



ADDENDUM NO. 1 - OUTLINE AND SUMMARY INFORMATION

Project Name: Fieldhouse Fire Alarm Replacement PPA No.: 23-0928
Location: Montana State University Date: March 07, 2025

To: *All Plan Holders of Record*

*The Plans and Specification prepared by **Morrison Maierle, Inc** dated **January 29, 2025**, shall be clarified and added as follow. The bidder proposes to perform all the following clarifications or changes. It is understood that the Base Bid shall include any modification of Work or Additional Work that may be required by reason of the following change or clarifications.*

The Bidders are to acknowledge the receipt of this Addendum by inserting its number and date into their Bid Forms. Failure to acknowledge may subject the Bidder to disqualification and rejection of the bid. This Addendum forms part of the Contract Documents as if bound therein and modifies them as follows:

I. PRIOR APPROVALS

A. None

II. AMENDMENTS TO THE PROJECT MANUAL

A. None.

III. AMENDMENTS TO THE DRAWINGS

A. Replace existing Sheet FA0.1 with updated attached Sheet FA0.1.

B. Replace existing Sheet FA0.2 with updated attached Sheet FA0.2.

C. Add new Sheet FA8.1.

D. Add new Sheet FA8.2.

E. Add new Sheet FA8.3.

IV. ATTACHMENTS

A. Pre-Bid Meeting Attendance List.

B. Pre-Bid Meeting Questions.

C. Fieldhouse Events Schedule.

D. Revised Sheets.

END

Sign-in Sheet

Date: 3/4/2025

PPA No.: 23-0928

Project Name: Brick Breeden
Fire Alarm

Meeting Time & Location: 11:00 am at the Lobby of the Brick Breeden

From:

Pre-Bid Meeting Sign-in Sheet:

NAME	COMPANY	PHONE	E-MAIL
Ara Meskimen	MSU-PDC	406-994-3230	Ara.meskimen@montana.edu
Derek Bogan	MTWYS	406-869-9406	dbogan@mtwysys.com
Stacy Stoddard	MTWYS	670-8823	SSStoddard@mtwysys.com
Cody Bell	Millennium Electric	406-601-9010	CodyB@millenniumelectric.com
Eric Goroski	Liberty Electric	406-531-9814	eric.goroski@libertyelectricinc.com
Spencer Schmidt	Two Bear Construction	425 241 3031	spencer@twoBearConstruction.com
ERIC Gaines	HTS	406 579 3502	egaines@HTS-506.COM
Jim Wedel	3E Electric	406-410-1017	JimW@3econtractors.com
John Seave	3E Electric	406-920-8575	JohnS@3econtractors.com
RANDY BERNDT	ICF	406 579 8555	ICF@IN-tch.com
Kuan Crystal	crystal finishing	406-595-0807	crFinishing1@gmail.com
Brent Kronfus	Remote services	406-580-9773	remoteservices406@gmail.com

Questions from Brick Breeden Fire Alarm

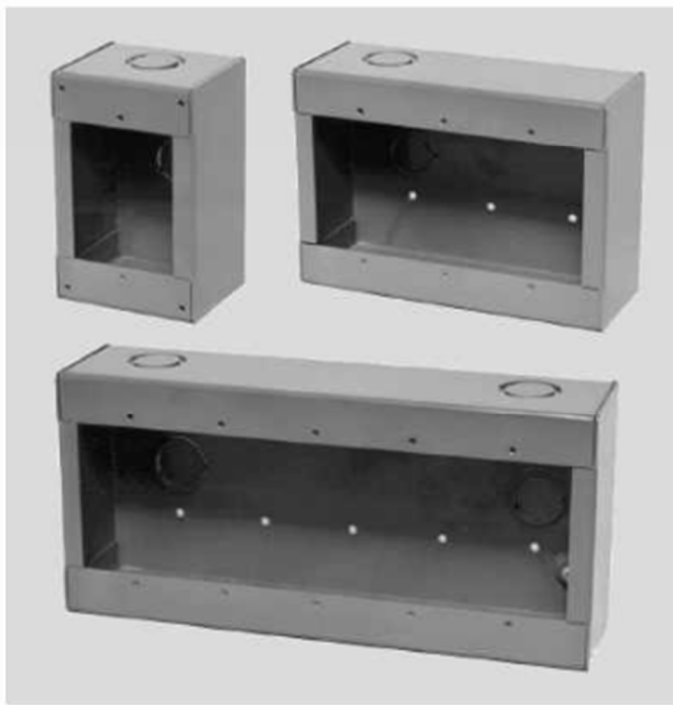
- Do you have a Budget for the project? MSU will not provide Engineer's Estimate.
- Do you have a Schedule put together for the days that we cannot work due to events? A schedule of events in Brick Breeden will be included as an attachment. Contractor will need additional coordination on these dates.
- Does exposed boxes and conduit have to match existing wall color? Yes, exposed boxes and conduit need to match existing wall color.
- Demo of conduit/boxes in Murals. Who will be responsible for painting/touching up the Murals? Do you have contacts who painted them? The contractor and MSU will work on a plan for touching up the Mural with the artist if needed.
- Will the Contractor have full access to rooms? Access to locker rooms and weight room will need to be schedule with user group. Access to offices require a 72-hour notice of work will need to be given.
- Will there be night work allowed? Yes , night and weekend work will be allowed but will need to coordinate with MSU
- Can an Electrical Contractor be Prime on it? Prime Contractor are not restricted to a certain trade. Contractor will need to able to bond and insure project.
- With the Hours of our scope, fire alarm scope, painting and patching could the contract be extended to a August 2026 completion date? I see manpower and housing being major factors for any contractor that bids this with a August 2025 completion date. Completion Date of the Project will be January 1,2026
- Can we updated timeline expectation in relation to the daily liquidated damages? Completion Date of the Project will be January 1,2026
- What is the schedule of events taking place at the Brick for the duration of the project? A schedule of events in Brick Breeden will be include as an attachment. Contractor will need additional coordination on these dates
- What is the flexibility regarding our employee's labor hours? IE nights, weekend, etc. Yes , night and weekend work will be allowed but will need to coordinate with MSU
- Clarification regarding parking permits/access. Contractor will be allowed 3 construction vehicles in staging area but will need to purchase contractor parking permit for additional vehicles or trailers.
- Will we be responsible for asbestos abatement and finishing work for painting/drywall etc. Contractor will be responsible for asbestos abatement and finishing work for painting /drywall.
- Fire Alarm will act as primary contractor for this project? Prime Contractor are not restricted to a certain trade. Contractor will need to able to bond and insure project.
- Who will cover fee for elevator tech and inspection fee? MSU will cover the fee to place the elevator in test and will cover the cost of the inspection fee from the state of Montana.
- Key Access? Contractor will need to get a CAT Card for access into the building.
- Surface mounted boxes painted or factory red? All conduit and boxes and covers in Mech rooms and above drop ceilings are to be factory red, but if conduit and boxes are exposed to the public, they will match surrounding paint colors, and the box covers will be labeled FIRE ALARM. And all surface mount Speaker/Strobes will have an Edwards factory white back box.TC

- Are lifts allowed on the floor? Yes, MSU Sport Facilities will provide plywood to protect the floor.
- Is MSU contracting the Asbestos Abatement contractor? No. Awarded contractor will carry the abatement.
- Is MSU contracting the Elevator Tech for the Elevator work? MSU will cover the fee to place the elevator in test and will cover the cost of the inspection fee from the state of Montana.
- Looking at the SOW of this project August 15, 2025 deadline is unattainable, would MSU be willing to extend the finish date to Jan. 2026 or even August of 2026. Asbestos abatement could become a time commitment. Completion Date for the Project will be January 1, 2026
- The Hyperspikes speakers that are Specified as of right now show 105 in stock, if these fall below the project amount will cause a delay in shipping of 4-6 months. MSU understands the availability of the Hyperspikes speakers could affect the

- Would the G4WSB be acceptable for all the visible wall mount devices? Versus the 27193-26? For all surface wall mounted Strobes and Speakers/Strobes, use the G4WSB. Do not use the 27193-26 for anything. For surface ceiling Strobes and Speaker/Strobes use any manufacturer acceptable back box, as there will not be visible to the eye from the ground.



G4WSB



27193-26

- What color for the Hyper Spikes? White for commercial but specs call for red? [Red per MSU Fire Marshall](#)

Attachment- Brick Breeden Fieldhouse Schedule March 1 to August 31, 2025

Saturday	1-Mar-25	CONFIRMED - WBB vs Sac State
Sunday	2-Mar-25	
Monday	3-Mar-25	CONFIRMED - MBB vs Eastern Washington
Tuesday	4-Mar-25	
Wednesday	5-Mar-25	
Thursday	6-Mar-25	
Friday	7-Mar-25	
Saturday	8-Mar-25	
Sunday	9-Mar-25	
Monday	10-Mar-25	
Tuesday	11-Mar-25	
Wednesday	12-Mar-25	CONFIRMED - State AA Basketball
Thursday	13-Mar-25	CONFIRMED - State AA Basketball
Friday	14-Mar-25	CONFIRMED - State AA Basketball
Saturday	15-Mar-25	CONFIRMED - State AA Basketball
Sunday	16-Mar-25	
Monday	17-Mar-25	
Tuesday	18-Mar-25	
Wednesday	19-Mar-25	CONFIRMED - SWMBIA (Evening Load In)
Thursday	20-Mar-25	CONFIRMED - SWMBIA
Friday	21-Mar-25	CONFIRMED - SWMBIA
Saturday	22-Mar-25	CONFIRMED - SWMBIA
Sunday	23-Mar-25	CONFIRMED - SWMBIA

Monday	24-Mar-25	
Tuesday	25-Mar-25	
Wednesday	26-Mar-25	1H - WBB Post-Season Hold
Thursday	27-Mar-25	1H - WBB Post-Season Hold
Friday	28-Mar-25	CONFIRMED - Pow Wow
Saturday	29-Mar-25	CONFIRMED - Pow Wow
Sunday	30-Mar-25	CONFIRMED - State FFA Convention (Internal set up)
Monday	31-Mar-25	CONFIRMED - State FFA Convention (Internal set up)
Tuesday	1-Apr-25	CONFIRMED - State FFA Convention (Internal set up)
Wednesday	2-Apr-25	CONFIRMED - State FFA Convention
Thursday	3-Apr-25	CONFIRMED - State FFA Convention
Friday	4-Apr-25	CONFIRMED - State FFA Convention
Saturday	5-Apr-25	CONFIRMED - State FFA Convention
Sunday	6-Apr-25	CONFIRMED - SPRING RODEO
Monday	7-Apr-25	CONFIRMED - SPRING RODEO
Tuesday	8-Apr-25	CONFIRMED - SPRING RODEO
Wednesday	9-Apr-25	CONFIRMED - SPRING RODEO
Thursday	10-Apr-25	CONFIRMED - SPRING RODEO – Event Day 1
Friday	11-Apr-25	CONFIRMED - SPRING RODEO – Event Day 2
Saturday	12-Apr-25	CONFIRMED - SPRING RODEO – Event Day 3
Sunday	13-Apr-25	CONFIRMED - SPRING RODEO – Event Day 4
Monday	14-Apr-25	CONFIRMED - SPRING RODEO
Tuesday	15-Apr-25	CONFIRMED - SPRING RODEO
Wednesday	16-Apr-25	
Thursday	17-Apr-25	
Friday	18-Apr-25	

Saturday	19-Apr-25	
Sunday	20-Apr-25	CONFIRMED - Revival Church
Monday	21-Apr-25	
Tuesday	22-Apr-25	
Wednesday	23-Apr-25	
Thursday	24-Apr-25	
Friday	25-Apr-25	
Saturday	26-Apr-25	CONFIRMED - Fusion Fight League
Sunday	27-Apr-25	
Monday	28-Apr-25	CONFIRMED - Golden Bobcats
Tuesday	29-Apr-25	
Wednesday	30-Apr-25	
Thursday	1-May-25	CONFIRMED - MADE FAIR
Friday	2-May-25	CONFIRMED - MADE FAIR
Saturday	3-May-25	CONFIRMED - MADE FAIR
Sunday	4-May-25	1H - COMMENCEMENT SET
Monday	5-May-25	CONFIRMED - COMMENCEMENT SET
Tuesday	6-May-25	CONFIRMED - COMMENCEMENT SET
Wednesday	7-May-25	CONFIRMED - COMMENCEMENT SET
Thursday	8-May-25	CONFIRMED - COMMENCEMENT SET
Friday	9-May-25	CONFIRMED - COMMENCEMENT
Saturday	10-May-25	
Sunday	11-May-25	
Monday	12-May-25	
Tuesday	13-May-25	
Wednesday	14-May-25	

Thursday	15-May-25	
Friday	16-May-25	
Saturday	17-May-25	
Sunday	18-May-25	
Monday	19-May-25	
Tuesday	20-May-25	
Wednesday	21-May-25	
Thursday	22-May-25	
Friday	23-May-25	
Saturday	24-May-25	
Sunday	25-May-25	
Monday	26-May-25	
Tuesday	27-May-25	
Wednesday	28-May-25	
Thursday	29-May-25	
Friday	30-May-25	
Saturday	31-May-25	
Sunday	1-Jun-25	
Monday	2-Jun-25	
Tuesday	3-Jun-25	
Wednesday	4-Jun-25	
Thursday	5-Jun-25	1H Bozeman Graduations - Rehearsal
Friday	6-Jun-25	1H Bozeman Graduations
Saturday	7-Jun-25	CONFIRMED - Bozeman Graduations
Sunday	8-Jun-25	
Monday	9-Jun-25	

Tuesday	10-Jun-25	
Wednesday	11-Jun-25	
Thursday	12-Jun-25	
Friday	13-Jun-25	
Saturday	14-Jun-25	1H - Athletics Men's BB Camp
Sunday	15-Jun-25	1H - Athletics (Summer Camps)
Monday	16-Jun-25	CONFIRMED - WBB Camp
Tuesday	17-Jun-25	CONFIRMED - WBB Camp
Wednesday	18-Jun-25	CONFIRMED - WBB Camp
Thursday	19-Jun-25	CONFIRMED - WBB Camp
Friday	20-Jun-25	CONFIRMED - WBB Camp
Saturday	21-Jun-25	CONFIRMED - WBB Camp
Sunday	22-Jun-25	1H - Athletics (Summer Camps)
Monday	23-Jun-25	CONFIRMED - MBB Camp
Tuesday	24-Jun-25	CONFIRMED - MBB Camp
Wednesday	25-Jun-25	CONFIRMED - MBB Camp
Thursday	26-Jun-25	1H - Athletics (Summer Camps)
Friday	27-Jun-25	1H - Athletics (Summer Camps)
Saturday	28-Jun-25	1H - Athletics (Summer Camps)
Sunday	29-Jun-25	1H - Athletics (Summer Camps)
Monday	30-Jun-25	CONFIRMED - MBB Camp
Tuesday	1-Jul-25	CONFIRMED - MBB Camp
Wednesday	2-Jul-25	CONFIRMED - MBB Camp

Thursday	3-Jul-25	1H - Athletics (Summer Camps)
Friday	4-Jul-25	1H - Athletics (Summer Camps)
Saturday	5-Jul-25	1H - Athletics (Summer Camps)
Sunday	6-Jul-25	1H - Athletics (Summer Camps)
Monday	7-Jul-25	1H - Athletics (Summer Camps)
Tuesday	8-Jul-25	CONFIRMED - VB Camp
Wednesday	9-Jul-25	CONFIRMED - VB Camp
Thursday	10-Jul-25	CONFIRMED - VB Camp
Friday	11-Jul-25	CONFIRMED - VB Camp
Saturday	12-Jul-25	CONFIRMED - VB Camp
Sunday	13-Jul-25	CONFIRMED - VB Camp
Monday	14-Jul-25	CONFIRMED - VB Camp
Tuesday	15-Jul-25	CONFIRMED - VB Camp
Wednesday	16-Jul-25	CONFIRMED - VB Camp
Thursday	17-Jul-25	CONFIRMED - VB Camp
Friday	18-Jul-25	CONFIRMED - VB Camp
Saturday	19-Jul-25	1H - Athletics (Summer Camps)
Sunday	20-Jul-25	1H - Athletics (Summer Camps)
Monday	21-Jul-25	
Tuesday	22-Jul-25	
Wednesday	23-Jul-25	
Thursday	24-Jul-25	1H - Athletics (Summer Camps)
Friday	25-Jul-25	1H - Athletics (Summer Camps)
Saturday	26-Jul-25	CONFIRMED - Pepper (Alison Krauss)
Sunday	27-Jul-25	
Monday	28-Jul-25	CONFIRMED - MBB Camp
Tuesday	29-Jul-25	CONFIRMED - MBB Camp
Wednesday	30-Jul-25	CONFIRMED - MBB Camp
Thursday	31-Jul-25	
Friday	1-Aug-25	
Saturday	2-Aug-25	1H - WBB Camp (Tentative)
Sunday	3-Aug-25	
Monday	4-Aug-25	
Tuesday	5-Aug-25	Maintenance Hold - Black Box Motors
Wednesday	6-Aug-25	Maintenance Hold - Black Box Motors
Thursday	7-Aug-25	Maintenance Hold - Black Box Motors
Friday	8-Aug-25	Maintenance Hold - Black Box Motors
Saturday	9-Aug-25	Maintenance Hold - Black Box Motors

Sunday	10-Aug-25	Maintenance Hold - Black Box Motors
Monday	11-Aug-25	Maintenance Hold - Black Box Motors
Tuesday	12-Aug-25	Maintenance Hold - Black Box Motors
Wednesday	13-Aug-25	Maintenance Hold - Black Box Motors
Thursday	14-Aug-25	Maintenance Hold - Black Box Motors
Friday	15-Aug-25	Maintenance Hold - Black Box Motors
Saturday	16-Aug-25	Maintenance Hold - Black Box Motors
Sunday	17-Aug-25	Maintenance Hold - Black Box Motors
Monday	18-Aug-25	CONFIRMED - Freshman Convocation (set up)
Tuesday	19-Aug-25	CONFIRMED - Freshman Convocation
Wednesday	20-Aug-25	
Thursday	21-Aug-25	
Friday	22-Aug-25	
Saturday	23-Aug-25	
Sunday	24-Aug-25	
Monday	25-Aug-25	
Tuesday	26-Aug-25	
Wednesday	27-Aug-25	
Thursday	28-Aug-25	
Friday	29-Aug-25	
Saturday	30-Aug-25	
Sunday	31-Aug-25	



MONTANA STATE UNIVERSITY
 BOZEMAN
(BRICK BREEDEN) FIELDHOUSE
FIRE ALARM REPLACEMENT



DRAWN BY: BSM		
REVIEWED BY: BSM		
REV.	DESCRIPTION	DATE
01	AHJ Review	2/28/25
02	Addenda #1	3/7/25


 Bryan Moss, SET
 Apex Fire Alarm Design
 NICET 110772
 Fire Alarm Systems, Level IV
 State of Montana DLI
 PPL-IEL-000888

Bryan Moss

PPA#23-0928

AE# 2024-02-04D

SHEET TITLE
FIRE ALARM
DEVICE LEGEND

SHEET
FA0.2

DATE
01/29/2025

100% SHOP DRAWING FOR PERMIT/CONSTRUCTION

PANEL LEGEND

SYMBOL	QUANTITY	MANUFACTURER	PART NO	DESCRIPTION	SIZE	MOUNTING	TRIM	BOX
[FACU]	1	EDWARDS	EST4 VOICE PANEL	FACP VOICE PANEL	50"H X 27.34"W X 3.86"D	72" AFF TO THE TOP OF THE CABINET. NO CONDUIT PENETRATION IN BOTTOM.	4-CAB24DR	3-CAB21B
	1	EDWARDS	4-CPU	MAIN CPU		LEFT 3 LRM SPACES ON 3-CHAS7		
	1	EDWARDS	4-LCDLE	DISPLAY MAIN LCD MODULE		ON 4-CPU @ INNER DOOR		
	1	EDWARDS	4-MIC	PAGING MICROPHONE		2 LRM SPACES ON 3-CHAS7		
	1	EDWARDS	4-AUDTELS	AUDIO IO AND TELEPHONE RISER MODULE		LRM SPACE ON 3-CHAS7		
	1	EDWARDS	4-LCDAUDTEL	SEPARATE LCD FOR MIC/FT		ON 4-AUDTELS @ INNER DOOR		
	1	EDWARDS	4-PPSM	PRIMARY POWER SUPPLY 120V		3-CHAS7		
	1	EDWARDS	3-MODCOM	MODEM COMMUNICATOR AND DIALER		LRM SPACE ON 3-CHAS7		
	1	EDWARDS	3-SSDC2	SIGNATURE SINGLE DRIVER CONTROLLER		LRM SPACE ON 3-CHAS7		
	1	EDWARDS	3-2A20A	20 WATT ZONED AMPLIFIER, CLASS B, 70VRMS		LRM SPACE ON 3-CHAS7		
	1	EDWARDS	3-CAB21B	BACK BOX, W/ 21 LRM SPACE W/O DOOR		N/A		
	1	EDWARDS	4-CAB24DR	DOOR ASSEMBLY, RED		3-CAB21B		
	1	EDWARDS	4-24L24S	24 INDICATOR 24 CONTROL DISPLAY MODULE		INNER DOOR		
	3	EDWARDS	3-CHAS7	CHASSIS ASSY FOR 7 LRMS		3-CAB21B		
	2	EDWARDS	4-NET-TP	TWISTED PAIR SFP NETWORK CONTROLLER		ON 4-CPU		
	1	EDWARDS	BC-1	BATTERY BOX FOR 40AH BATTERIES		BELOW OR ADJACENT TO FACU		
	[FA]	3	EDWARDS	4-6ANN (PAGING)	METALLIC BRONZE ANNUNCIATOR W/4-ANNCPU, MIC	13.2"H X 18.68"W X 2.67"D	72" AFF TO THE TOP OF THE CABINET. NO CONDUIT PENETRATION IN BOTTOM.	4-CAB24DR
3		EDWARDS	4-ANNCPU	ANNUNCIATOR CENTRAL PROCESSOR UNIT		IN 4-6ANNMT		
3		EDWARDS	4-ANNAUDTEL	AUDIO TELEPHONE INTERFACE MODULE		IN 4-6ANNMT		
3		EDWARDS	4-LCDLE	DISPLAY MAIN LCD MODULE		ON 4-ANNCPU		
3		EDWARDS	4-24L24S	24 INDICATOR 24 CONTROL DISPLAY MODULE		IN 4-6ANNMT		
3		EDWARDS	4-6ANNMT	WALLBOX, SURFACE/FLUSH MOUNTING		N/A		
3		EDWARDS	4-6ANN SERIES	DOOR ASSEMBLY FOR 4-6ANNMT, BRONZE		ON 4-6ANNMT		
3		EDWARDS	4-MIC	PAGING MICROPHONE		IN 4-6ANNMT		
6		EDWARDS	4-NET-TP	TWISTED PAIR SFP NETWORK CONTROLLER		ON 4-ANNCPU		
1		DMP	DUALCOMNF-LA (24V)	UNIVERSAL FIRE ALARM COMMUNICATOR L/E-A&T	4.5"W X 2.75"H X 1.75"D	ADJACENT TO FACU - SURFACE	N/A	INCLUDED
[NA] AA30	5	EDWARDS	APS6A	AUXILIARY/BOOSTER POWER SUPPLY, 6A, 120VAC, RED	26"H X 15"W X 5.3"D	72" AFF TO THE TOP OF THE CABINET. NO CONDUIT PENETRATION IN BOTTOM.	N/A	INCLUDED
	5	EDWARDS	SIGA-AA30	30 WATT INTELLIGENT AUDIO AMPLIFIER		MOUNT IN SIDE AT THE TOP OF APS		
[NA] AA30x2	1	EDWARDS	APS10A	AUXILIARY/BOOSTER POWER SUPPLY, 10A, 120VAC, RED	26"H X 15"W X 5.3"D	72" AFF TO THE TOP OF THE CABINET. NO CONDUIT PENETRATION IN BOTTOM.	N/A	INCLUDED
	2	EDWARDS	SIGA-AA30	30 WATT INTELLIGENT AUDIO AMPLIFIER		MOUNT IN SIDE AT THE TOP OF APS		
[NA]	1	EDWARDS	BPS10A	REMOTE BOOSTER POWER SUPPLY, 10A, 120VAC, RED	17"H X 13"W X 3.375"D	72" AFF TO THE TOP OF THE CABINET. NO CONDUIT PENETRATION IN BOTTOM.	N/A	INCLUDED
[AMP]	2	EDWARDS	AMPLIFIER(S) FOR HYPERSPIKE SPEAKERS	3-RCC REMOTE CLOSET CABINET WITH (4) 3-2A95 AMPLIFIERS AND 4-PPS POWER SUPPLIES.	48.375"H X 25"W X 6"D	72" AFF TO THE TOP OF THE CABINET. NO CONDUIT PENETRATION IN BOTTOM.	N/A	3-RCC21
	2	EDWARDS	3-RCC21R	RED REMOTE CHASSIS CABINET W/ COVER		N/A		
	2	EDWARDS	4-CPU	MAIN CPU		LEFT 3 LRM SPACES ON 3-CHAS7		
	8	EDWARDS	3-2A95	95 WATT ZONED AMPLIFIER, CLASS B/A, 25 OR 70VRMS		LRM SPACE ON 3-CHAS7		
	8	EDWARDS	4-PPSM	PRIMARY POWER SUPPLY 120V		3-CHAS7		
	6	EDWARDS	3-CHAS7	CHASSIS ASSY FOR 7 LRMS		3-RCC21		
	4	EDWARDS	4-NET-TP	TWISTED PAIR SFP NETWORK CONTROLLER		ON 4-CPU		
	3	EDWARDS	MFC-A (ELEV RECALL)	MULTI-FUNCTION CABINET W/ UIO6R AND (4) MCR, (1) MCT2	8"H X 14"W X 3.5"D	SURFACE MOUNT, 48" AFF TO TOP OF BOX. SEE FIRE ALARM PLANS	SIGA-UIO6R	INCLUDED
[MFC]	3	EDWARDS	SIGA-UIO6R	6 POSITION, RISER SELECTION UIO MB		MOUNTS IN MFC-A		
	12	EDWARDS	SIGA-MCR	CONTROL RELAY MODULE - UIO MOUNT		ON SIGA-UIO6R		
	3	EDWARDS	SIGA-MCT2	DUAL INPUT MODULE - UIO MOUNT		ON SIGA-UIO6R		
[MFC] FP	1	EDWARDS	MFC-A (FIRE PUMP)	MULTI-FUNCTION CABINET W/ UIO2R AND (2)MCT2'S	8"H X 14"W X 3.5"D	SURFACE MOUNT, 48" AFF TO TOP OF BOX. SEE FIRE ALARM PLANS	SIGA-UIO2R	INCLUDED
	1	EDWARDS	SIGA-UIO2R	6 POSITION, RISER SELECTION UIO MB		MOUNTS IN MFC-A		
	2	EDWARDS	SIGA-MCT2	DUAL INPUT MODULE - UIO MOUNT		ON SIGA-UIO2R		

DEVICE LEGEND

SYMBOL	QUANTITY	IS EXISTING	MANUFACTURER	PART NO	DESCRIPTION	SIZE	MOUNTING	TRIM	BOX
[IM]	8		EDWARDS	SIGA-IM2	ISOLATOR MODULE	2.5"H X 4"W X 1"D	ADJACENT TO THE FACU	SIGA-MP1	4" SQUARE BACK BOX - 2-1/8" DEEP
[F]	3		EDWARDS	SIGA-278	DOUBLE ACTION FIRE ALARM STATION	6"H X 3.5"W X 1"D	48" TO THE TOP OF THE HANDLE: PULL STATION WITHIN 5' OF THE EXIT	N/A	SINGLE GANG CUT-IN, 278B-RSB SURFACE MOUNT BOX RED
[AM]	9		EDWARDS	SIGA-CT1	SINGLE INPUT MODULE	2.5"H X 2"W X 1"D	MOUNT WITHIN 3' OF THE DEVICE BEING MONITORED	SIGA-MP2	4" SQUARE BACK BOX - 2-1/8" DEEP, 1-GANG RING
[DM]	11		EDWARDS	SIGA-CT2	DUAL INPUT MODULE	2.5"H X 2"W X 1"D	MOUNT WITHIN 3' OF THE DEVICE BEING MONITORED	SIGA-MP2	4" SQUARE BACK BOX - 2-1/8" DEEP, 1-GANG RING
[CR]	7		EDWARDS	SIGA-CR	CONTROL RELAY MODULE	2.5"H X 2"W X 1"D	MOUNT WITHIN 3' OF THE DEVICE BEING CONTROLLED	SIGA-MP2	4" SQUARE BACK BOX - 2-1/8" DEEP, 1-GANG RING
[CRH]	11		EDWARDS	SIGA-CRH	CONTROL RELAY MODULE (HIGH CURRENT)	4"L x 4"W x 1"D	MOUNT WITHIN 3' OF THE DEVICE BEING CONTROLLED	N/A	4" SQUARE BACK BOX - 2-1/8" DEEP
[CCIS]	7		EDWARDS	SIGA-CCIS	SIGNATURE SINGLE INPUT SIGNAL SYNCHRONIZATION MODULE	2.5"H X 4"W X 1"D	MOUNT IN APS CABINET	SIGA-MP1	N/A
[OSD]	46		EDWARDS	SIGA-OSD W/SIGA-SB4 BASE	INTELLIGENT OPTICAL SMOKE DETECTOR W/ STANDARD BASE	6"Ø X 2.5"D	36" OR GREATER AWAY FROM VENTS OR FLUORESCENT LIGHTS.	SIGA-SB4	4" SQUARE BACK BOX, 1-1/2" DEEP
[IB]	3		EDWARDS	SIGA-OSD W/SIGA-IB4 BASE	INTELLIGENT OPTICAL SMOKE DETECTOR W/ ISOLATOR BASE	6"Ø X 2.5"D	36" OR GREATER AWAY FROM VENTS OR FLUORESCENT LIGHTS.	SIGA-IB4	4" SQUARE BACK BOX, 1-1/2" DEEP
[HRD]	3		EDWARDS	SIGA-HRD W/SIGA-SB4 BASE	INTELLIGENT FIXED TEMPERATURE /RATE-OF-RISE HEAT DETECTOR	6"Ø X 2.5"D	WITHIN 24" OF SPRINKLER HEAD.	SIGA-SB4	4" SQUARE BACK BOX, 1-1/2" DEEP
[OSH]	6		EDWARDS	SIGA-OSH W/SIGA-SB4 BASE	MULTISENSOR SMOKE AND HEAT DETECTOR	6"Ø X 2.5"D	WITHIN 24" OF SPRINKLER HEAD.	SIGA-SB4	4" SQUARE BACK BOX, 1-1/2" DEEP
[S]	13		EDWARDS	SIGA-DDOS	OPTICA INTELLIGENT DUCT SMOKE DETECTOR	8.7L x 5.45"W x 1.9"D	SEE FIRE ALARM PLANS	N/A	4" SQUARE BACK BOX, 1-1/2" DEEP MOUNTED NEXT TO SIGA-SD
[S]	13		EDWARDS	SD-T#	AIR SAMPLE TUBE, FIELD VERIFY		FIELD VERIFY REQUIRED TUBE LENGTH		
[TRK]	13		EDWARDS	SD-TRK	REMOTE TEST/RESET STATION, KEYED	N/A	COORDINATE FINAL LOCATION WITH MSU FIRE TECH FORMAN	N/A	1-GANG, 2-1/2 DEEP BACK BOX
[S]	71		EDWARDS	GCSWA	SPEAKER/STROBE, CEILING, WHITE, ALERT	6.8"Ø X 1.82"D	CEILING	GCTW, GRSW-10	4" SQUARE BACKBOX - 2-1/8" DEEP
[S]	44		EDWARDS	GCSWA	SPEAKER, CEILING, WHITE, ALERT	6.8"Ø X 1.82"D	CEILING	GCTW, GRSW-10	4" SQUARE BACKBOX - 2-1/8" DEEP
[S]	102		EDWARDS	G4SWA	SPEAKER/STROBE, WALL, WHITE, ALERT	5.78"H X 4.95"W X 1.62"D	80" TO THE BOTTOM OF THE BACK BOX	GRSW-10	4" SQUARE BACKBOX - 2-1/8" DEEP (FLUSH) OR G4WSB (SURFACE)
[S]	9		EDWARDS	G4SWA	SPEAKER, WALL, WHITE, ALERT	5.78"H X 4.95"W X 1.62"D	80" TO THE BOTTOM OF THE BACK BOX	GRSW-10	4" SQUARE BACKBOX - 2-1/8" DEEP (FLUSH) OR G4WSB (SURFACE)
[S]	14		EDWARDS	90215A-801-05-L	TCPA-10 AUDIO SPEAKER, 5 SELECTABLE POWER TAPS, 25V, 70V AND 100 VRMS, RED	10.1"H X 10.1"W X 11.3"D	MOUNT TO CATWALK STRUCTURE SIDE RAILS USING WALL/POLE MOUNT BRACKET	72377B-801	4" SQUARE BACK BOX - 2-1/8" DEEP WITH RED BLANK COVER
[S]	8		EDWARDS	90215A-801-05-L	TCPA-10 AUDIO SPEAKER, 5 SELECTABLE POWER TAPS, 25V, 70V AND 100 VRMS, RED	10.1"H X 10.1"W X 11.3"D	WALL MOUNT 8FT AFF TO BOTTOM OF SPEAKER USING WALL MOUNT BRACKET	72377B-801	4" SQUARE BACK BOX - 2-1/8" DEEP WITH RED BLANK COVER
[S]	33		EDWARDS	G4VWN W/ G4VWA-CVR	WALL STROBE, WHITE, ALERT COVER	5.78"H X 4.95"W X 1.62"D	80" TO THE BOTTOM OF THE BACK BOX	G4TW, GP-10 & G4VWA-CVR	4" SQUARE BACKBOX - 2-1/8" DEEP (FLUSH) OR G4WSB (SURFACE)
[S]	4		EDWARDS	GCVWN W/ GCVWA-CVR	STROBE, CEILING, WHITE, ALERT COVER	6.8"Ø X 1.82"D	CEILING	GCTW, GP-10 & GCVWA-CVR	4" SQUARE BACKBOX - 2-1/8" DEEP
[S]	16		EDWARDS	GCVHWA	STROBE, CEILING, WHITE, ALERT, HI CANDELA	6.8"Ø X 1.82"D	CEILING	GCTW, GP-10 & GCVWA-CVR	4" SQUARE BACKBOX - 2-1/8" DEEP
[S]	1		EDWARDS	WG4RF-HVMC	OUTDOOR RATED HORN-STROBE, RED WITH FIRE MARKING, CLEAR LENS	5.6"W X 8.5"H X 1.4"D	MOUNT ABOVE OR ADJACENT TO FDC, 8'-10' ABOVE GRADE	N/A	742347U (RED)
[J]	28		GENERIC	N/A	JUNCTION BOX WALL	N/A	N/A	N/A	4" SQUARE BACK BOX - 2-1/8" DEEP WITH RED BLANK COVER
[J]	22		GENERIC	N/A	JUNCTION BOX CEILING	N/A	N/A	N/A	4" SQUARE BACK BOX - 2-1/8" DEEP WITH RED BLANK COVER
[FD]	6		GENERIC	N/A	ROLL DOWN FIRE DOOR (MCCABE LINK)	N/A	EXISTING HARDWARE	N/A	N/A
[FD]	1		SPACE AGE ELECTRONICS	SSU00685	FIRE ALARM DOCUMENT CABINET W/8GB USB DRIVE (ACE-11), RED WITH CUSTOM LOGO	N/A	EXISTING HARDWARE	N/A	N/A
[FC]	1		GENERIC	N/A	FIRE PUMP CONTROLLER	N/A	EXISTING CONTROLS	N/A	N/A
[S]	7		GENERIC	N/A	WATERFLOW SWITCH	N/A	EXISTING SWITCH	N/A	N/A
[S]	14		GENERIC	N/A	VALVE TAMPER SUPERVISORY SWITCH	N/A	EXISTING SWITCH	N/A	N/A
[S]	2		GENERIC	N/A	BACKFLOW VALVE	N/A	EXISTING SWITCH	N/A	N/A
[S]	28		GENERIC	N/A	24VAC/DC	N/A	EXISTING HARDWARE	N/A	N/A

PANEL LOAD SUMMARY				STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)	
QTY	PART NO	DESCRIPTION	CURRENT DRAW	TOTAL (A)	CURRENT DRAW	TOTAL	
			(A)		(A)		
1	3-CAB14B	Back Box w/ 14 LRM Space w/o Door	1 x 0	= 0	1 x 0	= 0	
1	3-CHAS7	Chassis Assy for 7 LRMs	1 x 0	= 0	1 x 0	= 0	
1	3-MODCOM	Modem Communicator and Diater	1 x 0.06	= 0.06	1 x 0.095	= 0.095	
1	3-SSDC2	Signature Single Driver Controller (LRM)	1 x 0.144	= 0.144	1 x 0.204	= 0.204	
1	3-ZA20A	20 Watt Zoned Amplifier, Class A, 25 or 70Vrms	1 x 0.062	= 0.062	1 x 1.12	= 1.12	
1	4-24L24S	24 Indicator 24 Control Display Module	1 x 0.009	= 0.009	1 x 0.009	= 0.009	
1	4-AUDTELS	Audio IO and Telephone Riser Source Module	1 x 0.085	= 0.085	1 x 0.101	= 0.101	
1	4-CPU	Main CPU	1 x 0.211	= 0.211	1 x 0.211	= 0.211	
1	4-LCDANN	Color LCD display	1 x 0.04	= 0.04	1 x 0.093	= 0.093	
1	4-LCDAUDTEL	Separate LCD for Mic/FT	1 x 0.04	= 0.04	1 x 0.093	= 0.093	
1	4-LCDLE	DISPLAY MAIN LCD MODULE	1 x 0.04	= 0.04	1 x 0.093	= 0.093	
1	4-MIC	Paging Microphone	1 x 0.008	= 0.008	1 x 0.038	= 0.038	
1	4-NET-TP	Twisted Pair SFP network controller	1 x 0.032	= 0.032	1 x 0.032	= 0.032	
1	4-PPSM	Primary Power Supply 120V	1 x 0	= 0	1 x 0	= 0	
CIRCUIT							
ANN				1 x 0	= 0	1 x 0	= 0
Audio-25V				1 x 0	= 0	1 x 0	= 0
AUX1				1 x 0.03	= 0.03	1 x 0.082	= 0.082
L1				1 x 0.01	= 0.01	1 x 0.014	= 0.014
N1				1 x 0	= 0	1 x 0.238	= 0.238
TOTAL STANDBY CURRENT				0.77		TOTAL ALARM CURRENT	2.422

PANEL FCP (EST4 VOICE) SUMMARY REPORT

CIRCUIT DETAILS AND CALCULATIONS				STANDBY CURRENT		ALARM CURRENT		POINT-TO-POINT VOLTAGE DROP CALCULATION SUMMARY			SPEAKER POWER/DB LOSS CALCULATIONS							
SOURCE	MAX CAPACITY	TOTAL USED CAPACITY	AVAILABLE CAPACITY	CIRCUIT	AWG	TOTAL DEVICE QTY	CIRCUIT LENGTH	CIRCUIT RESISTANCE (Ω/R)	TOTAL STANDBY (A)	TOTAL ALARM (A)	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	VOLTAGE DROP	TOTAL USED WATTS	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	POWER LOSS PERCENT	TOTAL DB LOSS
3-SSDC2				L1	16	194	4321'	0.004	0.01	0.014								
3-ZA20A				Audio-25V	16	7	1627'	0.004	0	0				0w	25v	25v	0.00 %	0dB
4-CPU				N1	14	7	238'	0.003	0	0.238	20.4v	20.05v	0.35v					
4-PPSM				AUX1	14	1	1141'	0.004	0	0								
							1'	0.003	0.03	0.082	20.4v	20.4v	0v					

SECONDARY POWER SOURCE REQUIREMENTS			
REQUIRED STANDBY TIME = 24 HOURS			
REQUIRED ALARM TIME = 15 MINUTES			
SECONDARY STANDBY LOAD	0.77	x 24	= 18.48 AH
SECONDARY ALARM LOAD	2.422	x 0.25	= 0.61 AH
STANDBY AND ALARM LOAD SUBTOTAL			19.09 AH
DERATING FACTOR			x 1.25
SECONDARY LOAD REQUIREMENTS (AMP HOURS)			23.86 AH

PROVIDE (2) 12V 40AH BATTERIES IN BC-1 CABINET MOUNTED BELOW FACU

PANEL LOAD SUMMARY				STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)	
QTY	PART NO	DESCRIPTION	CURRENT DRAW	TOTAL (A)	CURRENT DRAW	TOTAL	
			(A)		(A)		
3	3-CHAS7	Chassis Assy for 7 LRMs	3 x 0	= 0	3 x 0	= 0	
1	3-RCC21R	Red Remote Chassis Cabinet w/ Cover	1 x 0	= 0	1 x 0	= 0	
4	3-ZA95	95 Watt Zoned Amplifier, Class B/A, 25 or 70Vrms	4 x 0.085	= 0.34	4 x 5.54	= 22.16	
4	4-PPSM	Primary Power Supply 120V	4 x 0	= 0	4 x 0	= 0	
CIRCUIT							
S1				1 x 0	= 0	1 x 0	= 0
S2				1 x 0	= 0	1 x 0	= 0
S3				1 x 0	= 0	1 x 0	= 0
S4				1 x 0	= 0	1 x 0	= 0
TOTAL STANDBY CURRENT				0.34		TOTAL ALARM CURRENT	22.16

PANEL HSA:1 (3-RCC21R W/3-ZA95) SUMMARY REPORT

CIRCUIT DETAILS AND CALCULATIONS				STANDBY CURRENT		ALARM CURRENT		POINT-TO-POINT VOLTAGE DROP CALCULATION SUMMARY			SPEAKER POWER/DB LOSS CALCULATIONS							
SOURCE	MAX CAPACITY	TOTAL USED CAPACITY	AVAILABLE CAPACITY	CIRCUIT	AWG	TOTAL DEVICE QTY	CIRCUIT LENGTH	CIRCUIT RESISTANCE (Ω/R)	TOTAL STANDBY (A)	TOTAL ALARM (A)	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	VOLTAGE DROP	TOTAL USED WATTS	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	POWER LOSS PERCENT	TOTAL DB LOSS
3-ZA95				S2	12	5	463'	0.002	0	0				72w	70.7v	69.13v	2.22 %	-0.211dB
3-ZA95				S4	12	4	508'	0.002	0	0				48w	70.7v	69.46v	1.75 %	-0.154dB
3-ZA95				S1	12	4	379'	0.002	0	0				48w	70.7v	69.78v	1.31 %	-0.115dB
3-ZA95				S3	12	5	510'	0.002	0	0				72w	70.7v	68.95v	2.47 %	-0.233dB

SECONDARY POWER SOURCE REQUIREMENTS			
REQUIRED STANDBY TIME = 24 HOURS			
REQUIRED ALARM TIME = 15 MINUTES			
SECONDARY STANDBY LOAD	0.34	x 24	= 8.16 AH
SECONDARY ALARM LOAD	22.16	x 0.25	= 5.54 AH
STANDBY AND ALARM LOAD SUBTOTAL			13.7 AH
DERATING FACTOR			x 1.25
SECONDARY LOAD REQUIREMENTS (AMP HOURS)			17.13 AH

PROVIDE (2) 12V 24AH BATTERIES @ 24VDC

PANEL LOAD SUMMARY				STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)	
QTY	PART NO	DESCRIPTION	CURRENT DRAW	TOTAL (A)	CURRENT DRAW	TOTAL	
			(A)		(A)		
3	3-CHAS7	Chassis Assy for 7 LRMs	3 x 0	= 0	3 x 0	= 0	
1	3-RCC21R	Red Remote Chassis Cabinet w/ Cover	1 x 0	= 0	1 x 0	= 0	
4	3-ZA95	95 Watt Zoned Amplifier, Class B/A, 25 or 70Vrms	4 x 0.085	= 0.34	4 x 5.54	= 22.16	
4	4-PPSM	Primary Power Supply 120V	4 x 0	= 0	4 x 0	= 0	
CIRCUIT							
S1				1 x 0	= 0	1 x 0	= 0
S2				1 x 0	= 0	1 x 0	= 0
S3				1 x 0	= 0	1 x 0	= 0
S4				1 x 0	= 0	1 x 0	= 0
TOTAL STANDBY CURRENT				0.34		TOTAL ALARM CURRENT	22.16

PANEL HSA:2 (3-RCC21R W/3-ZA95) SUMMARY REPORT

CIRCUIT DETAILS AND CALCULATIONS				STANDBY CURRENT		ALARM CURRENT		POINT-TO-POINT VOLTAGE DROP CALCULATION SUMMARY			SPEAKER POWER/DB LOSS CALCULATIONS							
SOURCE	MAX CAPACITY	TOTAL USED CAPACITY	AVAILABLE CAPACITY	CIRCUIT	AWG	TOTAL DEVICE QTY	CIRCUIT LENGTH	CIRCUIT RESISTANCE (Ω/R)	TOTAL STANDBY (A)	TOTAL ALARM (A)	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	VOLTAGE DROP	TOTAL USED WATTS	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	POWER LOSS PERCENT	TOTAL DB LOSS
3-ZA95				S1	12	4	482'	0.002	0	0				16w	70.7v	70.5v	0.28 %	-0.048dB
3-ZA95				S3	12	4	337'	0.002	0	0				48w	70.7v	69.88v	1.16 %	-0.102dB
3-ZA95				S4	12	4	468'	0.002	0	0				48w	70.7v	69.56v	1.61 %	-0.142dB
3-ZA95				S2	12	7	628'	0.002	0	0				18w	70.7v	70.37v	0.47 %	-0.071dB

SECONDARY POWER SOURCE REQUIREMENTS			
REQUIRED STANDBY TIME = 24 HOURS			
REQUIRED ALARM TIME = 15 MINUTES			
SECONDARY STANDBY LOAD	0.34	x 24	= 8.16 AH
SECONDARY ALARM LOAD	22.16	x 0.25	= 5.54 AH
STANDBY AND ALARM LOAD SUBTOTAL			13.7 AH
DERATING FACTOR			x 1.25
SECONDARY LOAD REQUIREMENTS (AMP HOURS)			17.13 AH

PROVIDE (2) 12V 24AH BATTERIES @ 24VDC



100% SHOP DRAWING FOR PERMIT/CONSTRUCTION
 (BRICK BREEDEN) FIELDHOUSE
 FIRE ALARM REPLACEMENT
 MONTANA STATE UNIVERSITY
 BOZEMAN



DRAWN BY: BSM		
REVIEWED BY: BSM		
REV.	DESCRIPTION	DATE
01	AHJ Review	2/28/25
02	Addenda #1	3/7/25

Bryan Moss, SET
 Apex Fire Alarm Design
 NICET 110772
 Fire Alarm Systems, Level IV
 State of Montana DLI
 PPL-HEL-000888

PPA#23-0928

AE# 2024-02-04D

SHEET TITLE
 FIRE ALARM CALC
 SUMMARY 1

SHEET
 FA8.1

DATE
 01/29/2025



100% SHOP DRAWING FOR PERMIT/CONSTRUCTION
(BRICK BREEDEN) FIELDHOUSE
FIRE ALARM REPLACEMENT
 MONTANA STATE UNIVERSITY
 BOZEMAN



DRAWN BY: BSM		
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 State of Montana DLI
 PFL-IEL-000888
Bryan Moss
PPA#23-0928
AE# 2024-02-04D

SHEET TITLE
FIRE ALARM CALC
SUMMARY 2
SHEET
FA8.2
DATE
01/29/2025

PANEL LOAD SUMMARY				STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)	
PANEL COMPONENT SUMMARY				CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
1	BPS10A Mainboard	Mainboard for BPS10A assembly		1 x 0.07	= 0.07	1 x 0.27	= 0.27
CIRCUIT SUMMARY				STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)	
CIRCUIT				CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
N1				1 x 0	= 0	1 x 0.364	= 0.364
N2				1 x 0	= 0	1 x 0.35	= 0.35
N3				1 x 0	= 0	1 x 0.53	= 0.53
N4				1 x 0	= 0	1 x 0.318	= 0.318
TOTAL STANDBY CURRENT				0.07		1.832	

PANEL BPS:1 (BPS10A) SUMMARY REPORT

CIRCUIT DETAILS AND CALCULATIONS								STANDBY CURRENT	ALARM CURRENT	POINT-TO-POINT VOLTAGE DROP CALCULATION SUMMARY			SPEAKER POWER/DB LOSS CALCULATIONS						
SOURCE	MAX CAPACITY	TOTAL USED CAPACITY	AVAILABLE CAPACITY	CIRCUIT	AWG	TOTAL DEVICE QTY	CIRCUIT LENGTH	CIRCUIT RESISTANCE (Ω/R)	TOTAL STANDBY (A)	TOTAL ALARM (A)	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	VOLTAGE DROP	TOTAL USED WATTS	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	POWER LOSS PERCENT	TOTAL DB LOSS	
BPS10A Mainboard				N1	14	13	866'	0.003	0	0.364	19.7v	18.68v	1.02v						
				N2	14	12	663'	0.003	0	0.35	19.7v	19.03v	0.67v						
				N3	14	10	869'	0.003	0	0.53	19.7v	18.12v	1.58v						
				N4	14	6	1019'	0.003	0	0.318	19.7v	18.61v	1.09v						

SECONDARY POWER SOURCE REQUIREMENTS

		REQUIRED STANDBY TIME = 24 HOURS	
		REQUIRED ALARM TIME = 15 MINUTES	
SECONDARY STANDBY LOAD		0.07	x 24 = 1.68 AH
SECONDARY ALARM LOAD		1.832	x 0.25 = 0.46 AH
STANDBY AND ALARM LOAD SUBTOTAL			2.14 AH
DERATING FACTOR			x 1.25
SECONDARY LOAD REQUIREMENTS (AMP HOURS)			2.67 AH

PROVIDE (2) 12V 7AH BATTERIES @ 24VDC

PANEL LOAD SUMMARY				STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)	
PANEL COMPONENT SUMMARY				CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
1	APS10A Mainboard	Mainboard for APS10A assembly		1 x 0.07	= 0.07	1 x 0.27	= 0.27
1	SIGA-AA30	30 Watt Intelligent Audio Amplifier		1 x 0.002	= 0.002	1 x 1.55	= 1.55
CIRCUIT SUMMARY				STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)	
CIRCUIT				CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
N2				1 x 0	= 0	1 x 0.56	= 0.56
N3				1 x 0	= 0	1 x 0.574	= 0.574
N4				1 x 0.344	= 0.344	1 x 0.427	= 0.427
S1				1 x 0	= 0	1 x 0	= 0
TOTAL STANDBY CURRENT				0.416		3.381	

PANEL APS:2 (APS6A W/SIGA-AA30) SUMMARY REPORT
PANEL POWER SUPPLY MAX CURRENT = 6A
TOTAL USED CAPACITY = 3.381A (56.35 %)

CIRCUIT DETAILS AND CALCULATIONS								STANDBY CURRENT	ALARM CURRENT	POINT-TO-POINT VOLTAGE DROP CALCULATION SUMMARY			SPEAKER POWER/DB LOSS CALCULATIONS					
SOURCE	MAX CAPACITY	TOTAL USED CAPACITY	AVAILABLE CAPACITY	CIRCUIT	AWG	TOTAL DEVICE QTY	CIRCUIT LENGTH	CIRCUIT RESISTANCE (Ω/R)	TOTAL STANDBY (A)	TOTAL ALARM (A)	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	VOLTAGE DROP	TOTAL USED WATTS	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	POWER LOSS PERCENT	TOTAL DB LOSS
APS10A Mainboard				N2	14	20	497'	0.003	0	0.56	19.7v	18.8v	0.9v					
				N3	14	20	711'	0.003	0	0.574	19.7v	18.28v	1.42v					
				N4	14	1	261'	0.003	0.344	0.427	19.7v	19.02v	0.68v					
				S1	16	37	1232'	0.004	0	0	10w	70.7v	69.92v	1.11 %	-0.177dB			

SECONDARY POWER SOURCE REQUIREMENTS

		REQUIRED STANDBY TIME = 24 HOURS	
		REQUIRED ALARM TIME = 15 MINUTES	
SECONDARY STANDBY LOAD		0.416	x 24 = 9.98 AH
SECONDARY ALARM LOAD		3.381	x 0.25 = 0.85 AH
STANDBY AND ALARM LOAD SUBTOTAL			10.83 AH
DERATING FACTOR			x 1.25
SECONDARY LOAD REQUIREMENTS (AMP HOURS)			13.54 AH

PROVIDE (2) 12V 18AH BATTERIES @ 24VDC

PANEL LOAD SUMMARY				STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)	
PANEL COMPONENT SUMMARY				CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
1	APS10A Mainboard	Mainboard for APS10A assembly		1 x 0.07	= 0.07	1 x 0.27	= 0.27
1	SIGA-AA30	30 Watt Intelligent Audio Amplifier		1 x 0.002	= 0.002	1 x 1.55	= 1.55
CIRCUIT SUMMARY				STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)	
CIRCUIT				CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL
N2				1 x 0	= 0	1 x 0.224	= 0.224
N3				1 x 0	= 0	1 x 0.749	= 0.749
N4				1 x 0.344	= 0.344	1 x 0.427	= 0.427
S1				1 x 0	= 0	1 x 0	= 0
TOTAL STANDBY CURRENT				0.416		3.22	

PANEL APS:3 (APS6A W/SIGA-AA30) SUMMARY REPORT
PANEL POWER SUPPLY MAX CURRENT = 6A
TOTAL USED CAPACITY = 3.22A (53.67 %)

CIRCUIT DETAILS AND CALCULATIONS								STANDBY CURRENT	ALARM CURRENT	POINT-TO-POINT VOLTAGE DROP CALCULATION SUMMARY			SPEAKER POWER/DB LOSS CALCULATIONS					
SOURCE	MAX CAPACITY	TOTAL USED CAPACITY	AVAILABLE CAPACITY	CIRCUIT	AWG	TOTAL DEVICE QTY	CIRCUIT LENGTH	CIRCUIT RESISTANCE (Ω/R)	TOTAL STANDBY (A)	TOTAL ALARM (A)	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	VOLTAGE DROP	TOTAL USED WATTS	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	POWER LOSS PERCENT	TOTAL DB LOSS
APS10A Mainboard				N2	14	8	246'	0.003	0	0.224	19.7v	19.51v	0.19v					
				N3	14	23	751'	0.003	0	0.749	19.7v	17.88v	1.82v					
				N4	14	1	263'	0.003	0.344	0.427	19.7v	19.04v	0.66v					
				S1	16	38	998'	0.004	0	0	11w	70.7v	70.05v	0.92 %	-0.158dB			

SECONDARY POWER SOURCE REQUIREMENTS

		REQUIRED STANDBY TIME = 24 HOURS	
		REQUIRED ALARM TIME = 15 MINUTES	
SECONDARY STANDBY LOAD		0.416	x 24 = 9.98 AH
SECONDARY ALARM LOAD		3.22	x 0.25 = 0.81 AH
STANDBY AND ALARM LOAD SUBTOTAL			10.79 AH
DERATING FACTOR			x 1.25
SECONDARY LOAD REQUIREMENTS (AMP HOURS)			13.49 AH

PROVIDE (2) 12V 18AH BATTERIES @ 24VDC

PANEL LOAD SUMMARY							STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)													
PANEL COMPONENT SUMMARY							QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL									
							1	APS10A Mainboard	Mainboard for APS10A assembly	1 x 0.07	= 0.07	1 x 0.27	= 0.27									
							2	SIGA-AA30	30 Watt Intelligent Audio Amplifier	2 x 0.002	= 0.004	2 x 1.55	= 3.1									
CIRCUIT SUMMARY							CIRCUIT															
							N2			1 x 0	= 0	1 x 0.637	= 0.637									
							N3			1 x 0	= 0	1 x 0.448	= 0.448									
							N4			1 x 0.42	= 0.42	1 x 0	= 0									
							S1			1 x 0	= 0	1 x 0	= 0									
							S2			1 x 0	= 0	1 x 0	= 0									
							TOTAL STANDBY CURRENT			0.494		TOTAL ALARM CURRENT		4.455								
CIRCUIT DETAILS AND CALCULATIONS										STANDBY CURRENT		ALARM CURRENT		POINT-TO-POINT VOLTAGE DROP CALCULATION SUMMARY			SPEAKER POWER/DB LOSS CALCULATIONS					
SOURCE	MAX CAPACITY	TOTAL USED CAPACITY	AVAILABLE CAPACITY	CIRCUIT	AWG	TOTAL DEVICE QTY	CIRCUIT LENGTH	CIRCUIT RESISTANCE (DR)	TOTAL STANDBY (A)	TOTAL ALARM (A)	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	VOLTAGE DROP	TOTAL USED WATTS	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	POWER LOSS PERCENT	TOTAL DB LOSS				
APS10A Mainboard				N2	14	19	775'	0.003	0	0.637	19.7v	17.85v	1.85v									
				N3	14	14	1335'	0.003	0	0.448	19.7v	16.51v	3.19v									
				N4	14	31	917'	0.003	0.42	0	19.7v	19.7v	0v									
SIGA-AA30	30w	4.75w	25.25w	S2	16	18	630'	0.004	0	0				4.75w	70.7v	70.46v	0.34 %	-0.043dB				
SIGA-AA30	30w	10.5w	19.5w	S1	16	33	944'	0.004	0	0				10.5w	70.7v	70.06v	0.90 %	-0.142dB				
SECONDARY POWER SOURCE REQUIREMENTS										STANDBY CURRENT		ALARM CURRENT										
										REQUIRED STANDBY TIME = 24 HOURS		REQUIRED ALARM TIME = 15 MINUTES										
										SECONDARY STANDBY LOAD		0.494 x 24										
										SECONDARY ALARM LOAD		4.455 x 0.25										
										STANDBY AND ALARM LOAD SUBTOTAL		12.97 AH										
										DERATING FACTOR		x 1.25										
										SECONDARY LOAD REQUIREMENTS (AMP HOURS)		16.21 AH										

PANEL APS:4 (APS10A W/SIGA-AA30) SUMMARY REPORT
 PANEL POWER SUPPLY MAX CURRENT = 10A
 TOTAL USED CAPACITY = 4.455A (44.55 %)

PROVIDE (2) 12V 18AH BATTERIES @ 24VDC

PANEL LOAD SUMMARY							STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)													
PANEL COMPONENT SUMMARY							QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL									
							1	APS10A Mainboard	Mainboard for APS10A assembly	1 x 0.07	= 0.07	1 x 0.27	= 0.27									
							1	SIGA-AA30	30 Watt Intelligent Audio Amplifier	1 x 0.002	= 0.002	1 x 1.55	= 1.55									
CIRCUIT SUMMARY							CIRCUIT															
							N2			1 x 0	= 0	1 x 0.343	= 0.343									
							N3			1 x 0	= 0	1 x 0.49	= 0.49									
							N4			1 x 0.344	= 0.344	1 x 0.427	= 0.427									
							S1			1 x 0	= 0	1 x 0	= 0									
							TOTAL STANDBY CURRENT			0.416		TOTAL ALARM CURRENT		3.08								
CIRCUIT DETAILS AND CALCULATIONS										STANDBY CURRENT		ALARM CURRENT		POINT-TO-POINT VOLTAGE DROP CALCULATION SUMMARY			SPEAKER POWER/DB LOSS CALCULATIONS					
SOURCE	MAX CAPACITY	TOTAL USED CAPACITY	AVAILABLE CAPACITY	CIRCUIT	AWG	TOTAL DEVICE QTY	CIRCUIT LENGTH	CIRCUIT RESISTANCE (DR)	TOTAL STANDBY (A)	TOTAL ALARM (A)	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	VOLTAGE DROP	TOTAL USED WATTS	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	POWER LOSS PERCENT	TOTAL DB LOSS				
APS10A Mainboard				N2	14	12	479'	0.003	0	0.343	19.7v	19.14v	0.56v									
				N3	14	17	577'	0.003	0	0.49	19.7v	18.62v	1.08v									
				N4	14	1	124'	0.003	0.344	0.427	19.7v	19.37v	0.33v									
SIGA-AA30	30w	8.25w	21.75w	S1	16	27	1021'	0.004	0	0				8.25w	70.7v	70.19v	0.72 %	-0.121dB				
SECONDARY POWER SOURCE REQUIREMENTS										STANDBY CURRENT		ALARM CURRENT										
										REQUIRED STANDBY TIME = 24 HOURS		REQUIRED ALARM TIME = 15 MINUTES										
										SECONDARY STANDBY LOAD		0.416 x 24										
										SECONDARY ALARM LOAD		3.08 x 0.25										
										STANDBY AND ALARM LOAD SUBTOTAL		10.75 AH										
										DERATING FACTOR		x 1.25										
										SECONDARY LOAD REQUIREMENTS (AMP HOURS)		13.44 AH										

PANEL APS:5 (APS6A W/SIGA-AA30) SUMMARY REPORT
 PANEL POWER SUPPLY MAX CURRENT = 6A
 TOTAL USED CAPACITY = 3.08A (51.33 %)

PROVIDE (2) 12V 18AH BATTERIES @ 24VDC

PANEL LOAD SUMMARY							STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)													
PANEL COMPONENT SUMMARY							QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL									
							1	APS10A Mainboard	Mainboard for APS10A assembly	1 x 0.07	= 0.07	1 x 0.27	= 0.27									
							1	SIGA-AA30	30 Watt Intelligent Audio Amplifier	1 x 0.002	= 0.002	1 x 1.55	= 1.55									
CIRCUIT SUMMARY							CIRCUIT															
							N2			1 x 0	= 0	1 x 0.672	= 0.672									
							N3			1 x 0	= 0	1 x 0.413	= 0.413									
							S1			1 x 0	= 0	1 x 0	= 0									
							TOTAL STANDBY CURRENT			0.072		TOTAL ALARM CURRENT		2.905								
CIRCUIT DETAILS AND CALCULATIONS										STANDBY CURRENT		ALARM CURRENT		POINT-TO-POINT VOLTAGE DROP CALCULATION SUMMARY			SPEAKER POWER/DB LOSS CALCULATIONS					
SOURCE	MAX CAPACITY	TOTAL USED CAPACITY	AVAILABLE CAPACITY	CIRCUIT	AWG	TOTAL DEVICE QTY	CIRCUIT LENGTH	CIRCUIT RESISTANCE (DR)	TOTAL STANDBY (A)	TOTAL ALARM (A)	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	VOLTAGE DROP	TOTAL USED WATTS	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	POWER LOSS PERCENT	TOTAL DB LOSS				
APS10A Mainboard				N2	14	20	599'	0.003	0	0.672	19.7v	18.34v	1.36v									
				N3	14	12	579'	0.003	0	0.413	19.7v	18.96v	0.74v									
				S1	16	46	1521'	0.004	0	0												
SIGA-AA30	30w	14.75w	15.25w	S1	16	46	1521'	0.004	0	0				14.75w	70.7v	69.46v	1.76 %	-0.326dB				
SECONDARY POWER SOURCE REQUIREMENTS										STANDBY CURRENT		ALARM CURRENT										
										REQUIRED STANDBY TIME = 24 HOURS		REQUIRED ALARM TIME = 15 MINUTES										
										SECONDARY STANDBY LOAD		0.072 x 24										
										SECONDARY ALARM LOAD		2.905 x 0.25										
										STANDBY AND ALARM LOAD SUBTOTAL		2.45 AH										
										DERATING FACTOR		x 1.25										
										SECONDARY LOAD REQUIREMENTS (AMP HOURS)		3.07 AH										

PANEL APS:6 (APS6A W/SIGA-AA30) SUMMARY REPORT
 PANEL POWER SUPPLY MAX CURRENT = 6A
 TOTAL USED CAPACITY = 2.905A (48.42 %)

PROVIDE (2) 12V 7AH BATTERIES @ 24VDC

PANEL LOAD SUMMARY							STANDBY CURRENT (AMPS)		ALARM CURRENT (AMPS)													
PANEL COMPONENT SUMMARY							QTY	PART NO	DESCRIPTION	CURRENT DRAW (A)	TOTAL (A)	CURRENT DRAW (A)	TOTAL									
							1	APS10A Mainboard	Mainboard for APS10A assembly	1 x 0.07	= 0.07	1 x 0.27	= 0.27									
							1	SIGA-AA30	30 Watt Intelligent Audio Amplifier	1 x 0.002	= 0.002	1 x 1.55	= 1.55									
CIRCUIT SUMMARY							CIRCUIT															
							N2			1 x 0	= 0	1 x 0.546	= 0.546									
							S1			1 x 0	= 0	1 x 0	= 0									
							TOTAL STANDBY CURRENT			0.072		TOTAL ALARM CURRENT		2.366								
CIRCUIT DETAILS AND CALCULATIONS										STANDBY CURRENT		ALARM CURRENT		POINT-TO-POINT VOLTAGE DROP CALCULATION SUMMARY			SPEAKER POWER/DB LOSS CALCULATIONS					
SOURCE	MAX CAPACITY	TOTAL USED CAPACITY	AVAILABLE CAPACITY	CIRCUIT	AWG	TOTAL DEVICE QTY	CIRCUIT LENGTH	CIRCUIT RESISTANCE (DR)	TOTAL STANDBY (A)	TOTAL ALARM (A)	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	VOLTAGE DROP	TOTAL USED WATTS	STARTING CALCULATION VOLTAGE	END OF LINE VOLTAGE	POWER LOSS PERCENT	TOTAL DB LOSS				
APS10A Mainboard				N2	14	19	668'	0.003	0	0.546	19.7v	18.66v	1.04v									
				S1	16	22	668'	0.004	0	0												
				SIGA-AA30	30w	6.75w	23.25w	S1	16	22	668'	0.004	0							0		
SECONDARY POWER SOURCE REQUIREMENTS										STANDBY CURRENT		ALARM CURRENT										
										REQUIRED STANDBY TIME = 24 HOURS		REQUIRED ALARM TIME = 15 MINUTES										
										SECONDARY STANDBY LOAD		0.072 x 24										
										SECONDARY ALARM LOAD		2.366 x 0.25										
										STANDBY AND ALARM LOAD SUBTOTAL		2.32 AH										
										DERATING FACTOR		x 1.25										
										SECONDARY LOAD REQUIREMENTS (AMP HOURS)		2.9 AH										

PANEL APS:7 (APS6A W/SIGA-AA30) SUMMARY REPORT
 PANEL POWER SUPPLY MAX CURRENT = 6A
 TOTAL USED CAPACITY = 2.366A (39.43 %)

PROVIDE (2) 12V 7AH BATTERIES @ 24VDC



100% SHOP DRAWING FOR PERMIT/CONSTRUCTION
 (BRICK BREEDEN) FIELDHOUSE
 FIRE ALARM REPLACEMENT
 MONTANA STATE UNIVERSITY
 BOZEMAN



REV.	DESCRIPTION	DATE
01	AHJ Review	2/28/25
02	Addenda #1	3/7/25

Bryan Moss, SET
 Apex Fire Alarm Design
 NICET 110772
 Fire Alarm Systems, Level IV
 State of Montana DLI
 FPL-HEL-000888
 PPA#23-0928
 AE# 2024-02-04D

SHEET TITLE
 FIRE ALARM CALC
 SUMMARY 3
 SHEET
 FA8.3
 DATE
 01/29/2025