FLR 1 LOBBY	1,2	20/1	10
11	20/1	1	LTG-FLR 1 VESTIBULES			700	350 LTG-FLR 1 LOBBY	1,2	20/1	12
13	20/1	1	LTG-RAMPS/TUNNEL	2,760			SPARE		20/1	14
15	20/1		LTG-FLR 1 NW		2,573		SPARE		20/1	16
17	20/1		LTG-FLR 1 CBP AREA			1,216	SPARE		20/1	18
19	20/1	1	LTG-FLR 1 CBP AREA	1,660			SPARE		20/1	20
21	20/1	1	LTG-FLR 1 CBIS RM		3,420		SPARE		20/1	22
23	20/1		LTG-FLR 1 NE			1,952	SPARE		20/1	24
25	20/1		LTG-FLR 1 RAC	700			SPARE		20/1	26
27	20/1	1	LTG-FLR 1 ROVER		400		SPARE		20/1	28
29	20/1	1	LTG-FLR 1 CORR.			739	SPARE		20/1	30
31	20/1	1,3	LTG-CANOPY	3,800			SPARE		20/1	32
33	20/1		SPARE				SPARE		20/1	34
35	20/1		SPARE				SPARE		20/1	36
37	20/1		SPARE				SPARE		20/1	38
39	20/1		SPARE				SPARE		20/1	40
41	20/1		SPARE				500 DEVICE ROUTER		20/1	42
TOTAL CONNECTED LOADS:				16,520	670	13,993	530	8,407	2,560	

PANELBOARD: LP-2A

SERVICE: 480/277V, 3PH, 4W + GND

BUS SIZE: 100A | LOAD: | NOTES: | SQUARE D POWERLINK PNL

MAIN DEVICE: 100A | CONN 40.0 kVA | 1 - PROVIDE CONTROLLABLE CIRCUIT BREAKER

DEM. 40.0 kVA | 2 - CONTROLLED BY DAYLIGHT SENSOR

DEM. 48.1 Amps

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	NOTES	TRIP/ POLE	CKT #
1	20/1	1	LTG-FLR 2 CBP AREA	2,200	3,440		LTG-FLR 2 WAITING	1	20/1	2
3	20/1		LTG-FLR 2 WEST		2,938	3,440	LTG-FLR 2 WAITING	1	20/1	4
5	20/1		LTG-FLR 2 EAST			2,604	3,440 LTG-FLR 2 WAITING	1	20/1	6
7	20/1	1	LTG-FLR 2 CORR.	1,086	210		LTG-ROOF		20/1	8
9	20/1	1,2	LTG-FLR 2 CONCRS.		1,575	2,332	LTG-FLR 3 STOR./OPS		20/1	10
11	20/1	1	LTG-FLR 2 CONCRS.			2,310	3,320 LTG-FLR 3 OPS/OFFICES		20/1	12
13	20/1	1	LTG-FLR 2 TSA/DEPLAN.	2,100	1,990		LTG-FLR 3 RESTRM/OFF.		20/1	14
15	20/1	1	LTG-FLR 2 CONCRS.		1,540	2,580	LTG-FLR 3 EQUIP. RMS		20/1	16
17	20/1	1	LTG-CBP COORD.			200	1,076 LTG-FLR 3 WAIT./CORR.	1	20/1	18
19	20/1		SPARE		1,310		LTG-FLR 3 RECEPT/OFFICE	1	20/1	20
21	20/1		SPARE			300	LTG-FLR 3 RECEPT.	1	20/1	22
23	20/1		SPARE				SPARE		20/1	24
25	20/1		SPARE				SPARE		20/1	26
27	20/1		SPARE				SPARE		20/1	28
29	20/1		SPARE				SPARE		20/1	30
31	20/1		SPARE				SPARE		20/1	32
33	20/1		SPARE				SPARE		20/1	34
35	20/1		SPARE				SPARE		20/1	36
37	20/1		SPARE				SPARE		20/1	38
39	20/1		SPARE				SPARE		20/1	40
41	20/1		SPARE				SPARE		20/1	42
TOTAL CONNECTED LOADS:				5,386	6,950	6,053	8,652	5,114	7,836	

PANELBOARD: LP-2B

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 225A | LOAD: | NOTES: | SQUARE D POWERLINK PNL

MAIN DEVICE: 150A | CONN 4.2 kVA | 1 - PROVIDE CONTROLLABLE CIRCUIT BREAKER

DEM. 4.2 kVA | 2-VERIFY OCP DEVICE SIZE PER MANUFACTURER'S REQ.

DEM. 11.6 Amps

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION		TRIP/ POLE	CKT #
1	20/1		REC-GENERAL	540	510		GRILLE	2	15/2	2
3	20/1		REC-GENERAL		540	510				4
5	20/1	1	LTG-BAR/COFFEE			525	510 GRILLE	2	15/2	6
7	20/1		LTG-STOR./PREP	330	510					8
9	20/1	1	LTG-VENDING		200		SPARE		20/1	10
11	20/1		SPARE				SPARE		20/1	12
13	20/1		SPARE				SPARE		20/1	14
15	20/1		SPARE				SPARE		20/1	16
17	20/1		SPARE				SPARE		20/1	18
19	20/1		SPARE				SPARE		20/1	20
21	20/1		SPARE				SPARE		20/1	22
23	20/1		SPARE				SPARE		20/1	24
25	20/1		SPARE				SPARE		20/1	26
27	20/1		SPARE				SPARE		20/1	28
29	20/1		SPARE				SPARE		20/1	30
31	20/1		SPARE				SPARE		20/1	32
33	20/1		SPARE				SPARE		20/1	34
35	20/1		SPARE				SPARE		20/1	36
37	20/1		SPARE				SPARE		20/1	38
39	20/1		SPARE				SPARE		20/1	40
41	20/1		SPARE				SPARE		20/1	42
TOTAL CONNECTED LOADS:				870	1,020	740	510	525	510	

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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

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SJA ARCHITECTS
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M/E/P/FP Engineers:
COSENTINI ASSOCIATES INC.
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Baggage Handling Systems Consultants:
BNP ASSOCIATES INC.
101 East Ridge Office Park, Suite 103, Danbury CT 06810
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Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
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ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11

REVIEWED BY: XXX

DRAWN BY: JK

DESIGNED BY: JK

AEP PROJECT NUMBER

213-1882-091

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SHEET TITLE

PANEL SCHEDULES

SHEET NUMBER

E405

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2035.00 Duluth Airport\5.0 CADD\(5.1) Electrical\Dwgs\2035_E405.dwg Plotted on: 2/25/2011 10:55 AM Plotted by: Kastner, Jennifer

PANELBOARD: RP-1A

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 225A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 150A | CONN 20.0 kVA | 1 - CONFIRM OCP SIZE WITH EQUIP. MANUFACTURER

DEM. 20.0 kVA

DEM. 55.7 Amps

CKT #	TRIP/ POLE		CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION		TRIP/ POLE	CKT #
1				672	540					REC-GENERAL		20/1	2
3	15/3		AC-1.3 (COMM. RM)			672	540			REC-GENERAL		20/1	4
5								672	540	REC-GENERAL		20/1	6
7	20/1		SPARE	0	360					REC-WASHRMS		20/1	8
9	20/1		REC-RAMP (GEN)			900	360			REC-WASHRMS		20/1	10
11	20/1		REC-TUNNEL (GEN)					540	720	REC-GENERAL		20/1	12
13	20/1		REC-EXTERIOR (GEN)	360	360					REC-OFFICE		20/1	14
15	20/1		SPARE			0	500			FUME HOOD		20/1	16
17	20/1		SPARE					0	1,500	WASHRM-ELEC DRYER	1	20/1	18
19	20/1		REC-ROVER	360	1,500					WASHRM-ELEC DRYER	1	20/1	20
21	20/1		REC-ROVER			540	360			REC-OFFICE		20/1	22
23	20/1		SPARE					0	1,000	REC-SIGNAGE		20/1	24
25	20/1		REC-GENERAL	720	0					SPARE		20/1	26
27	20/1		REC-OFFICE/WRKST.			900	540			REC-GENERAL		20/1	28
29	20/1		GARBAGE DISPOSAL					1,200	560	ELEV. PIT LTG/REC		20/1	30
31	20/1		REFRIGERATOR	1,200	0					SPARE		20/1	32
33	20/1		MICROWAVE			1,200	0			SPARE		20/1	34
35	20/1		REC-BREAK RM					180	0	SPARE		20/1	36
37	20/1		REC-BREAK RM	540	0					SPARE		20/1	38
39	20/1		SPARE			0	0			SPARE		20/1	40
41	20/1		SPARE					0	0	SPARE		20/1	42
TOTAL CONNECTED LOADS:				3,852	2,760	4,212	2,300	2,592	4,320				

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PANELBOARD: RP-1B

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 225A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 150A | CONN 22.1 kVA | 1 - CONFIRM OCP SIZE WITH EQUIP. MANUFACTURER

DEM. 22.1 kVA

DEM. 61.3 Amps

CKT #	TRIP/ POLE		CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION		TRIP/ POLE	CKT #
1	20/1		SPARE	0	360					REC-TUNNEL (GEN)		20/1	2
3	20/1		SPARE			0	1,080			REC-GENERAL		20/1	4
5	20/1		SPARE					0	360	REC-BAG RM		20/1	6
7	20/1		SPARE	0	200					ELEC FCT/SP DISP, FLR 1		20/1	8
9	20/1		SPARE			0	0			SPARE		20/1	10
11	20/1		SPARE					0	0	SPARE		20/1	12
13	20/1		REC-ELEC RM	360	0					SPARE		20/1	14
15	20/1		REC-TELECOM			360	0			SPARE		20/1	16
17	20/1		REC-GENERAL					720	0	SPARE		20/1	18
19	20/1		REC-WASHRMS	540	720					REC-BHS MAINT.		20/1	20
21	20/1		REC-GENERAL			720	720			REC-BHS MAINT.		20/1	22
23	20/1		REC-GENERAL					720	720	REC-BHS MAINT.		20/1	24
25	20/1		GARBAGE DISPOSAL	1,200	528					"CUH-1.4"		15/1	26
27	20/1		REFRIGERATOR			1,200	528			"EF-1.5"		15/1	28
29	20/1		MICROWAVE					1,200	0	SPARE		15/1	30
31	20/1		REC-RAC 1	360	540					REC-ETD		20/1	32
33	20/1		REC-RAC 2			360	1,500			WASHRM-ELEC DRYER	1	20/1	34
35	20/1		REC-RAC 3					360	1,500	WASHRM-ELEC DRYER	1	20/1	36
37	20/1		REC-RAC 4	360	1,500					WASHRM-ELEC DRYER	1	20/1	38
39	20/1		REC-RAC 5			360	1,500			WASHRM-ELEC DRYER	1	20/1	40
41	20/1		SPARE					0	1,500	WASHRM-ELEC DRYER	1	20/1	42
TOTAL CONNECTED LOADS:				2,820	3,848	3,000	5,328	3,000	4,080				

PANELBOARD: RP-1C

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 225A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 150A | CONN 15.5 kVA | 1 - CONFIRM OCP SIZE WITH EQUIP. MANUFACTURER

DEM. 15.1 kVA

DEM. 42.0 Amps

CKT #	TRIP/ POLE		CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION		TRIP/ POLE	CKT #
1	20/1		REC-TUNNEL (GEN)	540	360					REC-CHECK IN CTR		20/1	2
3	20/1		REC-RAMP (GEN)			900	360			REC-CHECK IN CTR		20/1	4
5	20/1		REC-PUMP RM					360	360	REC-CHECK IN CTR		20/1	6
7	20/1		REC-LOADING DOCK	180	360					REC-CHECK IN CTR		20/1	8
9	20/1		REC-LOADING DOCK			180	180			REC-GENERAL		20/1	10
11	20/1		REC-LOADING DOCK					180	720	REC-OFFICE/OPS (AIR 3)		20/1	12
13	20/1		REC-GENERAL	900	0					SPARE		20/1	14
15	20/1		REC-WASHRMS			360	0			SPARE		20/1	16
17	20/1		REC-OFFICE					360	0	SPARE		20/1	18
19	20/1		REC-OFFICE	360	0					SPARE		20/1	20
21	20/1		REC-GENERAL			720	0			SPARE		20/1	22
23	20/1		REC-BAG RM					360	0	SPARE		20/1	24
25	20/1		REC-OFFICE/OPS (AIR 1)	720	1,500					WASHRM-ELEC DRYER	1	20/1	26
27	20/1		REC-OFFICE/OPS (AIR 2)			720	1,000			REC-SCALE		20/1	28
29	20/1		REC-OPS					900	750	REC-SCALE		20/1	30
31	20/1		ELEV. PIT LTG/REC.	280	360					REC-EXTERIOR (GEN)		20/1	32
33	20/1		REC-OFFICE			360	0			SPARE		20/1	34
35	20/1		SPARE					0	0	SPARE		20/1	36
37	20/1		SPARE	0	0					SPARE		20/1	38
39	15/2		ACN-3			291	291			ACN-4		15/2	40
41								291	291				42
TOTAL CONNECTED LOADS:				2,980	2,580	3,531	1,831	2,451	2,121				

PANELBOARD: RP-1D

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 225A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 150A | CONN 30.2 kVA | 1-PROVIDE EMON METER FOR CIRCUIT

DEM. 22.0 kVA | 2-VERIFY OCP SIZE PER MANUFACTURER'S REQUIREMENTS

DEM. 61.1 Amps

CKT #	TRIP/ POLE		CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION		TRIP/ POLE	CKT #
1				2,000	2,000								2
3	30/3		REC-PSGR BRIDGE			2,000	2,000			REC-PSGR BRIDGE		30/3	4
5			GRD SERVICE EQUIP.					2,000	2,000	GRD SERVICE EQUIP.			6
7				2,000	2,000								8
9	30/3		REC-PSGR BRIDGE			2,000	2,000			REC-PSGR BRIDGE		30/3	10
11			GRD SERVICE EQUIP.					2,000	2,000	GRD SERVICE EQUIP.			12
13	20/1		REC-GENERAL	180	180					REC-GENERAL		20/1	14
15	20/1		REC-GENERAL			180	180			REC-GENERAL		20/1	16
17	20/1	1	REC-GENERAL					180	180	REC-GENERAL	1	20/1	18
19	20/1	1	REC-GENERAL	180	180					REC-GENERAL	1	20/1	20
21	15/2	2	SHUTTER-ETD RM			510	510			SHUTTER-ETD RM	2	15/2	22
23								510	510				24
25	15/2	2	SHUTTER-ETD RM	510	510					OH DOOR-LDING DOCK	2	15/2	26
27						510	510						28
29	20/1	1	REC-ELEC. CART					180	0	SPARE		20/1	30
31	20/1	1	REC-ELEC. CART	180	0					SPARE		20/1	32
33	20/1	1	REC-ELEC. CART			180	0			SPARE		20/1	34
35	20/1	1	REC-ELEC. CART					180		SPARE		20/1	36
37	20/1		SPARE							SPARE		20/1	38
39	20/1		SPARE							SPARE		20/1	40
41	20/1		SPARE							SPARE		20/1	42
TOTAL CONNECTED LOADS:				5,050	4,870	5,380	5,200	5,050	4,690				

PANELBOARD: RP-1E

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 225A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 150A | CONN 23.9 kVA | 1-VERIFY OCP SIZE PER MANUFACTURER'S REQUIREMENTS

DEM. 23.9 kVA

DEM. 66.4 Amps

CKT #	TRIP/ POLE		CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION		TRIP/ POLE	CKT #
1	20/1		LED ILLUM. SIGN	1,200	528					UH-1.4		15/1	2
3	20/1		LED ILLUM. SIGN			1,200	528			UH-1.5		15/1	4
5	20/1		RESERV. CENTER					1,200	528	UH-1.7		15/1	6
7	20/1		EDGELITE-1ST FLR	1,200	528					UH-1.8		15/1	8
9	20/1		EDGELITE-1ST FLR			1,200	528			UH-1.9		15/1	10
11	20/1		EDGELITE-1ST FLR					1,200	528	CUH-1.2		15/1	12
13	20/1		EDGELITE-1ST FLR	1,200	528					UH-1.6		15/1	14
15	20/1		EDGELITE-1ST FLR			1,200	528			EF-1.6		15/1	16
17	15/1		UH-1.1					528	528	EF-1.7		15/1	18
19	15/1		UH-1.2	528	1,920								20
21	15/1		CUH-1.5			528	1,920			PARTITION WALL	1	20/3	22
23	15/1		CUH-1.1					528	1,920				24
25	15/1		UH-1.3	528						SPARE		20/1	26
27	20/1		SPARE							SPARE		20/1	28
29	20/1		SPARE							SPARE		20/1	30
31	20/1		SPARE							SPARE		20/1	32
33	20/1		SPARE							SPARE		20/1	34
35	20/1		SPARE							SPARE		20/1	36
37	20/1		SPARE							SPARE		20/1	38
39	15/2		ACN-1.1			291	291			ACN-1.2		15/2	40
41								291	291				42
TOTAL CONNECTED LOADS:				4,656	3,504	4,419	3,795	3,747	3,795				

PANELBOARD: RP-2A

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 225A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 150A | CONN 26.7 kVA | 1 - CONFIRM OCP SIZE WITH EQUIP. MANUFACTURER

DEM. 26.7 kVA

DEM. 74.3 Amps

CKT #	TRIP/ POLE		CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION		TRIP/ POLE	CKT #
1	20/1		REC-GENERAL	540	0					SPARE		20/1	2
3	20/1	1	WASHRM-ELEC DRYER			1,500	500			REC-CONCRSE COUNTER		20/1	4
5	20/1	1	WASHRM-ELEC DRYER					1,500	0	SPARE		20/1	6
7	20/1	1	WASHRM-ELEC DRYER	1,500	540					REC-GENERAL		20/1	8
9	20/1	1	WASHRM-ELEC DRYER			1,500	360			REC-WASHRMS		20/1	10
11	20/1	1	WASHRM-ELEC DRYER					1,500	360	REC-OFFICE (GEN)		20/1	12
13	20/1	1	WASHRM-ELEC DRYER	1,500	1,080					REC-GENERAL		20/1	14
15	20/1	1	WASHRM-ELEC DRYER			1,500	360			REC-GENERAL		20/1	16
17	20/1	1	WASHRM-ELEC DRYER					1,500	0	SPARE		20/1	18
19	20/1		EDGELITE - 2ND FLR	1,200	900					REC-INTERNAT. (GEN)		20/1	20
21	20/1		REC-GENERAL			540	500			REC-PROC. BOOTH		20/1	22
23	20/1		REC-WASHRMS					360	500	REC-PROC. BOOTH		20/1	24
25	20/1		SPARE	0	1,200					VENDING MACH.		20/1	26
27	20/1		REC-CONCRSE (GEN)			720	1,200			VENDING MACH.		20/1	28
29	20/1		REC-CONCRSE (GEN)					360	1,200	VENDING MACH.		20/1	30
31	20/1		SPARE	0	0					SPARE		20/1	32
33	15/1		"CUH-2.1"			528	0			SPARE		20/1	34
35	20/1		REC-OFFICE					720	360	REC-WASHRMS		20/1	36
37	20/1		REC-ROVER	720	0					SPARE		20/1	38
39	20/1		SPARE			0	0			SPARE		20/1	40
41	20/1		SPARE					0	0	SPARE		20/1	42
TOTAL CONNECTED LOADS:				5,460	3,720	6,288	2,920	5,940	2,420				

PANELBOARD: RP-2B

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 225A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 150A | CONN 26.1 kVA | 1-VERIFY OCP DEVICE SIZE PER MANUFACTURER'S REQ.

DEM. 26.1 kVA

DEM. 72.5 Amps

CKT #	TRIP/ POLE		CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION		TRIP/ POLE	CKT #
1	20/1		REC-CHECK IN	360	720					REC-GENERAL		20/1	2
3	20/1		REC-GENERAL			540	360			REC-WASHRMS		20/1	4
5	20/1		REC-TSA (GEN)					720	0	SPARE		20/1	6
7	20/1		REC-GENERAL	540	0					SPARE		20/1	8
9	20/1		SPARE			0	720			REC-GENERAL		20/1	10
11	20/1		REC-TSA QUEUE					500	500	REC-CONCRSE COUNTER		20/1	12
13				672	500					REC-CONCRSE COUNTER		20/1	14
15	15/3		AC-2.1 (COMM. RM)			672	0			SPARE		20/1	16
17								672	510	GRILLE-TSA	1	15/2	18
19	20/1		SPARE	0	510								20
21	20/1		SPARE			0	831						22
23	20/1		REC-ELEC RM					360	831	GRILLE-TSA	1	15/3	24
25				1,920	831								26
27	20/3	1	PARTITION WALL			1,920	1,500			WASHRM-ELEC DRYER	1	20/1	28
29								1,920	1,500	WASHRM-ELEC DRYER	1	20/1	30
31	20/1		EDGELITE - 2ND FLR	1,200	1,500					WASHRM-ELEC DRYER	1	20/1	32
33	20/1		SPARE			0	1,500			WASHRM-ELEC DRYER	1	20/1	34
35	20/1		SPARE					0	720	REC-GENERAL		20/1	36
37	20/1		SPARE	0	1,080					REC-GENERAL		20/1	38
39	20/1		SPARE			0				SPARE		20/1	40
41	20/1		SPARE					0		SPARE		20/1	42
TOTAL CONNECTED LOADS:				4,692	5,141	3,132	4,911	4,172	4,061				

PANELBOARD: RP-2C

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 225A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 150A | CONN 29.1 kVA | 1 - CONFIRM OCP SIZE WITH EQUIP. MANUFACTURER

DEM. 29.1 kVA | 2 - CIRCUITS ASSOCIATED WITH ALTERNATE PRICE SEPARATE

DEM. 80.9 Amps

CKT #	TRIP/ POLE		CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION		TRIP/ POLE	CKT #
1	20/1		SPARE	0	540					REC-TSA GENERAL		20/1	2
3	20/1		REC-GENERAL			900	720			REC-OFFICES		20/1	4
5	20/1		REC-CHECK IN					360	1,500	WASHRM-ELEC DRYER	1	20/1	6
7	20/1		REC-CHECK IN	360	1,500					WASHRM-ELEC DRYER	1	20/1	8
9	20/1		REC-GENERAL			1,080	1,500			WASHRM-ELEC DRYER	1	20/1	10
11	20/1		REC-WASHRM					540	1,500	WASHRM-ELEC DRYER	1	20/1	12
13	20/1		REC-CONF RM	360	1,500					WASHRM-ELEC DRYER	1	20/1	14
15	20/1		REC-OFFICE			360	200			ELEC FCT/SP DISP, FLR 2		20/1	16
17	20/1		REC-GENERAL					360	1,657				18
19	20/1		VENDING MACH.	1,200	1,657					PARTITION WALL	1	20/3	20
21	20/1		VENDING MACH.			1,200	1,657						22
23	20/1		VENDING MACH.					1,200	540	MOTORIZED SHADES	2	20/1	24
25	20/1		EDGELITE - 2ND FLR	1,200	540					MOTORIZED SHADES	2	20/1	26
27	20/1		REC-GENERAL			360	540			MOTORIZED SHADES	2	20/1	28
29								672	540	MOTORIZED SHADES	2	20/1	30
31	15/3		AC-2.2 (LAN RM)	672	540					MOTORIZED SHADES	2	20/1	32
33						672	500			SHADE BUS SUPPLY	2	20/1	34
35	20/1		SPARE						500	SHADE BUS SUPPLY	2	20/1	36
37	20/1		SPARE							SPARE		20/1	38
39	20/1		SPARE							SPARE		20/1	40
41	20/1		SPARE							SPARE		20/1	42
TOTAL CONNECTED LOADS:				3,792	6,277	4,572	5,117	3,132	6,237				

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PANELBOARD: RPC-1A - PNL W/TVSS, 200% NEUTRAL & ISO GRD

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 100A | **LOAD:** | **NOTES:** CIRCUIT BREAKER PANEL

MAIN DEVICE: 100A | CONN 6.6 kVA

DEM. 6.6 kVA

DEM. 18.4 Amps

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION		TRIP/ POLE	CKT #
1	20/1		REC-FIDS CHECK IN	600	1,000					REC-TVS, FLR 2		20/1	2
3	20/1		REC-FIDS BAG/TNL			440	1,000			REC-TVS, FLR 2		20/1	4
5	20/1		REC-FIDS FLR 2W					800	1,000	REC-TVS, FLR 2		20/1	6
7	20/1		REC-FIDS FLR 2E	800	1,000					REC-TVS, FLR 2		20/1	8
9	20/1		SPARE							SPARE		20/1	10
11	20/1		SPARE							SPARE		20/1	12
13	20/1		SPARE							SPARE		20/1	14
15	20/1		SPARE							SPARE		20/1	16
17	20/1		SPARE							SPARE		20/1	18
19	20/1		SPARE							SPARE		20/1	20
21	20/1		SPARE							SPARE		20/1	22
23	20/1		SPARE							SPARE		20/1	24
25	20/1		SPARE							SPARE		20/1	26
27	20/1		SPARE							SPARE		20/1	28
29	20/1		SPARE							SPARE		20/1	30
31	20/1		SPARE							SPARE		20/1	32
33	20/1		SPARE							SPARE		20/1	34
35	20/1		SPARE							SPARE		20/1	36
37	20/1		SPARE	0	0								38
39	20/1		SPARE			0	0			TVSS		60/3	40
41	20/1		SPARE					0	0				42
TOTAL CONNECTED LOADS:				1,400	2,000	440	1,000	800	1,000				

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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT
DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

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SJA ARCHITECTS
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Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
2	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11

REVIEWED BY: XXX

DRAWN BY: JK

DESIGNED BY: JK

AEP PROJECT NUMBER

213-1882-091

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SHEET TITLE

PANEL SCHEDULES

SHEET NUMBER

E406

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2008.00 Duluth Airport\8.0 CADD\(8.3) Electrical\Dwgs\2008_E406.dwg Plotted on: 2/25/2011 10:02 AM Plotted by: Kastner, Jennifer

PANELBOARD: ELEV-1A

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 60A | LOAD: | NOTES: | CIRCUIT BREAKER PANEL

MAIN DEVICE: 60A | CONN 3.0 kVA | DEM. 3.0 kVA | DEM. 8.3 Amps

CKT #	TRIP/ POLE	Floor Serving	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	Floor Serving	TRIP/ POLE	CKT #
1	20/1		ELEV. #112 CAB LIGHTS	250 1,000			ELEV. #112 CONTROLLER		20/1	2
3	20/1		ELEV. MACH RM REC.		180 528		CUH-1.1		20/1	4
5	20/1		ELEV. RM SECURITY			500 528	EF-1.4		20/1	6
7	20/1		SPARE	0 0			SPARE		20/1	8
9	20/1		SPARE		0 0		SPARE		20/1	10
11	20/1		SPARE			0 0	SPARE		20/1	12
13	20/1		SPARE	0 0			SPARE		20/1	14
15	20/1		SPARE		0 0		SPARE		20/1	16
17	20/1		SPARE			0 0	SPARE		20/1	18
TOTAL CONNECTED LOADS:				250 1,000	180 528	500 528				

PANELBOARD: ELEV-1B

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 60A | LOAD: | NOTES: | CIRCUIT BREAKER PANEL

MAIN DEVICE: 60A | CONN 2.9 kVA | DEM. 2.9 kVA | DEM. 8.2 Amps

CKT #	TRIP/ POLE	Floor Serving	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	Floor Serving	TRIP/ POLE	CKT #
1	20/1		ELEV. #124 CAB LIGHTS	250 1,000			ELEV. #124 CONTROLLER		20/1	2
3	20/1		ELEV. MACH RM REC.		180 336					4
5	20/1		ELEV. RM SECURITY			500 336	AC-1.2		15/3	6
7	20/1		SPARE	0 336						8
9	20/1		SPARE		0 0		SPARE		20/1	10
11	20/1		SPARE			0 0	SPARE		20/1	12
13	20/1		SPARE	0 0			SPARE		20/1	14
15	20/1		SPARE		0 0		SPARE		20/1	16
17	20/1		SPARE			0 0	SPARE		20/1	18
TOTAL CONNECTED LOADS:				250 1,336	180 336	500 336				

PANELBOARD: ELEV-1C

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 60A | LOAD: | NOTES: | CIRCUIT BREAKER PANEL

MAIN DEVICE: 60A | CONN 2.9 kVA | DEM. 2.9 kVA | DEM. 8.2 Amps

CKT #	TRIP/ POLE	Floor Serving	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	Floor Serving	TRIP/ POLE	CKT #
1	20/1		ELEV. #105 CAB LIGHTS	250 1,000			ELEV. #105 CONTROLLER		20/1	2
3	20/1		ELEV. MACH RM REC.		180 336					4
5	20/1		ELEV. RM SECURITY			500 336	AC-1.1		15/3	6
7	20/1		SPARE	0 336						8
9	20/1		SPARE		0 0		SPARE		20/1	10
11	20/1		SPARE			0 0	SPARE		20/1	12
13	20/1		SPARE	0 0			SPARE		20/1	14
15	20/1		SPARE		0 0		SPARE		20/1	16
17	20/1		SPARE			0 0	SPARE		20/1	18
TOTAL CONNECTED LOADS:				250 1,336	180 336	500 336				

PANELBOARD: EPP-1D

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 100A | LOAD: | NOTES: | PLUG FUSE PANEL

MAIN DEVICE: 100A | CONN 3.6 kVA | DEM. 3.6 kVA | DEM. 10.0 Amps

CKT #	TRIP/ POLE	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	20/1	FIRE BELL	500 400			ACCESS CNTRL-FLR 1	20/1	2
3	20/1	ACCESS CNRL-FLR 1		400 400		ACCESS CNTRL-FLR 1	20/1	4
5	20/1	ACCESS CNRL-FLR 1			400 300	ACCESS CNTRL-FLR 2	20/1	6
7	20/1	ACCESS CNRL-FLR 2	400 300			ACCESS CNTRL-FLR 2	20/1	8
9	20/1	ACCESS CNRL-FLR 2		400		SPARE	20/1	10
11	20/1	SPARE			100	ACCESS CNTRL-FLR 3	20/1	12
13	20/1	SPARE				SPARE	20/1	14
15	20/1	SPARE				SPARE	20/1	16
17	20/1	SPARE				SPARE	20/1	18
19	20/1	SPARE				SPARE	20/1	20
21	20/1	SPARE				SPARE	20/1	22
23	20/1	SPARE				SPARE	20/1	24
25	20/1	SPARE				SPARE	20/1	26
27	20/1	SPARE				SPARE	20/1	28
29	20/1	SPARE				SPARE	20/1	30
31	20/1	SPARE				SPARE	20/1	32
33	20/1	SPARE				SPARE	20/1	34
35	20/1	SPARE				SPARE	20/1	36
37	20/1	SPARE				SPARE	20/1	38
39	20/1	SPARE				SPARE	20/1	40
41	20/1	SPARE				SPARE	20/1	42
TOTAL CONNECTED LOADS:			900 700	800 400	400 400			

PANELBOARD: ERP-1A - PNL W/TVSS, 200% NEUTRAL & ISO GRD

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 200A | LOAD: | NOTES: | CIRCUIT BREAKER PANEL

MAIN DEVICE: 200A | CONN 6.0 kVA | DEM. 6.0 kVA | DEM. 16.7 Amps | 1-PROVIDE EMON METER FOR CIRCUIT

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	20/1		REC-XRAY PODIUM	750 500			FIRE BELL	20/1	2
3	20/1		REC-CASHIER		250 0		SPARE	20/1	4
5	20/1		SPARE			0 0	SPARE	20/1	6
7	20/1		SPARE	0 0			SPARE	20/1	8
9	20/1		REC COMP-OFFICE		250 0		SPARE	20/1	10
11	20/1		REC-INTERVIEW			250 0	SPARE	20/1	12
13	20/1		REC-ADIT RM	250 0			SPARE	20/1	14
15	20/1		REC-INTERVIEW		250 250		REC-OFFICE	20/1	16
17	20/1		REC-ROVER			250 500	REC-SEC XRAY	20/1	18
19	20/1		REC-ROVER	250 500			REC-SEC XRAY	20/1	20
21	20/1		REC-ROVER		250 0		SPARE	20/1	22
23	20/1		REC-ROVER			250 0	SPARE	20/1	24
25	20/1		REC-ROVER	250 0			SPARE	20/1	26
27	20/1		REC-ROVER		250 0		SPARE	20/1	28
29	20/1		REC-ROVER			250 0	SPARE	20/1	30
31	20/1		REC-ROVER	250 0			SPARE	20/1	32
33	20/1		REC-ROVER		250 0		SPARE	20/1	34
35	20/1		SPARE			0 0	SPARE	20/1	36
37	20/1		SPARE	0 0					38
39	20/1		SPARE		0 0		TVSS	60/3	40
41	20/1		SPARE			0 0			42
TOTAL CONNECTED LOADS:				1,750 1,000	1,500 250	1,000 500			

PANELBOARD: ERP-1B - PNL W/TVSS, 200% NEUTRAL & ISO GRD

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 200A | LOAD: | NOTES: | CIRCUIT BREAKER PANEL

MAIN DEVICE: 200A | CONN 11.9 kVA | DEM. 11.9 kVA | DEM. 32.9 Amps

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	20/1		REC OFFICE	250 250			REC-COMM. RM	20/1	2
3	20/1		REC-CLG DUPLEX		500 250		REC-COMM. RM	20/1	4
5	20/1		REC-CLG DUPLEX			500 250	REC-COMM. RM	20/1	6
7	20/1		SPARE	0 250			REC-COMM. RM	20/1	8
9	20/1		REC-OFFICE		250 250		REC-COMM. RM	20/1	10
11	20/1		REC-OPS			500 250	REC-COMM. RM	20/1	12
13	20/1		REC-RAC 1	750 250			REC-COMM. RM	20/1	14
15	20/1		REC-RAC 2		750 250		REC-COMM. RM	20/1	16
17	20/1		REC-RAC 3			750 0	SPARE	20/1	18
19	20/1		BAG VIEW STAT.	500 0			SPARE	20/1	20
21	20/1		FIELD DATA RECORD		500 180		REC-RAC 4	20/1	22
23	20/1		REC-CLG DUPLEX			500 180	REC-RAC 5	20/1	24
25	20/1		REC-CLG DUPLEX	500 500			REC-EDT WRKSTAT.	20/1	26
27	20/1		REC-CLG DUPLEX		500 250		REC-EDT WRKSTAT.	20/1	28
29	20/1		REC-CLG DUPLEX			500 0	SPARE	20/1	30
31	20/1		REC-CLG DUPLEX	500 0			SPARE	20/1	32
33	20/1		REC-CLG DUPLEX		500 0		SPARE	20/1	34
35	20/1		REC-CLG DUPLEX			500 0	SPARE	20/1	36
37	20/1		SPARE	0 0					38
39	20/1		SPARE		0 0		TVSS	60/3	40
41	20/1		SPARE			0 0			42
TOTAL CONNECTED LOADS:				2,500 1,250	3,000 1,180	3,250 680			

PANELBOARD: ERP-1C - PNL W/TVSS, 200% NEUTRAL & ISO GRD

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 200A | LOAD: | NOTES: | CIRCUIT BREAKER PANEL

MAIN DEVICE: 200A | CONN 22.1 kVA | DEM. 22.1 kVA | DEM. 61.4 Amps | 1-PROVIDE EMON METER FOR CIRCUIT

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	30/2		SPARE	0 2,400			EDS MACH. 1	30/2	2
3					0 2,400				4
5	30/2	1	EDS MACH.			2,400 250	REC-CHECK IN CNTR	20/1	6
7				2,400 250			REC-CHECK IN CNTR	20/1	8
9	20/1		SPARE		0 250		REC-CHECK IN CNTR	20/1	10
11	20/1		SPARE			0 250	REC-CHECK IN CNTR	20/1	12
13	20/1		REC-OFFICE	750 250			REC-CHECK IN CNTR	20/1	14
15	20/1		REC-OPS		750 250		REC-CHECK IN CNTR	20/1	16
17	20/1		REC-OPS			500 250	REC-CHECK IN CNTR	20/1	18
19	20/1		REC-OFFICE	750 1,000			REC-CHECK IN	20/1	20
21	20/1		REC-OPS		500 1,000		REC-CHECK IN	20/1	22
23	20/1		REC-OPS			500 1,000	REC-CHECK IN	20/1	24
25	20/1		REC-OPS	500 500			REC-ATM MACH.	20/1	26
27	20/1		REC-OPS		500 250		REC-CHECK IN CNTR	20/1	28
29	20/1		REC-OPS			500 0	SPARE	20/1	30
31	20/1		REC-OPS	500 0			SPARE	20/1	32
33	20/1		REC-OPS		500 0		SPARE	20/1	34
35	20/1		REC-OFFICE			750 0	SPARE	20/1	36
37	20/1		SPARE	0 0					38
39	20/1		SPARE		0 0		TVSS	60/3	40
41	20/1		SPARE			0 0			42
TOTAL CONNECTED LOADS:				4,900 4,400	2,250 4,150	4,650 1,750			

PANELBOARD: EMLP-1A

SERVICE: 480/277V, 3PH, 4W + GND

BUS SIZE: 200A | LOAD: | NOTES:

MAIN DEVICE: 150A | CONN 23.1 kVA | DEM. 23.1 kVA | DEM. 27.8 Amps | FUSE PANEL

CKT #	TRIP/ POLE	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	20/1	EXIT SIGNS - 1ST FLR	366 186			EXIT SIGNS - 3RD FLR	20/1	2
3	20/1	EM LTG-RAMP/TUNNEL		1,740 2,364		EM LTG - 3RD FLR	20/1	4
5	20/1	EM LTG-EXTERIOR			560	SPARE	20/1	6
7	20/1	EM LTG-FLR 1 WEST	3,197			SPARE	20/1	8
9	20/1	EM LTG-FLR 1 EAST		1,587		SPARE	20/1	10
11	20/1	EXIT SIGNS - 2ND FLR			324	SPARE	20/1	12
13	20/1	EM LTG-FLR 2 NORTH	2,295			SPARE	20/1	14
15	20/1	EM LTG-FLR 2 MIDDLE		3,166		SPARE	20/1	16
17	20/1	EM LTG-FLR 2 SOUTH			3,225	SPARE	20/1	18
19	20/1	SPARE				SPARE	20/1	20
21	20/1	SPARE				SPARE	20/1	22
23	20/1	SPARE				SPARE	20/1	24
25	20/1	SPARE				SPARE	20/1	26
27	20/1	SPARE				SPARE	20/1	28
29	20/1	SPARE				SPARE	20/1	30
31	20/1	SPARE				SPARE	20/1	32
33	20/1	SPARE				SPARE	20/1	34
35	20/1	SPARE				SPARE	20/1	36
37	20/1	SPARE	0 1,620					38
39	20/1	SPARE		0 1,190		XMFR "ET-1A" 60A S/50AF		40
41	20/1	SPARE			0 1,260	3P		42
TOTAL CONNECTED LOADS:			5,858 1,806	6,493 3,554	4,109 1,260			

PANELBOARD: ERP-1D - PNL W/TVSS, 200% NEUTRAL & ISO GRD

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 200A | LOAD: | NOTES: | CIRCUIT BREAKER PANEL

MAIN DEVICE: 200A | CONN 11.5 kVA | DEM. 11.5 kVA | DEM. 31.9 Amps

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A	PHASE B	PHASE C	CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	20/1		REC-CLG TWISTLK	500 1,000			REC-UPS	30/2	2
3	20/1		REC-CLG TWISTLK		500 1,000				4
5	20/1		REC-CLG TWISTLK			500 1,000	REC-UPS	30/2	6
7	20/1		REC-CLG TWISTLK	500 1,000					8
9	20/1		REC-CLG TWISTLK		500 1,000		REC-UPS	30/2	10
11	20/1		REC-CLG TWISTLK			500 1,000			12
13	20/1		REC-CLG TWISTLK	500 1,000			REC-UPS	30/2	14
15	20/1		REC-CLG TWISTLK		500 0				16
17	20/1		REC-CLG TWISTLK			500 0	SPARE	20/1	18
19	20/1		SPARE	0 0			SPARE	20/1	20
21	20/1		SPARE		0 0		SPARE	20/1	22
23	20/1		SPARE			0 0	SPARE	20/1	24
25	20/1		SPARE	0 0			SPARE	20/1	26
27	20/1		SPARE		0 0		SPARE	20/1	28
29	20/1		SPARE			0 0	SPARE	20/1	30
31	20/1		SPARE	0 0			SPARE	20/1	32
33	20/1		SPARE		0 0		SPARE	20/1	34
35	20/1		SPARE			0 0	SPARE	20/1	36
37	20/1		SPARE	0 0					38
39	20/1		SPARE		0 0		TVSS	60/3	40
41	20/1		SPARE			0 0			42
TOTAL CONNECTED LOADS:				1,500 3,000	1,500 2,000	1,500 2,000			

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DULUTH AIRPORT AUTHORITY

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DULUTH, MN

NEW PASSENGER TERMINAL

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BNP ASSOCIATES INC.
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TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
PANEL SCHEDULES

SHEET NUMBER
E407

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2008.00 Duluth Airport\8.0 CAD\(8.1) Electrical\Dwgs\2008_E407.dwg Plotted on: 2/25/2011 10:03 AM Plotted by: Mathes, Jennifer

PANELBOARD: ERP-2A - PNL W/TVSS, 200% NEUTRAL & ISO GRD

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 200A | **MAIN DEVICE: 200A** | **LOAD:** CONN 12.2 kVA, DEM. 12.2 kVA, DEM. 33.8 Amps | **NOTES:** | **CIRCUIT BREAKER PANEL**

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	20/1		REC-TSA	250	1,200					FM200 SYS	20/1	2
3	20/1		REC-TSA			250	250			REC-COMM. RM	20/1	4
5	20/1		REC-TSA					250	250	REC-COMM. RM	20/1	6
7	20/1		REC-TSA	250	250					REC-COMM. RM	20/1	8
9	20/1		REC-TSA			250	250			REC-COMM. RM	20/1	10
11	20/1		XRAY					500	250	REC-COMM. RM	20/1	12
13	20/1		XRAY	500	250					REC-COMM. RM	20/1	14
15	20/1		REC-COUNTER			250	250			REC-COMM. RM	20/1	16
17	20/1		REC-COUNTER					250	250	REC-COMM. RM	20/1	18
19	20/1		REC-ETD MACH.	500	1,000					REC-UPS	30/2	20
21	20/1		REC- BODY IMAGER			1,200	1,000					22
23	20/1		REC-CONF RM					250	500	REC-CLG TWISTLK	20/1	24
25	20/1		REC-OFFICE	250	500					REC-CLG TWISTLK	20/1	26
27	20/1		SPARE			0	500			REC-CLG DUPLEX	20/1	28
29	20/1		SPARE					0	500	REC-CLG DUPLEX	20/1	30
31	20/1		SPARE	0	0					SPARE	20/1	32
33	20/1		SPARE			0	0			SPARE	20/1	34
35	20/1		SPARE					0	0	SPARE	20/1	36
37	20/1		SPARE	0	0							38
39	20/1		SPARE			0	0			TVSS	60/3	40
41	20/1		SPARE					0	0			42
TOTAL CONNECTED LOADS:				1,750	3,200	1,950	2,250	1,250	1,750			

PANELBOARD: ERP-2B - PNL W/TVSS, 200% NEUTRAL & ISO GRD

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 200A | **MAIN DEVICE: 200A** | **LOAD:** CONN 17.2 kVA, DEM. 17.2 kVA, DEM. 47.8 Amps | **NOTES:** | **CIRCUIT BREAKER PANEL**

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	20/1		REC-OFFICE	500	1,200					FM200 SYS	20/1	2
3	20/1		REC-OFFICE			250	250			REC-COMM. RM	20/1	4
5	20/1		SPARE					0	250	REC-COMM. RM	20/1	6
7	20/1		SPARE	0	250					REC-COMM. RM	20/1	8
9	20/1		REC-PROC. BOOTH			250	250			REC-COMM. RM	20/1	10
11	20/1		REC-PROC. BOOTH					250	250	REC-COMM. RM	20/1	12
13	20/1		REC-PROC. BOOTH	250	250					REC-COMM. RM	20/1	14
15	20/1		REC-PROC. BOOTH			250	250			REC-COMM. RM	20/1	16
17	20/1		REC COMP-OFFICE					250	250	REC-COMM. RM	20/1	18
19	20/1		SPARE	0	0					SPARE	20/1	20
21	20/1		REC-COUNTER			250	0			SPARE	20/1	22
23	20/1		REC-COUNTER					250	0	SPARE	20/1	24
25	20/1		REC-ROVER	500	2,000					PAGING SYSTEM	30/2	26
27	20/1		REC-ROVER			500	2,000					28
29	20/1		REC-ROVER					500	2,000	PAGING SYSTEM	30/2	30
31	20/1		REC-ROVER	500	2,000							32
33	20/1		REC-ROVER			500	0			SPARE	20/1	34
35	20/1		REC-ROVER					500	0	SPARE	20/1	36
37	20/1		REC-ROVER	500	0							38
39	20/1		SPARE			0	0			TVSS	60/3	40
41	20/1		SPARE					0	0			42
TOTAL CONNECTED LOADS:				2,250	5,700	2,000	2,750	1,750	2,750			

PANELBOARD: EP-1

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 100A | **MAIN DEVICE: 100A** | **LOAD:** CONN 19.1 kVA, DEM. 19.1 kVA, DEM. 52.9 Amps | **NOTES:** | **PLUG FUSE PANEL**

CKT #	TRIP/ POLE	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1			1,200	100					ELEC. FLSH VLV, FLR 1	20/1	2
3	20/3	BOILER "B-1"			1,200	200			ELEC. FLSH VLV, FLR 2	20/1	4
5							1,200	50	ELEC. FLSH VLV, FLR 3	20/1	6
7	15/2	ELEV. PIT PUMP	624	100					BHS MCP PWR	20/1	8
9					624	180			BHS MCP PWR	20/1	10
11	15/2	ELEV. PIT PUMP					624	100	BHS MCP PWR	20/1	12
13			624	180					BHS MCP PWR	20/1	14
15	15/2	ELEV. PIT PUMP			624				SPARE	20/1	16
17							624		SPARE	20/1	18
19			1,200						SPARE	20/1	20
21	20/3	BOILER "B-2"			1,200				SPARE	20/1	22
23							1,200		SPARE	20/1	24
25			1,200						SPARE	20/1	26
27	20/3	BOILER "B-3"			1,200				SPARE	20/1	28
29							1,200		SPARE	20/1	30
31			1,200						SPARE	20/1	32
33	20/3	BOILER "B-4"			1,200				SPARE	20/1	34
35							1,200		SPARE	20/1	36
37	20/1	SPARE							SPARE	20/1	38
39	20/1	SPARE							SPARE	20/1	40
41	20/1	SPARE							SPARE	20/1	42
TOTAL CONNECTED LOADS:			6,048	380	6,048	380	6,048	150			

PANELBOARD: ERP-2D - PNL W/TVSS, 200% NEUTRAL & ISO GRD

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 100A | **MAIN DEVICE: 100A** | **LOAD:** CONN 7.2 kVA, DEM. 7.2 kVA, DEM. 20.0 Amps | **NOTES:** | **CIRCUIT BREAKER PANEL**

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	30/2		REC-UPS	1,000	1,200					FM200 SYS	20/1	2
3						1,000	250			REC-COMP. RM	20/1	4
5	20/1		REC-CLG TWISTLK					500	250	REC-COMP. RM	20/1	6
7	20/1		REC-CLG TWISTLK	500	250					REC-COMP. RM	20/1	8
9	20/1		REC-CLG DUPLEX			500	250			REC-COMP. RM	20/1	10
11	20/1		REC-CLG DUPLEX					500	250	REC-COMP. RM	20/1	12
13	20/1		SPARE	0	250					REC-COMP. RM	20/1	14
15	20/1		SPARE			0	250			REC-COMP. RM	20/1	16
17	20/1		SPARE					0	250	REC-COMP. RM	20/1	18
19	20/1		SPARE	0	0					SPARE	20/1	20
21	20/1		SPARE			0	0			SPARE	20/1	22
23	20/1		SPARE					0	0	SPARE	20/1	24
25	20/1		SPARE	0	0					SPARE	20/1	26
27	20/1		SPARE			0	0			SPARE	20/1	28
29	20/1		SPARE					0	0	SPARE	20/1	30
31	20/1		SPARE	0	0					SPARE	20/1	32
33	20/1		SPARE			0	0			SPARE	20/1	34
35	20/1		SPARE					0	0	SPARE	20/1	36
37	20/1		SPARE	0	0							38
39	20/1		SPARE			0	0			TVSS	60/3	40
41	20/1		SPARE					0	0			42
TOTAL CONNECTED LOADS:				1,500	1,700	1,500	750	1,000	750			

PANELBOARD: ERP-3A - PNL W/TVSS, 200% NEUTRAL & ISO GRD

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 200A | **MAIN DEVICE: 200A** | **LOAD:** CONN 11.5 kVA, DEM. 11.5 kVA, DEM. 31.8 Amps | **NOTES:** | **CIRCUIT BREAKER PANEL**

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	20/1		REC-OPS CONF RM	540	1,200					FM200 SYS	20/1	2
3	20/1		REC-OPS CONF RM			720	250			REC-COMM. RM	20/1	4
5	20/1		REC-OPS CONF RM					720	250	REC-COMM. RM	20/1	6
7	20/1		REC-BADGE RM	360	250					REC-COMM. RM	20/1	8
9	20/1		REC-OFFICE			540	250			REC-COMM. RM	20/1	10
11	20/1		REC-RECEPT.					720	250	REC-COMM. RM	20/1	12
13	20/1		REC-OPEN OFFICE	720	250					REC-COMM. RM	20/1	14
15	20/1		REC-OFFICES			1,440	250			REC-COMM. RM	20/1	16
17	20/1		REC-OFFICES					1,200	250	REC-COMM. RM	20/1	18
19	20/1		REC COMP-OFFICE	250	0					SPARE	20/1	20
21	20/1		REC COMP-OFFICE			250	0			SPARE	20/1	22
23	20/1		REC COMP-TRAINING					250	0	SPARE	20/1	24
25	20/1		REC-OFFICE	540	0					SPARE	20/1	26
27	20/1		SPARE			0	0			SPARE	20/1	28
29	20/1		SPARE					0	0	SPARE	20/1	30
31	20/1		SPARE	0	0					SPARE	20/1	32
33	20/1		SPARE			0	0			SPARE	20/1	34
35	20/1		SPARE					0	0	SPARE	20/1	36
37	20/1		SPARE	0	0							38
39	20/1		SPARE			0	0			TVSS	60/3	40
41	20/1		SPARE					0	0			42
TOTAL CONNECTED LOADS:				2,410	1,700	2,950	750	2,890	750			

PANELBOARD: RP-3A

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 225A | **MAIN DEVICE: 150A** | **LOAD:** CONN 19.3 kVA, DEM. 19.3 kVA, DEM. 53.5 Amps | **NOTES:** 1 - CONFIRM OCP SIZE WITH EQUIP. MANUFACTURER | **CIRCUIT BREAKER PANEL**

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	15/1		"UH-3.1"	528	0					SPARE	20/1	2
3	15/1		"UH-3.2"			528	0			SPARE	20/1	4
5	15/1		"UH-3.5"					528	1,200	PROJECTOR	20/1	6
7	15/1		"UH-3.3"	528	720					REC-GENERAL	20/1	8
9	20/1		REC-MECH RM			900	720			REC-GENERAL	20/1	10
11	20/1		REC-MECH/ELEC RM					720	180	REC-RECEPT.	20/1	12
13	20/1		REC-GENERAL	720	0					SPARE	20/1	14
15	20/1		WTR HTR "WH-1"			240	0			SPARE	20/1	16
17	20/1		WTR HTR "WH-2"					240	360	REC-GENERAL	20/1	18
19	20/1		REC-WASHRMS	360	0					SPARE	20/1	20
21	20/1		REC-GENERAL			360	0			SPARE	20/1	22
23	15/1		"CUH-3.4"					528	0	SPARE	20/1	24
25	15/1		"CUH-3.1"	528	0					SPARE	20/1	26
27	15/1		"EF-3.1"			528	0			SPARE	20/1	28
29	15/1		"EF-3.2"					528	0	SPARE	20/1	30
31	15/1		"EF-3.3"	528	864					"P-11"	15/1	32
33	20/1	1	WASHRM-ELEC DRYER			1,500	864			"P-12"	15/1	34
35	20/1	1	WASHRM-ELEC DRYER					1,500	50	ELEC FCT/SP DISP. FLR 3	20/1	36
37	20/1	1	WASHRM-ELEC DRYER	1,500	0					SPARE	20/1	38
39	20/1	1	WASHRM-ELEC DRYER			1,500	0			SPARE	20/1	40
41	20/1		SPARE					0	0	SPARE	20/1	42
TOTAL CONNECTED LOADS:				4,692	1,584	5,556	1,584	4,044	1,790			

PANELBOARD: RP-3B

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 225A | **MAIN DEVICE: 150A** | **LOAD:** CONN 21.7 kVA, DEM. 21.7 kVA, DEM. 60.2 Amps | **NOTES:** 1 - PROVIDE GFCI TYPE CB | **CIRCUIT BREAKER PANEL**

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	20/1		REC-GENERAL	540	360					REC-OFFICES (GEN)	20/1	2
3	20/1		REC-GENERAL			540	360			REC-TRAINING RM (GEN)	20/1	4
5	20/1		REC-COUNTER					360	1,200	PROJECTOR	20/1	6
7	20/1		GARBAGE DISPOSAL	1,200	540					REC-GENERAL	20/1	8
9	20/1		MICROWAVE			1,200	720			REC-GENERAL	20/1	10
11	20/1		REFRIGERATOR					1,200	720	REC-MECH RM	20/1	12
13	20/1		SPARE	0	720					REC-MECH RM	20/1	14
15	20/1		SPARE			0	0			SPARE	20/1	16
17	20/1		REC-GENERAL					720	540	REC-BREAK RM	20/1	18
19	20/1		REC-BREAK RM	360	540					REC-COUNTER	20/1	20
21	20/1		REC-COPY RM			360	1,200			GARBAGE DISPOSAL	20/1	22
23	20/1		REC-COPY RM					180	1,200	MICROWAVE	20/1	24
25	20/1		REC-COPY RM	360	1,200					REFRIGERATOR	20/1	26
27	20/1		SPARE			0	696			"EF-3.3"	15/1	28
29	20/1		SPARE					0	672			30
31	15/1		"UH-3.6"	528	672					AC-3.1 (COMM. RM)	15/3	32
33	15/1		"UH-3.7"			528	672					34
35	15/1		"CUH-3.2"					528	0	SPARE	20/1	36
37	15/1		"CUH-3.3"	528	0					SPARE	20/1	38
39	15/1		"UH-3.5"			528	0			SPARE	20/1	40
41	20/1		SPARE					0	0	SPARE	20/1	42
TOTAL CONNECTED LOADS:				3,516	4,032	3,156	3,648	2,988	4,332			

PANELBOARD: ERP-2C - PNL W/TVSS, 200% NEUTRAL & ISO GRD

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 200A | **MAIN DEVICE: 200A** | **LOAD:** CONN 18.0 kVA, DEM. 18.0 kVA, DEM. 50.0 Amps | **NOTES:** | **CIRCUIT BREAKER PANEL**

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	20/1		REC-CLG TWISTLK	500	1,000					REC-UPS	30/2	2
3	20/1		REC-CLG TWISTLK			500	1,000					4
5	20/1		REC-CLG TWISTLK					500	1,000	REC-UPS	30/2	6
7	20/1		REC-CLG TWISTLK	500	1,000							8
9	20/1		REC-CLG TWISTLK			500	1,000			REC-UPS	30/2	10
11	20/1		REC-CLG TWISTLK					500	1,000			12
13	20/1		REC-CLG TWISTLK	500	1,000					REC-UPS	30/2	14
15	20/1		REC-CLG TWISTLK			500	1,000					16
17	20/1		REC-CLG TWISTLK					500	1,000	REC-UPS	30/2	18
19	20/1		REC-CLG TWISTLK	500	1,000							20
21	20/1		REC-CLG TWISTLK			500	1,000			REC-UPS	30/2	22
23	20/1		REC-CLG TWISTLK					500	1,000			24
25	20/1		REC-CLG DUPLEX	0	0					REC-CLG DUPLEX	20/1	26
27	20/1		REC-CLG DUPLEX			0	0			REC-CLG DUPLEX	20/1	28
29	20/1		REC-CLG DUPLEX					0	0	REC-CLG DUPLEX	20/1	30
31	20/1		REC-CLG DUPLEX	0	0					SPARE	20/1	32
33	20/1		REC-CLG DUPLEX			0	0			SPARE	20/1	34
35	20/1		REC-CLG DUPLEX					0	0	SPARE	20/1	36
37	20/1		REC-CLG DUPLEX	0	0							38
39	20/1		REC-CLG DUPLEX			0	0			TVSS	60/3	40
41	20/1		REC-CLG DUPLEX					0	0			42
TOTAL CONNECTED LOADS:				2,000	4,000	2,000	4,000	2,000	4,000			

PANELBOARD: ERP-3B - PNL W/TVSS, 200% NEUTRAL & ISO GRD

SERVICE: 208/120V, 3PH, 4W + GND

BUS SIZE: 200A | **MAIN DEVICE: 200A** | **LOAD:** CONN 8.0 kVA, DEM. 8.0 kVA, DEM. 22.2 Amps | **NOTES:** | **CIRCUIT BREAKER PANEL**

CKT #	TRIP/ POLE	NOTES	CIRCUIT DESCRIPTION	CONNECTED LOAD (VA) PHASE A		PHASE B		PHASE C		CIRCUIT DESCRIPTION	TRIP/ POLE	CKT #
1	20/1		REC-CLG TWISTLK	500	1,000					REC-UPS	30/2	2
3	20/1		REC-CLG TWISTLK			500	1,000					4
5	20/1		REC-CLG TWISTLK					500	1,000	REC-UPS	30/2	6
7	20/1		REC-CLG TWISTLK	500	1,000							8
9	20/1		REC-CLG DUPLEX			500	0			SPARE	20/1	10
11	20/1		REC-CLG DUPLEX					500	0	SPARE	20/1	12
13	20/1		REC-CLG DUPLEX	500	0					SPARE	20/1	14
15	20/1		REC-CLG DUPLEX			500	0			SPARE	20/1	16
17	20/1		SPARE					0	0	SPARE	20/1	18
19	20/1		SPARE	0	0					SPARE	20/1	20
21	20/1		SPARE			0	0			SPARE	20/1	22
23	20/1		SPARE					0	0	SPARE	20/1	24
25	20/1		SPARE	0	0					SPARE	20/1	26
27	20/1		SPARE			0	0			SPARE	20/1	28
29	20/1		SPARE					0	0	SPARE	20/1	30
31	20/1		SPARE	0	0					SPARE	20/1	32
33	20/1		SPARE			0	0			SPARE	20/1	34
35	20/1		SPARE					0	0	SPARE	20/1	36
37	20/1		SPARE	0	0							38
39	20/1		SPARE			0	0			TVSS	60/3	40
41	20/1		SPARE					0	0			42
TOTAL CONNECTED LOADS:				1,500	2,000	1,500	1,000	1,000	1,000			

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DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

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Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
1	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
PANEL SCHEDULES

SHEET NUMBER
E408

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2525.00 Duluth Airport\5.0 CADD\(5.1) Electrical\Dwgs\2525_E408.dwg Plotted on: 2/25/2011 10:04 AM Plotted by: Mather, Jennifer



N

1 ENLARGED FIRST LEVEL FLOOR PLAN - AREA B

1/8" = 1'-0"

NOTES:

1. EMERGENCY LIGHTING FIXTURES AND EXIT SIGNS ARE CONNECTED TO PANEL "EMLP-1A".
2. LIGHTING FIXTURES ON NORMAL POWER ARE CONNECTED TO PANEL "LP-1A".
3. EXTERIOR LIGHTING SHALL BE CONTROLLED BY PHOTOCELL.
4. LOCATIONS FOR DAYLIGHTING SENSORS ARE APPROXIMATE; LOCATE PER MANUFACTURER'S RECOMMENDATIONS.

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ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	1.24.11
2	BP2A ADDENDUM 2	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: XXX
DRAWN BY: JK
DESIGNED BY: JK

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

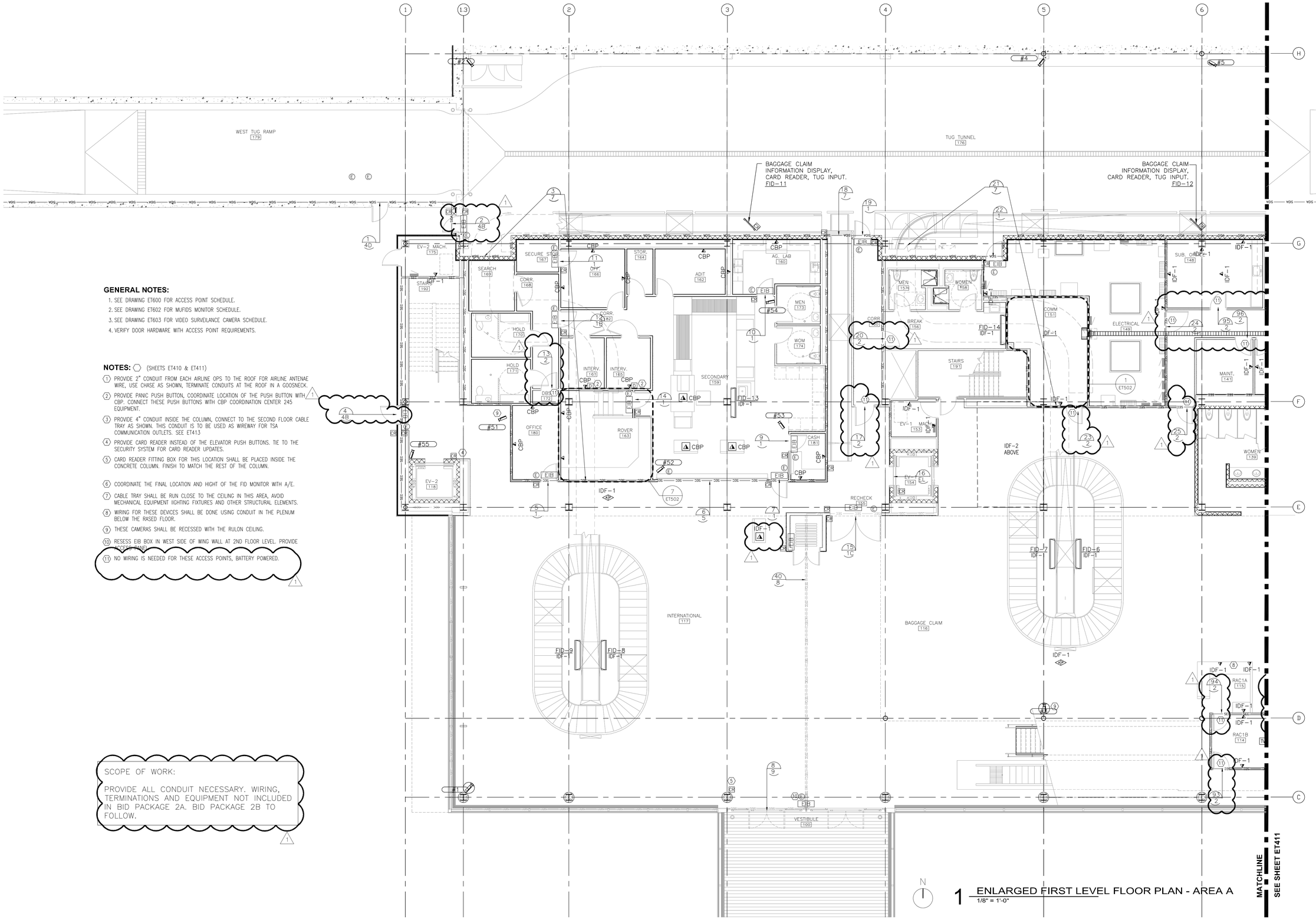
ENLARGED FIRST FLOOR LIGHTING PLAN AREA A

SHEET NUMBER

EL111

BID PACKAGE 2A
ADDENDUM 2

Drawing: X:\2008.00 Duluth Airport\8.0 CADD\(8.1) Electrical\Dwgs\2008_EL111.dwg Plotted on: 2/25/2011 10:11 AM Plotted by: Kastner, Jennifer



1 ENLARGED FIRST LEVEL FLOOR PLAN - AREA A
1/8" = 1'-0"

GENERAL NOTES:

1. SEE DRAWING ET600 FOR ACCESS POINT SCHEDULE.
2. SEE DRAWING ET602 FOR MUFIDS MONITOR SCHEDULE.
3. SEE DRAWING ET603 FOR VIDEO SURVEILANCE CAMERA SCHEDULE.
4. VERIFY DOOR HARDWARE WITH ACCESS POINT REQUIREMENTS.

NOTES: ⟨ ⟩ (SHEETS ET410 & ET411)

⟨1⟩ PROVIDE 2" CONDUIT FROM EACH AIRLINE OPS TO THE ROOF FOR AIRLINE ANTENAE WIRE, USE CHASE AS SHOWN, TERMINATE CONDUITS AT THE ROOF IN A GOOSNECK.

⟨2⟩ PROVIDE PANIC PUSH BUTTON, COORDINATE LOCATION OF THE PUSH BUTTON WITH CBP. CONNECT THESE PUSH BUTTONS WITH CBP COORDINATION CENTER 245 EQUIPMENT.

⟨3⟩ PROVIDE 4" CONDUIT INSIDE THE COLUMN, CONNECT TO THE SECOND FLOOR CABLE TRAY AS SHOWN. THIS CONDUIT IS TO BE USED AS WIREWAY FOR TSA COMMUNICATION OUTLETS. SEE ET413

⟨4⟩ PROVIDE CARD READER INSTEAD OF THE ELEVATOR PUSH BUTTONS. TIE TO THE SECURITY SYSTEM FOR CARD READER UPDATES.

⟨5⟩ CARD READER FITTING BOX FOR THIS LOCATION SHALL BE PLACED INSIDE THE CONCRETE COLUMN. FINISH TO MATCH THE REST OF THE COLUMN.

⟨6⟩ COORDINATE THE FINAL LOCATION AND HIGHT OF THE FID MONITOR WITH A/E.

⟨7⟩ CABLE TRAY SHALL BE RUN CLOSE TO THE CEILING IN THIS AREA, AVOID MECHANICAL EQUIPMENT IGHTING FIXTURES AND OTHER STRUCTURAL ELEMENTS.

⟨8⟩ WIRING FOR THESE DEVICES SHALL BE DONE USING CONDUIT IN THE PLENUM BELOW THE RASED FLOOR.

⟨9⟩ THESE CAMERAS SHALL BE RECESSED WITH THE RULON CEILING.

⟨10⟩ RESESS EIB BOX IN WEST SIDE OF WING WALL AT 2ND FLOOR LEVEL. PROVIDE ACCESS PANEL.

⟨11⟩ NO WIRING IS NEEDED FOR THESE ACCESS POINTS, BATTERY POWERED.

SCOPE OF WORK:

PROVIDE ALL CONDUIT NECESSARY. WIRING, TERMINATIONS AND EQUIPMENT NOT INCLUDED IN BID PACKAGE 2A. BID PACKAGE 2B TO FOLLOW.

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Landscaping Consultants:
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TEL: (218) 591-5079

REVISIONS

NO.	DESCRIPTION	DATE
	100% REVIEW	12.15.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 2	02.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: BA
DRAWN BY: RJL
DESIGNED BY: BA

AEP PROJECT NUMBER
213-1882-091

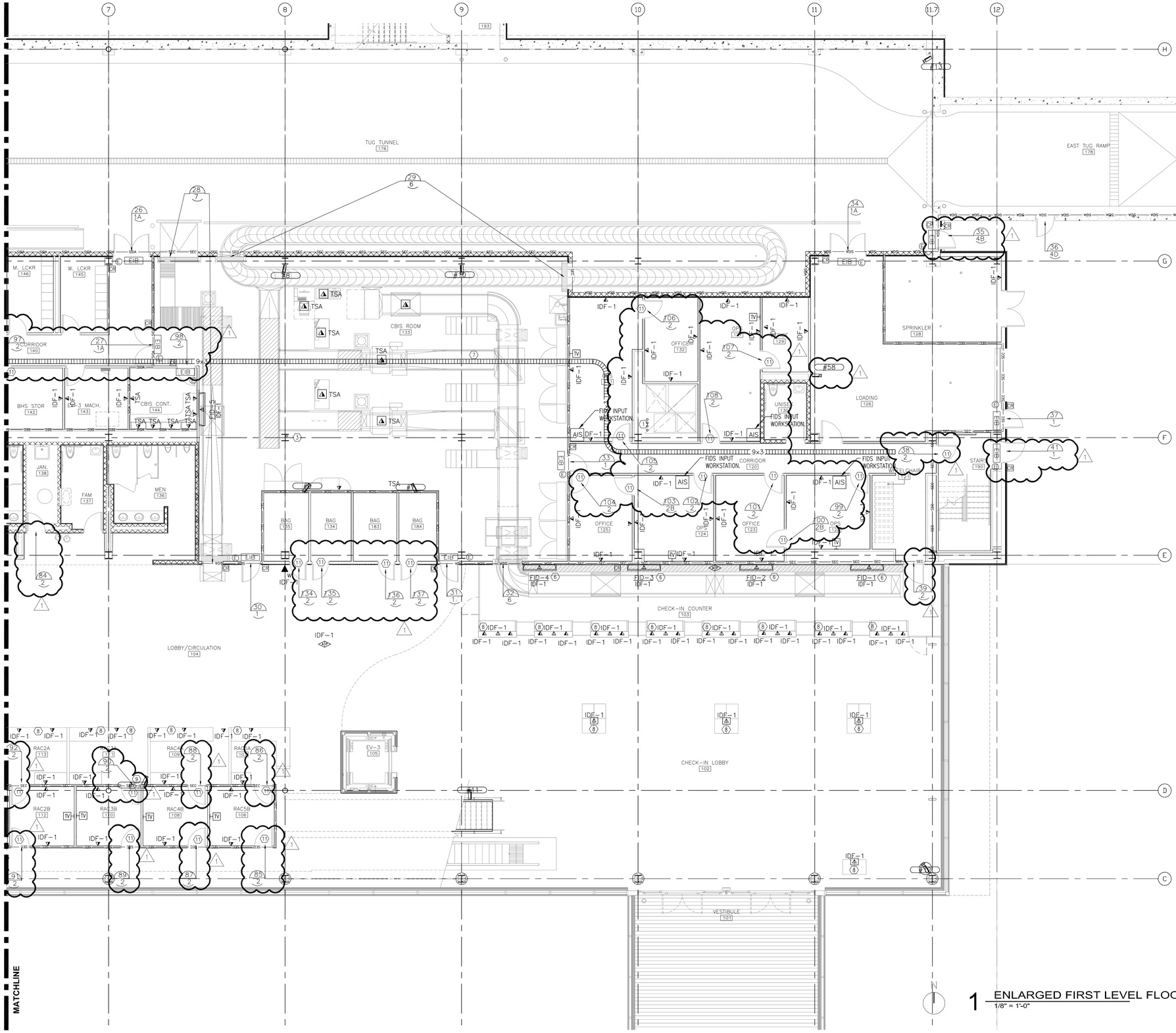
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SHEET TITLE
TECHNOLOGY FIRST FLOOR PLAN AREA A

SHEET NUMBER
ET410

BID PACKAGE 2A ADDENDUM 2

Drawing: T:\P\213882.091 Duluth New Terminal\Cad\E\ET1-01 FIRST FLOOR TECHNOLOGY.dwg Plotted on: 2/24/2011 2:52 PM Plotted by: Llazari, Rional



1 ENLARGED FIRST LEVEL FLOOR PLAN - AREA B
1/8" = 1'-0"

GENERAL NOTES:

1. SEE DRAWING ET600 FOR ACCESS POINT SCHEDULE.
2. SEE DRAWING ET602 FOR MUFIDS MONITOR SCHEDULE.
3. SEE DRAWING ET603 FOR VIDEO SURVEILANCE CAMERA SCHEDULE.
4. VERIFY DOOR HARDWARE WITH ACCESS POINT REQUIREMENTS.

NOTES: ⬡ (SHEETS ET410 & ET411)

1. PROVIDE 2" CONDUIT FROM EACH AIRLINE OPS TO THE ROOF FOR AIRLINE ANTENAE WIRE, USE CHASE AS SHOWN, TERMINATE CONDUITS AT THE ROOF IN A GOOSNECK.
2. PROVIDE PANIC PUSH BUTTON, COORDINATE LOCATION OF THE PUSH BUTTON WITH CBP. CONNECT THESE PUSH BUTTONS WITH CBP COORDINATION CENTER 245 EQUIPMENT.
3. PROVIDE 4" CONDUIT INSIDE THE COLUMN, CONNECT TO THE SECOND FLOOR CABLE TRAY AS SHOWN. THIS CONDUIT IS TO BE USED AS WIREWAY FOR TSA COMMUNICATION OUTLETS. SEE ET413
4. PROVIDE CARD READER INSTEAD OF THE ELEVATOR PUSH BUTTONS. TIE TO THE SECURITY SYSTEM FOR CARD READER UPDATES.
5. CARD READER FITTING BOX FOR THIS LOCATION SHALL BE PLACED INSIDE THE CONCRETE COLUMN. FINISH TO MATCH THE REST OF THE COLUMN.
6. COORDINATE THE FINAL LOCATION AND HIGHT OF THE FID MONITOR WITH A/E.
7. CABLE TRAY SHALL BE RUN CLOSE TO THE CEILING IN THIS AREA, AVOID MECHANICAL EQUIPMENT LIGHTING FIXTURES AND OTHER STRUCTURAL ELEMENTS.
8. WIRING FOR THESE DEVICES SHALL BE DONE USING CONDUIT IN THE PLENUM BELOW THE RASED FLOOR.
9. THESE CAMERAS SHALL BE RECESSED WITH THE RULON CEILING.
10. RESESS EIB BOX IN WEST SIDE OF WING WALL AT 2ND FLOOR LEVEL. PROVIDE ACCESS PANEL.
11. NO WIRING IS NEEDED FOR THESE ACCESS POINTS, BATTERY POWERED.

SCOPE OF WORK:

PROVIDE ALL CONDUIT NECESSARY. WIRING, TERMINATIONS AND EQUIPMENT NOT INCLUDED IN BID PACKAGE 2A. BID PACKAGE 2B TO FOLLOW.

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DATE ISSUED: 02-25-11
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DRAWN BY: RJL
DESIGNED BY: BA

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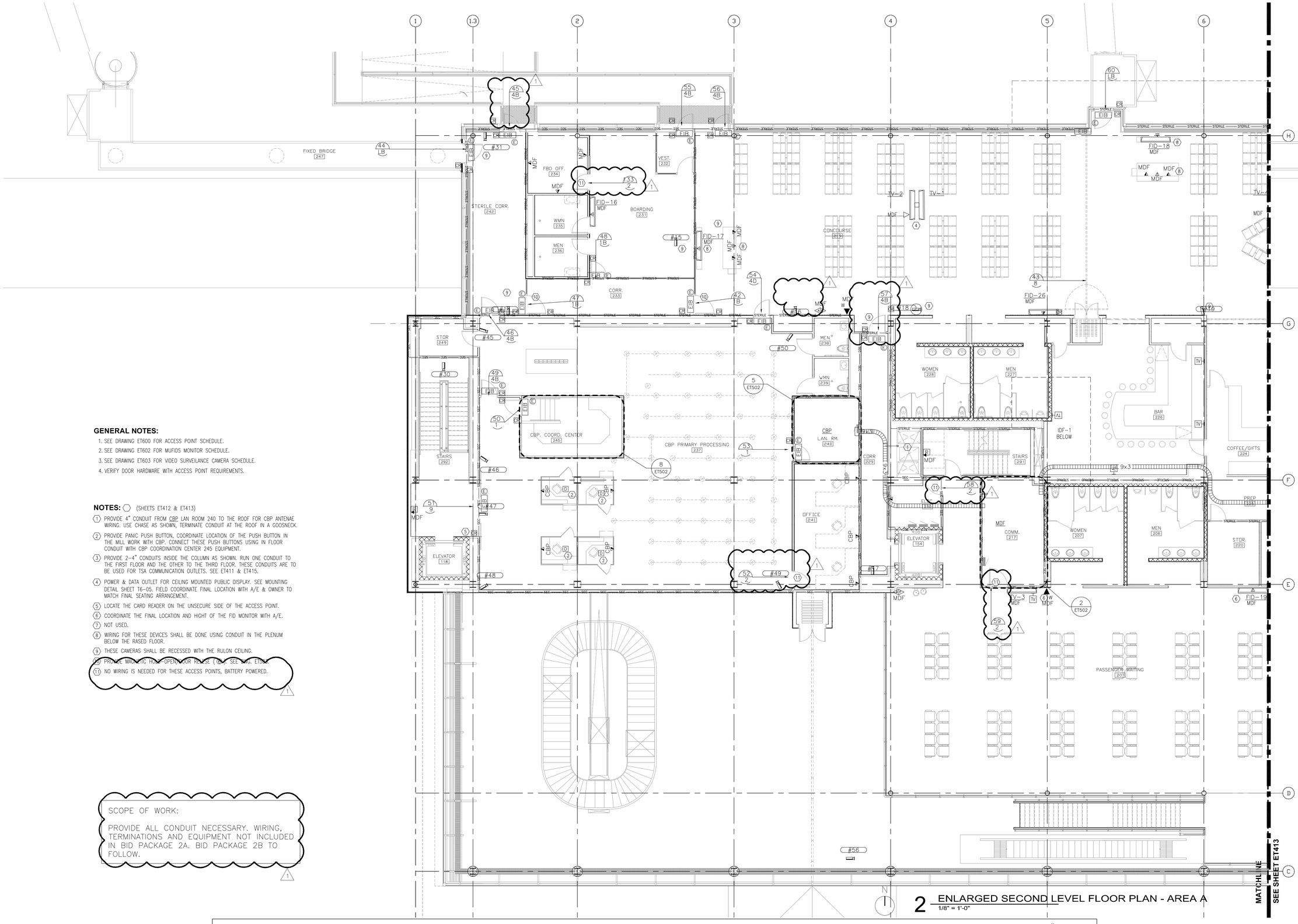
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SHEET TITLE
TECHNOLOGY FIRST FLOOR PLAN AREA B

SHEET NUMBER
ET411

BID PACKAGE 2A ADDENDUM 2

Drawing: T:\P\2131882.091 Duluth New Terminal\Cad\E\ET1-01 FIRST FLOOR TECHNOLOGY.dwg Plotted on: 2/24/2011 2:53 PM Plotted by: Lizzari, Riona



2 ENLARGED SECOND LEVEL FLOOR PLAN - AREA A
1/8" = 1'-0"

GENERAL NOTES:

1. SEE DRAWING ET600 FOR ACCESS POINT SCHEDULE.
2. SEE DRAWING ET602 FOR MUFIDS MONITOR SCHEDULE.
3. SEE DRAWING ET603 FOR VIDEO SURVEILANCE CAMERA SCHEDULE.
4. VERIFY DOOR HARDWARE WITH ACCESS POINT REQUIREMENTS.

NOTES: ⬡ (SHEETS ET412 & ET413)

1. PROVIDE 4" CONDUIT FROM CBP LAN ROOM 240 TO THE ROOF FOR CBP ANTENAE WIRING. USE CHASE AS SHOWN, TERMINATE CONDUIT AT THE ROOF IN A GOOSNECK.
2. PROVIDE PANIC PUSH BUTTON, COORDINATE LOCATION OF THE PUSH BUTTON IN THE MILL WORK WITH CBP. CONNECT THESE PUSH BUTTONS USING IN FLOOR CONDUIT WITH CBP COORDINATION CENTER 245 EQUIPMENT.
3. PROVIDE 2-4" CONDUITS INSIDE THE COLUMN AS SHOWN. RUN ONE CONDUIT TO THE FIRST FLOOR AND THE OTHER TO THE THIRD FLOOR. THESE CONDUITS ARE TO BE USED FOR TSA COMMUNICATION OUTLETS. SEE ET411 & ET415.
4. POWER & DATA OUTLET FOR CEILING MOUNTED PUBLIC DISPLAY. SEE MOUNTING DETAIL SHEET T6-05. FIELD COORDINATE FINAL LOCATION WITH A/E & OWNER TO MATCH FINAL SEATING ARRANGEMENT.
5. LOCATE THE CARD READER ON THE UNSECURE SIDE OF THE ACCESS POINT.
6. COORDINATE THE FINAL LOCATION AND HIGHT OF THE FID MONITOR WITH A/E.
7. NOT USED.
8. WIRING FOR THESE DEVICES SHALL BE DONE USING CONDUIT IN THE PLENUM BELOW THE RASED FLOOR.
9. THESE CAMERAS SHALL BE RECESSED WITH THE RULON CEILING.
10. PROVIDE MAGNETIC HOLD-OPEN DOOR RELEASE (TYP.), SEE SHT. ET604.
11. NO WIRING IS NEEDED FOR THESE ACCESS POINTS, BATTERY POWERED.

SCOPE OF WORK:

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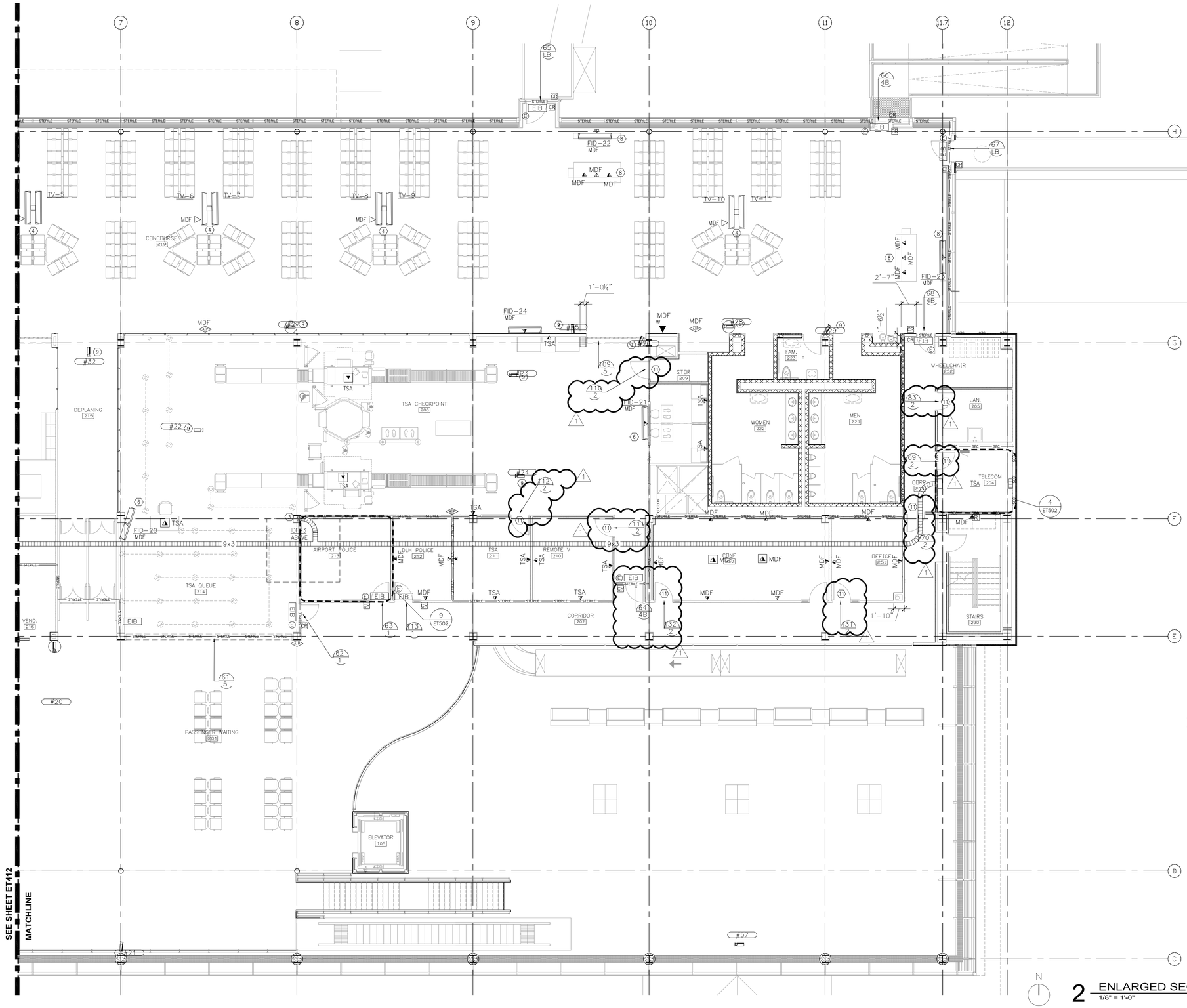
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SHEET TITLE
TECHNOLOGY SECOND FLOOR PLAN AREA A

SHEET NUMBER
ET412

BID PACKAGE 2A ADDENDUM 2

Drawing: T:\P\2131882.091 Duluth New Terminal\Cad\E\ET1-02 SECOND FLOOR TECHNOLOGY.dwg Plotted on: 2/24/2011 2:53 PM Plotted by: Lazari, Rional



2 ENLARGED SECOND LEVEL FLOOR PLAN - AREA B
1/8" = 1'-0"

GENERAL NOTES:

1. SEE DRAWING ET600 FOR ACCESS POINT SCHEDULE.
2. SEE DRAWING ET602 FOR MUFIDS MONITOR SCHEDULE.
3. SEE DRAWING ET603 FOR VIDEO SURVEILANCE CAMERA SCHEDULE.
4. VERIFY DOOR HARDWARE WITH ACCESS POINT REQUIREMENTS.

NOTES: ⬡ (SHEETS ET412 & ET413)

1. PROVIDE 4" CONDUIT FROM CBP LAN ROOM 240 TO THE ROOF FOR CBP ANTENAE WIRING. USE CHASE AS SHOWN, TERMINATE CONDUIT AT THE ROOF IN A GOOSNECK.
2. PROVIDE PANIC PUSH BUTTON, COORDINATE LOCATION OF THE PUSH BUTTON IN THE MILL WORK WITH CBP. CONNECT THESE PUSH BUTTONS USING IN FLOOR CONDUIT WITH CBP COORDINATION CENTER 245 EQUIPMENT.
3. PROVIDE 2-4" CONDUITS INSIDE THE COLUMN AS SHOWN. RUN ONE CONDUIT TO THE FIRST FLOOR AND THE OTHER TO THE THIRD FLOOR. THESE CONDUITS ARE TO BE USED FOR TSA COMMUNICATION OUTLETS. SEE ET411 & ET415.
4. POWER & DATA OUTLET FOR CEILING MOUNTED PUBLIC DISPLAY. SEE MOUNTING DETAIL SHEET T6-05. FIELD COORDINATE FINAL LOCATION WITH A/E & OWNER TO MATCH FINAL SEATING ARRANGEMENT.
5. LOCATE THE CARD READER ON THE UNSECURE SIDE OF THE ACCESS POINT.
6. COORDINATE THE FINAL LOCATION AND HIGHT OF THE FID MONITOR WITH A/E.
7. NOT USED.
8. WIRING FOR THESE DEVICES SHALL BE DONE USING CONDUIT IN THE PLENUM BELOW THE RASED FLOOR.
9. THESE CAMERAS SHALL BE RECESSED WITH THE RULON CEILING.
10. PROVIDE MAGNETIC HOLD OPEN DOOR RELEASE (MHOR). SEE DWG. ET603.
11. NO WIRING IS NEEDED FOR THESE ACCESS POINTS, BATTERY POWERED.

SCOPE OF WORK:

PROVIDE ALL CONDUIT NECESSARY. WIRING, TERMINATIONS AND EQUIPMENT NOT INCLUDED IN BID PACKAGE 2A. BID PACKAGE 2B TO FOLLOW.

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DATE ISSUED: 02-25-11
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DRAWN BY: RJL
DESIGNED BY: BA

AEP PROJECT NUMBER
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SHEET TITLE
TECHNOLOGY SECOND FLOOR PLAN AREA B

SHEET NUMBER
ET413

BID PACKAGE 2A ADDENDUM 2

Drawing: T:\P\2131882.091 Duluth New Terminal\Cad\E\ET1-02 SECOND FLOOR TECHNOLOGY.dwg Plotted on: 2/24/2011 2:53 PM Plotted by: Lazari, Rional

GENERAL NOTES:

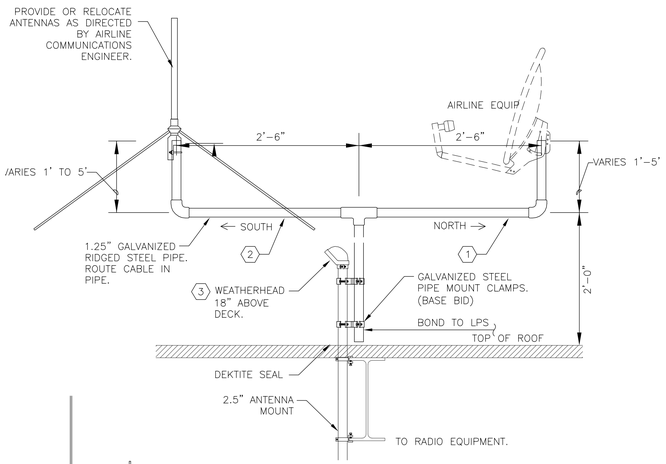
1. SEE DRAWING ET600 FOR ACCESS POINT SCHEDULE.
2. SEE DRAWING ET602 FOR MUFIDS MONITOR SCHEDULE.
3. SEE DRAWING ET603 FOR VIDEO SURVEILANCE CAMERA SCHEDULE.
4. VERIFY DOOR HARDWARE WITH ACCESS POINT REQUIREMENTS.

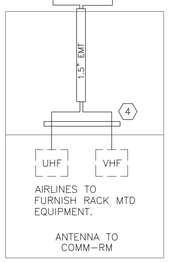
NOTES: ⬡ (SHEETS ET414 & ET415)

1. SEE DRAWINGS ET411 & ET412
2. PROVIDE A PUSH BUTTON AND THE WIRING REQUIRED FOR THE RESEPTIONIST TO BUZZ PEOPLE IN DURING WORKING HOURS.
3. PROVIDE 4" CONDUIT INSIDE THE COLUMN, CONNECT TO THE SECOND FLOOR CABLE TRAY AS SHOWN. THIS CONDUIT IS TO BE USED AS WIREWAY FOR TSA COMMUNICATION OUTLETS. SEE ET413
4. POWER & DATA OUTLET FOR CEILING MOUNTED OPS-1 TO OPS-6 ARE TO BE PLACED ABOVE CEILING. PROVIDE PEERLESS MOUNT #PLCM-UNL AND ALL REQUIRED HARDWARE FOR A COMPLETE INSTALLATION. ROUTE THE WIRING INSIDE THE COLUMN. PENETRATE THE CEILING TILE IN THE CENTER.
5. PROVIDE LMR-400DB 50 OHM FLEXIBLE LOW LOSS WATERTIGHT COAXIAL CABLE TO ROOFTOP ANTENNA VIA ANTENNA CONDUIT ROOF PENETRATION. SEE A104 TERMINATE W/N CONNECTOR MONT AND CONNECT VHF ANTENNA ANDREN #DB224FAA PER DETAIL 2 ON 4.
6. NO WIRING IS NEEDED FOR THESE ACCESS POINTS, BATTERY POWERED.

SCOPE OF WORK:

PROVIDE ALL CONDUIT NECESSARY. WIRING, TERMINATIONS AND EQUIPMENT NOT INCLUDED IN BID PACKAGE 2A. BID PACKAGE 2B TO FOLLOW.





TYPICAL RADIO RISER DIAGRAM

GENERAL NOTES

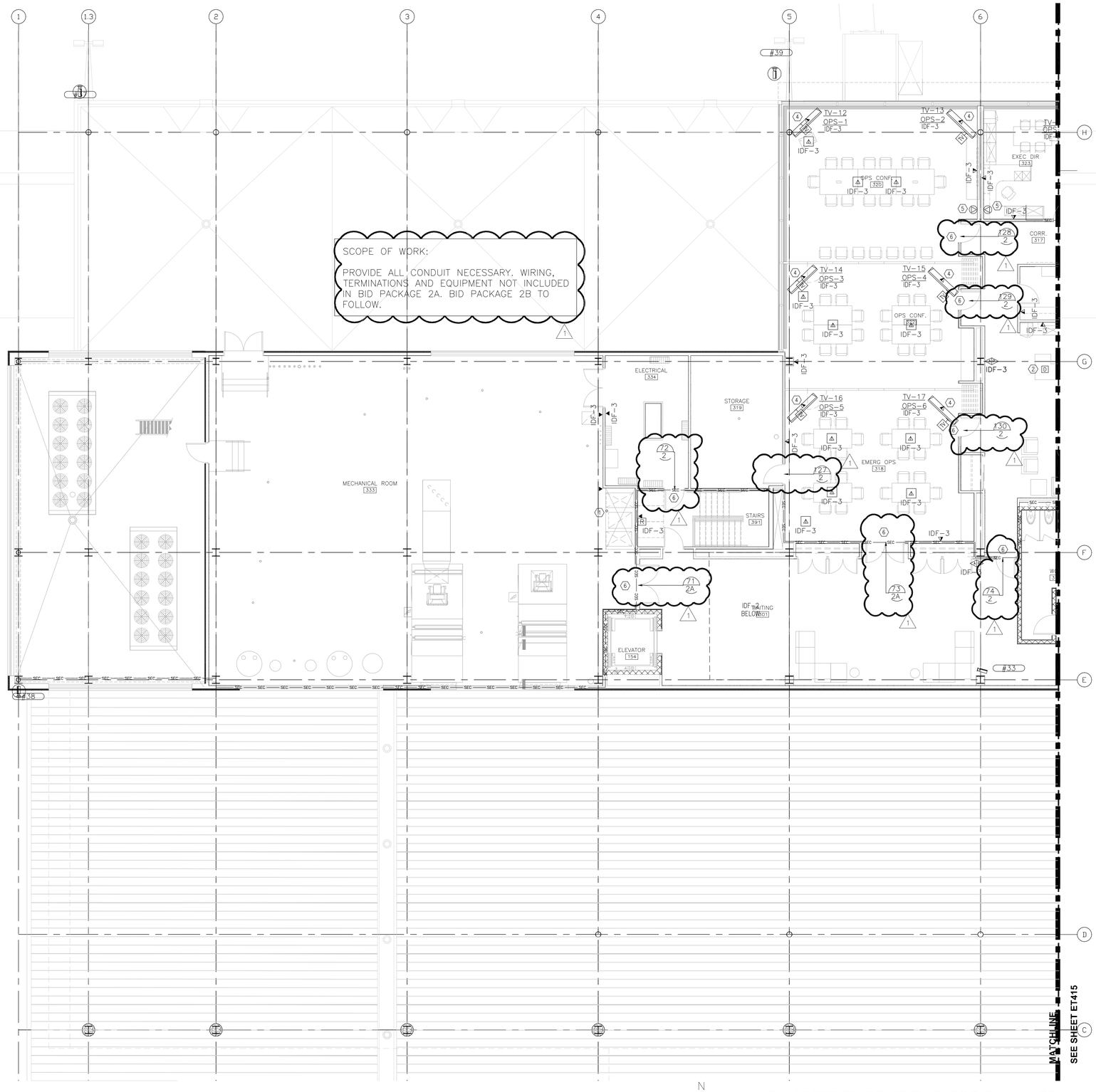
1. CONTRACTOR SHALL COORDINATE RADIO SCOPE OF WORK WITH EACH AIRLINE. CONTRACTOR SHALL NOTIFY AIRLINE OF WORK SCHEDULE.
2. CONTRACTOR SHALL WORK CLOSELY WITH AIRLINE RADIO TECHNICIAN. TECHNICIAN MAY WISH TO BE PRESENT DURING FINAL INSTALLATION. CONTRACTOR SHALL ACQUIRE AIRLINE APPROVAL OF ANTENNA INSTALLATION.
3. ANTENNAS # A3, A4, A5, A6 ARE FOR AIRLINE USE. PROVIDE FOR COAX FOR TWO ANTENNAS, UHF (GROUND TO GROUND) AND VHF (AIR TO GROUND), PROVIDE CONDUIT ROUGH IN FOR ALL OTHER ANTENNA LOCATIONS.
4. CONTRACTOR SHALL PROVIDE ENGRAVED LABEL AT EACH ANTENNA. LABEL SHALL INDIACATE AIRLINE, FREQUENCY AND OWNER CONTACT INFORMATION.
5. ALL OUTDOOR COMPONENTS SHALL BE WEATHERPROOF. PROVIDE DEKTITE DIVERTER FLASHING SYSTEM FOR ALL PIPE PENETRATIONS (SEE http://www.itwbuildex.com/dektite.htm).
6. EQUIPMENT LIST DIAGRAMTIC AND TO BE VERIFIED WITH AIRLINE / AND OR AIRPORT BEFORE INSTALLATION. ASSUME 8 RADIO ROOMS, AND 2 ADDITIONAL ROOF ANTENNA LOCATIONS.

NOTES: ⬡

1. PROVIDE (2) LMR-300-75 OHM FLEXIBLE LOW LOSS COAXIAL CABLE TO AIRLINE COMM TTB BACKBOARD. PROVIDE 4' SLACK IN 1' COIL AT BOTH ENDS. TERMINATE WITH WEATHERPROOF "F" MALE CONNECTORS.
2. PROVIDE (1) LMR-600 50 OHM FLEXIBLE LOW LOSS COAXIAL CABLE. PROVIDE 10' SLACK AT AIRLINE RADIO LOCATION. TERMINATE WITH WEATHERPROOF "N" MALE CONNECTORS.
3. PROVIDE AN ADDITIONAL 4' SLACK IN A 1' COIL FOR ALL CABLES AT WEATHER HEAD FOR FUTURE MODIFICATIONS TO CABLES.
4. PROVIDE 1/4" x 1" x 12" GROUND BAR 12" BELOW CEILING. GROUND BAR SHALL BE HARGER GBI14112E OR EQUAL. PROVIDE #2 GROUND CONDUCTOR TO SYSTEM GROUND. FOR EACH ANTENNA CABLE, PROVIDE A GAS TUBE SURGE PROTECTOR WITH MOUTING BRACKET, N-FEMALE CONNECTORS, SURGE PROTECTOR SHALL BE POLYPHASER RGT OR EQUAL.

2 ET414 **TYPICAL ANTENNA**

SCALE: NOT TO SCALE



N

3 ENLARGED THIRD LEVEL FLOOR PLAN - AREA A
1/8" = 1'-0"

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REVISIONS

NO.	DESCRIPTION	DATE
	100% REVIEW	12.15.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 2	02.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: BA
DRAWN BY: RJL
DESIGNED BY: BA

AEP PROJECT NUMBER
213-1882-091

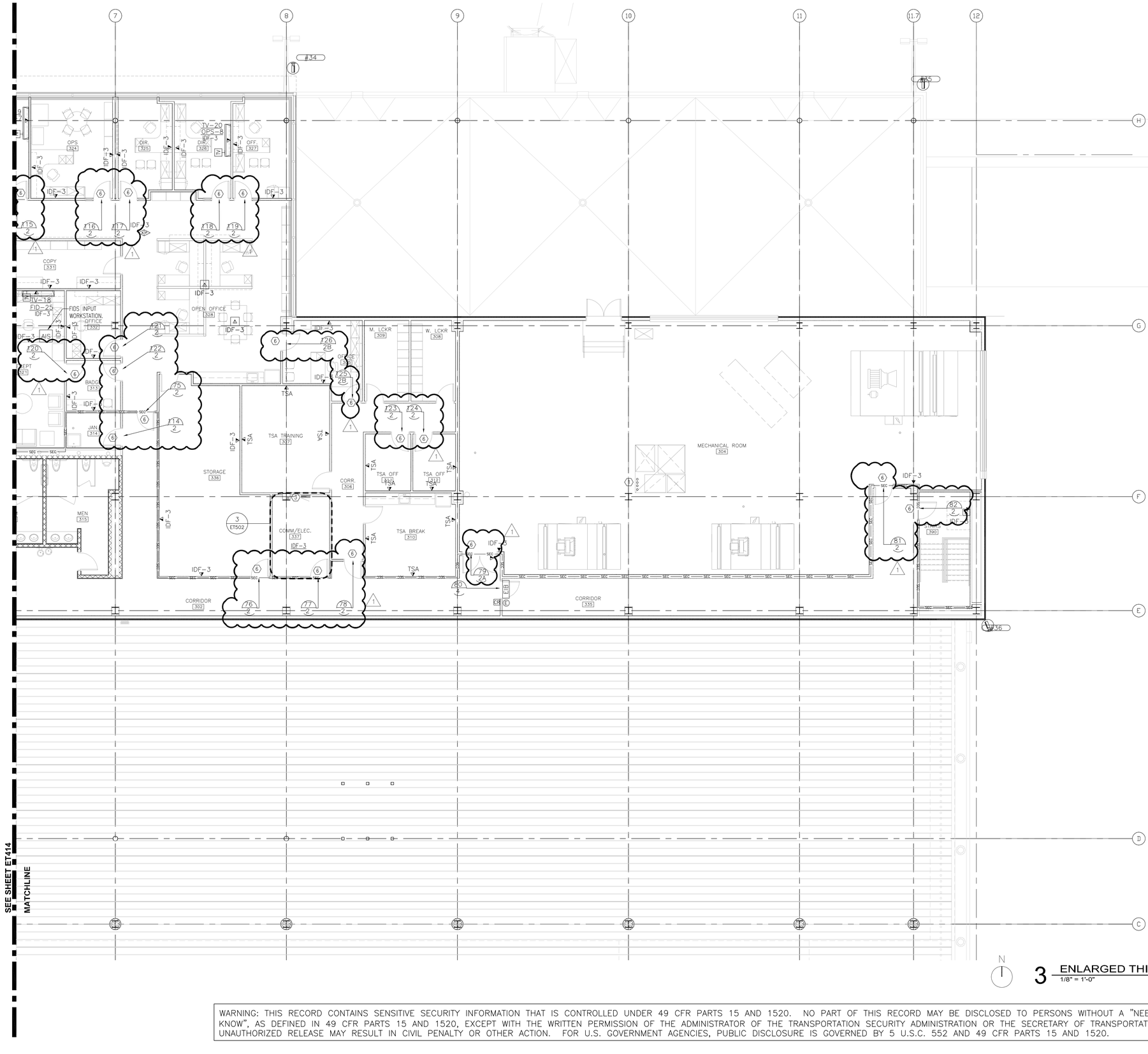
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SHEET TITLE
TECHNOLOGY THIRD FLOOR PLAN AREA A

SHEET NUMBER
ET414

BID PACKAGE 2A ADDENDUM 2

Drawing: T:\P\2131882.091 Duluth New Terminal\Cad\E\ET1-03 THIRD FLOOR TECHNOLOGY.dwg Plotted on: 2/24/2011 2:53 PM Plotted by: Lizzari, Riona



GENERAL NOTES:

1. SEE DRAWING ET600 FOR ACCESS POINT SCHEDULE.
2. SEE DRAWING ET602 FOR MUFIDS MONITOR SCHEDULE.
3. SEE DRAWING ET603 FOR VIDEO SURVEILANCE CAMERA SCHEDULE.
4. VERIFY DOOR HARDWARE WITH ACCESS POINT REQUIREMENTS.

NOTES: ⬡ (SHEETS ET414 & ET415)

1. SEE DRAWINGS ET411 & ET412
2. PROVIDE A PUSH BUTTON AND THE WIRING REQUIRED FOR THE RESEPTIONIST TO BUZZ PEOPLE IN DURING WORKING HOURS.
3. PROVIDE 4" CONDUIT INSIDE THE COLUMN, CONNECT TO THE SECOND FLOOR CABLE TRAY AS SHOWN. THIS CONDUIT IS TO BE USED AS WIREWAY FOR TSA COMMUNICATION OUTLETS. SEE ET413
4. POWER & DATA OUTLET FOR CEILING MOUNTED OPS-1 TO OPS-6 ARE TO BE PLACED ABOVE CEILING. PROVIDE PEERLESS MOUNT #PLCM-UNL AND ALL REQUIRED HARDWARE FOR A COMPLETE INSTALLATION. ROUTE THE WIRING INSIDE THE COLUMN. PENETRATE THE CEILING TILE IN THE CENTER.
5. PROVIDE LMR-400DB 50 OHM FLEXIBLE LOW LOSS WATERTIGHT COAXIAL CABLE TO ROOFTOP ANTENNA VIA ANTENNA CONDUIT ROOF PENETRATION. SEE A104 TERMINATE W/N CONNECTOR MONT AND CONNECT VHF ANTENNA ANDREN #DB224FAA PER DETAIL 5 ET414
6. NO WIRING IS NEEDED FOR THESE ACCESS POINTS, BATTERY POWERED.

SCOPE OF WORK:

PROVIDE ALL CONDUIT NECESSARY. WIRING, TERMINATIONS AND EQUIPMENT NOT INCLUDED IN BID PACKAGE 2A. BID PACKAGE 2B TO FOLLOW.

N

3 ENLARGED THIRD LEVEL FLOOR PLAN - AREA B
1/8" = 1'-0"

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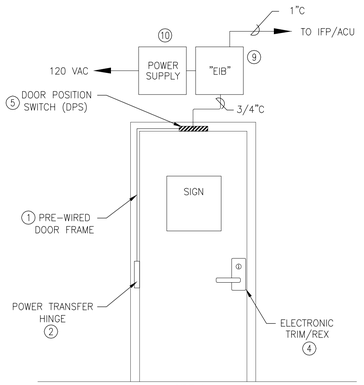
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SHEET TITLE
TECHNOLOGY THIRD FLOOR PLAN AREA B

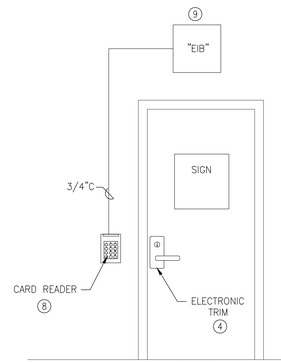
SHEET NUMBER
ET415

BID PACKAGE 2A ADDENDUM 2

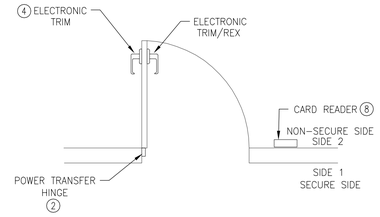
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SIDE 1
SECURE SIDE



SIDE 2
NON-SECURE SIDE



PLAN VIEW

SIDE 1 – EGRESS/SECURE SIDE

1. DOOR HARDWARE SHALL BE RELEASED WITH NO DELAY EGRESS UPON ACTIVATION OF ELECTRONIC TRIM/REX.
2. DOOR HARDWARE SHALL BE RELEASED UPON AN AUTHORIZED ACCESS NOTIFICATION FROM THE ACCESS CONTROL SYSTEM FOR TYPE 1A.

SIDE 2 – NON-SECURE SIDE

1. DOOR HARDWARE SHALL BE RELEASED UPON AN AUTHORIZED ACCESS NOTIFICATION FROM ACCESS CONTROL SYSTEM.

DOOR OPERATION UNDER LOSS OF POWER:

1. ELECTRONIC TRIM/REX SHALL FAIL SAFE.
2. ELECTRONIC TRIM SHALL FAIL SECURE.
3. MASTER KEY SHALL OVERRIDE/OPEN DOOR HARDWARE

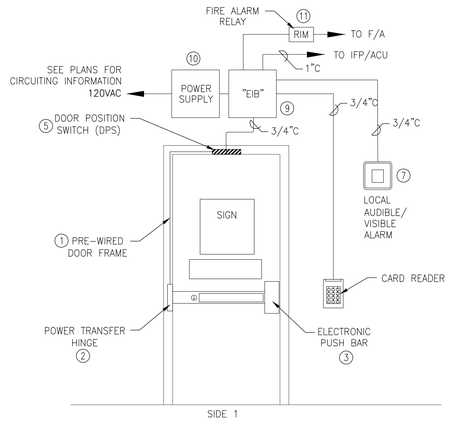
TYPE 1A, 1B, 1C, AND 1D DESCRIPTIONS

1. TYPE 1 SHOWN IN DETAIL.
2. TYPE 1A IS THE SAME AS TYPE 1 (SGL CARD READER) EXCEPT WITH DOUBLE DOORS (PROVIDE DPS BOTH DOORS).
3. TYPE 1B IS THE SAME AS TYPE 1 EXCEPT WITH DUAL CARD READER (SGL DOOR, SIDE 1 SIGN TYPE 4).
4. TYPE 1C IS THE SAME AS TYPE 1B EXCEPT DOUBLE DOOR (DBL DOOR).
5. TYPE 1D IS THE SAME AS TYPE 1 EXCEPT ELECTRONIC TRIM/REX IS REPLACED WITH ELECTRONIC PUSH BAR/REX ON SIDE 1..

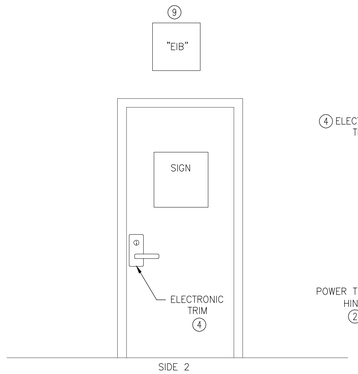
TYPE 1 ACCESS POINT (#1)

TERMINAL OPERATIONAL DOOR
(SEE NOTES FOR TYPES 1A, 1B, 1C AND 1D DOORS)

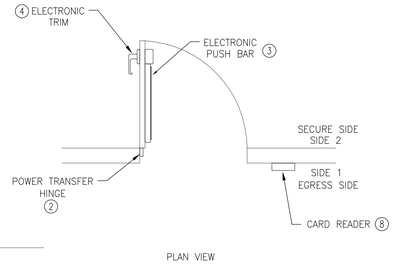
(#1A) (#1B) (#1C) (#1D)



SIDE 1



SIDE 2



PLAN VIEW

SIDE 1 – EGRESS SIDE

1. DOOR HARDWARE SHALL BE RELEASED AFTER 15 SECOND DELAY EGRESS UPON ACTIVATION OF ELECTRONIC PUSH BAR BY PRESSING BAR FOR 3 TO 5 SECONDS.
2. DOOR HARDWARE SHALL BE RELEASED IMEDIATLY UPON AN AUTHORIZED ACCESS NOTIFICATION FROM ACCESS CONTROL SYSTEM.
3. ACTIVATE LOCAL AUDIBLE/VISIBLE ALARM ON ANY FORCED ENTRY OR EGRESS ALARM INDICATION.
4. RELEASE DOOR WITHOUT DELAY OR ALARM UPON ACTIVATION OF RIM BY FIRE ALARM SYSTEM ACTIVATION.

SIDE 2 – STERILE SIDE/SECURE SIDE

1. DOOR HARDWARE SHALL BE RELEASED WITH NO DELAY EGRESS UPON ACTIVATION OF ELECTRONIC TRIM/REX.
2. DOOR HARDWARE SHALL BE RELEASED UPON AN AUTHORIZED ACCESS NOTIFICATION FROM THE ACCESS CONTROL SYSTEM FOR TYPE 4A.

DOOR OPERATION UNDER ALARM CONDITIONS:

1. FIRE ALARM SHALL ALLOW THE ACCESS THROUGH THE DOOR WITHOUT DELAY UPON THE DETECTION OF A FIRE ALARM WITHIN THE ZONE (SMOKE OR SPRINKLER ONLY). PULL STATION SHALL NOT BYPASS THE DELAY REQUIREMENT.

DOOR OPERATION UNDER LOSS OF POWER:

1. ELECTRONIC PUSH BAR SHALL FAIL SAFE.
2. ELECTRONIC TRIM SHALL FAIL SECURE.

TYPE 4A, 4B, 4C AND 4D DESCRIPTIONS

1. TYPE 4 SHOWN IN DETAIL.
2. TYPE 4A IS THE SAME AS TYPE 4 EXCEPT WITH DOUBLE DOORS. PROVIDE DPS ON BOTH DOORS.
3. TYPE 4B IS THE SAME AS TYPE 4 EXCEPT WITH DUAL CARD READER.
4. TYPE 4C IS THE SAME AS TYPE 4B EXCEPT WITH DOUBLE DOORS.
5. TYPE 4D IS THE SAME AS TYPE 4 EXEPT THERE IS NO HARDARE ON SIDE 2. (ONE WAY DOOR).

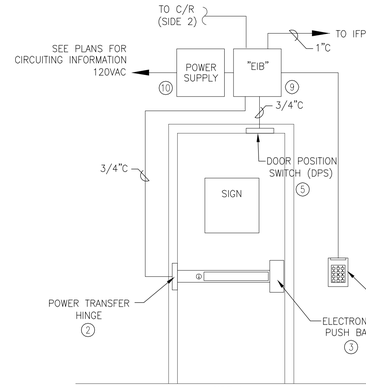
TYPE 4A, 4B, 4C AND 4D GENERAL NOTES

1. PROGRAM READER TO ALLOW AUTHORIZED USERS TO KEY-IN THE TIME TO KEEP DOOR OPEN. ONCE THE DOOR IS CLOSED THE DOOR SHALL RESET INTO SECURE POSITION.
2. ACTIVATE A PRE-ALARM ON CARD READER TO INDICATE EXPIRATION OF TIME IS NEARING. COORDINATE PRE-ALARM TIME WITH OWNER.
3. DELAYED EGRESS CRASH BAR SHALL RE-SECURE UPON DETECTION FROM DPS THAT DOOR HAS BEEN CLOSED AND NOT RELY ON INTEGRATED TIMER.
4. MONITOR RELEASE COUNTDOWN ON ACCESS CONTROL AS AN ALARM CONDITION.

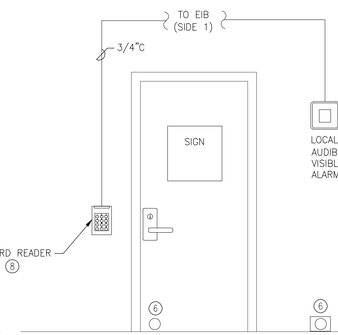
TYPE 4 ACCESS POINT (#4)

TERMINAL OPERATIONAL/EMERGENCY EXIT DOOR/STERILE TO SECURE
(SEE NOTES FOR TYPES 4A, 4B AND 4C DOORS)

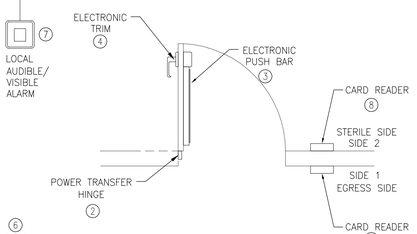
(#4A) (#4B) (#4C)



SIDE 1
EGRESS SIDE/PLANE SIDE



SIDE 2
STERILE SIDE



PLAN VIEW

TYPE "LB" GENERAL NOTES

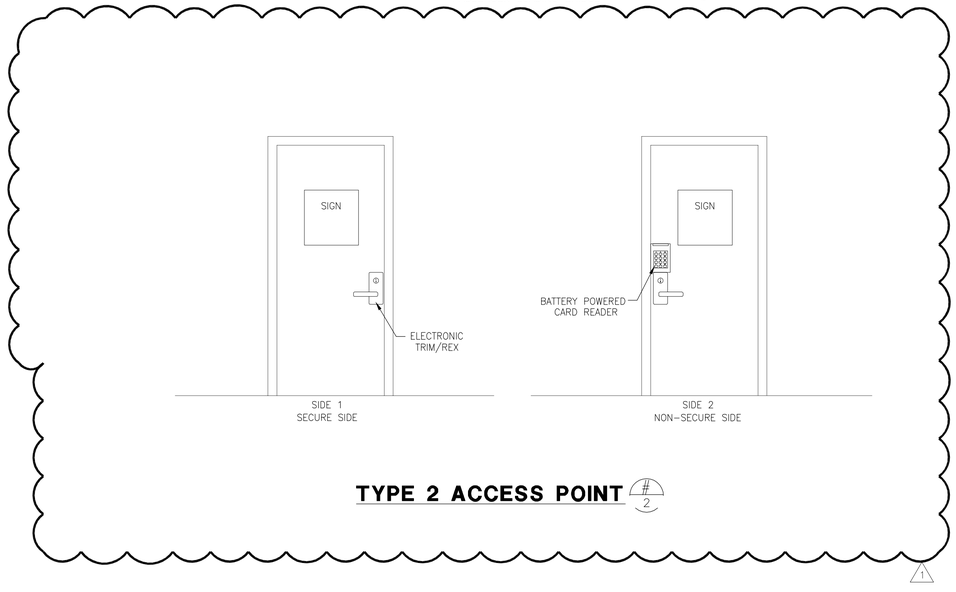
1. PROVIDE 20A CIRCUIT FROM EMERGENCY PANEL. ONE CIRCUIT SHALL FEED NO MORE THAN 4 DOORS. LABEL PANEL SCHEDULE "ACCESS CONTROL DOOR".
2. PROVIDE CONDUIT FOR AUDIBLE/VISIBLE ALARM UNDER THIS PACKAGE.

DOOR OPERATION UNDER ALARM CONDITIONS:

1. THERE SHALL BE NO DELAY ENTERING BUILDING FROM PLANE SIDE IN CASE OF FIRE ON PLANE.

TYPE LB ACCESS POINT (#LB)

PASSENGER LOADING BRIDGE



TYPE 2 ACCESS POINT (#2)

1

ACCESS CONTROL SYSTEM GENERAL NOTES

1. MANUFACTURER AND MODEL NUMBERS ARE USED TO ESTABLISH QUALITY AND PERFORMANCE OF THE SYSTEM. ANY EQUIPMENT THAT MEETS OR EXCEEDS THE PERFORMANCE SHALL BE CONSIDERED AND APPROVED AT THE DISCRETION OF THE ENGINEER AND/OR OWNER.
2. REFER TO ACCESS POINT SCHEDULE DWG ET600 FOR DOOR CONFIGURATION AND SIGNAGE TYPE. SEE ET5-05 FOR SECURITY SIGNAGE.
3. ACCESS CONTROL SYSTEM SHALL MONITOR OR INTERFACE WITH THE FOLLOWING ITEMS AT EACH ACCESS POINT (IF AVAILABLE):
   - A. CARD READER TAMPER
   - B. EIB TAMPER
   - C. POWER SUPPLY TAMPER
   - D. DOOR POSITION SWITCHES
   - E. POWER SUPPLY POWER FAIL
   - F. POWER SUPPLY BATTERY LOW/FAIL
   - G. REQUEST TO EXIT (REX)
   - H. PANIC BAR ALARM – COUNTDOWN (DELAYED EGRESS ONLY)
   - I. FIRE ALARM RELEASE (DELAYED EGRESS ONLY)
   - J. LOCAL ALARM
4. DOORS TO BE HELD OPEN FOR LONGER THAN 30 SECONDS SHALL:
   - A. ALLOW AUTHORIZED USERS TO KEY-IN THE TIME TO KEEP DOOR OPEN. ONCE THE DOOR IS CLOSED, THE DOOR SHALL RESET INTO SECURE POSITION.
   - B. ACTIVATE A PRE-ALARM AUDIO BEEP ON CARD READER TO INDICATE EXPIRATION OF TIME IS NEARING. COORDINATE PRE-ALARM TIME WITH OWNER.
   - C. AFTER PRE-ALARM AND PRIOR TO EXPIRATION OF TIME DOORS WITH MAGNETIC HOLD OPEN DEVICES SHALL RELEASE DOOR TO PREVENT HOLD OPEN ALARM.
   - D. EXPIRATION OF TIME SHALL ACTIVATE THE HORN/STROBE AT THE DOOR AND A STEADY BEEP ON THE READER.
5. SEE ET504 FOR ACCESS POINT/DOOR HARDWARE SCHEDULE.

SCOPE OF WORK:

PROVIDE ALL CONDUIT NECESSARY. WIRING, TERMINATIONS AND EQUIPMENT NOT INCLUDED IN PACKAGE 2A. PACKAGE 2B TO FOLLOW.

1

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SHEET TITLE

ACCESS CONTROL DETAILS

SHEET NUMBER

ET503

BID PACKAGE 2A ADDENDUM 2

Drawing: T:\F\2131882.091 Duluth New Terminal\Cad\E\ET5-03Access Point Det.dwg Plotted on: 2/24/2011 2:54 PM Plotted by: Liazari, Rional

ACCESS POINT SCHEDULE

POINT ID	DOOR #	TERM POINT	LOCATION	POINT TYPE	REF DWG	CCTV CAMERA	SECURITY LINE SIDE 1	SECURITY LINE SIDE 2	SIGNAGE SIDE 1	SIGNAGE SIDE 2	NOTES
1	179C	IDF-1	TUG DRIVE TO LANDSIDE	4D	ET410	–	SIDA	NON-SECURE	TYPE 3	TYPE 2	ALARM WHEN OPEN
2	176E	IDF-1	TUG DRIVE TO LANDSIDE	4D	ET410	#2	SIDA	NON-SECURE	TYPE 3	TYPE 2	ALARM WHEN OPEN
3	–	IDF-1	INTERNATIONAL 117 TO BAGGAGE CLAIM	4B	ET410	#52	SECURE	NON-SECURE	–	–	BAGGAGE BELT
4	117A	IDF-1	INTERNATIONAL 117 TO LANDSIDE	4B	ET410	#51	SECURE	NON-SECURE	TYPE 4	TYPE 2	
5	180A	IDF-1	INTERNATIONAL 117 TO OFFICE 180	1	ET410	#1	NON-SECURE	SECURE	TYPE 7	TYPE 8	
6	159A	IDF-1	INTERNATIONAL 117 TO SEC. X-RAY 159	5	ET410	#1	NON-SECURE	SECURE	–	–	
7	159B	IDF-1	INTERNATIONAL 117 TO SEC. X-RAY 159	1	ET410	#1	SECURE	NON-SECURE	TYPE 8	TYPE 7	
8	100A	IDF-1	VESTIBULE 100 TO INTERNATIONAL 117	9	ET410	#1	NON-SECURE	SECURE	–	–	
9	181A	IDF-1	SECONDARY 159 TO CASH 181	1	ET410	#52	SECURE	SECURE	TYPE 7	TYPE 8	
10	160A	IDF-1	SECONDARY 159 TO AG. LAB 160	1	ET410	#52	SECURE	SECURE	TYPE 7	TYPE 8	
11	167A	IDF-1	OFFICE 166 TO SECURE STORAGE 167	1	ET410	–	SECURE	SECURE	TYPE 7	TYPE 8	
12	168A	IDF-1	CORRIDOR 168 TO CORRIDOR 169	1	ET410	#54	SECURE	SECURE	TYPE 8	TYPE 7	
13	172A	IDF-1	CORRIDOR 168 TO DBS 172	2	ET410	–	SECURE	SECURE	–	–	
14	163A	IDF-1	SECONDARY 159 TO ROVER 163	1	ET410	#53	SECURE	SECURE	TYPE 8	TYPE 7	
15	155B	IDF-1	BAGGAGE CLAIM 116 TO RECHECK 155	1C	ET410	#3	SECURE	NON-SECURE	TYPE 8	TYPE 7	
16	154	IDF-1	RECHECK 155 TO ELEV. 154	EL	ET410	–	SECURE	SECURE	–	–	
17	150A	IDF-1	RECHECK 155 TO CORRIDOR 150	2	ET410	–	SECURE	NON-SECURE	TYPE 8	TYPE 7	
18	–	IDF-1	RECHECK 155 TO TUG TUNNEL	5	ET410	#4	NON-SECURE	SIDA	–	–	BAGGAGE BELT
19	176F	IDF-1	RECHECK 155 TO TUG TUNNEL	1	ET410	#4	SECURE	SIDA	TYPE 2	TYPE 3	
20	156A	IDF-1	CORRIDOR 150 TO BREAK 156	2	ET410	–	SECURE	SECURE	TYPE 7	TYPE 8	
21	–	IDF-1	BAGGAGE CLAIM 116 TO TUG TUNNEL	5	ET410	#4,#3	NON-SECURE	SIDA	–	–	BAGGAGE BELT
22	149A	IDF-1	ELECTRICAL 149 TO TUG TUNNEL	1	ET410	#4	SECURE	SIDA	TYPE 2	TYPE 3	
23	151A	IDF-1	BAGGAGE CLAIM 116 TO COMM. 151	2	ET410	–	SECURE	NON-SECURE	TYPE 8	TYPE 7	
24	149B	IDF-1	CORRIDOR 140 TO ELECTRICAL 149	2	ET410	–	SECURE	SECURE	TYPE 8	TYPE 7	
25	140A	IDF-1	CORRIDOR 140 TO BAGGAGE CLAIM 116	2	ET410	#3	SECURE	NON-SECURE	TYPE 8	TYPE 7	
26	140B	IDF-1	CORRIDOR 140 TO TUG TUNNEL	7	ET411	#4	SECURE	SIDA	TYPE 2	TYPE 3	
27	133C	IDF-1	CORRIDOR 140 TO CBIS ROOM 133	1A	ET411	–	SECURE	SECURE	TYPE 8	TYPE 7	
28	–	IDF-1	CBIS ROOM 133 TO TUG TUNNEL	7	ET411	#5,#6	NON-SECURE	SIDA	–	–	BAGGAGE BELT
29	–	IDF-1	CBIS ROOM 133 TO TUG TUNNEL	7	ET411	#5,#13	SECURE	SIDA	–	–	BAGGAGE BELT
30	133A	IDF-1	LOBBY/CIRCULATION 104 TO CBIS 133	1	ET411	#6	SECURE	NON-SECURE	TYPE 8	TYPE 7	
31	133D	IDF-1	LOBBY/CIRCULATION 104 TO CBIS 133	1	ET411	#11	SECURE	NON-SECURE	TYPE 8	TYPE 7	
32	–	IDF-1	CHECK IN COUNTER 103 TO CBIS 133	6	ET411	#11	NON-SECURE	SECURE	–	–	
33	120B	IDF-1	CORRIDOR 120 TO CBIS ROOM 133	1	ET411	–	SECURE	SECURE	TYPE 8	TYPE 7	
34	176A	IDF-1	LOADING 126 TO TUG TUNNEL	1A	ET411	#13	SECURE	SIDA	TYPE 2	TYPE 3	
35	176B	IDF-1	TUG TUNEL 176 TO LANDSIDE	4D	ET411	#13	SIDA	NON-SECURE	TYPE 3	TYPE 2	ALARM WHEN OPEN
36	179C	IDF-1	EAST TUG RAMP 179 TO ALNDSIDE	4D	ET411	–	SIDA	NON-SECURE	TYPE 3	TYPE 2	ALARM WHEN OPEN
37	126B	IDF-1	LANDSIDE TO LOADING 126	1	ET411	–	SECURE	NON-SECURE	TYPE 8	TYPE 7	
38	126C	IDF-1	CORRIDOR 126 TO LOADING 126	2	ET411	–	SECURE	NON-SECURE	TYPE 8	TYPE 7	
39	120A	IDF-1	CHECK-IN LOBBY TO CORRIDOR 120	2	ET411	#12	SECURE	NON-SECURE	TYPE 8	TYPE 7	
40	117B	IDF-1	BAGGAGE CLAIM 116 TO INTERNATIONAL 117	8	ET411	–	SECURE	NON-SECURE	–	–	
41	190B	IDF-1	LANDSIDE TO STAIRS	2	ET411	–	NON-SECURE	NON-SECURE	–	–	
42	219A	MDF	CONCOURSE 219 TO CORRIDOR 233	1B	ET412	#18	STERILE	STERILE	TYPE 8	TYPE 7	
43	219C	MDF	CONCOURSE 219 TO CONCOURSE 219	8	ET412	#18,#19	SECURE	NON-SECURE	–	–	
44	242A	MDF	STERILIE CORRIDOR 242 TO RAMP 247	LB	ET412	#14	SIDA	STERILE	TYPE 1	TYPE 2	
45	242C	MDF	STERILIE CORRIDOR 242 APRON	4B	ET412	#14	STERILE	SIDA	TYPE 2	TYPE 1	
46	237C	MDF	STERILE CORRIDOR 242 TO CBP PRIM. PROC.	4B	ET412	#	SECURE	STERILE	TYPE 1	TYPE 2	
47	233B	MDF	STERILE CORRIDOR 242 TO CORRIDOR 233	1B	ET412	#	STERILE	STERILE	TYPE 2	TYPE 3	
48	237B	MDF	CORRIDOR 233 TO BOARDING 231	1	ET412	–	STERILE	STERILE	TYPE 2	TYPE 3	
49	233B	MDF	CBP PRIM. PROC. 237 TO CBP PRIM. PROC.	4B	ET412	#45	SECURE	SECURE	TYPE 2	TYPE 3	
50	245A	MDF	CBP PRIM. PROC. 237 TO CBP COORD. CNTR.	1	ET412	–	SECURE	SECURE	TYPE 3	TYPE 2	
51	–	MDF	CBP PRIM. PROC. 237 TO STAIRS 235	9	ET412	#48	SECURE	NON-SECURE	TYPE 3	TYPE 2	
52	241A	MDF	CBP PRIM. PROC. 237 TO OFFICE 241	2	ET412	–	SECURE	SECURE	–	–	
53	240A	MDF	CBP PRIM. PROC. 237 TO JAN. RM. 240	1	ET412	–	SECURE	SECURE	TYP3 2	TYPE 3	
54	237D	MDF	CBP PRIM. PROC. 237 TO DEPARTURE LOUNGE	4D	ET412	#18,#49	SECURE	STERILE	TYP3 4	–	
55	232A	MDF	VESTIBULE 232 TO APRON	4B	ET412	#15	STERILE	SIDA	TYPE 2	TYPE 1	
56	219I	MDF	DEPARTURE LOUNGE 219 TO APRON	4B	ET412	#16	STERILE	SIDA	TYPE 2	TYPE 1	
57	219B	MDF	DEPARTURE LOUNGE 219 TO CORRIDOR 229	4B	ET412	#17	SECURE	STERILE	TYPE 1	TYPE 2	
58	230A	MDF	PASSENGER WAITING 201 TO ELEC. RM 230	2	ET412	–	NON-SECURE	SECURE	TYPE 7	TYPE 8	
59	217A	MDF	PASSENGER WAITING 201 TO COMM. RM. 217	2	ET412	–	NON-SECURE	SECURE	TYPE 7	TYPE 8	
60	219H	MDF	DEPARTURE LOUNGE 219 TO BOARDING BRIDGE	LB	ET412	#19	SIDA	STERILE	TYPE 1	TYPE 2	
61	214A	MDF	PASSENGER WAITING 201 TO TSA QUEUE	5	ET413	#21	NON SECURE	STERILE	–	–	
62	214B	MDF	PASSENGER WAITING 201 TO TSA QUEUE	1	ET413	#21	NON-SECURE	STERILE	TYPE 3	TYPE 1	
63	213A	MDF	PASSENGER WAITING 201 TO AIRPORT POLICE	1	ET413	#21	NON-SECURE	SECURE	TYPE 7	TYPE 8	
64	208A	MDF	CORRIDOR 202 TO TSA CHECKPOINT 208	1	ET413	#26	NON-SECURE	STERILE	TYPE 3	TYPE 1	
65	219G	MDF	CONCOURSE 219 TO BOARDING BRIDGE	LB	ET413	#25	SIDA	STERILE	TYPE 1	TYPE 2	
66	219F	MDF	CONCOURSE 219 TO APRON	4B	ET413	#29	STERILE	SIDA	TYPE 2	TYPE 1	
67	219E	MDF	CONCOURSE 219 TO FIXED BRIDGE 248	LB	ET413	#29	SIDA	STERILE	TYPE 1	TYPE 2	

GENERAL NOTES:

1. SEE DRAWINGS ET503, ET504 FOR ACCESS POINT DETAILS.
2. SEE DRAWING ET505 FOR ACCESS POINT SIGNAGE.
3. SEE DRAWING ET601 FOR ACCESS POINT RISER DIAGRAM AND NOTES.

ACCESS POINT SCHEDULE

POINT ID	DOOR #	TERM POINT	LOCATION	POINT TYPE	REF DWG	CCTV CAMERA	SECURITY LINE SIDE 1	SECURITY LINE SIDE 2	SIGNAGE SIDE 1	SIGNAGE SIDE 2	NOTES
68	203B	MDF	CONCOURSE 219 TO COORIDOR 203	4B	ET413	#28	STERILE	SECURE	–	–	
69	204A	MDF	CORRIDOR 203 TO TELECOM 204	2	ET413	–	SECURE	SECURE	–	–	
70	203A	MDF	CORRIDOR 202 TO CORRIDOR 203	2	ET413	–	SECURE	NON-SECURE	–	–	
71	333A	IDF-3	WAITING 301 TO MECHANICAL ROOM 333	2A	ET414	#33	SECURE	NON-SECURE	–	–	
72	391B	IDF-3	STAIRS 391 TO ELECTRICAL 334	2	ET414	–	SECURE	NON-SECURE	–	–	
73	318A	IDF-3	WAITING 301 TO EMERGENCY OPS 318	2A	ET414	#40	SECURE	NON-SECURE	–	–	
74	317A	IDF-3	WAITING 301 TO RECEPTION 321	2	ET414	#40	SECURE	NON-SECURE	–	–	
75	302A	IDF-3	CORRIDOR 302 TO OPEN OFFICE 328	2	ET415	–	SECURE	NON-SECURE	–	–	
76	336A	IDF-3	CORRIDOR 302 TO STORAGE 336	2	ET415	–	NON-SECURE	SECURE	–	–	
77	337A	IDF-3	CORRIDOR 302 TO COM/ELEC 337	2	ET415	–	NON-SECURE	SECURE	–	–	
78	306A	IDF-3	CORRIDOR 302 TO CORRIDOR 306	2	ET415	–	SECURE	NON-SECURE	–	–	
79	304A	IDF-3	CORRIDOR 302 TO MECHANICAL 304	2A	ET415	–	SECURE	NON-SECURE	–	–	
80	335C	IDF-3	CORRIDOR 302 TO CORRIDOR 335	4	ET415	–	NON-SECURE	SECURE	–	–	
81	304B	IDF-3	CORRIDOR 335 TO MECHANICAL 304	2	ET415	–	SECURE	SECURE	–	–	
82	390A	IDF-3	CORRIDOR 335 TO STAIRS 390	2	ET415	–	SECURE	NON-SECURE	–	–	
83	205A	MDF	CORRIDOR 209 TO JAN 205	2	ET413	–	SECURE	SECURE	–	–	
84	138A	IDF-1	LOBBY/CIRCULATION 104 TO JAN 138	2	ET411	–	SECURE	NON-SECURE	–	–	
85	106A	MDF	LOBBY/CIRCULATION 104 TO RAC5B	2	ET411	–	SECURE	NON-SECURE	–	–	
86	107A	IDF-1	RAC5A TO RAC5B	2	ET411	–	SECURE	NON-SECURE	–	–	
87	108A	IDF-1	LOBBY/CIRCULATION 104 TO RAC4B	2	ET411	–	SECURE	NON-SECURE	–	–	
88	109A	IDF-1	RAC4A TO RAC4B	2	ET411	–	SECURE	NON-SECURE	–	–	
89	110A	IDF-1	LOBBY/CIRCULATION 104 TO RAC3B	2	ET411	–	SECURE	NON-SECURE	–	–	
90	111A	IDF-1	RAC3A TO RAC3B	2	ET411	–	SECURE	NON-SECURE	–	–	
91	112A	IDF-1	LOBBY/CIRCULATION 104 TO RAC2B	2	ET411	–	SECURE	NON-SECURE	–	–	
92	113A	IDF-1	RAC2A TO RAC2B	2	ET411	–	SECURE	NON-SECURE	–	–	
93	114A	IDF-1	LOBBY/CIRCULATION 104 TO RAC1B	2	ET410	–	SECURE	NON-SECURE	–	–	
94	115A	IDF-1	RAC1A TO RAC1B	2	ET410	–	SECURE	NON-SECURE	–	–	
95	148A	IDF-1	CORRIDOR 140 TO SUB.OFFICE148	2	ET410	–	SECURE	SECURE	–	–	
96	141A	IDF-1	CORRIDOR 140 TO MAINT.141	2	ET410	–	SECURE	SECURE	–	–	
97	142A	IDF-1	CORRIDOR 140 TO BHS STOR 142	2	ET411	–	SECURE	SECURE	–	–	
98	--	--	--	--	--	--	--	--	–	–	
99	122A	IDF-1	CORRIDOR 120 TO OPS 122	2	ET411	–	SECURE	SECURE	–	–	
100	123B	IDF-1	OPS 122 TO OFFICE 123	2	ET411	–	SECURE	SECURE	–	–	
101	123A	IDF-1	CORRIDOR 120 TO OFFICE 123	2	ET411	–	SECURE	SECURE	–	–	
102	124A	IDF-1	CORRIDOR 120 TO OPS 124	2	ET411	–	SECURE	SECURE	–	–	
103	125B	IDF-1	OPS 124 TO OFFICE 125	2	ET411	–	SECURE	SECURE	–	–	
104	125A	IDF-1	CORRIDOR 120 TO OFFICE 125	2	ET411	–	SECURE	SECURE	–	–	
105	131A	IDF-1	CORRIDOR 120 TO OPS 131	2	ET411	–	SECURE	SECURE	–	–	
106	131B	IDF-1	OPS 131 TO OFFICE 132	2	ET411	–	SECURE	SECURE	–	–	
107	127B	IDF-1	OFFICE 132 TO OPS 127	2	ET411	–	SECURE	SECURE	–	–	
108	127A	IDF-1	CORRIDOR 120 TO OPS 127	2	ET411	–	SECURE	SECURE	–	–	
109	208B	MDF	CONCOURSE 219 TO TSA CHECKPOINT 208	5	ET413	–	STERILE	SECURE	–	–	
110	209A	MDF	TSA CHECKPOINT 208 TO STOR 209	2	ET413	–	SECURE	SECURE	–	–	
111	210A	MDF	TSA CHECKPOINT 208 TO REMOTE V 210	2	ET413	–	SECURE	SECURE	–	–	
112	211A	MDF	TSA CHECKPOINT 208 TO TSA 211	2	ET413	–	SECURE	NON-SECURE	–	–	
113	212A	MDF	CORRIDOR 202 TO DLH POLICE 112	2	ET413	–	SECURE	NON-SECURE	–	–	
114	314A	IDF-3	COORIDOR 302 TO JAN 314	2	ET415	–	SECURE	NON-SECURE	–	–	
115	323A	IDF-3	CORRIDOR 317 TO EXEC. DIR 323	2	ET415	–	SECURE	SECURE	–	–	
116	324A	IDF-3	CORRIDOR 317 TO OPS 324	2	ET415	–	SECURE	SECURE	–	–	
117	325A	IDF-3	OPEN OFFICE 328 TO DIR 325	2	ET415	–	SECURE	SECURE	–	–	
118	326A	IDF-3	OPEN OFFICE 328 TO DIR 326	2	ET415	–	SECURE	SECURE	–	–	
119	327A	IDF-3	OPEN OFFICE 328 TO OFF 327	2	ET415	–	SECURE	SECURE	–	–	
120	313B	IDF-3	RECEPT 321 TO BADGE 313	2	ET415	–	SECURE	SECURE	–	–	
121	332A	IDF-3	OPEN OFFICE 328 TO OFFICE 332	2	ET415	–	SECURE	SECURE	–	–	
122	313A	IDF-3	OPEN OFFICE 328 TO BADGE 313	2	ET415	–	SECURE	SECURE	–	–	
123	311A	IDF-3	CORRIDOR 306 TO TSA OFF 311	2	ET415	–	SECURE	SECURE	–	–	
124	312A	IDF-3	CORRIDOR 306 TO TSA OFF 312	2	ET415	–	SECURE	SECURE	–	–	
125	305B	IDF-3	CORRIDOR 306 TO OFFICE 305	2	ET415	–	SECURE	SECURE	–	–	
126	305A	IDF-3	OPEN OFFICE 328 TO OFFICE 305	2	ET415	–	SECURE	SECURE	–	–	
127	319A	IDF-3	EMERG OPS 318 TO STORAGE 319	2	ET414	–	SECURE	SECURE	–	–	
128	320A	IDF-3	CORRIDOR 317 TO OPS CONF 320	2	ET414	–	SECURE	SECURE	–	–	
129	322A	IDF-3	CORRIDOR 317 TO OPS CONF 322	2	ET414	–	SECURE	SECURE	–	–	
130	318A	IDF-3	CORRIDOR 317 TO EMERG OPS 318	2	ET414	–	SECURE	SECURE	–	–	
131	251A	IMDF	CORRIDOR 203 TO OFFICE 251	2	ET413	–	NON-SECURE	SECURE	–	–	
132	250A	MDF	CORRIDOR 203 TO CONF 250	2	ET413	–	NON-SECURE	SECURE	–	–	
133	234A	MDF	BOARDING 231 TO FBO OFFICE 234	2	ET412	–	SECURE	SECURE	–	–	
134	135A	IDF-1	LOBBY/ CIRCULATION 104 TO BAG 135	2	ET411	–	NON-SECURE	SECURE	–	–	
135	134A	IDF-1	LOBBY/ CIRCULATION 104 TO BAG 134	2	ET411	–	NON-SECURE	SECURE	–	–	
136	183A	IDF-1	LOBBY/ CIRCULATION 104 TO BAG 183	2	ET411	–	NON-SECURE	SECURE	–	–	
137	184A	IDF-1	LOBBY/ CIRCULATION 104 TO BAG 184	2	ET411	–	NON-SECURE	SECURE	–	–	

SCOPE OF WORK:

PROVIDE ALL CONDUIT NECESSARY. WIRING, TERMINATIONS AND EQUIPMENT NOT INCLUDED IN PACKAGE 2A. PACKAGE 2B TO FOLLOW.

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NEW PASSENGER TERMINAL

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TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscaping Consultants:
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2432 East First Street, Duluth MN 55812
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REVISIONS

NO.	DESCRIPTION	DATE
	100% REVIEW	12.15.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 2	02.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: BA
DRAWN BY: RJL
DESIGNED BY: BA

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

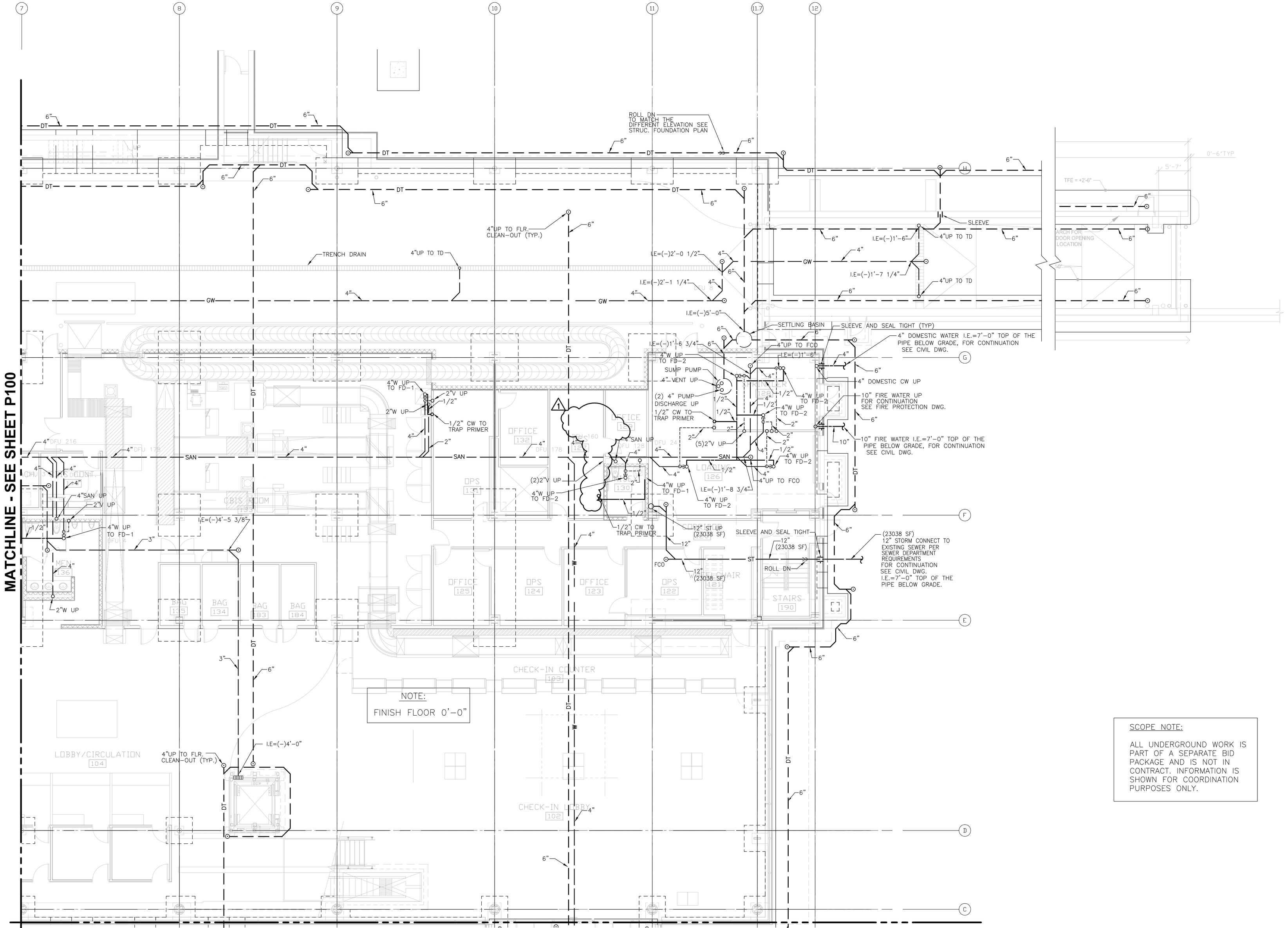
ACCESS POINT SCHEDULE

SHEET NUMBER

ET600

BID PACKAGE 2A ADDENDUM 2

Drawing: T:\P\2131882.091 Duluth New Terminal\Cad\E\ET6-01 Security Riser.dwg Plotted on: 2/24/2011 2:54 PM Plotted by: Lizzari, Rional



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ENGINEER CERTIFICATION
I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	RFP 017	9.24.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: RDJ
DRAWN BY: SA
DESIGNED BY: SA

AEP PROJECT NUMBER
213-1882-091

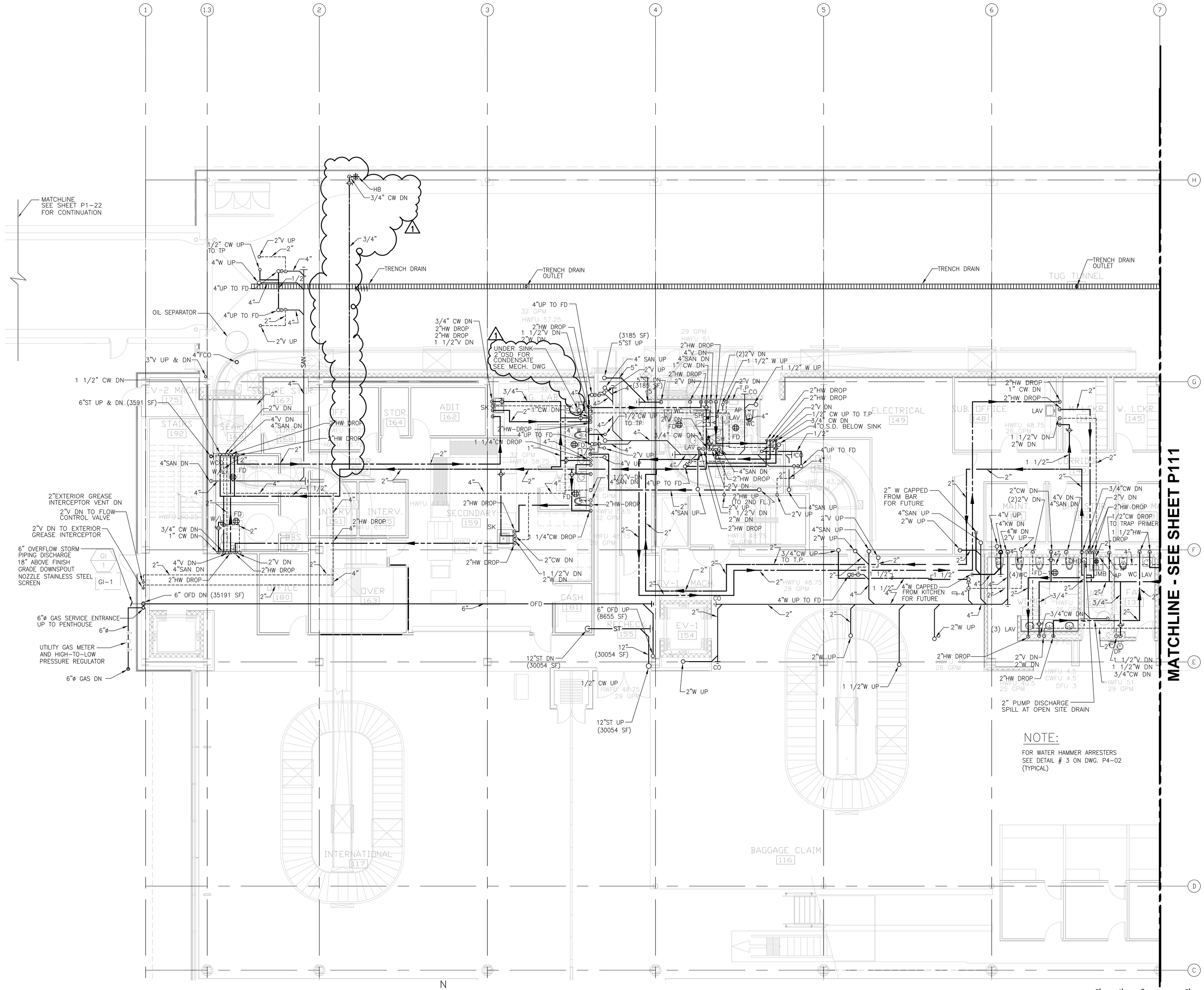
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SHEET TITLE
ENLARGED UNDERGROUND PLUMBING PLAN AREA B

SHEET NUMBER
P101

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2255.00 Duluth Airport\5.0 CAD\(5.6) Plumbing\Dwgs\2255_P101.dwg Plotted on: 2/25/2011 7:25 AM Plotted by: Vaiana, Nancy



1 ENLARGED FIRST LEVEL FLOOR PLAN - AREA A
1/8" = 1'-0"

SCALE: 1/8" = 1'-0"

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ENGINEER CERTIFICATION
I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	RFP 017	9.24.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: RDJ
DRAWN BY: SA
DESIGNED BY: SA

AEP PROJECT NUMBER
213-1882-091

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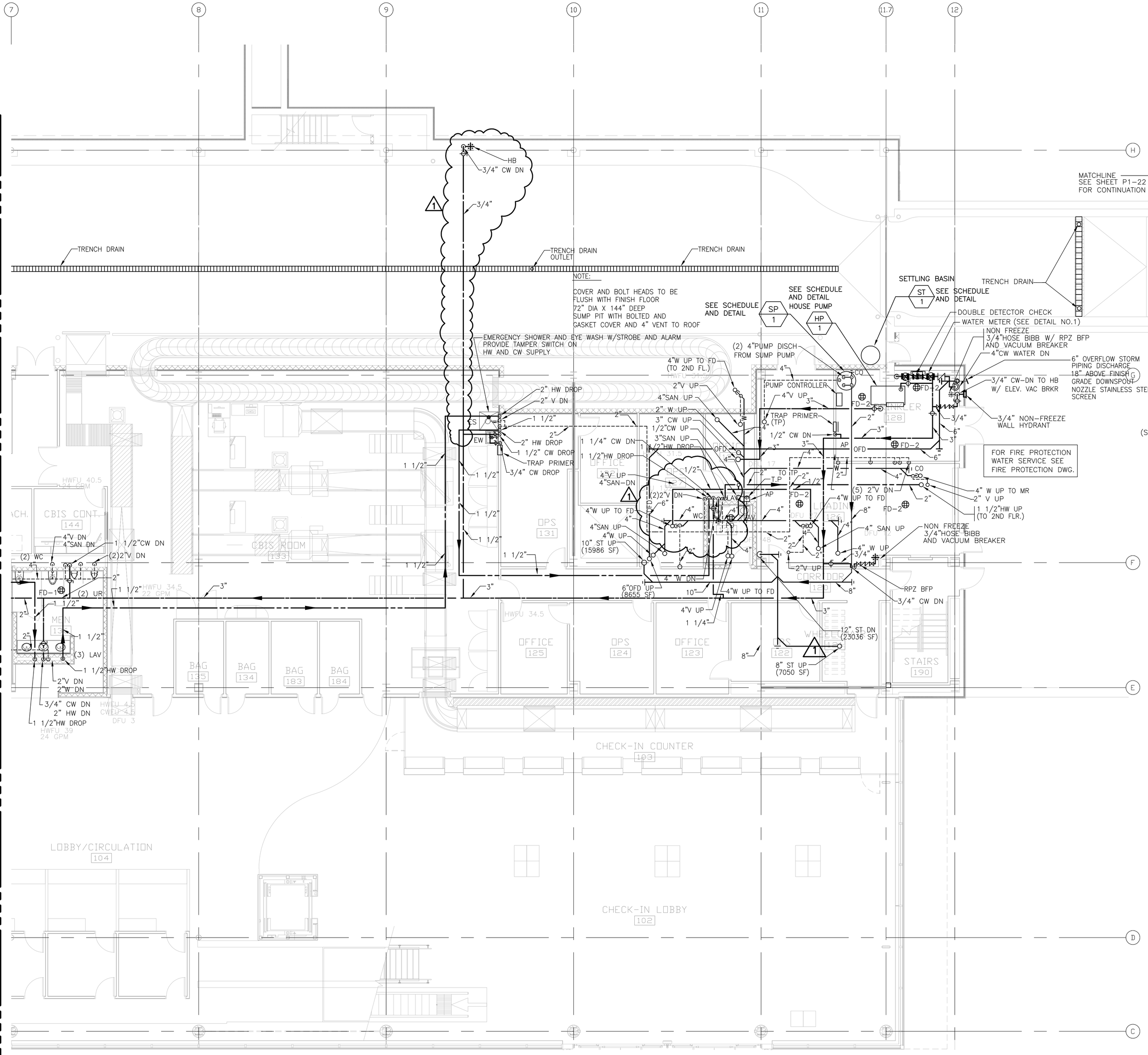
SHEET TITLE
ENLARGED
FIRST FLOOR
PLUMBING
PLAN AREA A

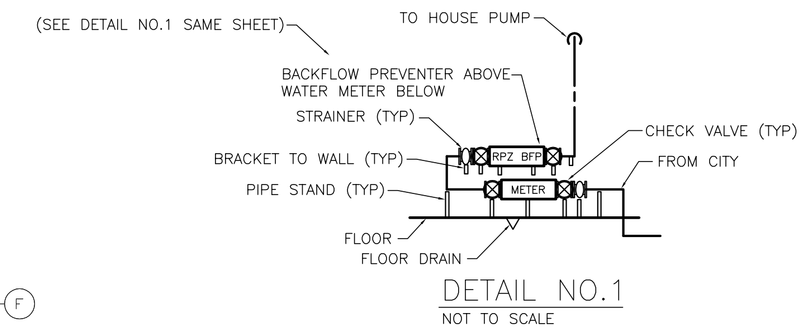
SHEET NUMBER
P110

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2035.00 Duluth Airport\5.0 CAD\(5.6) Plumbing\Dwgs\2035_P110.dwg Plotted on: 2/25/2011 7:23 AM Plotted by: Vokes, Henry

MATCHLINE - SEE SHEET P110





DETAIL NO.1
NOT TO SCALE

N

1 ENLARGED FIRST LEVEL FLOOR PLAN - AREA B
1/8" = 1'-0"

8' 4' 0 8' 16'
SCALE: 1/8" = 1'-0"

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Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

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	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

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DRAWN BY: SA
DESIGNED BY: SA

AEP PROJECT NUMBER
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SHEET TITLE

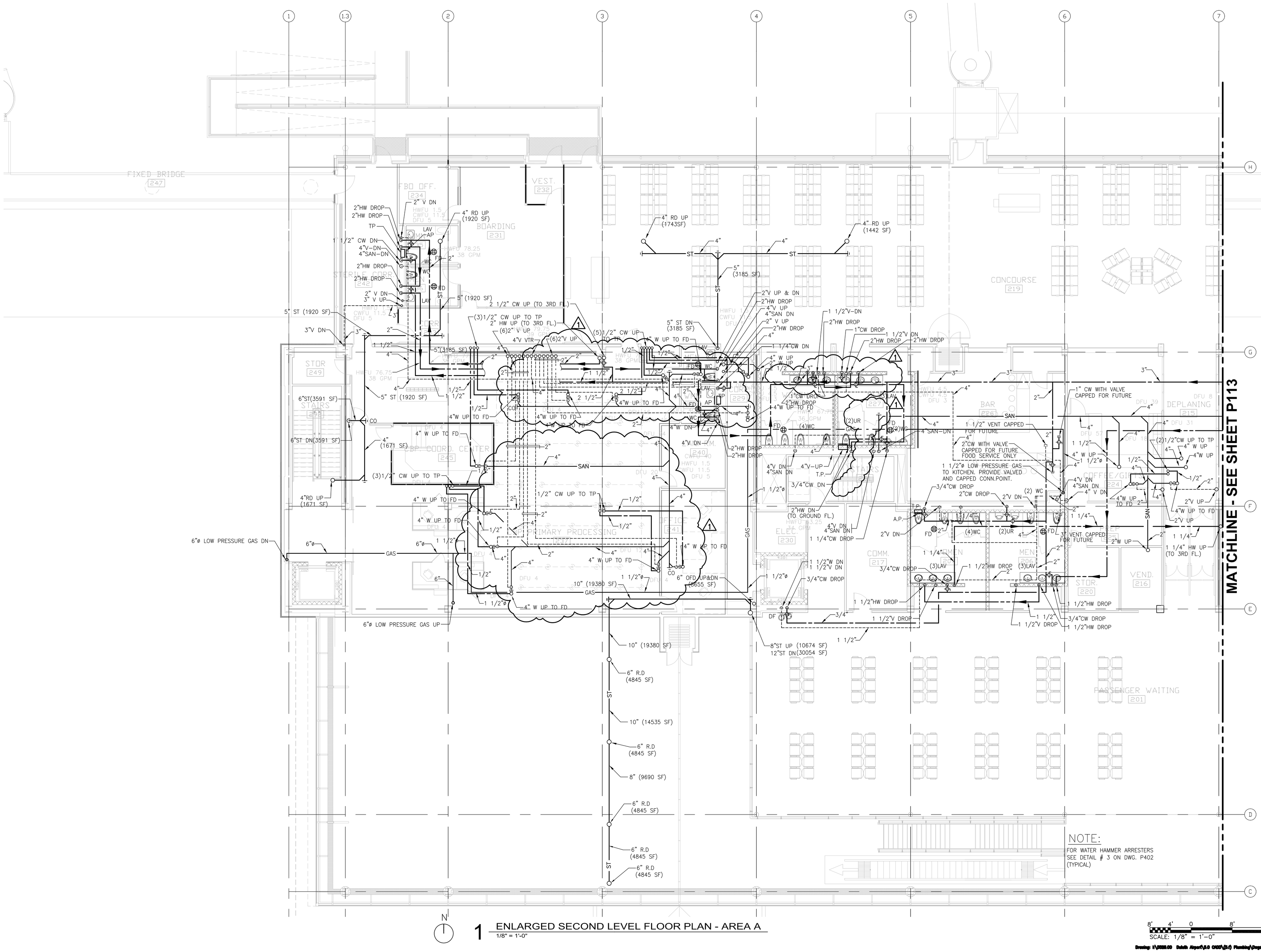
ENLARGED
FIRST FLOOR
PLUMBING
PLAN AREA B

SHEET NUMBER

P111

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2010.00 Duluth Airport\5.0 CADD\(5.0) Plumbing\Dwgs\2010_P111.dwg Plotted on: 2/25/2011 7:22 AM Plotted by: Valens, Henry



N

1 ENLARGED SECOND LEVEL FLOOR PLAN - AREA A
1/8" = 1'-0"

8' 4' 0 8' 16'
SCALE: 1/8" = 1'-0"

Drawing: I:\2010\10.00 Duluth Airport\8.0 CADD\8.0 Plumbing\Dwgs\2010_P112.dwg Plotted on: 2/24/2011 4:09 PM Plotted by: Velasa, Henry

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TEL: (218) 724-8578 / FAX: (218) 724-8717

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TEL: (218) 722-1056 / FAX: (218) 722-9306

M/E/P/FP Engineers:
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101 East Ridge Office Park, Suite 103, Danbury CT 06810
TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

ENGINEER CERTIFICATION

I hereby certify that the engineerinhg plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: RDJ
DRAWN BY: SA
DESIGNED BY: SA

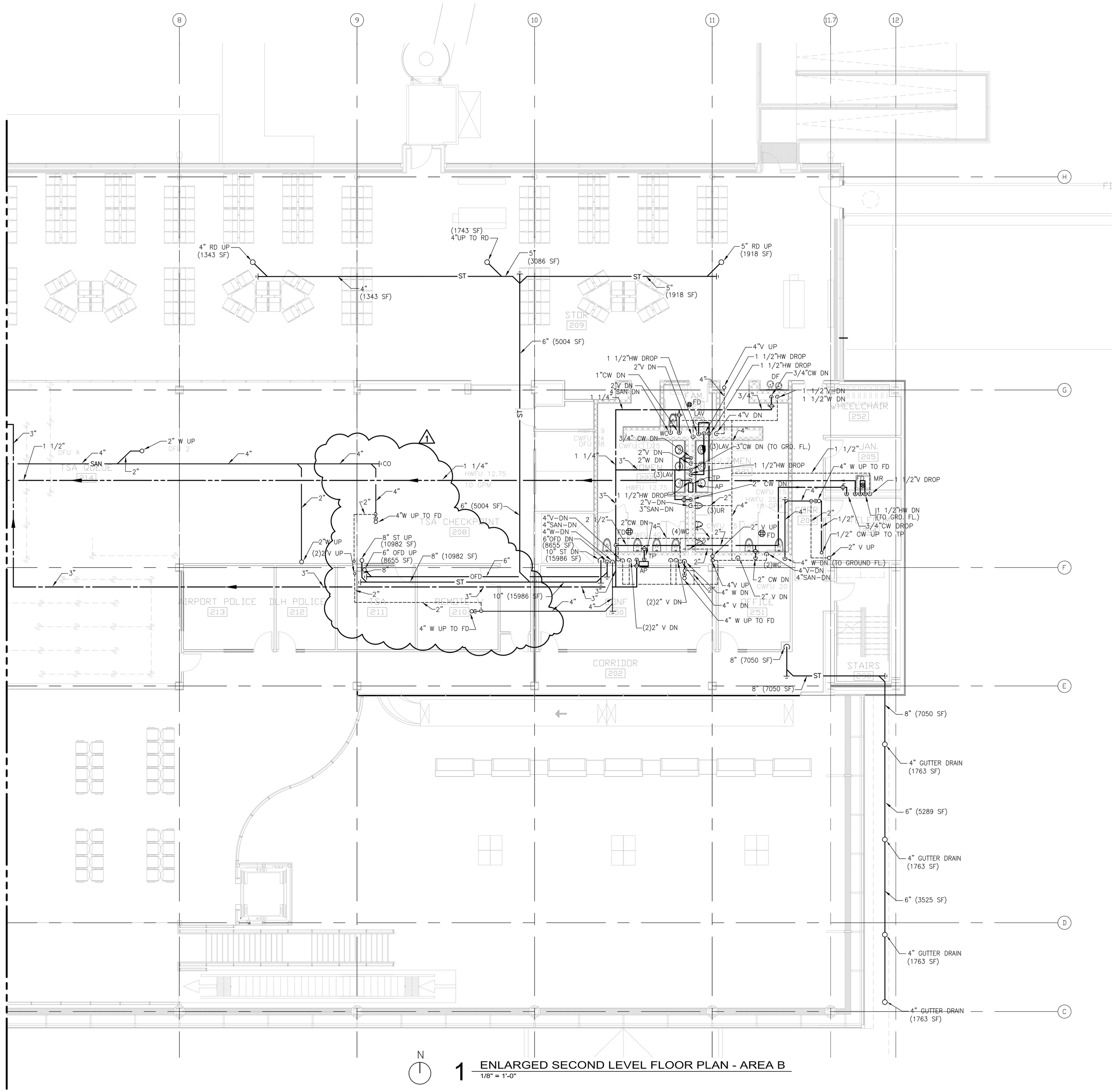
AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
ENLARGED SECOND FLOOR PLUMBING PLAN AREA A

SHEET NUMBER
P112

BID PACKAGE 2A
ADDENDUM 2



N

1 ENLARGED SECOND LEVEL FLOOR PLAN - AREA B
1/8" = 1'-0"

8' 4' 0 8' 16'
SCALE: 1/8" = 1'-0"

Drawing: I:\2008.00 Duluth Airport\5.0 CADD\(5.6) Plumbing\Dwgs\2008_P113.dwg Plotted on: 2/24/2011 4:07 PM Plotted by: Velma, Henry

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Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

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NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: RDJ
DRAWN BY: SA
DESIGNED BY: SA

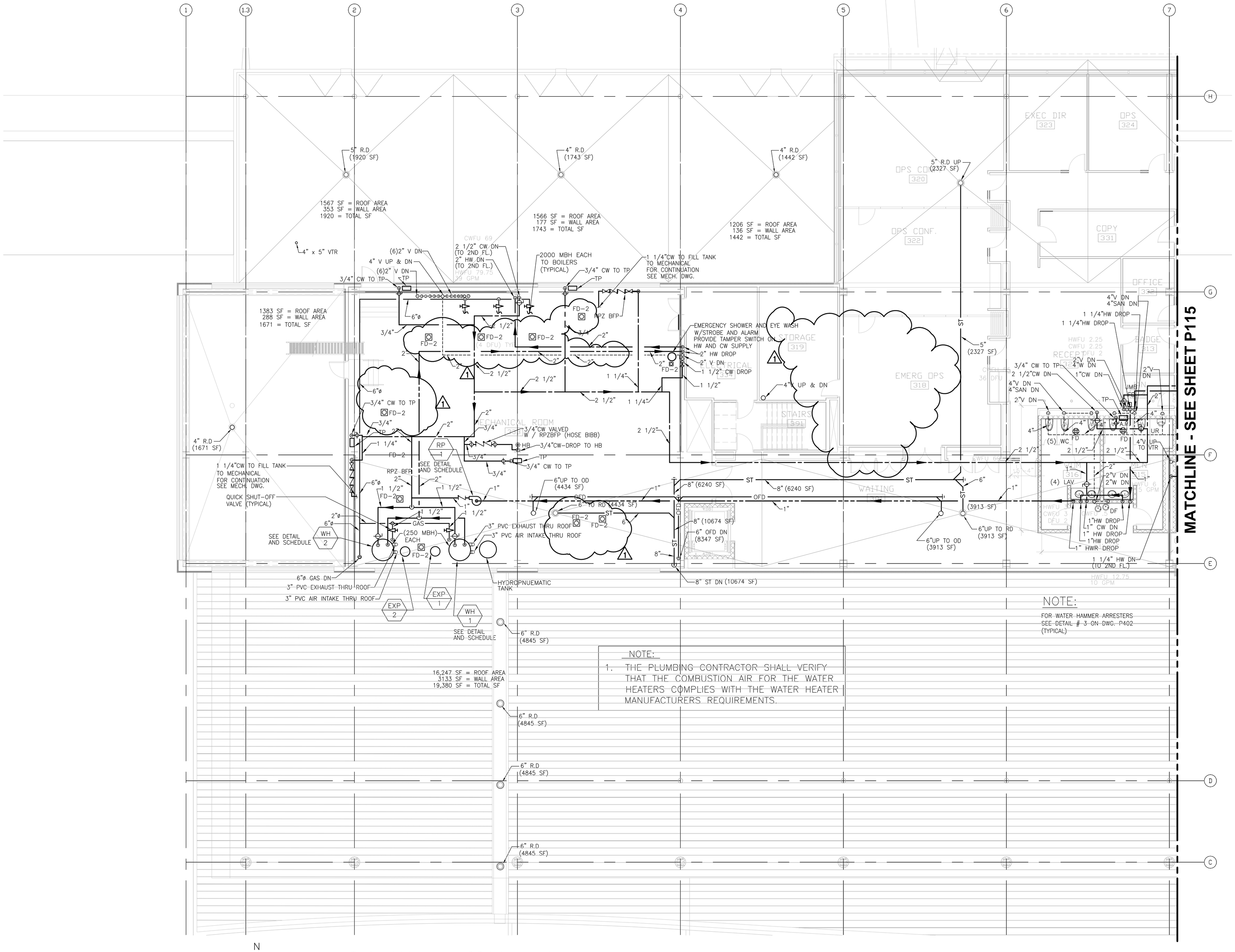
AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
ENLARGED
SECOND FLOOR
PLUMBING
PLAN AREA B

SHEET NUMBER
P113

BID PACKAGE 2A
ADDENDUM 2



N

1 ENLARGED THIRD LEVEL FLOOR PLAN - AREA A
1/8" = 1'-0"

8' 4' 0 8' 16'
SCALE: 1/8" = 1'-0"

Drawing: I:\2008.00 Duluth Airport\5.0 CADD\(5.6) Plumbing\Dwgs\2008_P114.dwg Plotted on: 2/24/2011 4:05 PM Plotted by: Velasa, Henry

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Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

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NO.	DESCRIPTION	DATE
1	**ADDENDUM 1**	**6.11.10**
	CONFORMANCE SET	**7.12.10**
3	**PERMIT REVISIONS**	**7.23.10**
	BUILDING PERMIT	**8.16.10**
	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: RDJ
DRAWN BY: HV/SA
DESIGNED BY: SA

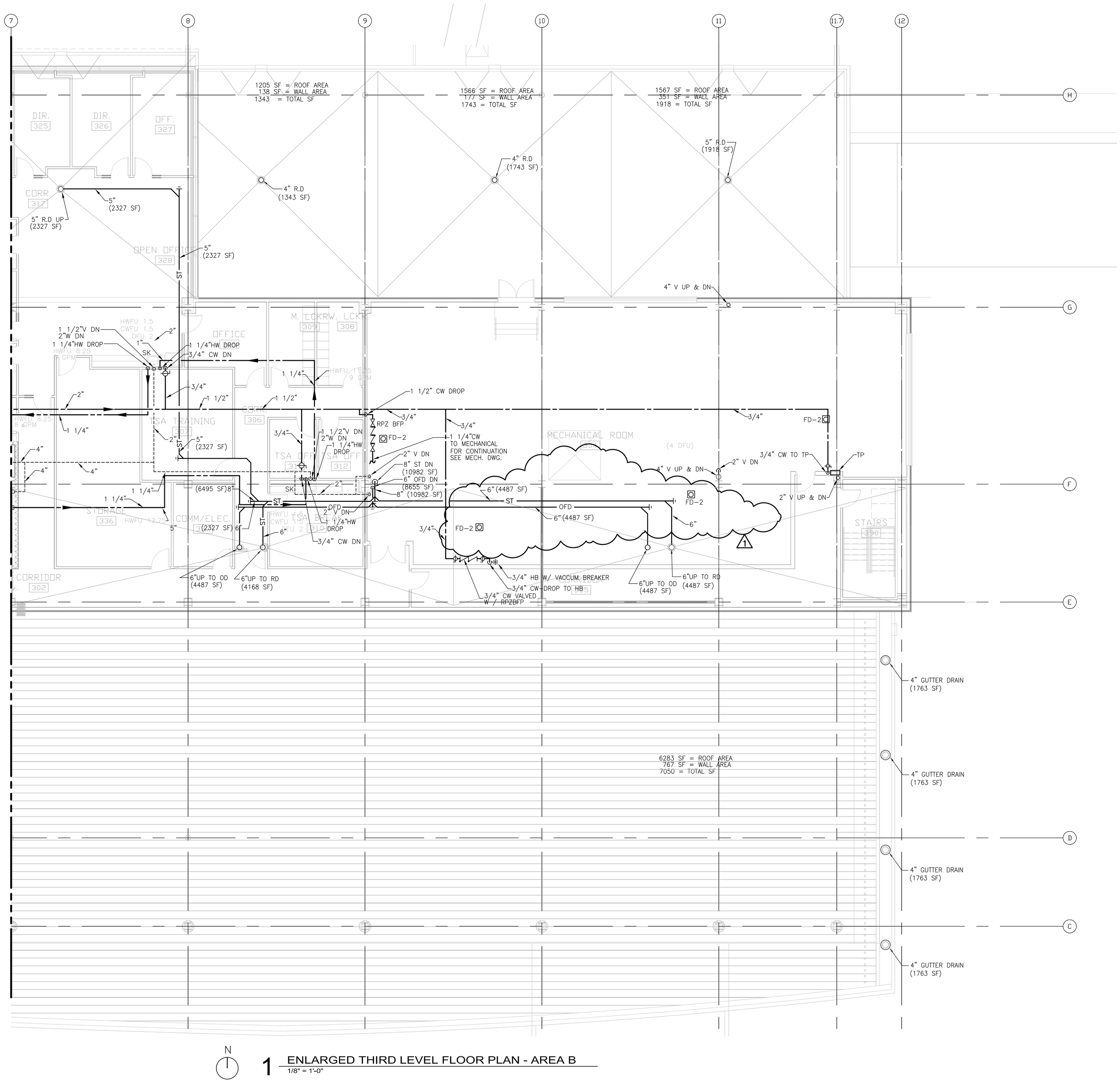
AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
ENLARGED THIRD FLOOR PLUMBING PLAN AREA A

SHEET NUMBER
P114

BID PACKAGE 2A
ADDENDUM 2



N

1 ENLARGED THIRD LEVEL FLOOR PLAN - AREA B
1/8" = 1'-0"

8' 4' 0 8' 16'
SCALE: 1/8" = 1'-0"

Drawing: I:\2035.00 Duluth Airport\5.0 CADD\(5.6) Plumbing\Dwgs\2035_P115.dwg Plotted on: 2/24/2011 4:03 PM Plotted by: Velasa, Henry

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Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

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NO.	DESCRIPTION	DATE
1	**ADDENDUM 1**	**6.11.10**
	CONFORMANCE SET	**7.12.10**
3	**PERMIT REVISIONS**	**7.23.10**
	BUILDING PERMIT	**8.16.10**
	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: RDJ
DRAWN BY: HV/SA
DESIGNED BY: SA

AEP PROJECT NUMBER
213-1882-091

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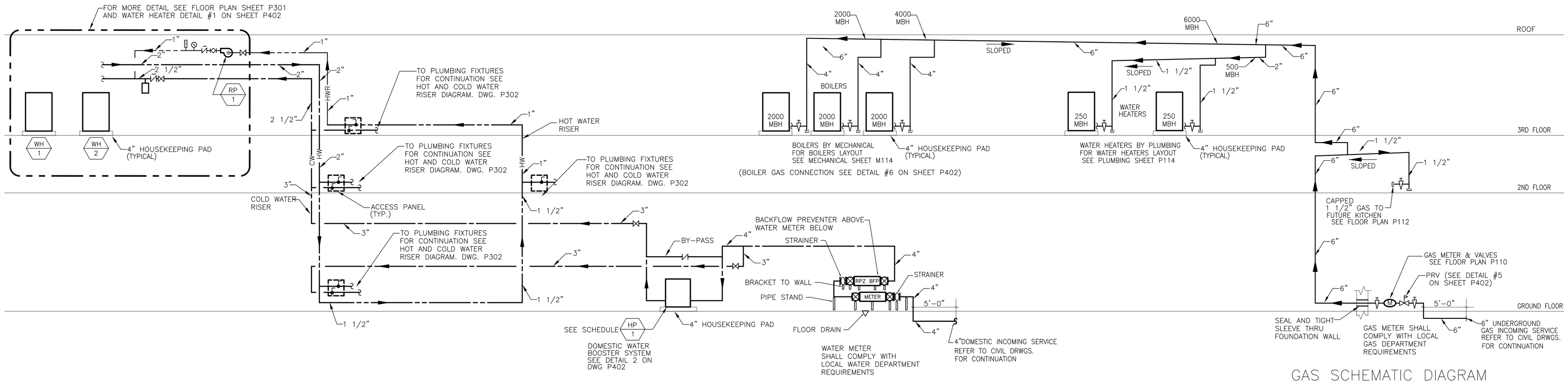
SHEET TITLE

ENLARGED THIRD FLOOR PLUMBING PLAN AREA B

SHEET NUMBER

P115

BID PACKAGE 2A
ADDENDUM 2

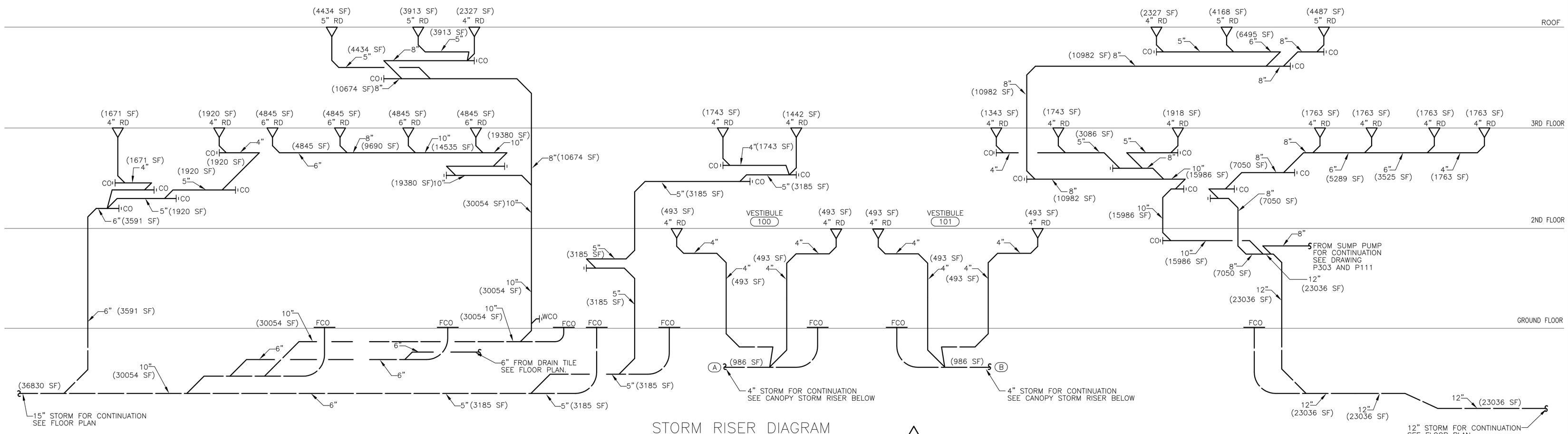


WATER SCHEMATIC DIAGRAM

NOT TO SCALE

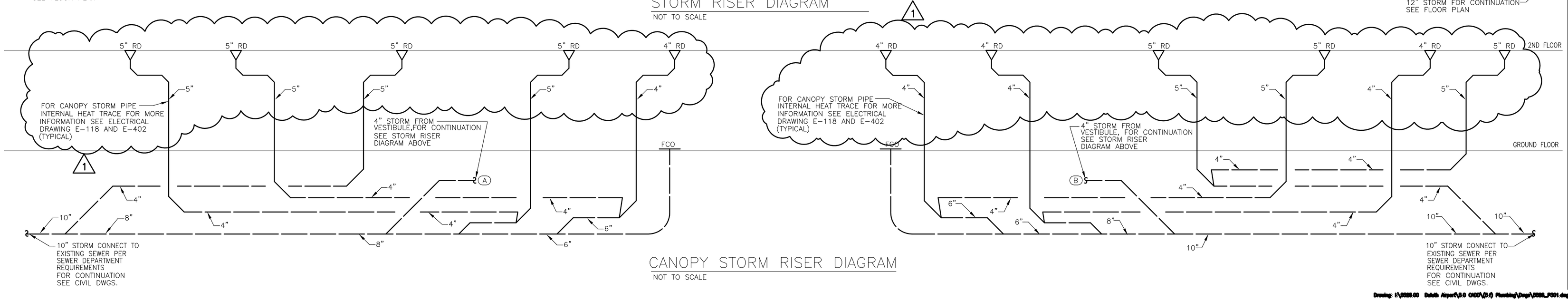
GAS SCHEMATIC DIAGRAM

NOT TO SCALE



STORM RISER DIAGRAM

NOT TO SCALE



CANOPY STORM RISER DIAGRAM

NOT TO SCALE

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3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: RDJ
DRAWN BY: SA
DESIGNED BY: SA

AEP PROJECT NUMBER
213-1882-091

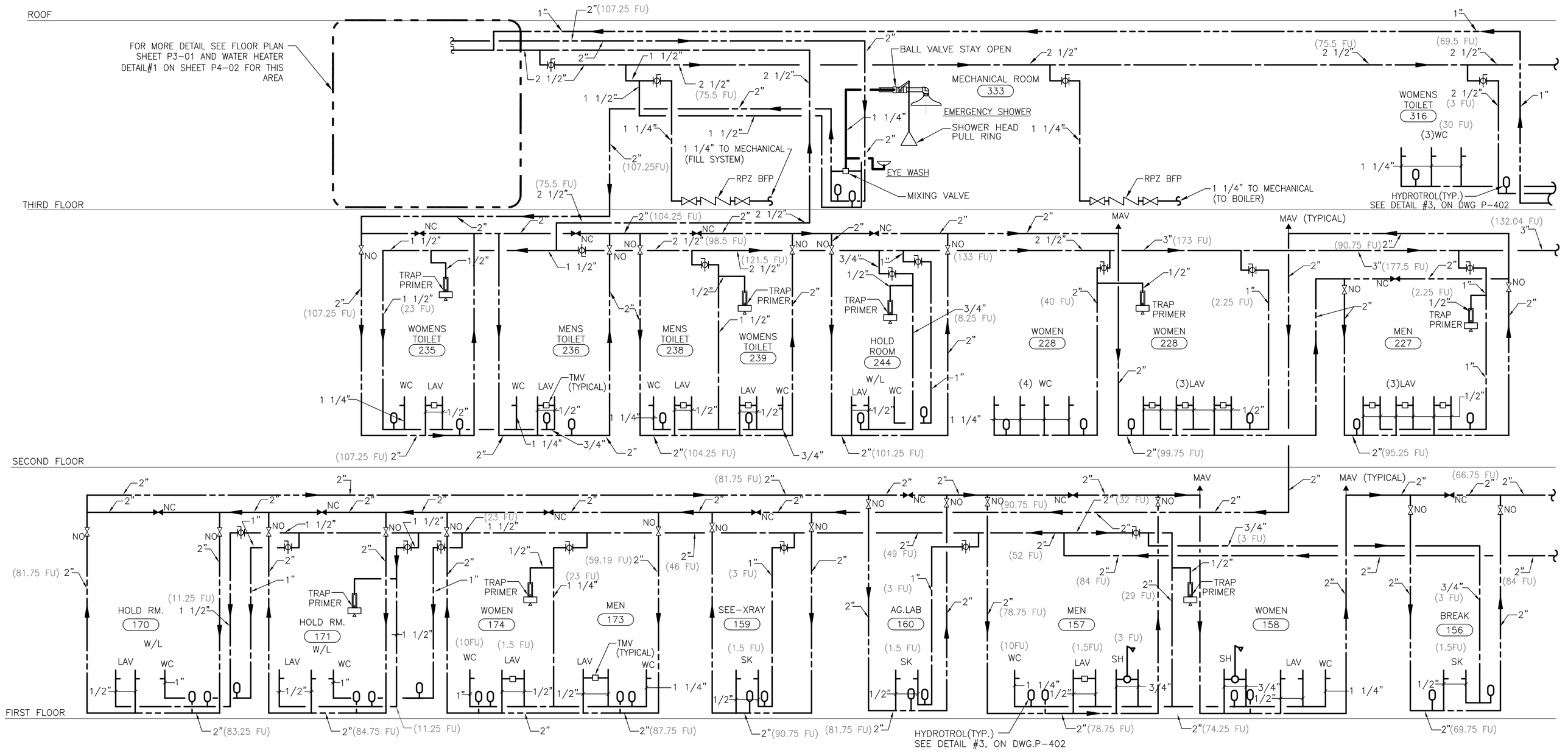
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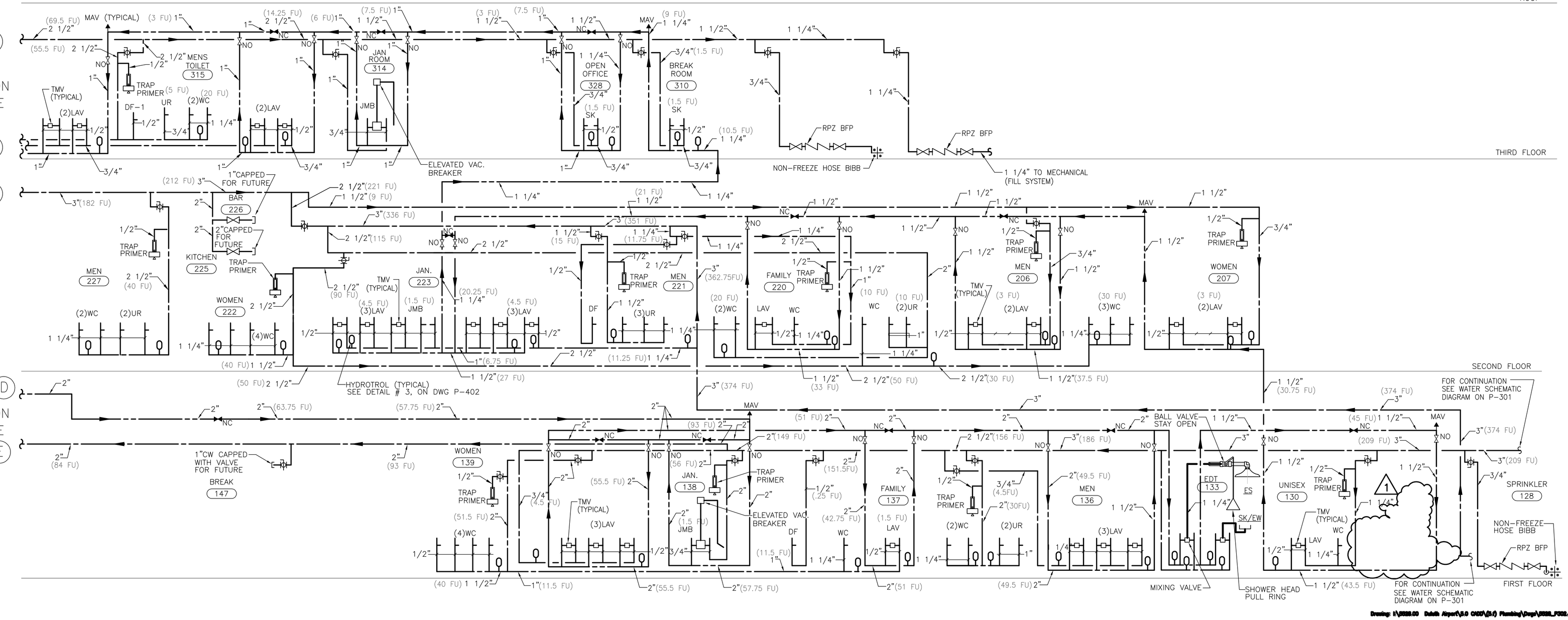
SHEET TITLE
WATER SCHEMATIC, GAS SCHEMATIC AND STORM RISER DIAGRAM

SHEET NUMBER
P301

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2008.00 Duluth Airport\8.0 CADD\(8.6) Plumbing\Dwgs\2008_P301.dwg Plotted on: 2/24/2011 4:00 PM Plotted by: Vekara, Nancy





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Signature:

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NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: RDJ
DRAWN BY: HV/SA
DESIGNED BY: SA

AEP PROJECT NUMBER
213-1882-091

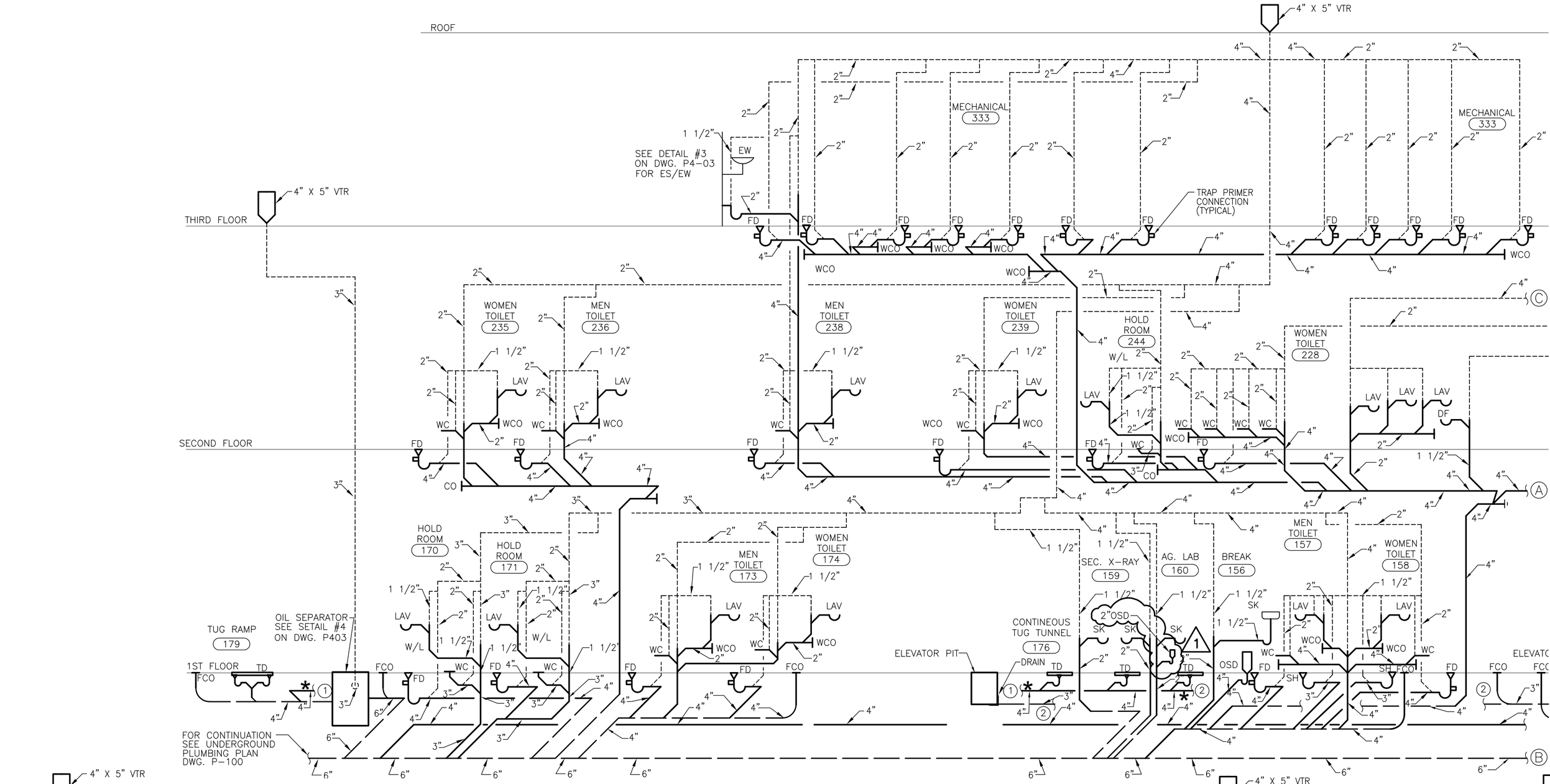
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SHEET TITLE
COLD & HOT WATER RISER DIAGRAM

SHEET NUMBER
P302

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2255.00 Duluth Airport\5.0 CADD\(5.6) Plumbing\Dwgs\2255_P302.dwg Plotted on: 2/24/2011 3:59 PM Plotted by: Vokes, Henry



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Signature:

Date: 08/16/10 Reg. No.: 21067

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1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
3	PERMIT REVISIONS	7.23.10
	BUILDING PERMIT	8.16.10
	RFP 017	9.24.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: RDJ
DRAWN BY: HV/SA
DESIGNED BY: SA

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

WASTE AND VENT
RISER DIAGRAM

SHEET NUMBER

P303

BID PACKAGE 2A
ADDENDUM 2

Drawing: I:\2008.00 Duluth Airport\8.0 CADD\8.0 Plumbing\Dwgs\2008_P303.dwg Plotted on: 2/24/2011 3:59 PM Plotted by: Vokes, Henry

VALVE SCHEDULE / 32° F TO 150° F SERVICE TEMPERATURE

BALL VALVES - 4 INCH AND SMALLER FULL PORT 600# WOG

MANUFACTURER	THREADED	SOLDER
CONBRACO (APOLLO)	70-100	70-200
CRANE	9302	9322
GRINNELL	3700	3700 SJ
RED-WHITE	5044 F.	5094 F.
STOCKHAM (1)	S216-BR-RT	S216-BR-RS
WATTS	B-6000	B-6001

"X" MEANS NOT AVAILABLE

BUTTERFLY VALVES - 4 INCH AND LARGER 175 PSI MAX.

MANUFACTURER	WAFER	LUG
KEYSTONE	AR-1	AR-2
BRAY	30-119	31-119
CENTERLINE	200-W	200-L

FOR COPPER GRV'D. CONNECTIONS, USE VICTAULIC SERIES 608 300 PSI MAX.

SWING CHECK VALVES - 2 INCH AND SMALLER

MANUFACTURER	CLASS 125 THREADED	CLASS 125 SOLDER	CLASS 150 THREADED	CLASS 150 SOLDER
CRANE	37	1342	137	X
GRINNELL	3300	3300SJ	3320	X
HAMMOND	IB940	IB941	IB946	IB945
MILWAUKEE	509	1509	510	1510
STOCKHAM (1)	B-319	B-309	B-321	X

FOR GROOVED CONNECTIONS, USE VICTAULIC SERIES 712

SWING CHECK VALVES - 2 1/2 INCH AND LARGER - FLANGED

MANUFACTURER	CLASS 125	CLASS 250
CRANE	373	
GRINNELL	X	
HAMMOND	IR1124	
MILWAUKEE	F-2974	
STOCKHAM (1)	G-931	

FOR GROOVED CONNECTIONS, USE VICTAULIC SERIES 712

"X" MEANS NOT AVAILABLE

PLUMBING MATERIALS SPECIFICATION

TYPE of MATERIAL	SIZE	SUSPEN. DRAINS & STACKS	SUSPEN. VENTS & STACKS	SUSPEN. STORM DRAINS & DOWNSPOUTS	SUSPEN. DOM. WTR. DISTRIB. TO 100#	BURIED DOM. WTR. DISTRIB. 51# & 400#	BURIED FIRE PROT. SERVICE	BURIED BLDG. SEWER	BURIED BLDG. DRAINS	BURIED STORM	SUB-SOIL DRAINAGE
CAST IRON SOIL PIPE & FITTINGS ASTM A74	2"-15" dia.										
CAULKED JOINTS w\ LEAD & OAKUM FS QQ-C-40		*	*	*			*	*			
PUSH-ON JOINTS w\ ASTM C564 GASKETS							*	*			
GALV. STL. PIPE ASTM A53 & DRAINAGE FITTINGS											
CUT-GROOVED COUPLINGS & FTTGS.	2"-24" dia.			*							
THREADED CAST IRON ASTM B16.12	1 1/2"-2 1/2" dia.	*	*								
COPPER PIPE HARD DRAWN TYPE M ASTM B88 w\											
CAST ASTM B16.23 or WROT ASTM B16.29											
COPPER SOLDER JOINT DRAINAGE FITTINGS	1 1/2"-2 1/2" dia.	*	*								
COPPER PIPE HARD DRAWN TYPE K ASTM B88	1 1/2"-2 1/2" dia.				*						
CAST IRON HUB PIPE AND FITTINGS ASTM A888-07a	2 1/2" AND LARGER	*	*	*							
VITRIFIED CLAY PIPE & FITTINGS ASTM C700 w\											
COMPRESSION GASKET JOINTS ASTM C425	6"-24" dia.										
REINFORCED CONCRETE PIPE ASTM C76 w\											
RUBBER GASKET JOINTS ASTM C443	14"-54" dia.							*			
DUCTILE IRON PIPE & FITTINGS AWWA C151											
CEMENT LINED AWWA A21.4, w\ PUSH-ON or											
MECHANICAL JOINTS AWWA A21.11	3"-24" dia.				*	*					
GALV. STL. PIPE ASTM A53 Sch.40 w\ GALV. 125#											
THREADED MALLEABLE IRON FITTINGS ANSI B16.3	to 2 1/2" dia.			*							
FLANGED CAST IRON FITTINGS ANSI B16.1	3"-12" dia.			*							
COPPER PIPE HARD DRAWN TYPE L ASTM B88 w\											
CAST ASTM B16.18 or WROT ASTM B16.22											
COPPER SOLDER JOINT PRESSURE FITTINGS	to 2 1/2" dia.			*							
ROLL-GROOVED COPPER FITTINGS & COPPER											
PLATED DUCTILE IRON COUPLINGS	3"-6" dia.			*							
T-DRILL EXTRUDED CONNECTIONS	1 1/2"-6" dia.			*							
GALV. STL. PIPE ASTM A53 Sch.40 w\ GALV. 250#											
THREADED MALLEABLE IRON FITTINGS ANSI B16.3	to 2 1/2" dia.				*						
FLANGED CAST IRON FITTINGS ANSI B16.1	3"-12" dia.				*						
PREFORATED SCHEDULE 40 PVC	4"-8" dia.								*		
POLYVINYL CHLORIDE (PVC) PLASTIC PIPE (TYPE DWV PIPE).		*	*	*				*	*		
ASTM F 891	6"-12" dia.										
POLYVINYL CHLORIDE (PVC) PLASTIC FITTINGS		*	*	*				*	*		
ASTM D 2464											

FIXTURE ROUGH-IN PIPE SIZES

FIXTURE	TAG	RISER AND AIR CHAMBER FOR FIXTURE HW	RISER AND AIR CHAMBER FOR FIXTURE CW	FIXTURE NIPPLE (VALVE INLET) HW	FIXTURE NIPPLE (VALVE INLET) CW	CODE REQUIREMENTS WASTE	CODE REQUIREMENTS VENT	ELEC.	MFG.	FLOW RATE	(1) MODEL SEE SPEC	REMARKS
WATER CLOSET	WC-1	-	1 1/4"	-	1"	4"	2"	120V	SEE SPEC.	1.28 GPF		WALL HUNG, ELONGATED BOWL, OPEN FRONT SEAT, NO COVER HEAVY DUTY CHAIR CARRIER SENSOR TYPE FLUSH VALVE, HARD WIRED TO TRNSFORMER
WATER CLOSET (ADA)	WC-2	-	1 1/4"	-	1"	4"	2"	120V	SEE SPEC.	1.28 GPF		WALL HUNG, ELONGATED BOWL, OPEN FRONT SEAT, NO COVER HEAVY DUTY CHAIR CARRIER, SENSOR TYPE FLUSH VALVE, HARD WIRED TO TRANSFORMER
WATER CLOSET/LAV	W/L	3/4"	1 1/4"	1/2"	1/2"	4"	2"	-	WILLOUGHBY		ECF-3696	ADA COMPLIANT ON SIDE, USE MODEL NUMBER ECF-3696 (L OR R) ON-BPH-PM2-PBH-OV-TW4-LF-RTH FLUSH POWER PURGE SENSOR LOCATE OUTSIDE ROOM.
LAVATORY	LAV-1	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	-	SEE SPEC.	0.5 GPF		ELECTRONIC FAUCET AND SOAP DISPENSOR H&C MIXING FAUCET
URINAL	UR-1	-	1"	-	3/4"	2"	1 1/2"	120V	SEE SPEC.	0.125 GPF		WALL HUNG, HEAVY DUTY CARIER, SENSOR TYPE FLUSH VALVE HARD WIRED TO TRANSFORMER
URINAL (ADA)	UR-2	-	1"	-	3/4"	2"	1 1/2"	120V	SEE SPEC.	0.125 GPF		WALL HUNG, HEAVY DUTY CARIER, SENSOR TYPE FLUSH VALVE HARD WIRED TO TRANSFORMER
SINK	SK-1	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	-	SEE SPEC.	1.1 GPM		(1)
SINK		3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	-	SEE SPEC.	1.1 GPM		
SINK	SK-2	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	-	SEE SPEC.	1.1 GPM		
DRINKING FOUNTAIN	DF-1	-	3/4"	-	1/2"	2"	1 1/2"	-	SEE SPEC.			
JANITOR'S MOP BASIN	JMB	3/4"	3/4"	1/2"	1/2"	3"	2"	-	SEE SPEC.	1.1 GPM		
HOSE BIBB	HB	-	1"	-	3/4"	-	-	-	-		-	WITH CODE REQ'D. BACKFLOW PREVENTER
TRAP PRIMER	TP	-	1/2"	-	-	-	-	-	PRECISION PLUMBING PRODUCTS		MODEL P1 or P2	RUN 1/2" COLD WATER TO EACH FLOOR DRAINS INCLUDE DISTRIBUTION UNITS AS REQUIRED.
EMER. SHOWER / EYEWASH (ADA)	ES/EW	2"	1 1/2"	1 1/4"	1 1/4"	2"	2"	-				
SHOWER	SH	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	-	SEE SPEC.	1.5 GPM		

DOMESTIC WATER HEATER SCHEDULE

HEATER TAG	SERVICE	LOCATION	STORAGE CAPACITY	ELECTRICAL PUMP	ELECTRICAL ELEMENT KW	ELECTRICAL BURNER	ELECTRICAL BLOWER	ELECTRICAL VOLTS	ELECTRICAL PHASE	GAS BTU/HR INPUT	RECOVERY RATE AT 100 DEG. F TEMP. RISE	STORED WATER TEMP. F.	BASIS OF DESIGN	MODEL NO.	COMMONS
WH-1	DOMESTIC WATER HEATING	3RD FLOOR MECHANICAL ROOM	100	-						250,000	294	140	LAARS	LUHE-100T-250E-3N(A)	99.1% EFFICIENT
WH-2			100	-						250,000	294			LUHE-100T-250E-3N(A)	

PUMP SCHEDULE

	SERVICE	LOCATION	SYSTEM GPM	TOTAL DYNAMIC HEAD	PUMP GPM	MOTOR DATA HP	MOTOR DATA VOLTS	MOTOR DATA PH	MOTOR DATA RPM	MANUFACTURER & MODEL	REMARKS
HP-1	HOUSE PUMP	GROUND FLOOR	145	92	73	5	460	3	3450	SYNCROFLO 55TA354V-VFD	TRIPLEX BOOSTER SYSTEM U.L./C-U.L. SYSTEM FLOW 145 GPM BOOST PRESSURE 40 PSIG INCLUDING A SUCTION PRESSURE OF 38 PSIG MIN.
				92	73	5	460	3	3450		
				92	37	3	460	3	3450		
RP-1	120° HOT WATER RECIRCULATING PUMP	THIRD FLOOR	6	31		1/6	115		3300	B&G PL-36	IN-LINE
PP-1	ELEVATOR PIT PUMP	GROUND FLOOR	34	20	-	1/2	208	1		ZOELLER PUMP CO, 4282	SUBMERSIBLE, SUMP PUMP SEE DETAIL #11 ON DWG. P402 W/ OIL MINDER ON EMERGENCY POWER
SP-1	DUPLEX SUBMERSIBLE SUMP PUMP	GROUND FLOOR	800	30	800	10	460	3	1750	FTI FTI150DLF67.54	DUPLEX SUBMERSIBLE SUMP PUMP DUPLEX VARIABLE-SPEED CONTROL SYSTEM TO RESPOND TO THE FLOW CHANGES, PROVIDE SUBMERSIBLE TRANSMITTER, EMERGENCY POWER

(OTHER ACCEPTABLE MANUFACTURES ARE BELL AND GOSSETT,METROPOLITAN AND CANARIIS)

MIXING VALVE SCHEDULE

TAG	LOCATION	SERVICE	IN HOT	IN COLD	MIXED OUT	GPM MIN.	GPM MAX	COMMENTS	BASIS OF DESIGN
TMV	SINK	LAV	120	40	110	0.1	0.5	PARRALEL PIPED	SYMMONS 5-110-CK

GREASE INTERCEPTOR SCHEDULE

TAG NO.	SERVICE	LOCATION	MANUFACTURER & MODEL #	REMARKS
GI 1	GREASE INTERCEPTOR	GROUND FLOOR	J.R. SMITH MODEL # 8050 50 GPM FLOW, 100 LB. GREASE CAPACITY	

DRAIN SCHEDULE

TAG	SERVICE	DESCRIPTION	JR SMITH NO.	ACCEPTABLE MANUFACTURES
FD-1	FINISHED AREA FLOOR DRAIN	NICKLE BRONZE VANDAL PROOF TOP	2010	WADE OR ZURN
FD-2	MECHANICAL ROOMS	FLOOR SINK W/ 1/2" GRATE	2270	WADE OR ZURN
FD-3		RECESSED GRATE		
RD-1	ROOF DRAIN	CAST IRON WITH FLASHING CLAMP & CAST IRON DOME	1015-ARC	WADE OR ZURN
RD-2	ROOF DRAIN	CAST IRON WITH FLASHING CLAMP, CAST IRON DOME & INTERNAL DAM	-	WADE OR ZURN
RD-3	ROOF DRAIN			
TD	TRENCH DRAIN		TRENCH 9818 GRATE 9812-CI	POLYDRAIN
FS		FLOOR SINK		
FD-4	ELEVATOR DRAIN	CAST IRON WITH FLASHING CLAMP	1520	WADE OR ZURN

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ENGINEER CERTIFICATION

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Print Name: Douglas C. Mass

Signature:

Date: 08/16/10 Reg. No.: 21067

REVISIONS

NO.	DESCRIPTION	DATE
1	**ADDENDUM 1**	**6.11.10**
	CONFORMANCE SET	**7.12.10**
3	**PERMIT REVISIONS**	**7.23.10**
	BUILDING PERMIT	**8.16.10**
	RFP 017	9.24.10
	100% REVIEW	12.17.10
	BID PACKAGE 2A	01.24.11
1	BP2A ADDENDUM 1	2.25.11

DATE ISSUED: 02-25-11
REVIEWED BY: RDJ
DRAWN BY: HV
DESIGNED BY: SA

AEP PROJECT NUMBER
213-1882-091

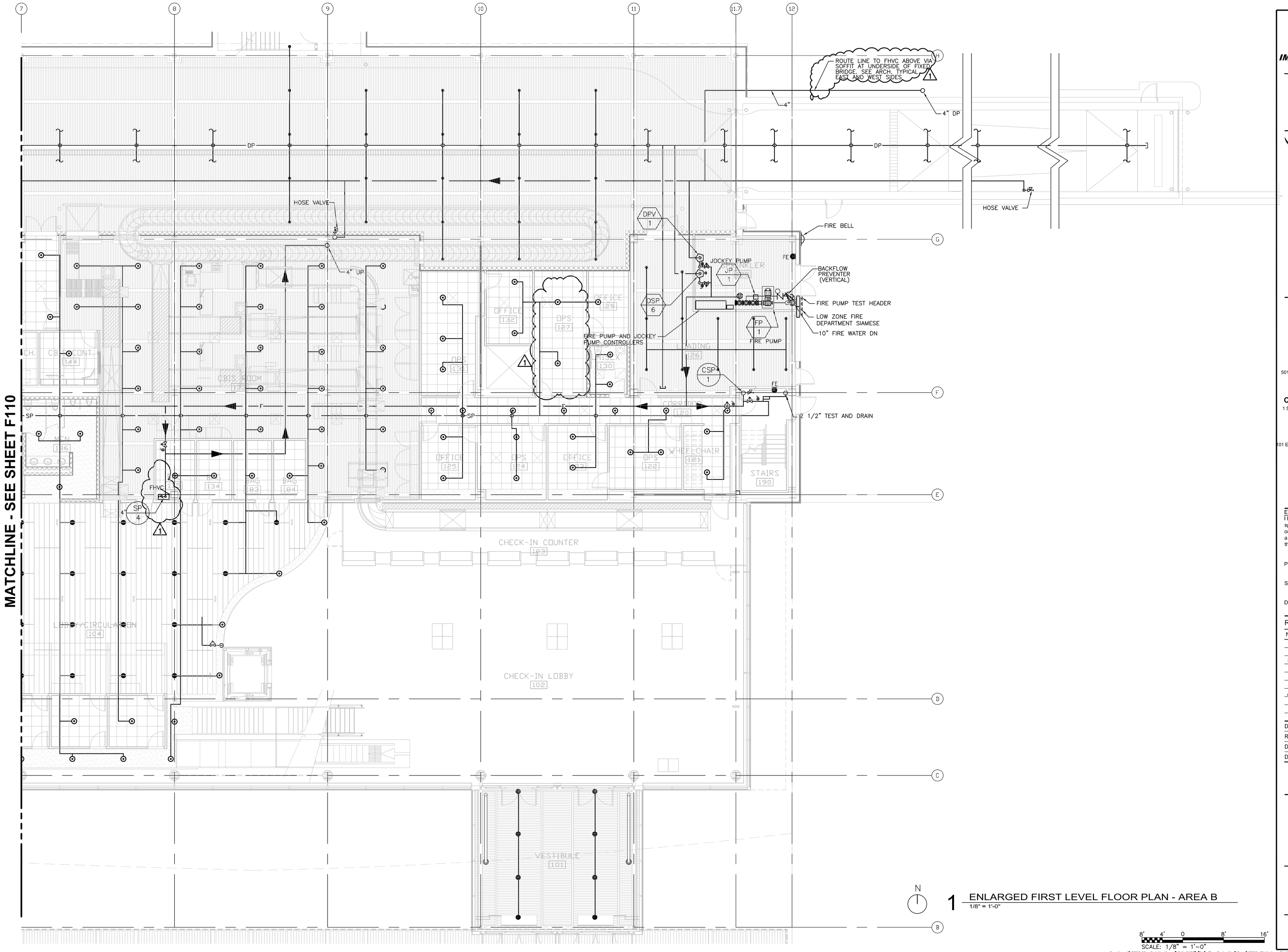
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SHEET TITLE
PLUMBING SCHEDULES

SHEET NUMBER
P501

BID PACKAGE 2A ADDENDUM 2

Drawing: I:\2008.00 Duluth Airport\8.0 CADD\(8.6) Plumbing\Dwgs\2008_P501.dwg Plotted on: 2/25/2011 7:49 AM Plotted by: Vokes, Nancy



1 ENLARGED FIRST LEVEL FLOOR PLAN - AREA B
1/8" = 1'-0"

N

8' 4' 0 8' 16'
SCALE: 1/8" = 1'-0"

Drawing: I:\2008.00 Duluth Airport\8.0 CADD\(8.4) Fire Protection\Dwgs\ENSR_F111.dwg Plotted on: 2/25/2011 7:45 AM Plotted by: Vaissa, Henry

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Signature:

Date: 08/16/10 Reg. No.: 21067

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REVIEWED BY: RDJ
DRAWN BY: HV
DESIGNED BY: SA

AEP PROJECT NUMBER
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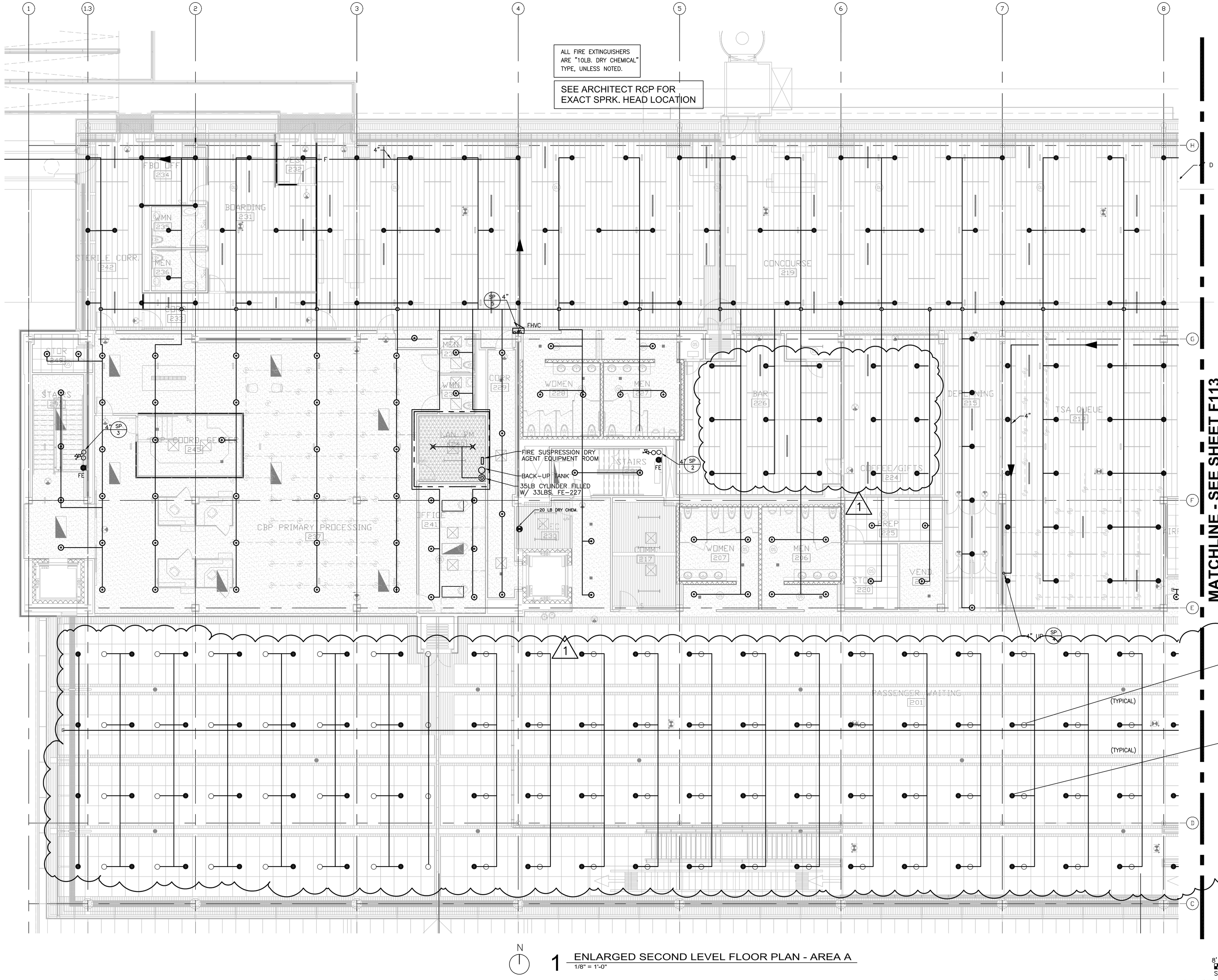
SHEET TITLE

ENLARGED FIRST FLOOR FIRE PROTECTION PLAN AREA B

SHEET NUMBER

F111

BID PACKAGE 2A
ADDENDUM 2



N

1 ENLARGED SECOND LEVEL FLOOR PLAN - AREA A
1/8" = 1'-0"

8' 4' 0 8' 16'
SCALE: 1/8" = 1'-0"

Drawing: I:\2008.00 Duluth Airport\8.0 CAD\(D.4) Fire Protection\Dwgs\2008_F112.dwg Plotted on: 2/25/2011 7:40 AM Plotted by: Vetens, Henry

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1	BP2A ADDENDUM 1	2.25.11

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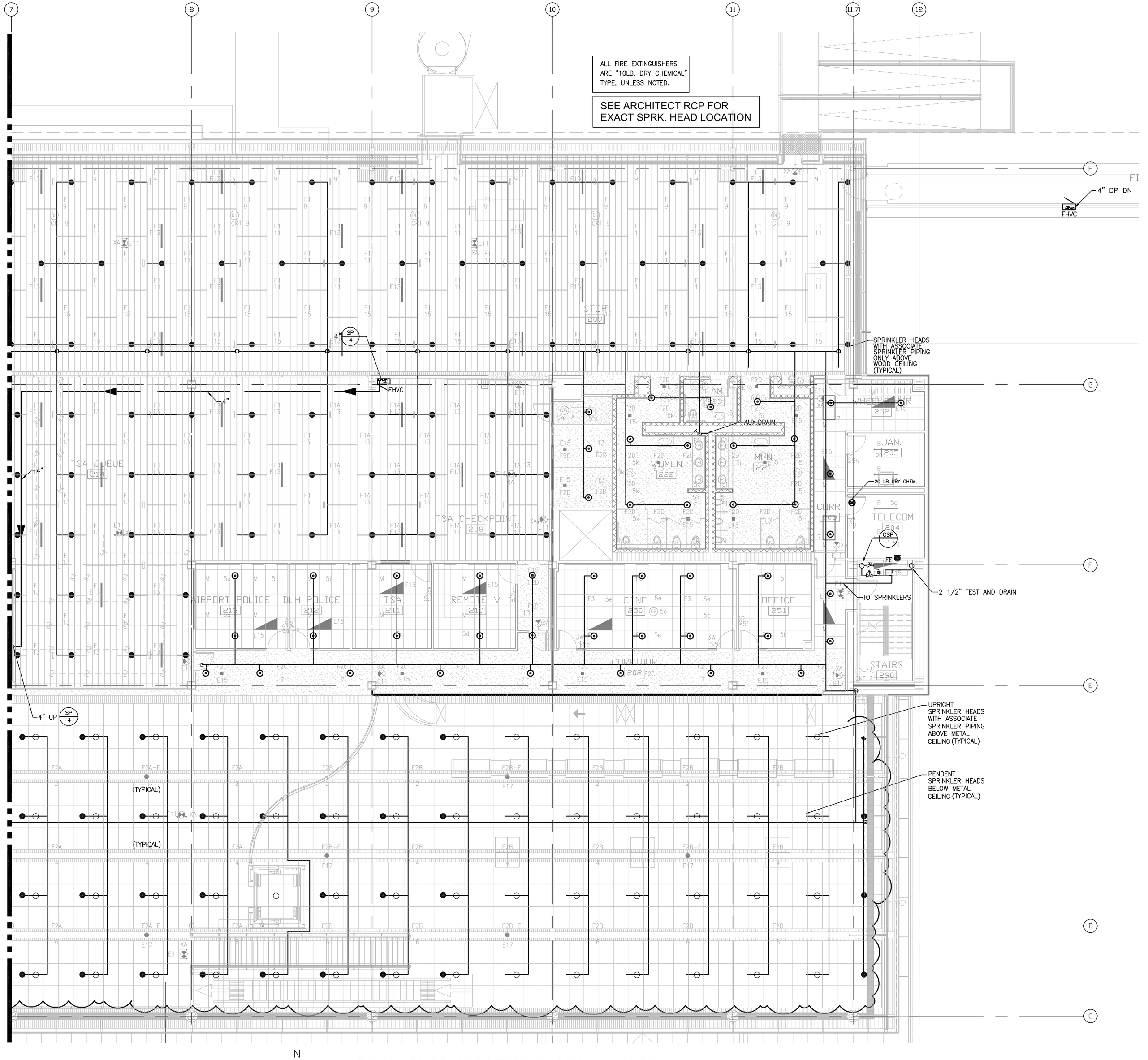
AEP PROJECT NUMBER
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SHEET TITLE
ENLARGED SECOND FLOOR FIRE PROTECTION PLAN AREA A

SHEET NUMBER
F112

BID PACKAGE 2A
ADDENDUM 2



N

1 ENLARGED SECOND LEVEL FLOOR PLAN - AREA B
1/8" = 1'-0"

8' 4' 0 8' 16'
SCALE: 1/8" = 1'-0"

Drawing: I:\2008.00 Duluth Airport\8.0 CADD\[8.4] Fire Protection\Dwgs\2008_F113.dwg Plotted on: 2/28/2011 7:38 AM Plotted by: Velasa, Henry

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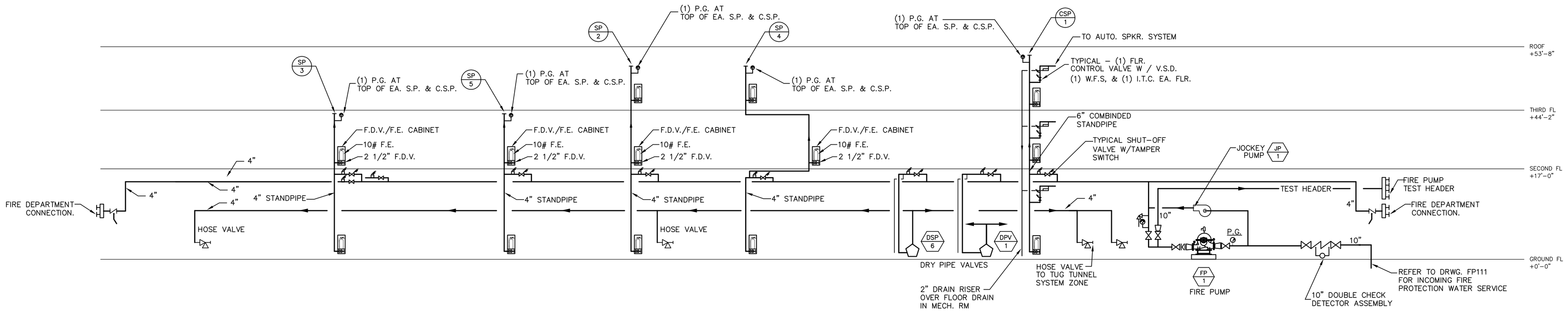
SHEET TITLE
ENLARGED SECOND FLOOR FIRE PROTECTION PLAN AREA B

SHEET NUMBER
F113

BID PACKAGE 2A
ADDENDUM 2

PUMP SCHEDULE

PUMP TAG	SERVICE	LOCATION	GPM EACH PUMP	BOOST PSI	SHUT OFF PSI	MOTOR DATA				MANUFACTURER	REMARKS
						HP	VOLTS	PH	RPM		
FP-1	FIRE PUMP	GROUND FLOOR	1250	115	130	125	480	3	3550	PEERLESS MODEL # 6AEF10	130 PSI CHURN
JP-1	JOCKY PUMP	GROUND FLOOR	7			10	480	3			
				1							



1 FIRE PROTECTION RISER DIAGRAM
SCALE: NONE

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1	BP2A ADDENDUM 1	2.25.11

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AEP PROJECT NUMBER
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SHEET TITLE
FIRE PROTECTION SCHEDULES AND RISER DIAGRAM

SHEET NUMBER
F501

BID PACKAGE 2A
ADDENDUM 2

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